April 22, 2016

BY COURIER & RESS

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
Toronto, Ontario
M4P 1E4

RE: EB-2016-0004 – Union Gas Limited ("Union") – Natural Gas Expansion Generic Proceeding – Interrogatory Responses

Dear Ms. Walli,

Please find attached Union's responses to the interrogatories received in the above proceeding. These were filed in RESS and copies were sent to the Board.

If you have any questions with respect to this submission please contact me at 519-436-5476.

Yours truly,

[original signed by]

Chris Ripley
Manager, Regulatory Applications

Encl.

cc: Charles Keizer, Torys
All Intervenors (EB-2016-0004)

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Union Gas Limited EB-2016-0004, p. 11, Lines 15-21

The evidence states that historically, Union Gas Limited (Union) based the capital cost in the economic analysis of a project on the minimum pipeline system design necessary to meet the demand expected through the project's customer forecast period. In some cases, a project will be planned with a preferred design, for example with increased pipe size, to account for other system needs. Historically, Union has not included the cost premium for a preferred system design in the economic analysis, and proposes that this practice be confirmed.

a) Please provide examples of other system needs.

b) Please explain who would bear the costs of any difference between the minimum pipeline system design and the preferred system design.

c) Please clarify if Union is proposing the preferred design system as the recommended approach for the economic analysis or does it propose to provide the preferred design analysis in addition to the current economic analysis that is required under the existing guidelines.

Response:

a) Please see the response at S15.Union.EnergyProbe.5 and EB-2015-0179 Exhibit B.LPMA.14 a).

b) New customers would bear the costs of any differences between a preferred design and minimum design provided the Investment Portfolio and Rolling Project Portfolio both have a positive net present value under the current E.B.O. 188 guidelines. These costs do not result in incremental rates, they are carried by the Portfolios. Existing customers would not bear these costs. Union proposes that this would continue to be the case for projects that are not considered Community Expansion Projects.

   Union's EB-2015-0179 proposals exclude Community Expansion Projects from the Investment and Rolling Project Portfolios as well as reduced PI's. As a result, for Community Expansion Projects, both new and existing customers would bear the costs of any difference between a minimum design and a preferred design. The allocation of these costs between new customers and existing customers would depend on the PI of the project. If a project was proposed at a PI of 0.4, the new customers would bear 40% of this additional cost and existing ratepayers would bear the remaining 60%.

c) Consistent with past practice, Union is proposing that the minimum design be used as a basis for the economic analysis of the project. Any additional costs related to a preferred design would be provided in the Leave-to-Construct Application for review by the Board.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Union Gas Limited EB-2016-0004, p. 13, Lines 2-4

Union in its evidence refers to the EBO 188 requirement to use existing rate schedules for new distribution system expansion requirements. Union has argued that using existing rate schedules creates a barrier for existing utilities as they are unable to develop unique rate schedules to reflect the cost of expansion.

If the Ontario Energy Board (OEB) were to revise the EBO 188 guidelines so that existing utilities can develop new rate schedules for specific expansion projects, does Union intend to develop separate rate schedules for community expansion projects?

Response:

No. It is Union's preference to maintain its existing rate schedules (postage stamp rates) and not develop separate rate schedules for community expansion projects. Union's proposal would not result in a need for unique rates for each project. Union would consider developing unique rate schedules for community expansion projects only if other less complex mechanisms, like the proposed Temporary Expansion Surcharge (TES), are not available or appropriate.

Separate rate schedules for each community expansion project would be administratively burdensome and inefficient. To develop a specific community expansion project rate schedule, Union would need to:

- Attribute a portion of Union's existing integrated system costs to each community expansion project.
- Develop and maintain indefinitely a separate cost allocation study for each community expansion project.
- Develop a rate design methodology for each community expansion project.
- Develop and maintain ratebase for each community expansion project.
- Identify specific capital and O&M costs related to each community expansion project.
- Develop a rate schedule for each community expansion project.
- Update each rate schedule annually.
- Update each rate schedule at rebasing for Union's integrated system costs, project costs, capital costs and forecast volumes.

If Union implemented its community expansion projects based on its proposal in EB-2015-0179, Union would need to develop 29 cost allocation studies, 29 rate schedules (assuming all

customers are in one rate class) and track the capital and associated costs with the 29 projects. The community expansion project rate schedules would need to be updated at each QRAM.

From Union's perspective, the administrative burden associated with developing separate rate schedules for each community expansion project is significant and provides little if any benefit relative to its proposed TES.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Union Gas Limited EB-2016-0004, p. 24 and EB-2015-0179, Section 4.5, pp. 32-34

Union proposed a capital pass through mechanism to recover the net revenue requirement associated with the gross capital investment of the 29 community expansion projects that it had proposed in EB-2015-0179.

Do the individual projects referred to in EB-2015-0179 meet the capital pass through criteria agreed to in the Settlement Agreement (EB-2013-0202) approved by the OEB?

Response:

No. The individual projects do not meet nor are they intended to meet the specific capital pass through requirements agreed to in EB-2013-0202. Although for the most part the individual projects are relatively small in nature, collectively the projects represent a significant investment, which on a combined basis meets the cost threshold. Union is not prepared to make such a significant investment without a reasonable certainty of cost recovery.

Please refer to EB-2015-0179 Exhibit B.CCC.14 and Exhibit B.SEC.20 for the rationale.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Union Gas Limited EB-2016-0004, pp. 28-30

Union has listed the minimum requirements that any utility proposing to provide natural gas service in Ontario should meet and fulfil core expectations that the OEB has of existing gas utilities in Ontario. Union further submits that if the OEB's expectations of new entrants are not the same as expectations of existing utilities, then the ability of existing utilities to compete on a level playing field with new entrants to extend service to new areas would be seriously jeopardized.

Please confirm that the existing gas utilities in Ontario that are regulated by the OEB fulfil the minimum requirements, core expectations and financial ability that is listed by Union including Natural Resource Gas Limited.

Response:

Union can confirm that it fulfills these requirements. However, Union is unable to confirm that other existing gas utilities meet the requirements.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Union Gas Limited EB-2016-0004, p. 32, Lines 13-15, p. 34, Lines 9-13

Union has noted that the OEB's attempts to encourage new entrant natural gas LDCs appears to be in conflict with provincial efforts to encourage electric LDC consolidation. Union has questioned the OEB's efforts to encourage new entrants in order to achieve its objective of providing gas service to additional northern and rural communities. Union has further submitted that encouraging new entrants is not likely to result in a more efficient natural gas sector in Ontario.

a) Is it the opinion of Union that the OEB should only approve applications from the incumbent utilities for community expansion projects and not approve the applications of new entrants?

b) If a new entrant meets the minimum expectations set by the OEB, is it the opinion of Union that such an entrant should not be allowed to operate because it would pass on the substantive administrative and management infrastructure costs to consumers and not be as efficient as an incumbent utility?

Response:

a) No. Union does not have the opinion that new entrants should be barred from participating in the sector. Union does not support subsidization of new entrants from existing utilities or their customers.

b) If a new entrant is able to meet the minimum expectations set by the Board, Union is not opposed to them being allowed to operate. A new entrant may be able to buy or develop the expertise and services necessary to operate in Ontario, and the cost of doing so would be reflected in the new entrant's application for approval of rates. The cost of administrative infrastructure (both people and assets) should be a key consideration in the evaluation of applications, especially in cases where there are multiple distributors, whether existing gas utilities or new entrants, interested in providing service to an area.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Economically efficient approaches to community expansion – expert assistance in the matter of Union Gas Limited's community expansion application (EB-2015-0179)

The London School of Economics in its report has provided examples of several jurisdictions to provide a high-level overview of the funding mechanisms adopted for community expansion projects across North America. The report has referred to practices in New York, Nebraska, North Carolina and Alberta.

Please confirm whether the funding approaches to expand into communities that are uneconomic to serve was facilitated through specific legislation or general powers of the regulatory bodies.

Response:

The following response was prepared by LEI.

In Nebraska, North Carolina and Alberta the funding approaches discussed in LEI's report are governed / facilitated through enacted legislation. While in New York, Public Service Law (section 68) requires expansion projects to be economic for ratepayers, the details regarding the rate treatment afforded to the expansion of gas services is outlined in the regulations (final decisions) of the New York Public Service Commission.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Updated Evidence in EB-2015-0179, Exhibit A, Tab 1, Appendix D

Union has provided a list of 103 municipalities that provides natural Profitability Index (PI) and PI with the Temporary Expansion Surcharge and Incremental Tax Equivalent. Of these, Union targeted 29 community projects in its application. Please provide a revised table using a rate of $0.18m^3$ for the first three years of the project and $0.27m^3$ for the next seven years of the project. Also, assume an upfront capital contribution of $500 from each new customer.

a) Would using a lower rate in the first three years of the project impact the uptake of natural gas service in the new communities? If yes, please quantify the potential uptake in the first 3 years of the project. Please provide the requested information in a table for the 29 community expansion projects referred to in EB-2015-0179.

b) Please provide the total subsidy that would be paid by existing customers for the 29 community expansion projects referred to in Union's application (EB-2015-0179) under the above scenario.

c) Please confirm that the natural PI listed in the table in Appendix D is the same as the PI referred to in the OEB's EBO 188 guidelines.

Response:

a- b) The scenario posed by the question reduces the cost of the TES in the early years and increases the cost in the later years. In Union's opinion the addition of a $500 up-front connection charge would on its own reduce attachment rates relative to Union's proposal because customers would also have to pay as much as $4,200 for the conversion or replacement of their furnace before attaching to the gas system. In combination the proposal in the question has a cost for a conversion customer that is 25% higher than the cost under Union's proposal. This would decrease attachment rates, although Union is unable to quantify an expected reduction without testing the scenario with potential conversion customers.

For clarity, the 25% higher cost is based on the present value of the payment stream for a sample 100 customers with the same attachment rates and the TES as proposed by Union in comparison to the TES rate and $500 payment described in the question.

Because Union is unable to quantify the impact on the customer forecast, Union is unable to further quantify the requested information for part a) and b).

c) Confirmed. The term “natural PI” represents the PI excluding any Aid to Construction or the TES and ITE components. It is derived using the current E.B.O. 188 guidelines.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Parkland Fuel Corporation

The evidence filed in this proceeding by Parkland Fuel Corporation offers an extensive critique outlining a number of concerns with the use of cross subsidies to support system expansion.

Is Union able to provide a high level response to the concerns regarding cross subsidies raised by Parkland Fuel Corporation's evidence?

Response:

The evidence from Parkland appears to avoid one key underlying issue: consumers and municipalities in areas that are not serviced by natural gas, including those currently using propane, are asking for natural gas service. Numerous parties have submitted comment letters to the Board on both Union's EB-2015-0179 application and this proceeding to that effect.

For example, Knollcrest Lodge, Milverton, in their letter of comment dated February 18, 2016, stated *"For your information, access to Natural Gas would save Knollcrest Lodge approximately $80,000 per year, since we currently use propane. That $80,000 savings would certainly make a difference in our ability to provide the required quality care, and, indeed, have a significant impact on this organization's viability in the long term."* And Brenda Shulz, a Milverton resident, in her letter dated February 9, 2016, indicated their annual energy costs over the past few years for propane ranged from $3,461 to $2,030, adding *"We have a 23 year old bungalow. In 2009, following an energy audit, we added additional insulation to the attic as well as installing a new high efficiency propane furnace. As seniors, we do not know how much longer we can afford to pay this high cost to heat our home."*

These consumer and municipal requests for access to the natural gas system are the primary reason that Union proposed alternative mechanisms to support expansion. And the Province has indicated support for this effort as evidenced by the Minister's request on June 26, 2014, that the Board consider options "to facilitate connecting more communities to natural gas[1]".

Union acknowledges that some existing ratepayers may argue against any form of cross subsidization. It is Union's view, however, that the level of cross subsidy is not unreasonable or undue. Further, one of the goals of rate design is to minimize cross subsidies by adhering to principles of cost causation. It is not possible to eliminate cross subsidies in their entirety. On the contrary, cross subsidization has been approved by the Board in the past as a means of retaining load in order to prevent rates from being higher than they otherwise would be if the

[1] Letter is provided in EB-2015-0179 at Exhibit A, Tab 1, Appendix A.

load was lost.

Parkland's evidence provides a critique of cross subsidization as a means of expansion of the natural gas system and suggests that any cross subsidization based on "public benefit" or "externality" arguments should be borne by taxpayers as opposed to natural gas ratepayers. While theoretically differing mechanisms could be used, some of those may be beyond the authority of the Board. Union's submission provides a report prepared by London Economics International ("LEI") which includes a ranking of funding mechanisms from five perspectives[2]:

- Cost Causation and avoidance of subsidies
- Financial Stability and fair rate of return
- Incentives compatibility
- Non-discrimination
- Administrative simplicity and transparency

Based on these criteria, internal utility cross subsidization appears to be the strongest option, and is within the jurisdiction of the Board.

[2] EB-2016-0004 Exhibit A, Tab 1, Schedule 1, p. 14.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Canadian Propane Association, Exhibit 3, Tab 3, p. 6

The evidence of Canadian Propane Association (CPA) notes that in the event the OEB authorizes cross-utility subsidization to occur, such that customers of one utility subsidize the expansion undertaken by another distributor, the OEB can mitigate some of the adverse impacts by removing the return on rate base component embedded in the subsidy so that there is only a return "of" and not "on" the capital investment associated with the expansion. With the return component removed, utilities will continue to benefit from the remaining non-financial, social and other benefits of natural gas expansion.

a) Please provide Union's opinion on the approach proposed by CPA.

b) Does Union agree with the proposed approach of the CPA? If no, why not?

Response:

a-b) Union does not support subsidies from one utility to another as they would not result in just and reasonable rates. However, to the extent that a subsidy takes the form of a Contribution in Aid of Construction, Union has proposed that it be treated as Aid and as such the utility would not earn a return on that portion of the capital costs.

Union's Community Expansion Project proposal as presented in EB-2015-0179 best meets the provincial government's desire to extend natural gas infrastructure to communities that would otherwise not receive natural gas service.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Evidence of Canadian Propane Association, Exhibit 9, Tab 9, pp. 8-9

The CPA in its evidence has noted that Union in response to an interrogatory in EB-2015-0179 confirmed that the price used for propane in their analysis were for auto propane and not residential propane. Since 2012, residential propane prices have been significantly lower than auto propane prices. Gas Processing Management Inc. has claimed that the expected payout period for a switch from propane to natural gas will likely exceed 7 years and not approximately 4 years as claimed by Union.

Please provide Union's opinion on CPA's conclusion with respect to propane prices and the larger than expected payout period to switch from propane to natural gas.

Response:

It is unclear to Union precisely what data Gas Processing Managements Inc.'s (GPMI) calculation of a 7 year payback period is based on. Union's estimate of a 4 year payback for propane conversions was based on very conservative up-front cost assumptions which included 100% of the furnaces being replaced at a cost of $4,000 and an Aid of Construction payment of $2,500 which might be necessary in the absence of Union's proposals. The purpose of the Figure[1] in the Market Background section of the EB-2015-0179 evidence was merely to demonstrate that generally there was a strong value proposition for customers to convert, regardless of their current fuel source. It was not to demonstrate specific payback periods for each fuel.

Relative to propane conversions specifically, as indicated in Attachments 1-4 (letters from manufacturers), the vast majority of installed propane furnaces are actually natural gas furnaces that were converted to propane upon installation. In many cases, when this occurs, the components that are replaced (the orifices and regulator springs) are left with the customer or in the furnace vestibule by the gas fitter, and need only be re-installed to convert the furnace back to natural gas. Beyond the equipment conversion, in most cases the fitter would only need to connect the gas meter to the pre-existing piping to activate the furnace on natural gas.

Cost estimates to convert a furnace back to natural gas and connect the meter, based on information provided in the attached letters, include $200-$300 for labour, plus something in the range of $100 for the conversion kit components if they were not left with the furnace when it was earlier converted to propane. Based on this information, which Union believes to represent the majority of residential propane furnace conversion situations, the total cost to convert heating

[1] EB-2015-0179 Exhibit A, Tab 1, Figure 2 (p. 10).

equipment would be in the range of $200 to $400. Union had used a more conservative estimate of $700 for this activity in earlier evidence and IR responses.

Union notes that the above estimates for a furnace conversion are significantly lower than those provided by CPA at Tab 10 of their evidence, which includes estimates of $650-$900 for furnace conversions from several HVAC contractors in the St. Thomas area. Attachment 1 is a letter that Union has relied upon from Reliance Home Comfort, which is one of the largest HVAC companies in Ontario and operates in many geographic locations across the province. Attachments 2, 3 and 4 are from furnace manufacturers, who provide heating products across the province. These four letters are more representative of the conditions across the province at large than estimates from two small HVAC contractors operating in one geographic market area.

Union has difficulty accepting GPMI's estimates of the annual energy cost differences between residential propane and natural gas, as identified in Figure 1 (p. 9) of the GMPI report, and has submitted a number of interrogatories to CPA to better understand these figures. Union has acknowledged that upon investigation it was determined that the propane cost figures provided in EB-2015-0179 at Exhibit A, Tab 1 Updated, Figure 1 (p. 9) were in fact based upon automotive propane prices, but Union has been unable to identify a reliable source for Province wide home heating propane prices. In an effort to understand the cost differences between automotive and home heating propane, Union assumed that the automotive propane prices provided by the cited source include a Provincial fuel tax of $0.043 per litre[2], as well as HST of 13%. The result of backing out these factors from the annual costs of propane energy[3] resulted in an Ontario average home propane cost of $2,069, which would result in annual savings of $1,225 if a propane customer converted to natural gas. This figure compares to what would appear to be annual savings in the $700 to $800 range in GPMI's Figure 1. Because of this difference Union is unable to confirm that GPMI's costs estimates are representative of the market. Note that in conducting this exercise Union was unable to produce charted values comparable to the residential propane line in GPMI's Figure 1.

However, even if Union had accepted GPMI's $700-$800 estimate of the 2015 annual energy cost savings of natural gas relative to propane, if a propane furnace is converted back to natural gas at an average cost of $350 (assuming the conversion kit is not available on site), the customer would have a payback period of less than one year. If Union's proposed Temporary Expansion Surcharge were to be included at an annual cost of roughly $500 per year, customers would still see something approaching a two year simple payback period.

Union also notes that these comparisons of home propane and natural gas prices are occurring at a time when propane prices have declined to recent historical lows, and that future price forecasts indicate that some recovery in propane prices[4] is likely to occur.

[2] Fuel tax of $0.043/litre in place since January 1, 1999; http://www.fin.gov.on.ca/en/tax/gt/index.html
[3] Calculation is based on updated automotive propane costs provided at Exhibit S15.Union.Energy Probe 15 (a)
[4] EIA 2105 Residential Price Forecast is provided at Exhibit S15.Union.Energy Probe.15.

Reliance home comfort™

Ms. Diane Murray

Strategic Account Manager

Union Gas Limited / Spectra Energy

918 South Service Rd, Stoney Creek, L8E 5M4

Hello Diane:

I write in regards to your inquiry relating to costs for converting existing propane forced air furnaces to natural Gas. **I can advise that the charges would be approximately two to three hundred dollars with consideration of the following guidelines listed as follows:**

- The locations of interest do not involve excessive travel. Example would involve travel only within the same community.
- Simple piping tie-ins to the meter are required within one metre – no excessive piping involved.
- The existing houseline is found to be in compliance to the CSA B149.1 Gas Code.
- The existing furnace installation is found to be in compliance to the CSA B149.1 Gas Code.
- The existing venting is found to be in compliance with the CSA B149.1 Gas Code.
- The furnace is current and worthy of conversion with an approved kit provided by the customer.
- Water heaters are not considered in any way with the work involved. All propane water heaters cannot be converted – They must be replaced.

This estimate only includes a meter tie in, Inspection of the present installation, installation of a conversion kit (Valve regulator and orifices), confirming suitable input, pressures and performance of the converted furnace.

I hope this note satisfactorily addresses your inquiry.

With Thanks and Best Regards

G. Andrew Gould
Manager Technical and Regulatory Support
Reliance Comfort L.P
275 Thompson Dr Unit !
Cambridge, On
N1T 2B9
Office : (519) 624-8733
Cell : (519)750-2969
Fax : (416)756-5328
agould@reliancecomfort.com

Tuesday, March 29, 2016

Diane Murray
Strategic Account Manager
Union Gas Limited
918 South Service Rd, Stoney Creek, L8E 5M4
Tel: 289-649-2081 ext. 5212081 Cell: 905-741-7193
dmurray@uniongas.com

Re: Propane installations with Rheem and Ruud furnaces

Dear Diane,

As per our discussion, this letter is to confirm the information regarding conversions of our Rheem or Ruud furnaces between natural gas (NG) and propane gas (LP).

All of our furnaces are manufactured to operate with NG. In order to work on LP, an LP conversion kit is required. Conversions require the installation of springs, and replacement of each of the orifices in order for the furnace to operate correctly. Some further adjustments to the gas valve may be required. It is important for the installer to follow the installation instructions that come with the kit and different types of furnaces have slightly varying requirements.

This conversion is typically done at the time of installation, and takes approximately 30 minutes to complete. The cost to the end user, usually included in the overall installation quotation, is approximately $100 plus any labour charges. These LP conversion kits are readily available through Rheem Canada and our network of Distributors and Dealers across Canada.

To convert a furnace back to NG from LP, the following steps must be taken:

1. Reinstall the original orifices
2. Reinstall the original springs in the gas valve
3. Adjust gas pressure for Natural Gas
4. Remove all labels in regards to the LP conversion

If the original components are no longer available, the gas valve itself will have to be replaced along with new orifices. The cost for a new gas valve will vary depending on the type of furnace (single stage, two stage, modulating). Labour will also need to be factored in. This process would be treated as a service call.

If you require any further information, please do not hesitate to reach out.

Sincerely,

Adam Wills
Canadian General Sales Manager, HVAC and Customer Support

Rheem Canada Ltd./Ltée
125 Edgeware Road, Unit 1
Brampton, Ontario L6Y 0P5
800.268.6966
www.rheem.com

Dettson

April 8, 2016

Mrs. Diane Murray
Strategic Account Manager
Union Gas
918 South Service Rd,
Stoney Creek, Ontario
L8E 5M4

Subject: Our observation as a manufacturer for converting a furnace which ran on propane to natural gas.

Let me start by making the point that our line of gas furnaces, called the Chinook, is designed to run in both modes that are natural gas or propane. From our facility, the units are shipped to be fired with natural gas and an installer would need to acquire our conversion kit which would allow propane to be used.

The conversion kit to enable the Chinook gas unit to use propane rather than natural gas does consist of:

- A different orifice size for each burner;
- A spring(s), or jumper for the gas valve.

A Chinook gas furnace which would have been running on propane could also be converted back to natural gas. There would be one of the 2 options below to select from:

Option 1;
If not sure of the quality of the technician to be doing the conversion, one would need to change:

- The complete manifold including the burners;
- The gas valve.

Option 2;
Making sure the technician making the conversion is qualified and follows instructions, the following components would need to be changed;

- The orifice for each burner.
- The spring(s) or a jumper to be removed for the gas valve.

In both options a technician shall need to remove the propane conversion label and there shall need to be a label stating that the unit is using natural gas. The pressure shall also need to be adjusted in both cases.

Yours truly,

Marc Chenier
General Manager
Dettson Industries

Date: April 19, 2016

Diane Murray
Key Account Manager
Union Gas
360 Strathearne Ave N
Hamilton, Ontario, L8N 3A5
Canada

NAPOLEON – HVAC

Dear Diane:

Wolf Steel Ltd. manufactures gas furnaces under the brand names Napoleon and Continental. All of our gas furnaces are fully convertible to propane, with only a single kit being suitable for all models. The kit #W370-0018 contains all the orifices required for converting, including those for high altitude applications as well as the spring required to be installed in the gas valve.

We also include a low pressure propane cut-off switch in this kit, with all the fittings required to be installed on the inline gas piping. This pressure switch will shut down the furnace in the event that the propane pressure falls below proper operating level, such as when the propane tank is very low.

All instructions and new labels that are required for a field conversion are included. The kit has a retail price of $142.00, and most installers would take about 15 minutes to convert a furnace. Once the furnace is converted normal practice is to leave all the gas components in the furnace, contained in the included baggie in case the furnace needs to be converted back to natural gas in the future. Should these components be lost, kit #W370-0031 will provide you with all the components for converting a furnace from propane to natural gas, with retail price of $59.00.

If you have any other questions or require additional technical information please contact myself or Customer Solutions at 1-866-820-8686.

Regards,

Mike Cantin
Director of HVAC Sales – North America

24 Napoleon Road
Barrie, Ontario, Canada
L4M 0G8
705-721-1212

214 Bayview Drive
Barrie, Ontario, Canada
L4N 4Y8
705 726-4278

103 Miller Drive
Crittenden, Kentucky, USA
41030
859 428-9555

www.napoleonproducts.com

UNION GAS LIMITED

Answer to Interrogatory from
Anwaatin Inc. ("Anwaatin")

a) Are there any situations where it would be desirable for provincial support to be accepted for expansion of service to rural, remote and First Nation.

b) Please provide details on: the proposed cost allocation to each group, responsibilities, and long-term benefits in light of services and transition to a lower carbon economy.

Response:

a) Yes. There are situations where provincial support is desirable, which is why Union has had ongoing dialogue with Provincial Ministries over the past several years. This dialogue is summarized in EB-2015-0179 at Exhibit B.Energy Probe.1, Attachment 1 and details of presentations are provided at EB-2015-0179 Exhibit JT1.12, Attachment 1. The benefits are summarized in the referenced materials.

b) Assuming "cost allocation" refers to cost reductions that would result, as noted in Union's evidence, any provincial financial support would constitute an Aid to Construction. Consequently, this would reduce the capital costs recorded in rate base, which would provide the ratepayer benefit of a reduction in the capital costs and return that must be recovered over the life of the installed assets. This approach would not change as Ontario transitions to a lower carbon economy.

UNION GAS LIMITED

Answer to Interrogatory from
Anwaatin Inc. ("Anwaatin")

a) Are there any situations where it would be desirable for a Universal Service Fund type of mechanism, administered by the Ontario Energy Board (the Board) or similar Ontario body, and available to incumbent operators and to new entrants seeking expansion of natural gas service to rural, remote and first Nation communities?

b) Please provide details on: the proposed cost allocation to each group, responsibilities, and long-term benefits in light of services and transition to a lower carbon economy.

Response:

a) No. Union is not in favour of the establishment of a Universal Service Fund. Union's rationale is provided in its submission for Issue 2 filed at Exhibit A, Tab 1, pp.3-5.

b) In the event that the Board were to establish such a fund, Union's position is as follows:

- Any financial support from such a fund dedicated towards capital cost contributions would constitute an Aid of Construction, and consequently would reduce the capital costs recorded in rate base, which would provide the ratepayer benefit of a reduction in capital costs and return that must be recovered over the life of the assets.

- Any financial support from such a fund dedicated toward annual revenue deficiencies would be treated as revenue and consequently would benefit ratepayers for the new utilities through a reduction in rates that would be required in the absence of the funding.

This approach would not change as Ontario transitions to a lower carbon economy.

UNION GAS LIMITED

Answer to Interrogatory from
Anwaatin Inc. ("Anwaatin")

Reference: Union evidence, Exhibit A, Tab 1, pp. 2-5

Preamble: Union Gas asserts that the Board's jurisdiction does not include authority to require that Union's customers subsidize the expansion undertaken by another distributor into communities that do not have natural gas service.

a) Are there options available to incumbent operators that would enable incumbents to subsidize expansion into rural, remote and First Nation communities through partnership or collaborative distribution arrangements with other parties?

b) Please provide details on: the proposed cost allocation to each group, responsibilities, and long-term benefits in light of services and transition to a lower carbon economy.

Response:

a) Please see the response at EB-2015-0179 Exhibit B.Staff.4 b) to d). Union has not explored specific potential options in depth because they could vary significantly with any interested party.

b) Union is unclear on what is meant by "cost allocation to each group" in the context of this question.

UNION GAS LIMITED

Answer to Interrogatory from
Anwaatin Inc. ("Anwaatin")

Reference: Union evidence, Schedule 1, p. 5
Union evidence, Schedule 1, p. 6

Preamble: Union Gas put forward the following principles:

- Customers and municipalities who directly benefit from Community Expansion Projects should contribute to the financial viability of the project.
- Expansion customer contributions to project feasibility should be commensurate with the savings achieved by switching to natural gas.
- Moderate cross subsidization from existing customers is acceptable, provided long-term rate impacts are reasonable.
- Natural gas distributors should not be exposed to financial risk related to the incremental new community capital investments.

Union then identifies funding mechanisms including Temporary Expansion Surcharge, Incremental Tax Equivalent, Temporary Connection Surcharge and a cross-subsidy between existing ratepayers and new expansion ratepayers.

a) Which of these are applicable to expansion of natural gas service to remote First Nations and "road-connected" First Nations?

b) Can Union Gas describe scenarios in which the above principles and funding mechanisms can be applied to unserved First Nation communities – both remote First Nations and "road-connected" First Nations?

c) Please provide details on: the proposed cost allocation to each group, responsibilities, and long-term benefits in light of services and transition to a lower carbon economy.

Response:

a) Union's proposal for Community Expansion Projects applies equally to both First Nation Projects and non-First Nation projects. All of the above would be applicable to both remote and "road connected" First Nations that might be serviced by Union Gas.

b) Union has identified a number of First Nations that might be candidates for projects in EB-2015-0179 at Exhibit A, Tab 1, Appendix D. A number of these projects might be feasible without a need for Government funding if Union's proposals are accepted by the Board. As

other projects are identified they may also be considered.

c) Cost allocation for any First Nations project would be the same as it would for any other Community Expansion Project under Union's proposal. Details for the first 29 projects, assuming they are all implemented, are provided at Exhibit S15.Union.IGUA.6. The benefits would be similar to the benefits for other non-First Nations projects. This approach would not change as Ontario transitions to a lower carbon economy.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Union Gas Submission

Has Union considered any options for existing customers other than a rate rider, which will attract payment of HST in addition to the rate rider itself, thereby adding an additional 13% to costs associated with the rate rider? If so, please file the results of the analysis. If not, why not? Over the timeframe estimated for the collection of the rate rider from existing customers what will be the total provincial share of the HST revenue?

Response:

Please see the response at EB-2015-0179, Exhibit B. Energy Probe.8 b). All options Union considered would require payment of HST with the exception of any charges associated with pipeline projects on First Nations' land.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Union Gas Submission

With respect to the ICF study for the Canadian Gas Association, why does Union assume the results for Canada as whole can be assumed to apply to Ontario, given that Ontario's electricity system has been significantly decarbonized already?

Response:

The ICF Report provided in EB-2015-0179 at Exhibit B.CCC.5, Attachment 1 provides a national context and the environmental impacts provided in the report were not developed by province. As such, Union is unable to pull Ontario specific numbers from the report. Union acknowledges that Ontario's electricity system has been significantly decarbonized, and as such, direct proration of the environmental benefits would likely result in slightly overstated impacts for Ontario. Regardless, Union has indicated there are environmental benefits to expansion, which include an 8% reduction in CO_2 emissions, as noted at Exhibit S15.Union.BOMA.74.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Union Gas Submission

With respect to the average rate impacts being limited to $2.00 per month, BOMA Toronto assumes that this amount is the average for a residential or general service customer. What is the estimate of the total rate impact for Union other customer classes, by rate class per month and for the lifetime of the community expansion projects included in Union's submission?

Response:

The average rate increase of $2 per month (or $24 per year) was Union's proposed maximum rate increase limit for an average residential general service customer for all current and future community expansion projects proposed over multi-year expansion program.

Based on the potential 29 community expansion projects, Union estimates the maximum residential bill impact to be $2.91 per year (an average of $0.24 per month) for a typical residential customer which is significantly less than Union's proposed bill impact maximum limit of $24 per year ($2 per month). Please see Exhibit S15.Union.IGUA.6 for the estimated total annual bill impact for all rate classes based on the 29 potential community expansion projects for Project Years 1, 5, 10 and 15 with the scenario assuming all 29 projects are in service in Year 1.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Issue 12

In its 2016 budget, the Ontario government states:

> "The Province is also developing programs to help communities partner with utilities to extend access to natural gas supplies. Ontario will introduce a loan program to support access to natural gas in 2016. Access to natural gas can help stimulate the economy, particularly in smaller communities, by attracting new industry, making commercial transportation more affordable, benefiting agricultural producers and providing consumers with more energy choices" (p63).

a) Does Union agree that in the 2016 budget (page 63), while the $200 million loan program, introduced in the 2015 budget, is reaffirmed, there is no reference to the $30 million grant program?

b) In Union's view, has the province dropped the grant program?

c) In Union's view, why has the province not yet developed criteria for the loan/grant program, given that the program was first announced in the 2015 budget?

d) When does Union anticipate the provincial program will become operational?

e) What is Union's view as to how the loan program will fit into the CEP program, who will receive the loans, what features must the loan program have to contribute to a successful CEP?

f) Please provide details of any conversations or exchanges in writing between Union and the provincial government on the CEP program since the 2015 budget announcement.

g) Given that the province, in its 2016 budget, at page 63, appears to have dropped the grant component of the rural gas expansion program, announced in its 2015 budget, and given that the province has in more than a year later not developed any criteria for the loan or grant parts of its policy, would Union agree with BOMA that the province no longer has a "policy" of facilitating gas service for unserved communities in Ontario? If Union disagrees, please explain what that policy is either than a preference that existing gas customers subsidize the uneconomic expansion to unserved areas.

Response:

a) Union agrees that the 2016 Ontario budget does not specifically reference the $30 million natural gas grant program.

b) Union has no reason to believe that the Province has dropped the grant program.

c) Union believes that the Province has not fully developed the loan or grant programs to this point because they expect to use the funds made available by the programs to further leverage any flexibility in approach to natural gas expansion granted by the Board. In EB-2015-0179 Exhibit B.CCC.16, Union provides its understanding of the Government's intent.

d) Union expects the provincial Loan program to become available before the end of 2016, based on the 2016 Ontario budget document. Union continues to expect the Grant program to become available in Province's 2017/2018 fiscal year, as noted at EB-2015-0179 Exhibit B. CCC.16.

e) Please see the response at EB-2015-0179 Exhibit JT1.12, Attachment 1 pp. 9-13.

f) Please see the response at EB-2015-0179 Exhibit B. Energy Probe.1 Attachment 1 and EB-2015-0179 Exhibit JT1.12 Attachment 1.

g) No. Union does not agree. Union has no reason to believe that the Province no longer has a policy of facilitating gas service to un-served communities. The Minster of Energy has not rescinded or provided any further clarification to his request that the Board assess what options might exist to facilitate connecting more communities to the natural gas system. Further, the fact that the Province has announced that the Natural Gas Access Loans will become available this year provides evidence that the Government's policy remains unchanged.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Page 20 of 38

Does Union agree that in order to capture the public interest aspects of proceeding with a community expansion project, the impact of the project on GHG emissions should be considered, including efforts to mitigate such GHG impacts?

Response:

Union agrees that the impact of GHG emissions is one of the factors that should be considered in the evaluation of a project. Therefore, Union provided evidence of the GHG emissions impact of the specific projects it proposed in EB-2015-0179 at Exhibit B.SEC.10, and more broadly in EB-2016-0004 at Exhibit S15.Union.BOMA.74.

In Union's analysis, the GHG emissions were an overall benefit, and therefore no efforts to mitigate were required.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: p. 20

a) Has Union made an assessment of the economic impact of connection to natural gas for an industrial customer currently using oil, propane, or electricity as a major objective of the CEP program is economic development in smaller communities and rural areas?

b) Please provide a list of the industrial customers in each of the targeted communities that would be eligible to connect to natural gas for (i) heating; or (ii) process purpose. How many of the industrial customers compete with companies outside Ontario?

c) Does Union agree that allowing community expansion projects to proceed with P/Is as low as 0.8, so long as the rolling portfolio P/I remains at 1.0 is itself a subsidy from existing ratepayers.

Response:

a) Union has not conducted an assessment of the economic impact of a specific industrial customer in a smaller community or rural area connecting to natural gas. The impacts could vary widely depending on the size of the business, the specific uses for natural gas in the business and the competitive environment in which the business operates. Union has heard consistently from municipalities that not having access to natural gas, aside from affecting the competitiveness of current businesses, also impedes their ability to attract new businesses. In EB-2015-0179, Exhibit B.CCC.5 and the related ICF report at Attachment 1 provide macroeconomic impacts of connecting to natural gas. Union notes that Greenfield Energy in Tiverton would potentially be one of the customers serviced by a Community Expansion Project, and Greenfield's evidence submission for this proceeding provides some idea of the economic impact of the plant locally.

b) For the four[1] Projects proposed by Union in EB-2015-0179, Union is aware of one potential industrial customer[2]. Union does not know whether this customer competes with companies outside Ontario. Union is not aware of any industrial customers in the other three immediate Project areas.

---

[1] Projects for which Union has requested approval to proceed in EB-2015-0179 (Milverton, Prince Township, Lambton Shores/Kettle Point First Nation, and Moraviantown First Nation).
[2] Union does not typically release customer specific information without the permission of the customer, and as such have not identified the specific customers here.

For the other 25 potential Projects listed in EB-2015-0179 at Exhibit A, Tab 1, Appendix D Updated, Union is aware of a number of potential industrial customers in the communities and would provide related information at the time applications are made to the Board for recovery of revenue requirements or Leave-to-Construct for those projects.

c) No. Union does not agree. If the Rolling Project Portfolio PI remains at 1.0 or greater, there is not a long-term rate impact for pre-existing ratepayers. Existing ratepayers would see long term impacts only if the Rolling Project portfolio PI drops below 1.0. Union does acknowledge, however, that if the Rolling Project Portfolio remains at 1.0 or greater, there is a subsidy from new customers being connected to projects undertaken at a PI of greater than 1.0 in favour of new customers being connected to projects undertaken at a PI of less than 1.0.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: p. 21, Issue 4 f)

Union states in its evidence that it has only used EBO 134 in applications to expand the Dawn Parkway and Ojibway transmission systems. Does Union agree that EBO 134 remains a construct to facilitate expansion of these high pressure, long line transmission systems are essential to the operation of the Union integrated transmission/distribution business, and was not designed to be used for distribution system expansion projects? However, for distribution expansions to connect additional communities, EBO 188 is a well-developed test, which Union supports. Why is Union purporting to use the EBO 134 Guidelines for distribution expansion? Why is it appropriate to use these tests to support a project-specific assessment of distribution expansion projects. Does Union agree that using these second stage benefits could be used to justify any expansion to unserved communities in the province, no matter how remote the communities are from existing gas infrastructure.

Response:

The question misstates Union evidence. The question states "Union states in its evidence that is has only used E.B.O. 134 in applications to expand the Dawn Parkway and Ojibway systems". Union's EB-2016-0004 evidence at Exhibit A, Tab 1, p.16 states…"In Union's case, the current transmission pipeline system subject to E.B.O. 134 Guidelines are limited to the Dawn Parkway and Panhandle transmission system"

E.B.O. 134 applied to both transmission and distribution projects prior to the development of the E.B.O. 188 Guidelines in 1998. As such, E.B.O. 134 was developed for use with both types of projects, which included expansions to connect to additional communities. With the E.B.O. 188 Decision, in-franchise expansions to connect additional communities were subject to the E.B.O. 188 Guidelines rather than the previous E.B.O. 134 Decision.

The minimum Portfolio PI requirement identified in E.B.O. 188 was put in place as a means to ensure existing ratepayers were held harmless from the cost of new connections or projects[1]. Because existing ratepayers were being held harmless, there was no reason to consider economic assessments that included the broader public benefits of the projects. Union, however, has proposed that limited levels of subsidization from existing ratepayers are in the public interest. If limited levels of cross subsidization from existing ratepayers are acceptable, either the E.B.O. 188 Guidelines related to minimum Portfolio and Project PI's need to be relaxed, or those projects will need to be exempted from E.B.O. 188.

[1] Board Letter, dated February 18, 2015, and provided at EB-2015-0179 Exhibit A, Tab 1, Appendix A, p. 3.

Union has proposed the use of the Stage 2 and 3 Assessments identified in the E.B.O. 134 Decision as a means for the Board to assess the public interests in these cases. Union supports the use of a Stage 2 assessment for the analysis of any project where existing ratepayers will be impacted. However, whether that assessment would justify expansion to very remote communities would depend on the specific costs of the project being proposed. Union does not agree that every possible project is expected to be justified.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: p. 24

Union states that:

> "It is Union's position that the Board should avoid, where possible, prescriptive ratemaking approaches, and allow utilities to bring forward rate proposals that can be reviewed on their merits".

What does Union mean by "prescriptive ratemaking approaches", as used in the quoted sentence? Please provide examples of such "prescriptive" approaches and why Union does not favour them, or is opposed to them.

Does Union believe it is necessary or desirable to have uniform gas distribution rates across the province?

Response:

By using the phrase "prescriptive ratemaking approaches", Union is suggesting the Board should not impose the method by which a utility recover its costs but rather, given the diversity and differing motivations of Ontario's natural gas distributors, allow the necessary flexibility for utilities to bring forward rate proposals that can be reviewed on their merits.

