

October 3rd, 2013

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

Dear Ms. Walli:

**RE: Union Gas Limited (“Union”) - Undertakings  
EB-2012-0451/EB-2012-0433/EB-2013-0074**

Please find attached Union’s response to the following Undertaking in the above captioned proceeding:

J3.5

Yours truly,

*[original signed by]*

Karen Hockin  
Manager, Regulatory Initiatives  
Encl.

cc: Crawford Smith, Torys  
All intervenors

UNION GAS LIMITED

Undertaking of Mr. Henning  
To Mr. Quinn

ICF to provide qualitative analysis on an update to Ex 3-7 and 3-8 (Tables) that discuss dynamics of 1) Term Sheet details and 2) Energy East not proceeding.

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**Introduction**

Mr. Henning from ICF was asked to update the analysis of Landed Cost of Ontario Gas Supply (“Landed Cost Analysis”) that was presented in these proceedings (EB-2012-0433, Schedule 4-7, Pages 15 and 16 of 36, Updated 2013-08-23; and EB-2013-0074, Schedule 4-1, Pages 15 and 16 of 36, Updated 2013-08-23). ICF has conducted the requested analysis, which is presented below.

The analysis is described in three parts. Part one presents an analysis of historical natural gas prices at AECO (NIT), Empress, and Dawn from 2004 through 2013 year to date. The period of the analysis was chosen to be consistent with the period presented in the Supplementary Evidence filed by TransCanada at page 6 of 17, line 10 through page 9 of 17, line 26. The data was extended through the most recent month; August 2013.

Part two presents the Landed Cost Analysis. The analysis considers aspects of two separate areas of change and uncertainty that has been introduced into the market following the National Energy Board’s RH-003-2011 Decision and resulting market behavior. The first area considers the TransCanada tolls. Two different toll scenarios are examined: 1) the tolls approved by the NEB in RH-003-2011 (“Compliance Tolls”); and 2) estimated tolls assuming that the principles of the Settlement Term Sheet are implemented (“Estimated Settlement Tolls”).

The second area examined within Part two is the relationship between natural gas prices at AECO (NIT), Empress and Dawn. Two scenarios are presented. The first scenario is based upon the historical price relationships at those locations. The second scenario projects the landed cost analysis assuming a dynamic response in the North American natural gas market.

Part Three of the analysis presents conclusions.

**Part One - Natural Gas Prices at AECO (NIT), Empress and Dawn**

Exhibit 1 below presents the average monthly prices for Empress, AECO (NIT)<sup>1</sup>, and Dawn constructed from the daily spot prices. For each annual average as well as the average for all of the years, both the mean and median of the daily spot prices are presented.

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<sup>1</sup> The TransCanada supplementary evidence identified the relevant price series as NIT. The more common nomenclature for the Alberta Price data is AECO or AECO-C. The different data series are essentially identical.

**Exhibit 1**  
**Average Natural Gas Prices**  
**(Nominal \$C per GJ)**

Year	EMPRESS		AECO		DAWN		EMPRESS TO DAWN BASIS	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
2004	\$ 6.40	\$ 6.40	\$ 6.25	\$ 6.24	\$ 7.55	\$ 7.52	\$ 1.15	\$ 1.12
2005	\$ 8.50	\$ 7.53	\$ 8.35	\$ 7.38	\$ 10.04	\$ 8.81	\$ 1.53	\$ 1.28
2006	\$ 6.30	\$ 6.31	\$ 6.20	\$ 6.19	\$ 7.36	\$ 7.44	\$ 1.05	\$ 1.13
2007	\$ 6.24	\$ 6.25	\$ 6.13	\$ 6.14	\$ 7.29	\$ 7.19	\$ 1.05	\$ 0.94
2008	\$ 7.83	\$ 7.26	\$ 7.72	\$ 7.18	\$ 9.08	\$ 8.29	\$ 1.25	\$ 1.03
2009	\$ 3.64	\$ 3.42	\$ 3.60	\$ 3.35	\$ 4.49	\$ 4.40	\$ 0.85	\$ 0.99
2010	\$ 3.70	\$ 3.49	\$ 3.78	\$ 3.59	\$ 4.63	\$ 4.46	\$ 0.93	\$ 0.97
2011	\$ 3.24	\$ 3.32	\$ 3.44	\$ 3.43	\$ 4.20	\$ 4.14	\$ 0.97	\$ 0.82
2012	\$ 2.30	\$ 2.23	\$ 2.32	\$ 2.16	\$ 2.96	\$ 2.89	\$ 0.66	\$ 0.66
2013 Ytd (9/19)	\$ 2.92	\$ 3.00	\$ 2.98	\$ 3.04	\$ 3.94	\$ 4.00	\$ 1.02	\$ 1.00
Ave 2004 - 2008	\$ 7.06	\$ 6.75	\$ 6.93	\$ 6.63	\$ 8.26	\$ 7.85	\$ 1.21	\$ 1.10
Ave 2009 - 2013 Ytd	\$ 3.16	\$ 3.09	\$ 3.22	\$ 3.11	\$ 4.05	\$ 3.98	\$ 0.89	\$ 0.89
<b>Ave 2004 - 2013 Ytd</b>	<b>5.11</b>	<b>4.92</b>	<b>5.08</b>	<b>4.87</b>	<b>6.15</b>	<b>5.91</b>	<b>1.05</b>	<b>0.99</b>

