

August 27, 2015

BY COURIER & RESS

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

RE: EB-2014-0182 – Union Gas Limited (“Union”) – Burlington Oakville Project – Reply Evidence Interrogatory Responses

Dear Ms. Walli,

Please find attached Union’s responses to the interrogatories received on its Reply evidence (dated July 31, 2015) in the above noted case. These responses will be filed in RESS and copies will be sent to the Board. Union notes that the School Energy Coalition (“SEC”) numbered its interrogatories beginning at question 6, and Union has maintained this numbering sequence.

The attached includes responses to all interrogatories with the exception of questions 6 and 12 as submitted by the Federation of Rental-housing Providers of Ontario (“FRPO”). These responses require system planning modeling that could not be completed in time to meet the August 27, 2015 deadline. Union will file these responses by September 1, 2015.

In Union’s view this minor delay should have no impact on the remaining procedural dates highlighted in the Board’s Procedural Order No.5 dated August 13, 2015. As directed, Union will file its Argument-in-Chief September 10, 2015.

If you have any questions with respect to this submission please contact me at 519-436-5334.

Yours truly,

[original signed by]

Vanessa Innis
Manager, Regulatory Initiatives

Encl.

cc: Zora Crnojacki, Board staff
Mark Kitchen, Union Gas
Charles Keizer, Torys
All Intervenors (EB-2014-0182)

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Union's Reply Evidence, Exhibit C /page 2/ lines 14-18

In the event that the Burlington-Oakville project is not approved, what would be the implications, financial or otherwise of Union's proposed plan to contract for capacity on the NEXUS pipeline?

Response:

The need for the proposed Burlington Oakville Pipeline is independent of Union's plan to contract for capacity on the NEXUS pipeline. As stated at Exhibit C, page 2, lines 11-12, "...supply is not the issue that Union is addressing through the proposed Burlington Oakville Pipeline." The proposed Burlington Oakville Pipeline is simply a reinforcement of the high pressure distribution system that is currently being served in part through contracted third party services and that serves a rapidly growing market.

As noted at Exhibit A, Tab 7, page 16, the proposed Burlington Oakville Pipeline provides the required capacity to meet the long term design day demands of the Burlington Oakville System at the lowest cost to Union's ratepayers.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Union's Reply Evidence, Exhibit C/ page 3/ lines 10-11 and Exhibit C/ page 16 / lines 8-9

Preamble: Union stated that the Alternative Proposal does not align with Union's Gas planning principles it would move up to 77% of Union's upstream transportation and supply portfolio away from Dawn. Union indicated that it purchases approximately 360 TJ/d of gas supply for its Union South sales service portfolio (based on average day).

- a) In calculating the 77% number, did Union take the peak day requirement for Burlington-Oakville of 276 TJ/d and divided it by 360 TJ/d?
- b) If yes, please re-calculate the percentage by using the average day requirement for Burlington-Oakville of 94 TJ/d and dividing it by the 360 TJ/d or take the 276 TJ/d of peak day demand for Burlington-Oakville and dividing it by the corresponding peak day demand for Union South's sales service.

Response:

- a) Yes. Paragraph 14 of the evidence of Ms. Aggie Cheung (dated June 29, 2015) states that Union could serve 100% of the Burlington Oakville System demand (276 TJ/d) through the TransCanada system from Niagara and paragraph 21 states that Union could purchase up to a total of 276 TJ/d from Niagara to the Burlington Oakville area by 2035.
- b) Sourcing a Burlington Oakville System average day requirement of 94 TJ/d from Niagara would represent approximately 26% of the Union South gas supply portfolio of 360 TJ/d.

The Burlington Oakville System peak day demand expressed as a percentage of the Union South sales service peak day demand is not relevant since Union does not structure its gas supply portfolio to purchase based on peak day demand (Union uses average day demand) or to purchase for individual market areas (Union South supply is purchased based on aggregate average Union South demand).

As stated in Exhibit D.Staff.1, the proposed Burlington Oakville Pipeline is simply a high pressure distribution reinforcement that supports growing local markets attached to the Burlington Oakville System and will replace contracted third party services. Where to source natural gas supply for all of Union South (not just the local markets attached to the Burlington Oakville System) is an independent decision.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Union's Reply Evidence, Exhibit C/ page 4/ line 6-7

Preamble: Union indicated that the Alternative Proposal, including up to 77 % of the upstream supply portfolio at a single point, would require the reinstatement of vertical slice.

Would Union, if successful in contracting for NEXUS pipeline capacity, need to reinstate the vertical slice. Please explain.

Response:

No. Union holds a diverse upstream pipeline portfolio for Union South sales service customers, with no individual pipeline or supply basin dominant in the portfolio. As a result, Union was able to suspend the Vertical Slice¹ program in Union South. Union is proposing a NEXUS commitment that represents approximately 30% of the Union South supply portfolio (pages 31-32 of EB-2015-0166). Therefore the NEXUS commitment is about the same level as supply received from Chicago today (31%) and would not be dominant in the gas supply portfolio.

With respect to Niagara, the Alternative Proposal is suggesting that 77% of the gas supply portfolio would be concentrated at one supply point with corresponding long term transportation commitments. The result of the Alternative Proposal would be insufficient flexibility in Union's gas supply portfolio to facilitate service switching between sales service and bundled direct purchase unless customers were allocated a portion of the underlying transportation portfolio. Also, as discussed at Exhibit C, page 4, lines 8-10, Union does not believe it is equitable to require only sales service customers to purchase supplies and hold Niagara to Union CDA transportation capacity to support the distribution needs for all customers (sales service, unbundled, bundled direct purchase, and T-service) for the foreseeable future. This inequity arises because sales service customers would be obligated to purchase gas at an illiquid point (Niagara) while direct purchase customers receive the benefit of purchasing supplies at a liquid point (Dawn) and at the same time avoiding the costs of meeting peak day demands in the Burlington Oakville area.

¹ Union received approval to implement the Vertical Slice methodology effective November 1, 2001 (RP-1999-0017). The methodology was used to allocate Union's upstream transportation contracts to facilitate new incremental direct purchase for its Southern Operations area. The Vertical Slice was based on the assets in Union's upstream transportation portfolio as projected for November 1 of each year. It applied a proportionate allocation, based on the customer's Daily Contract Quantity ("DCQ"), of the transportation, exchanges and other transport used to service existing system customers moving to direct purchase. In EB-2014-0145, the Board approved Union's request to suspend the use of the Vertical Slice methodology.

Further, Union does not believe long term distribution system reinforcement requirements should be managed through gas supply portfolio solutions. In order to address the inequity described above, a Vertical Slice and/or a change in delivery obligation would be appropriate to ensure an equitable distribution of costs and obligations to all customers and that Union would have sufficient flexibility to manage the portfolio in a manner consistent with the Gas Supply Planning Principles.

In addition, the Alternative Proposal is completely inconsistent with the Board-approved Parkway Delivery Obligation agreement which allows customers currently obligated to deliver gas at an illiquid point (Parkway) to deliver their supply to the liquid Dawn Hub.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Union's Reply Evidence, Exhibit C/page 16/ lines 3-6

Preamble: Union states that the Alternative Proposal will result in a drastic decrease in the diversity of contract terms (will require 15 year contracts).

Is it Union's view that contacting for any new pipeline capacity that requires a 15 year contract term would drastically decrease its diversity of the contract terms?

Response:

No. This statement is specific to a 15-year commitment for transportation from Niagara.

The Alternative Proposal would require 77% of the Union South sales service portfolio (276 TJ/d) to be contracted on a long term basis at a trading point far less liquid than the Dawn hub. As discussed at Exhibit C, pages 9-13, Niagara is not a liquid point and is not expected to develop into a liquid trading point. Niagara is a trans-shipment point between pipeline systems.

This dramatic shift in supply portfolio is problematic and does not align with Union's Gas Supply Planning Principles. Compared to Dawn which has access to multiple pipelines, multiple supply basins and significant storage, moving 77% of the Union South sales service gas supply to Niagara would dramatically reduce diversity and flexibility. This would also limit (or perhaps eliminate) Union's ability to support new infrastructure projects that would encourage new supply to Ontario from growing neighbouring production basins for the next 15 years.

Long term transportation contracting in Union's gas supply portfolio is not problematic if it meets Union's Gas Supply Planning Principles. Union is comfortable holding transportation contracts with a range of durations but typically long term contracts are reserved for supporting new infrastructure builds. Once the proposed Burlington Oakville Pipeline is built, supply will be delivered as part of the aggregated Union South portfolio. The Union South gas supply portfolio does evolve over time. Every time Union makes a gas supply purchasing decision it evaluates all possible sources of supply, including Niagara and Dawn. Buying additional supply at Niagara for the Union South gas supply portfolio will be evaluated in the future, however, that purchase decision is independent of building the proposed reinforcement pipeline into the Burlington Oakville System. The gas supply costs for sales service customers on the Burlington Oakville System reflect the average of the aggregate Union South gas supply portfolio and are not tied to a single purchase point – at Dawn or Niagara.

In addition, the Alternative Proposal is completely inconsistent with the Board-approved Parkway Delivery Obligation agreement which allows customers currently obligated to deliver gas at an illiquid point (Parkway) to deliver their supply to the liquid Dawn Hub.

UNION GAS LIMITED

Answer to Interrogatory from
Board Staff

Reference: Union's Reply Evidence, Exhibit C/page 21/ lines 14-19

Preamble: Union states that despite the assumption that Union would continue to satisfy the requirements as it has in the past if the Burlington-Oakville Pipeline is not approved, and consistent with the changes required by TransCanada in 2011 at Parkway, it is very likely that in the future TransCanada will require Union to contract for transportation capacity from Kirkwall to facilitate deliveries to the Kirkwall/Dominion Gate Station and Hamilton #3 Gate Station. As a result, it is not appropriate to exclude this aspect from the comparative analysis.

- a) Has Union discussed the option/possibility with TransCanada of being required to contract for transportation capacity from Kirkwall to the Amended CDA (in the event that the Burlington-Oakville project was not approved)?
- b) Has Union confirmed with TransCanada that TransCanada will likely require Union to contract for transportation capacity from Kirkwall to the Amended CDA if the Burlington-Oakville project is not approved?

Response:

- a) No, Union has not recently discussed the Kirkwall to Amended Union CDA transportation contract with TransCanada.

The supply situation at Kirkwall is very similar to the situation that existed at Parkway prior to 2011 before Union was required to contract for firm transportation service from Parkway (for gas originating from the Dawn Parkway System) to Union's gate stations within TransCanada's Union CDA delivery area.

Prior to 2011, Union provided supply from the Dawn Parkway System to TransCanada at Parkway to meet in-franchise delivery requirements within TransCanada's Union CDA delivery area, (which included markets served through the Bronte Gate Station and the Burlington Gate Station). At that time, it was assumed that delivering gas to Parkway was the same as delivering gas to the Union CDA. Union did not contract for a firm Parkway to Union CDA transportation service to transport gas on the TransCanada system from Parkway to its gate stations within TransCanada's Union CDA delivery area.

In early 2011, TransCanada indicated that Union was required to contract for capacity and pay to transport volumes from Parkway to the Union CDA gate stations. Subsequently,

Union contracted for firm transportation capacity on the TransCanada system from Parkway to the Union CDA to meet in-franchise delivery requirements. This is described in detail in Exhibit A, Tab 5, p.2 and in Exhibit C, p.21.

The current situation at Kirkwall is very similar to the situation that existed at Parkway prior to 2011. At Kirkwall, Union provides an amount of supply from the Dawn Parkway System to TransCanada equivalent to the in-franchise delivery requirements at the Kirkwall/Dominion Gate Station and Hamilton Gate #3 Station. Union does not currently contract for firm capacity on the TransCanada system from Kirkwall to the Kirkwall/Dominion Gate Station and Hamilton Gate #3 Station. This is essentially completed through an operational exchange.

Independent of the Mainline Settlement Agreement discussions, Union has not discussed paying for firm transportation capacity from Kirkwall to the Kirkwall/Dominion Gate Station and Hamilton Gate #3 Station with TransCanada. TransCanada is aware that Union does not currently contract for firm transportation from Kirkwall to the Kirkwall/Dominion Gate Station and the Hamilton Gate #3 Station today. This was specifically addressed during the Mainline Settlement Agreement negotiations in the summer of 2013. It was assumed in the Mainline Settlement Agreement (at Section 8.1(d)) that the proposed Burlington Oakville Pipeline would proceed and Union would also contract for and pay for firm transportation capacity from Kirkwall to the Kirkwall/Dominion Gate Station and the Hamilton Gate #3 Station. There is no operational linkage between serving the Burlington Oakville System with the proposed pipeline and the incremental capacity that Union would purchase from TransCanada to serve the Kirkwall/Dominion Gate Station and the Hamilton Gate #3 Station – the only linkage is through the commitments contained in the Mainline Settlement Agreement.

The Mainline Settlement Agreement does not address the alternative in which Union does not receive approval for the proposed Burlington Oakville Pipeline. In the event that the proposed Burlington Oakville Pipeline is not approved, Union would continue to deliver gas at Kirkwall and supply the Kirkwall/Dominion Gate Station and the Hamilton Gate #3 Station as it does today. Nothing restricts TransCanada from requiring Union to contract and pay for firm transportation capacity from Kirkwall to supply the Kirkwall/Dominion Gate Station and the Hamilton Gate #3 Station. Union would expect TransCanada to initiate discussions regarding contracting for capacity and paying for firm transportation services from Kirkwall to those two gate stations.