Union does not believe it is necessary or desirable to have uniform gas distribution rates across the province. Rather, Union maintains that Union's distribution rates be established based on the costs incurred by Union to serve to its customers.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Issue 7

Union has stated that they should not be at risk for the expansion program. Why should Union's shareholders not be at risk with respect to recovery of capital expenditures for the community expansion projects, given that expenditures will increase Union's rate base and its revenue requirement, both of which will benefit Union? Please explain fully.

Response:

One of Union's guiding principles when designing its community expansion proposal is natural gas distributors should not be exposed to financial risk related to the incremental new community capital investments.

The rationale behind this guiding principle is discussed at EB-2015-0179 Exhibit A, Tab 1 and at EB-2015-0179 Exhibit B.CPA.11 and Exhibit B.CPA.16.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Issue 8

a) Does Union agree that a new entrant should be able to charge higher rates than currently approved Union or EGD rates to its customers in a currently unserved area, if that it is necessary for that entrant to earn a compensatory return on capital? If not, why not? Could it charge lower rates than existing EGD and Union rates if it could still earn its return?

b) Does Union think that it would be, or could be, in the public interest to have more than the current gas distribution utilities, active in Ontario? Please discuss fully.

Reference: p. 33

c)

i) Does Union believe that the addition of new customers could reduce O&M costs as a result of the larger base over which to spread fixed costs on a per customer basis? Please explain why. Which fixed costs of overall administrative support capability would be more widely spread?

ii) By how much?

d) Why does Union think it is necessary for the new entrants to get Board approval of rates before signing (or getting Board approval for) a franchise agreement with a municipality?

Response:

a) Consistent with how Union establishes its own rates, the rates charged by a new entrant should be based on the prudently incurred costs required to serve its customers. It is the Board who ultimately needs to determine if any rate proposal meets the just and reasonable test.

b) Union is not opposed to other gas utilities operating in Ontario. However, the prospect of having more than the current natural gas distribution utilities in Ontario is likely to increase the overall costs to consumers beyond what might otherwise be the case. Additional utilities can only meet the Board's public interest test if the Board's expectations of new entrants are the same as those for existing utilities, and if the Board is satisfied that rates for consumers serviced by each utility are the result of prudent investment decisions that result in just and reasonable rates. The importance of having existing utilities operate on a level playing field with new entrants is detailed in Union's response to Issues 8 and 9 on pp. 25-35 of its EB-

2016-0004 Exhibit A, Tab 1.

c)

i) The addition of new customers could result in lower O&M costs on a per customer basis. Administrative and general costs, which represents approximately 37% of distribution related O&M expenses, will not vary with the attachment of new customers from these communities.

ii) Union estimates each existing general service customer would benefit by approximately $0.50 per year related to the attachment of the 29 potential community expansion communities.

d) It is necessary for new entrants to get Board-approved rates before attaining a Board-approved Franchise Agreement with the municipality and a Certificate of Public Convenience and Necessity. As stated in Union's EB-2016-0004 evidence at Exhibit A, Tab 1 pp. 26 and 27, a community could end up supporting a proposal without realizing that the proposal would result in higher rates than surrounding (currently served) municipalities. In doing so, this would defeat a community's interest in offering energy costs that are competitive with other municipalities. The Board has the authority to assess the competence of a utility as well as its rates and costs, not a municipality.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: pp. 26-28

Why does Union think that the Board should become more heavily engaged in an RFP process to choose a new supplier for an unserved community? If so, please explain the process Union would envisage.

Response:

Any RFI or RFP process should not usurpt the Board's authority to set rates.

The Board should be engaged in any RFI or RFP process because the Board has the sole jurisdiction to grant Franchises, Certificates of Public Convenience and Necessity (CPCN), and Leave-to-Construct approval. In the absence of Board involvement, a municipality could conduct an RFI or RFP process only to discover that after the process has been completed and the selected project proponent applies for Leave-to-Construct approval from the Board, it could be denied or granted with conditions that the proponent could not or is not willing to meet.

At a minimum the Board's engagement should include setting specific parameters that the municipality should address in its evaluation of RFI or RFP responses. These parameters would include an assessment of the factors that Union has identified in its response to Issue 8 at Exhibit A, Tab 1, pp. 25-30. Since a primary component of the Board's mandate is setting just and reasonable rates, the rates that will be charged to customers in new communities should be a key factor in the assessment of RFI's or RFP's.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: London Economics ("LE") Study (Schedule 1)

Does LE agree that given the source make-up of Ontario electricity production, conversion of residential customers from electricity to gas conflicts with, rather than aligns with, Ontario's GHG policy goals? If not, why not?

Response:

The following response was prepared by LEI.

LEI does not agree with BOMA's statement that conversion to natural gas conflicts, rather than aligns with, Ontario's greenhouse gas ("GHG") related policy goals.

As outlined in the 2013 Long Term Energy Plan ("LTEP"), the Ontario government wants to make sure communities have access to natural gas to take advantage of the changes in North American natural gas markets, particularly, the low prices of the commodity. Further the government recognized "*the quality of life and economic prosperity of Ontario depends on having secure access to competitively priced natural gas and an equally competitively priced natural gas transmission and distribution system*."[1]

As noted within LEI's report "rural residents rely on higher carbon emitting fuels such as oil, propane, or higher priced electricity [to] heat their homes and businesses."[2] Providing rural residents with natural gas supply can potentially result in a net reduction in the overall GHG emissions by substituting for fuels such as oil, and for electricity which at peak hours often may include generation from fossil-fueled sources. Specifically, as rural customers move away from using high priced and high emitting heating sources, these customers will contribute to Ontario's environmental and carbon reduction goals.

[1] Ontario Ministry of Energy. Achieving Balance Ontario's Long Term Energy Plan. December 2013

[2] Ontario Federation of Agriculture. Turning up the heat for natural gas expansion in rural Ontario (2013)

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Schedule 1, p. 2

a) Did LE in its high level review of North American gas and electricity markets examine the funding mechanism for expansion in all U.S. states and Canadian provinces in sufficient detail to conclude that all of the mechanisms used fell into one of the four categories outlined in Figure 1? If not, please explain. Does each jurisdiction have some mechanism or process for dealing with expansion? Do some jurisdictions have no set process? How do these jurisdictions deal with the issue?

b) How were the jurisdictions for more detailed analysis chosen?

c) Does Union or LE have a view on why each of the provinces/states chosen for detailed study have legislation which underpins the formal process for funding gas distribution expansion in their province/state (our emphasis)? Were there any judicial decisions that required the legislation?

Response:

The following response was prepared by LEI.

a) Review of every jurisdiction in North America was beyond the scope of LEI's report. Generally, where a mechanism is in place, it reflects the individual market characteristics, government mandates, size, cost and assessed benefits associated with expansion programs, and finally availability of alternative funding mechanisms (for example if government was willing to provide access to loans, grants or alternative finance).

b) Jurisdictions were chosen because they were representative of particular approaches to the issue.

c) Detailed review of legislative and judicial history for each jurisdiction was beyond the scope of LEI's engagement. Further LEI note not all jurisdictions have passed specific legislation underpinning the funding mechanisms adopted for expansion programs.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Schedule 1, p. 10, Reports to the Board of Selected Project Performance

a) Please provide the projects selected for their Rolling Projects Portfolio and reported to the Board for showing the customer attachments at the end of the third full year, the associated revenues and costs, and the third year forecasted performance for each of the last five years.

b) How were the projects selected to ensure they are representative?

Response:

a-b) The activity referenced is outlined in E.B.O. 188 at Section 3.2[1], Ongoing Monitoring Information, which states:

"In consultation with Board Staff, the utilities shall select projects from their Rolling Project Portfolios on an annual basis and shall file the following with respect to the sample:

(a) the cumulative number of customers attached at the end of the 3rd full year and the associated revenues and costs; and

(b) the corresponding year 3 customer attachment forecasts and associated revenues and costs."

This process has not been initiated.

[1] E.B.O. 188 Final Report of the Board, provided in EB-2015-0179 at Exhibit A, Tab 1, Appendix C p.38

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Schedule 1, p. 20, New York

Please provide copies of, or a link to, New York Public Service Law, Section 68.

Response:

The following response was prepared by LEI.

Section 68 of New York Public Service Law may be accessed through the New York public legislator website[1] http://public.leginfo.state.ny.us.

[1] Please note the website does not provide for a direct link to Section 68 of the Public Service Law. However the required section may be found by utilizing the search engine within the site.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Schedule 1, p. 21

a) Please explain how the surcharge is calculated under New York legislation.

b) Does New York have the equivalent of EBO 188? Please discuss.

c) Please confirm that the exceptions granted in 89-G-078 did not increase the amount of the surcharge but simply allowed for its collection over a ten year period, rather than a shorter period to ease the burden on the new customers.

d) Please confirm that the collection of a rate surcharge from "all customers in the new area" is only permitted to the extent that the forecast expansion project cost shows that at the end of a five year period, without such charges, the rate of return of the utility will be below its allowed rate. If not, please explain.

e) What would be the impact on the Union proposal of using the New York test?

f) Does LE agree that comparison between gas and electricity service should be conditioned by the absolute need for electricity to run a modern home or business, as it essentially has no substitutes? In other words, electricity is a must have, gas is a "nice to have".

g) In all of the cases discussed by LE, except New York, the jurisdiction has enacted legislation to facilitate the expansion of gas or electric utilities into rural, farm, or other underserved area. Is LE of the view that specific legislation in Ontario, which codified government support for rural expansion, would lead to a more orderly, comprehensive development of an Ontario program?

Response:

The following response was prepared by LEI.

a) The calculation of a surcharge is provided for under New York Public Service Commission Case 89-G-078 *Policy for Rate Treatment of Gas Service Expansion into New Franchise Areas, Statement of Policy Regarding Rate Treatment to be Afforded to the Expansion of Gas Service Into New Franchise Areas.*

Where a revenue deficiency is found, for example where a proposal is projected to earn less than the full rate of return by the fifth year of the development, a utility is authorized to assess surcharges on all sales in the new franchise area for a period of up to five years from the

commencement of service.[1]

A maximum surcharge will be calculated on the basis of the aggregate five-year revenue deficiency divided by the total estimated sales for the first five years.[2] Separate surcharge levels may be established for individual customer service classifications and surcharges may be adjusted during the development period, but the unit surcharge for any class may not be greater than the overall maximum level.[3]

b) Ontario's EBO 188 and New York's Case 89-G-078 both provide guidelines for evaluating the expansion of natural gas services in their respective jurisdictions. In this sense they may be considered similar. Both policies strive to ensure just rates for ratepayers and require expansions to be economic based on defined criteria. However, each guideline provides for a differing evaluation approach.

c) Confirmed.

d) Confirmed.

e) A quantitative assessment incorporating New York's assessment methodology was outside the scope of work for the engagement.

f) LEI does not agree with the BOMA's assertion *"a comparison between gas and electricity services should be conditioned"*, or *"gas is a 'nice to have'*. Furthermore, our understanding of the proceeding is that it is focused on appropriate funding mechanisms for natural gas community expansion programs, rather than a discussion of the relative merits of using gas versus electricity.

Further, depending on the use of natural gas or electricity, one may substitute for another. For example LEI note throughout its report in the case of heating a residence or business natural gas can provide a substitute for higher priced electricity, propane or oil.

g) LEI's focus was on the economic arrangements, rather than the legal framework. As such, LEI has not developed a view on this matter.

---

[1] New York Public Service Commission. *Case 89-G-078, Policy for Rate Treatment of Gas Service Expansion into New Franchise Areas, Statement of Policy Regarding Rate Treatment to be Afforded to the Expansion of Gas Service Into New Franchise Areas*. December 11, 1989.

[2] Ibid.

[3] Ibid.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Union Red Lake Expansion

In the Red Lake expansion case (EB-2011-0040), please confirm that Goldcorp Inc. paid a contribution-in-aid of over $20 million to make the expansion feasible. The contribution was paid in several payments. Please confirm that the Goldcorp Inc. payments to Union resulted in commensurate reduction to Union's increase in rate base for the project.

Response:

Confirmed.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Application, EB-2015-0179, Updated, Exhibit A, Tab 1, p. 2

How should those new customer contributions, by way of monthly payments, be treated for ratemaking purposes? Please explain fully. Would the payments over the plan term be discounted and used to reduce rate base in year one, or would they be deducted from rate base in the year in which they were made? Please explain any administrative problems that would make the deduction of the annual contribution amount at the end of each year, or as a reduction from opening rate base in the following year unusually deficient, and if there is such a problem, how it would be solved, if the Board were to direct that course of action.

Response:

The requested details are provided at EB-2015-0179 Exhibit A, Tab 1 Updated, p.34 and EB-2015-0179 Exhibit B.LPMA.1.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Application, EB-2015-0179, Updated, Exhibit A, Tab 1, p. 6

What annual normalized reinforcement has Union included in its calculation of the capital costs for its proposed expansion? How are the amounts of these cost forecasts derived? What have actual reinforcement costs been in each of the last three years?

Response:

The normalized reinforcement is a cost allocated to the Investment Portfolio and Rolling Portfolio. This cost is not included in individual projects.

Please see pp.7-9 of the EB-2015-0179 Technical Conference transcript (dated December 15, 2015) for description as to how these normalized reinforcement costs are derived.

Table 1 below is an excerpt from the EB-2015-0179 Undertaking response Exhibit JT1.1. It lists the normalized reinforcement applied to the Rolling Portfolio and the Investment Portfolio in $ millions.

Table 1

	2011	2012	2013	2014	2015
Union South	$ 6.11	$ 5.84	$ 5.75	$ 6.25	$ 5.39
Union North	$ 2.03	$ 2.11	$ 2.08	$ 2.00	$ 2.50
Total	$ 8.13	$ 7.96	$ 7.83	$ 8.26	$ 7.89

The actual reinforcement cost for the last three years is noted below in $ millions:

2013 - $3.2
2014 - $5.2
2015 - $3.4

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: Application, EB-2015-0179, Updated, Exhibit A, Tab 1, p. 2

Why, in Union's view, is it fair to ask existing Union customers to subsidize the expansion of service to new communities through projects that have a P/I lower than 0.8%, which is already a subsidy? Why should this not be a role for the government of Ontario, through its recently announced program?

Response:

Completing projects with a PI of 0.8 does not reflect a subsidy if the Rolling Project PI remains above 1.0.

The moderate degree of subsidization from existing ratepayers is appropriate given the Province's desire to support expansion to new communities and the Board's request for proposals[1] which indicated a willingness to consider reduced Project PIs.

[1] Provided at EB-2015-0179 Exhibit A, Tab 1, Appendix A.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2016-0004, Exhibit A, Tab 1, p. 33

a) What percentage of customers in each unserved community would likely attach after the initial ten year attachment forecast horizon? Please support this answer with data from other Union's experiences, and identify the expansion projects relied upon.

b) Please quantify the incremental revenue that would be generated by the customers referred to in (a) above, and the "economics of sale" achieved by the company due to the project in the twenty-nine communities, both in absolute terms and percentage of Union's revenue requirement. Please discuss thoroughly, and specify what unit costs would be reduced because of economics of scale, and by how much.

Response:

a) Where Union provides gas service the predominant fuel choice by customers is natural gas with a penetration rate of approximately 90%[1]. After 25 years Union expects the gas penetration rate for the proposed projects to be similar to existing gas serviced areas, assuming past longer term annual fuel cost comparisons remain relevant. Although the province's Cap and Trade mechanism is likely to raise the cost of all fossil fuels, Union does not expect it to impact natural gas costs relative to oil or propane. Despite natural gas cost increases that might result from Cap and Trade, electricity prices (and their expected increases) are not likely to impede the value of converting to natural gas.

The 90% penetration figure is relevant because all of Union's customers were at one point expansion customers. Union is unable to obtain specific figures for expansion projects from as long as 25 years ago to validate the assumption, because in many cases additional projects (for example a series of smaller main extensions) have been attached to those projects since they entered service.

Union used a 25 year attachment rate of 80% in its Stage 2 Assessment provided in EB-2015-0179 at Exhibit A, Tab 1, p. 39, as a conservative estimate for longer term gas penetration. The 80% was used as an indication of the relative magnitude of Stage 2 savings when applying a conservative penetration rate.

Union expects that 90% penetration would be a maximum ceiling for a longer term penetration rates on a general basis, if no other conditions change in the market. In the

[1] Based on the Union Gas 2011 Market Share study provided in EB-2015-0179 at Exhibit B.SEC.9, Attachment 1, p. 3.

evaluation of each specific Project, however, Union would not assume that all 90% of consumers would eventually convert. For each Project, Union would expect to adjust this figure to reflect the types of equipment installed in the local area. The specific long term penetration rate and any necessary evidence to support it would be provided in the Leave-to-Construct application for the Project as deemed appropriate.

b) The response at Exhibit S15.Union.BOMA.59 provides an indication of the economies of scale. Regarding incremental revenue, this question is too specific and not relevant to the EB-2016-0004 Board-approved Issues List.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2015-0179, Updated, Exhibit A, Tab 1, p. 2

a) Will the ratepayers' funds paid in rates, in the event the costs for particular projects were less than forecast, be returned to ratepayers? How would this happen?

b) Please confirm that under the Y-factor treatment proposed by Union for its CEP capital costs, existing utility ratepayers would be responsible for the payment of any cost overruns relative to forecasts of the capital costs on the community expansion projects and the incremental rate base and revenue requirements that would result. If not, please explain in what circumstances utility ratepayers would not be responsible.

Response:

a) Yes. Any difference between forecasted capital and actual capital will be captured in the proposed Community Expansion Project Deferral Account as noted in EB-2015-0179 at Exhibit A, Tab 1, p. 8.

b) Confirmed. Likewise, utility ratepayers would receive the benefit of any cost savings achieved.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2015-0179, Updated, Exhibit A, Tab 1, p. 32

Please provide a timetable for the implementation of the first few projects in the event the Board were to approve the proposed program on terms acceptable to Union by September 2016. Please identify which projects, from Union's list of projects, would proceed first and why, and the implementation timetable for each such project. Over what period of time would Union propose to construct the remaining projects?

Response:

If the Board were to approve the Community Expansion proposal on terms acceptable to Union by September 2016, Union proposes to begin construction on the four projects – Lambton Shores/Kettle and Stony Point First Nations, Milverton, Delaware Nation of Moraviantown and, Prince Township - identified in EB-2015-0179 in April/May of 2017 (subject to required Leave-to-Construct approvals). Original project schedules for these communities can be found in EB-2015-0179 Exhibit A, Tab 2, Section A, B, C and D.

As per EB-2015-0179 Exhibit A, Tab 1, p. 37, Union will prioritize the construction of the remaining 25 projects based on the Project PI, the number of potential customers, capital availability, expected project duration and the capacity of the organization to undertake detailed costing, market studies and construction.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2016-0004, Exhibit A, Tab 1, pp. 26-28

Is it Union's view that the new entrants should demonstrate their qualifications to run a gas distribution business in this proceeding or in some future proceeding, for example, a leave to construct hearing? Please explain fully. Is it Union's view that a party seeking to distribute gas to an unserved area in Ontario must already be in the gas distribution business in another jurisdiction, and if so, why? Please explain fully.

Response:

New entrants should demonstrate their qualifications when applying to the Board for approval of Franchise Agreements, Certificates of Public Convenience and Necessity ("CPCN"), and Leave-to-Construct applications. Union does not expect new entrants to demonstrate their qualifications during the EB-2016-0004 proceeding.

It is not Union's view that a party seeking to distribute gas in Ontario must already be a gas distributor in another jurisdiction. However, there may be cost, quality of service, or safety consequences in granting an inexperienced entrant permission to operate a gas utility. These potential consequences should be a factor in the decision to award franchise or CPCN rights to those new entrants.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2016-0004, Exhibit A, Tab 1, p. 35

Please provide the forecast reduction to Greenhouse Gas ("GHG") reduction in Ontario over the next ten years that would result from implementation of Union's expansion proposal. What percentage of Ontario's 2030 GHG target reduction would the reduction be?

Response:

In EB-2015-0179 at Exhibit B.SEC.10, Union estimated GHG reductions of 8% for the new communities, from a base of 7,877 tonnes CO_2 equivalent ($_tCO_2e$). Using figures from the table provided for that IR response, this equates to a reduction of 649 $_tCO_2e$ over 1,110 forecasted customers. Applying the same assumptions to the 9,107 forecast customers in the 29 Projects that Union has indicated might be feasible as a result of its proposal would result in CO_2e reductions building to 5,322 $_tCO_2e$ per year by the end of the 10 year customer forecast period for the projects.

The 2030 target set by the province is a reduction in GHG emissions by 37% below 1990 levels; this is estimated to build to an annual reduction of 55 million $_tCO_2e$. The potential annual savings of 5,322 $_tCO_2e$ represent 0.01% of that target.

Note that the above CO_2e reductions do not reflect the potential for additional favourable impacts enabled by offering energy efficiency program incentives from Union's DSM programs to customers in the new communities, or a conservative approach Union has used to establish the customer forecasts.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: EB-2016-0004, Exhibit A, Tab 1, p. 35

What is Union's estimate (or measured amount) of the amount of GHG emissions resulting from methane emissions from its natural gas operations in Ontario currently, including emissions from pipeline services, compressors, storage facilities, and all other equipment? Does Union measure such emissions? Please discuss in detail. What quantitative targets, if any, does Union have to reduce such methane emissions over the next few years? What would be the additional methane emissions that result from the proposed CEP?

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: General

a) What are the "contingencies" built into the cost estimates for each of the twenty-nine projects in both dollar and percentage terms? By how much is the contingency amount for each of the projects expected to be reduced, once (i) detailed design; and (ii) tendering for each of the projects has been completed? What impact would that have on the weighted average "natural P/I" for the twenty-nine projects?

b) Will the contracts for the work be on a fixed price basis? If not, on what basis?

c) What is the forecast average cost per home of connecting Union's 18,000 homes (twenty-nine communities)?

Response:

a) Union has completed detailed cost estimates for the four projects filed in EB-2015-0179 as well as project 29 – Kincardine, Tiverton, Paisley, Chesley and project 54 – Ripley and Lucknow (see Exhibit A, Tab 1, Appendix D Updated). The contingencies for those projects are as follows:

   a. Milverton - $188,412, 5%
   b. Prince Township, Sault Ste. Marie - $96,530, 5%
   c. Lambton Shores, Kettle and Stony Point First Nations - $91,709, 5%
   d. Delaware Nation of Moraviantown - $38,744, 10%
   e. Kincardine, Tiverton, Paisley, Chesley - $5,498,721, 10%
   f. Ripley, Lucknow – $1,931,335, 10%

   For the remaining 24 projects, high level cost estimates were developed. The contingency amounts within the estimated costs are approximately 25%. It is expected that the contingency amount will reduce for each project once detailed designs are completed. Absent an increase in other capital costs related to the project, the "natural P/I" would increase.

b) Union has Alliance contracts in place for the completion of work related to the construction of distribution facilities. Union will utilize these Alliance contracts for the construction of its proposed community expansion projects. The work will be executed on a time and material basis.

c) The forecasted average cost per home based on a capital spend of $135 million over 18,000 homes is $7,500

+UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: p. 20, Paragraph 58

In community expansion projects in the past ten years, please provide a comparison of Union's forecast and actual costs of expansion programs, together with the actual versus forecast conversions for the ten year period, with reference to OEB case numbers in cases where leave-to-construct was required.

Response:

Union has completed one significant Community Expansion Project in the most recent 10 years, the project to serve Red Lake (EB-2011-0040). Attachment information for that project is provided in EB-2015-0179 at Exhibit B.Staff.14. Estimated and actual costs as filed with the Board April 22, 2014 for Phase 2 of the Red Lake Project are provided in Attachment 1. The most significant variation in proposed verses actual costs can be found in the construction of plastic mains. Additional rock excavation and changes in the scope of the project resulted in these additional costs.

In EB-2015-0179 at Exhibit B.Staff.12, Union provides conversion results for the following projects:

- Pt. Elgin/Southampton/Wiarton (E.B.L.O. 259), in service 1998
- Wingham (E.B.L.O. 253) in service 1996
- Parry Sound (E.B.L.O. 270), in service 1999
- Clifford/Mildmay/Formosa (E.B.A. 883, 884, 995), in service 1999

Red Lake Project – Phase II

TOTAL ESTIMATED and FINAL PROJECT COSTS

Plastic Mains	Estimated Costs -Phase II	Costs to Date
Contract Labour	$3,200,418.00	$ 6,647,733.66
Material	$ 194,131.00	$ 256,941.48
Outside Service & Company Labour	$ 493,928.00	$ 395,468.37
Contingency	$ 194,424.00	$ 0.00
Total Mains	**$4,082,091.00**	**$ 7,300,143.51**
Steel Mains		
Contract Labour	$ 856,541.00	$ 570,735.49
Overall Project Coordination	$ 1,437,000.00	$ 820,261.78
Material	$ 238,578.00	$ 172,289.95
Company Expenses and Labour	$ 49,733.00	$ 88,934.82
Outside Services	$ 270,591.00	$ 389,979.15
Contingency	$ 142,622.00	$ 0.00
Total Steel Mains	**$ 2,995,065.00**	**$ 2,042,201.19**
Services		
Contract Labour	$ 3,853,940.00	$2,132,649.62
Material	$ 822,085.00	$ 83,442.92
Company Expenses	$ 53,045.00	$ 3,420.46
Outside Services	$ 0.00	$ 10,420.38
Contingency	$ 236,454.00	$ 0.00
Total Services	**$4,965,524.00**	**$2,229,933.38**

Note: Additional service costs will be incurred as new customers are added to the system

Stations

Contract Labour	$ 234,325.00	$ 517,442.47
Material	$ 234,325.00	$ 203,169.39
Company Labour	$ 0.00	$ 170,302.96
Outside Services	$ 0.00	$ 362,481.53
Total Stations	**$ 468,650.00**	**$1,253,396.35**
Total Phase II Costs	**$12,512,140.00**	**$12,825,674.43**

April 22, 2014

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Reference: p. 24, Paragraph 72

BOMA wishes to know the feasibility of the proposed implementation schedule. Please indicate which of the twenty-nine proposed projects would be completed in each year of the first five years and the total capex for the projects in each of those five years. Please state which two projects will be completed in year one and the total capex. Please explain the scheduling for the year one projects, assuming a Board approval in September 2016, and for each subsequent group of projects in years two through seven.

Response:

Please see the response at Exhibit S15.Union.BOMA.72.

The capital expenditure required for the first four projects (pipelines and services) expected to be completed in year 1 is $10.6 million.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association, Greater Toronto ("BOMA")

Is Union Gas prepared to accept a reduction to its allowed ROE with respect to the rate base dedicated to the CEP over the initiate five years of the project?

Response:

No. Please also see the response at EB-2015-0179 Exhibit B.Staff.3 i).

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: General

Please specify whether any of the submitted material is intended to be accepted as expert evidence; if so, please specify precisely which assertions within the submitted material are intended to be expert opinions and identify the relevant expert.

Response:

All assertions included in the evidence prepared by London Economics International LLC ("LEI") and filed as Schedule 1 in Union's EB-2016-0004 Exhibit A, Tab 1 evidence (dated March 21, 2016) should be accepted as expert evidence.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 5

If Union was directed to implement a mechanism whereby its customers were required to subsidize the expansion of natural gas undertaken by another distributor how would Union propose that mechanism be designed and administered?

Response:

Union does not anticipate the Board would issue a directive to implement a mechanism whereby its customers were required to subsidize the expansion of natural gas undertaken by another distributor. Such a mechanism is not aligned with the "just and reasonable" rates standard. Please see the response at Exhibit S15.Union.Energy Probe.10.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 8

Preamble: Even if the Board is unable to accept the concept that a limited level of cross subsidization from existing to new customers is in the public interest, enabling lowered individual project threshold PI's to below 0.8 is appropriate. The rationale for this is that Union's recent Rolling Project Portfolio history has resulted in a positive NPV averaging $14.6 million$_4$ per year over the most recent three years, and a similar pattern has existed for an extended number of years. Absent the provision of a minimum project PI threshold of 0.8, this annual $14.6 million favourable NPV could have been used to support additional projects at PI's lower than 0.8 even without a need for subsidization from existing customers.

a) Please confirm that in the scenario outlined above, although there is no apparent subsidization by existing customers in favour of new customers, there remains a subsidy flowing from new customers connecting to a project that has a PI above 1.0 in favour of new customers connecting to a project that has a PI below 1.0.

b) Please provide an analysis illustrating how the change proposed in the scenario above would permit Union to complete some of the projects in Ex. A/T1 Appendix D of EB-2015-0179, including an assessment as to how many of the 103 listed projects would become feasible by allowing projects to go below an individual PI of .8 without compromising the existing Rolling Project Portfolio PI requirements. In doing the analysis please assume that both TES and ITE revenue is available for 10 years. Please also comment on the pace of the completion of the projects that would result from allowing the use of "surplus" NPV to offset the cost of projects below a PI of .8.

Response:

a) Confirmed.

b) The number of projects that become feasible would depend on the minimum Project PI that could be applied. Regardless, the number of projects undertaken would remain limited by Union's Investment Portfolio and Rolling Project Portfolio PI's. In EB-2015-0179 at Exhibit B.LPMA.5 b), Union provides the estimated impact on the Investment Portfolio of proceeding with the first 4 Projects identified. The Union South Investment Portfolio, when the three projects in Union South are applied, drops below the minimum PI of 1.1 (PI plus a safety factor) required by E.B.O. 188. Based on this very few projects could proceed each year. As a result fewer than the 3 proposed projects could proceed in one year. The Rolling Project

Portfolio would appear to be able to withstand additional projects beyond what the Investment Portfolio could support, as noted in the first table ("As Filed") in EB-2015-0179 at Exhibit B.LPMA.5 Attachment 1.

Consequently the result of the approach would be to stretch any Community Expansion program over a much longer time period, potentially many years.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 9

Preamble: "In future facilities applications Union is directed to… file an estimate of the costs of any reinforcement of existing lines that may be necessary as a result of the specific application, and an assessment of the impact of these costs on the economics of the project;…"

a) Please confirm that Union is only asking that the Board explicitly include in any new or Revised Guidelines the already existing practice of including reinforcement costs in the economic evaluation of proposed projects, and is not proposing a change to Union's actual practice in this regard since 1997. If Union is asking for approval of a new practice going forward, please explain and quantify the impact of that new practice on the economics set out in Exhibit A, Tab 1 Appendix D of EB-2015-0179.

Response:

a) Union is proposing a change to the approach taken for these projects, as follows:

- Limiting the inclusion of Advancement Charges in project economics to situations where future reinforcement will be accelerated to within three years from the time a project enters service, and,

- Limiting the inclusion of Advancement Charges in project economics to situations where the new load addition consists of a load of 200 m^3/hour or higher.

These limitations were not considered in the one situation where Union is aware of the application of Advancement Charges, the Project to service Pt. Elgin, Southampton and Wiarton (E.B.L.O.) 259[1]. No other projects have been completed since that time where Advancement Charges would have been considered.

Beyond the projects that Union has requested Leave-to-Construct ("LTC") Approval for in EB-2015-0179, and the Kincardine area and Ripley area projects[2], Union has not assessed whether advancement charges would be appropriate to any other projects identified in Exhibit A, Tab 1, Appendix D Updated. It would be more appropriate to consider these charges when each project is assessed in detail prior to advancing an LTC application, however,

[1] Further details are provided at Exhibit S15.Union.EPCOR.1.
[2] Lines 29 and 54 in EB-2015-0179 Exhibit A, Tab 1 (Updated), Appendix D.

Advancement Charges would not be a consideration for the majority of the projects identified.

For the projects that Union has requested LTC approval, upstream reinforcement planning is underway for the system feeding two of these projects (Milverton and Lambton Shores/Kettle and Stony Point, with expected timing within the next three years, and that reinforcement is required regardless of whether the Projects are attached. For that reason Union has not included advancement charges in the project economics.

For the Kincardine area project and the Ripley area project, the impact of Advancement Charges is included in the PI's provided for each of those in EB-2015-0179 Exhibit A, Tab 1, Appendix D Updated.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 13

Preamble: Although Union continues to prefer to apply postage stamp ratemaking principles as noted in its response to Issue 5, existing utilities should not be prevented from resorting to community or project specific rates to make projects feasible.

a) Please explain how community or project specific rates would be determined? For example, is it the case that in order to propose a project specific rate, Union would have to perform a full allocation study to re-allocate existing costs and allocated proposed new costs to existing and newly proposed customers?

Response:

a) Please see the response at Exhibit S15.Union.Staff.2.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 13

Preamble: For this reason, Union proposes that a maximum 40-year term be used for heat and water heating load for commercial and industrial customers.

a) Does Union believe that the proposed maximum 40-year term for heat and water heating load for commercial and industrial customers will have a material effect on the economic evaluation of any of the 103 projects listed in Ex. A/T1 Appendix D of EB-2015-0179? If so please recalculate the natural PI for any of the 103 projects where Union believes the impact of the proposed change is material.

Response:

a) This question is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The intent of the generic proceeding as outlined in the Board's Decision and Procedural Order No.2 (dated March 9, 2016) is to allow the Board an opportunity to establish a common framework and provide guidance to all entities that wish to provide gas distribution services in communities across Ontario. The scope clearly does not include the detailed analysis and modelling requested on specific projects identified in Union's EB-2015-0179 proposal. Rather, the Board needs to first consider the generic aspects of community expansion and make the necessary policy-related decisions before any focus can be given to specific projects.

   In order to provide an understanding of the potential impacts, however, Union has run scenarios with two specific projects, Milverton and Prince Township. These scenarios provide an indication of the materiality of an extension of the customer forecast period and inclusion of commercial and industrial revenues for extended time periods. The results are provided in the table below. Each scenario is independent of others unless otherwise indicated.

Line #	Scenario	Milverton	Prince Township
1	Base PI as filed[1]	0.57	0.49
2	Scenario A: PI change due to Residential customer forecast extended from 10 years to 25 years	+ 0.03	+0.03
3	Scenario B: PI change due to CI revenue term extended from 20 to 40 years	+0.02	+0.00
4	Scenario C: Scenario A + Scenario B	+0.04	+0.04

[1] Filed in EB-2015-0179 at Exhibit A, Tab 2, Sections B and D.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 14

Preamble: Union proposes the maximum customer forecast period be extended from 10 to 25 years.

a) Does Union believe that the proposed customer forecast period extension from 10 to 25 years will have a material effect on the economic evaluation of any of the 103 projects listed in Ex. A/T1 Appendix D of EB-2015-0179? If so please recalculate the natural PI for any of the 103 projects where Union believes the impact of the proposed change is material.

b) Does Union include forecasts for interruptible service revenue in its economic evaluations? If not why not? If not are there projects listed in Ex. A/T1 Appendix D of EB-2015-0179 for which the forecast revenue from interruptible service is material, and if so please recalculate the natural PI for any of the 103 projects where Union believes there will be material revenue from interruptible service.

c) For each of the 103 community expansion projects, how would Union prioritize which projects to proceed with first?

Response:

a) Please see the response at Exhibit S15.Union.CCC.6.

b) The revenue forecast for any project reflects the best estimate based on the characteristics of the project. For Community Expansion projects the majority of potential customers will be general service rate class. Interruptible service is not available to general service customers. If a potential customer qualified to be a contract customer and they were interested in interruptible service, Union would include the corresponding interruptible service revenue in its economic evaluations.

c) Please see the response at EB-2015-0179 Exhibit B.South Bruce.5 a) and c).

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, pp. 19-20

Preamble: Union proposes that in cases where a community expansion project or collection of projects is not economically feasible, as demonstrated by a PI of 1.0 or better in a Stage 1 DCF analysis, public interest factors should be considered in assessing whether to proceed with the projects. However, Union submits that a further assessment of the impacts of not proceeding with a project should not be required. An assessment of not proceeding would be broader and much more complex than an assessment of the impacts of proceeding, as it would require a public policy view that would be very difficult for project proponents to quantify or assess. For example, an assumption on potential negative impacts on the community if businesses elect to move to other communities because of high energy costs would be required. Union does not believe this additional perspective would be of meaningful assistance to the Board in evaluating project applications.

a) Does Union agree that economic impact of allowing a project with a PI less then 1.0 to proceed is to, assuming no contributions in aid of construction or approved supplemental charges (i.e. the proposed ITE and TES charges) that bring the effective PI up to or above 1.0, approve a subsidy from existing customers to the benefit of new customers? If not why not?

b) Assuming Union agrees with the proposition in part a), does Union agree that the proposed public interest factors to be considered should be limited to the public interest of the existing customers that are required to fund the subsidy for the proposed new customers? If not why not?

Response:

a) Union agrees with the statement only in cases where the Rolling Project Portfolio ("RPP") drops below a P.I. of 1.0. In cases where the RPP remains above 1.0, however, the project is being subsidized by more profitable projects to connect new customers undertaken within the same rolling period. In these cases existing customers would not be providing a subsidy.

b) Union does not agree. Adding the results of Stage 1, Stage 2 and Stage 3 DCF analyses would provide a more comprehensive understanding of the impact for all customers who would be served, including the new customers in the expansion areas. Accepting CCC's proposition would in effect limit the analysis to a Stage 1 DCF, and would ignore the broader public benefits which are the intent of a Stage 2 DCF. Union would not have made its proposals for Community Expansion if it agreed with CCC's premise in this question.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 21

Preamble: E.B.O. 134, which provides guidelines for assessment of natural gas transmission projects, provided for use of further economic assessment to enable understanding of the public benefits of expansion. This assessment takes the form of both a Stage 2 and Stage 3 DCF analysis, as outlined in Union's proposal, which also provides the results of a Stage 2 assessment. This type of analysis was not deemed necessary for distribution projects in E.B.O. 188, since the Guidelines include minimum portfolio PI's of 1.0 or greater, which supported the intent of ensuring that existing ratepayers were held harmless from the cost of expansion to new customers.

a) Please provide the basis for the assertion that "This type of analysis was not deemed necessary for distribution projects in E.B.O. 188, since the Guidelines include minimum portfolio PI's of 1.0 or greater, which supported the intent of ensuring that existing ratepayers were held harmless from the cost of expansion to new customers." Please provide any other references known to Union that explain why the Stage 2 and Stage 3 DCF analyses were included as part of E.B.O. 134 and omitted from E.B.O. 188.

Response:

a) Please see the response at Exhibit S15.Union.BOMA.56. Union is unaware of any specific references that would indicate a reason for Stage 2 or 3 DCF analyses not being included in E.B.O. 188.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 24

It is Union's position that it should be permitted to recover the revenue requirement associated with community expansion costs in rates that are outside of the approved incentive ratemaking framework. Please point to the provisions of the Settlement Agreement that would allow for such recovery.

Response:

a) Yes. Please see the response at EB-2015-0179 Exhibit B.CCC.14, Exhibit B.SEC.20, and Exhibit JT1.14.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 22

In its EB.2015-0179 Application Union proposed the introduction of a municipal contribution mechanism known as the Incremental Tax Equivalent (ITE). The ITE value is based on the estimated value of the incremental property taxes collected from Union as a result of the project for a period of time that matches the Temporary Expansion Surcharge. Why wouldn't Union seek to maximize the amount of the municipal contribution? Why is its proposal the optimum approach?

Response:

Please see the response at EB-2015-0179 Exhibit B.CCC.10, and Exhibit B.EGD.4.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, p. 38

Please provide copies of all correspondence between Union and the relevant Ministries (Economic Development, Employment and Infrastructure, Energy and Agriculture) regarding the Province's proposed natural gas expansion loan and grant program. When does Union expect the details of these programs to be defined?

Response:

Please see the response at EB-2015-0179 Exhibit JT1.12, and for this proceeding please see the response at Exhibit S15.Union.BOMA.53.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, Schedule 1, p. 18 (London Economics)

Preamble: Internal cross-subsidization has been applied in other jurisdictions including Ohio, Nebraska and North Carolina. In 2014, Ohio passed a bill permitting natural gas companies to apply infrastructure development riders to recover costs of gas distribution expansion projects that could be applied to all customers of the natural gas utility. In 2012, Nebraska passed legislation allowing utilities to apply a rural infrastructure surcharge to customers within an expansion area and to a broader set of utility customers as well. In North Carolina, the 1991 Natural Gas Expansion/Cost Act specified that distribution expansion surcharges apply to all customers of the Local Distribution Company ("LDC") that was carrying out the expansion.

a) Please confirm that the cited examples of internal cross-subsidization are based on enabling legislative provisions. Please provide any known examples of a regulator creating an explicit cross subsidy between existing customers and new customers without grounding that subsidy in legislation that explicitly provided for internal cross-subsidization; to the extent any such examples exist, please provide a cite for the regulator's authority to create such a subsidy.

Response:

a) The following response was prepared by LEI.

Confirmed.