The data shown in Exhibit 1 is based on Bloomberg data for all of the points. While natural gas spot prices at Empress are reported, Empress is a much less liquid trading location than either AECO (NIT) or Dawn. In order to present a statistically valid analysis, the mean and median values presented in Exhibit 1 are based upon days when prices are reported for all three points (Empress, AECO (NIT) and Dawn).

The Landed Cost Analysis is based upon natural gas commodity acquisition at Dawn and Empress rather than AECO (NIT). It is necessary, therefore, to evaluate price differences between AECO (NIT) and Empress. Exhibit 2 focuses on the differences in the prices between AECO (NIT) and Empress.

**Exhibit 2**  
**Relationship between Average Natural Gas Prices at AECO (NIT) and Empress**  
**(Nominal \$C per GJ)**

Year	EMPRESS		AECO		AECO TO EMPRESS BASIS	
	Mean	Median	Mean	Median	Mean	Median
2004	\$ 6.40	\$ 6.40	\$ 6.25	\$ 6.24	\$ 0.15	\$ 0.16
2005	\$ 8.50	\$ 7.53	\$ 8.35	\$ 7.38	\$ 0.15	\$ 0.15
2006	\$ 6.30	\$ 6.31	\$ 6.20	\$ 6.19	\$ 0.10	\$ 0.12
2007	\$ 6.24	\$ 6.25	\$ 6.13	\$ 6.14	\$ 0.11	\$ 0.11
2008	\$ 7.83	\$ 7.26	\$ 7.72	\$ 7.18	\$ 0.11	\$ 0.08
2009	\$ 3.64	\$ 3.42	\$ 3.60	\$ 3.35	\$ 0.05	\$ 0.07
2010	\$ 3.70	\$ 3.49	\$ 3.78	\$ 3.59	\$ (0.09)	\$ (0.09)
2011	\$ 3.24	\$ 3.32	\$ 3.44	\$ 3.43	\$ (0.20)	\$ (0.11)
2012	\$ 2.30	\$ 2.23	\$ 2.32	\$ 2.16	\$ (0.02)	\$ 0.07
2013 Ytd (9/19)	\$ 2.92	\$ 3.00	\$ 2.98	\$ 3.04	\$ (0.06)	\$ (0.04)
Ave 2004 - 2008	\$ 7.06	\$ 6.75	\$ 6.93	\$ 6.63	\$ 0.13	\$ 0.12
Ave 2009 - 2013 Ytd	\$ 3.16	\$ 3.09	\$ 3.22	\$ 3.11	\$ (0.06)	\$ (0.02)
<b>Ave 2004 - 2013 Ytd</b>	<b>\$ 5.11</b>	<b>\$ 4.92</b>	<b>\$ 5.08</b>	<b>\$ 4.87</b>	<b>\$ 0.03</b>	<b>\$ 0.05</b>

The analysis indicates that there has been a significant shift in the relationship between these prices in the last several years. For the time period from 2004 through 2007 median, natural gas prices at Empress were between \$0.11 and \$0.16 per GJ higher than the price at AECO. This difference in value between AECO (NIT) and Empress was driven by the transportation cost on the NOVA system. Under normal conditions, one would expect the relative values at the two locations to reflect the transportation cost. In recent years, however, that differential has changed.

The change in the years since 2007 was driven by the difference in the value between dry natural gas and Natural Gas Liquids (NGLs), which was much higher. The natural gas entering the NOVA system generally has a higher BTU content than the natural gas entering the TransCanada Mainline at Empress. NGLs are removed in “straddle” gas processing plants before natural gas enters the TransCanada Mainline, with the proceeds shared among the shippers.

In order to capture more of the value of the liquids, producers of the “higher NGL” gas production streams will seek to increase the value that they capture by processing their natural gas prior to putting the gas into the NOVA system. As a result, ICF concludes that the price differential between AECO (NIT) and Empress will return to the historic levels seen in 2004 through 2007 over the next few years; a differential of \$0.11-\$0.16 per GJ between AECO (NIT) and Empress. ICF has used the average of these values, \$0.135 per GJ, in the Landed Cost Analysis, rather than the \$0.05 per GJ average price differential shown in Exhibit 2.