- b) Please refer to response (a) above.

UNION GAS LIMITED

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

At line 12, Union states:

"Today, Union delivers the same amount of natural gas to TransCanada at Kirkwall that it requires for deliveries to the Kirkwall/Dominion Gate Station and Hamilton #3 Gate Station. Despite the assumption that Union would continue to satisfy the requirements as it has in the past if the Burlington Oakville Pipeline is not approved, and consistent with the changes required by TransCanada in 2011 at Parkway, it is very likely that in the future TransCanada will require Union to contract for transportation capacity from Kirkwall to facilitate deliveries to the Kirkwall/Dominion Gate Station and Hamilton #3 Gate Station. As a result, it is not appropriate to exclude this aspect from the comparative analysis".

BOMA notes that this is a drastic change of position from the view Mr. Isherwood expressed at the Technical Conference.

What evidence does Union have that TCPL would require Union to contract for a separate service from Kirkwall to the two gate stations, particularly in light of the improved relationship between the eastern LDCs and TCPL, the Settlement Agreement which was approved by the NEB in RH-001-2014, and the increasing east to west flow on the TCPL mainline from Niagara to Kirkwall.

Response:

Union does not agree with BOMA's assertion that this is a drastic change of position from the view expressed at the Technical Conference. Please see the response at Exhibit D.Staff.5.

UNION GAS LIMITED

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

Section 8.1(d) of the TCPL Mainline Settlement Agreement states:

- (d) Subject to Union receiving approval to construct its Burlington Oakville pipeline with an anticipated in-service date of November 1, 2016, referred to in subsection 8.1(a)(iii):
 - (i) TransCanada will amend the existing Union CDA to remove the Burlington, Bronte and Parkway-Union meter stations as Delivery Points;
 - (ii) TransCanada will seek Regulatory Approval to designate the Parkway-Union meter as a stand-alone Delivery Point ("**Union Parkway Belt Delivery Point**") and to designate the Burlington and Bronte meter stations as Delivery Points in the Union ECDA; and
 - (iii) Union shall bid into an existing or new capacity open season and enter into an FT Contract for a minimum term of 16 years for a volume of 135 TJ/day for gas transportation service between TransCanada's Kirkwall Receipt Point and the Amended Union CDA.

Mainline Shippers who hold Firm Service Contracts to the existing Union CDA shall have a one-time option to amend the Delivery Point to the Union Parkway Belt Delivery Point or the Union ECDA."

Why should the Board not infer from Section 8.1(d)(iii) of the Settlement Agreement that in the event Union does not build the Burlington Oakville line, TCPL will not ask for a new FT toll from Kirkwall to the two city gates referred to in question #1?

Response:

Please see the response at Exhibit D.Staff.5.

UNION GAS LIMITED

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

At this link: http://investor.nationalfuelgas.com/files/doc_presentations/2015/20150806_NFG-IR-Presentation_FINAL.pdf is a copy of a recent (August 15th) presentation from National Fuel Gas Company, a corporation with both transmission facilities in Western New York and connection to Ontario at both Chippewa and Niagara and very large reserves and production in the Marcellus shale throughout Pennsylvania. Given the commitments to move gas to Niagara and into Canada, set out at pages 23, 24 and 25 of the presentation, can Union comment on the increasing importance of Niagara as an entry point/contracting point from Marcellus supply?

Response:

With the development of the Marcellus, TransCanada, Union and the U.S. upstream pipelines that connect to Niagara (Tennessee Gas Pipeline, Dominion Transmission and National Fuel Gas) and Chippawa (Empire State Pipeline) have held various open seasons from 2009 through to 2011 that would provide transportation from the Marcellus producing area to the New York/Ontario border and into Ontario and other eastern markets. These open seasons resulted in commitments that supported the modification and expansion of infrastructure in Canada and the United States which reversed the traditional direction of flow at Niagara from Ontario to New York. The reversal of flow on this path has also supported the development of new services (such as Union's M12-X transportation service). Effective November 2012, the facilities at Niagara were able to physically import and deliver about 0.4 PJ/d from Niagara to Kirkwall.

As part of these open seasons, Union contracted for 21,101 GJ/d of Niagara to Kirkwall transportation capacity on the TransCanada system that would support the purchase of gas at Niagara. At Kirkwall, Union can then flow gas to Union's in-franchise markets or to Dawn for injection into storage. Union was the first end-user to contract with TransCanada at Niagara (other contracts were supported by producers/marketers).

Subsequently, additional open seasons were held that will ultimately lead to expansions into Niagara and Chippawa of a further 1 PJ/d (for a total of approximately 1.4 PJ/d) in the 2015/2016 time period. Open seasons have also been held for the TransCanada and Union systems that will move gas from Niagara and Chippawa to Dawn and other eastern markets in that same time period.

For any shippers, including direct purchase customers, Niagara or Kirkwall supply can be accessed through long term, transportation services. Where there is no existing pipeline capacity available, then shippers will be required to support expansion of facilities.

As a result of Union's open seasons, Union has contracted 396 TJ/d of firm, long-term M12-X transportation capacity, 421 TJ/d of firm long-term M12 Kirkwall to Parkway transportation capacity and 488 TJ/d of firm C1 Kirkwall to Dawn transportation capacity; all of which can access Niagara or Kirkwall supply.

As discussed at Exhibit C, pages 9-13, Niagara is not a liquid point and is not expected to develop into a liquid trading point. Niagara is a trans-shipment point between pipeline systems.

Please also see the response at Exhibit D.Staff.1.

UNION GAS LIMITED

Answer to Interrogatory from
Building Owners and Managers Association (“BOMA”)

What step is Union taking to facilitate the purchase of supplies at Niagara or Kirkwall by itself and its direct purchase customers? Would such step not increase the transacting at Niagara, given the price advantage over Dawn?

Response:

Please see the response at Exhibit D.BOMA.3.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 4, lines 2 to 11

- a) Notwithstanding a shift of direct purchase customers to Dawn and the application to shift the reference price, please confirm that Union designs its Dawn to Parkway system based upon getting gas to Parkway on a peak day.
- b) Please provide the average winter basis differential between Dawn and Parkway for the years:
- (1) 2004/05
 - (2) 2009/10
 - (3) 2014/15
 - (4) Forecast 2019/20

Response:

- a) Please see Exhibit A, Tab 6 for a description of how Union designs its Dawn Parkway System.
- b) Below are the average winter (November-March) Dawn-Parkway basis spreads based on one-month forward winter pricing. For the 2019/2020 data, the forward pricing was from August 3-7, 2015 forecasts.

Average Winter Dawn-Parkway Basis		
	USD/MMBtu	CAD/GJ
2004/2005	\$0.40	\$0.45
2009/2010	\$0.21	\$0.24
2014/2015	\$0.10	\$0.11
2019/2020	\$0.08	\$0.09
Source NGX		
FX Assumption – \$1.20 CAD = \$1 US		

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 6, lines 12 to 18; page 16, lines 8 and 9, page 17, Figure 3-2.

Preamble: Union describes the design day and average day requirements of the Union South system.

- a) Please provide the Union South Winter 2015/16 Design Day Demand and Resources balance and the Union South 2015/16 Average Day Demand and Resources balance in a format similar to Figure 7 included in Attachment 3 to Ms. Cheung's Evidence.
- b) Please confirm that Union meets its aggregate Union South demand with its aggregate supply. If not confirmed, please reproduce the demand and resources balances in (a) showing how the supplies are allocated to meet the demands.
- c) Please provide the numerical data in TJ/d that generated Figure 3-2 on page 17.
- d) Please explain and reconcile the data in (c) against those in (a).

Response:

- a) Please see the tables below.

Winter 2015/2016 Design Day
Union South Design Day Demand and Resources (TJ/day)

Demand

Union South*	2,900
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Supply

Storage at Dawn	1,483
Non-obligated (e.g. Power Plants)	210
TCPL Empress to Union CDA	67
Trunkline	21
Panhandle	39
Market Based Transportation	21
TCPL Niagara	21
Ontario Parkway	334
Vector	111
MichCon	74
Ontario Dawn	467
Customer Supplied Fuel	52
Total Supply	2,900

* includes Sales Service, Bundled Direct Purchase, T-service, Unbundled

2015/2016 Average Day
Union South Average Day Demand and Resources (TJ/d)
for the period November 1, 2015 to October 31, 2016

Demand	
Union South (1)	366
 Supply	
TCPL Empress to Union CDA	50
Trunkline	21
Panhandle	39
Market Based Transportation	21
TCPL Niagara	21
Alliance/Vector (2)	6
Vector	111
MichCon (3)	69
Uncommitted (Dawn Spot)	28
Total Supply	366

Notes:

- (1) Includes Sales Service only.
- (2) Includes November 2015 supply only due to contract expiry.
- (3) Includes 10.5 TJ/d contract for 12 months and 63.3 TJ/d contract for 11 months.

b) Confirmed.

c)

January 2015 South Portfolio (TJ/d)

<u>Basin - Pipe</u>	<u>System Capacity</u>	
Chicago - Vector	112	31%
WCSB - Alliance/Vector	74	21%
WCSB - TCPL	52	15%
Mid-Continent - PEPL	39	11%
Niagara - TCPL	21	6%
Gulf of Mexico - TGC/PEPL	21	6%
Local Production	2	1%
Michigan - Michcon	11	3%
Dawn/Other	27	8%
Total	359	100%

d)

Comparison Table (TJ/d)

	Part C	Part A	
	January 2015	Average Day Supply	
<u>Basin - Pipe</u>	<u>System Capacity</u>	<u>Nov 15-Oct 16</u>	<u>Variance</u>
Chicago - Vector	112	111	1
WCSB - Alliance/Vector	74	6	68 (1)
WCSB - TCPL	52	50	2
Mid-Continent - PEPL	39	39	
Niagara - TCPL	21	21	
Gulf of Mexico - TGC/PEPL	21	21	
Local Production	2	1	
Michigan - Michcon	11	69	(58) (2)
Dawn/Other	27	27	1
Market Based Transportation	0	21	(21) (3)
	359	366	(8)

Notes:

- (1) Alliance Contract expires November 30, 2015.
- (2) Includes new DTE MichCon contract for 63.3 TJ/d effective December 1, 2015.
- (3) Includes new Market Based Transportation contract for 21.1 TJ/d effective November 1, 2015.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 7, lines 11 to 13.

Preamble: FRPO would like to explore Union's understanding of the Alternative Proposal and its impact on gas supply.

- a) Please confirm that the Alternative Proposal does not force Union to contract for the entire 276 TJ/d at Niagara.
- b) Please confirm that Union need only contract for the incremental amount needed at the outset to meet peak day needs.
- c) Please provide the incremental capacity needed in 2017 for the Burlington Oakville system over and above what is currently fed from the existing NPS 8 and NPS 12 lines and existing TCPL Dawn to CDA contract.
- d) Has Union provided notice of non-renewal to TCPL on the Dawn to CDA contract?
- e) Please confirm that under the Alternative Proposal of using transportation contracting, Union can decide how best to phase in new supplies from Niagara based on its supply and demand.

Response:

- a) The Alternative Proposal does not force Union to contract for the entire 276 TJ/d at Niagara. However, Union believes the intent of the evidence of Ms. Aggie Cheung is for Union to contract for the entire 276 TJ/d at Niagara. For instance, at paragraph 14 Ms. Cheung's evidence states that "Union could serve 100% of the demand (of the Burlington Oakville System) through the TransCanada system." At paragraph 21, Ms. Cheung's evidence states "Under the Alternative (Proposal) described above, Union would source up to a total of 276 TJ/d from Niagara to the Burlington Oakville area by 2035."

Further, at paragraphs 24 and 27, Ms. Cheung's evidence suggests that Union could contract for an initial 200 TJ/d of transportation capacity from Niagara on TransCanada (which would meet the current market demands) and increase transportation capacity over time as growth in the Burlington Oakville System market occurs or as gas supply displacement opportunities arise.

Finally, it appears that there is no consideration for use of Union's existing facilities serving the Burlington Oakville System from the Dawn Parkway System to meet design day demand as Ms. Cheung's evidence states at paragraph 17 that "In addition, the existing 8" and 12" lines provide additional system integrity during upset conditions." If those existing pipelines were intended to meet Burlington Oakville System design day demands in the Alternative Proposal then they would not provide "additional" system integrity but would already be in use to their full capacity of 54 TJ/d.

- b) Gas supply requirements are purchased on an average day basis and not a peak day basis for Union South. Union uses its Dawn storage assets to balance average loads versus summer lows by injecting into storage and versus winter peaks by withdrawing from storage. In addition, Union structures its gas supply portfolio for Union South to meet aggregate Union South demand. As discussed extensively in Exhibit C, the Alternative Proposal, when operationalized to use Dawn storage assets (and, as a result, Dawn Parkway System assets), is less economic than the proposed Burlington Oakville Pipeline.

As discussed in part a) above, Ms. Cheung's evidence states that "Union could serve 100% of the demand (of the Burlington Oakville System) through the TransCanada system." This would indicate that the Alternative Proposal not only contemplates contracting for the incremental amount needed at the outset to meet peak day needs but the amount needed to meet all peak day needs at the outset.

The Alternative Proposal would also not allow Union to realize any of the benefits that the proposed Burlington Oakville project provides.

c)

Capacity	TJ/d
2017/2018 Design Day Demand	210
Existing NPS 8 and NPS 12	54
Existing TransCanada Dawn to Union CDA Contracts	68
2017/2018 Incremental Capacity Required	88

d) Please see the response at Exhibit B.APPrO.1.

e) Please see part a) above.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 9, lines 16 and 17.