LEI's mandate was to review and discuss economic arrangements; exhaustive analysis of legislative or regulatory foundations was not part of LEI's engagement.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, Schedule 1, p. 22 (London Economics)

Preamble: The application was made by NYSEG who petitioned the NYPSC seeking to expand their service offering to the remaining areas in the Town of Plattsburgh. The proceeding went on for two years before a decision was reached on July 29, 2014 that would allow NYSEG to expand to the remaining areas of Plattsburgh and recover the costs of expansion over a ten-year development period as opposed to the traditional five. In its decision the NYPSC commented that "a ten-year development period is appropriate in this case given the current price of natural gas as compared to alternative fuels and the density of potential customers in the economic footprint. Further, a ten-year period will reduce monthly billing impacts for customers." NYSEG would recover the costs of expansion from all connecting customers in the approved area (both existing and new customers) using a uniform surcharge of 9.95 cents per cubic meter of natural gas.

a) With respect to the cited decision of the NYPSC (Case 12-G-0499), please provide the precise cite for the assertion that a uniform surcharge of 9.95 cents per cubic meter of natural gas was levied on all connecting customers in the approved area (both existing and new customers). (CCC has reviewed the cited decision and can only find reference to a Contribution in Aid of Construction surcharge of $0.282 per therm to be charged only to new customers in new expansion areas.)

b) Please discuss the differences and similarities between the Board's E.B.O. 188 Requirements and the requirements imposed by the NYPSC's 1989 Policy Statement, specifically the difference between using PI thresholds as opposed to Development Periods.

c) Please provide analysis as to which of the projects listed in Ex. A/T1 Appendix D of EB-2015-0179 would become feasible if the NYPSC's 1989 Policy Statement was applied as the appropriate threshold, using the extended 10 Year Development Period approved in Case 12-G-0499. For projects that do not become feasible using a 10 Year Development Period, please provide the Development Period that would have to be approved in order to meet the requirement of the 1989 Policy Statement that the project earn or exceed the full allowed rate of return in the last year of the Development Period.

Response:

The following response was prepared by LEI.

a) LEI wishes to make a correction to its report and note the surcharge should be $0.78 per cubic meter. LEI has converted the surcharge amount of $0.282 per therm into $ per cubic meter.

b) Detailed comparative analysis of EBO 188 and the NYPSC 1989 Policy Statement was not within LEI's mandate.

c) A quantitative assessment incorporating New York's assessment methodology was outside the scope of work for the engagement.

UNION GAS LIMITED

Answer to Interrogatory from
Consumers Council of Canada ("CCC")

Reference: Exhibit A, Tab 1, Schedule 1, p. 32 (London Economics)

Preamble: The Telecommunications Act of 1993 describes the federal government's policy objective, among others, to render reliable and affordable telecommunications services of high quality accessible to Canadians in both urban and rural areas, in all regions of Canada.

a) Please provide citations for any similarly broad federal or (Ontario) provincial policy objective imposed on the OEB with respect to the rendering of affordable natural gas service of high quality to Canadians in both urban and rural areas in all regions of Canada and/or Ontario.

Response:

The following response was prepared by LEI.

LEI's focus for the engagement was on the economic arrangements of adopted funding mechanisms with respect to expansion of the natural gas network, rather than the legal frameworks. As such, LEI has not reviewed other broad policy objectives imposed on the OEB.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

a) Is Union relying on its Evidence in EB-2015-0179 in this proceeding? i.e. is Union including either all, or portions of its evidence and IR responses in EB-2015-0179 in this proceeding. If so, please indicate a complete listing of references to that evidence, including IR responses.

b) If Union is not including all the evidence and IR responses in this proceeding provide a complete list and references to the underlying EB-2015-0179 evidence which Union relies upon in this case. Example Union references Exhibit B.Staff.2b. under Issue #1.

c) Please map the evidence from EB-2015-0179 that Union is relying upon in this proceeding to the EB-2016-0004 Issues List.

Response:

a) Pursuant to the Board's Notice of Hearing issued on February 5, 2016 for the EB-2016-0004 proceeding, the Board stated it would "*adopt into the record of this proceeding, all evidence filed in EB-2015-0179 that is relevant to the issues to be determined for the generic hearing.*"

Based on the Board's Notice, Union is of the view that all evidence including interrogatory and undertaking responses filed in EB-2015-0179 specific to its community expansion proposal is relevant to EB-2016-0004. The Leave-to-Construct ("LTC") applications included in Exhibit A, Tab 2 however are on hold until the completion of the generic proceeding.

b) Please see part a) above.

c) The Issues List for EB-2016-0004 was developed to deal with the generic nature of community expansion. It is a totally different proceeding than EB-2015-0179.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference**:** Exhibit A, pp. 3-4,
EB-2015-0179, Exhibit B.Staff.2 b)

Preamble: "However, Union maintains that the Board's jurisdiction, while broad, does not include authority to require that Union's customers subsidize the expansion undertaken by another distributor into communities that do not have natural gas service. Union's response to EB-8 2015-0179, Exhibit B.Staff.2 b) states, "… ***as there is no explicit legislative authority for the Board to create such a mechanism, it is questionable that the Board could enact such a mechanism even if it was so inclined."*** Furthermore, express authority to establish such a subsidy regime is required because rates, established in the absence of such a regime, would not be established in accordance with the just and reasonable standard.

a) Under a scenario where the Board were to find that a general charge should be imposed on all existing and/or new gas utility customers in order to finance the Community Expansion program, please provide in detail Union's views regarding such a scenario. List all assumptions, such as whether this would be rate-based, if the charge should be utility-specific and customer-based or volume based etc.

b) Compare/contrast the above Scenario to the Ontario LIEP Assistance program for Low Income electricity customers.

Response:

a) Please see the response at Exhibit S15.Union.CCC.2.

b) Union assumes that Energy Probe's reference to the "Ontario LIEP Assistance" program is to the Low-Income Energy Assistance Program ("LEAP") administered by the Board. LEAP is available to natural gas and electricity consumers and includes three components:

- Emergency Financial Assistance provides a one-time emergency relief grant to help customers avoid disconnection;
- Customer service rules to allow utilities to provide more flexibility to low-income customers; and
- Targeted conservation and demand management programs help low-income customers reduce their energy costs by reducing their energy usage.

Targeted for low-income customers, the LEAP Emergency Financial Assistance is intended to be applied only to outstanding gas or electricity bill payments and is not intended to provide regular or ongoing bill payment assistance. Although the LEAP is funded by all ratepayers through each distributor's rates, distributors and social agencies may also raise money from private donations to supplement LEAP funding. Unlike the new Ontario Electricity Support Program ("OESP"), the funds provided by a particular distributor for LEAP must be used only for that distributor's customers, or customers of unit sub-meter providers operating within that distributor's service area.

The OESP is a rate assistance program for low-income households and provides ongoing rate assistance to electricity customers (it is not offered for natural gas). The OESP reduces electricity bills for low-income customers and is intended to improve payment patterns and reduce disconnections of electricity service. Funding for the OESP comes from a per kilowatt-hour electricity charge paid by all electricity customers in Ontario, including residential, commercial and industrial customers. The charge is set annually by the OEB. The Independent Electricity System Operator ("IESO") manages the collection and distribution of funds to cover program costs. The funds are distributed based on a defined chart.

If the Board were to find that a general charge should be imposed on all existing and/or new gas utility customers to finance the Community Expansion program, the revenues recovered would not be used to provide emergency relief nor ongoing bill reductions to low-income customers of a utility. It would only be used to offset costs to expand natural gas service to unserved areas.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference**:** Exhibit A, Tab 1, p. 7

Preamble: Union proposes that limited levels of cross subsidization are in the public interest. Please reference Union's proposal at EB-2015-0179, Exhibit A, Tab 1 (Updated), Section 4.3 (p. 24), Section 4.4 (p. 29), and Section 7 (p. 38) for further details on Union's submission.

a) What is Union's specific proposal regarding changes to the Project and Portfolio thresholds? Please discuss in detail.

b) Specifically, discuss how the Portfolio requirements should be modified to accommodate projects with a PI>0.8 with/without CIAC.

Response:

a) Please see EB-2015-0179 Exhibit A, Tab 1 Updated, Section 4.4, p. 29.

b) Union is not proposing that the Portfolio requirements for Projects with a PI of 0.8 or greater be modified. Union is unaware of any Community Expansion Projects, however, that would meet a PI of 0.8.

For Community Expansion Projects that have a PI of less than 0.8, Union is proposing they be granted an exclusion from being included in the Investment Portfolio and Rolling Project Portfolio.

It should be noted that in the event of significant adjustments to Union's proposals, the Investment Portfolio and Rolling Project Portfolio minimum PI requirements, if not adjusted, are likely to become a barrier to moving forward with a large number of projects.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference**:** Exhibit A, Tab 1, p. 8

Preamble: Union's recent Rolling Project Portfolio history has resulted in a positive Net Present Value (NPV) averaging $14.6 million per year over the most recent three years. A similar pattern has existed for an extended number of years. Absent the provision of a minimum project PI threshold of 0.8, this annual $14.6 million favourable NPV could have been used to support additional projects at PI's lower than 0.8 even without a need for subsidization from existing customers.

a) Please provide the supporting schedules/Working Papers for this statement.

b) Based on Union's customer addition forward outlook, please provide a projection of the Rolling Portfolio net NPV for outlook periods of 3, 5, and 10 years using:

   i. Current EBO 188 Guidelines
   ii. A reduced individual project threshold less than 0.8 that Union believes is appropriate

---

Response:

a) The inflow and outflow for the 3 year rolling PI can be found in Union application EB-2015-0179 Exhibit A, Tab 1 Updated, Table 4, p. 32.

b) Union is unable to estimate the requested projection of the rolling PI ("RPI") for periods of 3, 5 and 10 years in the future. The RPI is a summation of the prior 12 months determined on a rolling basis (eg. add this month's data and drop the data from 13 months ago).

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 11

Preamble: As explained in EB-2015-0179, Exhibit B.LPMA.14, Union has historically based the capital costs in the economic analysis of a project on the minimum pipeline system design necessary to service the demand expected through the project's customer forecast period. In some cases a project will be planned with a preferred design, for example with increased pipe size, to account for other system needs. Union has not historically included the cost premium for a preferred system design in the economic analysis, and proposes that this practice be confirmed.

a) Please provide examples of projects where the preferred design (rather than minimum) was approved.

b) For each indicate supporting rationale and the cost and NPV difference.

c) Please explain why the additional cost of the preferred design should not be covered under the CIAC.

Response:

a-b) The concept of a minimum versus recommended designs has been applied for decades. The business principle is that a new customer should not be required to pay for more facilities than the facilities that are required to serve their need. Union's evidence in this hearing was intended to be transparent and clear on the principles upon which the new Community Expansion Program would apply. New principles related to minimum or preferred designs are not being proposed.

Following are examples:

i) A project planned in Stephen Township to connect 29 residential customers and 4 commercial customers. The minimum design for the project required 2.0 km of NPS 4 main and 6.9 km of NPS 2 main, which would cost $297,000, and require Aid of Construction of $202,000 to achieve a PI of 1.0 for the project.

Union was aware of a number of further potential main extensions to connect additional customers in the future if the project was installed, based on prior requests from customers. Union expected this additional growth to occur within a 5 year timeframe. Further, the area of installation was very congested with other utilities including fibre optic cable being

installed, which would limit Union's ability to reinforce the area to allow for additional projects to connect other customers in the future.

Consequently, Union made the decision to increase 4.5 km of the pipeline from NPS 2 to NPS 4 in size. The incremental cost for this increase in size was $81,000. Union did not charge this incremental cost to the customers being attached to the project; they paid $202,000 in Aid based upon the minimum design. The incremental $81,000 resulted in an NPV of ($81,000), which was managed within Union's capital budget and both the Investment Portfolio PI and Rolling Project Portfolio PI for the year.

ii) A project planned in Stanley Township to connect 8 residential and 2 commercial customers. The minimum design for the project required 3.2 km of NPS 2 main, which would cost $90,000, and require Aid of Construction of $46,000 to achieve a PI of 1.0 for the project.

Union was aware of an additional 7 potential commercial agricultural customers in the vicinity of the proposed project, and was confident that further main extensions to serve some of these customers were likely within the next 5 years.

Consequently, Union made the decision to increase the main size from NPS 2 to NPS 4 to avoid a need for future reinforcement to serve these potential future customers at an incremental cost of $69,000. Union did not charge this incremental cost to the customers being attached to the project; they paid $46,000 in Aid based upon the minimum design. The incremental $69,000 resulted in an NPV of ($81,000), which was managed within Union's capital budget and both the Investment Portfolio PI and Rolling Project Portfolio PI for the year.

Union's current practice is to include the higher cost of the preferred design in ratebase. The incremental rate base is funded by new customers to the extent that the Investment Portfolio and Rolling Project Portfolio PI's remain above 1.0, as noted at Exhibit S15.Union.Staff.1.

c) Please see the response at EB-2015-0179 Exhibit B.LPMA.14 a).

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 13

Preamble: ...the 1 E.B.O. 188 requirement to use existing rate schedules creates a barrier for existing utilities to compete with new entrants. This barrier is the result of the existing utilities being unable to develop unique rate schedules that will reflect the costs of expansion. For this reason Union proposes that the requirement to use existing rate schedules be excluded from the Guidelines. Although Union continues to prefer to apply postage stamp ratemaking principles as noted in its response to Issue 5, existing utilities should not be prevented from resorting to community or project specific rates to make projects feasible.

a) Please explain why community-specific rates (except for TES) are appropriate.

b) Specifically, provide an illustration for a new community, without a franchise, where an existing utility (e.g. Union) and a new entrant (e.g. EPCOR) propose to provide distribution service.

Response:

a) Union prefers to continue to apply postage stamp ratemaking principles where possible, as noted at Exhibit S15.Union.Staff.2.

However, there may be situations where community specific rates are appropriate:

- In the absence of Board approval for flexibility in the E.B.O. 188 Guidelines and/or significant funding from third parties like the Government, community specific or collective Community Expansion Project area rates which differ from rates in other areas serviced may be the only alternative available to enable these communities to gain gas service.

- If a community is supplied by CNG or LNG, in the absence of Board approval to imbed additional annual costs related to the supply of gas in the weighted average cost of gas (which is borne by all ratepayers), specific rates for the community or collectively for all CNG or LNG expansion areas may be the best alternative.

b) If a new entrant is proposing service to a new community, rates will have to be established by the new entrant to recover the cost of capital. The applicable rates would be based on the new

entrant's capital, depreciation, O&M and financing costs as well as their return on equity.

In contrast, rates for an existing utility to provide service are based in part on the existing depreciated capital costs of the utility as opposed to the current and future capital cost for the specific project to provide service. This results in the capital basis for the revenue requirements to differ significantly between a new entrant and an existing utility.

The result could be that the new entrant is able to charge higher rates which enable them to recover their full costs over the life of the assets, while the existing utilities are required to use existing rates, which do not reflect the costs of expansion and as such are likely to be lower. The ability to implement higher rates could make a project feasible for a new entrant, but not feasible for an existing utility under the current E.B.O. 188 guidelines.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, pp. 15-16

Preamble: A review of E.B.O. 134 is not required in this proceeding. The Board reviewed E.B.O. 134 in the context of filing guidelines and issued adjusted guidelines February 21, 21Filed: 2016-03-21 EB-2016-0004 Exhibit A, Tab 1, p. 16 of 38, 2013

"These requirements apply to all Ontario Energy Board regulated gas utilities requesting approval to construct new transmission facilities. For the purpose of these Guidelines 4 ***transmission pipelines are defined as*** *any planned or proposed pipeline project that would provide transportation services* ***to move natural gas on behalf of other shippers within Ontario****. Distribution system expansion pipelines that are subject to the filing guidelines set in the E.B.O. 188 would not be subject to the proposed filing requirement."* ***(Emphasis Added).***

a) Please define Transmission Pipeline Expansion and the relevant characteristics as applied to Economic Tests as encompassed by E.B.O. 134.

b) Please define Distribution System Expansion and the relevant characteristics as applied to Economic Tests as encompassed by E.B.O. 188.

c) Please confirm the economic tests for Transmission Pipeline and System Expansion are both derived from the E.B.O. 134 Decision.

d) Accordingly, please explain why any amendments to the Distribution System Expansion Guidelines should not, as applicable, be applied to Transmission Pipeline expansion.

Response:

a) Transmission Pipeline Expansion is defined in the Preamble.

b) E.B.O. 188 applies to distribution which includes all expansions with the exception of transmission facilities subject to E.B.O. 134 and storage facilities.

c) Not confirmed. E.B.O. 134 applies to transmission pipelines. E.B.O. 188 is a separate decision which is specific to Distribution. Prior to E.B.O. 188 parties relied upon E.B.O. 134 for guidance, however the specific application of criteria applied by Union, Enbridge and

Centra were not identical. This resulted in the Board initiating the E.B.O. 188 proceeding.

d) Please see the response to part c).

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 21

Preamble: Consistent with Union's proposal that limited levels of subsidization from existing ratepayers is in the public interest, Union proposes that Stage 2 and Stage 3 analysis are an appropriate means of considering the broader public benefits of Community Expansion Projects on a *collective basis*. (emphasis added).

a) Please explain what is meant by *on a collective basis*, as opposed to individual community project basis.

b) Please provide the format an E.B.O. 188 Stage 2 and Stage 3 analyses and provide an illustrative example based on E.B.O. 134.

c) Specifically, indicate if Union is proposing to include environmental aspects in the analysis and provide an illustration of such factors and analyses.

Response:

a) Union proposes that Stage 2 or 3 analyses be provided for groups of projects at the time applications for Leave-to-Construct approval are made, or when applications to pass the capital costs of Community Expansion Projects into rates are made.

b) Union does not have a specified format for Stage 2 and Stage 3 analyses; however the references below are illustrative of the content of these analyses for community expansion.

For an example of the format of a Stage 2 analysis, please see the response at Exhibit B.CPA.18 part a), in EB-2015-0179.

For an example of a Stage 3 calculation, please refer to Union's 2017 Dawn Parkway Project (EB-2015-0200) evidence, Exhibit A, Tab 9, Schedule 7, which has been attached to this response as Attachment 1. For Stage 3 factors that are appropriate for community expansions please see the response at Exhibit B.CCC.5, including Attachment 1, in EB-2015-0179.

c) Union proposes that the environmental aspects would be considered in a Stage 3 analysis. As part of a Stage 3 analysis, Union would qualitatively consider the environmental impacts of its proposal. Due to the subjectivity associated with the assumptions, Union would not quantify the environmental costs and benefits.

Economic Benefits from Infrastructure Spending

Figures in $ Millions

Line No	Description	Note	Capex Spend Out of Country (a)	Capex Spend within Ontario (b)	Capex Spend within Canada Excluding Ontario (c)	Capex Total (d)= sum (a-c)	
1	Dawn H		$ 58	$ 163	$ 29	$ 250	
2	Lobo D		$ 58	$ 73	$ 14	$ 145	
3	Bright C		$ 59	$ 140	$ 29	$ 228	
4	Total		$ 175	$ 376	$ 72	$ 623	
5							
6	% of Total Spend		28%	60%	12%	100%	Line 4 /Total Line 4 Col (d)
7							
8	GDP						
9	GDP Factor	(a)		1.14			Source : Schedule 9-8
10	GDP Impact $ Millions			$ 429			Line 4 * Line 9
11							
12	Employment (Jobs)						
13	Jobs Factor	(b)		16.7			Source : Schedule 9-8
14	Jobs Created			6,279			Line 4 * Line 13
15							
16	Taxes Paid by Union Gas	(c)					
17	Property Tax			$ 15			Source: NPV DCF
18	Provincial Income Tax			$ 23			Source: NPV DCF
19	Total Provincial Taxes			$ 38			
20	Federal Income Tax			$ 30			Source: NPV DCF
21	Total Taxes Paid			$ 68			
22							
23	Total Value to Ontario						
24	GDP Impact $ Millions			$ 429			Line 10
25	Total Provincial Taxes			$ 38			Line 19
26	NPV Total Value to Ontario			$ 467			

Notes:
Schedule 9-8 : The Economic Impact of Ontario’s Infrastructure Investment Program Conference Board of Canada
(a) Schedule 9-8 page 7 ($ Real GDP $ 114 million for each $ 100 million invested)= 1.14
(b) Schedule 9-8 page 7 (1,670 jobs for each $ 100 million invested) = 1670/100 = 16.70 per $ 1million
(c) Net Present Value taxes by Union paid over 30 years

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 22,
EB-2015-0179, Exhibit A, Tab 1, 12 (Updated), Section 4.1 (p. 15), and Section 4.2 (p. 23).

Preamble: In addition to the rationale provided in EB-2015-0179, surcharges provide a mechanism to allow for the expansion customers to make an additional contribution to financial feasibility of a project over time, while providing a means to revert to postage stamp rates once the surcharge period has expired. In other words, once the surcharge period has expired customers in the expansion areas will see rates that are the same as rates in any surrounding communities that previously had natural gas service.

a) Please define and distinguish CIAC and Surcharges.

b) Please provide the criteria Union proposes for each of CIAC and Surcharges, including how in general these will be calculated for CE projects.

c) In providing this response, please indicate the source of the proposal, such as E.B.O. 188 or recent practice and precedent.

Response:

a-b) CIAC is an upfront cash payment from the customer or a third party towards the capital cost of a Project. It is applied as a reduction to rate base. In contrast, a surcharge is a rate and is collected as revenue on an ongoing basis. Please see the response at EB-2015-0179 Exhibit B.LPMA.1 for a description and associated rationale for treatment the Temporary Expansion Surcharge (TES) as revenue.

CIAC will be calculated by preparing a DCF analysis for each project. The amount of CIAC under Union's proposal would be any cash shortfall required in year one for a Project to reach a PI of 0.4 after including all incremental costs and revenues, as outlined in E.B.O. 188 (along with any modifications resulting from this proceeding), and the TES and ITE.

Once Union's proposed TES rate is set and approved by the Board, it would not change. The same value of $0.23 per m^3 will be applied for all projects for which it is necessary.

c) Union has not had a TES in the past and as such there is no precedent or recent practice for its use at Union.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 24

Preamble: At the same time, it is Union's position that the Board should avoid, where possible, prescriptive ratemaking approaches and allow utilities to bring forward rate proposals that can be reviewed on their merits. It is important that utilities be allowed to maintain flexibility to propose their own rate proposals based on the public interest and the just and reasonable standard.

a) Please define the "Just and Reasonable Standard" with reference to the Act, regulatory precedent and practice.

b) Describe how Union will implement the "standard" for rates for existing and new Community Expansion customers. In particular, should distribution rates be based on the "standard" and/or whether CIAC and Surcharges should be calculated and shown separately on the bills.

Response:

a) In a Supreme Court of Canada Decision (Ontario Energy Board v. Ontario Power Generation), dated September 25, 2015, Justice Rothstein explained the concept of "just and reasonable rates" as follows:

"[i]n order to ensure that the balance between utilities' and consumers' interests is struck, just and reasonable rates must be those that ensure consumers are paying what the Board expects it to cost to efficiently provide the services they receive, taking account of both operating and capital costs. In that way, consumers may be assured that, overall, they are paying no more than what is necessary for the service they receive, and utilities may be assured of an opportunity to earn a fair return for providing those services."

b) Union is unclear on the intended question. Rates approved by the Board will remain in place for existing customers, and will be applied as applicable to the new customers.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 24

Preamble: Union supports an allowance for the recovery of the revenue requirement in rates that is outside the Board approved incentive regulation framework as proposed in EB-2015-0179, Exhibit A, Tab 1 (Updated), Section 4.5 (p. 32).

a) Please explain why the unanticipated implementation of the CE projects does not affect customer numbers and revenue and margin in the IRM period.

b) Please provide more details on the treatment of revenues/costs and associated Revenue Requirement during the IRM period and upon rebasing in 2019.

Response:

a) The premise of the question is incorrect. Union's community expansion proposal does impact customer numbers and revenues during the IRM period. As noted at Exhibit A, EB-2015-0179, Tab 1, p.33:

> *"Union proposes to adjust rates annually to recover the forecasted net revenue requirement associated with the gross capital investment for all Community Expansion Projects."*

Based on Union's proposals, Union would update its cost allocation study and rates with the community expansion forecast volumes, customer numbers and revenues.

b) During Union's 2014-2018 IRM period it files annual rate adjustments in accordance with Union's IR Settlement Agreement (per EB-2013-0202). As part of Union's annual rate proceeding, Union files a draft rate order that reflects the impact of the PCI pricing formula, Y factors, including capital pass-through projects, Z factors, NAC and other items as agreed upon by the parties. Projects that qualify for the capital pass-through mechanism are required to meet certain criteria, as described at EB-2013-0202, Settlement Agreement, p. 13.

As described at EB-2015-0179, Exhibit A, Tab 1 Updated, Section 4.5, p. 32, Union is proposing a capital pass-through mechanism to recover the Community Expansion Project capital costs when these expansion projects come into service.

Union will perform a complete Cost of Service based on the 2019 test year to reset rates to reflect Union's forecast revenue requirement. The Cost of Service proceeding will include all

cost changes, including other capital project costs that did not qualify for Union's capital pass-through mechanism during the IRM period. As part of the 2019 Cost of Service proceeding, Union will also file any other proposed changes related to Union's revenue requirement, cost allocation and rate design.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, pp. 25-26

Preamble: Making any modifications to the current Model Franchise Agreement would, in all likelihood, be an extensive process, and Union does not support a need for review of or change to existing agreements. Further to this, Union proposes that the current Model Franchise Agreement continue to be adopted by all parties across the province, as opposed to allowing broad variations in Franchise Agreements to begin to occur.

a) Please discuss barriers to new entrants arising from the combination of existing gas distribution franchise agreements and the Model Franchise Agreement. Please frame the response(s) in terms of both gas distribution and alternative energy supply.

b) Please clarify Union's position regarding connection of new distributor to the Union system at either Transmission or Distribution levels

c) Does Union believe it is/is not inefficient for a Municipality to have two Municipal Franchise Agreements? Please discuss.

Response:

a) The Model Franchise Agreement does not create barriers for new entrants. Fuel oil and propane distributors do not require Franchise Agreements.

b) Union would treat a new entrant requiring a connection to Union's system in the same way that any customer requesting service from Union would be treated.

c) Union does not believe it is inefficient for a Municipality to have Franchise Agreements with more than one natural gas distributor, and similar situations exist currently. Please see the response at EB-2015-0179 Exhibit B.CCC.4 for further explanation. Any confusion on the part of the Municipality that might come about in administration of multiple Franchise Agreements can be eliminated by ensuring that the Board-approved Model Franchise Agreement is used in all cases.

In contrast, as noted in Union's evidence related to Issue 8 (see EB-2016-0004 Exhibit A, Tab 1, pp.25-30), allowing for multiple Certificates of Public Convenience and Necessity for the same geographic areas would not be efficient.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, pp. 28-29

Preamble: Prior to Board approval of newly established Franchise Agreements or Certificates, Union proposes that the Board should ensure that any utility proposing to provide natural gas service to a community will be capable of meeting minimum requirements of an LDC.

a) Please provide the sources for the proposed criteria. If they are based on regulatory precedent please provide references and extracts from the decisions/orders.

b) In Union's view, do all regulated and non rate-regulated distributors meet these criteria? Specifically note areas that do not, e.g. DSM.

c) In Union's view, should all distributors be required to screen new connections and "blitz" new Community Expansion communities with DSM programs prior to connecting new customers?

d) Who should pay for these programs, existing rates or rates paid by Community Expansion customers?

e) Is there a case for a Distribution Licence similar to Electricity to protect gas consumers? Please Comment.

Response:

a) The minimum requirements as shown in the response at Exhibit A, Tab 1, pp. 28-29 of Union's evidence are an illustrative set of good utility practices and performance standards to ensure reliability and quality of natural gas service, both on a short-term and long-term basis. The details and references provided below suggest a number of these criteria are based on regulatory precedent.

1. Demonstrated Operational Capability

- Licensed by TSSA as a Natural Gas Distributor - The Technical Safety Standards Authority ("TSSA") is the technical authority that has quality and safety accountability for the construction and maintenance of pressurized systems such as natural gas distribution. The TSSA issues various licenses including to operate oil and gas transmission systems and to distributors of natural gas and oil. An Application for an Ontario Licence to Transmit Natural Gas by Pipeline must be submitted to the TSSA.

- Demonstrated experience as a natural gas local distribution company – See other requirements related to gas supply, system integrity and reliability.
- A distribution system design that will deliver acceptable levels of reliability - One of the objectives in the *Ontario Energy Board Act* is: To protect the interests of consumers with respect to prices and the reliability and quality of gas service (Section 2, Paragraph 2).
- An existing safety and loss management system that provides for the protection of people, the environment, and property.
- An existing Emergency Response Plan – GDAR Section 7.3.5.2 requires documentation of Emergency Response procedures for each type of emergency event to ensure that responders to emergencies follow the Distributor's approved emergency procedures.
- 24 x 7 call handling and emergency response capability – GDAR Section 7 addresses Telephone Answering Performance and Gas Emergency Response as service quality indicators.
- Ability to train and certify field staff – Establishment of mandatory training requirements and certification requirements for gas technicians is administered by the TSSA which is responsible to the Ministry of Consumer and Commercial Relations.
- An existing billing system and related processes – GDAR Section 5.1.1 requires a gas distributor to maintain information on all consumers who are provided gas distribution services by the gas distributor as well as a billing system; GDAR Section 6 addresses the requirements of a billing system.
- Engineering and system planning capability.
- A System Integrity Management program.
- Gas supply procurement capability - Section 2.3.5 of the Board's Natural Gas Reporting and Record Keeping Requirements (RRR) requires a utility to maintain records and provide information to justify the prudence of the utility's commodity purchases.

2. <u>Ability to meet Core Expectations that the Board has of Existing Gas Utilities in Ontario</u>

Examples include but are not limited to:

- Meet and report on OEB Service Quality Requirement Performance Metrics ("Gas Distribution Access Rule") – this is Section 7 of GDAR.
- Comply with Affiliated Relationships Code ("ARC") requirements – this is a legal requirement to comply with an OEB Code; Section 2.2 of the Natural Gas Reporting and Record Keeping Requirements (RRR) requires that a utility annually provide statements certifying that the utility is meeting the requirements of the Affiliate Relationships Code for Gas Utilities.
- Deliver DSM Programs - One of the objectives in the *Ontario Energy Board Act* is: "To promote energy conservation and energy efficiency in accordance with the policies of the Government of Ontario, including having regard to the consumer's economic circumstances" (Section 2, Paragraph 5). The March 2014 directive to the Board from the Minister of Energy required the Board to develop a new DSM framework that meets

specific government objectives. It includes policies on all key elements that will be funded through the distribution rates of the gas utilities, providing guidance to the gas utilities as they develop their DSM plans. The OEB's position is that natural gas consumers need long-term access to natural gas energy efficiency and conservation programs.

- Provide low income emergency financial assistance (LEAP funding).
- Deliver a plant damage prevention program - CSA standard Z247-15 (Damage prevention for the protection of underground infrastructure) establishes best practices around damage prevention.
- Comply with future government policy mandates (i.e. Cap and Trade Program) – not only will Union comply with the laws of the province but it an active participant in the Board's consultation to develop a regulatory framework for natural gas distributors' Cap and Trade Compliance Plans (EB-2015-0363).

3. Demonstrated Financial Stability

- One of the objectives in the *Ontario Energy Board Act* is: "To facilitate the maintenance of a financially viable gas industry for the transmission, distribution and storage of gas." (Section 2, Paragraph 5.1).

b) Please see the response at Exhibit S15.Union.Staff.4.

c) Please see the response at EB-2015-0179 Exhibit JT1.18 Attachment 1, pp. 15-20, and EB-2015-0179 Exhibit B.Energy Probe.6. DSM programs should be offered to all rate-regulated natural gas customers by their local gas distributor. Union does not have an opinion on whether non-rate-regulated distributors should be required to do so.

d) All existing rate-regulated customers, including those that attach to Community Expansion Projects, should bear the costs for programs offered by their specific distributor. These costs are currently imbedded in current rates for Union.

e) There is no need for natural gas distributors to attain a Distribution Licence similar to electricity. It is Union's understanding the TSSA's licencing requirements do not apply to electricity distributors. Thus, with the rules and guidelines currently in place to assist the Board in its regulation of natural gas distributors, there does not appear to be anything to gain from a regulatory perspective by requiring natural gas distributors to acquire such a licence to protect consumers.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 31

Preamble: The most significant barrier to expansion to additional communities is economic in nature. The challenge, then, is one of either making projects less costly so that they can meet required economic feasibility criteria, or adjusting the feasibility criteria. Union does not believe that there are cost reduction opportunities that would reduce the capital costs of expansion significantly enough to overcome the financial viability barrier that currently exists. For this reason, Union has proposed adjusting the criteria. Union submits that an effort by the Board to encourage RFI or RFP processes and competition from multiple parties to service any specific area will not be helpful if projects proposed by new entrants still need to meet the current E.B.O. 188 criteria.

Is Union suggesting that the E.B.O. 188 Guidelines should be specifically modified for Communities that are subject to RFI or PFP processes? Please explain in detail.

Response:

Union has proposed that the E.B.O. 188 guidelines be modified for all Community Expansion Projects, not only those where the municipality elects to proceed via an RFI or RFP process. The guidelines should be consistent regardless of any process a municipality might decide to undertake to solicit proponents to provide natural gas service.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: Exhibit A, Tab 1, p. 38
EB-2015-0179, Exhibit B, CPA.1, Attachment 1, p. 3

Preamble: Based on 2015 figures, the estimated annual difference in energy cost between natural gas and electricity was $2,465. Union does not foresee this substantial difference being eliminated through the implementation of the Ontario government's cap and trade program.

a) Please update the analysis/comparison in the Reference.

b) Please provide an update to the current and forecast cost outlook for other fuels –propane and fuel oil.

c) Please indicate the assumptions, including whether the estimates are based on wholesale or delivered costs

d) Please chart the cost of energy and fuels for home heating and hot water and combinations of these uses for an average home in the major Community Expansion areas.

e) Indicate the basis for the annual use in terms of conversion efficiency and provide separate estimate for a home that has been upgraded using either Federal or Ontario CDM/DSM programs.

Response:

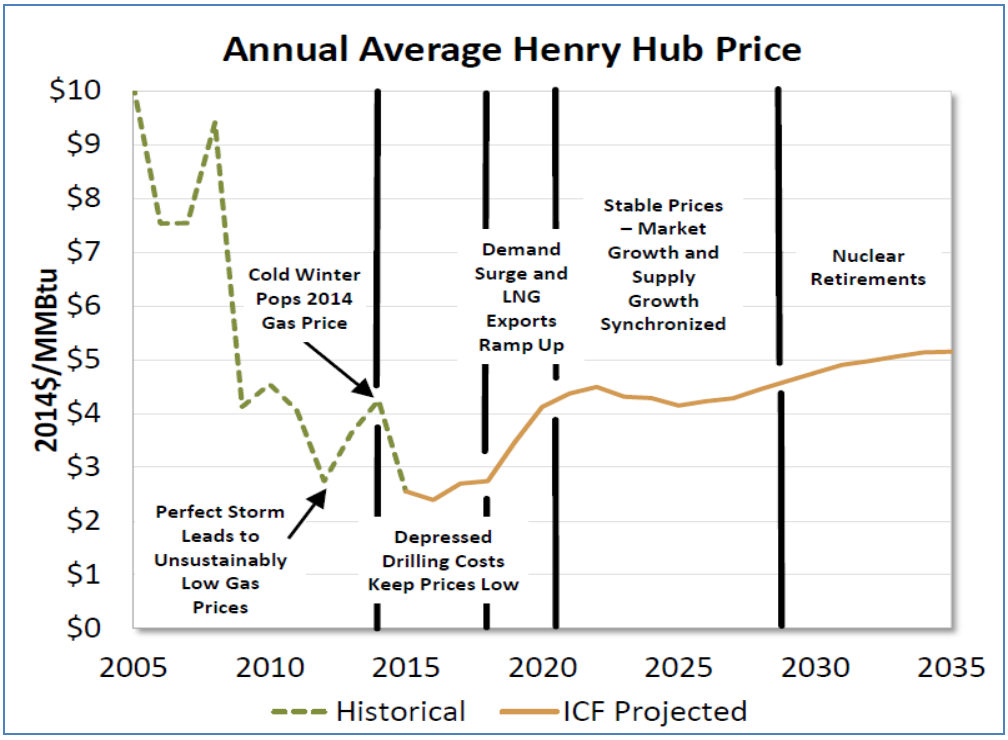
a) Please refer to Attachment 1 for an updated price comparison. Union updates this information in May and October each year, to coincide with typical timing for changes in electricity rates. The data provided is based on October 2015 prices, and as such, does not reflect the more recent changes as noted below.

- Union's rates were adjusted in January and April, 2016. The net impact of these changes in a decrease of $26 per year for a residential customer in Union South, and a decrease of $76 per year for a residential customer in Union North.
- On April 15, 2016, electricity rate increases amounting to $38 per year were announced. These increases are to become effective on May 1, 2016.

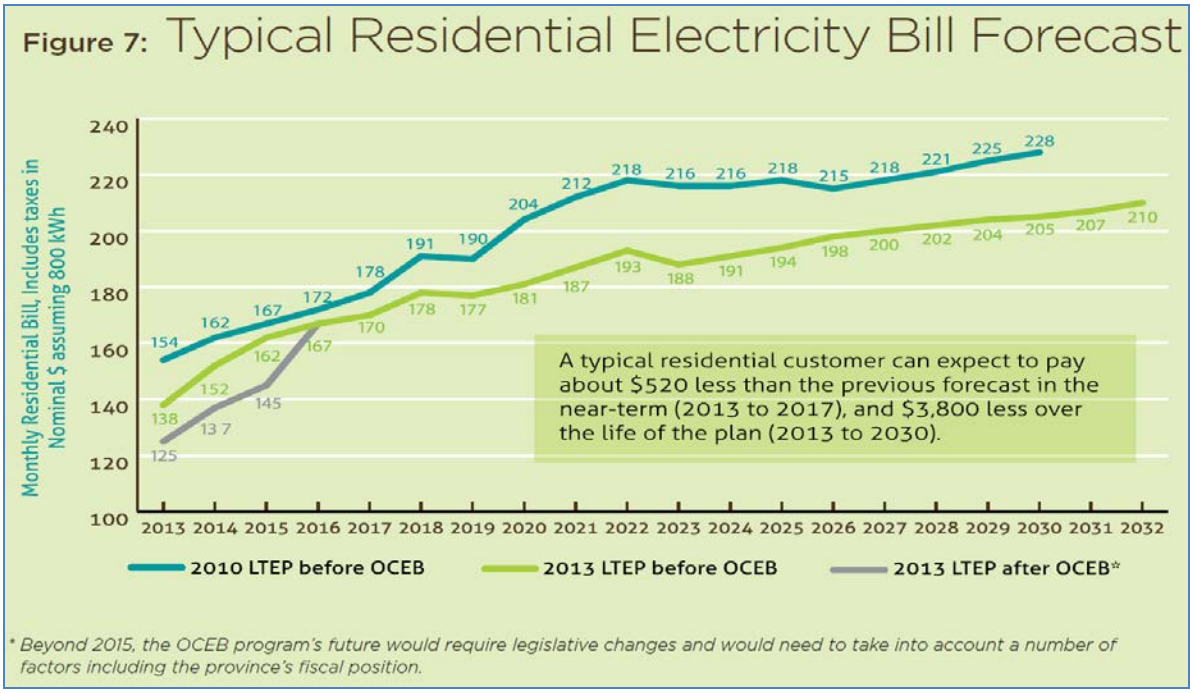
Union has been unable to find a reliable source for Ontario wide retail propane prices, and as such, propane prices in Attachment 1 are for automotive propane. Please see the response at

Exhibit S15.Union.Staff.10 for further detail on potential propane savings relative to natural gas.

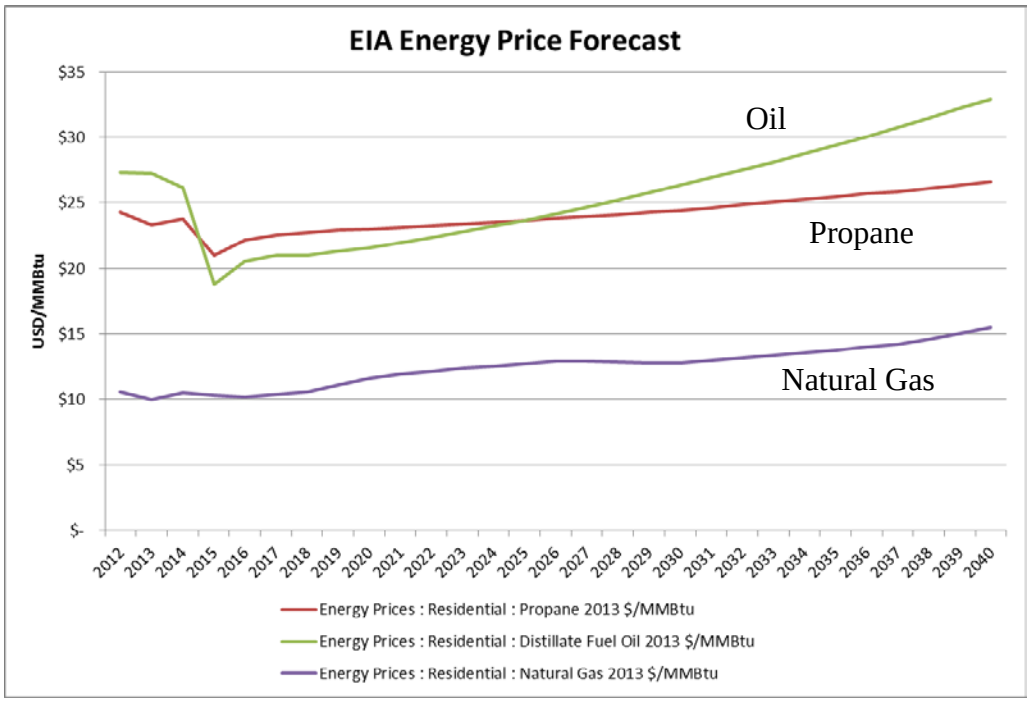
b) Following is an update of the natural gas price forecast from ICF International, dated January 25, 2016. The price in this chart is the natural gas commodity price at Henry Hub.