***With adjustment for the value of the NGLs, ICF finds that the analysis of historical price data suggests a difference between the gas commodity cost at Dawn and the gas commodity cost at Empress to be \$0.89 to \$0.93 per GJ based upon the median price data.***

ICF has used the average of these values, \$0.91 per GJ, in the Landed Cost Analysis.

## **Part Two - Landed Cost Analysis**

As noted above, the update of the Landed Cost Analysis presented here requires certain assumptions. This is necessary because a level of market uncertainty results from implementation of various regulatory proceedings at the National Energy Board including, but not limited to, the current Tariff Proposal Application (RH-001-2013) and the anticipated proceeding to implement the principles outlined in the Settlement Term Sheet as well as market response to the changes.

As discussed earlier, ICF used the average of the annual median price of gas at Empress and at Dawn for each year from 2004 through 2013, adjusted for the projected shift in liquids value at Empress, as the starting point for the Landed Cost Analysis. ICF calculated the Landed Costs using the Compliance Tolls, as well as the Estimated Settlement Tolls. ICF used ranges for the Estimated Settlement Tolls consistent with the ranges submitted in undertaking response J4.5.

Eastern Ontario Triangle Short Haul	145%-155% of Compliance Tolls
Eastern Ontario Triangle Long Haul	113%-120% of Compliance Tolls
Other Long Haul	107% -113% of Compliance Tolls

The landed cost of gas for the Compliance Tolls and the Estimated Settlement Tolls are shown in Exhibit 3. The landed cost is based on the historic differentials in natural gas prices between Empress and Dawn discussed previously, rather than a forecast of future natural gas prices.

**Exhibit 3**  
**Landed Cost Analysis Based on Historical Gas Prices**

Long-term Transportation Contracting Analysis (Full Utilization) Median 2004 - Aug 2013 Basis								
Median 2004 - 2013 Prices and Basis - Pipeline Capacity Fully Utilized or Recovered (Nov 2015-Oct 2025)								
TCPL Delivery Region	TCPL Compliance Tolls		Estimated Settlement Tolls (Low)		Estimated Settlement Tolls (High)			
	Dawn	Empress	Dawn	Empress	Dawn	Empress	Dawn	Empress
NDA	6.42	6.40	6.58	6.49	6.62	6.65		
NCDA	6.23	6.61	6.31	6.80	6.32	6.98		
EDA	6.30	6.76	6.42	6.98	6.44	7.17		

  

Long-term Transportation Contracting Analysis (80% Utilization) Median 2004 - Aug 2013 Basis								
Median 2004-2013 Prices and Basis - 20% of Pipeline Capacity Unutilized and Unrecovered (Nov 2015-Oct 2025)								
TCPL Delivery Region	TCPL Compliance Tolls		Estimated Settlement Tolls (Low)		Estimated Settlement Tolls (High)			
	Dawn	Empress	Dawn	Empress	Dawn	Empress	Dawn	Empress
NDA	6.53	6.73	6.73	6.85	6.78	7.04		
NCDA	6.29	6.98	6.39	7.22	6.41	7.45		
EDA	6.39	7.17	6.53	7.44	6.56	7.69		

As stated by Mr. Henning<sup>2</sup> the dynamic market response to the failure to implement the Estimated Settlement Tolls has the potential to substantially reduce the average basis between Empress and Dawn relative to the average historical levels used to form the basis of the Landed Cost Analysis shown in Exhibit 3.

ICF concludes that the natural gas prices in the market over August and to date in September are unsustainably low and inconsistent with the development of natural gas supplies transported via the TransCanada Mainline sufficient to meet the needs of Ontario. ICF concludes that natural gas prices in western Canada would need to rise to levels well above \$4.50 per GJ to develop such supplies. Absent an increase to this level, natural gas drilling activity will be insufficient to

<sup>2</sup> Transcript Volume 3, September17, Page 33, lines 6 through 24

generate sufficient supplies to meet western Canadian demand as well as supplies for export to other markets.

If the differential between the natural gas prices at Empress and Dawn remain consistent with the historic values, the natural gas cost savings calculated above remain valid. That analysis, however, does not reflect the dynamic response that should be expected in the market including the shift in the basis between Empress and Dawn that would accompany a shift to long-term long-haul transportation contracts.

As a general matter, the LDCs and regulators generally do not consider relying upon non-firm discretionary transportation service to meet the needs of in-franchise customers as a prudent component of the gas supply plan. LDCs and their regulators recognize that it is necessary to obtain firm service in a manner that assures continued access to natural gas supply as appropriate.

As a result, if the Settlement Term Sheet was not successfully implemented, ICF would anticipate that the requirements of the market would be met predominantly with long-term firm transportation service contracts with supply sourced through Empress. Under this scenario, the market dynamics that determine the relationship between natural gas prices at two points on the pipeline network – the basis – will be fundamentally changed.