Preamble: FRPO would like to understand how the Alternative Proposal would decrease the diversity and security of Union's upstream transportation and supply portfolio.

- a) Please confirm that the current Union South supply portfolio includes (i) 21 TJ/d from TransCanada at Niagara and (ii) 67 TJ/d from TransCanada at Empress.
- b) Please confirm that with the construction of the proposed Burlington Oakville Pipeline, the Union South supply portfolio will include (i) 21 TJ/d from TransCanada at Niagara and (ii) 0 TJ/d from TransCanada at Empress. If not confirmed, please provide the correct figures.
- c) Please confirm that the Alternative Proposal envisages increased amounts from TransCanada at Niagara.

Response:

- a) Confirmed. Union currently contracts for 21 TJ/d of TransCanada Niagara to Kirkwall transportation capacity for Union South sales service customers, which provides access to supply available at Niagara. Union also currently contracts for 67 TJ/d of TransCanada transportation capacity from Empress of which approximately 50 TJ/d is for Union South sales service customers and 17 TJ/d is for supply to bundled direct purchase customers.
- b) Following the construction of the proposed Burlington Oakville Pipeline, the Union South portfolio is expected to include 21 TJ/d of TransCanada transportation capacity from Niagara to Kirkwall and 11 TJ/d of TransCanada transportation capacity from Empress to the Union ECDA.
- c) Confirmed. Please see the response at Exhibit D.FRPO.3 part a).

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 10, lines 5 to 9.

Preamble: Since 2012, flow has primarily reversed from the United States to bring Marcellus production through Niagara into Canada. Despite its proximity to the Marcellus region, **Niagara is not a liquid point.** Liquidity at Niagara is low due to its limited pipeline connectivity, distance from storage, limited number of counterparties who buy and sell at that point and limited price discovery. Even with TransCanada transportation contracts expected to exceed 1 PJ/d from Niagara to points in Ontario and Quebec, Niagara remains a trans-shipment point and is not expected to develop into a liquid trading point

- a) Please provide a full listing of firm and interruptible contracts Union has on pipelines upstream of Dawn to transport gas into the Dawn hub.
- b) Please explain why Union will not consider contracting on pipelines upstream of Niagara and/or Douglastown.
- c) Please provide the number of pipelines that converge at Kensington, Ohio, the receipt point for Union's proposed Nexus contract.
- d) Please provide the proximity of Kensington to Dawn relative to Niagara to Dawn.

Response:

- a) Union provides a summary of upstream transportation contracts in its annual Gas Supply Plan Memorandum. Please see Attachment 1 for Appendix C and Appendix D from the Gas Supply Plan Memorandum filed in EB-2015-0010.
- b) The information requested is not relevant to EB-2014-0182. Contracting natural gas supply upstream of Niagara or Chippawa (Douglastown) is not relevant to meeting the design day demands of the Burlington Oakville System and is not even relevant to the Alternative Proposal which is focused on sourcing supply at Niagara. Union has provided its evaluation of the Alternative Proposal (including sourcing supply at Niagara) in Exhibit C.

- c) The information requested is not relevant to EB-2014-0182. The proposed Burlington Oakville Pipeline is independent of Union's proposed NEXUS contract. The number of pipelines that converge at Kensington, Ohio and the proximity of Kensington to Dawn relative to the proximity of Niagara to Dawn are not relevant to meeting the design day demands of the Burlington Oakville System over the long term and are not relevant to any commercial alternatives evaluated by Union.
- d) The information requested is not relevant to EB-2014-0182. Please see the response to part c) above.

2014/15 Gas Supply Plan Memorandum

Appendix C

UNION GAS LIMITED

Summary of Upstream Transportation Contracts - as at November 1, 2014

Northern and Eastern Operations Areas

Filed: 2015-08-27

EB-2014-0182

Exhibit D.FRPO.5

Attachment 1

Page 1 of 2

Line No.	Upstream Pipeline	Primary Receipt Point (a)	Primary Delivery Point (b)	Contract Quantity (c)	Contract Units (d)	Contract Termination Date (e)	Unitized Demand Charge (\$Cdn/GJ) (f)	Commodity Charge (\$Cdn/GJ) (g)	100% LF Toll (\$Cdn/GJ) (h=f+g)
TransCanada Pipeline									
1	Empress to Union NCDA FT	Empress	Union NCDA	10,756	GJ	31-Oct-2017	1.495		1.495
2	Empress to Union EDA FT	Empress	Union EDA	59,101	GJ	31-Oct-2017	1.650		1.650
3	Empress to Union NDA FT	Empress	Union NDA	76,015	GJ	31-Oct-2017	1.317		1.317
4	Empress to Union WDA FT	Empress	Union WDA	39,880	GJ	31-Oct-2017	0.856		0.856
5	Empress to Union SSMDA FT	Empress	Union SSMDA	8,843	GJ	31-Oct-2017	1.194		1.194
6	Empress to Union MDA FT	Empress	Union MDA	4,522	GJ	31-Oct-2017	0.598		0.598
7	Parkway to Union EDA FT	Parkway	Union EDA	35,000	GJ	31-Oct-2017	0.250		0.250
8	Parkway to Union CDA FT	Parkway	Union CDA	16,000	GJ	31-Oct-2017	0.101		0.101
9	Dawn to Union CDA FT	Dawn	Union CDA	8,000	GJ	31-Oct-2017	0.204		0.204
10	TCPL FT - Total			258,117	GJ				
Other									
11	Parkway to CDA - Exchange	Parkway	Union CDA	60,000	GJ	31-Mar-2015	0.960		0.960
12	Total - Other			60,000	GJ				
TransCanada Storage Transportation Service Firm Withdrawal									
13	NCDA	Parkway	Union NCDA	13,704	GJ	31-Oct-2017			
14	WDA	Parkway	Union WDA	31,420	GJ	31-Oct-2017			
15	SSMDA	Dawn	Union SSMDA	35,022	GJ	31-Oct-2017			
16	NDA	Parkway	Union NDA	48,375	GJ	31-Oct-2017			
17	EDA	Parkway	Union EDA	68,520	GJ	31-Oct-2017	0.250		0.250
18	TCPL Firm STS Withdrawal - Total			197,041	GJ				
TransCanada Storage Transportation Service Firm Injection									
19	NCDA	Union NCDA	Parkway	0	GJ	31-Oct-2017			0.000
20	WDA	Union WDA	Parkway	3,150	GJ	31-Oct-2017	0.840		0.840
21	SSMDA	Union SSMDA	Parkway	0	GJ	31-Oct-2017			
22	EDA	Union EDA	Parkway	47,571	GJ	31-Oct-2017			
23	NDA	Union NDA	Parkway	49,100	GJ	31-Oct-2017	0.358		0.358
24	TCPL Firm STS Injection - Total			99,821	GJ				
Centra Transmission Holdings Inc.									
25	Centra Transmission Holdings Inc.	Spruce	Union MDA	149.6	10 ³ m ³	31-Oct-2015	0.221		0.221
26	Centra Pipelines Minnesota Inc.	Sprague	Baudette	5,281	MCF	31-Oct-2015	0.061		0.061
27	CTHI FT - Total			5,695	GJ		0.283		0.283

Exchange Rate 1 US =

1.1271 CAD

Bank of Canada USD Close Oct. 31, 2014

Conversion Factor

1.055056

Heat Content

38.07

2014/15 Gas Supply Plan Memorandum
Appendix D
UNION GAS LIMITED
Summary of Upstream Transportation Contracts - as at November 1, 2014
Southern Operations Areas

Filed: 2015-08-27
EB-2014-0182
Exhibit D.FRPO.5
Attachment 1
Page 2 of 2

Line No.	Upstream Pipeline	Primary Receipt Point	Primary Delivery Point	Contract Quantity	Contract Units	Contract Termination Date	Unitized Demand Charge (\$Cdn/GJ)	Commodity Charge (\$Cdn/GJ)	100% LF Toll (\$Cdn/GJ)
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h=f+g)
TransCanada Pipeline									
1	Dawn to Union CDA FT	Dawn	Union CDA	60,000	GJ	31-Oct-2017	0.204		0.204
2	Empress to Union CDA FT	Empress	Union CDA	46,682	GJ	31-Oct-2017	1.606		1.606
3	Empress to Union CDA FT	Empress	Union CDA	20,645	GJ	31-Dec-2017	1.606		1.606
4	Niagara to Kirkwall	Niagara	Kirkwall	21,101	GJ	31-Oct-2022	0.142		0.142
5	TCPL FT - Total			148,428	GJ				
Alliance Pipelines/Vector Pipelines									
6	Alliance	Northern Alberta	Cdn/US Interconnect	2,266.2	103M3	30-Nov-2015	0.893		0.893
7	Alliance (L.P.)	Cdn/US Interconnect	Vector	80,000	MCF	30-Nov-2015	0.614		0.614
8	Vector (L.P.) FT1	Chicago	Cdn/US Interconnect	80,000	DTH	30-Nov-2017	0.246	0.001	0.247
9	Vector Canada FT1	Cdn/US Interconnect	Dawn (Union)	84,405	GJ	30-Nov-2017	0.019		0.019
10	Alliance/Vector - Total			84,405	GJ		1.772	0.001	1.774
Panhandle Eastern Pipe Line Field Zone									
11	PEPL FT	Panhandle Field Zone	Ojibway (Union)	25,000	DTH	31-Oct-2017	0.454	0.046	0.501
12	PEPL FT	Panhandle Field Zone	Ojibway (Union)	2,000	DTH	31-Oct-2017	0.342	0.046	0.388
13	PEPL FT	Panhandle Field Zone	Ojibway (Union)	10,000	DTH	31-Oct-2015	0.454	0.046	0.501
14	PEPL - Total			39,307	GJ				
Trunkline Gas Company/Panhandle Eastern Pipe Line									
15	Trunkline FT	East Louisiana	Bourbon	20,467	DTH	31-Oct-2017	0.123	0.015	0.138
16	PEPL EFT	Bourbon	Ojibway (Union)	20,000	DTH	31-Oct-2017	0.080	0.013	0.092
17	TGC/PEPL FT - Total			21,101	GJ		0.203	0.028	0.231
Vector Pipelines									
18	Vector (L.P.) FT1	Chicago	Cdn/US Interconnect	81,000	DTH	30-Nov-2015			
19	Vector Canada FT1	Cdn/US Interconnect	Dawn (Union)	85,460	GJ	30-Nov-2015			
20	Vector - Total			85,460	GJ		0.267	0.001	0.268
21	Vector (L.P.) FT1	Chicago	Cdn/US Interconnect	25,000	DTH	31-Oct-2017	0.193		
22	Vector Canada FT1	Cdn/US Interconnect	Dawn (Union)	26,376	GJ	31-Oct-2017	0.010		
23	Vector - Total			26,376	GJ		0.203	0.001	0.204
Michigan Consolidated Gas Company (MichCon)									
24	MichCon	MichCon Generic	St. Clair (Union)	10,000	DTH	31-Oct-2015	0.004		0.004
25	MichCon - Total			10,551	GJ				
Other:									
26	St.Clair Pipelines L.P. (St.Clair Pipeline)	St. Clair/Intl Border	St. Clair/Intl Border	214,000	GJ	31-Oct-2023			
27	St.Clair Pipelines L.P. (Bluewater Pipeline)	Bluewater/Intl Border	Bluewater/Intl Border	127,000	GJ	31-Oct-2023			

Exchange Rate 1 US =
Conversion Factor
Heat Content

1.1271 CAD
1.055056
38.07

Bank of Canada USD Close Oct. 31, 2014

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: pages 19 to 21.

Preamble: FRPO requires clarification of the TransCanada Kirkwall to Union CDA contract.

a) Please confirm that Mr. Isherwood's responses to Mr. Quinn during the Technical Conference on transcript pages 124 and 125, reproduced below, are correct.

(1)"MR. QUINN: If there was a -- okay, now I'll ask the question, Mr. Isherwood -- or whoever on the panel, if Union were to get an integrated service from TransCanada and avoid building this facility, TransCanada would get additional revenues through its tolls; correct?

(2)MR. ISHERWOOD: They would not.

(3)MR. QUINN: How would they not get...

(4)MR. ISHERWOOD: We have a choice of paying them \$8 million on Burlington Oakville or paying \$8 million a year on the Kirkwall to the amended CDA. They won't get both. They have \$8 million one of two ways: we build, they get 8 million; they don't build, they get 8 million."

b) If (a) is not confirmed, please explain what has changed since the Technical Conference.

c) If (a) is not confirmed, is Union now agreeing with Mr. Quinn that TransCanada would get additional revenues by provided an integrated service from TransCanada?

d) Please seek written confirmation from TCPL on its position in this matter filing both the question from Union to TCPL and TCPL's response.

Response:

a) through c) Please see the response at Exhibit D.Staff.5.

d) Union has not sought written confirmation from TransCanada with respect to this issue. Please see the response at Exhibit D.Staff.5.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 24, Figure 5-2.

Preamble: FRPO requires clarification.