Union does not have updated versions of the electricity price forecast from the Province's Long Term Energy Plan, which was provided in EB-2015-0179 at Exhibit B.Energy Probe.5. For convenience, Union has copied that chart below. The costs in this chart reflect total delivered costs per month.



Union is unaware of updates to the forecast by the US Energy Information Administration which was provided in EB-2015-0179 at Exhibit B.Energy Probe.5. For convenience that chart is provided below, with labels added. Prices in this chart reflect residential pricing.



c) Key assumptions for the ICF projections[1] include the following:

Key Assumptions – Macroeconomic

- GDP Growth:
  - The BEA's December 22, 2015 U.S. GDP growth estimate for 2015 Q3 2015 of 2.0%, Q2 2015 of 3.9%, and Q1 2015 of 0.6% is included in this case – this is a revision downwards from our Q4 2015 release.
  - U.S. GDP growth assumptions for the balance of 2015 are based on the Wall Street Journal's December 2015 Survey of Economists.
    - For Q4 2015, U.S. GDP growth is projected to be 2.2%.
    - For the full year 2015, U.S. GDP growth is projected to be 2.2%.
    - For the full year 2015, Canadian GDP growth is projected to be 0.9%.
  - From 2016 forward, we assume U.S. GDP grows at 2.6% per year, and Canada GDP grows at 2.5% per year.
- Demographic trends are consistent with trends during the past 20 years. U.S. population growth averages about 1% per year throughout our projection.
- Future weather is assumed to be consistent with averages over the past 20 years.

Key Assumptions – Power Market

- Electric load growth averages 1% per year.
- ICF's Base Case reflects EPA's current rules for Mercury & Air Toxics Standards Rule (MATS), water intake structures (often referred to as 316(b)), and coal combustion residuals (CCR, or ash).
  - It also includes Cross-State Air Pollution Rule (CSAPR), which was reinstated in January 2015. CSAPR has replaced the CAIR program, imposing regional and state caps on emissions of NO_x and SO_2.
- The ICF Base Case also includes a charge on CO_2 reflecting the continuing lack of consensus in Congress and the time it may take for direct regulation of CO_2 to be implemented. The case generally leads to retirement and replacement of some coal generating capacity with gas-based capacity.
- Power plant mix: renewable capacity is up to meet state RPS's, coal generation is down, and other forms of non-gas generation are fairly flat. Gas generation grows to fill the gap between electric load and the total amount of generation from other types of generation.
  - A maximum lifespan of 60 years is assumed for all nuclear units, resulting in 24 GW of nuclear retirements by the end of 2035.
- Adoption of DSM programs and conservation and efficiency measures continue, consistent with recent history.

[1] From ICF Strategic Natural Gas Outlook, reproduced with permission from ICF.

Key Assumptions – Natural Gas Supply and Midstream Development

- Current U.S. and Canada gas production is from over 400 trillion cubic feet of proven gas reserves.
- The substantial North American natural gas resource base, totaling over 4,000 trillion cubic feet of unproved plus discovered but undeveloped gas resource, can supply the U.S. and Canada gas markets for over 100 years (at current consumption levels).
- Shale gas accounts for over 50 percent of remaining recoverable gas resources.
- No significant restrictions on well permitting and fracturing beyond restrictions that are currently in place.
- No significant hurricane disruptions to natural gas supply. Modest disruptions assumed, consistent with the average disruption over the past 20 years.
- Arctic projects (specifically Alaska and Mackenzie Valley gas pipelines) are not included in our projection.
- Near-term midstream infrastructure development is aligned with project announcements. Unplanned ("generic") projects are included when the market signals need of capacity (i.e., projected basis covers the unit cost of expansion). We assume that there are no significant delays in permitting and construction of pipelines.

Key assumptions for the IEA forecast are available on the IEA website[2].

The source of the electricity cost forecast is the Province's "Achieving Balance- Ontario's Long Term Energy Plan" published in December 2013. The assumptions underlying the LTEP are available on the Independent Electricity System Operator (IESO) website[3].

d) Union has provided a table populated with what it believes to be more common combinations below. Total costs for homes dedicated to a single fuel are sourced from Attachment 1, with the exception of "Home Propane Estimate" as noted below. As such they do not include the price adjustments after October 2015 which are noted in a) above. The figures in the table for heating and water heating are based on a proration of total costs for a home with the same fuel used for both heating and water heating. The proration is based on Union's estimation of average water heating load of 330 m3 (12.3 GJ) per year, in comparison to the average total consumption figure of 2,200 m3 (82 GJ) per year.

Included in the table is a set of columns called "Home Propane Estimate". Propane cost figures in these columns are calculated on the basis of the average of figures provided by

[2] IEA website: http://www.eia.gov/forecasts/aeo/data/browser/#/?id=3-AEO2015&region=1-0&cases=ref2015&start=2012&end=2040&f=A&linechart=3-AEO2015.3.1-0~3-AEO2015.4.1-0~3-AEO2015.5.1-0~&map=&ctype=linechart&sid=ref2015-d021915a.3-3-AEO2015.1-0~ref2015-d021915a.4-3-AEO2015.1-0~ref2015-d021915a.5-3-AEO2015.1-0&sourcekey=0

[3] IESO website: http://www.powerauthority.on.ca/power-planning/long-term-energy-plan-2013

GPMI and Union's attempt to derive similar figures, which is outlined in detail in Exhibit S15.Union.Staff.10.

	Annual Cost								
Heating Fuel:	Propane (Automotive)		Home Propane Estimate		Furnace Oil		Electricity	Natural Gas	
Space Heating	$2,120	$2,120	$1,557	$1,557	$2,053	$2,053	$2,837	$717	$717
Water Heating- Propane	$374		$275						
Water Heating- Furnace Oil					$362				
Water Heating- Electricity		$501		$501		$501	$501		$501
Water Heating- Natural Gas								$127	
Total	**$2,494**	**$2,621**	***$1,832**	**$2,058**	**$2,415**	**$2,554**	**$3,338**	**$844**	**$1,218**

* NG cost plus ($1,225+$750)/2[4]

e) Union has not attempted to reflect equipment efficiencies in the table above. Union acknowledges this may result in a slight overstatement in electricity equipment costs, but not to the extent that consumers would not see a clear benefit to converting. For propane and oil equipment Union believes the average efficiency levels[5] for installed equipment are likely to be similar to natural gas equipment.

In the table below Union has applied a 15% (330 m^3 per year) efficiency savings[6] to natural gas heated homes only. For simplicity, Union has applied the entire volume reduction to heating equipment only. Union is not familiar with the savings achieved in electric homes through any relevant CDM programs, and Union is not aware that DSM or CDM programs would apply to heating costs for a propane or oil heated home. For that reason Union has not estimated DSM or CDM savings for any other fuels.

	Annual Cost								
Heating Fuel:	Propane (Automotive)		Home Propane Estimate		Furnace Oil		Electricity	** Natural Gas	
Space Heating	$2,120	$2,120	$1,557	$1,557	$2,053	$2,053	$2,837	$647	$647
Water Heating- Propane	$374		$275						
Water Heating- Furnace Oil					$362				
Water Heating- Electricity		$501		$501		$501	$501		$501
Water Heating- Natural Gas								$127	
Total	**$2,494**	**$2,621**	***$1,832**	**$2,058**	**$2,415**	**$2,554**	**$3,338**	**$774**	**$1,148**

* NG cost plus ($1,225+$750)/2
** NG variable heating cost decreased by 15%

The costs provided in the response to parts (d) and (e) do not include the cost of Union's proposed Temporary Expansion Surcharge.

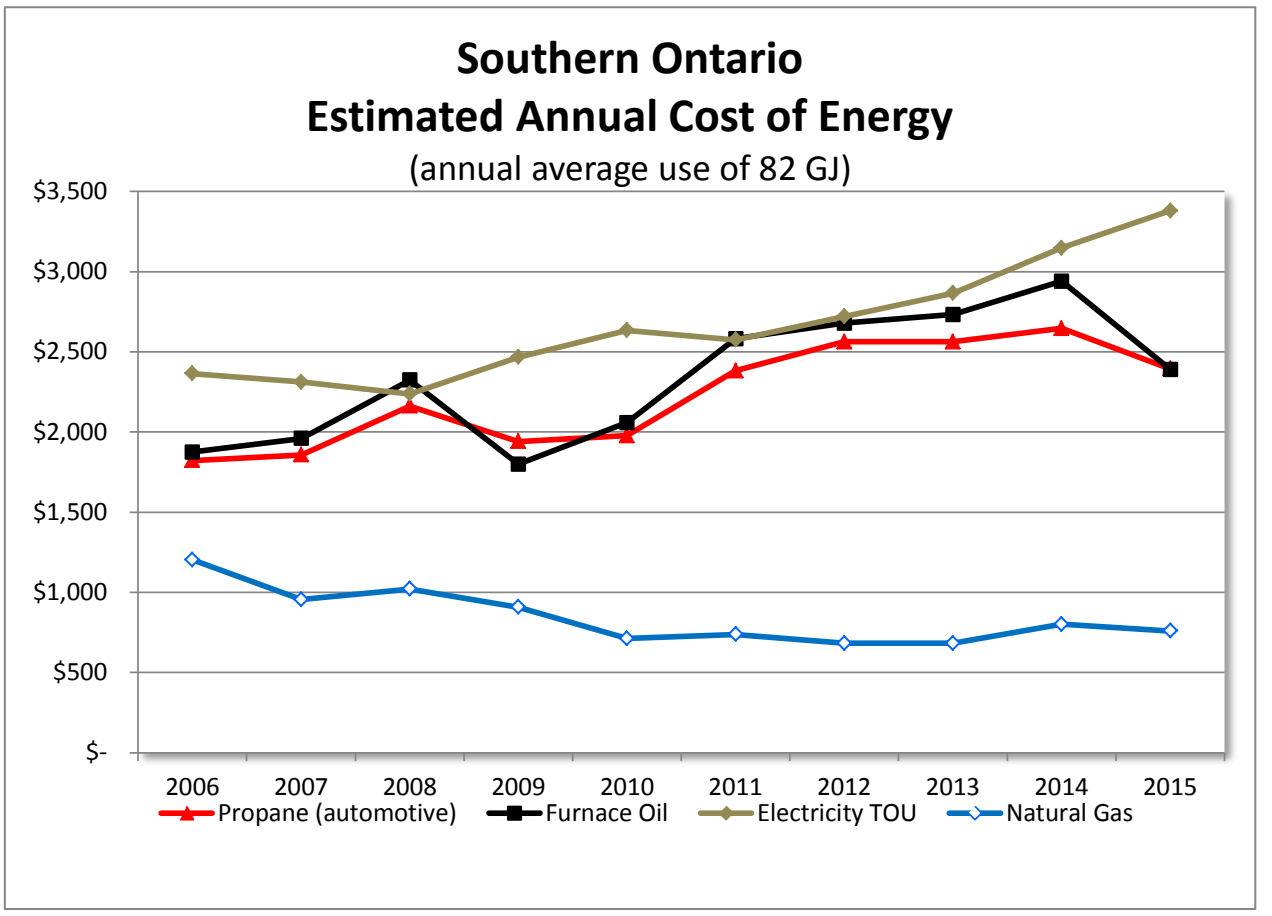
[4] Based on the average of figures provided by GPMI and Union's attempt to derive similar figures, which are outlined in detail in Exhibit S15.Union.Staff.10.

[5] Union estimates average heating equipment efficiency across its customer base is 87.5% based on market survey data.

[6] Union DSM participants achieved on average 15% consumption savings as required for incentive eligibility in Union's DSM program.

Southern Ontario Estimated Annual Cost of Energy

Year	Propane (automotive)	Furnace Oil	Electricity TOU	Natural Gas
2006	$ 1,823	$ 1,875	$ 2,364	$ 1,203
2007	$ 1,857	$ 1,959	$ 2,312	$ 954
2008	$ 2,162	$ 2,324	$ 2,238	$ 1,021
2009	$ 1,942	$ 1,799	$ 2,467	$ 908
2010	$ 1,978	$ 2,058	$ 2,634	$ 712
2011	$ 2,382	$ 2,582	$ 2,575	$ 738
2012	$ 2,563	$ 2,679	$ 2,721	$ 683
2013	$ 2,563	$ 2,733	$ 2,866	$ 682
2014	$ 2,646	$ 2,940	$ 3,148	$ 802
2015	$ 2,394	$ 2,390	$ 3,380	$ 760
2015 Cost per GJ	$ 32	$ 29	$ 41	$ 9
2015 NG Savings	$ (501)	$ 1,631	$ 2,621	Elect less Fixed
per GJ	$ (6)	$ 20	$ 32	$ 19



Sources:

Propane & Heating Oil: The Kent Group. Rates taken for London for the South and Thunder Bay for the North

Natural Gas: Union Gas Limited Rate Schedules

Electricity: OEB time-of-use rates & utility-specific charges. Rates taken for London for the South and Thunder Bay for the North

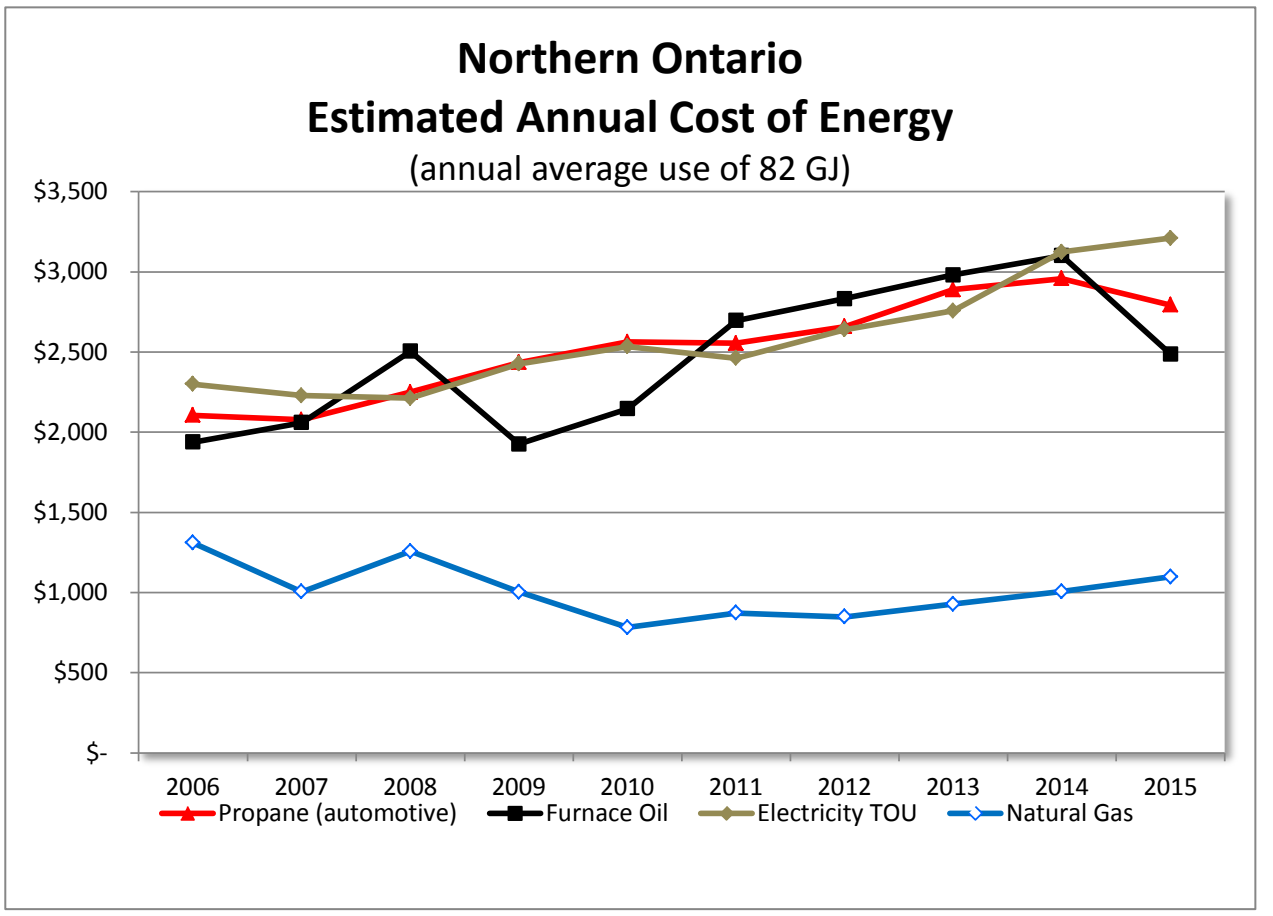
Fixed Monthly Rate: Hydro One medium density monthly fixec $ 24.07

Average Annual Savngs

Year	Propane	Furnace Oil	Electricity TOU	Electricity TOU excl Fixed Monthy Charges
2006	$ 620	$ 672	$ 1,162	$ 873
2007	$ 903	$ 1,005	$ 1,357	$ 1,068
2008	$ 1,141	$ 1,303	$ 1,217	$ 928
2009	$ 1,033	$ 891	$ 1,559	$ 1,270
2010	$ 1,266	$ 1,347	$ 1,922	$ 1,634
2011	$ 1,645	$ 1,844	$ 1,837	$ 1,549
2012	$ 1,881	$ 1,996	$ 2,038	$ 1,749
2013	$ 1,881	$ 2,051	$ 2,184	$ 1,895
2014	$ 1,845	$ 2,139	$ 2,346	$ 2,057
2015	$ 1,634	$ 1,631	$ 2,621	$ 2,332

Northern Ontario Estimated Annual Cost of Energy

Year	Propane (automotive)	Furnace Oil	Electricity TOU	Natural Gas
2006	$ 2,106	$ 1,938	$ 2,300	$ 1,310
2007	$ 2,078	$ 2,059	$ 2,228	$ 1,005
2008	$ 2,250	$ 2,505	$ 2,213	$ 1,258
2009	$ 2,434	$ 1,926	$ 2,427	$ 1,004
2010	$ 2,563	$ 2,146	$ 2,534	$ 782
2011	$ 2,554	$ 2,697	$ 2,462	$ 873
2012	$ 2,659	$ 2,832	$ 2,639	$ 848
2013	$ 2,889	$ 2,981	$ 2,758	$ 929
2014	$ 2,958	$ 3,101	$ 3,124	$ 1,006
2015	$ 2,794	$ 2,487	$ 3,210	$ 1,097
2015 Cost per GJ	$ 36	$ 30	$ 39	$ 13
2015 NG Savings	$ (166)	$ 1,390	$ 2,113	Elect less Fixed
per GJ	$ (2)	$ 17	$ 26	$ 9



Sources:

Propane & Heating Oil: The Kent Group. Rates taken for London for the South and Thunder Bay for the North

Natural Gas: Union Gas Limited Rate Schedules

Electricity: OEB time-of-use rates & utility-specific charges. Rates taken for London for the South and Thunder Bay for the North

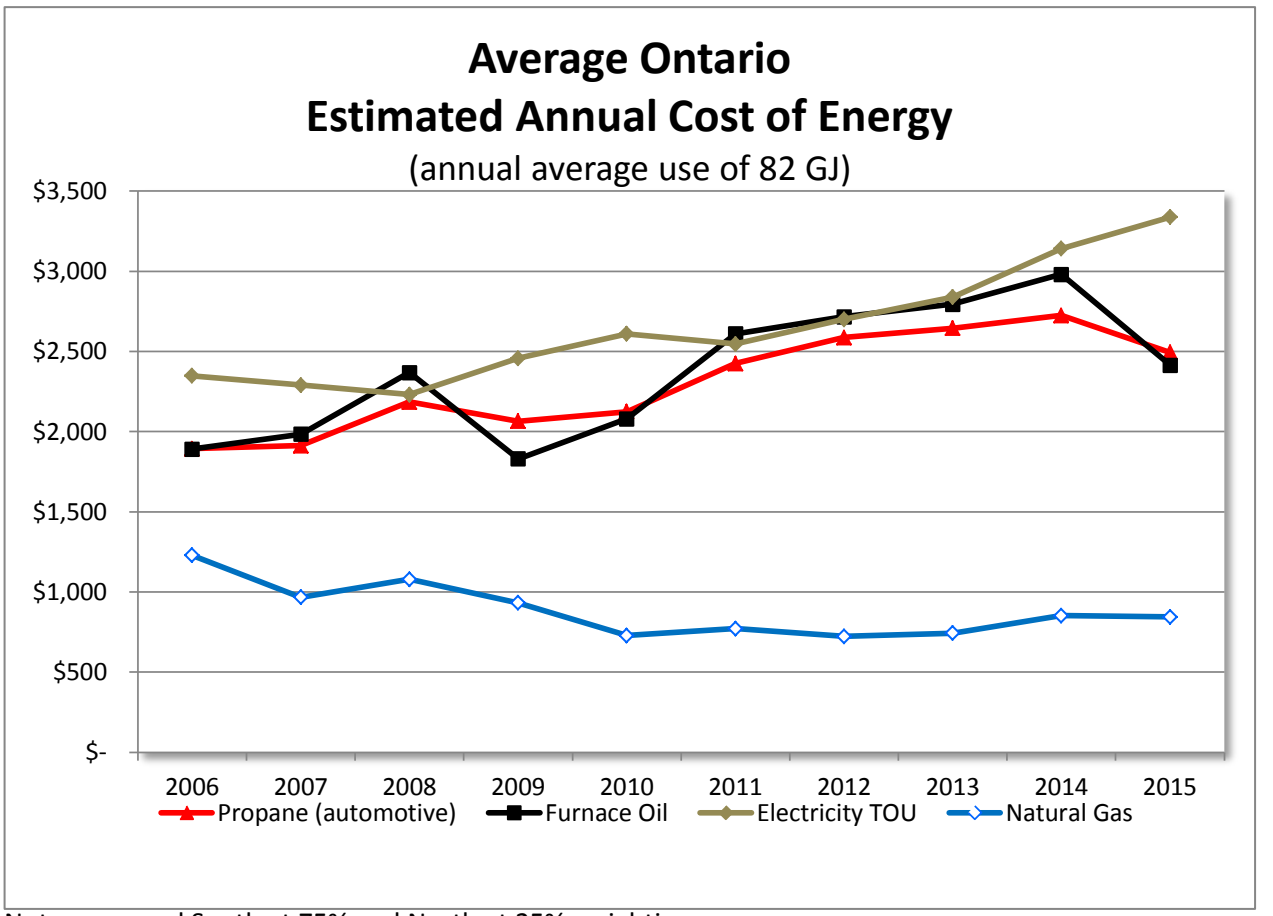
Fixed Monthly Rate: Hydro One medium density monthly fixec $ 24.07

Average Annual Savngs

Year	Propane	Furnace Oil	Electricity TOU	Electricity TOU excl Fixed Monthy Charges
2006	$ 796	$ 628	$ 990	$ 701
2007	$ 1,072	$ 1,054	$ 1,223	$ 934
2008	$ 992	$ 1,247	$ 955	$ 666
2009	$ 1,430	$ 922	$ 1,423	$ 1,134
2010	$ 1,781	$ 1,364	$ 1,752	$ 1,464
2011	$ 1,681	$ 1,824	$ 1,589	$ 1,300
2012	$ 1,810	$ 1,984	$ 1,791	$ 1,502
2013	$ 1,960	$ 2,052	$ 1,829	$ 1,540
2014	$ 1,952	$ 2,095	$ 2,117	$ 1,829
2015	$ 1,696	$ 1,390	$ 2,113	$ 1,824

Average Ontario Estimated Annual Cost of Energy

Year	Propane (automotive)	Furnace Oil	Electricity TOU	Natural Gas
2006	$ 1,894	$ 1,891	$ 2,348	$ 1,229
2007	$ 1,912	$ 1,984	$ 2,291	$ 967
2008	$ 2,184	$ 2,369	$ 2,231	$ 1,080
2009	$ 2,065	$ 1,831	$ 2,457	$ 932
2010	$ 2,124	$ 2,080	$ 2,609	$ 729
2011	$ 2,425	$ 2,611	$ 2,547	$ 772
2012	$ 2,587	$ 2,717	$ 2,701	$ 724
2013	$ 2,645	$ 2,795	$ 2,839	$ 744
2014	$ 2,724	$ 2,981	$ 3,142	$ 853
2015	$ 2,494	$ 2,415	$ 3,338	$ 844
2015 Cost per GJ	$ 33	$ 29	$ 41	$ 10
2015 NG Savings	$ (417)	$ 1,571	$ 2,494	Elect less Fixed
per GJ	$ (5)	$ 19	$ 30	$ 17



Note: assumed South at 75% and North at 25% weightings.

Sources:

Propane & Heating Oil: The Kent Group. Rates taken for London for the South and Thunder Bay for the North

Natural Gas: Union Gas Limited Rate Schedules

Electricity: OEB time-of-use rates & utility-specific charges. Rates taken for London for the South and Thunder Bay for the North

Fixed Monthly Rate: Hydro One medium density monthly fixed $ 24.07

Average Annual Savngs

Year	Propane	Furnace Oil	Electricity TOU	Electricity TOU excl Fixed Monthy Charges
2006	$ 664	$ 661	$ 1,119	$ 830
2007	$ 945	$ 1,017	$ 1,324	$ 1,035
2008	$ 1,104	$ 1,289	$ 1,151	$ 862
2009	$ 1,133	$ 899	$ 1,525	$ 1,236
2010	$ 1,395	$ 1,351	$ 1,880	$ 1,591
2011	$ 1,654	$ 1,839	$ 1,775	$ 1,486
2012	$ 1,863	$ 1,993	$ 1,976	$ 1,688
2013	$ 1,901	$ 2,051	$ 2,095	$ 1,806
2014	$ 1,871	$ 2,128	$ 2,289	$ 2,000
2015	$ 1,650	$ 1,571	$ 2,494	$ 2,205

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: EB-2016-0004 Schedule 1;
LEI Evidence p. 8 and p. 17

Preamble: LEI was retained by Union to provide a high level overview of the funding mechanisms employed in community expansion programs in the provision of natural gas services. LEI's work was not intended to be exhaustive, or to provide specific and detailed recommendations. Specifically, LEI was tasked with providing answers to the following questions:

a) What funding mechanisms are adopted for community expansion projects, for example from existing and/or new ratepayers?

b) What requirements, if any, are placed on incumbent utility customers to help fund expansion projects for new or other utilities?

c) Please indicate if, in its Scope of work, LEI reviewed the Background to the levels of subsidy the Board set out in E.B.O. 188, as reflected in the thresholds for the Project and Rolling Portfolio.

d) Please provide range of cross subsidization that your research found-- expressed as $/customer or $/customer per year and if possible the relative relationship of this to the customer distribution or total bill.

e) Does LEI have a comment on Union's proposed minimum Project PI of 0.4 (before government grants), or on the Rolling Portfolio?

Response:

The following response was prepared by LEI.

a- b) LEI has interpreted this question to begin at part c). Parts a) and b) as referenced above, appear to be part of the Preamble as they are copied verbatim from LEI's Report at Section 2.2, p. 8.

c) LEI reviewed the Ontario Energy Board's *Guidelines for Assessing and Reporting on Natural Gas System Expansion in Ontario* (EBO 188) as part of its review. LEI did not review in detail the background materials which lead to the establishment of the guideline by the Ontario Energy Board.

d) LEI's scope of work was to provide a "high level overview of the funding mechanisms employed in community expansion programs in the provision of natural gas services." Our review has focused on the approaches adopted and not the specific outcomes for each jurisdiction. A detailed quantitative assessment of the range of cross-subsidization was therefore considered out of scope for the purposes of LEI's assessment.

e) While LEI has reviewed Union's application as part of its review, the scope of work did not provide for a detailed assessment of specific elements, including the minimum profitability index ("PI") of 0.4 and Rolling Project Portfolio proposed by Union in its application to the OEB.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: EB-2016-0004 Schedule 1;
LEI Evidence p. 3

Preamble: Our research indicates that cross-subsidization for rural expansion in each case does not require ratepayers of an existing company to bear the expansion costs of a new entrant or existing competitor. Instead, if charges are passed on to ratepayers they are done so in a uniform method whereby all ratepayers in the utility are charged equally, for example through a mark-up to existing rates applied to *all ratepayers in a province or through the implementation of a broad based tax borne by all taxpayers*.(emphasis added)

a) Please reconcile this statement with Union's evidence that it's existing residential ratepayers should pay up to $24 per year to subsidize Community Expansion (CE) (page 7).

b) Does LEI support such broad-based approach(es) (as opposed to individual utility cross-subsidization)? If so, please explain the basis for this support/preference or non-support/preference. In particular, discuss whether this approach will allow new entrants (such as EPCOR) to operate on the same basis as incumbent utilities.

c) Please discuss the advantages/disadvantages that incumbent utilities have, including, but not limited to, large rate base, Franchise Agreements, ratepayer funded DSM programs and so on.

d) Is there an economic basis/empirical evidence that demonstrates that incumbent utilities provide expansion of distribution service to rural areas at a lower cost than new entrants?

Response:

The following response was prepared by LEI.

a) The reference made by Energy Probe in its question refers to an internal cross subsidy proposed by Union as part of a broader approach to funding its community expansion program. As part of the internal cross subsidy only Union's existing ratepayers would be subsidizing new expansion ratepayers. Ratepayers supplied by other natural gas utilities located throughout the province would not be burdened with these additional costs.

The extract from LEI's report referenced by Energy Probe refers to a scenario where a broad-based approach is adopted to funding community expansion projects. These funding mechanisms, defined as jurisdiction-wide cross-subsidization and taxpayer funding, would

result in a scenario where all ratepayers or taxpayers within a jurisdiction are utilized to recover the costs associated with community expansion programs. This is a different approach to the one suggested by Union in its application to the Ontario Energy Board.

b) The merits of one approach over another are subject to many variables including, but not limited to:

- individual market supply and demand characteristics (such as the number of suppliers, and total demand, availability of substitutes);
- public policy mandates of local, provincial and federal governments;
- size and costs of proposed expansion programs;
- perceived individual and public benefits associated those programs; and
- availability of alternative funding mechanisms.

LEI's mandate was not to recommend one over the other, but rather to describe the attributes of funding mechanisms adopted for community expansion projects in other North American jurisdictions, including any requirements placed on incumbent utility to fund expansion projects for new or other utilities.

c) LEI's scope of work was to provide a "high level overview of the funding mechanisms employed in community expansion programs in the provision of natural gas services" only. An assessment of the advantages and disadvantages one utility may have over another was out of scope for the purposes of LEI's assessment.

d) Exploring relative cost structures of various potential distribution service providers in detail was beyond the scope of LEI's engagement.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: EB-2016-0004 Schedule 1;
LEI Evidence pp. 13-14, Figure 4

Preamble: In selecting among funding mechanisms, consideration should be given to the specific project which funds are to be recovered for. In terms of scale, Union's application for community expansion projects estimates a $135 million cost to provide access to 18,000 new ratepayers, or approximately 1.2% of its existing 1.4 million ratepayers, and 0.5% of the 3.4 million natural gas ratepayers across the province. Under the context of this expansion, LEI has ranked the above funding mechanisms in Figure 4 based on their alignment with the previously described rate design principles. These rankings may change when applied to other expansion projects or other jurisdictions.

a) Please explain the scale used in the Rankings chart i.e. is it 0-4 or other?

b) Please explain why new Community Expansion customers' funding has a lower simplicity/transparency than Funding from existing ratepayers.

c) Please explain why jurisdictional funding has a lower transparency than taxpayer funding.

d) Please provide an overall ranking showing which of the options are preferred based on this assessment.

e) How would this chart change if Union proposed a larger CE program than that proposed in EB-2015-0179?

Response:

The following response was prepared by LEI.

a) The Harvey Balls utilized in Figure 4 communicate LEI's qualitative assessment of each funding mechanism relative to the rate design principles listed in the textbox on page 12 of LEI's report. This assessment specifically considers Union's application for community expansion programs, the total number of new ratepayers to be connected and the cost estimates of the expansion projects.

b) LEI note in our report funding via natural gas expansion ratepayers is "administratively simple to implement and easy to communicate to customers." However a lower ranking was

provided relative to internal utility cross-subsidization, given Union would be required to establish an individual tariff/rate for each new expansion project completed. These tariffs/rates would need to be reflective of the costs associated with the individual projects and the number of customers connected as a result. As this funding mechanism provides for no cross-subsidization and Union's application provided for a total of 29 expansion projects, an additional 29 new tariff/rate classes would be established as a result. Union would be required to forecast the revenues and costs associated with these classes on an ongoing basis as part of its general rate application to the OEB.

Alternatively by adopting an internal-utility cross-subsidy, the costs of these projects can be aggregated and where appropriate spread across all of Union's existing ratepayers. New tariffs would not be required as all ratepayers would incur the same costs, subject to their individual classification. While some assessment is required on the part of Union and the OEB as to the level of cross-subsidization this is considered less burdensome and administratively simpler to employ.

c) The qualitative assessment referred to by Energy Probe covers both the administrative simplicity and the transparency associated with each funding mechanism (and not the transparency only). LEI considered the application of a broad-based tax, whereby the total costs of the expansion programs are distributed among all taxpayers to be an administratively simpler funding mechanism relative to establishing jurisdictional-wide cross subsidies applicable to all ratepayers. Further any tax increases associated with the total costs of an expansion program are easily mapped back, relative to a cross subsidy.

d) LEI's qualitative ranking of alternative funding mechanisms as detailed in Figure 4 accounts for the scale of Union's proposed community expansion projects in relation to the existing ratepayer base and overall costs. This ranking (as it is currently presented) is intended to highlight LEI's assessment of the alternative funding mechanisms applicable to Union application.

e) LEI's assessment of the various funding mechanisms as presented in Figure 4 may change, however would be subject to the alternative community expansion program proposed by Energy Probe, its total costs, the number of new natural gas expansion ratepayers connected and the assessed benefits, both to the individual customers, the utility and the broader public associated with the proposed program. Given these details are unknown, LEI cannot definitively describe how Figure 4 may change, or whether it would change at all.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference**:** EB-2016-0004 Schedule 1;
LEI Evidence pp. 13-14

Preamble: In Ontario funding options available to natural gas distributors are being led by the Ministry of Economic Development, Employment and Infrastructure with support from the Ministry of Energy and the Ministry of Agriculture and Rural Affairs. Announced funding includes, the Natural Gas Access Loan, which will provide up to $200 million over two years to help communities partner with utilities to extend access to natural gas supplies and a $30-million Natural Gas Economic Development Grant to accelerate projects with clear economic development potential. Though these funding mechanisms exist, unlike the NCPC, there is currently no legislation which establishes the OEB as the administrator of them.

Does LEI have an opinion regarding administration of the NGAL and how this fits into the economic evaluation of projects?

Response:

The following response was prepared by LEI.

Examining the details of the administration of the NGAL was beyond the scope of LEI's engagement.

UNION GAS LIMITED

Answer to Interrogatory from
Energy Probe Research Foundation ("Energy Probe")

Reference: EB-2016-0004 Schedule 1;
LEI Evidence p. 13

Preamble: Subject to the overall cost of expanding the network, internal cross-subsidies within a utility's customer base may allow for sufficient recovery of investment. The total cost impact to a customer, or customer group, can be minimized subject to the cost allocation methods adopted.

a) Please explain this statement in more detail, in particular regarding cost allocation.

b) Please provide any analysis that supports "a moderate level of cross-subsidization."

c) Does LEI have a recommendation as to which approaches are appropriate in Ontario?

Response:

The following response was prepared by LEI.

a) Economic principles suggest that efficient prices for each customer or customer group should lie between the incremental cost ("IC") and stand alone cost ("SAC") of supply. The optimum positioning within this range is determined by the characteristics of the market including, but not limited to:

- supply – direct costs of supplying individual customers or customer groups and indirect or shared/common costs associated with supply which cannot be attributed to a single customer/group; and
- demand – total number of customers / customer groups, forecast consumption, and price elasticities for each customer or customer group.

Accounting for these characteristics, where prices violate the IC and SAC tests, the allocation methodology adopted by a utility is considered incorrect and conceptually likely to result in inefficient outcomes.

A utility can utilize these tests to determine the optimal cost allocation methods in order to achieve its desired goals including minimizing the cost impact to a customer or customer group.

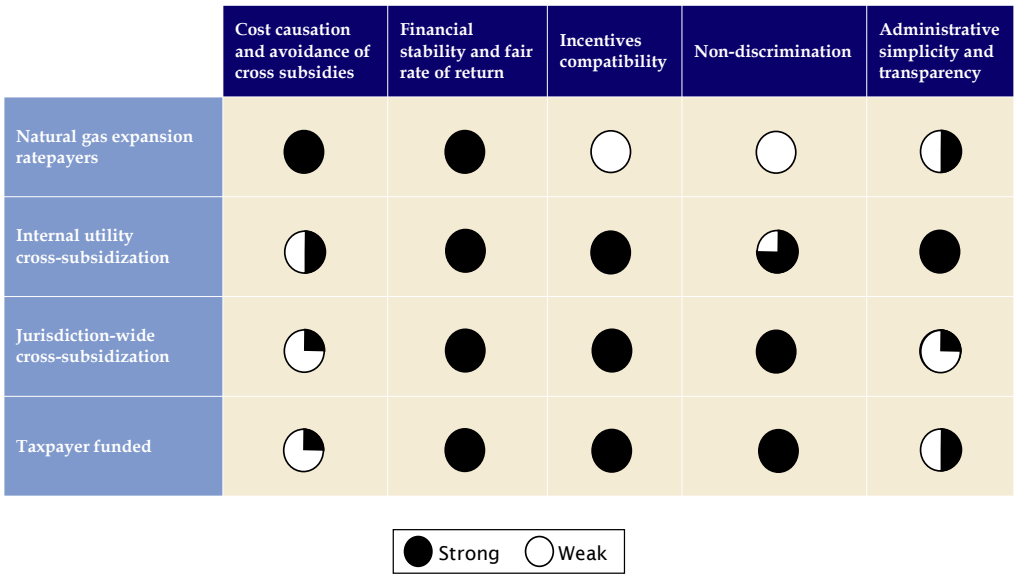
b) LEI is unclear of Energy Probe's reference to a *"a moderate level of cross-subsidization"* on page 34 of our report. In development of its application Union adopted the principle *"moderate cross subsidization from existing customers is acceptable, provided long term rate impacts are reasonable"* as highlighted on page 5 of LEI's report.

Please refer to LEI`s response to part a) for a discussion on cost allocation methodologies and how the overall cost impact may be minimized by a utility.

c) Figure 4 of LEI's report, replicated below, details LEI's qualitative assessment of the alternative funding mechanisms based on:

- Union's proposed community expansion plans, including scale, as documented in its application to the Ontario Energy Board; and
- their alignment with key rate design principles

Figure 1. LEI ranking of funding mechanisms with respect to Union's application



For the purposes of Union's application, LEI considered internal utility cross-subsidization to align with the various rate design principles and therefore would be an appropriate approach to funding the various proposed projects.

These rankings may change when applied to other expansion projects within Ontario, depending on the total size/scale (customers connected, total cost of investment, assessed benefits) of individual programs or public policy mandates within Ontario.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 5-22

Does Union agree that existing gas consumers should be required to subsidize expansions of Ontario's natural gas distribution system only if all of the following criteria are met:

a) The expansion will lead to a net reduction in Ontario's greenhouse gas emissions [e.g., this could occur if the new customers' previous energy source (e.g., heating oil) had higher greenhouse gas emissions];

b) Expanding the gas system is the most cost-effective, feasible option to achieve the greenhouse gas emission reductions [i.e., do not expand the gas distribution system using existing customer subsidies if the emission reductions could be achieved at a lower cost by energy efficiency or renewable energy investments (e.g., home energy retrofits, heat pumps)]; and

c) The subsidy is necessary to make the project happen [e.g., do not require existing customers to subsidize an expansion of the gas system if the cost could be recovered from the new customers via a surcharge on their gas rates]?

If "no", please fully justify your response. Please specifically address each of the three criteria in your response. Note that the above three criteria would not be to the exclusion of other criteria required for community expansion.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 5-22

Please make best efforts to provide an estimate of the greenhouse gas emissions that would be produced by the consumption of natural gas by all customers estimated to convert to natural gas in the 33 communities currently under consideration by Union for community expansion, cumulatively from the present until: (a) 2020, (b) 2030, and (c) 2050. Assume that natural gas is expanded to all of the communities under consideration. Please make and state all necessary assumptions on a best efforts basis. Where possible, please use the same assumptions used in the profitability analysis and the stage 2 analysis contained in the Union evidence.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 5-22 & EB-2015-0179, Exhibit A, Tab 1, p. 37

Section 3.1 (d) of the Appendix B to E.B.O. 188 refers to "estimates of the NPV and the benefit-cost ratio for the Investment Portfolio using a Societal Cost Test ("SCT"), defined in the Report of the Board, E.B.O. 169 III, as an evaluation of the costs and/or benefits accruing to society as a whole, due to an activity. The SCT analysis should be consistent with that used for the utilities' DSM programs. The benefit-cost ratio shall be presented with and without monetized externalities."