Basis is determined in the market by the cost of moving natural gas from one location to another. When natural gas is being transported from Empress to Ontario utilizing discretionary services, the basis value is driven by the cost of acquiring the discretionary service. Since the implementation of the RH-003-2011 Decision Model by the NEB, reflecting the pricing discretion granted for Interruptible Service (“IT”) and Short-Term Firm Transportation (“STFT”), the basis between western Canada and Ontario has expanded dramatically, surpassing the \$1.50 per GJ identified in TransCanada’s Supplementary Evidence.

If, however, shippers respond to the pricing discretion granted for IT and STFT by contracting for firm long-haul service, the cost incurred by a decision to move gas from Empress to Ontario will be the fuel cost only. The demand charges associated with the transportation contract are sunk and will not enter into the economic decision to nominate and ship gas on the TransCanada Mainline. The fuel cost of transporting natural gas is much smaller than the demand charge component of the toll.

In order to assess the potential impact of the dynamic market response on the landed cost of natural gas, it is necessary to consider the scenario where the difference in the commodity cost at Empress and the commodity cost at Dawn compresses to approach the fuel cost only. To do this, ICF considered a scenario where the average basis between Empress and Dawn falls from \$0.91 per GJ to \$0.50 per GJ. ICF allocated the reduction in the basis to the prices at Empress and Dawn based upon the changes in the price relationship that has occurred since July 1, 2013. July 1, 2013 was the date of the implementation of the Compliance Tolls and the date when TransCanada’s discretion in the pricing of IT and STFT commenced. Based upon that analysis, 84% of the impact (\$0.34 per GJ) is reflected as an increase in the commodity price of gas at

Empress.

While the impact of the dynamic market response on prices at Empress and at Dawn is expected to be similar in both the Compliance Toll and the Estimated Settlement Toll scenarios, the impact on gas portfolio costs to purchasers is not. In the compliance case, a higher percentage of natural gas requirements are expected to be sourced at Empress due to the need to hold additional FT capacity, as well as the expected lack of expansion through the Parkway to Maple constraint. The increased percentage of gas sourced at Empress leads to a greater impact on average gas costs for the Compliance Tolls case relative to the Estimated Settlement Tolls case.

The following tables present the Landed Cost Analysis assuming that the difference between the commodity cost for natural gas acquired at Empress and the commodity cost of acquiring natural gas at Dawn is \$0.50 per GJ.

**Exhibit 4**  
**Landed Cost Analysis Based on Historical Gas Prices with Dynamic Market Response**

Long-term Transportation Contracting Analysis (Full Utilization) Dynamic Market Response (Estimated)							
Median 2004 - 2013 Prices and Basis - Pipeline Capacity Fully Utilized or Recovered (Nov 2015-Oct 2025)							
TCPL Delivery	TCPL Compliance Tolls		Estimated Settlement Tolls (Low)		Estimated Settlement Tolls (High)		
Region	Dawn	Empress	Dawn	Empress	Dawn	Empress	
NDA	6.35	6.75	6.51	6.85	6.55	7.00	
NCDA	6.16	6.96	6.24	7.15	6.26	7.34	
EDA	6.24	7.11	6.35	7.33	6.37	7.52	

  

Long-term Transportation Contracting Analysis (80% Utilization) Dynamic Market Response (Estimated)							
Median 2004-2013 Prices and Basis - 20% of Pipeline Capacity Unutilized and Unrecovered (Nov 2015-Oct 2025)							
TCPL Delivery	TCPL Compliance Tolls		Estimated Settlement Tolls (Low)		Estimated Settlement Tolls (High)		
Region	Dawn	Empress	Dawn	Empress	Dawn	Empress	
NDA	6.46	7.08	6.66	7.20	6.71	7.39	
NCDA	6.22	7.33	6.32	7.58	6.34	7.80	
EDA	6.32	7.53	6.46	7.80	6.49	8.04	

**Part Three – Conclusions**

From this analysis, ICF concludes the following:



- *Under all of the scenarios examined, facilities that allow access to additional natural gas supplies through Dawn and Niagara/Chippawa will produce gas cost savings for consumers in Ontario compared to acquiring natural gas at Empress and transporting on the TransCanada Mainline.*
  
- *The risk associated with a failure to successfully implement the principles of the Settlement Term Sheet presents the highest landed cost of gas for any of the scenarios examined. The conclusion is based upon the recognition that absent the implementation of the principles embodied in the Settlement Term Sheet, most of the gas transported to Ontario will be sourced through Empress. Implementation of the principles embodied in the Settlement Term Sheet provides the opportunity to access gas at Dawn, reducing the landed cost of gas.*