- a) Assuming Union contracts for 276 TJ/d from Niagara to CDA, please confirm that Union can transport the difference between the contract quantity and average day demand from Kirkwall to Dawn without constructing new facilities. If not confirmed, please provide a cost estimate for the additional facilities required.
 - b) Assuming Union contracts for 276 TJ/d from Niagara to CDA, please confirm that Union can transport the difference between the contract quantity and minimum summer demand from Kirkwall to Dawn without construction new facilities. If not confirmed, please provide a cost estimate for the additional facilities required.
 - c) Did Union include those costs in its evaluation of alternatives?
-

Response:

- a) The difference between the 276 TJ/d and the average day demand of 94 TJ/d identified by Union in Exhibit C at page 24, is 182 TJ/d. Union currently has 182 TJ/d of existing Kirkwall to Dawn capacity without the need for constructing new facilities.
- b) Union would require Kirkwall to Dawn capacity equivalent to the difference between 276 TJ/d and the minimum summer demand of 28 TJ/d, or 248 TJ/d. Union currently has 248 TJ/d of existing Kirkwall to Dawn capacity without the need for constructing new facilities.
- c) The costs that Union included in its evaluation of the Alternative Proposal are shown in Exhibit C, Figure 5-3, p. 26. Please see the response at Exhibit D.FRPO.10.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 26, Figure 5-3.

Preamble: FRPO requires clarification.

- a) Instead of contracting twice on TransCanada (from Niagara to Kirkwall and from Parkway to Union CDA) and once on Union (from Kirkwall to Parkway), is Union aware that it can contract for a Niagara to CDA service on TransCanada?
- b) Is Union aware that the Niagara to CDA toll is less than the Niagara to Kirkwall toll on TransCanada?
- c) Please confirm that TransCanada's Niagara to CDA toll at 100% load factor is \$0.2166/GJ and the Niagara to Kirkwall toll at 100% load factor is \$0.2214/GJ.
- d) Please confirm that the cost for 128 TJ/d from Dawn to Parkway is \$4.0 million. If not confirmed, please provide the correct cost.
- e) Please confirm the costs (\$ million) in the following table.

i) 94 TJ/d Niagara to CDA (TCPL)	7.5
ii) 66 TJ/d Kirkwall to Dawn (Union)	0.9
iii) 182 TJ/d Dawn to Parkway (Union)	5.7
iv) 128 TJ/d Parkway to CDA (TCPL)	7.3
v) Total	21.4

Response:

- a) Union is aware that TransCanada offers Niagara to Union CDA transportation services. This was the subject of the Alternative Proposal in Ms. Aggie Cheung's evidence dated June 29, 2015, which was addressed by Union in Exhibit C.
- b) Yes. The Niagara to Union CDA transportation rate is \$0.2231/GJ/d and the Niagara to Kirkwall transportation rate is \$0.2282/GJ/d. These transportation rates include the FT demand charge and abandonment surcharge.
- c) Not confirmed. The correct tolls are noted in the response to part b) above. The tolls referenced in the question do not include the abandonment surcharge.

- d) Confirmed, assuming current M12 Dawn Parkway toll of \$0.0856/GJ/d.
- e) The costs in the table appear only to include the FT demand charge for TransCanada transportation services. The table has been reproduced below to include the TransCanada abandonment surcharge. Union notes this table assumes 66 TJ/d moving from Kirkwall to Dawn without a stated means or cost of a transportation contract to get the gas from Niagara to Kirkwall.

Line	Receipt Point	Delivery Point	Service Provider	Toll (/GJ/d)	Capacity (TJ/d)	Annual Cost (\$MM)
1	Niagara Falls	Union CDA	TransCanada	\$0.2231	94	\$7.7
2	Kirkwall	Dawn	Union	\$0.0371	66	\$0.9
3	Dawn	Parkway	Union	\$0.0856	182	\$5.7
4	Union Parkway Belt	Union CDA	TransCanada	\$0.1594	128	\$7.4
Total						\$21.7

As discussed in Exhibit C, pages 19-22, any alternative to the proposed Burlington Oakville Pipeline must include the 135 TJ/d of Kirkwall to Amended Union CDA transportation capacity. Currently, Union does not contract for this transportation capacity however it receives natural gas at the Kirkwall/Dominion Gate Station and Hamilton Gate #3 Station through an operational exchange (see response at Exhibit D.Staff.5). The table appears to address another alternative which does not include a means for providing the Kirkwall/Dominion Gate Station and Hamilton Gate #3 Station deliveries on a design day, so therefore the costs for the 135 TJ/d of Kirkwall to Amended Union CDA transportation capacity must be included. The additional cost is \$8.25 million per year and is not included in the table above. The total annual cost including this amount is \$30.0 million. This alternative proposal also would require Union to divert the Niagara to Union CDA contract to Kirkwall. As noted above and as discussed in Exhibit D.FRPO.14 b), diversions would not be firm on the TransCanada system and would be subject to availability/TransCanada system operating conditions.

The proposed Burlington Oakville Pipeline will provide sufficient firm capacity to meet the design day demands of the Burlington Oakville System for the foreseeable future and will replace more expensive third party contracted services. The proposed Burlington Oakville Pipeline provides a high pressure distribution connection to the Dawn Parkway System from which the rapid growth of the Oakville, Burlington and southern portion of Milton can be served.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 29, Figure 5-5

- a) Please provide all of the assumptions and costs that went into this depiction of the comparative assessment.
- b) Using the data from the May 2015 Transportation Contracting Analysis (from EB-2015-0166), please provide the respective annual costs for gas supply of 150 TJ/day sourced at Niagara vs. via Nexus
 - i) for the first five years starting in 2017
 - ii) the average annual cost over the 20 years starting in 2017

Response:

- a) Please see Attachments 1, 2 and 3.

Attachment 1 – Burlington Oakville Pipeline Annual Revenue Requirements
Attachment 2 – Calculation of Costs (Burlington Oakville Pipeline) – Alternative Proposal Adjusted for Operations
Attachment 3 – Comparison of Proposed Project (Build) vs. Alternative Proposal

The TransCanada tolls used are the Settlement tolls effective January 1, 2015. This is the same data used by Ms. Aggie Cheung for the Alternative Proposal.

Noted below are the line numbers of Attachment 3 that the charts were created from.

	Data for Figure 5-4	Data for Figure 5-5
Union Build	Line 4	Line 13
Alternative Proposal	Line 11	Line 17

- b) The information requested is not relevant to EB-2014-0182. The proposed Burlington Oakville Pipeline is independent of Union's proposed NEXUS contract and the May 2015 Transportation Contracting Analysis (EB-2015-0166). The annual costs for gas supply at Niagara versus NEXUS is not relevant to meeting the design day demands of the Burlington Oakville System and are not relevant to any commercial alternatives evaluated by Union.

[illegible]

[illegible]

[illegible]

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

[illegible]

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	
Calculations based on Calendar Years																
Alternative Proposal Average Day																
Description of calculations: Burlington Oakville Pipeline ("BOP")																
Ship Niagara to Kirkwall for 34% of Peak demand = average day, starting at current level and adding growth. Apply TCPL Toll																
Minimum Demand (10% of Design Day demand) always ships direct Kirkwall to Parkway																
Average minus Minimum; Contract to ship to Dawn, and apply M12 toll																
Days demand more than average ship Dawn to Kirkwall to equate to full demand at Kirkwall. Apply M12 toll.																
Ship Kirkwall to Parkway at M12 toll for peak day requirement																
Drop 54 TJ at Existing Interconnects (Milton & Parkway)																
Contract TCPL Parkway to CDA for Peak Day less existing interconnect demands (54TJ), apply CDA Toll																
Note: Year 1 costs Prorated to 2 months																
to align with Calendar Yr Revenue Requirement COS alternative																
19	2 Month Factor		0.1667													
Niagara - Kirkwall (TCPL)																
20	Average Day (Line 8)	TJ	70.2	71.4	72.7	73.9	75.2	76.7	78.2	79.7	81.2	82.7	84.0	85.4	86.7	88.1
21	Niagara - Kirkwall (TCPL) CDA Toll	\$/GJ	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239
22	Cost Niagara - Kirkwall (TCPL) CDA Toll	\$ 000's	\$956	\$5,836	\$5,939	\$6,042	\$6,145	\$6,267	\$6,389	\$6,511	\$6,633	\$6,755	\$6,866	\$6,977	\$7,088	\$7,200
Kirkwall - Dawn (Union)																
23	Ave Day minus Minimum (Ship to Dawn) (Line 11)	TJ	49.5	50.4	51.3	52.2	53.1	54.1	55.2	56.2	57.3	58.3	59.3	60.3	61.2	62.2
24	Kirkwall - Dawn (Union) Toll	\$/GJ	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371
25	Cost to Ship Kirkwall to Dawn	\$ 000's	\$112	\$683	\$695	\$707	\$719	\$733	\$747	\$762	\$776	\$790	\$803	\$816	\$829	\$842
Dawn to Kirkwall (Union)																
26	Peak Day Ship Dawn to Kirkwall (Line 14)	TJ	136.2	138.6	141.1	143.5	146.0	148.9	151.8	154.7	157.5	160.4	163.1	165.7	168.4	171.0
27	Dawn to Kirkwall (Union) Toll	\$/GJ	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721
28	Cost to Ship to Dawn to Kirkwall	\$ 000's	597	3,648	3,712	3,777	3,841	3,917	3,994	4,070	4,146	4,222	4,292	4,361	4,431	4,500
Kirkwall - Parkway (Union)																
29	Kirkwall to Parkway (Line 15)	TJ	206	210	214	217	221	226	230	234	239	243	247	251	255	259
30	Kirkwall - Parkway (Union) Toll	\$/GJ	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135
31	Cost to Ship to Kirkwall to Parkway	\$ 000's	169	1,035	1,053	1,071	1,090	1,111	1,133	1,155	1,176	1,198	1,218	1,237	1,257	1,277
Parkway to Burlington/Oakville (CDA via TCPL)																
32	Parkway to Burl/Oakville Net of Line 17	TJ	152	156	160	163	167	172	176	180	185	189	193	197	201	205
33	Parkway to CDA Toll (TCPL)	\$/GJ	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563
34	Cost to Ship to Parkway to CDA (TCPL)	\$ 000's	1,448	8,901	9,113	9,324	9,535	9,786	10,036	10,287	10,538	10,788	11,017	11,245	11,473	11,701
Kirkwall - CDA (Amended)																
35	Ship Kirkwall to CDA (Line 18)	TJ	135	135	135	135	135	135	135	135	135	135	135	135	135	135
36	Kirkwall - CDA (Amended) Toll	\$/GJ	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674
37	Cost to Ship to Kirkwall to CDA	\$ 000's	1,375	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
Summary Alternative Proposal Average Day																
38	Cost Niagara - Kirkwall (TCPL) CDA Toll		956	5,836	5,939	6,042	6,145	6,267	6,389	6,511	6,633	6,755	6,866	6,977	7,088	7,200
39	Cost to Ship Kirkwall to Dawn		112	683	695	707	719	733	747	762	776	790	803	816	829	842
40	Cost to Ship to Dawn to Kirkwall		597	3,648	3,712	3,777	3,841	3,917	3,994	4,070	4,146	4,222	4,292	4,361	4,431	4,500
41	Cost to Ship to Kirkwall to Parkway		169	1,035	1,053	1,071	1,090	1,111	1,133	1,155	1,176	1,198	1,218	1,237	1,257	1,277
42	Cost to Ship to Parkway to CDA (TCPL)		1,448	8,901	9,113	9,324	9,535	9,786	10,036	10,287	10,538	10,788	11,017	11,245	11,473	11,701
43	Alternative Proposal Average Day Total Cost		3,282	20,103	20,512	20,920	21,329	21,814	22,299	22,784	23,269	23,754	24,195	24,637	25,079	25,520
44	Cost to Ship to Kirkwall to CDA		1,375	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
45	Alternative Proposal Average Day Total Cost With Kirk CDA Cost		4,657	28,352	28,760	29,169	29,578	30,063	30,548	31,033	31,517	32,002	32,444	32,886	33,327	33,769

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

[illegible]