Please make best efforts to provide a benefit-cost ratio for the expansion of gas to the 33 communities currently under consideration by Union for community expansion. Please use a Societal Cost Test ("SCT"), defined in the Report of the Board, E.B.O. 169 III, as an evaluation of the costs and/or benefits accruing to society as a whole, due to an activity. Please use an SCT analysis that is consistent with the test used by Union in relation to DSM. Please account for the anticipated impact of cap and trade. Please present the ratio with and without monetized externalities. Please make and state all necessary assumptions on a best efforts basis. Please provide a spreadsheet of key assumptions and the underlying calculations.

Response:

Union understands the Stage 2 analysis and Societal Cost Test are similar. Please see the response at Exhibit S15.Union.Energy Probe.8 for Stage 2 calculations.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 35-38

Please describe the contingency planning that has been undertaken by Union to assess the possibility that substantial reductions in natural gas consumption (e.g. 40%) will be required in Ontario in the medium term (e.g. by 2030).

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 35-38

a) Please provide a list of all documents that have been prepared by Union to estimate the overall reductions in natural gas consumption that may be needed to meet Ontario's GHG emission reduction targets.

b) Please provide a list of all documents possessed by Union prepared by third parties to estimate the overall reductions in natural gas consumption that may be needed to meet Ontario's GHG emission reduction targets.

c) Please provide a copy of all documents listed in (a) and (b) above. If a document is not provided, please provide a justification. A document need not be provided if it simply repeats the estimates and analysis contained in a document already provided.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 35-38

An expert report by Chris Neme filed in EB-2015-0029 / EB-2015-0049 states as follows at pages 15 to 16:

In 2007, the Ontario government adopted the following set of greenhouse gas emission reductions targets:

- 6% reduction below 1990 levels by 2014;
- 15% reduction below 1990 levels by 2020; and
- 80% reduction below 1990 levels by 2050.

In subsequent years, additional climate policies, including the "conservation first" policy, were adopted. More recently additional significant policy commitments have been made. For example, the province recently joined Quebec, British Columbia, California, and other sub-national jurisdictions in re-affirming a commitment to at least an 80% carbon emission reduction by 2050. In the Spring of 2015 it also established a new commitment to a 37% carbon emission reduction in the province by 2030 and committed to imposing a carbon "cap-and-trade" policy to meet those requirements.

These policy decisions, including the most recent commitments made just several months ago, raise questions about whether the OEB's 2014 gas DSM budget guidelines are outdated. Though the province was expected to meet its 2014 target, it is currently expected to fall about 30% (about 19 megatonnes) short of the emission reductions required to meet its 2020 target. Absent new policies or programs (i.e. with the current Climate Change Action Plan as the baseline), the province is currently projected to see its emissions gradually increase back to 1990 levels. Thus, the province will need much greater reductions – on the order of 67 megatonnes – to meet its new 2030 target. That translates to about 4.5 megatonnes reduction per year, which is on the order of 2.5% annually, for each of the next 15 years. Natural gas accounts for approximately 30% of all greenhouse gas emissions in the province, so some portion of the additional future emission reductions will almost certainly have to come from the natural gas sector.

a) Does Union agree that "some portion of the additional future emission reductions will almost certainly have to come from the natural gas sector"? If not, please explain why not.

b) Does Union agree that this will require overall declines in natural gas consumption in Ontario?

c) Please indicate if Union disagrees with any sentences in the above passage and why.

d) Please file a copy of the above-referenced expert report.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 35-38

An expert report by Paul Chernick filed in EB-2015-0029 / EB-2015-0049 states as follows at pages 22 to 23:

The Ontario goals include reduction of jurisdictional emissions by about 26% from 2013 to 2030, or about five times the reductions expected from the [U.S.] Clean Power Plan. Ontario's goals are more aggressive than those of the Clean Power Plan. That difference may increase the marginal cost of reaching those goals compared to that of the Clean Power Plan. While the Clean Power Plan relies heavily on renewables, efficiency, and gas backing out coal-fired generation, Ontario has already eliminated coal on its electric system. Additional reductions in Ontario carbon emissions will require such further measures as the following:

- backing down gas generation (which requires twice the load reduction per tonne avoided, compared to backing down coal),
- reducing usage of natural gas in buildings,…

a) Does Union agree with the above? If not, please explain.

b) Does Union agree that this will require overall declines in natural gas consumption in Ontario?

c) Please indicate if Union disagrees with any sentences in the above passage and why.

d) Please file a copy of the above-referenced expert report.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 35-38

Please provide and file:

a) Union's most recent DSM Annual Report

b) A copy of the most recent Ontario Climate Change Update published by the Minister of the Environment and Climate Change;

c) A copy of the most recent Climate Change Report published by the Environmental Commissioner of Ontario; and

d) A copy of Ontario's Climate Change Strategy.

Response:

a-d) Union is not providing the requested documents. Union is not the Applicant in this proceeding and the documents requested are available on the public record.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 5-22 & EB-2015-0179, Exhibit A, Tab 1, p. 37

a) Please provide a copy of the natural gas price forecast figures used to calculate the net present value ("NPV") of anticipated customer fuel savings.

b) Please provide a copy of the natural gas price forecast figures used to calculate the Total Resource Cost in Union's EB-2015-0029/EB-2015-0049.

c) If the figures in response to (a) are lower than the figures in response to (b), please (i) recalculate NPV figures on page 33 of Union's evidence and (ii) recalculate the benefit-cost ratio calculated in response to interrogatory # 3 above based on the natural gas price forecast figures in (b) above.

Response:

a) Please see the response at Exhibit S15.Union.Energy Probe.15 for price forecasts. Union did not use future price forecasts to calculate the NPV of anticipated fuel savings, current prices were used.

b) This question is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The scope of the generic proceeding does not include the requested information.

c) Please see the response to b) above.

UNION GAS LIMITED

Answer to Interrogatory from
Environmental Defence

Reference: Exhibit A, Tab 1, pp. 5-22 & EB-2015-0179, Exhibit A, Tab 1, p. 37

a) Has Union compared the stage 2 benefits that would flow from a dollar of spending on the community expansion projects it is considering and:

    a. The stage 2 benefits that would flow from a dollar of DSM spending; and
    b. The stage 2 benefits that would flow from a dollar of spending on renewable energy spending, such as investment in heat pumps?

If yes, please provide the comparison.

b) Has Union compared the stage 3 benefits that would flow from a dollar of spending on the community expansion projects it is considering and:

    a. The stage 3 benefits that would flow from a dollar of DSM spending; and
    b. The stage 3 benefits that would flow from a dollar of spending on renewable energy spending, such as investment in heat pumps?

If yes, please provide the comparison.

Response:

a-b) Union has not made these comparisons. Such comparisons would be onerous and not relevant to a generic proceeding. Union's proposal is in response to the Governments desire to support the expansion of natural gas to additional communities and in response to customer requests.

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence, Exhibit A, Tab 1, Page 9 of 38

Preamble: In its discussion of upstream reinforcement of the distribution system, Union Gas Limited ("Union") refers to "a project to service Port Elgin, Southampton and Wiarton in 1997", and in the accompanying footnote cites Ontario Energy Board ("OEB") Decision E.B.L.O. 259, 1997.

Paragraph 4.3.1 of E.B.L.O. 259 indicates that approximately $6 million related to reinforcement costs would be attributed to the project noted above.

a) Provide a detailed explanation of the calculations on which the $6 million amount was based, including without limitation all inputs and assumptions, and the sources of and rationale behind each of them.

b) Explain whether and how the $6 million cost was recovered by Union, when it was recovered and from which parties.

c) Identify all instances in which similar costs have been charged to customers or municipalities since 1997.

Response:

a) Please see Attachment 1, Union's Interrogatory response to Board Staff in E.B.L.O. 259, which provides the basis for the calculation. Union is unable to find any additional records related to the detailed calculations.

b) The project had gross capital costs of $22.1 million and a PI of 0.8 after customer up-front Aid of Construction of $3.8 million was included. With a PI of 0.8, $18.3 million was included in rate base[1]. The cost of Advancement was not separated from the capital costs of the project in determining or administering the amounts to be recovered in rates, however, so Union is unable to provide precisely how much of the $6 million in Advancement costs was recovered from which parties. The expansion area customers funded the amount required for the project to achieve a PI of 0.8, and other new ratepayers funded the remainder.

c) Union is not aware of any other projects where Advancement Charges were required. Union notes that other than the Red Lake Project, there have been very few Community Expansion

[1] All figures from Decision with Reasons, E.B.L.O.259, E.B.C. 256-265, E.B.A. 772-781, Section 3.3.36 (p. 30)

Projects since the Wingham area project was completed. These projects are listed at Exhibit S15.Union.BOMA.77.

UNION GAS LIMITED

PORT ELGIN, SOUTHAMPTON, WIARTON AREA PROJECT

Response to Interrogatory
from
Ontario Energy Board Staff

Interrogatory #31

Re: System Planning, Engineering Design

Ref. p.8, no.35; schedule 18
In the prefiled evidence, Union indicated that the Owen Sound Line will require reinforcement by 1999 instead of 2007 as a result of this project.

a. Please provide detailed calculations supporting the carrying costs related to this line (p.19).
b. Please provide a written explanation of the calculations.
c. Has the cost that an earlier reinforcement will be required been included in the economic feasibility calculation for the project? Except for interest costs, what other costs related to the Owen Sound reinforcement have been included as part of the proposed project costs.
d. Please provide a forecast of the capital costs related to the Owen Sound reinforcement line. What is the planned increase in capacity resulting from the reinforcement? Please explain and provide the assumptions used in calculating the capacity.

Response:

a. Please see the attached chart for the detailed calculation supporting the carrying costs of the Owen Sound Line.

b. The column labels referred to in the following explanation refer to the attached chart provided as the response to part (a) of this interrogatory. In order to determine the appropriate carrying costs, Union determined when reinforcement costs are necessary with (Column B) and without (Column C) construction of the proposed Port Elgin/Southampton/Wiarton project. Column D was then calculated to represent the "basis" for the carrying cost calculation. Column D represents the cumulative reinforcement spending with construction of the Port Elgin/Southampton/Wiarton project less the cumulative reinforcement spending required without construction of the Port Elgin/Southampton/Wiarton project.

c. Yes, the cost that an earlier reinforcement will be required has been included in the economic feasibility calculation for the project. This is reflected in the carrying costs. It is important to note that the Port Elgin/Southampton/Wiarton project causes only an advancement in the Owen Sound Line reinforcement construction. This Owen Sound Line construction would occur without construction of the Port Elgin/Southampton/Wiarton project, just later in time. Because of this fact, coupled with the fact that the Owen Sound Line reinforcement itself will be economically justified separately on its own merits, it would be inappropriate to include any further costs of the Owen Sound Line in the project at hand.

a)

UNION GAS LIMITED

PORT ELGIN, SOUTHAMPTON, WIARTON AREA PROJECT

Response to Interrogatory
from
Ontario Energy Board Staff

Response: (Cont'd)

d. The following table provides a forecast of the capital costs and reinforcement capacities related to the Owen Sound reinforcement:

Year	Capital Costs ($000's)		Reinforcement Capacity With Project ($10^3m^3/d$)
	Without Project	With Project	
1997	0	0	
1998	0	0	
1999	0	2,040	120
2000	0	0	
2001	0	0	
2002	0	1,256	36
2003	0	1,105	30
2004	0	1,105	32
2005	0	1,105	32
2006	0	1,105	32
2007	2,040	0	
2008	0	0	
2009	1,256	0	
2010	0	0	
2011	487	0	
2012	1,235	0	
2013	929	0	
2014	1,105	0	
2015	1,105	0	
Total	**$8,157**	**$7,716**	**282**

The planned increase in capacities is based on the increase in peak day demand on the Owen Sound Line, including the Port Elgin, Southampton, Wiarton Area Project, from the year prior to the reinforcement year to the year prior to the next required reinforcement. It is assumed that the Owen Sound Line is at capacity the year before the reinforcement is required.

E.B.A.772-781/E.B.C.256-265
E.B.L.O.259
Interrogatory #31
Board Staff
Attachment
(1 Page)

PORT ELGIN, SOUTHAMPTON, WIARTON AREA PROJECT
CARRYING COSTS FOR OWEN SOUND LINE REINFORCEMENT
(IN $000s)

Timing of Spending	Amount to be Spent With/Without Bruce County Expansions		Basis	Carrying Cost Rate	Total Carrying Cost
	With	Without			
(a)	(b)	(c)	(d)	(e)	(f)
1997	$0	$0	$0	9.36%	$0
1998	$0	$0	$0	9.86%	$0
1999	$2,040	$0	$2,040	9.61%	$196
2000	$0	$0	$2,040	9.61%	$196
2001	$0	$0	$2,040	9.61%	$196
2002	$1,256	$0	$3,296	9.61%	$317
2003	$1,105	$0	$4,401	9.61%	$423
2004	$1,105	$0	$5,506	9.61%	$529
2005	$1,105	$0	$6,611	9.61%	$635
2006	$1,105	$0	$7,716	9.61%	$742
2007	$0	$2,040	$5,676	9.61%	$545
2008	$0	$0	$5,676	9.61%	$545
2009	$0	$1,256	$4,420	9.61%	$425
2010	$0	$0	$4,420	9.61%	$425
2011	$0	$487	$3,933	9.61%	$378
2012	$0	$1,235	$2,698	9.61%	$259
2013	$0	$929	$1,769	9.61%	$170
2014	$0	$1,105	$664	9.61%	$64
2015	$0	$664	$0	9.61%	$0
Total	$7,716	$7,716			$6,045

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence, Schedule 1, Report prepared for Union by London Economics International LLC titled "Economically efficient approaches to community expansion – expert assistance in the matter of Union Gas Limited's community expansion application (EB-2015-0179)" dated March 18, 2016

a) Please confirm the names of the authors of the report.

b) Please provide a detailed curriculum vitae for each individual which includes all publications, reports and previous testimony.

Response:

The following response was prepared by LEI.

a) The following LEI staff contributed to authorship of the report:

- AJ Goulding, President;
- Lance Brooks, Senior Consultant;
- Juliana Bruno, Research Associate;
- Jarome Leslie, Research Associate; and
- Azraa Zoomerwalla, Research Associate.

b) Please refer to Section 12 of this report for detailed curriculum vitae for all authors of LEI's report.

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence, Schedule 1, Report prepared for Union by London Economics International LLC titled "Economically efficient approaches to community expansion – expert assistance in the matter of Union Gas Limited's community expansion application (EB-2015-0179)" dated March 18, 2016

Preamble: In Figure 4, at page 14, the authors evaluate alternative funding mechanisms according to several criteria. The funding mechanism entitled "Internal utility cross-subsidization" is given the strongest possible rating with respect to "Administrative simplicity and transparency". In comparison, "Jurisdiction-wide cross-subsidization" is given a weak evaluation in this same category.

a) Identify the administrative procedures and activities that are being assumed in these evaluations.

b) Identify and provide an explanation of your assumptions about which entities would be conducting each administrative task under each of these two funding mechanisms.

c) Provide a detailed explanation of the word "transparency" as used by LEI in the figure referenced above.

Response:

The following response was prepared by LEI.

a) The Harvey Balls utilized in Figure 4 communicate LEI's qualitative assessment of each funding mechanism relative to the rate design principles listed in the textbox on page 12 of LEI's report. Importantly this assessment specifically considers the scale of Union's application for community expansion programs, the total number of new ratepayers to be connected and the cost estimates of the expansion projects. In this context LEI considered internal utility cross-subsidization to be an administratively simpler and more transparent approach to funding the community expansion projects when compared to jurisdiction-wide cross-subsidization.

The introduction of more than one utility associated with a cross subsidy, for the scale of program proposed by Union, was seen to create unnecessary administrate burden as part of the general rate setting process. This burden may manifest in the form of additional accounting costs, billing costs and leading to time spent proving that rate design is fair to all

customers.[1]

Under this scenario, the rate impacts of all natural gas suppliers would need to be evaluated by the Ontario Energy Board, with a focus on the total costs recovered and by whom. As customers or customer groups value access to supply of natural gas differently these impacts and the total costs recovered from each will likely differ. All natural gas utilities may therefore be required to submit amended rate applications showing the impact of the jurisdictional wide cross subsidy on their own ratepayers.

Further, in addition to directly violating the cost causation principle LEI considered a jurisdiction-wide cross-subsidy lacked transparency relative to an internal cross subsidy. Specifically, in this instance non-Union ratepayers, whom may not directly benefit from the community expansion program, are relied upon to recover the costs associated with the community expansion program.

b) The roles and responsibilities would largely not change between the two funding mechanisms. For example the Ontario Energy Board would still be required to approve rate applications submitted by each utility. Utilities would continue to be responsible for compiling their assessment of rates and the cost impacts of associated community expansion programs.

The Ontario Energy Board's tasks may expand under a jurisdictional wide approach as it engages all natural gas utilities each time a community expansion project is to be considered. This level of complexity regarding the assessment, as well as the potentially opaque outcomes surrounding the total cost recovery for the expansion projects, led to a lower ranking relative to adopting an internal utility cross subsidization approach.

c) Rates should be straightforward for customers, service providers and regulators to understand and apply. The rate setting process should provide stakeholders with the confidence that it is conducted in an unbiased fashion. Customers should be able to calculate their monthly bills themselves, and be able understand why the rate is calculated in the prescribed fashion.

[1] An additional step whereby funds are transferred between utilities will also be required in the settlement process where a cross-subsidy between utilities is introduced.

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence, Exhibit A, Tab 1, Page 25 of 38

Preamble: In its evidence, Union states that it "does not support a need for changes to Municipal Franchise Agreements or Certificates of Public Convenience and Necessity."

a) Provide a list of all new Franchise Agreements that Union has entered into with a municipality since 1997, and include the counterparty to each agreement, the date of the agreement and if the Franchise Agreement has been approved by the OEB, the OEB order number approving the Franchise Agreement and, where applicable, the Certificate of Public Convenience and Necessity ("CPCN").

b) Provide a list of all Franchise Agreements to which Union is or has been a party in respect of which Union has not constructed any facilities connecting new customers within the franchise area to its system, and include the counterparty to each agreement, the date of the agreement and the OEB order number approving the Franchise Agreement and where applicable, the CPCN.

c) Provide a list of all Franchise Agreements to which Union is or has been a party that have been renewed at or after the completion of the initial term, and include the counterparty to the agreement, the date of the agreement and the OEB order number approving the Franchise Agreement and, where applicable, the CPCN.

d) Identify the Franchise Agreements listed in the response to c) above with respect to which no facilities had been constructed connecting new customers within the franchise area to Union's system at the time of the expiry of the initial term of the Franchise.

e) Provide a list of all Franchise Agreements to which Union is or has been a party where the counterparty municipality has been granted the right to terminate the Franchise Agreement if construction of facilities to connect customers within the Franchise area to Union's system has not commenced or been completed within a certain period of time.

f) For each Franchise Agreement identified in the response to e) above, provide a copy of the relevant termination clause(s).

Response:

a)-f) This question is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The scope of the generic proceeding does not include the requested information.

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence from EB-2015-0179 Exhibit A, Tab 1, Pages 32-33

If the Board does not approve the proposed deferral account to capture any deficiency between actual revenue received and the allowed revenue requirements, will Union continue to pursue any of the Community Expansion projects? If so, which projects will Union pursue and why?

Response:

If the deferral account is not approved, Union would have to reassess its proposal.

UNION GAS LIMITED

Answer to Interrogatory from
EPCOR Utilities Inc. ("EPCOR")

Reference: Union Evidence, Exhibit A, Tab 1, Pages 10-11

Preamble: Union indicates that the Advancement Charge for reinforcement projects would only apply in situations where a new load is greater than 200 m^3/h, as it is material enough to impact future reinforcement timing.

a) What is the design load per average residential customer used by Union for the purposes of its evidence, and how many residential customers would the stated load of 200 m^3/h represent?

b) Confirm that under Union's proposal, the 200 m^3/h criterion could result in customer additions totaling less than 200 m^3/h being treated differently from customer additions totalling more than 200 m^3/h in terms of the economics of attaching the loads. If the requested confirmation cannot be provided, provide a detailed explanation of Union's position and the rationale behind it.

c) Explain whether and how Union's proposal takes into account the economic implications of the periodic reinforcement costs required to accommodate growth for loads under 200 m^3/h.

Response:

a) Union uses a diversified design load factor ranging from 0.98 to 1.28 m^3 /hour depending on the system being reviewed. The factor is based on actual experience with an adjustment to reflect design degree days. The average is 1.10 m^3 per hour for residential customers. As a rule of thumb, the 200 m^3/hour threshold would equate to a Community Expansion Project with a customer forecast of 180 residential customers.

b) Confirmed. Union's primary rationale for setting a lower limit is to avoid the need for review of upstream system reinforcement needs for every single customer request to attach to Union's system. Union attaches approximately 20,000 customers per year and the effort required to undertake this type of review for each connection would be very resource intensive.

c) Union's proposal takes into account periodic planned reinforcement to accommodate growth of loads of less than 200 m^3/hour in several ways. First, the capacity available through previous reinforcement is available to any customer or project on a first come, first served basis without reinforcement cost attribution to a specific Project, in cases where the Project would not result in a need to advance future reinforcement to a period within 3 years following the year that the Project enters service. Second, in cases where an Advancement

Charge is necessary, only the cost of the minimum level of reinforcement necessary to service the load would be considered in establishing the value of the Advancement Charge, as opposed to the full cost of the next stage of reinforcement.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 11

Preamble: "*Union has not historically included the cost premium for a preferred system design in the economic 20 analysis, and proposes that this practice be confirmed*."

Historically, has Union identified specifically the enhanced design features and justified the reasons for these enhancements? If not, why not?

Response:

Yes.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 11

Preamble: "*Union has not historically included the cost premium for a preferred system design in the economic 20 analysis, and proposes that this practice be confirmed*."

In the case of municipally ordered relocation, is Union's practice to cost the minimum design for the purpose allocating costs to the municipality then absorbing the cost premium of enhancements in utility budgets? If not, please clarify.

Response:

Yes. The portion of costs allocated to the municipality is outlined in the Franchise Agreement, and the basis for any costs allocated to the municipality is the minimum design (i.e. "like for like" replacement).

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 11

Preamble: "*Union has not historically included the cost premium for a preferred system design in the economic 20 analysis, and proposes that this practice be confirmed*."

Enbridge has identified in its filed evidence (Filed 2016-03-21, Page 17, paragraph 50):

*"The Company (**Enbridge)** has identified a subset of communities where a preliminary analysis indicates that gas service could be more economically provided through the utilization of LNG as an alternative to transmission mains as a means of transporting natural gas to these locations."* **(bold added for clarity).**

a) Under the practice that Union is asking to be confirmed, is it Union's position that approaches such as LNG as alternative to transmission mains need not be identified as a minimum design if more economic?

b) Please explain Union's position on the need to investigate the most economic delivery systems and specifically identify and justify enhancements.

Response:

a) No, LNG or CNG can be considered as alternatives provided that both the capital costs and any incremental gas supply costs are both considered in the evaluation of their economic feasibility relative to other options.

b) The most economic proven delivery systems that can deliver expected levels of reliability should be investigated, and a rationale provided for the selected design in the Leave-to-Construct application for a Project.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 14

Preamble: *"After the initial 10 year period, it is likely that additional customers will attach to a new system when their heating system requires replacement. Applying a general rule of thumb that typical heating equipment has a life of up to 25 years would result in 4% of remaining potential customers converting each year from year 11 to 25.*

Is the underlying assumption of this approach that all of the customers whose heating equipment fails will convert to gas if it is available in the community?

a) If yes, please provide the evidence that supports this assumption.
b) If not, please explain the rationale.

Response:

a-b**)** Please see the response at Exhibit S15.Union.BOMA.70 a).

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 19

Preamble: *"It is Union's position that upstream transmission[10] and storage costs should continue to be excluded from the economic assessment of a distribution project. Only incremental directly attributable costs are appropriate to include as compared against incremental revenues."*

Are storage related revenues included in the DCF analysis?

a) If so, could Union's Excess over Average storage allocation methodology combined with unit storage costs not provide an estimate of the impact? If not, why not?

Response:

a) Storage and transmission revenues are not included in the DCF analysis. The incremental cost in the DCF analysis is the incremental distribution costs for the project. The revenue is the distribution portion of the rate. Storage and transmission facilities are typically constructed prior to distribution facilities and the approach of segmenting the revenue stream better matches the costs and timing of the revenues.

Please also refer to the Board comments on storage and transmission in the E.B.O. 188 decision, which is below:

"3.3.4 The Board concludes that, although theoretically correct, the inclusion of forecast incremental costs for the transportation and storage of gas will add unnecessary complexity to the DCF calculations for distribution system expansion projects."[1]

[1] E.B.O. 188 Decision, January 30, 1998.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 19

Preamble: *"It is Union's position that upstream transmission[10] and storage costs should continue to be excluded from the economic assessment of a distribution project. Only incremental directly attributable costs are appropriate to include as compared against incremental revenues."*

Are revenues associated with the embedded cost of the Dawn-Parkway system included in the rates used to determine the projected revenues.

a) If so, could that portion of revenue stream be estimated and extracted to ensure an appropriate matching of incremental revenues and costs? If not, why not?

Response:

a) Please see the response at Exhibit S15.Union.FRPO.5.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 19

Preamble: *"It is Union's position that upstream transmission[10] and storage costs should continue to be excluded from the economic assessment of a distribution project. Only incremental directly attributable costs are appropriate to include as compared against incremental revenues."*

How would Union propose that the Board direct a third party distributor to economically evaluate the costs for storage and transmission services to their proposed distribution franchise?

a) Please provide Union's views on the Board's need to create a level playing field in the treatment of these costs for incumbent and new utilities.

Response:

a) As part of the Board's determination of just and reasonable rates the Board will evaluate all costs, including the costs for storage and transmission services. This determination is consistent for incumbent and new utilities.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 22

Preamble: *"Union supports the use of surcharges as proposed in EB-2015-0179, Exhibit A, Tab 1 12 (Updated), Section 4.1 (p. 15), and Section 4.2 (p. 23)."*

Please provide Union's views on the merits of a surcharge being in place for forty years or until the project reaches a profitable position as proposed by Enbridge in its evidence (Filed 2016-03-21, page 21).

Response:

Union does not support extending this period "until a project becomes feasible".

A 40-year surcharge period would in essence amount to higher rates for some communities than other neighbouring communities (who currently have natural gas service) for the long term. The difference in rates would remain a barrier to growth for the communities affected for a significantly extended time period, albeit this would be less of a barrier than the alternative of not having access to natural gas is today.

This type of approach would represent a departure from Union's preference to continue to apply postage stamp ratemaking principles wherever possible. Given Union's proposals which include a deferral credit to ratepayers for the amount of surcharge revenue collected[1], the tracking and reporting period could be extended dramatically with significant extension of the Surcharge period.

Union would also be concerned that an extended surcharge period has not been tested with consumers in the potential expansion communities and as such, its impact on customer forecasts is unknown. However, surveys undertaken to support the expected attachment forecasts at a Project level would allow for the impact on feasibility of Projects with longer surcharge periods to be determined before a decision to develop an application occurs.

Union has submitted that there are some benefits to existing ratepayers due to economies of scale at Exhibit S15.Union.LPMA.1 and Union estimates these impacts at Exhibit S15.Union.BOMA.59 c). Union believes these economies of scale could be recognized by allowing for reduced Project and Portfolio PI's.

[1] Community Expansion Contribution Deferral Account as proposed in EB-2015-0179 Exhibit A, Tab 1, Section 4.6 (p. 34)

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Exhibit A, Tab 1, p. 31 and
EB-2015-0179 Transcript Pre-hearing Conference 20151218, p. 44, lines

Preamble: "*The challenge, then, is one of either making projects less costly so that they can meet required economic feasibility criteria, or adjusting the feasibility criteria. Union does not believe that there are cost reduction opportunities that would reduce the capital costs of expansion significantly enough to overcome the financial viability barrier that currently exists. For this reason, Union has proposed adjusting the criteria. Union submits that an effort by the Board to encourage RFI or RFP processes and competition from multiple parties to service any specific area will not be helpful if projects proposed by new entrants still need to meet the current E.B.O. 188 criteria."*

Please provide the major drivers of the significant cost reduction in Union's estimates to feed South Bruce.

a) Please quantify the specific driver and source of the change (e.g., technological, new routing, enhanced project knowledge, etc.).

Response:

a) Union's approach to the assessment of 103 identified potential projects was consistent with Union's original estimate for the Southern Bruce project. It was based on utilizing maps to determine appropriate running lines and a high level understanding of load requirements. In late 2015, Union mobilized field resources to complete a construction level estimate of the project area for the South Bruce project. Union utilized enhanced knowledge of the area to provide an estimate that is more reflective of the cost to construct the project.

   Particular areas where Union's construction estimate was reduced from the original include:

   - Contingencies – reduced from 25% to 10%.
   - Running line selection and construction techniques – clearly quantified bore vs. trench requirements.
   - Pressure regulating station costs – more detailed designs were completed resulting in cost reduction.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Schedule 1, Section 2.2 and
EB-2015-0156 "Jurisdictional Review of Natural Gas Distribution System Expansion," KPMG Report prepared for the Ontario Energy Board, March 31, 2015"

Preamble: London Economics states: "To provide answers to Union's questions, LEI has reviewed the alternative funding mechanisms adopted across various North American natural gas (New York, North Carolina and Nebraska), electricity (Ontario and Alberta) and telecommunication (USA and Canada) markets.

How were the North American natural gas jurisdictions chosen?

Response:

The following response was prepared by LEI.

Natural gas jurisdictions were identified following an initial high-level desktop review. LEI focused its efforts based on its own industry expertise and knowledge of such programs. To complete the initial review LEI sought to identify if an explicit community expansion program existed in the region, and if so, what funding mechanisms were adopted under the program. LEI relied on publicly available information including regulator, legislature and utility websites (including applications, decisions/orders, legislation, codes and guidelines), reports and presentations.

Please see Section 6 of LEI's report for a detailed list of the works consulted.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Schedule 1, Section 2.2 and
EB-2015-0156 "Jurisdictional Review of Natural Gas Distribution System Expansion," KPMG Report prepared for the Ontario Energy Board, March 31, 2015"

Preamble: London Economics states: "To provide answers to Union's questions, LEI has reviewed the alternative funding mechanisms adopted across various North American natural gas (New York, North Carolina and Nebraska), electricity (Ontario and Alberta) and telecommunication (USA and Canada) markets.

What jurisdictions were considered and subsequently eliminated and why?

Response:

The following response was prepared by LEI.

No North American jurisdictions were considered and rejected, and LEI focused only on North America given the perceived degree of relevance to Ontario.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Schedule 1, Section 2.2 and
EB-2015-0156 "Jurisdictional Review of Natural Gas Distribution System Expansion," KPMG Report prepared for the Ontario Energy Board, March 31, 2015"

Preamble: London Economics states: "To provide answers to Union's questions, LEI has reviewed the alternative funding mechanisms adopted across various North American natural gas (New York, North Carolina and Nebraska), electricity (Ontario and Alberta) and telecommunication (USA and Canada) markets.

What is London Economics view on the merits of the approach used in Maine and Alaska as described by KPMG in the above referenced report to the Board.

Response:

The following response was prepared by LEI.

A detailed review of the findings of KPMG's report titled "Jurisdictional Review of Natural Gas Distribution System Expansion" was considered outside the scope of work for the purposes LEI's review. LEI has consulted the report for the purposes of its assessment, however did not rely on the contents of the KPMG report, nor has LEI verified the accuracy of the report's content.

LEI note KPMG specifies alternative government funding approaches adopted by each jurisdiction (Maine and Alaska), specifically:

- Maine provide for state bond financing, via the Finance Authority of Maine, for gas distribution investments where an applicant contributes 25% of the expected total project costs; and
- Alaska provide for various government loans and grants under its 2013 State Financing Plan, including US $150 million for expanding the local distribution system.[1]

Both funding mechanisms are mandated under the legislative framework of each jurisdiction. The use of government funding as the primary source for expansion of the natural gas network

[1] KPMG. Jurisdictional Review of Natural Gas Distribution System Expansions. March 31, 2015.

is essentially a form of taxpayer financing, as state bond issuance reduces the state's ability to borrow for other budget purposes. As part of our report we note "a challenge in implementing a tax is the ability to balance both the social and economic objectives, while minimizing the negative welfare effects associated with an increase in taxpayer costs." This statement applies to state-backed bond initiatives as well. Such an approach may "minimizes the distortionary effects on any one consumer, while mitigating the problem of free-riders, as almost all individuals are contributing toward the production of the public good."

The approaches adopted in Maine and Alaska appears similar to North Carolina's adopted funding mechanisms, as well as Ontario's proposed Natural Gas Access Loan and Natural Gas Economic Development Grant.[2]

[2] LEI note the OEB is not currently mandated to administer these programs on behalf of the provincial government.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, p. 7, lines 18-19.

Union states that "*if a Portfolio PI remains above 1.0, the new customers will actually be subsidizing existing customers over the longer term*".

Would this result still obtain once all rates are rebased? Please explain (providing a numerical example).

Response:

A PI of 1.0 or greater indicates a net present value revenue sufficiency over the timeframe of the project. It does not necessarily indicate a revenue sufficiency in each year of the project.

Upon rebasing, the costs and billing units of projects completed during the Incentive Regulation ("IR") period, which were not subject to capital pass-through, will be added to the existing costs and billing units of a rate class. If the portfolio of projects completed during the IR period has a revenue sufficiency in the year of rebasing, the unit rate of the rate class will decrease. The unit rate decrease is a result of the subsidization of existing customers by new customers. Union has prepared an example for illustration purposes only that demonstrates how a project portfolio with a revenue sufficiency will subsidize existing customers upon rebasing. See Table 1 for a numerical example.

Table 1
Illustration of a Project Portfolio > 1.0 Rolled into an Existing Rate

Line No.	Particulars	Existing Unit Rate	Project Portfolio >1.0	Revised Unit Rate
		(a)	(b)	(c) = (a)+(b)
1	Costs ($)	2,000	1,000	3,000
2	Billing Units	4,000	3,000	7,000
3	Project Portfolio Revenue Sufficiency ($) (line 2 * line 4)a) - line 1)		500	
4	Unit Rate ($) (line 1 / line 2)	0.5000		0.4286

In the example above, an existing customer's unit rate would decrease (from $0.5000 to $0.4286) at rebasing as a result of the addition of the project portfolio costs and billing units with a revenue sufficiency.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, p. 8, lines 4-9.

The evidence states:

"...Union's recent Rolling Portfolio history has resulted in a positive NPV averaging $14.6 million per year over the most recent three years, and a similar pattern has existed for an extended number of years. Absent the provision of a minimum project PI threshold of 0.8, this annual $14.6 million favourable NPV could have been used to support additional projects at Pl's lower than 0.8 even without a need for subsidization form existing customers."

a) Please confirm that the cited $14.6 million is not actual revenue, but rather a calculation of what revenue arising from the subject expansions would have been at then current rates if projections regarding customer attachments and volumes turned out to be accurate and rates had not been changed for the duration of the economic evaluation period.

b) Please comment on how consideration of Union's actual revenues arising from customer attachments for recent system expansions supports Union's position on broadening intra-utility cross-subsidies for new customers.

Response:

a) Confirmed. The $14.6 million is the NPV of "Revenue less Expenses less Capital" by year over the analysis term with values discounted to period 1. The revenue portion is based on current approved rate schedules. Since the NPV is based on future activity it is not "actual". With a NPV greater than zero, the "revenue portion" is in excess of the cost portion.

b) Union has attached an average of 20,502 new customers per year to its system over the past 3 years. These include both new buildings and customers converting from other fuels to natural gas. The Investment Portfolio PI remains above the minimum E.B.O 188 threshold of 1.1[1], so assuming the forecasted load per customer is achieved, the delivery rates do not change, and on average Union's weather normal is accurate, the actual results of the Portfolio would provide a positive NPV. A positive NPV would imply that new customers are subsidizing existing customers. Union has referenced the Investment Portfolio as opposed to the Rolling Project Portfolio because it includes all customers attached in a specific year and does not reflect forecasted attachments over a 10 year period.

[1] E.B.O. 188 set a minimum Investment Portfolio PI of 1.0 "plus a safety factor (for example corresponding to a PI of 1.1)".

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, p. 14, lines 12–15.

Union proposes extending the customer attachment forecast period for evaluating proposed expansions from 10 years to 25 years of customer attachments. Union justifies its proposal with reference to the useful life of *"typical"* heating equipment.

a) Please explain what *"typical"* means in reference to heating equipment.

b) Please explain how the life of a particular customer's heating equipment relates to the appropriate forecast period for the number of customers expected to attach to an expansion.

Response:

a) In the context of this statement Union would define "typical" heating equipment as forced air furnaces or boilers.

b) Despite the annual costs savings that might be available, some consumers will be unable or unwilling to incur the up-front cost of converting their furnace to natural gas. Union submits that those customers are likely to delay a decision about converting until such time as they are faced with the absolute necessity to replace their furnace because their only alternative is major repair costs (for example heat exchanger replacement). A customer who installed a new furnace or boiler 5 years ago is much more likely to be faced with this situation when the equipment age reaches as much as 25 years. When faced with this decision however, the customer will consider switching to an alternate fuel compared to their current fuel source.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference: Exhibit A, Tab 1, p. 20; Issue 4 (in particular consideration of the value of environmental benefits from gas expansion).

Union cites environmental benefits from gas expansion projects.

a) Has Union considered how the carbon reduction benefits of gas expansion projects could be monetized to support the economics of the projects?

b) Who would "own" the carbon reduction credit arising from community expansion projects?

Response:

a) Please see the response at Exhibit S15.Union.OSEA.3.

b) There is no explicit credit to be "owned", however, the benefit of the carbon reduction would be realized by customers. By switching from an energy source that has higher GHG emissions per unit of energy (such as heavy fuel oil, propane, or other petroleum products covered by the provincial emissions cap) to natural gas, the consumer is reducing the overall quantity of carbon emitted in the environment. Therefore, the carbon cost a consumer has to pay for his or her energy use will be reduced.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference: Exhibit A, Tab 1, Schedule 1.

Please provide the CVs of the authors of the London Economics report.

Response:

The following response was prepared by LEI.

Please refer to Section 12 for detailed curriculum vitae for all authors of LEI's report.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 7, first paragraph.

Union has proposed a limit to the rate impact on a current residential customer's bill to a maximum of $24 per year for all current and future community expansion projects that it will complete.

a) Please provide a table which projects ratepayer impacts for all rate classes assuming all of the potential community expansion projects are undertaken.

b) In the table produced in response to part (a), please include a column providing the ratepayer impacts for each rate class of;

   i. The costs of Union's Winter Warmth program included in 2016 rates.

   ii. The costs of Union's DSM programs included in 2016 rates.

Response:

a) In Union's Community Expansion proceeding (EB-2015-0179, Undertaking JT1.3), Union calculated the rate impacts for all rate classes of the 29 potential projects during Years 1, 5, 10, and 15. Union has updated these rate impacts to reflect 2016 Rates, including the updated 2016 DSM budget, per EB-2015-0029 filed March 14, 2016, as provided at Attachments 1 to 4.

   Based on the estimated bill impacts for Years 1, 5, 10 and 15, the maximum bill impact is estimated at $2.91 per year (an average of $0.24 per month) for a typical residential customer with annual consumption of 2,200 m^3. The maximum bill impact occurs in Year 10, per Attachment 3, p. 2.

   Accordingly, should Union proceed with all 29 potential community expansion projects, Union's maximum residential bill impact of $2.91 per year (an average of $0.24 per month) is significantly less than Union's proposed bill impact maximum limit of $24 per year (or $2 per month) for all current and future community expansion projects that it could complete.

b)

i) Consistent with Union's 2014-2018 IR Settlement Agreement (per EB-2013-0202), Exhibit A, Tab 1, p. 20, Union is not recovering the costs for the Winter Warmth Program/LEAP in rates during the IRM term.

ii) Please see Attachments 1 to 4, column e) and f), for the bill impact of Union's 2016 DSM program included in 2016 Rates, based on Union's approved 2015-2020 DSM Plan.

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 1 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union North

Line No.	Particulars	Annual Bill					
		EB-2015-0029 2016 DSM Rate Order	Year 1 Community Expansion Proposal	Community Expansion Bill Impact		2016 DSM Budget Bill Impact (2)	
		($)	($)	($)	(%)	($)	(%)
		(a)	(b)	(c) = (b - a)	(d) = (c / a)	(e)	(f) = (e / a)
	Small Rate 01						
1	Delivery Charges	443	444	0.53	0.1%	17.28	3.9%
2	TES and ITE Deferral Credits	-	(0)	(0.17)	-		
3	Gas Supply Charges	481	481	(0.03)	0.0%		
4	Total Bill	924	924	0.32	0.0%	17.28	1.9%
5	Sales Service Impact			0.32	0.0%		
6	Bundled-T (Direct Purchase) Impact			0.32	0.0%		
	Small Rate 10						
7	Delivery Charges	4,510	4,550	39.90	0.9%	441.50	9.8%
8	TES and ITE Deferral Credits	-	(3)	(3.44)	-		
9	Gas Supply Charges	13,109	13,108	(0.95)	0.0%		
10	Total Bill	17,619	17,655	35.52	0.2%	441.50	2.5%
11	Sales Service Impact			35.52	0.2%		
12	Bundled-T (Direct Purchase) Impact			35.52	0.3%		
	Large Rate 10						
13	Delivery Charges	14,621	14,734	113.44	0.8%	1,839.60	12.6%
14	TES and ITE Deferral Credits	-	(14)	(14.32)	-		
15	Gas Supply Charges	54,621	54,617	(3.95)	0.0%		
16	Total Bill	69,242	69,337	95.17	0.1%	1,839.60	2.7%
17	Sales Service Impact			95.17	0.1%		
18	Bundled-T (Direct Purchase) Impact			95.17	0.2%		
	Small Rate 20						
19	Delivery Charges	77,828	78,641	812.28	1.0%	9,332.73	12.0%
20	TES and ITE Deferral Credits	-	(77)	(77.49)	-		
21	Gas Supply Charges	573,432	573,394	(38.47)	0.0%		
22	Total Bill	651,261	651,957	696.32	0.1%	9,332.73	1.4%
23	Sales Service Impact			696.32	0.1%		
24	Bundled-T (Direct Purchase) Impact			696.32	0.2%		
	Large Rate 20						
25	Delivery Charges	301,518	304,181	2,662.78	0.9%	46,663.67	15.5%
26	TES and ITE Deferral Credits	-	(387)	(387.45)	-		
27	Gas Supply Charges	2,659,156	2,658,991	(164.89)	0.0%		
28	Total Bill	2,960,674	2,962,784	2,110.44	0.1%	46,663.67	1.6%
29	Sales Service Impact			2,110.44	0.1%		
30	Bundled-T (Direct Purchase) Impact			2,110.44	0.1%		
	Average Rate 25						
31	Delivery Charges	62,814	63,239	424.46	0.7%	-	0.0%
32	TES and ITE Deferral Credits	-	(4)	(4.04)	-		
33	Gas Supply Charges	303,844	303,844	-	0.0%		
34	Total Bill	366,658	367,079	420.43	0.1%	-	0.0%
35	Sales Service Impact			420.43	0.1%		
36	T-Service (Direct Purchase) Impact			420.43	0.7%		
	Small Rate 100						
37	Delivery Charges	264,126	266,762	2,636.16	1.0%	31,089.94	11.8%
38	TES and ITE Deferral Credits	-	(262)	(261.57)	-		
39	Gas Supply Charges	5,353,074	5,353,074	-	0.0%		
40	Total Bill	5,617,199	5,619,574	2,374.59	0.0%	31,089.94	0.6%
41	Sales Service Impact			2,374.59	0.0%		
42	T-Service (Direct Purchase) Impact			2,374.59	0.9%		
	Large Rate 100						
43	Delivery Charges	2,140,569	2,161,271	20,702.16	1.0%	276,355.00	12.9%
44	TES and ITE Deferral Credits	-	(2,325)	(2,325.07)	-		
45	Gas Supply Charges	46,488,914	46,488,914	-	0.0%		
46	Total Bill	48,629,483	48,647,860	18,377.09	0.0%	276,355.00	0.6%
47	Sales Service Impact			18,377.09	0.0%		
48	T-Service (Direct Purchase) Impact			18,377.09	0.9%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 1 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order ($) (a)	Year 1 Community Expansion Proposal ($) (b)	Community Expansion Bill Impact ($) (c) = (b - a)	Community Expansion Bill Impact (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2) ($) (e)	2016 DSM Budget Bill Impact (2) (%) (f) = (e / a)
	Small Rate M1						
1	Delivery Charges	353	354	1.46	0.4%	14.56	4.1%
2	TES and ITE Deferral Credits	-	(0)	(0.22)	-		
3	Gas Supply Charges	299	299	-	0.0%		
4	Total Bill	651	653	1.24	0.2%	14.56	2.2%
5	Sales Service Impact			1.24	0.2%		
6	Direct Purchase Impact			1.24	0.4%		
	Small Rate M2						
7	Delivery Charges	3,569	3,595	25.79	0.7%	462.24	13.0%
8	TES and ITE Deferral Credits	-	(3)	(2.81)	-		
9	Gas Supply Charges	8,151	8,151	-	0.0%		
10	Total Bill	11,720	11,743	22.98	0.2%	462.24	3.9%
11	Sales Service Impact			22.98	0.2%		
12	Direct Purchase Impact			22.98	0.6%		
	Large Rate M2						
13	Delivery Charges	11,715	11,805	90.34	0.8%	1,925.98	16.4%
14	TES and ITE Deferral Credits	-	(12)	(11.72)	-		
15	Gas Supply Charges	33,964	33,964	-	0.0%		
16	Total Bill	45,679	45,757	78.62	0.2%	1,925.98	4.2%
17	Sales Service Impact			78.62	0.2%		
18	Direct Purchase Impact			78.62	0.7%		
	Small Rate M4						
19	Delivery Charges	41,130	41,465	335.39	0.8%	7,143.60	17.4%
20	TES and ITE Deferral Credits	-	(37)	(36.71)	-		
21	Gas Supply Charges	118,874	118,874	-	0.0%		
22	Total Bill	160,004	160,303	298.69	0.2%	7,143.60	4.5%
23	Sales Service Impact			298.69	0.2%		
24	Direct Purchase Impact			298.69	0.7%		
	Large Rate M4						
25	Delivery Charges	323,108	325,956	2,847.79	0.9%	97,969.32	30.3%
26	TES and ITE Deferral Credits	-	(503)	(503.40)	-		
27	Gas Supply Charges	1,630,272	1,630,272	-	0.0%		
28	Total Bill	1,953,380	1,955,725	2,344.39	0.1%	97,969.32	5.0%
29	Sales Service Impact			2,344.39	0.1%		
30	Direct Purchase Impact			2,344.39	0.7%		
	Small Rate M5						
31	Delivery Charges	32,605	32,925	320.29	1.0%	6,735.39	20.7%
32	TES and ITE Deferral Credits	-	(32)	(32.41)	-		
33	Gas Supply Charges	112,081	112,081	-	0.0%		
34	Total Bill	144,686	144,974	287.89	0.2%	6,735.39	4.7%
35	Sales Service Impact			287.89	0.2%		
36	Direct Purchase Impact			287.89	0.9%		
	Large Rate M5						
37	Delivery Charges	185,621	187,843	2,221.42	1.2%	53,066.71	28.6%
38	TES and ITE Deferral Credits	-	(255)	(255.31)	-		
39	Gas Supply Charges	883,064	883,064	-	0.0%		
40	Total Bill	1,068,685	1,070,651	1,966.11	0.2%	53,066.71	5.0%
41	Sales Service Impact			1,966.11	0.2%		
42	Direct Purchase Impact			1,966.11	1.1%		
	Small Rate M7						
43	Delivery Charges	671,474	675,339	3,864.96	0.6%	293,907.96	43.8%
44	TES and ITE Deferral Credits	-	(1,143)	(1,142.92)	-		
45	Gas Supply Charges	4,890,816	4,890,816	-	0.0%		
46	Total Bill	5,562,290	5,565,012	2,722.04	0.0%	293,907.96	5.3%
47	Sales Service Impact			2,722.04	0.0%		
48	Direct Purchase Impact			2,722.04	0.4%		
	Large Rate M7						
49	Delivery Charges	2,569,817	2,586,682	16,865.28	0.7%	424,533.72	16.5%
50	TES and ITE Deferral Credits	-	(1,651)	(1,650.88)	-		
51	Gas Supply Charges	7,064,512	7,064,512	-	0.0%		
52	Total Bill	9,634,329	9,649,543	15,214.40	0.2%	424,533.72	4.4%
53	Sales Service Impact			15,214.40	0.2%		
54	Direct Purchase Impact			15,214.40	0.6%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 1 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill					
		EB-2015-0029 2016 DSM Rate Order	Year 1 Community Expansion Proposal	Community Expansion Bill Impact		2016 DSM Budget Bill Impact (2)	
		($)	($)	($)	(%)	($)	(%)
		(a)	(b)	(c) = (b - a)	(d) = (c / a)	(e)	(f) = (e / a)
	Small Rate M9						
1	Delivery Charges	129,389	129,348	(40.64)	0.0%	-	0.0%
2	TES and ITE Deferral Credits	-	(21)	(21.16)	-		
3	Gas Supply Charges	944,199	944,199	-	0.0%		
4	Total Bill	1,073,588	1,073,526	(61.79)	0.0%	-	0.0%
5	Sales Service Impact			(61.79)	0.0%		
6	Direct Purchase Impact			(61.79)	0.0%		
	Large Rate M9						
7	Delivery Charges	384,526	384,405	(121.03)	0.0%	-	0.0%
8	TES and ITE Deferral Credits	-	(61)	(61.43)	-		
9	Gas Supply Charges	2,741,302	2,741,302	-	0.0%		
10	Total Bill	3,125,829	3,125,646	(182.46)	0.0%	-	0.0%
11	Sales Service Impact			(182.46)	0.0%		
12	Direct Purchase Impact			(182.46)	0.0%		
	Average Rate M10						
13	Delivery Charges	5,570	5,581	11.34	0.2%	-	0.0%
14	TES and ITE Deferral Credits	-	(5)	(4.56)	-		
15	Gas Supply Charges	12,838	12,838	-	0.0%		
16	Total Bill	18,408	18,415	6.78	0.0%	-	0.0%
17	Sales Service Impact			6.78	0.0%		
18	Direct Purchase Impact			6.78	0.1%		
	Small Rate T1						
19	Delivery Charges	129,428	130,519	1,091.33	0.8%	24,258.61	18.7%
20	TES and ITE Deferral Credits	-	(156)	(156.40)	-		
21	Gas Supply Charges	1,023,947	1,023,947	-	0.0%		
22	Total Bill	1,153,374	1,154,309	934.92	0.1%	24,258.61	2.1%
23	Sales Service Impact			934.92	0.1%		
24	Direct Purchase Impact			934.92	0.7%		
	Average Rate T1						
25	Delivery Charges	197,476	199,226	1,750.87	0.9%	37,226.16	18.9%
26	TES and ITE Deferral Credits	-	(240)	(240.01)	-		
27	Gas Supply Charges	1,571,302	1,571,302	-	0.0%		
28	Total Bill	1,768,778	1,770,289	1,510.86	0.1%	37,226.16	2.1%
29	Sales Service Impact			1,510.86	0.1%		
30	Direct Purchase Impact			1,510.86	0.8%		
	Large Rate T1						
31	Delivery Charges	435,588	439,647	4,058.98	0.9%	82,473.73	18.9%
32	TES and ITE Deferral Credits	-	(532)	(531.74)	-		
33	Gas Supply Charges	3,481,185	3,481,185	-	0.0%		
34	Total Bill	3,916,773	3,920,301	3,527.24	0.1%	82,473.73	2.1%
35	Sales Service Impact			3,527.24	0.1%		
36	Direct Purchase Impact			3,527.24	0.8%		
	Small Rate T2						
37	Delivery Charges	529,197	530,547	1,350.15	0.3%	51,053.60	9.6%
38	TES and ITE Deferral Credits	-	(305)	(305.48)	-		
39	Gas Supply Charges	8,050,283	8,050,283	-	0.0%		
40	Total Bill	8,579,480	8,580,525	1,044.66	0.0%	51,053.60	0.6%
41	Sales Service Impact			1,044.66	0.0%		
42	Direct Purchase Impact			1,044.66	0.2%		
	Average Rate T2						
43	Delivery Charges	1,231,955	1,234,133	2,177.86	0.2%	170,411.15	13.8%
44	TES and ITE Deferral Credits	-	(1,020)	(1,019.67)	-		
45	Gas Supply Charges	26,870,938	26,870,938	-	0.0%		
46	Total Bill	28,102,893	28,104,051	1,158.19	0.0%	170,411.15	0.6%
47	Sales Service Impact			1,158.19	0.0%		
48	Direct Purchase Impact			1,158.19	0.1%		
	Large Rate T2						
49	Delivery Charges	2,012,540	2,015,635	3,095.43	0.2%	318,860.11	15.8%
50	TES and ITE Deferral Credits	-	(1,908)	(1,907.93)	-		
51	Gas Supply Charges	50,278,811	50,278,811	-	0.0%		
52	Total Bill	52,291,351	52,292,538	1,187.49	0.0%	318,860.11	0.6%
53	Sales Service Impact			1,187.49	0.0%		
54	Direct Purchase Impact			1,187.49	0.1%		
	Large Rate T3						
55	Delivery Charges	3,552,739	3,551,819	(919.92)	0.0%	-	0.0%
56	TES and ITE Deferral Credits	-	(1,341)	(1,340.99)	-		
57	Gas Supply Charges	37,049,561	37,049,561	-	0.0%		
58	Total Bill	40,602,300	40,600,039	(2,260.91)	0.0%	-	0.0%
59	Sales Service Impact			(2,260.91)	0.0%		
60	Direct Purchase Impact			(2,260.91)	-0.1%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 5 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union North

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order ($) (a)	Year 5 Community Expansion Proposal ($) (b)	Community Expansion Bill Impact ($) (c) = (b - a)	Community Expansion Bill Impact (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2) ($) (e)	2016 DSM Budget Bill Impact (2) (%) (f) = (e / a)
	Small Rate 01						
1	Delivery Charges	443	445	1.60	0.4%	17.28	3.9%
2	TES and ITE Deferral Credits	-	(1)	(1.45)	-		
3	Gas Supply Charges	481	481	(0.05)	0.0%		
4	Total Bill	924	924	0.11	0.0%	17.28	1.9%
5	Sales Service Impact			0.11	0.0%		
6	Bundled-T (Direct Purchase) Impact			0.11	0.0%		
	Small Rate 10						
7	Delivery Charges	4,510	4,633	123.11	2.7%	441.50	9.8%
8	TES and ITE Deferral Credits	-	(29)	(29.34)	-		
9	Gas Supply Charges	13,109	13,108	(1.31)	0.0%		
10	Total Bill	17,619	17,712	92.46	0.5%	441.50	2.5%
11	Sales Service Impact			92.46	0.5%		
12	Bundled-T (Direct Purchase) Impact			92.46	0.8%		
	Large Rate 10						
13	Delivery Charges	14,621	14,953	332.30	2.3%	1,839.60	12.6%
14	TES and ITE Deferral Credits	-	(122)	(122.26)	-		
15	Gas Supply Charges	54,621	54,615	(5.45)	0.0%		
16	Total Bill	69,242	69,446	204.59	0.3%	1,839.60	2.7%
17	Sales Service Impact			204.59	0.3%		
18	Bundled-T (Direct Purchase) Impact			204.59	0.5%		
	Small Rate 20						
19	Delivery Charges	77,828	80,278	2,449.37	3.1%	9,332.73	12.0%
20	TES and ITE Deferral Credits	-	(635)	(635.06)	-		
21	Gas Supply Charges	573,432	573,368	(64.51)	0.0%		
22	Total Bill	651,261	653,010	1,749.79	0.3%	9,332.73	1.4%
23	Sales Service Impact			1,749.79	0.3%		
24	Bundled-T (Direct Purchase) Impact			1,749.79	0.5%		
	Large Rate 20						
25	Delivery Charges	301,518	308,860	7,341.86	2.4%	46,663.67	15.5%
26	TES and ITE Deferral Credits	-	(3,175)	(3,175.32)	-		
27	Gas Supply Charges	2,659,156	2,658,880	(276.49)	0.0%		
28	Total Bill	2,960,674	2,964,564	3,890.06	0.1%	46,663.67	1.6%
29	Sales Service Impact			3,890.06	0.1%		
30	Bundled-T (Direct Purchase) Impact			3,890.06	0.3%		
	Average Rate 25						
31	Delivery Charges	62,814	64,217	1,402.82	2.2%	-	0.0%
32	TES and ITE Deferral Credits	-	(37)	(36.94)	-		
33	Gas Supply Charges	303,844	303,844	-	0.0%		
34	Total Bill	366,658	368,024	1,365.88	0.4%	-	0.0%
35	Sales Service Impact			1,365.88	0.4%		
36	T-Service (Direct Purchase) Impact			1,365.88	2.2%		
	Small Rate 100						
37	Delivery Charges	264,126	271,418	7,292.52	2.8%	31,089.94	11.8%
38	TES and ITE Deferral Credits	-	(2,206)	(2,206.17)	-		
39	Gas Supply Charges	5,353,074	5,353,074	-	0.0%		
40	Total Bill	5,617,199	5,622,286	5,086.35	0.1%	31,089.94	0.6%
41	Sales Service Impact			5,086.35	0.1%		
42	T-Service (Direct Purchase) Impact			5,086.35	1.9%		
	Large Rate 100						
43	Delivery Charges	2,140,569	2,195,876	55,307.52	2.6%	276,355.00	12.9%
44	TES and ITE Deferral Credits	-	(19,610)	(19,610.40)	-		
45	Gas Supply Charges	46,488,914	46,488,914	-	0.0%		
46	Total Bill	48,629,483	48,665,180	35,697.12	0.1%	276,355.00	0.6%
47	Sales Service Impact			35,697.12	0.1%		
48	T-Service (Direct Purchase) Impact			35,697.12	1.7%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 5 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order Annual Bill ($) (a)	Annual Bill: Year 5 Community Expansion Proposal Annual Bill ($) (b)	Community Expansion Bill Impact: Delivery Rate Change ($) (c) = (b - a)	Community Expansion Bill Impact: Annual Bill (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2): Annual Bill ($) (e)	2016 DSM Budget Bill Impact (2): Annual Bill (%) (f) = (e / a)
	Small Rate M1						
1	Delivery Charges	353	356	3.61	1.0%	14.56	4.1%
2	TES and ITE Deferral Credits	-	(2)	(1.77)	-		
3	Gas Supply Charges	299	299	-	0.0%		
4	Total Bill	651	653	1.84	0.3%	14.56	2.2%
5	Sales Service Impact			1.84	0.3%		
6	Direct Purchase Impact			1.84	0.5%		
	Small Rate M2						
7	Delivery Charges	3,569	3,640	71.38	2.0%	462.24	13.0%
8	TES and ITE Deferral Credits	-	(22)	(22.16)	-		
9	Gas Supply Charges	8,151	8,151	-	0.0%		
10	Total Bill	11,720	11,769	49.22	0.4%	462.24	3.9%
11	Sales Service Impact			49.22	0.4%		
12	Direct Purchase Impact			49.22	1.4%		
	Large Rate M2						
13	Delivery Charges	11,715	11,959	244.31	2.1%	1,925.98	16.4%
14	TES and ITE Deferral Credits	-	(92)	(92.34)	-		
15	Gas Supply Charges	33,964	33,964	-	0.0%		
16	Total Bill	45,679	45,831	151.97	0.3%	1,925.98	4.2%
17	Sales Service Impact			151.97	0.3%		
18	Direct Purchase Impact			151.97	1.3%		
	Small Rate M4						
19	Delivery Charges	41,130	42,030	899.81	2.2%	7,143.60	17.4%
20	TES and ITE Deferral Credits	-	(286)	(286.04)	-		
21	Gas Supply Charges	118,874	118,874	-	0.0%		
22	Total Bill	160,004	160,618	613.77	0.4%	7,143.60	4.5%
23	Sales Service Impact			613.77	0.4%		
24	Direct Purchase Impact			613.77	1.5%		
	Large Rate M4						
25	Delivery Charges	323,108	330,750	7,641.64	2.4%	97,969.32	30.3%
26	TES and ITE Deferral Credits	-	(3,923)	(3,922.78)	-		
27	Gas Supply Charges	1,630,272	1,630,272	-	0.0%		
28	Total Bill	1,953,380	1,957,099	3,718.85	0.2%	97,969.32	5.0%
29	Sales Service Impact			3,718.85	0.2%		
30	Direct Purchase Impact			3,718.85	1.2%		
	Small Rate M5						
31	Delivery Charges	32,605	33,478	872.77	2.7%	6,735.39	20.7%
32	TES and ITE Deferral Credits	-	(271)	(270.68)	-		
33	Gas Supply Charges	112,081	112,081	-	0.0%		
34	Total Bill	144,686	145,288	602.10	0.4%	6,735.39	4.7%
35	Sales Service Impact			602.10	0.4%		
36	Direct Purchase Impact			602.10	1.8%		
	Large Rate M5						
37	Delivery Charges	185,621	191,437	5,815.70	3.1%	53,066.71	28.6%
38	TES and ITE Deferral Credits	-	(2,133)	(2,132.60)	-		
39	Gas Supply Charges	883,064	883,064	-	0.0%		
40	Total Bill	1,068,685	1,072,368	3,683.10	0.3%	53,066.71	5.0%
41	Sales Service Impact			3,683.10	0.3%		
42	Direct Purchase Impact			3,683.10	2.0%		
	Small Rate M7						
43	Delivery Charges	671,474	682,146	10,672.20	1.6%	293,907.96	43.8%
44	TES and ITE Deferral Credits	-	(8,701)	(8,701.41)	-		
45	Gas Supply Charges	4,890,816	4,890,816	-	0.0%		
46	Total Bill	5,562,290	5,564,261	1,970.79	0.0%	293,907.96	5.3%
47	Sales Service Impact			1,970.79	0.0%		
48	Direct Purchase Impact			1,970.79	0.3%		
	Large Rate M7						
49	Delivery Charges	2,569,817	2,616,386	46,569.60	1.8%	424,533.72	16.5%
50	TES and ITE Deferral Credits	-	(12,569)	(12,568.70)	-		
51	Gas Supply Charges	7,064,512	7,064,512	-	0.0%		
52	Total Bill	9,634,329	9,668,330	34,000.90	0.4%	424,533.72	4.4%
53	Sales Service Impact			34,000.90	0.4%		
54	Direct Purchase Impact			34,000.90	1.3%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 5 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill					
		EB-2015-0029 2016 DSM Rate Order	Year 5 Community Expansion Proposal	Community Expansion Bill Impact		2016 DSM Budget Bill Impact (2)	
		($)	($)	($)	(%)	($)	(%)
		(a)	(b)	(c) = (b - a)	(d) = (c / a)	(e)	(f) = (e / a)
	Small Rate M9						
1	Delivery Charges	129,389	129,475	85.84	0.1%	-	0.0%
2	TES and ITE Deferral Credits	-	(84)	(84.10)	-		
3	Gas Supply Charges	944,199	944,199	-	0.0%		
4	Total Bill	1,073,588	1,073,590	1.73	0.0%	-	0.0%
5	Sales Service Impact			1.73	0.0%		
6	Direct Purchase Impact			1.73	0.0%		
	Large Rate M9						
7	Delivery Charges	384,526	384,783	256.18	0.1%	-	0.0%
8	TES and ITE Deferral Credits	-	(244)	(244.17)	-		
9	Gas Supply Charges	2,741,302	2,741,302	-	0.0%		
10	Total Bill	3,125,829	3,125,841	12.00	0.0%	-	0.0%
11	Sales Service Impact			12.00	0.0%		
12	Direct Purchase Impact			12.00	0.0%		
	Average Rate M10						
13	Delivery Charges	5,570	5,645	75.79	1.4%	-	0.0%
14	TES and ITE Deferral Credits	-	(35)	(35.21)	-		
15	Gas Supply Charges	12,838	12,838	-	0.0%		
16	Total Bill	18,408	18,449	40.58	0.2%	-	0.0%
17	Sales Service Impact			40.58	0.2%		
18	Direct Purchase Impact			40.58	0.7%		
	Small Rate T1						
19	Delivery Charges	129,428	132,356	2,928.73	2.3%	24,258.61	18.7%
20	TES and ITE Deferral Credits	-	(1,199)	(1,199.42)	-		
21	Gas Supply Charges	1,023,947	1,023,947	-	0.0%		
22	Total Bill	1,153,374	1,155,104	1,729.31	0.1%	24,258.61	2.1%
23	Sales Service Impact			1,729.31	0.1%		
24	Direct Purchase Impact			1,729.31	1.3%		
	Average Rate T1						
25	Delivery Charges	197,476	202,145	4,668.98	2.4%	37,226.16	18.9%
26	TES and ITE Deferral Credits	-	(1,841)	(1,840.58)	-		
27	Gas Supply Charges	1,571,302	1,571,302	-	0.0%		
28	Total Bill	1,768,778	1,771,606	2,828.41	0.2%	37,226.16	2.1%
29	Sales Service Impact			2,828.41	0.2%		
30	Direct Purchase Impact			2,828.41	1.4%		
	Large Rate T1						
31	Delivery Charges	435,588	446,348	10,759.34	2.5%	82,473.73	18.9%
32	TES and ITE Deferral Credits	-	(4,078)	(4,077.76)	-		
33	Gas Supply Charges	3,481,185	3,481,185	-	0.0%		
34	Total Bill	3,916,773	3,923,455	6,681.59	0.2%	82,473.73	2.1%
35	Sales Service Impact			6,681.59	0.2%		
36	Direct Purchase Impact			6,681.59	1.5%		
	Small Rate T2						
37	Delivery Charges	529,197	533,338	4,140.44	0.8%	51,053.60	9.6%
38	TES and ITE Deferral Credits	-	(1,840)	(1,840.32)	-		
39	Gas Supply Charges	8,050,283	8,050,283	-	0.0%		
40	Total Bill	8,579,480	8,581,780	2,300.11	0.0%	51,053.60	0.6%
41	Sales Service Impact			2,300.11	0.0%		
42	Direct Purchase Impact			2,300.11	0.4%		
	Average Rate T2						
43	Delivery Charges	1,231,955	1,238,803	6,847.74	0.6%	170,411.15	13.8%
44	TES and ITE Deferral Credits	-	(6,143)	(6,142.79)	-		
45	Gas Supply Charges	26,870,938	26,870,938	-	0.0%		
46	Total Bill	28,102,893	28,103,598	704.95	0.0%	170,411.15	0.6%
47	Sales Service Impact			704.95	0.0%		
48	Direct Purchase Impact			704.95	0.1%		
	Large Rate T2						
49	Delivery Charges	2,012,540	2,022,389	9,848.96	0.5%	318,860.11	15.8%
50	TES and ITE Deferral Credits	-	(11,494)	(11,493.91)	-		
51	Gas Supply Charges	50,278,811	50,278,811	-	0.0%		
52	Total Bill	52,291,351	52,289,706	(1,644.95)	0.0%	318,860.11	0.6%
53	Sales Service Impact			(1,644.95)	0.0%		
54	Direct Purchase Impact			(1,644.95)	-0.1%		
	Large Rate T3						
55	Delivery Charges	3,552,739	3,555,412	2,673.48	0.1%	-	0.0%
56	TES and ITE Deferral Credits	-	(4,384)	(4,383.86)	-		
57	Gas Supply Charges	37,049,561	37,049,561	-	0.0%		
58	Total Bill	40,602,300	40,600,590	(1,710.38)	0.0%	-	0.0%
59	Sales Service Impact			(1,710.38)	0.0%		
60	Direct Purchase Impact			(1,710.38)	0.0%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 10 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union North

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order ($) (a)	Year 10 Community Expansion Proposal ($) (b)	Community Expansion Bill Impact ($) (c) = (b - a)	Community Expansion Bill Impact (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2) ($) (e)	2016 DSM Budget Bill Impact (2) (%) (f) = (e / a)
	Small Rate 01						
1	Delivery Charges	443	445	1.35	0.3%	17.28	3.9%
2	TES and ITE Deferral Credits	-	(0)	(0.12)	-		
3	Gas Supply Charges	481	481	(0.02)	0.0%		
4	Total Bill	924	925	1.21	0.1%	17.28	1.9%
5	Sales Service Impact			1.21	0.1%		
6	Bundled-T (Direct Purchase) Impact			1.21	0.2%		
	Small Rate 10						
7	Delivery Charges	4,510	4,638	127.25	2.8%	441.50	9.8%
8	TES and ITE Deferral Credits	-	(2)	(2.07)	-		
9	Gas Supply Charges	13,109	13,108	(0.59)	0.0%		
10	Total Bill	17,619	17,744	124.59	0.7%	441.50	2.5%
11	Sales Service Impact			124.59	0.7%		
12	Bundled-T (Direct Purchase) Impact			124.59	1.1%		
	Large Rate 10						
13	Delivery Charges	14,621	14,954	333.53	2.3%	1,839.60	12.6%
14	TES and ITE Deferral Credits	-	(9)	(8.62)	-		
15	Gas Supply Charges	54,621	54,618	(2.45)	0.0%		
16	Total Bill	69,242	69,564	322.46	0.5%	1,839.60	2.7%
17	Sales Service Impact			322.46	0.5%		
18	Bundled-T (Direct Purchase) Impact			322.46	0.7%		
	Small Rate 20						
19	Delivery Charges	77,828	80,329	2,500.34	3.2%	9,332.73	12.0%
20	TES and ITE Deferral Credits	-	(43)	(43.35)	-		
21	Gas Supply Charges	573,432	573,387	(45.03)	0.0%		
22	Total Bill	651,261	653,673	2,411.97	0.4%	9,332.73	1.4%
23	Sales Service Impact			2,411.97	0.4%		
24	Bundled-T (Direct Purchase) Impact			2,411.97	0.7%		
	Large Rate 20						
25	Delivery Charges	301,518	308,617	7,099.63	2.4%	46,663.67	15.5%
26	TES and ITE Deferral Credits	-	(217)	(216.76)	-		
27	Gas Supply Charges	2,659,156	2,658,963	(192.97)	0.0%		
28	Total Bill	2,960,674	2,967,364	6,689.90	0.2%	46,663.67	1.6%
29	Sales Service Impact			6,689.90	0.2%		
30	Bundled-T (Direct Purchase) Impact			6,689.90	0.4%		
	Average Rate 25						
31	Delivery Charges	62,814	64,323	1,508.68	2.4%	-	0.0%
32	TES and ITE Deferral Credits	-	(3)	(2.73)	-		
33	Gas Supply Charges	303,844	303,844	-	0.0%		
34	Total Bill	366,658	368,164	1,505.94	0.4%	-	0.0%
35	Sales Service Impact			1,505.94	0.4%		
36	T-Service (Direct Purchase) Impact			1,505.94	2.4%		
	Small Rate 100						
37	Delivery Charges	264,126	271,151	7,025.40	2.7%	31,089.94	11.8%
38	TES and ITE Deferral Credits	-	(144)	(143.65)	-		
39	Gas Supply Charges	5,353,074	5,353,074	-	0.0%		
40	Total Bill	5,617,199	5,624,081	6,881.75	0.1%	31,089.94	0.6%
41	Sales Service Impact			6,881.75	0.1%		
42	T-Service (Direct Purchase) Impact			6,881.75	2.6%		
	Large Rate 100						
43	Delivery Charges	2,140,569	2,192,561	51,992.40	2.4%	276,355.00	12.9%
44	TES and ITE Deferral Credits	-	(1,277)	(1,276.90)	-		
45	Gas Supply Charges	46,488,914	46,488,914	-	0.0%		
46	Total Bill	48,629,483	48,680,198	50,715.50	0.1%	276,355.00	0.6%
47	Sales Service Impact			50,715.50	0.1%		
48	T-Service (Direct Purchase) Impact			50,715.50	2.4%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 10 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order Annual Bill ($) (a)	Annual Bill: Year 10 Community Expansion Proposal Annual Bill ($) (b)	Community Expansion Bill Impact: Delivery Rate Change ($) (c) = (b - a)	Community Expansion Bill Impact: Annual Bill (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2): Annual Bill ($) (e)	2016 DSM Budget Bill Impact (2): Annual Bill (%) (f) = (e / a)
	Small Rate M1						
1	Delivery Charges	353	356	3.03	0.9%	14.56	4.1%
2	TES and ITE Deferral Credits	-	(0)	(0.12)	-		
3	Gas Supply Charges	299	299	-	0.0%		
4	Total Bill	651	654	2.91	0.4%	14.56	2.2%
5	Sales Service Impact			2.91	0.4%		
6	Direct Purchase Impact			2.91	0.8%		
	Small Rate M2						
7	Delivery Charges	3,569	3,638	69.09	1.9%	462.24	13.0%
8	TES and ITE Deferral Credits	-	(1)	(1.49)	-		
9	Gas Supply Charges	8,151	8,151	-	0.0%		
10	Total Bill	11,720	11,788	67.60	0.6%	462.24	3.9%
11	Sales Service Impact			67.60	0.6%		
12	Direct Purchase Impact			67.60	1.9%		
	Large Rate M2						
13	Delivery Charges	11,715	11,947	232.77	2.0%	1,925.98	16.4%
14	TES and ITE Deferral Credits	-	(6)	(6.21)	-		
15	Gas Supply Charges	33,964	33,964	-	0.0%		
16	Total Bill	45,679	45,905	226.57	0.5%	1,925.98	4.2%
17	Sales Service Impact			226.57	0.5%		
18	Direct Purchase Impact			226.57	1.9%		
	Small Rate M4						
19	Delivery Charges	41,130	41,984	853.70	2.1%	7,143.60	17.4%
20	TES and ITE Deferral Credits	-	(19)	(19.20)	-		
21	Gas Supply Charges	118,874	118,874	-	0.0%		
22	Total Bill	160,004	160,838	834.50	0.5%	7,143.60	4.5%
23	Sales Service Impact			834.50	0.5%		
24	Direct Purchase Impact			834.50	2.0%		
	Large Rate M4						
25	Delivery Charges	323,108	330,357	7,248.95	2.2%	97,969.32	30.3%
26	TES and ITE Deferral Credits	-	(263)	(263.37)	-		
27	Gas Supply Charges	1,630,272	1,630,272	-	0.0%		
28	Total Bill	1,953,380	1,960,366	6,985.58	0.4%	97,969.32	5.0%
29	Sales Service Impact			6,985.58	0.4%		
30	Direct Purchase Impact			6,985.58	2.2%		
	Small Rate M5						
31	Delivery Charges	32,605	33,443	838.63	2.6%	6,735.39	20.7%
32	TES and ITE Deferral Credits	-	(17)	(17.44)	-		
33	Gas Supply Charges	112,081	112,081	-	0.0%		
34	Total Bill	144,686	145,507	821.19	0.6%	6,735.39	4.7%
35	Sales Service Impact			821.19	0.6%		
36	Direct Purchase Impact			821.19	2.5%		
	Large Rate M5						
37	Delivery Charges	185,621	191,062	5,441.06	2.9%	53,066.71	28.6%
38	TES and ITE Deferral Credits	-	(137)	(137.44)	-		
39	Gas Supply Charges	883,064	883,064	-	0.0%		
40	Total Bill	1,068,685	1,073,989	5,303.62	0.5%	53,066.71	5.0%
41	Sales Service Impact			5,303.62	0.5%		
42	Direct Purchase Impact			5,303.62	2.9%		
	Small Rate M7						
43	Delivery Charges	671,474	681,786	10,311.84	1.5%	293,907.96	43.8%
44	TES and ITE Deferral Credits	-	(604)	(603.87)	-		
45	Gas Supply Charges	4,890,816	4,890,816	-	0.0%		
46	Total Bill	5,562,290	5,571,998	9,707.97	0.2%	293,907.96	5.3%
47	Sales Service Impact			9,707.97	0.2%		
48	Direct Purchase Impact			9,707.97	1.4%		
	Large Rate M7						
49	Delivery Charges	2,569,817	2,614,814	44,997.12	1.8%	424,533.72	16.5%
50	TES and ITE Deferral Credits	-	(872)	(872.25)	-		
51	Gas Supply Charges	7,064,512	7,064,512	-	0.0%		
52	Total Bill	9,634,329	9,678,454	44,124.87	0.5%	424,533.72	4.4%
53	Sales Service Impact			44,124.87	0.5%		
54	Direct Purchase Impact			44,124.87	1.7%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 10 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill					
		EB-2015-0029 2016 DSM Rate Order	Year 10 Community Expansion Proposal	Community Expansion Bill Impact		2016 DSM Budget Bill Impact (2)	
		($)	($)	($)	(%)	($)	(%)
		(a)	(b)	(c) = (b - a)	(d) = (c / a)	(e)	(f) = (e / a)
	Small Rate M9						
1	Delivery Charges	129,389	129,582	193.52	0.1%	-	0.0%
2	TES and ITE Deferral Credits	-	(10)	(10.32)	-		
3	Gas Supply Charges	944,199	944,199	-	0.0%		
4	Total Bill	1,073,588	1,073,771	183.21	0.0%	-	0.0%
5	Sales Service Impact			183.21	0.0%		
6	Direct Purchase Impact			183.21	0.1%		
	Large Rate M9						
7	Delivery Charges	384,526	385,103	576.91	0.2%	-	0.0%
8	TES and ITE Deferral Credits	-	(30)	(29.95)	-		
9	Gas Supply Charges	2,741,302	2,741,302	-	0.0%		
10	Total Bill	3,125,829	3,126,376	546.97	0.0%	-	0.0%
11	Sales Service Impact			546.97	0.0%		
12	Direct Purchase Impact			546.97	0.1%		
	Average Rate M10						
13	Delivery Charges	5,570	5,670	100.26	1.8%	-	0.0%
14	TES and ITE Deferral Credits	-	(3)	(3.31)	-		
15	Gas Supply Charges	12,838	12,838	-	0.0%		
16	Total Bill	18,408	18,505	96.96	0.5%	-	0.0%
17	Sales Service Impact			96.96	0.5%		
18	Direct Purchase Impact			96.96	1.7%		
	Small Rate T1						
19	Delivery Charges	129,428	132,217	2,789.13	2.2%	24,258.61	18.7%
20	TES and ITE Deferral Credits	-	(81)	(81.36)	-		
21	Gas Supply Charges	1,023,947	1,023,947	-	0.0%		
22	Total Bill	1,153,374	1,156,082	2,707.76	0.2%	24,258.61	2.1%
23	Sales Service Impact			2,707.76	0.2%		
24	Direct Purchase Impact			2,707.76	2.1%		
	Average Rate T1						
25	Delivery Charges	197,476	201,903	4,427.12	2.2%	37,226.16	18.9%
26	TES and ITE Deferral Credits	-	(125)	(124.85)	-		
27	Gas Supply Charges	1,571,302	1,571,302	-	0.0%		
28	Total Bill	1,768,778	1,773,080	4,302.26	0.2%	37,226.16	2.1%
29	Sales Service Impact			4,302.26	0.2%		
30	Direct Purchase Impact			4,302.26	2.2%		
	Large Rate T1						
31	Delivery Charges	435,588	445,748	10,159.59	2.3%	82,473.73	18.9%
32	TES and ITE Deferral Credits	-	(277)	(276.61)	-		
33	Gas Supply Charges	3,481,185	3,481,185	-	0.0%		
34	Total Bill	3,916,773	3,926,656	9,882.97	0.3%	82,473.73	2.1%
35	Sales Service Impact			9,882.97	0.3%		
36	Direct Purchase Impact			9,882.97	2.3%		
	Small Rate T2						
37	Delivery Charges	529,197	533,417	4,219.72	0.8%	51,053.60	9.6%
38	TES and ITE Deferral Credits	-	(146)	(145.61)	-		
39	Gas Supply Charges	8,050,283	8,050,283	-	0.0%		
40	Total Bill	8,579,480	8,583,554	4,074.11	0.0%	51,053.60	0.6%
41	Sales Service Impact			4,074.11	0.0%		
42	Direct Purchase Impact			4,074.11	0.8%		
	Average Rate T2						
43	Delivery Charges	1,231,955	1,239,014	7,059.24	0.6%	170,411.15	13.8%
44	TES and ITE Deferral Credits	-	(486)	(486.04)	-		
45	Gas Supply Charges	26,870,938	26,870,938	-	0.0%		
46	Total Bill	28,102,893	28,109,466	6,573.19	0.0%	170,411.15	0.6%
47	Sales Service Impact			6,573.19	0.0%		
48	Direct Purchase Impact			6,573.19	0.5%		
	Large Rate T2						
49	Delivery Charges	2,012,540	2,022,747	10,207.00	0.5%	318,860.11	15.8%
50	TES and ITE Deferral Credits	-	(909)	(909.44)	-		
51	Gas Supply Charges	50,278,811	50,278,811	-	0.0%		
52	Total Bill	52,291,351	52,300,648	9,297.56	0.0%	318,860.11	0.6%
53	Sales Service Impact			9,297.56	0.0%		
54	Direct Purchase Impact			9,297.56	0.5%		
	Large Rate T3						
55	Delivery Charges	3,552,739	3,558,210	5,470.68	0.2%	-	0.0%
56	TES and ITE Deferral Credits	-	(578)	(578.20)	-		
57	Gas Supply Charges	37,049,561	37,049,561	-	0.0%		
58	Total Bill	40,602,300	40,607,193	4,892.48	0.0%	-	0.0%
59	Sales Service Impact			4,892.48	0.0%		
60	Direct Purchase Impact			4,892.48	0.1%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 15 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union North