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
		15	16	17	18	19	20	21	22	23	24	25	26
Calculations based on Calendar Years													
Alternative Proposal Average Day													
Description of calculations: Burlington Oakville Pipeline ("BOP")													
Ship Niagara to Kirkwall for 34% of Peak demand = average day, starting at current level and adding growth. Apply TCPL Toll													
Minimum Demand (10% of Design Day demand) always ships direct Kirkwall to Parkway													
Average minus Minimum; Contract to ship to Dawn, and apply M12 to Days demand more than average ship Dawn to Kirkwall to equate to full demand at Kirkwall. Apply M12 toll.													
Ship Kirkwall to Parkway at M12 toll for peak day requirement													
Drop 54 TJ at Existing Interconnects (Milton & Parkway)													
Contract TCPL Parkway to CDA for Peak Day less existing interconnect demands (54TJ), apply CDA Toll													
Note: Year 1 costs Prorated to 2 months													
to align with Calendar Yr Revenue Requirement COS alternative													
19	2 Month Factor		0.1667										
Niagara - Kirkwall (TCPL)													
20	Average Day (Line 8)	TJ	89.5	90.4	91.3	92.2	93.1	94.0	94.0	94.0	94.0	94.0	94.0
21	Niagara - Kirkwall (TCPL) CDA Toll	\$/GJ	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239
22	Cost Niagara - Kirkwall (TCPL) CDA Toll	\$ 000's	\$7,311	\$7,385	\$7,460	\$7,535	\$7,609	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684
Kirkwall - Dawn (Union)													
23	Ave Day minus Minimum (Ship to Dawn) (Line 11)	TJ	63.1	63.8	64.4	65.1	65.7	66.4	66.4	66.4	66.4	66.4	66.4
24	Kirkwall - Dawn (Union) Toll	\$/GJ	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371
25	Cost to Ship Kirkwall to Dawn	\$ 000's	\$855	\$864	\$873	\$881	\$890	\$899	\$899	\$899	\$899	\$899	\$899
Dawn to Kirkwall (Union)													
26	Peak Day Ship Dawn to Kirkwall (Line 14)	TJ	173.7	175.4	177.2	179.0	180.7	182.5	182.5	182.5	182.5	182.5	182.5
27	Dawn to Kirkwall (Union) Toll	\$/GJ	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721
28	Cost to Ship to Dawn to Kirkwall	\$ 000's	4,570	4,617	4,663	4,710	4,757	4,803	4,803	4,803	4,803	4,803	4,803
Kirkwall - Parkway (Union)													
29	Kirkwall to Parkway (Line 15)	TJ	263	266	268	271	274	277	277	277	277	277	277
30	Kirkwall - Parkway (Union) Toll	\$/GJ	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135
31	Cost to Ship to Kirkwall to Parkway	\$ 000's	1,296	1,310	1,323	1,336	1,349	1,363	1,363	1,363	1,363	1,363	1,363
Parkway to Burlington/Oakville (CDA via TCPL)													
32	Parkway to Burl/Oakville Net of Line 17	TJ	209	212	214	217	220	223	223	223	223	223	223
33	Parkway to CDA Toll (TCPL)	\$/GJ	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563
34	Cost to Ship to Parkway to CDA (TCPL)	\$ 000's	11,930	12,083	12,236	12,389	12,543	12,696	12,696	12,696	12,696	12,696	12,696
Kirkwall - CDA (Amended)													
35	Ship Kirkwall to CDA (Line 18)	TJ	135	135	135	135	135	135	135	135	135	135	135
36	Kirkwall - CDA (Amended) Toll	\$/GJ	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674
37	Cost to Ship to Kirkwall to CDA	\$ 000's	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
Summary Alternative Proposal Average Day													
38	Cost Niagara - Kirkwall (TCPL) CDA Toll		7,311	7,385	7,460	7,535	7,609	7,684	7,684	7,684	7,684	7,684	7,684
39	Cost to Ship Kirkwall to Dawn		855	864	873	881	890	899	899	899	899	899	899
40	Cost to Ship to Dawn to Kirkwall		4,570	4,617	4,663	4,710	4,757	4,803	4,803	4,803	4,803	4,803	4,803
41	Cost to Ship to Kirkwall to Parkway		1,296	1,310	1,323	1,336	1,349	1,363	1,363	1,363	1,363	1,363	1,363
42	Cost to Ship to Parkway to CDA (TCPL)		11,930	12,083	12,236	12,389	12,543	12,696	12,696	12,696	12,696	12,696	12,696
43	Alternative Proposal Average Day Total Cost		25,962	26,258	26,555	26,851	27,148	27,444	27,444	27,444	27,444	27,444	27,444
44	Cost to Ship to Kirkwall to CDA		8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
45	Alternative Proposal Average Day Total Cost With Kirk CDA Cost		34,211	34,507	34,803	35,100	35,396	35,693	35,693	35,693	35,693	35,693	35,693

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

Calculations based on Calendar Years

Alternative Proposal Average Day

Description of calculations: Burlington Oakville Pipeline ("BOP")

Ship Niagara to Kirkwall for 34% of Peak demand = average day, starting at current level and adding growth. Apply TCPL Toll

Minimum Demand (10% of Design Day demand) always ships direct Kirkwall to Parkway

Average minus Minimum; Contract to ship to Dawn, and apply M12 to

Days demand more than average ship Dawn to Kirkwall to equate

to full demand at Kirkwall. Apply M12 toll.

Ship Kirkwall to Parkway at M12 toll for peak day requirement

Drop 54 TJ at Existing Interconnects (Milton & Parkway)

Contract TCPL Parkway to CDA for Peak Day less existing

interconnect demands (54TJ), apply CDA Toll

[illegible]

CALCULATION OF COSTS

Burlington Oakville Project

Alternative Proposal Adjusted for Operations (Ave Day)

		2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
	Calculations based on Calendar Years	27	28	29	30	31	32	33	34	35	36	37	38	39	40
	Alternative Proposal Average Day														
	Description of calculations: Burlington Oakville Pipeline ("BOP")														
	Ship Niagara to Kirkwall for 34% of Peak demand = average day, starting at current level and adding growth. Apply TCPL Toll														
	Minimum Demand (10% of Design Day demand) always ships direct Kirkwall to Parkway														
	Average minus Minimum; Contract to ship to Dawn, and apply M12 to Days demand more than average ship Dawn to Kirkwall to equate to full demand at Kirkwall. Apply M12 toll.														
	Ship Kirkwall to Parkway at M12 toll for peak day requirement														
	Drop 54 TJ at Existing Interconnects (Milton & Parkway)														
	Contract TCPL Parkway to CDA for Peak Day less existing interconnect demands (54TJ), apply CDA Toll														
	Note: Year 1 costs Prorated to 2 months														
	to align with Calendar Yr Revenue Requirement COS alternative														
19	2 Month Factor		0.1667												
	Niagara - Kirkwall (TCPL)														
20	Average Day (Line 8)	TJ	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0
21	Niagara - Kirkwall (TCPL) CDA Toll	\$/GJ	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239	0.2239
22	Cost Niagara - Kirkwall (TCPL) CDA Toll	\$ 000's	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684	\$7,684
	Kirkwall - Dawn (Union)														
23	Ave Day minus Minimum (Ship to Dawn) (Line 11)	TJ	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4	66.4
24	Kirkwall - Dawn (Union) Toll	\$/GJ	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371
25	Cost to Ship Kirkwall to Dawn	\$ 000's	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899	\$899
	Dawn to Kirkwall (Union)														
26	Peak Day Ship Dawn to Kirkwall (Line 14)	TJ	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5	182.5
27	Dawn to Kirkwall (Union) Toll	\$/GJ	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721	0.0721
28	Cost to Ship to Dawn to Kirkwall	\$ 000's	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803
	Kirkwall - Parkway (Union)														
29	Kirkwall to Parkway (Line 15)	TJ	277	277	277	277	277	277	277	277	277	277	277	277	277
30	Kirkwall - Parkway (Union) Toll	\$/GJ	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135	0.0135
31	Cost to Ship to Kirkwall to Parkway	\$ 000's	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363
	Parkway to Burlington/Oakville (CDA via TCPL)														
32	Parkway to Burl/Oakville Net of Line 17	TJ	223	223	223	223	223	223	223	223	223	223	223	223	223
33	Parkway to CDA Toll (TCPL)	\$/GJ	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563	0.1563
34	Cost to Ship to Parkway to CDA (TCPL)	\$ 000's	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696
	Kirkwall - CDA (Amended)														
35	Ship Kirkwall to CDA (Line 18)	TJ	135	135	135	135	135	135	135	135	135	135	135	135	135
36	Kirkwall - CDA (Amended) Toll	\$/GJ	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674	0.1674
37	Cost to Ship to Kirkwall to CDA	\$ 000's	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
	Summary Alternative Proposal Average Day														
38	Cost Niagara - Kirkwall (TCPL) CDA Toll		7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684	7,684
39	Cost to Ship Kirkwall to Dawn		899	899	899	899	899	899	899	899	899	899	899	899	899
40	Cost to Ship to Dawn to Kirkwall		4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803	4,803
41	Cost to Ship to Kirkwall to Parkway		1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363	1,363
42	Cost to Ship to Parkway to CDA (TCPL)		12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696	12,696
43	Alternative Proposal Average Day Total Cost		27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444
44	Cost to Ship to Kirkwall to CDA		8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
45	Alternative Proposal Average Day Total Cost With Kirk CDA Cost		35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693

**Comparison Proposed Project
(Build) vs Alternative Proposal**

Burlington Oakville Project

Calculations based on Calendar Years

Line	Particulars \$ 000's CAD)	2016 <u>1</u>	2017 <u>2</u>	2018 <u>3</u>	2019 <u>4</u>	2020 <u>5</u>	2021 <u>6</u>	2022 <u>7</u>	2023 <u>8</u>	2024 <u>9</u>	2025 <u>10</u>
Union Reply Evidence Figure 5-4											
Proposed Project (Build) Case											
1	Build: Revenue Requirement	77	8,283	8,530	8,641	8,760	8,843	8,896	8,923	8,927	8,913
2	Allocated Dawn-Parkway Tolls	1,074	6,562	6,678	6,794	6,909	7,047	7,184	7,321	7,458	7,596
3	Kirkwall to Amended CDA allocated cost	1,375	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
4	Figure 5-4 Total Build	2,526	23,094	23,457	23,684	23,918	24,138	24,328	24,492	24,634	24,757
Build References											
5	Revenue Requirement: FRPO Q10 Attachment 1, Line 12										
6	Allocated DP Tolls: FRPO Q10 Attachment 1, Line 20										
7	Allocated Kirkwall: FRPO Q10 Attachment 1, Line 24)										
Operationalized Alternative Proposal											
8	Total Paid to TCPL (Line 21)	2,404	14,737	15,052	15,366	15,680	16,053	16,425	16,798	17,171	17,543
9	Allocated DP Tolls (Line 25)	878	5,366	5,460	5,555	5,649	5,762	5,874	5,986	6,098	6,210
10	Allocated Kirkwall to CDA cost (Line 3)	1,375	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
11	Figure 5-4 Total Operationalized Alternative	4,657	28,352	28,760	29,169	29,578	30,063	30,548	31,033	31,517	32,002
12	Figure 5-4 difference (Line 4 - 11)	(2,131)	(5,257)	(5,304)	(5,485)	(5,660)	(5,924)	(6,219)	(6,540)	(6,883)	(7,245)
Union Reply Evidence Figure 5-5											
Proposed Project (Build) Case: Same data as Figure 5-4											
13	Same data Figure 5-4 Total Build (Line 4)	2,526	23,094	23,457	23,684	23,918	24,138	24,328	24,492	24,634	24,757
Operationalized Alternative Proposal											
14	Total Paid to TCPL (Line 21)	2,404	14,737	15,052	15,366	15,680	16,053	16,425	16,798	17,171	17,543
15	Allocated DP Tolls (Line 25)	878	5,366	5,460	5,555	5,649	5,762	5,874	5,986	6,098	6,210
16	Allocated Kirkwall to CDA cost (Line 3)	-	-	-	-	-	-	-	-	-	-
17	Figure 5-5 Total Operationalized Alternative	3,282	20,103	20,512	20,920	21,329	21,814	22,299	22,784	23,269	23,754
18	Figure 5-5 difference (Line 13-17)	(757)	2,991	2,945	2,763	2,589	2,324	2,029	1,708	1,366	1,004
References											
Alternative Proposal TCPL Costs											
Reference: FRPO Q10, Attachment 2, Lines 38,42)											
19	Cost Niagara - Kirkwall (TCPL) CDA Toll	-	956	5,836	5,939	6,042	6,145	6,267	6,389	6,511	6,755
20	Cost to Ship to Parkway to CDA (TCPL)	-	1,448	8,901	9,113	9,324	9,535	9,786	10,036	10,287	10,788
21	Alternative Proposal Total Paid to TCPL	2,404	14,737	15,052	15,366	15,680	16,053	16,425	16,798	17,171	17,543
Alternative Proposal Allocated Dawn-Parkway Tolls											
Reference: FRPO Q10, Attachment 2, Lines , Lines 39-41)											
22	Cost to Ship Kirkwall to Dawn	-	111.8	682.6	694.6	706.7	718.7	733.0	747.3	761.5	790.1
23	Cost to Ship to Dawn to Kirkwall	-	597.3	3,648.0	3,712.3	3,776.6	3,841.0	3,917.3	3,993.6	4,069.9	4,222.5
24	Cost to Ship to Kirkwall to Parkway	-	169.4	1,034.9	1,053.2	1,071.4	1,089.7	1,111.3	1,133.0	1,154.6	1,197.9
25	Alternative Proposal Total Allocated Dawn-Parkway Tolls	878.5	5,365.5	5,460.1	5,554.7	5,649.3	5,761.5	5,873.8	5,986.0	6,098.2	6,210.4

Comparison Proposed Project (Build) vs Alternative Proposal

Burlington Oakville Project

Calculations based on Calendar Years

Line	Particulars \$ 000's CAD)	2026 <u>11</u>	2027 <u>12</u>	2028 <u>13</u>	2029 <u>14</u>	2030 <u>15</u>	2031 <u>16</u>	2032 <u>17</u>	2033 <u>18</u>	2034 <u>19</u>	2035 <u>20</u>
Union Reply Evidence Figure 5-4											
Proposed Project (Build) Case											
1	Build: Revenue Requirement	8,882	8,837	8,780	8,711	8,655	8,655	8,452	8,351	8,244	8,131
2	Allocated Dawn-Parkway Tolls	7,721	7,846	7,971	8,096	8,221	8,305	8,388	8,472	8,556	8,640
3	Kirkwall to Amended CDA allocated cost	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
4	Figure 5-4 Total Build	24,852	24,932	24,999	25,055	25,124	25,208	25,089	25,072	25,049	25,020
Build References											
5	Revenue Requirement: FRPO Q10 Attachment 1, Line 12										
6	Allocated DP Tolls: FRPO Q10 Attachment 1, Line 20										
7	Allocated Kirkwall: FRPO Q10 Attachment 1, Line 24)										
Operationalized Alternative Proposal											
8	Total Paid to TCPL (Line 21)	17,883	18,222	18,562	18,901	19,240	19,468	19,696	19,924	20,152	20,380
9	Allocated DP Tolls (Line 25)	6,313	6,415	6,517	6,619	6,722	6,790	6,859	6,927	6,996	7,065
10	Allocated Kirkwall to CDA cost (Line 3)	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
11	Figure 5-4 Total Operationalized Alternative	32,444	32,886	33,327	33,769	34,211	34,507	34,803	35,100	35,396	35,693
12	Figure 5-4 difference (Line 4 - 11)	(7,592)	(7,954)	(8,328)	(8,713)	(9,087)	(9,299)	(9,714)	(10,028)	(10,348)	(10,673)
Union Reply Evidence Figure 5-5											
Proposed Project (Build) Case:											
Same data as Figure 5-4											
13	Same data Figure 5-4 Total Build (Line 4)	24,852	24,932	24,999	25,055	25,124	25,208	25,089	25,072	25,049	25,020
Operationalized Alternative Proposal											
14	Total Paid to TCPL (Line 21)	17,883	18,222	18,562	18,901	19,240	19,468	19,696	19,924	20,152	20,380
15	Allocated DP Tolls (Line 25)	6,313	6,415	6,517	6,619	6,722	6,790	6,859	6,927	6,996	7,065
16	Allocated Kirkwall to CDA cost (Line 3)	-	-	-	-	-	-	-	-	-	-
17	Figure 5-5 Total Operationalized Alternative	24,195	24,637	25,079	25,520	25,962	26,258	26,555	26,851	27,148	27,444
18	Figure 5-5 difference (Line 13-17)	656	295	(80)	(465)	(838)	(1,051)	(1,466)	(1,779)	(2,099)	(2,424)
References											
Alternative Proposal TCPL Costs											
Reference: FRPO Q10, Attachment 2, Lines 38,42)											
19	Cost Niagara - Kirkwall (TCPL) CDA Toll	-	6,866	6,977	7,088	7,200	7,311	7,385	7,460	7,535	7,609
20	Cost to Ship to Parkway to CDA (TCPL)	-	11,017	11,245	11,473	11,701	11,930	12,083	12,236	12,389	12,543
21	Alternative Proposal Total Paid to TCPL		17,883	18,222	18,562	18,901	19,240	19,468	19,696	19,924	20,152
Alternative Proposal Allocated Dawn-Parkway Tolls											
Reference: FRPO Q10, Attachment 2, Lines , Lines 39-41)											
22	Cost to Ship Kirkwall to Dawn	-	803.1	816.1	829.1	842.1	855.1	863.8	872.6	881.3	890.0
23	Cost to Ship to Dawn to Kirkwall	-	4,292.0	4,361.4	4,430.9	4,500.4	4,569.9	4,616.6	4,663.2	4,709.9	4,756.5
24	Cost to Ship to Kirkwall to Parkway	-	1,217.6	1,237.3	1,257.0	1,276.8	1,296.5	1,309.7	1,322.9	1,336.2	1,349.4
25	Alternative Proposal Total Allocated Dawn-Parkway Tolls		6,312.7	6,414.9	6,517.1	6,619.3	6,721.5	6,790.1	6,858.7	6,927.4	7,064.6

Comparison Proposed Project (Build) vs Alternative Proposal

Burlington Oakville Project

Calculations based on Calendar Years

Line	Particulars	\$ 000's CAD)
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Union Reply Evidence Figure 5-4

Proposed Project (Build) Case

1	Build: Revenue Requirement	8,014	7,892	7,767	7,638	7,505	7,370	7,232	7,091	6,948	6,825
2	Allocated Dawn-Parkway Tolls	8,640	8,640	8,640	8,640	8,640	8,640	8,640	8,640	8,640	8,640
3	Kirkwall to Amended CDA allocated cost	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
4	Figure 5-4 Total Build	24,903	24,781	24,656	24,526	24,394	24,259	24,120	23,980	23,837	23,714

Build References

5 Revenue Requirement: FRPO Q10 Attachment 1, Line 12
6 Allocated DP Tolls: FRPO Q10 Attachment 1, Line 20
7 Allocated Kirkwall: FRPO Q10 Attachment 1, Line 24)

Operationalized Alternative Proposal

8	Total Paid to TCPL (Line 21)	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380
9	Allocated DP Tolls (Line 25)	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065
10	Allocated Kirkwall to CDA cost (Line 3)	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249	8,249
11	Figure 5-4 Total Operationalized Alternative	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693	35,693
12	Figure 5-4 difference (Line 4 - 11)	(10,790)	(10,912)	(11,037)	(11,167)	(11,299)	(11,434)	(11,573)	(11,713)	(11,856)	(11,979)

Union Reply Evidence Figure 5-5

**Proposed Project (Build) Case:
Same data as Figure 5-4**

13	Same data Figure 5-4 Total Build (Line 4)	24.903	24.781	24.656	24.526	24.394	24.259	24.120	23.980	23.837	23.714
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Operationalized Alternative Proposal

14	Total Paid to TCPL (Line 21)	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380	20,380
15	Allocated DP Tolls (Line 25)	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065	7,065
16	Allocated Kirkwall to CDA cost (Line 3)	-	-	-	-	-	-	-	-	-	-
17	Figure 5-5 Total Operationalized Alternative	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444	27,444
18	Figure 5-5 difference (Line 13-17)	(2,541)	(2,663)	(2,789)	(2,918)	(3,050)	(3,186)	(3,324)	(3,464)	(3,607)	(3,730)

References

Alternative Proposal TCPL Costs

Reference: FRPO Q10, Attachment 2, Lines 38,42)

[illegible]

Alternative Proposal Allocated Dawn-Parkway Tolls

Reference: FRPO Q10, Attachment 2, Lines , Lines 39-41)

[illegible]

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: page 30, lines 14 to 19.

Preamble: FRPO requires clarification of Union's understanding of TransCanada's flow schematics.

- a) Please confirm that the referenced Figure 3-2 System Schematics in TransCanada's Greater Golden Horseshoe Project shows a flow of $7615 \times 10^3 \text{m}^3/\text{d}$ or approximately 287 TJ/d at MLV 209 and a flow of $5309 \times 10^3 \text{m}^3/\text{d}$ at MLV 207.
- b) Is Union aware that MLV 209 is located near Ancaster and MLV 207 is located near Burlington? If not aware, please consult TransCanada and provide confirmation.
- c) Is Union aware that the difference in flow between MLV 207 and MLV 209 represents deliveries from TransCanada to Union's ECDA? If not aware, please consult TransCanada and provide confirmation.

Response:

- a) Confirmed. The flow at MLV 207 is equivalent to 200 TJ/d.
- b) Yes.
- c) Union cannot confirm that the difference in flow between TransCanada's MLV 209 near Ancaster and MLV 207 near Burlington represents deliveries from TransCanada to the Union ECDA (Burlington Gate Station and Bronte Gate Station). Union notes that its transportation capacity on TransCanada to the Union CDA originates from Dawn and Parkway which does not flow through MLV 209 to the Burlington Gate Station and Bronte Gate Station delivery points. Supply to the Burlington Gate Station and Bronte Gate Station delivery points from Parkway and Dawn has historically flowed from Parkway towards these delivery points.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Technical Conference Transcript, May 21, 2015, pages 93-98

Preamble: A request was made for an undertaking for Union to file its most recent 20 Year Distribution Planning Study for Burlington-Oakville. The undertaking was refused.

- a) Please file Union's most recent 20 Year Distribution Planning Study for Burlington-Oakville.
- b) If Union still refuses, please provide the basis for this refusal.

Response:

This question does not arise from Union's Reply evidence (Exhibit C). Secondly, the interrogatory is posed by FRPO which was granted late intervention status on the condition that FRPO accepted the record. Questions asked and dealt with during the technical conference form part of the record and it is not for FRPO to attempt to use this current interrogatory process to revisit or alter the record. Furthermore, the information sought by FRPO is not relevant as the inquiry made during the technical conference related to growth in west Burlington. The evidence and witnesses were clear that the growth giving rise to the need for incremental capacity related to north Oakville and the southern part of Milton and not west of Burlington Gate. The documentation referenced at the technical conference clearly referenced the growth area and that growth was not in dispute. The inquiry related wholly to a geographic area unrelated to the need for the Burlington Oakville Pipeline.

UNION GAS LIMITED

Answer to Interrogatory from
Federation of Rental-housing Providers of Ontario ("FRPO")

Reference: Union Reply Evidence and Exhibit A, Tab 4, pages 7-9

Preamble: We understand that the Amendment to the Union CDA is premised on Board approval of the Burlington-Oakville project.

- a) If the Board does not approve the Burlington-Oakville project, please confirm that it is Union's understanding that the Union CDA will not be amended.
 - b) If the Union CDA is not amended, please confirm that Union would be able to deliver excess gas from Burlington-Oakville to Kirkwall firm in the summer.
 - c) Please seek written confirmation from TCPL on its position in these matters filing both the question from Union to TCPL and TCPL's response.
-

Response:

- a) Not confirmed. The Mainline Settlement Agreement provides that if the proposed Burlington Oakville Pipeline is approved then the elements in Section 8.1(d) of that agreement are implemented.

The Mainline Settlement Agreement does not address the alternative in which Union does not receive approval for the proposed Burlington Oakville Pipeline. As part of the RH-001-2014 proceeding, the National Energy Board approved TransCanada's modifications to the Union CDA delivery area. Nothing in the Mainline Settlement Agreement would restrict TransCanada from implementing the Union CDA delivery area modifications if the proposed Burlington Oakville Pipeline is not approved.

- b) Not confirmed. Delivering gas to Kirkwall through TransCanada transportation capacity that was contracted to the Burlington Oakville System (Burlington and Bronte Gate Stations) would require a diversion regardless of season (i.e. summer or winter). That diversion (for instance, Parkway to Union CDA diverted to Kirkwall) would not be firm on the TransCanada system and would be subject to availability/TransCanada system operating conditions. Union regularly has diversions curtailed by TransCanada.
- c) Union has not sought written confirmation from TransCanada with respect to this issue. See response to part a) above.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: Exhibit C, p.8

Union states the "Burlington Oakville System customers would be completely reliant upon supply delivered to TransCanada at Niagara where: there are fewer upstream pipeline connections; supply is primarily from one production basin; fewer counterparties transact; and there is no direct access to storage."

- a) Please provide a list of all current and planned pipeline connections to Niagara. Please also provide their capacity and supply sources.
 - b) What methods of in-direct access to storage can parties obtain who contract at Niagara?
-

Response:

- a) The Niagara Spur Line is owned jointly by Tennessee Gas Pipeline, National Fuel Gas and Dominion Transmission, and connects the transmission pipeline systems of its joint owners to the TransCanada system at Niagara Falls, Ontario. Union understands the capacity of the Niagara Spur Line to be approximately 800 mmcf/d. Most of the supply at Niagara today would be sourced from the Marcellus, particularly the north-central Pennsylvania area. Currently the Niagara interconnect is contracted at about half of its capacity with plans in 2015/2016 to contract to greater than 700 mmcf/d.

Supply from the Marcellus can also be sourced through the Empire State Pipeline connection with the TransCanada system at Chippawa, in the vicinity of Niagara Falls, Ontario. Currently this connection does not physically flow gas into Ontario, however Empire State Pipeline and TransCanada plan to construct/modify facilities to move up to 700 mmcf/d from New York to Ontario in 2015/2016.

Please also see the response at Exhibit D.BOMA.3.

- b) No storage is directly connected to Niagara, unlike the Dawn Hub. Parties holding transportation capacity to Niagara in the United States could contract for storage with the provider of their transportation services - Tennessee Gas Pipeline, National Fuel Gas or Dominion Transmission - or with storage facilities located along those pipeline systems. Similarly, parties holding transportation capacity in Canada on the TransCanada system and the Union Dawn Parkway System could contract for storage at Dawn. However, balancing at Niagara would require the use of firm transportation assets or the purchase of a market-based

balancing service. However, at Niagara, a limited secondary market exists making balancing services more difficult to contract.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition (“SEC”)

Reference: Exhibit C, pp.17-18

Union states that the Alternative Proposal would move up to 77% of Union’s upstream transportation and supply portfolio away from Dawn.

- a) If the proposed facilities are approved, what percentage of Union’s forecasted upstream transportation and supply portfolio would not be connected to Dawn in 2016 and 2035?
- b) In the Alternative Proposal, what percentage of Union’s forecast upstream transportation and supply portfolio would not be connected to Dawn in 2016, and 2035?

Response:

- a) If Union’s proposed facilities are approved and in service for November 1, 2016, 100% of the Union South portfolio would be connected to Dawn (and Union’s storage) either directly or via Union’s transmission systems. This includes Union’s Niagara to Kirkwall transportation contract which connects to Dawn through the Dawn Parkway System. Union does not have forecast information out to 2035.
- b) For the Alternative Proposal, Figure 3-3 on page 18 of Exhibit C illustrates that for 2016, 77% of the Union South portfolio would be sourced from Niagara which, as explained in Exhibit C, would be disconnected from Union’s storage and transmission system, including the Dawn Hub. The Alternative Proposal suggests using a Niagara to Union CDA transportation service that would not connect to the Dawn Parkway System. Therefore only 23% of the Union South supply would be connected to Dawn (and Union’s storage). Union does not have forecast information out to 2035.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition (“SEC”)

Reference: Exhibit C, p.21

What is the basis for Union’s belief that TransCanada will require it at some future date to contract transportation capacity from Kirkwall to facilitate delivers to the Kirkwall/Dominion Gate Station and Hamilton #3 Gate Station?

Response:

Please see the response at Exhibit D.Staff.5.