Line No.	Particulars	Annual Bill					
		EB-2015-0029 2016 DSM Rate Order	Year 15 Community Expansion Proposal	Community Expansion Bill Impact		2016 DSM Budget Bill Impact (2)	
		($)	($)	($)	(%)	($)	(%)
		(a)	(b)	(c) = (b - a)	(d) = (c / a)	(e)	(f) = (e / a)
	Small Rate 01						
1	Delivery Charges	443	444	1.11	0.3%	17.28	3.9%
2	TES and ITE Deferral Credits	-	-	-	-		
3	Gas Supply Charges	481	481	0.00	0.0%		
4	Total Bill	924	925	1.12	0.1%	17.28	1.9%
5	Sales Service Impact			1.12	0.1%		
6	Bundled-T (Direct Purchase) Impact			1.12	0.2%		
	Small Rate 10						
7	Delivery Charges	4,510	4,628	117.78	2.6%	441.50	9.8%
8	TES and ITE Deferral Credits	-	-	-	-		
9	Gas Supply Charges	13,109	13,109	0.13	0.0%		
10	Total Bill	17,619	17,737	117.91	0.7%	441.50	2.5%
11	Sales Service Impact			117.91	0.7%		
12	Bundled-T (Direct Purchase) Impact			117.91	1.0%		
	Large Rate 10						
13	Delivery Charges	14,621	14,929	308.55	2.1%	1,839.60	12.6%
14	TES and ITE Deferral Credits	-	-	-	-		
15	Gas Supply Charges	54,621	54,621	0.55	0.0%		
16	Total Bill	69,242	69,551	309.10	0.4%	1,839.60	2.7%
17	Sales Service Impact			309.10	0.4%		
18	Bundled-T (Direct Purchase) Impact			309.10	0.7%		
	Small Rate 20						
19	Delivery Charges	77,828	80,149	2,321.06	3.0%	9,332.73	12.0%
20	TES and ITE Deferral Credits	-	-	-	-		
21	Gas Supply Charges	573,432	573,410	(21.84)	0.0%		
22	Total Bill	651,261	653,560	2,299.22	0.4%	9,332.73	1.4%
23	Sales Service Impact			2,299.22	0.4%		
24	Bundled-T (Direct Purchase) Impact			2,299.22	0.6%		
	Large Rate 20						
25	Delivery Charges	301,518	308,108	6,590.26	2.2%	46,663.67	15.5%
26	TES and ITE Deferral Credits	-	-	-	-		
27	Gas Supply Charges	2,659,156	2,659,062	(93.61)	0.0%		
28	Total Bill	2,960,674	2,967,170	6,496.65	0.2%	46,663.67	1.6%
29	Sales Service Impact			6,496.65	0.2%		
30	Bundled-T (Direct Purchase) Impact			6,496.65	0.4%		
	Average Rate 25						
31	Delivery Charges	62,814	64,224	1,410.19	2.2%	-	0.0%
32	TES and ITE Deferral Credits	-	-	-	-		
33	Gas Supply Charges	303,844	303,844	-	0.0%		
34	Total Bill	366,658	368,068	1,410.19	0.4%	-	0.0%
35	Sales Service Impact			1,410.19	0.4%		
36	T-Service (Direct Purchase) Impact			1,410.19	2.2%		
	Small Rate 100						
37	Delivery Charges	264,126	270,675	6,549.12	2.5%	31,089.94	11.8%
38	TES and ITE Deferral Credits	-	-	-	-		
39	Gas Supply Charges	5,353,074	5,353,074	-	0.0%		
40	Total Bill	5,617,199	5,623,748	6,549.12	0.1%	31,089.94	0.6%
41	Sales Service Impact			6,549.12	0.1%		
42	T-Service (Direct Purchase) Impact			6,549.12	2.5%		
	Large Rate 100						
43	Delivery Charges	2,140,569	2,189,052	48,483.12	2.3%	276,355.00	12.9%
44	TES and ITE Deferral Credits	-	-	-	-		
45	Gas Supply Charges	46,488,914	46,488,914	-	0.0%		
46	Total Bill	48,629,483	48,677,966	48,483.12	0.1%	276,355.00	0.6%
47	Sales Service Impact			48,483.12	0.1%		
48	T-Service (Direct Purchase) Impact			48,483.12	2.3%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 15 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order Annual Bill ($) (a)	Annual Bill: Year 15 Community Expansion Proposal Annual Bill ($) (b)	Community Expansion Bill Impact: Delivery Rate Change ($) (c) = (b - a)	Community Expansion Bill Impact: Annual Bill (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2): Annual Bill ($) (e)	2016 DSM Budget Bill Impact (2): Annual Bill (%) (f) = (e / a)
	Small Rate M1						
1	Delivery Charges	353	355	2.68	0.8%	14.56	4.1%
2	TES and ITE Deferral Credits	-	-	-	-		
3	Gas Supply Charges	299	299	-	0.0%		
4	Total Bill	651	654	2.68	0.4%	14.56	2.2%
5	Sales Service Impact			2.68	0.4%		
6	Direct Purchase Impact			2.68	0.8%		
	Small Rate M2						
7	Delivery Charges	3,569	3,633	64.23	1.8%	462.24	13.0%
8	TES and ITE Deferral Credits	-	-	-	-		
9	Gas Supply Charges	8,151	8,151	-	0.0%		
10	Total Bill	11,720	11,784	64.23	0.5%	462.24	3.9%
11	Sales Service Impact			64.23	0.5%		
12	Direct Purchase Impact			64.23	1.8%		
	Large Rate M2						
13	Delivery Charges	11,715	11,931	216.21	1.8%	1,925.98	16.4%
14	TES and ITE Deferral Credits	-	-	-	-		
15	Gas Supply Charges	33,964	33,964	-	0.0%		
16	Total Bill	45,679	45,895	216.21	0.5%	1,925.98	4.2%
17	Sales Service Impact			216.21	0.5%		
18	Direct Purchase Impact			216.21	1.8%		
	Small Rate M4						
19	Delivery Charges	41,130	41,922	792.27	1.9%	7,143.60	17.4%
20	TES and ITE Deferral Credits	-	-	-	-		
21	Gas Supply Charges	118,874	118,874	-	0.0%		
22	Total Bill	160,004	160,796	792.27	0.5%	7,143.60	4.5%
23	Sales Service Impact			792.27	0.5%		
24	Direct Purchase Impact			792.27	1.9%		
	Large Rate M4						
25	Delivery Charges	323,108	329,834	6,726.36	2.1%	97,969.32	30.3%
26	TES and ITE Deferral Credits	-	-	-	-		
27	Gas Supply Charges	1,630,272	1,630,272	-	0.0%		
28	Total Bill	1,953,380	1,960,106	6,726.36	0.3%	97,969.32	5.0%
29	Sales Service Impact			6,726.36	0.3%		
30	Direct Purchase Impact			6,726.36	2.1%		
	Small Rate M5						
31	Delivery Charges	32,605	33,377	772.32	2.4%	6,735.39	20.7%
32	TES and ITE Deferral Credits	-	-	-	-		
33	Gas Supply Charges	112,081	112,081	-	0.0%		
34	Total Bill	144,686	145,458	772.32	0.5%	6,735.39	4.7%
35	Sales Service Impact			772.32	0.5%		
36	Direct Purchase Impact			772.32	2.4%		
	Large Rate M5						
37	Delivery Charges	185,621	190,616	4,994.52	2.7%	53,066.71	28.6%
38	TES and ITE Deferral Credits	-	-	-	-		
39	Gas Supply Charges	883,064	883,064	-	0.0%		
40	Total Bill	1,068,685	1,073,680	4,994.52	0.5%	53,066.71	5.0%
41	Sales Service Impact			4,994.52	0.5%		
42	Direct Purchase Impact			4,994.52	2.7%		
	Small Rate M7						
43	Delivery Charges	671,474	681,162	9,688.14	1.4%	293,907.96	43.8%
44	TES and ITE Deferral Credits	-	-	-	-		
45	Gas Supply Charges	4,890,816	4,890,816	-	0.0%		
46	Total Bill	5,562,290	5,571,978	9,688.14	0.2%	293,907.96	5.3%
47	Sales Service Impact			9,688.14	0.2%		
48	Direct Purchase Impact			9,688.14	1.4%		
	Large Rate M7						
49	Delivery Charges	2,569,817	2,612,092	42,275.52	1.6%	424,533.72	16.5%
50	TES and ITE Deferral Credits	-	-	-	-		
51	Gas Supply Charges	7,064,512	7,064,512	-	0.0%		
52	Total Bill	9,634,329	9,676,604	42,275.52	0.4%	424,533.72	4.4%
53	Sales Service Impact			42,275.52	0.4%		
54	Direct Purchase Impact			42,275.52	1.6%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED
Impacts of the 29 Potential Community Expansion Projects Including TES and ITE Deferral Credits
Calculation of Year 15 Sales Service and Direct Purchase Impacts for Typical Small and Large Customers - Union South

Line No.	Particulars	Annual Bill: EB-2015-0029 2016 DSM Rate Order Annual Bill ($) (a)	Annual Bill: Year 15 Community Expansion Proposal Annual Bill ($) (b)	Community Expansion Bill Impact: Delivery Rate Change ($) (c) = (b - a)	Community Expansion Bill Impact: Annual Bill (%) (d) = (c / a)	2016 DSM Budget Bill Impact (2): Annual Bill ($) (e)	2016 DSM Budget Bill Impact (2): Annual Bill (%) (f) = (e / a)
	Small Rate M9						
1	Delivery Charges	129,389	129,643	253.80	0.2%	-	0.0%
2	TES and ITE Deferral Credits	-	-	-	-		
3	Gas Supply Charges	944,199	944,199	-	0.0%		
4	Total Bill	1,073,588	1,073,842	253.80	0.0%	-	0.0%
5	Sales Service Impact			253.80	0.0%		
6	Direct Purchase Impact			253.80	0.2%		
	Large Rate M9						
7	Delivery Charges	384,526	385,283	756.44	0.2%	-	0.0%
8	TES and ITE Deferral Credits	-	-	-	-		
9	Gas Supply Charges	2,741,302	2,741,302	-	0.0%		
10	Total Bill	3,125,829	3,126,585	756.44	0.0%	-	0.0%
11	Sales Service Impact			756.44	0.0%		
12	Direct Purchase Impact			756.44	0.2%		
	Average Rate M10						
13	Delivery Charges	5,570	5,672	102.82	1.8%	-	0.0%
14	TES and ITE Deferral Credits	-	-	-	-		
15	Gas Supply Charges	12,838	12,838	-	0.0%		
16	Total Bill	18,408	18,511	102.82	0.6%	-	0.0%
17	Sales Service Impact			102.82	0.6%		
18	Direct Purchase Impact			102.82	1.8%		
	Small Rate T1						
19	Delivery Charges	129,428	132,020	2,592.68	2.0%	24,258.61	18.7%
20	TES and ITE Deferral Credits	-	-	-	-		
21	Gas Supply Charges	1,023,947	1,023,947	-	0.0%		
22	Total Bill	1,153,374	1,155,967	2,592.68	0.2%	24,258.61	2.1%
23	Sales Service Impact			2,592.68	0.2%		
24	Direct Purchase Impact			2,592.68	2.0%		
	Average Rate T1						
25	Delivery Charges	197,476	201,590	4,114.56	2.1%	37,226.16	18.9%
26	TES and ITE Deferral Credits	-	-	-	-		
27	Gas Supply Charges	1,571,302	1,571,302	-	0.0%		
28	Total Bill	1,768,778	1,772,892	4,114.56	0.2%	37,226.16	2.1%
29	Sales Service Impact			4,114.56	0.2%		
30	Direct Purchase Impact			4,114.56	2.1%		
	Large Rate T1						
31	Delivery Charges	435,588	445,029	9,440.61	2.2%	82,473.73	18.9%
32	TES and ITE Deferral Credits	-	-	-	-		
33	Gas Supply Charges	3,481,185	3,481,185	-	0.0%		
34	Total Bill	3,916,773	3,926,214	9,440.61	0.2%	82,473.73	2.1%
35	Sales Service Impact			9,440.61	0.2%		
36	Direct Purchase Impact			9,440.61	2.2%		
	Small Rate T2						
37	Delivery Charges	529,197	533,288	4,090.51	0.8%	51,053.60	9.6%
38	TES and ITE Deferral Credits	-	-	-	-		
39	Gas Supply Charges	8,050,283	8,050,283	-	0.0%		
40	Total Bill	8,579,480	8,583,571	4,090.51	0.0%	51,053.60	0.6%
41	Sales Service Impact			4,090.51	0.0%		
42	Direct Purchase Impact			4,090.51	0.8%		
	Average Rate T2						
43	Delivery Charges	1,231,955	1,238,977	7,021.99	0.6%	170,411.15	13.8%
44	TES and ITE Deferral Credits	-	-	-	-		
45	Gas Supply Charges	26,870,938	26,870,938	-	0.0%		
46	Total Bill	28,102,893	28,109,915	7,021.99	0.0%	170,411.15	0.6%
47	Sales Service Impact			7,021.99	0.0%		
48	Direct Purchase Impact			7,021.99	0.6%		
	Large Rate T2						
49	Delivery Charges	2,012,540	2,022,811	10,271.71	0.5%	318,860.11	15.8%
50	TES and ITE Deferral Credits	-	-	-	-		
51	Gas Supply Charges	50,278,811	50,278,811	-	0.0%		
52	Total Bill	52,291,351	52,301,622	10,271.71	0.0%	318,860.11	0.6%
53	Sales Service Impact			10,271.71	0.0%		
54	Direct Purchase Impact			10,271.71	0.5%		
	Large Rate T3						
55	Delivery Charges	3,552,739	3,559,954	7,215.12	0.2%	-	0.0%
56	TES and ITE Deferral Credits	-	-	-	-		
57	Gas Supply Charges	37,049,561	37,049,561	-	0.0%		
58	Total Bill	40,602,300	40,609,516	7,215.12	0.0%	-	0.0%
59	Sales Service Impact			7,215.12	0.0%		
60	Direct Purchase Impact			7,215.12	0.2%		

Notes:
(1) Reflects the rates per Appendix A in Union's 2016 DSM Rate Order (EB-2015-0029) filed 2016-03-14 as at January 1, 2016.
(2) DSM annual bill impacts estimated based on a volumetric unit rate by rate class, calculated as the 2016 DSM budget (per EB-2015-0029, Union's 2015-2020 DSM Plan) divided by 2016 annual volumes (per EB-2015-0116, Union's 2016 Rates application).

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference: Exhibit A, Tab 1, Schedule 1, pp. 1 and 12.

London Economics cites the creation of new jobs, *"potential expansion of other industries"*, and *"boosting economic growth in Northern and rural Ontario"* as benefits of gas expansion.

a) Please detail London Economics' assessment that natural gas expansion will create new jobs, and file copies of any supporting analysis.

b) Please explain what *"other industries"* London Economics predicts will expand as a result of natural gas expansion, detail this assessment, and file copies of any supporting analysis.

c) Please detail London Economics' assessment that natural gas expansion will *"boost [ ] economic growth in Northern and rural Ontario"*, and file copies of any supporting analysis.

Response:

The following response was prepared by LEI.

a) A detailed assessment of the employment impacts associated expansion of natural gas services into rural communities was outside the scope of work for the engagement.

b) A detailed assessment of the macroeconomic impacts on other industries of expansion of natural gas services into rural communities was outside the scope of work for the engagement.

c) As noted in response to Part b) a detailed assessment of the macroeconomic impacts on other industries of expansion of natural gas services into rural communities was outside the scope of work for the engagement.

The Ontario Federation of Agriculture study *"Issue Update: Affordable natural gas across rural Ontario"* (referenced in LEI's report) notes one of the greatest advantages of access to natural gas is that it is cheaper than oil, propane and electricity when used for heating at about half the cost.[1] This is expected to free up a significant amount of capital in these communities by lowering on-farm energy costs and attracting new businesses. These capital savings may be re- invested to further develop the community and boost economic growth.[2]

[1] Ontario Federation of Agriculture. *Issue Update: Affordable natural gas across rural Ontario.* 2015.
[2] Ibid.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 11

London Economics' evidence discusses "economic efficiency" and associated price signals for *"efficient resource using behaviour"*.

Please discuss whether, and if so how, Union's proposal to require existing Union rate payers to subsidize otherwise uneconomic expansions of Union's system to unserved communities furthers principles of "economic efficiency" and encourages *"efficient resource using behaviour"*.

Response:

The following response was prepared by LEI.

LEI's response is subject to the presumption that Union is operating within a public policy consensus that views natural gas expansion as having broad-based economic and environmental benefits which are enjoyed by Union's existing customer base. The proposed expansions are relatively small, suggesting that the creation of new and potentially costly set of administrative arrangements may be more expensive relative to maintaining cross-subsidies within the utility. Union's proposal allows for the expansion to be affordable to new customers in the expansion areas, while having bill impact of between 0.1% and 0.7% on existing customers.[1] Existing customers also benefit from the potential embedded option value of the additional infrastructure, in that the new customers may ultimately prove more profitable than anticipated, and make a greater contribution to system costs. Ratemaking is often a balance between strict cost causation, policy initiatives, and administrative considerations – while internal cross subsidies violate principles of cost causation, if such subsidies are small, they may be less distorting than the creation of entirely new administrative measures to implement policy-driven initiatives.

[1] Union Gas Limited. Application EB-2015-0179 – Union Gas Limited ("Union") – Community Expansion – Evidence Update. December 14, 2015.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 12, footnote 26.

London Economics cites a June 30, 2014 *Rate Design Presentation* in the context of setting efficient rates while promoting the expansion of the natural gas distribution network.

a) Please file a copy of the presentation.

b) Please explain the context of this presentation (who gave it, to whom, and why).

Response:

The following response was prepared by LEI.

a) A copy of the presentation may be found here: http://www.camput.org/wp-content/uploads/2013/08/Rate-Design-Laurie-Reid.pdf

b) The presentation was provided as part of Canada's Energy and Utility Regulators ("CAMPUT") association 2014 Energy Regulation Course. The presentation, titled "Rate Design", was delivered by Laurie Reid Senior Policy Advisor – Infrastructure and Renewables, Ontario Energy Board.

A copy of the course program may be found here: http://www.camput.org/wp-content/uploads/2014/02/2014-05-30-CAMPUT-Energy-Regulation-Course-Program.pdf

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 14, Figure 4.

Please redo the cited table on the basis that the benefits arising from currently uneconomic expansions of gas service to new communities are economic, environmental and social equality benefits which accrue to Ontarians at large, and this is the primary purpose of the expansions and the incurrence of the expansion costs.

Response:

The following response was prepared by LEI.

In the hypothetical scenario proposed by the IGUA, greater weight may be placed on those broad-based approaches described in LEI's report. Specifically the IGUA hypothetical scenario may be attributable to the view that the provision of natural gas services to rural communities is identified as a public good where the "*environmental and social equality benefits which accrue to Ontarians at large.*"

In this instance LEI has amended the figure and the qualitative ranking under the heading *"Administrative simplicity and transparency"* for the last three rows. LEI recognise the broad-based approaches (jurisdiction wide cross-subsidization and tax payer funding) as potentially stronger funding mechanisms in this context relative to the recovery of funds through internal utility cross-subsidization

Figure 1. LEI ranking of funding mechanisms with respect to IGUA hypothetical example

	Cost causation and avoidance of cross subsidies	Financial stability and fair rate of return	Incentives compatibility	Non -discrimination	Administrative simplicity and transparency
Natural gas expansion ratepayers	●	●	○	○	◑
Internal utility cross -subsidization	◑	●	●	◕	◑
Jurisdiction -wide cross -subsidization	◔	●	●	●	●
Taxpayer funded	◔	●	●	●	●

● Strong ○ Weak

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 14

The evidence asserts that recovering expansion costs exclusively from new customers would result in *"exorbitantly high rates"*.

a) Please provide the rate levels that London Economics has concluded would be *"exorbitantly high"*.

b) What energy costs/rates has London Economics considered in comparison to those which it asserts would be *"exorbitantly high"?*

Response:

The following response was prepared by LEI.

a) A quantitative assessment of the rate levels charged to natural gas expansion ratepayers was outside of the scope of work. LEI consider rates to be "exorbitantly high" under a natural gas expansion ratepayers funding mechanism relative to the rates paid by existing customers, and the rates determined under the three alternative funding mechanism identified. The alternative funding mechanisms provide for the distribution of part, or all of, the total cost (including return margin) of expansion across a broader ratepayer/ taxpayer base.

b) Please refer to LEI`s response to part a).

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A, Tab 1, Schedule 1, p. 17

The evidence states:

By spreading the rate increase across its customer base, a utility can minimize the cost impact to any one customer, while ensuring rates are fair and equitable, and earning an appropriate return on investment.

a) Please explain what London Economics means by the phrase *"fair and equitable"* in the foregoing passage.

b) Please explain how London Economics has determined that cross-subsidization of otherwise uneconomic gas expansions by Union's existing customers' results in rates which are *"fair and equitable"*.

Response:

The following response was prepared by LEI.

a) Good utility rate design reflects a consensus between the utility, its ratepayers, and its regulators with regards to what is fair and equitable. LEI define such a design as one that allows a utility to recover the costs of, and fair return on, its investment while charging ratepayers efficient prices consistent with the cost of supply and the practicalities of administration.

b) Please refer to LEI's response to Exhibit S15.Union.IGUA.8.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** Exhibit A. Tab 1, Schedule 1, Figure 7.

a) In the cited figure, London Economics asserts that funding expansions from rates paid by new (expansion) customers is *"[i]nconsistent with the goal of public policy mandates such as the LTEP and the Green Energy Act"*.

Please explain this assertion. In so doing, please identify the specific goals considered, and the particular inconsistencies of such a funding mechanism with those goals.

b) In the cited figure, London Economics asserts that funding expansions through taxes has the disadvantage that *"the inherent nature of a tax is to potentially distort individual behavior"*.

Please explain what particular behaviour would potentially be distorted were currently uneconomic gas distribution system expansions to be funded through tax revenues.

Response:

The following response was prepared by LEI.

a) The Ontario government in its 2013 Long Term Energy Plan ("LTEP") for the province noted it "*will work with gas distributors and municipalities to pursue options to expand natural gas infrastructure to service more communities in rural and northern Ontario."*[1] The provision of natural gas services to rural and northern Ontario is currently considered uneconomic. Adopting a funding mechanism which requires natural gas expansion ratepayers to fund the entire cost of an expansion project is unrealistic and likely result in no expansion programs proceeding. LEI therefore consider this funding mechanism as contrary to the goals set out by the Ontario government in the LTEP.

b) Taxes are used to impact the behaviour of individuals or companies by altering the incentives they face. LEI in its report noted the *"challenge in implementing a tax is the ability to balance both the social and economic objectives, while minimizing the negative welfare effects associated with an increase in taxpayer costs."*

The distorted behavior referred to in Figure 7 of LEI's report refers to where the implementation of a tax potentially has a negative welfare effect on an individual / company beyond simply those that are directly impacted by a community expansion program. For

[1] Ontario Ministry of Energy. Achieving Balance Ontario's Long Term Energy Plan. December 2013

example, a tax which reduces economic activity by an amount greater than the funds it raises and the return on the use to which the taxpayer funded activities garners would be distortionary.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference: *Expert Evidence of Adonis Yatchew, Charles River Associates Inc.*, March 21, 2016, on behalf of EPCOR Utilities Inc., paragraph 22.

The evidence cites refers to a successful proposal by Summit Natural Gas of Maine (SNG) to extend gas service to previously unserved areas in that state. The evidence indicates that SNG's business strategy included:

…innovative approaches to pricing including accepting a rate of return that is below industry standards for the initials years of the tariff plan, offering pricing structures that include up-front financial incentives to help defray the costs of converting to natural gas and offering "on bill" loans to help bridge the gap between upfront costs of conversion and eventual savings from switching to a cheaper fuel source.

Please indicate whether Union has considered any of these mechanisms, or any similar customer incentive mechanisms, to facilitate expansion of its distribution system to unserved communities. If it has, please detail those considerations. If it has not, why not?

Response:

Union has not included up-front incentives in its proposal, but intends to leverage DSM offering incentives as noted in EB-2015-0179 at Exhibit JT1.18 Attachment 1 (p. 15), in order to increase interest on the part of consumers.

Union has not considered offering "on-bill" loans because financing of HVAC equipment is an activity that should reside in the competitive marketplace as opposed to an offering of a regulated monopoly. However, the Board recently directed Union to establish access to Union's bill for third parties who provide conservation related services[1]. Union expects that when developed, to the extent possible, this access would be made available to customers in expansion areas.

Regarding rate of return, please see the response at EB-2015-0179 Exhibit B.Staff.3 i).

[1] OEB Decision and Order for EB-2015-0029, p. 55.

UNION GAS LIMITED

Answer to Interrogatory from
Industrial Gas Users Association ("IGUA")

Reference**:** *Comments on Economic Issues Raised in EB-2016-0004*, filed on behalf of Parkland Fuel, paragraph 1.8.

In their evidence, Mr. Dasgupta and Dr. Nieberding discuss the load forecast risk associated with gas system expansions.

a) Is Union willing to assume the load forecast risk associated with its expansion program?

b) If not, how does Union propose to allocate that risk?

Response:

a) As noted in EB-2015-0179 at Exhibit B.South Bruce.6 b) Union has used conservative attachment forecasts in order to minimize customer forecast achievement risk. This conservative approach provides a means for existing ratepayers to benefit from overachievement of the forecast.

   With Union's proposed Temporary Expansion Surcharge (TES), the load forecast risk is generally doubled from what it would be in the absence of the TES. Weather risk on the attached customers is increased as well. For this reason Union has not proposed that Union's shareholders bear the forecast risk.

b) Union has proposed that forecast risk be borne by all ratepayers.

UNION GAS LIMITED

Answer to Interrogatory from
London Property Management Association ("LPMA")

Reference: Exhibit A, Tab 1, p. 4

In point 2, Union states that its customers would be incurring costs without receiving any corresponding benefits if Union's customers were subsidizing another utility's cost of service.

a) Please explain what benefits Union customers receive if Union serves the new community rather than another distributor in exchange for the subsidy they would be paying.

b) Please confirm that if the OEB determines that it does not have the legal authority to establish a framework whereby the customers of one utility subsidize the expansion undertaken by another distributor into communities that do not have access to natural gas, that Union's customers would pay less if these new communities were served by another distributor as compared to Union. If this cannot be confirmed, please explain fully.

Response:

a) Please see the response at EB-2015-0179 Exhibit B.CCC.5, and further examples of potential economics of scale referenced in Union's response to Issue 9 at EB-2016-0004 Exhibit A, Tab 1, pp. 32-33. Union estimates these impacts at Exhibit S15.Union.BOMA.59 c).

b) Confirmed, provided that if another distributor connects to Union's system, the impact of that connection would not result in Union's Investment Portfolio or Rolling Project Portfolio PI's dropping below 1.0.

UNION GAS LIMITED

Answer to Interrogatory from
London Property Management Association ("LPMA")

Reference: Exhibit A, Tab 1, p. 8

a) If there was no minimum project PI but a requirement for a rolling project portfolio of 1.0, and based on the $14.6 million positive NPV noted for the last several years, how many of the projects that Union is proposing for the next five years in EB-2015-0179 would proceed in the next five years?

b) If the rolling project portfolio was reduced to a minimum of 0.9, how many of the projects would proceed within the next five years?

Response:

a) Please see the response at Exhibit S15.Union.CCC.3 b).

b) This question is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The intent of the generic proceeding as outlined in the Board's Decision and Procedural Order No.2 (dated March 9, 2016) is to allow the Board an opportunity to establish a common framework and provide guidance to all entities that wish to provide gas distribution services in communities across Ontario. The scope clearly does not include the detailed analysis and modelling requested on specific projects identified in Union's EB-2015-0179 proposal. Rather, the Board needs to first consider the generic aspects of community expansion and make the necessary policy-related decisions before any focus can be given to specific projects.

UNION GAS LIMITED

Answer to Interrogatory from
London Property Management Association ("LPMA")

Reference: Exhibit A, Tab 1, p. 13

Has Union proposed in EB-2015-0179 the ability to have separate rates, or rate zones associated with specific community projects? If not, why not?

Response:

Please see the response at Exhibit S15.Union.Staff.2.

UNION GAS LIMITED

Answer to Interrogatory from
London Property Management Association ("LPMA")

Reference: Exhibit A, Tab 1, pp. 8 to 14

Please provide a table that shows for each of the 29 eligible projects listed in EB-2015-0179, Exhibit A, Tab 1, Appendix D, Updated the profitability index as filed in that appendix, along with the profitability index that would result if the OEB approved the changes proposed by Union in pages 8 through 14.

Response:

Please see the response at Exhibit S15.Union.CCC.6.

UNION GAS LIMITED

Answer to Interrogatory from
London Property Management Association ("LPMA")

Reference: Exhibit A, Tab 1, p. 18

a) Has Union considered the suspension of depreciation costs in the economic assessment for a limited number of years, with this expense recovered through rates over the remainder of the life of the assets for assets used to serve a new community? If not, why not?

b) What would be the impact on a typical new community project economic assessment, if the depreciation expense was deferred for the first 5 years that the project is in place, with the depreciation expense included in a deferral account and recovered over the a 35 year period? In particular, please provide a table that shows for the each of the 29 eligible projects shown in Exhibit A, Tab 1, Appendix D, Updated in EB-2015-0179 that shows the profitability index as shown in that appendix, along with the profitability index if the depreciation expense was deferred for the first 5 years of the project, along with the recovery of this expense over the remaining 35 years in the PI calculations.

Response:

a) No. Union has not considered the suspension of depreciation for a period of time. In concept a deferred rate recovery of a cost item such depreciation expense would result in the delay of revenue by the utility. Such a delay would require a deferral account mechanism to keep the utility whole. From the perspective of an NPV assessment the utility should be no worse off than it would be collecting the depreciation in the normal course of business. As such the time value of money applied to the deferral account would not impact the results of the economic assessment of a project.

b) The DCF is a cash flow analysis, and the PI is a ratio of the NPV of cash inflows to the NPV of the cash outflows. Depreciation is not a cash item and accordingly is not included in the DCF. Union is unable to provide the requested information.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

Preamble: The NOACC Coalition set out in its evidence, at page 3 lines 9 to 19, examples of costing provided by Union Gas with respect to expansion of natural gas service to the Municipalities of Neebing and Red Rock. In addition, Union Gas, in its table of Opportunity Assessment Summary at Appendix "D" to its July 23, 2015 submission in EB-2015-0179 sets out information of expanding natural gas to various communities, chosen by Union Gas.

Please provide the information set out in Appendix "D" to Union's July 23, 2015 submission in EB-2015-0179 with respect to communities in Northwestern Ontario from Kenora (in the west) to Wawa (in the east), including without limitation communities in Northwestern Ontario as set out in Tab 1 of the NOACC Coalition's Evidence (collectively hereinafter "Northwestern Ontario Communities"), but specifically excluding those communities already set out in Appendix "D" to Union's July 23, 2015 submission in EB-2015-0179.

Response:

The table below is a list of other communities located within the area described, that Union identified as part of its opportunity assessment. Because these communities were all a significantly longer distance from the existing natural gas system Union did not attempt to price a pipeline to move natural gas from its source to the edge of each town. For this reason, Union did not attempt to complete a preliminary economic feasibility assessment of pipeline connected projects to service these communities, and the communities were not included in EB-2015-0179 Exhibit A, Tab 1 Appendix D Updated.

Community Name	Maximum Customer Potential	Forecast Customers
Hornepayne	518	235
White River	435	196
PIC Mobert	195	88
Manitouwadge	1129	508
Dubreuilville	310	141
Goulais River & Goulais Bay	333	150
Wawa	1517	682
Chapleau	1046	472
Grassy Narrows FN	571	257
Wabaseemoong FN	562	253

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

Preamble: The NOACC Coalition set out in its evidence, at page 3 lines 9 to 19, examples of costing provided by Union Gas with respect to expansion of natural gas service to the Municipalities of Neebing and Red Rock. In addition, Union Gas, in its table of Opportunity Assessment Summary at Appendix "D" to its July 23, 2015 submission in EB-2015-0179 sets out information of expanding natural gas to various communities, chosen by Union Gas.

Has Union Gas completed similar estimates and costing (as set out in NOACC's Evidence at page 3 lines 9 to 19 and Tabs referenced therein) for any other Northwestern Ontario Communities in last 10 years? If so, please produce.

Response:

Please see the response at Exhibit S15.Union.NOACC.1.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

Preamble: The NOACC Coalition set out in its evidence, at page 3 lines 9 to 19, examples of costing provided by Union Gas with respect to expansion of natural gas service to the Municipalities of Neebing and Red Rock. In addition, Union Gas, in its table of Opportunity Assessment Summary at Appendix "D" to its July 23, 2015 submission in EB-2015-0179 sets out information of expanding natural gas to various communities, chosen by Union Gas.

Please provide all correspondence to and from the communities listed in the response of the Union Gas to No. 2 above in relation to the expansion of natural gas service to those communities.

Response:

Union has no natural gas expansion correspondence with the communities listed in the response at Exhibit S15.Union.NOACC.2.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

Preamble: The NOACC Coalition set out in its evidence, at page 3 lines 9 to 19, examples of costing provided by Union Gas with respect to expansion of natural gas service to the Municipalities of Neebing and Red Rock. In addition, Union Gas, in its table of Opportunity Assessment Summary at Appendix "D" to its July 23, 2015 submission in EB-2015-0179 sets out information of expanding natural gas to various communities, chosen by Union Gas.

With respect to each community listed in Union Gas' response to No. 2 and with respect to Northwestern Ontario Communities:

a) Advise whether natural gas services have been provided or, is in the process of being provided (and at what stage).

b) Provide a list of those communities which have agreed to provide the Contribution in Aid of Construction and those who have not.

Response:

a) Union has not provided natural gas service to these communities. Union has not taken any further steps because it is awaiting a Board decision on the policy raised by its EB-2015-0179 application as well as matters specific to this generic proceeding.

b) None of the communities listed have agreed to provide the necessary CIAC.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

Preamble: The NOACC Coalition set out in its evidence, at page 3 lines 9 to 19, examples of costing provided by Union Gas with respect to expansion of natural gas service to the Municipalities of Neebing and Red Rock. In addition, Union Gas, in its table of Opportunity Assessment Summary at Appendix "D" to its July 23, 2015 submission in EB-2015-0179 sets out information of expanding natural gas to various communities, chosen by Union Gas.

Enbridge, in their Evidence dated March 21, 2016 as Table 2, 3, and 4, provide lists of "communities currently under considerations" with corresponding data which includes data not set out in Appendix "D" to Union's July 23, 2015 submission in EB-2015-017, including without limitation, potential and forecast customers (conversion, new, total) and proposed solution (collectively the "Additional Data"). Please provide the Additional Data for those communities set out in Appendix "D" to Union's July 23, 2015 submission in EB-2015-017 and for Northwestern Ontario Communities.

Response:

Union provides both potential and forecast customers in EB-2015-0179 Exhibit A, Tab 1, Appendix D Updated. Union has not completed a full assessment of whether any combinations of CNG or LNG alternative supply models would be more appropriate than pipeline supply for each project and therefore is unable to provide the requested data. More in-depth assessments to consider other alternatives to service are best conducted prior to developing any Leave-to-Construct applications for specific projects to service new communities.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

If a fund is created to support the expansion of natural gas service to those rural and remote communities who do not have such service, please provide your position with respect to:

a) Whether:
   i) such a fund should be contributed to by all ratepayers in Ontario and used to expand service to communities irrespective of Utility; or

   ii) whether separate funds should be created for each Utility, limiting contribution to each such fund to customers of each Utility with said funds being used to expand natural gas service to only customers or perspective customer of such Utility.

b) How the Utility would prioritize the use of said fund for the expansion of specific projects.

c) Whether the Utility would be amenable to the incorporation, even partially, of a non-economic test (e.g. needs based) to prioritize the use of said fund for the expansion of specific projects.

Response:

a) If such a fund were to be created it should be created for each utility as noted in subsection ii). This would enable the utilities existing ratepayers to gain some of the mitigating benefits achieved through economics of scale, as noted at Exhibit S15.Union.BOMA.59 c).

   Further to the above, there would not be a need to develop a specific fund for this purpose; Union's proposals or a form of Union's proposals to accept reduced Project PI's and Portfolio PI exceptions would service this purpose, and would be less administratively burdensome than the development of a specific fund.

b) Union would prioritize use of the fund as noted at EB-2015-0179 at Exhibit B.South Bruce.5

c) Yes, Union would be amenable to the partial incorporation of a non-economic test provided a standard test is agreed upon (Board approved) and that the necessary inputs to the test are objective and readily available publicly.

UNION GAS LIMITED

Answer to Interrogatory from
The Northwestern Ontario Associated Chamber of
Commerce, The Northwestern Ontario Municipal Association
and Common Voice Northwest (The "NOACC Coalition")

At Page 19 of 38, 4(f) of its evidence, Union Gas submits that an assessment of the "impacts of not proceeding with the project should not be required". Does the Utility agree with the above referenced submission of Union Gas? If so, would the Utility then agree that circumstances such as the current energy supply mix (e.g. electricity, diesel) and specific energy needs of the communities are not relevant criteria? If the Utility does not agree with the above noted submission, why not?

Response:

Yes, Union agrees with its submission. Circumstances such as the current energy supply mix and the cost savings that are achievable through conversion to natural gas would be considered in a Stage 2 economic assessment of a Project to provide natural gas service, as Union proposed in its submission for issue 4 (f) in this proceeding. Since these costs are considered in the evaluation of a project to provide natural gas service, they are inherently available for use as a consequence of a decision to not provide service.

Union is unclear what other "specific energy needs of the communities" might imply. However, to the extent that these are known and can be quantified economically, they would also be included in Union's assessment noted above.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 8. and EB-2015-0179, Exhibit A, Tab 1, p. 38

Please provide the full calculations supporting the figures in Table 6 on page 38 of the original evidence.

Response:

The Inflows and Outflows for the 3 year average of Union's Rolling Project Portfolios are reported quarterly to the Board. These figures represent the accumulation of the Inflows and Outflows for every project contained within the Portfolio for each rolling year period. The figures in this case are the simple averages for the 3 years that end December 31. In the cases of the 29 specific projects, the inflows and outflows are based on 50% of the $135 million in capital required to complete half of the projects in one year as an outflow, and an inflow based on 40% of that value due to the PI of 0.4 for the projects .

The totals are calculated by adding the contents of each column.

The PI column figures are a calculation of the Inflow divided by the Outflow.

The NPV is equal to the Inflow minus the Outflow. There may be minor differences in the totals because the Inflows and Outflows are rounded to the nearest $100,000.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 11

Please provide the reason why Union believes there should be a "desire not to overburden community expansion projects with longer term reinforcement Advancement Charges when adequate capacity is currently available". Please quantify the application of this proposal to each of the 29 proposed projects.

Response:

Absent other factors, any continuous growth in customers or loads will at some point in the future result in the need for reinforcement of the supply system, unless either the growth stops, or a decision is made to not allow any growth to occur by denying service if necessary. The timeframe in which this future reinforcement is necessary will depend on the past and expected future rate of growth on that specific system. A reasonable limit must be established for when a customer being added today will be expected to pay for the need for system reinforcement in the future.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 11

Please explain why it is appropriate for the economic analysis to be based on a cost that is less than the actual expected cost of the expansion due to the use of a preferred design. Please confirm that the current practice is to include the higher cost of the preferred design in rate base and recover it from ratepayers.

Response:

Please see the response at Exhibit S15.Union.Energy Probe.5.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 14

Please advise whether Union believes that the 4% annual customer conversion assumption in years 11-25 would continue to be applicable in a carbon-constrained environment. Please provide copies of any studies, reports, analyses or other documents or information Union has that deal in whole or in part with customer conversions to gas from other energy sources in the next 40 years.

Response:

Please see the response at Exhibit S15.Union.BOMA.70.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 21 and EB-2015-0179, Exhibit A, Tab 1, p. 38 et seq.

Please confirm that a Stage 2 analysis should, in Union's proposal, include

a) the economic impacts on all customers outside of the new communities of the subsidies they are providing,
b) the economic impacts on the local communities of any subsidies provided by the municipalities,
c) the economic impacts across the province of any provincial funding,
d) the impacts on the Ontario electricity system,
e) quantification of the environmental costs and benefits of the expansion relative to:

    i. Status quo, and
    ii. Other options for provision of energy functionality to the community.

If any of the above are not proposed to be included, please explain why they should be excluded.

Response:

The Board's E.B.O. 134 decision, which was a precursor to E.B.O. 188, provided for use of further economic analysis to better understand the public benefits of expansion. This could take the form of both a Stage 2 and a Stage 3 analysis. Stage 2 generally refers to the energy cost savings that potential customers could achieve relative to their existing fuel usage. Stage 3 addresses public interest quantifiable and non-quantifiable benefits associated with a project.

Whereas a Stage 1 analysis includes only cash flows attributed to Union, Stage 2 and Stage 3 include cash flows not attributed to Union. These include customer cash flows attributed to energy savings, and non-cash factors both of which provide an understanding of the broader public interest perspective that the Board can consider in its evaluation of Union's proposal.

a) Not confirmed. The economic impact on customers outside of the new communities is the result of the Stage 1 analysis.

b) Not confirmed. The tax impact of project is not a cost to the municipality, it is revenue. The revenue net of the ITE is recognized as a cost to Union in Stage 1 and if necessary quantified as a benefit in Stage 3. It is not a part of Stage 2.

c) Not confirmed. Any provincial funding received by Union (assuming funding is provided to a municipality and paid by the municipality to Union) would reduce the capital invested by Union and recognized in Stage 1. The stage 3 analysis would consider the economic benefits for Ontario (GDP) as a result of the project. The GDP impact is based on the total cost of the project (investment by Union + government funding).

d) Not confirmed. Union is not able to determine the impacts on the Ontario electricity system.

e) Please see the response at Exhibit S15.Union.Energy Probe.8 part c).