UNION GAS LIMITED

Answer to Interrogatory from
School Energy Coalition ("SEC")

Reference: EB-2015-0166, Exhibit A, p.40, Figure 5-5

Please confirm the landed cost of gas to Kirkwall from Niagara is more cost effective than any other source of gas into Union's system.

Response:

Not confirmed. Landed cost analyses will vary depending on a variety of factors including the point in time they are performed, assumed basis differentials at various locations, the term being analyzed and the assumed supply and demand balance at each point.

For example, the landed costs included in Schedules 1, 2 and 3 of Union's 2014 Deferrals Disposition proceeding (EB-2015-0010) (see Attachments 1, 2 and 3) show that Niagara is not the lowest cost of gas in the Union portfolio. The same is true of Schedule 1 and 2 of Union's 2013 Deferrals Disposition proceeding (EB-2014-0145) (see Attachments 4 and 5).

As discussed in Exhibit C, pg. 9-13, Niagara is not a liquid trading point and is not expected to develop into a liquid trading point even considering the planned 2015/2016 expansion of capacity into and out of Niagara. Introducing a new, significant demand at Niagara could further reduce liquidity and result in substantially higher prices for supply at that point.

Union's evidence in this case is supporting a new pipeline that is needed to reinforce the market growth in the Burlington Oakville area and reduce the need for third party services. The decision to build this needed pipeline is independent of a decision on where to source natural gas supply for Union South sales service customers. Union will continue to evaluate all supply options (including Niagara, Dawn or the WCSB) each time it makes a supply decision.

UNION GAS LIMITED
2014-2018 Transportation Contracting Analysis

	Route	Point of Supply	Basis Differential \$/US/mmBtu (C)	Supply Cost \$/US/mmBtu (D) = Nymex + C	Unitized Demand Charge \$/US/mmBtu (E)	Commodity Charge \$/US/mmBtu (F)	Fuel Charge \$/US/mmBtu (G)	100% LF Transportation Inclusive of Fuel \$/US/mmBtu (I) = E + F + G	Landed Cost \$/US/mmBtu (J) = D + I	Landed Cost \$/CDN/G (K)	Point of Delivery (L)
(2)	Trunkline/Panhandle	Trunkline Field Zone 1A	-0.058	5.1922	0.1925	0.0275	0.1939	0.4139	\$5.61	\$5.81	Ojibway
*	Vector (2008-2018)	Chicago	0.183	5.4330	0.2500	0.0018	0.0603	0.3121	\$5.75	\$5.95	Dawn
(2)	TCPL Niagara	Niagara	0.364	5.6142	0.1375	0.0000	0.0101	0.1476	\$5.76	\$5.97	Kirkwall
(2)	PEPL (2012-2017)	Panhandle Field Zone	-0.165	5.0856	0.3200	0.0441	0.3184	0.6825	\$5.77	\$5.98	Ojibway
(1)	Dawn	Dawn	0.599	5.8498	0.0000	0.0000	0.0000	0.0000	\$5.85	\$6.06	Dawn
(2)	Panhandle Longhaul (2010-2017)	Panhandle Field Zone	-0.165	5.0856	0.4251	0.0441	0.3184	0.7876	\$5.87	\$6.08	Ojibway
(2)	Alliance/Vector (2000-2015)	CREC	-0.768	4.4828	1.7023	-0.4048	0.2560	1.5534	\$6.04	\$6.25	Dawn
(1)	TCPL SWDA	Empress	-0.647	4.6038	1.3707	0.0000	0.1823	1.5530	\$6.16	\$6.38	Dawn
(2)	TCPL CDA	Empress	-0.647	4.6038	1.4870	0.0000	0.1676	1.6546	\$6.26	\$6.48	Union CDA

(1) For Reference Only

(2) Existing Union Gas Contract

* indicates path referenced in evidence for this analysis

Assumptions used in Developing Transportation Contracting Analysis:

Annual Gas Supply & Fuel Ratio Forecasts	Point of Supply Col (B) above	Dec 2014 - Nov 2015	Dec 2015 - Nov 2016	Dec 2016 - Nov 2017	Dec 2017 - Nov 2018	Average Annual Gas Supply Cost \$/US/mmBtu Col (D) above	Fuel Ratio Forecasts Col (G) above
Henry Hub (NYMEX)	Henry Hub	\$4.37	\$4.84	\$5.95	\$5.84	\$5.25	
Trunkline/Panhandle	Trunkline Field Zone 1A	\$4.33	\$4.79	\$5.89	\$5.76	\$5.19	3.73%
Vector (2008-2018)	Chicago	\$4.60	\$5.07	\$6.11	\$5.96	\$5.43	1.11%
TCPL Niagara	Niagara	\$4.68	\$5.14	\$6.28	\$6.36	\$5.61	0.18%
PEPL (2012-2017)	Panhandle Field Zone	\$4.25	\$4.71	\$5.76	\$5.62	\$5.09	6.26%
Dawn	Dawn	\$5.08	\$5.52	\$6.47	\$6.33	\$5.85	0.00%
Panhandle Longhaul (2010-2017)	Panhandle Field Zone	\$4.25	\$4.71	\$5.76	\$5.62	\$5.09	6.26%
Alliance/Vector (2000-2015)	CREC	\$3.76	\$4.14	\$5.07	\$4.97	\$4.48	5.71%
TCPL SWDA	Empress	\$3.87	\$4.26	\$5.19	\$5.09	\$4.60	3.96%
TCPL CDA	Empress	\$3.87	\$4.26	\$5.19	\$5.09	\$4.60	3.64%

Sources for Assumptions:

Gas Supply Prices (Col D): ICF Q3 2014 Base Case

Fuel Ratios (Col G): Average ratio over the previous 12 months or Pipeline Forecast

Transportation Tolls (Cols E & F): Tolls in effect on Alternative Routes at the time of Union's Analysis

Foreign Exchange (Col K) \$1 US = \$1.093 CDN From Bank of Canada Closing Rate Sept 2, 2014

Energy Conversions (Col K) 1 dth = 1 mmBtu = 1.055056

Union's Analysis Completed: Sep-14

Paths included in analysis are those with comparable services available for contracting, as well as relevant benchmarks and currently contracted paths.

UNION GAS LIMITED
 2014-2017 Transportation Contracting Analysis

Route (A)	Point of Supply (B)	Basis Differential \$/US/mmBtu (C)	Supply Cost \$/US/mmBtu (D) = Nymex + C	Unitized Demand Charge \$/US/mmBtu (E)	Commodity Charge \$/US/mmBtu (F)	Fuel Charge \$/US/mmBtu (G)	100% LF Transportation Inclusive of Fuel \$/US/mmBtu (I) = E + F + G	Landed Cost \$/US/mmBtu (J) = D + I	Landed Cost \$/Cdn/G (K)	Point of Delivery (L)
(2) Trunkline/Panhandle	Trunkline Field Zone 1A	-0.044	4.1007	0.1923	0.0275	0.1566	0.3763	\$4.48	\$4.53	Ojibway
(2) TCPL Niagara	Niagara	0.199	4.3439	0.1409	0.0000	0.0070	0.1479	\$4.49	\$4.54	Kirkwall
(2) PEPL (2012-2017)	Panhandle Field Zone	-0.108	4.0372	0.3200	0.0441	0.1946	0.5587	\$4.60	\$4.65	Ojibway
* Vector (2014 - 2017)	Chicago	0.232	4.3772	0.1900	0.0018	0.0420	0.2338	\$4.61	\$4.66	Dawn
ANR-Michcon-Union (Fayetteville)	Fayetteville	-0.037	4.1082	0.3579	0.0161	0.1659	0.5399	\$4.65	\$4.70	St. Clair
(2) Vector (2008-2016)	Chicago	0.232	4.3772	0.2500	0.0018	0.0420	0.2938	\$4.67	\$4.72	Dawn
PEPL - (Mkt Quote)	Panhandle Field Zone	-0.108	4.0372	0.4200	0.0441	0.1946	0.6587	\$4.70	\$4.75	Ojibway
(2) Panhandle Longhaul (2010-2017)	Panhandle Field Zone	-0.108	4.0372	0.4251	0.0441	0.1946	0.6638	\$4.70	\$4.75	Ojibway
Michcon to St. Clair	SE Michigan	0.460	4.6051	0.0320	0.0000	0.0751	0.1071	\$4.71	\$4.76	St. Clair
ANR-Michcon-Union (Gulf)	ANR South East	0.030	4.1745	0.3579	0.0161	0.1686	0.5425	\$4.72	\$4.77	St. Clair
ANR-GLGT-TCPL	Fayetteville	-0.037	4.1082	0.5498	0.0216	0.1232	0.6946	\$4.80	\$4.86	Dawn
Dawn	Dawn	0.667	4.8123	0.0000	0.0000	0.0000	0.0000	\$4.81	\$4.87	Dawn
GLGT to TCPL	Northern Michigan	0.459	4.6035	0.2851	0.0074	0.0292	0.3217	\$4.93	\$4.98	Dawn
(2) Alliance/Vector (2000-2015)	CREC	-0.629	3.5157	1.7201	-0.4098	0.1952	1.5055	\$5.02	\$5.08	Dawn
(1) TCPL SWDA	Empress	-0.514	3.6304	1.4045	0.0000	0.1180	1.5225	\$5.15	\$5.21	Dawn
(2) TCPL CDA	Empress	-0.514	3.6304	1.5237	0.0000	0.1269	1.6506	\$5.28	\$5.34	Union CDA

(1) For Reference Only

(2) Existing Union Gas Contract

* indicates path referenced in evidence for this analysis

Assumptions used in Developing Transportation Contracting Analysis:

Annual Gas Supply & Fuel Ratio Forecasts	Point of Supply Col (B) above	Nov 2014 - Oct 2015	Nov 2015 - Oct 2016	Nov 2016 - Oct 2017	Average Annual Gas Supply Cost \$/US/mmBtu Col (D) above	Fuel Ratio Forecasts Col (G) above
Henry Hub (NYMEX)	Henry Hub	\$3.94	\$3.94	\$4.55	\$4.14	
Trunkline/Panhandle	Trunkline Field Zone 1A	\$3.90	\$3.90	\$4.50	\$4.10	3.82%
TCPL Niagara	Niagara	\$4.13	\$3.98	\$4.92	\$4.34	0.16%
PEPL (2012-2017)	Panhandle Field Zone	\$3.87	\$3.83	\$4.41	\$4.04	4.82%
Vector (2014 - 2017)	Chicago	\$4.29	\$4.14	\$4.70	\$4.38	0.96%
ANR-Michcon-Union (Fayetteville)	Fayetteville	\$3.93	\$3.90	\$4.50	\$4.11	4.04%
Vector (2008-2016)	Chicago	\$4.29	\$4.14	\$4.70	\$4.38	0.96%
PEPL - (Mkt Quote)	Panhandle Field Zone	\$3.87	\$3.83	\$4.41	\$4.04	4.82%
Panhandle Longhaul (2010-2017)	Panhandle Field Zone	\$3.87	\$3.83	\$4.41	\$4.04	4.82%
Michcon to St. Clair	SE Michigan	\$4.57	\$4.43	\$4.81	\$4.61	1.63%
ANR-Michcon-Union (Gulf)	ANR South East	\$3.98	\$3.97	\$4.57	\$4.17	4.04%
ANR-GLGT-TCPL	Fayetteville	\$3.93	\$3.90	\$4.50	\$4.11	3.00%
Dawn	Dawn	\$4.78	\$4.68	\$4.98	\$4.81	0.00%
GLGT to TCPL	Northern Michigan	\$4.57	\$4.43	\$4.81	\$4.60	0.64%
Alliance/Vector (2000-2015)	CREC	\$3.45	\$3.35	\$3.74	\$3.52	5.55%
TCPL SWDA	Empress	\$3.57	\$3.46	\$3.86	\$3.63	3.25%
TCPL CDA	Empress	\$3.57	\$3.46	\$3.86	\$3.63	3.50%

Sources for Assumptions:

Gas Supply Prices (Col D): ICF Q3 2014 Base Case

Fuel Ratios (Col G): Average ratio over the previous 12 months or Pipeline Forecast

Transportation Tolls (Cols E & F): Tolls in effect on Alternative Routes at the time of Union's Analysis

Foreign Exchange (Col K) \$1 US = \$1.067 CDN From Bank of Canada Closing Rate July 2, 2014

Energy Conversions (Col K) 1 dth = 1 mmBtu = 1.055056

Union's Analysis Completed: July 2014

Paths included in analysis are those with comparable services available for contracting, as well as relevant benchmarks and currently contracted paths.