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 21

Attached is a journal article dated April 22, 2014 authored by Professor Robert Howarth of Cornell University. Please advise whether Union Gas agrees with the conclusion of the author that, in addition to carbon dioxide emissions from combustion of natural gas, natural gas upstream and downstream methane emissions are equivalent to 3.8% of conventional gas, and 5.8% of unconventional gas including shale gas. Please advise the forecast mix of conventional vs. unconventional gas in years 10, 20, and 30 of its gas forecasts. Please provide a calculation of equivalent carbon dioxide emissions reflecting the upstream and downstream methane emissions. Please advise the total equivalent carbon dioxide emissions (including CO2 equivalent of methane from upstream and downstream emissions) for each cubic metre of natural gas expected to be burned in the expansion communities.

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for "*directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis.*"

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, p. 37

Please confirm that, absent subsidies to expand the distribution systems into new communities, the statement "there are significant price advantages of natural gas in comparison to propane, furnace oil, and electricity" is not correct. Please confirm that, absent those same subsidies, natural gas does not have a price advantage over geothermal in space heating and water heating applications in communities where there is no current gas distribution infrastructure.

Response:

Not confirmed. The statement that there are price advantages of natural gas is correct.

As noted in EB-2015-0179 at Exhibit A, Tab 1, Figure 3 (p. 12), Union has had between 5,000 and 7,000 customers connect to the system who converted from other fuels in each of the past 3 years. Consumer fuel choice is a key element of the energy marketplace in Ontario, and the number of consumers who choose to convert to other fuels (for example geothermal systems) pales in comparison to the number who choose to convert to natural gas in Ontario.

Union's EB-2015-0179 application is in direct response to both requests from consumers and municipalities, as well as the Board's initiative to address the Ontario government's desire to expand natural gas distribution systems to communities that currently do not have access to natural gas.

A comment letter from the Canadian GeoExchange Coalition filed with the Board in this proceeding on March 31, 2016 indicates that:

> *"We are generally of the view that the current proposal to extend the natural gas pipeline to rural communities in Ontario is a positive step towards improving Ontario's carbon footprint.*
>
> *Natural gas use goes way beyond heating buildings and homes. It is an important economic development tool and a significant step towards helping these communities – including First Nations' Communities – to access a cheaper and cleaner source of energy and help local businesses, institutions, farms and other potential gas users to improve their competitiveness. Every community in Ontario deserves an equal access and an equal opportunity for lower energy supply options.*
>
> *The current relative electricity rates and natural prices in Ontario are not favorable to the mass deployment of ground source heat pumps in the residential sector as showed in*

Appendix 1. Since 2009 – and net of distribution charges – electricity rates have been rising constantly and natural gas prices declining constantly. This is a market reality."

This comment confirms that natural gas has a price advantage.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Geothermal Association ("OGA")

Reference: Exhibit A, Tab 1, Schedule 1, p. 1

Please provide the basis for the statement "Natural gas expansion aligns with Ontario's environmental and carbon reduction goals to reduce greenhouse gas pollution by 15% below 1990 levels by 2020, and 80% below 1990 levels by 2050." Please provide all studies, reports, analyses and other documents or information in the possession of London Economics or Union dealing in whole or in part with the implications of Ontario's greenhouse gas reduction goals on Union's business, including, without limitation, any estimates of the reductions in natural gas throughput volumes that will be required to meet those goals.

Response:

The following response was prepared by LEI.

As noted in LEI's report, rural residents of Ontario currently rely on higher carbon emitting fuels such as oil, propane, or higher priced electricity in order to heat their homes and businesses. As natural gas replaces these fuels as a source for heating lower carbon emissions will be associated with these individual homes and business. This reduction will contribute to the environmental and carbon reduction goals of Ontario.

A detailed quantitative / qualitative assessment of the total greenhouse gas emission reduction possibilities associated with expansion of natural gas services was outside the scope of work for the engagement. Please review Section 6 of LEI's report for a detailed list of works consulted.

Union believes providing the requested documents is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for "*directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis.*"

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Sustainable Energy Association ("OSEA")

Reference: Exhibit A, Tab 1, Issue 4, Page 11 of 38

Preamble: *"Union has historically based the capital costs in the economic analysis of a project on the minimum pipeline system design necessary to service the demand expected through the project's customer forecast period."*

a) When determining expected demand, what consideration is given to renewable energy options, such as ground source heat pumps, and the impact of these renewable sources of energy on expected demand?

Response:

a) To the extent that Union is expecting the customers to convert based on the market information available, Union would not reflect the installation of renewable energy options in its forecast of the expected number of customers to connect to the system. However, changes in average use per customer, if warranted, would be reflected in the loads that are used in combination with the customer numbers to drive the calculation of revenues for the project.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Sustainable Energy Association ("OSEA")

Reference: Exhibit A, Tab 1, Issue 4 b), Page 11 of 38

Preamble: *"However, in cases where the natural gas load is used for heating, it is very unlikely to be demolished if the incumbent business is sold or closed, so at minimum, continued use of natural gas for heat should be included in the economic assessment. For this reasons, Union proposes that a maximum 40 year term be used for heat and water heating load for commercial and industrial customers."*

a) What assessment did Union perform to conclude that source of heating would not change from natural gas?

b) Did Union consider the feasibility of switching to renewable energy options?

c) Did Union review the uptake rates of renewable energy for heat and water heating in other jurisdictions?

Response:

a) Union did not perform a specific assessment. Union's opinion, based on many years of experience in the industry, is that once customers convert their equipment they need a very compelling indication that other options would be less costly before they would consider replacing the equipment before it reaches the end of its natural life.

b) Union considered the cost of geothermal/solar heating and water heating equipment and concluded that the up-front cost of these systems, estimated at $26,000 to $30,000[1], would be prohibitive.

c) Union did not review uptake rates of renewable energy for heat and water for other jurisdictions prior to making its application. However, a comment letter submitted by the Canadian GeoExchange Coalition for this proceeding indicates that the number of installations in Canada each year have been decreasing since peaking in 1998[2]. Heating and ground conditions in other jurisdictions may not be comparable to Ontario, however Canadian data is likely to be somewhat similar.

[1] As provided in EB-2017-0179 at Exhibit B.LPMA.2 c)
[2] "Canadian Geo Coalition(CGC)_ltr of comments_20160404", located at OEB RDS site for this proceeding, p.11.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Sustainable Energy Association ("OSEA")

Reference: Exhibit A, Tab 1, Issue 4 f), Page 20 of 38

Preamble: Union proposed that one of the public interest factors to be considered in assessing whether to proceed with the projects include "environmental benefits of the project"

a) How does Union define "environmental benefit" and how will it assess environmental benefits of a project?

   i. Will Union include an assessment of greenhouse gas use, reduction or emission?
   ii. Will Union compare only natural gas to the existing energy sources in the community?
   iii. Will Union prepare an assessment of all alternatives, including the use of renewable energy?

b) Is it Union's position that if the environmental benefits of natural gas are inferior to an available and viable renewable energy source that this should not be considered as a reason to not expand natural gas service?

Response:

a) To the extent a price is placed on carbon emissions and imbedded in costs for customers, or the emissions are quantifiable, Union would assess greenhouse gas emission impacts as part of a Stage 2 or 3 economic assessments. This appears likely with Ontario's plan to implement a Cap and Trade mechanism. If this does not occur the benefits would still be explained in a Stage 3 assessment.

b) No. Consumer choice is a significant consideration and if consumers in an area as asking for natural gas the feasibility of providing it should be explored. However, to the extent that renewable energy is a viable option Union would expect this to become readily apparent in the assessment of willingness of consumers to convert to natural gas. As such, forecasted penetration rates and load forecasts for projects in these situations would be weaker which would reduce the probability of them becoming feasible.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Sustainable Energy Association ("OSEA")

Reference: Exhibit A, Tab 1, Issue 10, Page 35 of 38

Preamble: Union stated preference is to deal with the effects of Ontario's cap and trade program in future proceedings (EB-2015-0363).

a) Has Union done any preliminary or other assessments on the impacts of Ontario's proposed cap and trade program on the costs of natural gas services? If so, please provide.

b) Is Union Gas intending to apply its conservation programs to potential customers in new communities to reduce the consumption of natural gas in advance of conversion?

c) Has Union Gas completed its analysis of the costs and benefits of community expansion using "average consumption per customer", pre-conservation consumption or post-conservation consumption?

Response:

a) On April 15, 2016, Union submitted to the Board an interim rate order (EB-2015-0363) with the intent of recovering the cost of customer emission allowances on a volumetric basis. The per unit rate impact in the proposed interim rate order is $\$0.026/m^3$.

b) Yes, please refer to EB-2015-0179 Exhibit JT1.18, pp.15-17.

c) Union's analysis in EB-2015-0179 Exhibit A, Tab 1, Appendix D Updated is based on pre-conservation average consumption. An assessment of expected consumption impacts through DSM program offerings to residential consumers is provided at EB-2015-0179 Exhibit JT 1.18, p.17.

UNION GAS LIMITED

Answer to Interrogatory from
Ontario Sustainable Energy Association ("OSEA")

Reference: Exhibit A, Tab 1, Issue 11, Page 37 of 38

Preamble: *"Union believes that natural gas will remain an economic option for customers in a low carbon economy as the differential between natural gas and electricity is so high."*

a) Has Union considered how the anticipated increase in natural gas prices under a cap and trade program will compare to the costs for renewable energy? If so, please provide the results of the analysis.

b) Has Union assessed how the increase in natural gas prices will impact conversion rates (e.g. will customers be more likely to switch from existing energy sources directly to renewable energy sources without converting to natural gas)? If so, please provide the results of the analysis.

Response:

a) This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

   The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

b) Although the province's Cap and Trade mechanisms are likely to raise the cost of all fossil fuels, Union does not expect them to impact natural gas costs relative to oil or propane because Union would expect carbon prices to apply to them as well as to natural gas. Electricity prices forecasted in the Long Term Energy Plan are expected to increase significantly, as noted in EB-2015-0179 Exhibit B.Energy Probe 5 (p. 4). Consequently, the economic benefit of conversion to natural gas will not be impeded.

UNION GAS LIMITED

Answer to Interrogatory from
Parkland Fuels Corporation ("Parkland")

Reference: Union Gas EB-2016-0004 Evidence, pg. 11

Union states that a project's economic analysis should be based on the capital costs of the minimum pipeline system design necessary to service the demand. In some cases, a project will be planned with a preferred design, for example with increased pipe size, to account for other system needs. Union submits the cost premium for a preferred system design should not be included in the economic analysis.

a) Please fully discuss the types of "system needs" that could justify a preferred design.

b) Would a preferred design include overbuilding pipe capacity to increase Union's ability to attract new customers in the future?

c) Is Union planning a preferred design for any of the expansions proposed in EB-2015-0179? If so, provide details of each preferred design Union is planning, including the additional capital cost and pipe capacity planned as compared with the minimum pipeline system design necessary to service the demand, as well as the system needs that justify each preferred design.

Response:

a) Please see the response at Exhibit S15.Union.Energy Probe.5.

b) Please see the response at Exhibit S15.Union.Energy Probe.5.

c) Yes; please see the response at EB-2015-0179 Exhibit A, Tab 1, Table 8 (p. 47) and the relevant Project evidence in EB-2015-0179 at Exhibit A, Tab 2, Sections A, B, and C for details.

UNION GAS LIMITED

Answer to Interrogatory from
Parkland Fuels Corporation ("Parkland")

Reference: Union Gas EB-2016-0004 Evidence, pg. 13-14

Union proposes a maximum 40-year term be used for estimating revenues from heat and water heating load for commercial and industrial customers. Union also proposes extending the maximum customer forecast period from 10 years to 25 years.

a) If Union's proposals are accepted by the Board, who would bear the risk of: (i) unforeseen circumstances resulting in commercial or industrial customers converting away from natural gas before 40 years; and (ii) fewer customers than forecast converting to natural gas between years 10 and 25?

Response:

a) Union's ratepayers would bear this risk. Union is not proposing to bear the risk of variation in the forecast of customer attachments, volumes and costs.

UNION GAS LIMITED

Answer to Interrogatory from
Parkland Fuels Corporation ("Parkland")

Reference: Union Gas EB-2015-0179 Application; Enbridge EB-2016-0004 Evidence, p. 19, Table 4

Enbridge has filed evidence that lists the potential customers, capital cost, distance from source and PI for each of its planned community expansion projects. Parkland requests the same information for each of Union's planned community expansion projects.

a) Please provide the same information about each of Union's planned community expansion projects that Enbridge provides about its projects in Table 4 of its evidence.

Response:

a) Please see EB-2015-0179 Exhibit A, Tab 1, Appendix D Updated.

UNION GAS LIMITED

Answer to Interrogatory from
Parkland Fuels Corporation ("Parkland")

Reference: Union Gas EB-2016-0004 Evidence, Schedule 1: Report by London Economics International LLC

No author has been indicated for this report.

a) Please identify the author(s) of this report, as well as their qualifications.

Response:

The following response was prepared by LEI.

LEI is the author of the report, as the firm's work reflects the collected experience of its staff, including those who did not formally contribute to the report. The following LEI staff contributed to authorship of the report:

- AJ Goulding, President;
- Lance Brooks, Senior Consultant;
- Juliana Bruno, Research Associate;
- Jarome Leslie, Research Associate; and
- Azraa Zoomerwalla, Research Associate.

Please refer to Section 12 for detailed curriculum vitae for all authors of LEI's report.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

With regards to risks and benefits of Union's proposed community expansion methodology:

a) provide a list of all benefits and risks borne by each of the following:

   v) Existing customers

   vi) New customers

   vii) New communities (i.e. municipalities)

   viii) Union

b) Please explain why Enbridge believes the allocation of benefits/risk is appropriate.

Response:

a)

v. Existing Customers

Benefits: Positive Gross Domestic Product ("GDP") impacts as annual energy savings from those converting flow back into the provincial economy; economies of scale reflected in rates as future attachments occur; potential earnings sharing benefits in accordance with IRM.

Risks: Capital cost risk for constructed facilities; TES deferral credits may be higher or lower related to forecast achievement or consumption being more or less than forecasted.

vi. New Customers

Benefits: Annual savings available from switching to natural gas, and same benefits as existing customers.

Risks: Annual savings may be more or less than estimated at the time of conversion; same risks as for existing customers once attached.

vii. New Municipalities

Benefits: Ability to retain or attract new residents and businesses due to competitive energy costs, future incremental property taxes on pipeline systems installed, and to the extent they own buildings the same benefits as new customers.
Risks: None

viii. Union:

Benefits: Growth in earnings resulting from return on equity for the increased level of investment.

Risks: All risks inherent in the operation of a natural gas distribution company for the new attachments and distribution systems; traditional weather risk on new attachments.

b) Union believes the allocation of risk in its proposal is appropriate because the rate impacts for customers provided at Exhibit S15.Union.IGUA.6 and peak at $2.91 per year (an average of $0.24 per month) for a typical residential customer, in comparison to Stage 2 economic benefits in the range of $300 million as provided in EB-2015-0179 at Exhibit A, Tab 1 Updated, p. 39. Union believes utility risk is appropriate as noted at EB-2015-0179 Exhibit A, Section Exhibit B.CPA.11 (c) and Exhibit B.CPA.16.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p. 5

Notwithstanding Union's position on issues 2 and 3, please provide its detailed views on how a cross-utility subsidization program should be implemented if the Board determined such an approach appropriate.

Response:

Please see the response at Exhibit S15.Union.CCC.2.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: pp. 8-11

Which of the proposed clarifications and adjustments to the economic assessment factors in EBO 188 did Union include in its application and evidence in EB-2015-0179? If it did not include all, please provide a revised P.I. for each of its proposed 29 projects which does so.

Response:

With respect to costs, Union has included upstream reinforcement and minimum design costs in its EB-2015-0179 project applications. With respect to revenues, Union has used existing rates with a proposed Temporary Expansion Surcharge (TES). With respect to time periods, Union has not incorporated proposed changes to reflect either the commercial/industrial revenue time period or customer forecast time period.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p. 12

Considering a significant reduction in natural gas usage is going to be required to meet the GHG reduction targets set out in Bill 172, please explain why it is appropriate to expand natural gas service when consumption is going to need to be reduced dramatically.

Response:

It is appropriate to expand natural gas service because customers and municipalities are requesting it, the Provincial government supports it and because expansion of natural gas service is not inconsistent with reducing GHG emissions.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p.18, Enbridge Evidence, p. 15, Table 1

Please provide a similar table to that of Table 1 in Enbridge's evidence. Please also add an additional column that shows the payback period if the SES was set at a rate to ensure that each community expansion project met the PI of 0.8 (i.e. there was no subsidy from existing customers).

Response:

Please see the table below, which provides a perspective on the payback periods of converting both heating and water heating to natural gas form other fuels.

The annual savings are based on updated annual energy cost information provided at Exhibit S15.Union.Energy Probe.15 (d), and propane conversion cost information provided at Exhibit S15.Union.Board Staff.10. The costs do not reflect future price projections. Union has separated propane savings into two categories in order to differentiate propane heating equipment that can be converted from propane heating equipment that would need to be replaced in performing these calculations. Further, Union has provided propane costs for both automotive propane and "Home Propane Estimate" as discussed in Exhibit S15.Union.Energy Probe.15 d). Conversion costs are sourced from EB-2015-0179 Exhibit A (Updated), Tab 1, Table 2 (p. 20), with the exception of propane heating equipment that can be converted as noted above. For oil and propane heated homes Union has assumed an electric water heater is currently installed.

Primary Fuel Type	Penetration	Annual Heating and Water Heating Bill	Natural Gas Savings (No TES)	Natural Gas Savings (With TES)	Heating Conversion Type	Conversion Applicability	Estimated Heating Equip Conversion Cost	Estimated Annual Water Heater Costs	Simple Payback Years (with TES)
Propane	35%	$2,621	$1,777	$1,271	Furnace replacement	25%	$4,000	$1,500	4.3
(automotive)		$2,621	$1,777	$1,271	Furnace conversion	75%	$350	$1,500	1.5
Home Propane		$2,058	$1,214	$708	Furnace replacement	25%	$4,000	$1,500	7.8
Estimate		$2,058	$1,214	$708	Furnace conversion	75%	$350	$1,500	2.6
Oil Forced Air	28%	$2,554	$1,710	$1,204	Furnace replacement	80%	$4,200	$1,500	4.7
Oil Boiler		$2,554	$1,710	$1,204	Boiler replacement	20%	$4,200	$1,500	4.7
Wood	22%	$2,158	$1,314	$808	Replace with fireplace	100%	$3,500	$1,500	6.2
Electric Forced Air	15%	$3,338	$2,494	$1,988	Furnace replacement	45%	$4,000	$1,500	2.8
Electric Baseboard		$3,338	$2,494	$1,988	Repl + Ductwork	55%	$11,000	$1,500	6.3
Natural Gas		$844							
Weighted Average (with Home Propane Estim			**$1,567**	**$1,061**			**$3,565**	**$1,500**	**4.8**

Union has not added a column that would reflect the results with a different TES rate to the above table. This request is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The intent of the generic proceeding as outlined in the Board's Decision

and Procedural Order No.2 (dated March 9, 2016) is to allow the Board an opportunity to establish a common framework and provide guidance to all entities that wish to provide gas distribution services in communities across Ontario. The scope clearly does not include the detailed analysis and modelling requested on specific projects identified in Union's EB-2015-0179 proposal. Rather, the Board needs to first consider the generic aspects of community expansion and make the necessary policy-related decisions before any focus can be given to specific projects.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p. 15, Table 1

Please add an additional column to table that shows the payback period if the SES was set at a rate to ensure that each community expansion project met the PI of 0.8 and there was no subsidy from existing customers.

Response:

Please see the response at Exhibit S15.Union.SEC.5.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p. 22

Please explain why Enbridge has limited collecting the ITE for only 10 years.

Response:

Union has limited the Incremental Tax Equivalent (ITE) to a maximum of 10 years to match the period that Union has proposed as a maximum for the Temporary Expansion Surcharge. This maximum term would provide the municipalities with the benefit in the foreseeable future of incremental property tax revenues.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: p. 35

Please provide Union's forecast of annual natural gas consumption for each of the next 40 years, on a per customer basis for the average:

a) Residential customer

b) Commercial customer

c) Industrial customer

Response:

This question is outside the scope of the Board-approved Issues List for this proceeding. The Issues List relates to a generic proceeding that was initiated by the Board on its own Motion. Further, the Board in its Decision and Procedural Order No.2 (dated March 9, 2016) stated that, "*it does not expect this proceeding to deal with the broader issues around cap and trade and the resulting rate impact of the program on all customers*." Rather, the Board is looking for *"directional impacts on how the cap and trade impact comparisons to alternative fuels and not a thorough quantitative analysis."*

The impact of greenhouse gas emissions ("GHG") on overall throughput is out of scope.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: Enbridge Evidence

If the Board were to adopt Enbridge's community expansion project methodology, including allowing projects with PI's below 0.4, how many additional communities would Union be able to connect, how many additional forecast customers would be added, and what would the additional capital costs be?

Response:

If Union applied a maximum 40 year temporary Expansion Surcharge (TES) to the Projects in order to achieve a minimum PI of 0.5, approximately 5 additional projects would become feasible. This would result in an incremental 1,100 forecast customers and add $31 million of incremental capital cost for those Projects.

If Union applied a maximum 40 year TES to the Projects in order to achieve a minimum PI of 0.4, approximately 15 additional projects would become feasible. This would result in an incremental 2,600 forecast customers and add $93 million of incremental capital costs for those Projects.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Does Union currently, or has it ever, paid a fee or made payment(s) to a municipality which it has a Municipal Franchise Agreement with, for the purposes of provide compensation for or in recognition of, it permitting Union to operate within its municipalities. If so, please provide details.

Response:

No. Union is unaware of any situation where this has occurred at least since the development of Model Franchise Agreements, and it is not a condition in any existing Franchise Agreements.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: EPCOR, Yachew Report, pp.12-13

Notwithstanding the position regarding Issues 2 and 3, please provide Union's view regarding the approach to cross-utility subsidization proposed in the evidence of Dr. Yachew on behalf of EPCOR.

Response:

Union does not support the approach envisioned by Dr. Yatchew. Union's position is outlined in its EB-2016-0004 Exhibit A, Tab 1 evidence related to Issues 2 and 3.

Exhibit A, Tab 1, Schedule 1 (p.14) of Union's submission provides a report from London Economics International ("LEI") which includes a ranking of funding mechanisms from five perspectives:

- Cost Causation and avoidance of subsidies
- Financial Stability and fair rate of return
- Incentives compatibility
- Non-discrimination
- Administrative simplicity and transparency

Based on these criteria internal utility cross subsidization appears to be the strongest option, and is within the jurisdiction of the Board.

The administration of a cross utility subsidization system would be overly complex and administratively burdensome. Beyond this, Dr. Yatchew appears to envision the proceeds of the reserve fund being provided to candidate projects as Aid to Construction, as opposed to annual amounts used to reduce the revenue require of the project. If this is the case, in order to have the same potential impact on a Project the amount collected from existing ratepayers would have to be significantly greater and occur over a much shorter time period than what would be required to fund annual revenue requirement shortfalls.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: LEI Report, p.8

What was the criteria LEI used to determine which North American jurisdictions to review? Is LEI aware of any other jurisdiction in North America that has undertaken an alternative funding mechanism for natural gas expansion that was not included in the report? If so, please provide details of those mechanisms.

Response:

The following response was prepared by LEI.

Natural gas jurisdictions were identified following an initial high-level desktop review. LEI focused its efforts based on its own industry expertise and knowledge of such programs. To complete the initial review LEI sought to identify if an explicit community expansion program existed in the region, and if so, what funding mechanisms were adopted under the program. LEI relied on publicly available information including regulator, legislature and utility websites (including applications, decisions/orders, legislation, codes and guidelines), reports and presentations.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: LEI Report

Is LEI aware of any other regulatory changes that have been considered and/or adopted by North American jurisdictions for the expansion of natural gas service, besides some form of subsidization? If so please, provide details.

Response:

The following response was prepared by LEI.

LEI is not aware of alternative (non-subsidization) approaches adopted for the provision of natural gas services.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: LEI Report

Is LEI aware of any other economic tests besides that set out in EBO 188, which other jurisdictions have used to determine the economic feasibility of expansion projects?

Response:

The following response was prepared by LEI.

Please refer to Section 4.1.1 and Section 4.1.3 of LEI's report for discussion of alternative economic tests utilized in New York and Nebraska respectively.

UNION GAS LIMITED

Answer to Interrogatory from
South Bruce

Reference: Exhibit A, Tab 1, page 4, lines 4-11

Preamble: Southern Bruce would like to better understand Union's position on the difference between imposing a charge on Union's existing customers for purposes of subsidizing certain new community expansion customers and "imposing a charge on Union's customers for purposes of subsidizing another utility's cost of service".

a) Is Union's view that the former is more consistent with the ratemaking principle of equity than the latter?

b) If so, what is the rationale for Union's view on why the equity implications are different in these two circumstances.

Response:

a) Yes.

b) If Union were to charge its customers for the purposes of subsidizing another utility's cost of service that portion of the customer's charge would not be based upon any underlying costs incurred by Union to serve its customers and would not be in accordance with the just and reasonable standard.

UNION GAS LIMITED

Answer to Interrogatory from
South Bruce

Reference: Exhibit A, Tab 1, page 31. lines 10-18

Preamble: Southern Bruce would like to better understand the statement that "Union does not believe that there are cost reduction opportunities that would reduce the capital costs of expansion significantly enough to overcome the financial viability barrier that currently exists."

a) Please provide any relevant evidence that supports this statement.

b) Does Union also believe that there is no entity that could build the required infrastructure to serve the communities that Union has included in its list of potential projects at a cost below Union's cost? If so, please provide any evidence that supports this view.

c) If another entity can demonstrate that it could serve one or more communities on the Union list below Union's cost, does Union believe that the OEB should require Union, as the higher cost service provider, to provide service?

Response:

a) In EB-2015-0179 at Exhibit A, Tab 1, Appendix D Updated, Union identified 103 potential expansion projects and provided an estimated capital construction cost and natural PI for each. These PI's ranged from 0.02 to 0.44. In other words, the projects would generate from 2% to 44% of the necessary cash inflows required to make them economically feasible on a stand-alone project basis without including very significant levels of Aid of Construction. In other words, without Aid or increased tariffs, the cost for these projects would have to be reduced by 56% to 98% to reach a PI of 1.0. Union is unaware of any technologies or processes that would generate anything approaching these types of capital cost savings.

b) Union does not know if other entities might be able to build the infrastructure at a lower cost than Union. However, the capital cost should not be the most critical concern of the municipalities. The ability to operate a sustainable, safe distribution system combined with the revenue requirement that will be passed on to consumers in the communities and any necessary Aid to Construction are more critical factors. The revenue requirement is based on more than only the capital costs of building the infrastructure, it also reflects operating costs and financing costs for example.

c) Rather than considering capital cost, the revenue requirement and necessary Aid to Construction provides a more appropriate basis for comparison of potential projects, as noted in b) above.

UNION GAS LIMITED

Answer to Interrogatory from
South Bruce

Reference: Schedule 1, London Economics Report, page 1

Preamble: "Alternatively expansion of natural gas services, for example to rural communities in Ontario, may be categorized as a public good where substantial positive externalities accrue to all. The cost of expansion programs may therefore be recovered from all ratepayers or taxpayers within the province, as opposed to an individual utility customer base. The LEI team found no examples of customers of one utility subsidizing another's except where all customers within a jurisdiction across multiple companies provided the funding."

a) Please confirm that the LEI findings are consistent, in principle, with the adoption of a mechanism that would use funding collected through a province-wide per GJ charge to subsidies natural gas expansions that are uneconomic but are deemed to be in the public interest**.**

b) Please identify any reasons, other than Union's view that the OEB does not have the jurisdiction to implement such a mechanism, that this is not an option that should be considered.

Response:

The following response was prepared by LEI.

a) While such a method would be one potential means of funding uneconomic natural gas expansions, LEI did not specifically consider such a configuration in its report and thus cannot comment on it.

b) LEI recognised in its report a broad-based approach to funding community expansion programs may provide an alternative approach to Union's proposed internal-utility cross subsidization. Specifically these approaches may be utilized where an expansion program is clearly defined as a public good, providing for recognition of the wider environmental and economic benefits that may be accrued through the investment to the broader public.

UNION GAS LIMITED

Answer to Interrogatory from
South Bruce

a) Would Union consider it appropriate for the OEB to deny a leave to construct to an entity that can provide service to a community that neither Union or Enbridge is planning to serve under their community expansion programs. If yes, please explain the reasons.

b) Would Union consider it appropriate for the OEB to deny a leave to construct to an entity that can provide service to a community that either Union or Enbridge is planning to serve under their community expansion programs if the other entity is prepared to provide service significantly early. If yes, please explain the reasons.

c) In the event that a community is located such that either Union or Enbridge would be able to provide service under their community expansion programs, what criteria should the OEB use to determine which utility should be granted the right to proceed with its proposal?

   i) Should cost be a primary consideration?

   ii) Should the local community have the right to choose its distributor?

d) Should the OEB be open to approving the leave-to-construct applications from each distributor, should both file applications?

Response:

a) No.

b) It could be appropriate for the Board to deny or place an application on hold if in the Board's judgement the difference in expected in-service dates is offset by additional benefit provided to the consumers in the community by the later proposal.

c)
   i) Please see the response at Exhibit S15.Union.South Bruce.2 c).
   ii) The Board should make the ultimate choice in Distributors since it has an obligation to ensure just and reasonable rates.

d) No. The Board should not approve Certificates of Public Convenience and Necessity, or Leave-to-Construct applications, which would allow multiple Distributors to serve the same geographic areas. This would not be in the public interest because duplication in infrastructure would result in increased costs to consumers.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit A, Tab 1, p. 3

a) Does Union contend that the Ontario Electricity Support Program is contrary to the role of the Ontario Energy Board as an economic regulator of just and reasonable rates? Please distinguish or compare the Program with a program of subsidization of uneconomic natural gas expansion.

Response:

a) The Ontario Electricity Support Program ("OESP"), which is administered through the Ontario Energy Board ("the Board"), provides ongoing support to low-income consumers struggling to pay their electricity bill. The Board serves as an economic regulator of just and reasonable rates while the intent of the OESP is to help low-income households by lowering their electricity bills. A program to extend natural gas service to additional communities is not targeted towards low-income customers. As such, no comparison between the two can be made.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: All

a) Please produce a table which shows and contrasts the proposal of Union with the proposal of Enbridge.

b) Please provide a column in the above table with Union's comment as to the reason for any differences in the two proposals.

c) Specifically comment on the impact to Union's proposal if the Board were to accept Enbridge's proposal for a System Expansion Surcharge.

d) Specifically comment on Enbridge's proposal for a differentiated Community Expansion Portfolio and how, if the Board were inclined to accept this proposal, how this would impact Union's proposed projects.

e) Enbridge has proposed that community expansion projects should be treated as a "Y-factor" with the incremental revenue requirement of community expansion addressed as part of the annual rate setting process. Please comment on this proposal and contrast it to Union's position.

Response:

a) Please see Attachment 1.

b) Please see Attachment 1.

c) Please see the response at Exhibit S15.Union.SEC.9 for further comments.

d) Enbridge proposes that Community Expansion Projects be Exempted from the Investment Portfolio requirements of E.B.O. 188, which is consistent with Union's proposal.

With respect to the Rolling Project Portfolio (RPP), Enbridge proposes that Community Expansion Projects be exempted from the traditional RPP and instead that a separate RPP consisting of only Community Expansion Projects be maintained with a minimum RPP PI of 0.5. This Community Expansion RPP would vary from the 12 month rolling timeframe set by E.B.O. 188, and instead allow the timeframe to extend for the length of time (approximately 7 years) that Enbridge would be undergoing Community Expansion Projects.

This approach in isolation of other elements of Enbridge's proposal would limit the number of Projects that Union could undertake. Union could accept a similar proposal if the minimum PI of the RPP was set at 0.4.

e) Enbridge's proposal is similar to Union's in that it proposes that the capital costs of Community Expansion Projects be included in rates once the Projects have entered service. Union supports this concept.

Attachment 1: **Comparison of Union and Enbridge Community Expansion Project (CEP) Proposals**

Feature	Enbridge Proposal	Union Proposal	Rationale for Differences
Program Summary			
Project Eligibility	A natural gas system expansion project which will provide first time natural gas system access where a minimum of 50 potential customers in homes and businesses already exist, for which minimum economic feasibility guidelines permit a Profitability Index ("PI") of less than 1.0.		Same
Gross Capital	$410 million	$135 million; > $135 million if government funding becomes available	PI's of first 2 projects in Enbridge portfolio enable additional projects
Capital Pass Through to Rates	Yes		Same
Projects	39	29, additional projects if more if government funding is available	
Potential Customers	20,490	18,373	
Forecast Customers	16,246	9,107	
Forecast Penetration	79%	50%	
Gross Capital per Forecast Customer	$25,200	$14,800; unknown if government funding is available	
Profitability Index (PI) Treatment			
Project Minimum PI	No minimum	0.4 after including TES	
CEP Rolling Project Portfolio (RPP) Minimum PI	0.5	CEPs excluded from RPP (0.4 implied by min Project PI)	PI's of first 2 projects in Enbridge portfolio enable all other projects. Union's first few projects would not support many other projects.
CEP RPP Portfolio Term	*Full term of a multi-year expansion program	N/A	Enbridge: Traditional 12 month Rolling Portfolio approach would not enable other projects to occur after year 1. Union: manage portfolio through adherence to maximum rate impact/residential customer as opposed to managing to a minimum Portfolio PI.
Investment Portfolio PI	CEP's excluded from Investment Portfolio		Same
Average Residential Rate Impact Ceiling	$2.00/month		Same

Feature	Enbridge Proposal	Union Proposal	Rationale for Differences
SES or TES (New Customer Surcharge Mechanism)			
Type	Volumetric		Same
Applicability	All CEP customers	All CEP general service customers; contract rate customers have no TES	Enbridge and Union have differing contract customer offerings suited to their specific areas of operation.
Value	$0.23/m^3		Same
Term	Lesser of 40 years, or when Project reaches a PI of 1.0	Minimum 4 years, maximum 10 years	
Treatment	Revenue	Revenue to deferral account for disposition to ratepayers	
ITE (Municipal Financial Support)			
Term	10 years	Minimum 4 years, maximum 10 years	
Optionality	Mandatory for any projects with PI >1.0	Mandatory for any projects with PI >0.8	
Basis	Incremental annual property tax value on assets installed		Same

* indicates an assumed or interpretation of the Enbridge proposal based on other components of their submission.

Both Enbridge and Union have defined similar proposals for small main extension projects that do not meet the definition of a CEP with two differing features. Enbridge will include these projects in its CEP RPP and include them in the "Y factor" to pass the capital through to rates, whereas Union proposed that these projects remain in its traditional RPP and not be subject to a capital pass through.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Enbridge Gas Distribution (EGD) evidence Table 3, page 19

a) For the proposed Union Community projects please produce a table similar to Table 3 of EGD's evidence which shows the PI's of projects if the E.B.O. 188/Community Expansion proposals of EGD were applied

---

Response:

a) This question is too specific and not relevant to the Board-approved Issues List for the generic proceeding. The generic proceeding was introduced in a January 20, 2016 letter from the Board to all EB-2015-0179 parties. At this time, the Board also announced that Union's EB-2015-0179 application would be "put on hold" until the completion of the generic proceeding. The intent of the generic proceeding, as noted in the Board's EB-2016-0004 Decision and Procedural Order No.2 (dated March 9, 2016), is to assist the Board in establishing a common framework and provide guidance to all entities that wish to provide gas distribution services in communities across Ontario. The scope of the generic proceeding does not include the detailed analysis and modelling requested on the expansion projects identified in EB-2015-0179. Rather, as noted above, the Board needs to deal with the generic aspects of community expansion first before any focus can be given to the expansion projects cited in EB-2015-0179.

   Nonetheless, Union has provided a high level overview of the impacts of Enbridge's proposal at Exhibit S15.Union.SEC.9.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit A, T1, p. 4; Schedule 1, p. 18

a) At the above reference and in other places Union makes the point that imposing a charge on Union's customers for the purpose of subsidizing another utility's cost of service would be contrary to the established ratemaking principle of "benefits follow costs." Please explain what benefits Union exists customers are provided through their subsidization of non-profitable system expansions.

b) If community expansion projects are non-profitable without a subsidy from existing ratepayers what difference does it make to an existing Union customer as to whom gets that subsidy?

c) At Schedule LEI states in respect to jurisdiction-wide cross-subsidization model that existing utilities may be adversely impacted by increased costs and possibly lower demand without enjoying the benefits of an increased customer base. Given that the addition of community expansion customers has a negative net present value please explain how adding these customers can lead to a net benefit.

d) Please explain why existing customers should not be better off/prefer having the equivalent subsidy proposed by the incumbent utility (i.e. Union) provided to a separate utility who then takes on both the business and financial risk of servicing these community expansions.

Response:

a) Please see the response at Exhibit S15.Union.LPMA.1.

b) If other gas utilities are the recipients of a subsidy provided by Union's customers, Union's customers would not receive any of the mitigating benefits of scale, as noted at Exhibit S15.Union.BOMA.59c), that would partially offset the cost of the subsidy they are providing.

c) The following response was prepared by LEI.

LEI did not say "net benefit." Instead, LEI noted that customers of utilities not engaging in the expansion would see an increase in their bills, but would not have the benefits of any positive scale effects associated with the expansion. For the expanding utility, even if the synergies are not sufficient to overcome a negative NPV, some benefits may accrue from a larger base over which to divide costs such as billing systems and central office functions

d) Please see the response at Exhibit S15.Union.LPMA.1.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit A, T1, p. 28

a) Union proposes a number of requirements for new utilities. Which of the requirements listed at page 28 does Union Gas currently seek explicit approval from the Board?

b) In light of the fact that a natural gas utility is licensed by the TSSA and not the Ontario Energy Board, please provide Union's understanding of the OEB's authority to mandate the utility requirements contemplated by Union.

Response:

a) Union is not seeking explicit approval of any of the requirements listed at Exhibit A, Tab 1, p.28. Rather this list illustrates the minimum requirements Union believes the Board should require any utility proposing to provide natural gas service to a community be capable of meeting.

b) Prior to approving newly established Franchise Agreements or Certificates, the applicant needs to be able to demonstrate to the Board that it can meet all utility requirements, including operational, compliance or financial related. This would support the Board in its mission *"to promote a viable, sustainable and efficient energy sector that serves the public interests and assists consumers to obtain reliable energy services that are cost effective"*. [1]

[1] Ontario Energy Board website:
http://www.ontarioenergyboard.ca/OEB/Industry/About+the+OEB/What+We+Do

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit A, T1, p. 33

a) In the evidence Union postulates that existing utilities are a priori more economical than a new utility due to economies of scale. Notwithstanding the reference to the Ontario budget electricity utility consolidation, what evidence has Union presented which supports this theory? Specifically, has Union researched Ontario electrical utilities? If so how please explain why a number of mid-size utilities have lower costs/rates than some larger utilities and how this fits with the theory postulated by Union.

Response:

a) The observation that new entrants are likely to be less economical than the existing gas utilities is based on Union's judgement and experience. By the nature of the un-serviced areas in Ontario, new entrants will serve significantly fewer customers than Enbridge or Union. As noted in the response at Exhibit S15.Union.BOMA.59, certain costs incurred to operate a gas distributor are fixed in nature, and because of this the cost per customer will be higher if a few customers are served in comparison to a situation where many customers are served.

Union has not researched electrical utilities. However, the government has made it clear that its interest in encouraging consolidation of electric utilities stems from a desire to incent efficiencies and benefit ratepayers[1]. It would be very difficult to understand why the government would take this approach if having many small electric utilities was actually more efficient than a lesser number of large utilities.

[1] Union's EB-2016-0004, Exhibit A, Tab 1, p. 34

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit A, T1, p. 38

At the reference it states: "*Union's understanding is that the Ontario Government intends for the announced loans and grants to be applicable to projects that regulator flexibility on its own would not make economically feasible*."

a) Please provide the basis for this understanding.

Response:

a) This understanding is based on dialogue with various officials from the Ministry of Energy and Ministry of Economic Development, Employment and Infrastructure over the past 1-2 years. Evidence of this intent is provided in EB-2015-0179 at Exhibit B.CCC.16.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Exhibit Schedule 1, p. 5

a) At the above reference it states that one of the principles adopted by Union Gas was that "[*N]atural gas distributors should not be exposed to financial risk related to the incremental new community expansion capital investment.*" If this is the case, and Union has no financial risk, please explain why these investments should attract the same rate of return as the Board provides for usual utility investments.

Response:

a) Please see the response at Exhibit S15.Union.SEC.1. With the exception of attachment forecast risk, Union faces the same risks as it does for the operation of the gas utility as a whole.

UNION GAS LIMITED

Answer to Interrogatory from
Vulnerable Energy Consumers Coalition ("VECC")

Reference: Schedule 1, p. 14

a) Please explain/provide the quantitative analysis which supports the rankings shown in Figure 4: LEI ranking of funding mechanisms with respect to Union's application.

Response:

The following response was prepared by LEI.

The Harvey Balls utilized in Figure 4 communicate LEI's qualitative assessment of each funding mechanism relative to the rate design principles listed in the textbox on page 12 of LEI's report. This assessment specifically considers Union's application for community expansion programs, the total number of new ratepayers to be connected and the cost estimates of the expansion projects.