UNION GAS LIMITED
2014-2015 Transportation Contracting Analysis

Route (A)	Point of Supply (B)	Basis Differential \$/US/mmBtu (C)	Supply Cost \$/US/mmBtu (D) = NYMEX + C	Unitized Demand Charge \$/US/mmBtu (E)	Commodity Charge \$/US/mmBtu (F)	Fuel Charge \$/US/mmBtu (G)	100% LE Transportation Inclusive of Fuel \$/US/mmBtu (I) = E + F + G	Landed Cost \$/US/mmBtu (J) = D + I	Landed Cost \$/Cdn/G (K)	Point of Delivery (L)
(2) PEPL (2012-2017)	Panhandle Field Zone	-0.302	3.8152	0.3200	0.0441	0.1839	0.5480	\$4.36	\$4.41	Ojibway
Dawn	Dawn	0.256	4.3735	0.0000	0.0000	0.0000	0.0000	\$4.37	\$4.42	Dawn
(2) Trunkline/Panhandle	Trunkline Field Zone 1A	-0.107	4.0102	0.1923	0.0275	0.1531	0.3729	\$4.38	\$4.43	Ojibway
* Michcon to St. Clair	SE Michigan	0.171	4.2883	0.0320	0.0000	0.0699	0.1019	\$4.39	\$4.44	St. Clair
(2) TCPL Niagara	Niagara	0.156	4.2735	0.1409	0.0000	0.0069	0.1478	\$4.42	\$4.47	Kirkwall
* PEPL - (Mkt Quote)	Panhandle Field Zone	-0.302	3.8152	0.4200	0.0441	0.1839	0.6480	\$4.46	\$4.51	Ojibway
(2) Panhandle Longhaul (2010-2017)	Panhandle Field Zone	-0.302	3.8152	0.4251	0.0441	0.1839	0.6531	\$4.47	\$4.52	Ojibway
Vector 1 Year (Mkt Quote)	Chicago	0.115	4.2329	0.2100	0.0018	0.0406	0.2524	\$4.49	\$4.53	Dawn
(2) Vector (2008-2016)	Chicago	0.115	4.2329	0.2500	0.0018	0.0406	0.2924	\$4.53	\$4.58	Dawn
ANR-Michcon-Union (Gulf)	ANR South East	-0.102	4.0152	0.3579	0.0161	0.1622	0.5361	\$4.55	\$4.60	St. Clair
GLGT to TCPL	Northern Michigan	0.191	4.3083	0.2851	0.0074	0.0274	0.3199	\$4.63	\$4.68	Dawn
ANR-GLGT-TCPL	Fayetteville	-0.076	4.0419	0.5498	0.0216	0.1213	0.6926	\$4.73	\$4.79	Dawn
(2) Alliance/Vector (2000-2015)	CREC	-0.635	3.4822	1.7201	-0.4098	0.1934	1.5037	\$4.99	\$5.04	Dawn
(1) TCPL SWDA	Empress	-0.362	3.7550	1.4045	0.0000	0.1220	1.5265	\$5.28	\$5.34	Dawn
(2) TCPL CDA	Empress	-0.362	3.7550	1.5237	0.0000	0.1312	1.6549	\$5.41	\$5.47	Union CDA

(1) For Reference Only

(2) Existing Union Gas Contract

* indicates path referenced in evidence for this analysis

Assumptions used in Developing Transportation Contracting Analysis:

Annual Gas Supply & Fuel Ratio Forecasts	Point of Supply Col (B) above	Nov 2014 - Oct 2015	Average Annual Gas Supply Cost \$/US/mmBtu Col (D) above	Fuel Ratio Forecasts Col (G) above
Henry Hub (NYMEX)	Henry Hub	\$4.12	\$4.12	
PEPL (2012-2017)	Panhandle Field Zone	\$3.82	\$3.82	4.82%
Dawn	Dawn	\$4.37	\$4.37	0.00%
Trunkline/Panhandle	Trunkline Field Zone 1A	\$4.01	\$4.01	3.82%
Michcon to St. Clair	SE Michigan	\$4.29	\$4.29	1.63%
TCPL Niagara	Niagara	\$4.27	\$4.27	0.16%
PEPL - (Mkt Quote)	Panhandle Field Zone	\$3.82	\$3.82	4.82%
Panhandle Longhaul (2010-2017)	Panhandle Field Zone	\$3.82	\$3.82	4.82%
Vector 1 Year (Mkt Quote)	Chicago	\$4.23	\$4.23	0.96%
Vector (2008-2016)	Chicago	\$4.23	\$4.23	0.96%
ANR-Michcon-Union (Gulf)	ANR South East	\$4.02	\$4.02	4.04%
GLGT to TCPL	Northern Michigan	\$4.31	\$4.31	0.64%
ANR-GLGT-TCPL	Fayetteville	\$4.04	\$4.04	3.00%
Alliance/Vector (2000-2015)	CREC	\$3.48	\$3.48	5.55%
TCPL SWDA	Empress	\$3.76	\$3.76	3.25%
TCPL CDA	Empress	\$3.76	\$3.76	3.50%

Sources for Assumptions:

Gas Supply Prices (Col D): ICE July 9, 2014

Fuel Ratios (Col G): Average ratio over the previous 12 months or Pipeline Forecast

Transportation Tolls (Cols E & F): Tolls in effect on Alternative Routes at the time of Union's Analysis

Foreign Exchange (Col K): \$1 US = \$1.067 CDN From Bank of Canada Closing Rate July 2, 2014

Energy Conversions (Col K): 1 dth = 1 mmBtu = 1.055056

Union's Analysis Completed: July 2014

Paths included in analysis are those with comparable services available for contracting, as well as relevant benchmarks and currently contracted paths.

Filed: 2015-08-27

EB-2014-0182

Exhibit D.SEC.9

Attachment 4

Filed: 2014-05-02

EB-2014-0145

Exhibit A

Tab 4

Appendix A

Schedule 1

Schedule 1
2013-2017 Transportation Contracting Analysis

	Route (A)	Point of Supply (B)	Basis Differential \$US/mmBtu (C)	Supply Cost \$US/mmBtu (D) = Nymex + C	Unitized Demand Charge \$US/mmBtu (E)	Commodity Charge \$US/mmBtu (F)	Fuel Charge \$US/mmBtu (G)	100% LF Transportation Inclusive of Fuel \$US/mmBtu (I) = E + F + G	Landed Cost \$US/mmBtu (J) = D + I	Landed Cost \$Cdn/G (K)	Point of Delivery (L)
(2)	Trunkline/Panhandle	Trunkline Field Zone 1A	-0.048	4.7216	0.1923	0.0275	0.1803	0.4000	\$5.12	\$5.11	Ojibway
(2)	PEPL (2012-2017)	Panhandle Field Zone	-0.143	4.6266	0.3200	0.0441	0.2230	0.5871	\$5.21	\$5.20	Ojibway
(2)	TCPL Niagara	Niagara	0.318	5.0876	0.1427	0.0000	0.0000	0.1427	\$5.23	\$5.22	Kirkwall
*	Vector (2008-2016)	Chicago	0.206	4.9751	0.2500	0.0018	0.0478	0.2996	\$5.27	\$5.26	Dawn
(2)	Panhandle Longhaul (2010-2017)	Panhandle Field Zone	-0.143	4.6266	0.4251	0.0441	0.2230	0.6922	\$5.32	\$5.31	Ojibway
	Dawn	Dawn	0.647	5.4165	0.0000	0.0000	0.0000	0.0000	\$5.42	\$5.41	Dawn
(2)	Alliance/Vector (2000-2015)	CREC	-0.715	4.0543	1.7310	-0.4129	0.2251	1.5432	\$5.60	\$5.59	Dawn
(1)	TCPL SWDA	Empress	-0.597	4.1722	1.4228	0.0000	0.0968	1.5196	\$5.69	\$5.68	Dawn
(2)	TCPL CDA	Empress	-0.597	4.1722	1.5435	0.0000	0.1135	1.6570	\$5.83	\$5.82	Union CDA

(1) For Reference Only

(2) Existing Union Gas Contract

* indicates path referenced in evidence for this analysis

Assumptions used in Developing Transportation Contracting Analysis:

Annual Gas Supply & Fuel Ratio Forecasts	Point of Supply Col (B) above	Dec 2013 - Nov 2014	Dec 2014 - Nov 2015	Dec 2015 - Nov 2016	Dec 2016 - Nov 2017	Average Annual Gas Supply Cost \$US/mmBtu Col (D) above	Fuel Ratio Forecasts Col (G) above
Henry Hub (NYMEX)	Henry Hub	\$3.92	\$4.37	\$4.84	\$5.95	\$4.77	
Trunkline/Panhandle	Trunkline Field Zone 1A	\$3.88	\$4.33	\$4.79	\$5.89	\$4.72	3.82%
PEPL (2012-2017)	Panhandle Field Zone	\$3.79	\$4.25	\$4.71	\$5.76	\$4.63	4.82%
TCPL Niagara	Niagara	\$4.25	\$4.68	\$5.14	\$6.28	\$5.09	0.00%
Vector (2008-2016)	Chicago	\$4.13	\$4.60	\$5.07	\$6.11	\$4.98	0.96%
Panhandle Longhaul (2010-2017)	Panhandle Field Zone	\$3.79	\$4.25	\$4.71	\$5.76	\$4.63	4.82%
Dawn	Dawn	\$4.60	\$5.08	\$5.52	\$6.47	\$5.42	0.00%
Alliance/Vector (2000-2015)	CREC	\$3.25	\$3.76	\$4.14	\$5.07	\$4.05	5.55%
TCPL SWDA	Empress	\$3.37	\$3.87	\$4.26	\$5.19	\$4.17	2.32%
TCPL CDA	Empress	\$3.37	\$3.87	\$4.26	\$5.19	\$4.17	2.72%

Sources for Assumptions:

Gas Supply Prices (Col D): ICF Q3 2013 Base Case

Fuel Ratios (Col G): Average ratio over the previous 12 months or Pipeline Forecast

Transportation Tolls (Cols E & F): Tolls in effect on Alternative Routes at the time of Union's Analysis

Foreign Exchange (Col K) \$1 US = \$1.053 CDN From Bank of Canada Closing Rate September 3, 2013

Energy Conversions (Col K) 1 dth = 1 mmBtu = 1.055056

Union's Analysis Completed: Sep-13

Paths included in analysis are those with comparable services available for contracting, as well as relevant benchmarks and currently contracted paths.

**Schedule 2
2013-2014 Transportation Contracting Analysis**

	<u>Route</u>	<u>Point of Supply</u>	<u>Basis Differential</u> \$US/mmBtu	<u>Supply Cost</u> \$US/mmBtu	<u>Unitized Demand</u> <u>Charge</u> \$US/mmBtu	<u>Commodity</u> <u>Charge</u> \$US/mmBtu	<u>Fuel Charge</u> \$US/mmBtu	<u>100% LF</u> <u>Transportation</u> <u>Inclusive of Fuel</u> \$US/mmBtu	<u>Landed Cost</u> \$US/mmBtu	<u>Landed Cost</u> \$Cdn/G	<u>Point of Delivery</u>
	(A)	(B)	(C)	(D) = Nymex + C	(E)	(F)	(G)	(I) = E + F + G	(J) = D + I	(K)	(L)
	Dawn	Dawn	0.172	4.0106	0.0000	0.0000	0.0000	0.0000	\$4.01	\$3.93	Dawn
(2)	TCPL Niagara	Niagara	0.072	3.9106	0.1453	0.0000	0.0000	0.1453	\$4.06	\$3.98	Kirkwall
*	Proposed PEPL - (Mkt Quote)	Panhandle Field Zone	-0.279	3.5598	0.3200	0.0441	0.1716	0.5357	\$4.10	\$4.01	Ojibway
(2)	PEPL (2012-2017)	Panhandle Field Zone	-0.279	3.5598	0.3200	0.0441	0.1716	0.5357	\$4.10	\$4.01	Ojibway
	Vector 1 Year (Mkt Quote)	Chicago	0.039	3.8777	0.2000	0.0018	0.0372	0.2390	\$4.12	\$4.04	Dawn
(2)	Trunkline/Panhandle	Trunkline Field Zone 1A	-0.051	3.7873	0.1923	0.0275	0.1483	0.3681	\$4.16	\$4.07	Ojibway
(2)	Vector (2008-2015)	Chicago	0.039	3.8777	0.2500	0.0018	0.0372	0.2890	\$4.17	\$4.08	Dawn
	ANR-Michcon-Union (Gulf)	ANR South East	-0.077	3.7617	0.2512	0.0161	0.1581	0.4253	\$4.19	\$4.10	Dawn
(2)	Panhandle Longhaul (2010-2017)	Panhandle Field Zone	-0.279	3.5598	0.4251	0.0441	0.1716	0.6408	\$4.20	\$4.12	Ojibway
	NGPL - ANR - MICH	NGPL TEX OK EAST	-0.115	3.7235	0.3635	0.0076	0.1590	0.5302	\$4.25	\$4.17	Dawn
	ANR-GLGT-TCPL	ANR South East	-0.077	3.7617	0.4059	0.0223	0.1100	0.5383	\$4.30	\$4.21	Dawn
(1)	TCPL SWDA	Empress	-0.545	3.2934	1.4486	0.0000	0.0764	1.5250	\$4.82	\$4.72	Dawn
(2)	Alliance/Vector (2000-2015)	CREC	-0.458	3.3808	1.7463	-0.4172	0.1877	1.5169	\$4.90	\$4.80	Dawn
(2)	TCPL CDA	Empress	-0.545	3.2934	1.5716	0.0000	0.0896	1.6612	\$4.95	\$4.86	Union CDA

(1) For Reference Only

(2) Existing Union Gas Contract

* indicates path referenced in evidence for this analysis

Sources for Assumptions:

Gas Supply Prices (Col D): ICE Settlement August 19, 2013

Fuel Ratios (Col G): Average ratio over the previous 12 months or Pipeline Forecast

Transportation Tolls (Cols E & F): Tolls in effect on Alternative Routes at the time of Union's Analysis

Foreign Exchange (Col K) \$1 US = \$1.034 CDN From Bank of Canada Closing Rate August 19, 2013

Energy Conversions (Col K) 1 dth = 1 mmBtu = 1.055056

Union's Analysis Completed: Aug-13

Paths included in analysis are those with comparable services available for contracting, as well as relevant benchmarks and currently contracted paths.