

November 30, 2016

BY COURIER & RESS

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

RE: EB-2016-0186 – Union Gas Limited (“Union”) – Panhandle Reinforcement Project Responses to Undertakings

Dear Ms. Walli,

Please find attached Union’s responses to Undertakings J2.1, J2.4 and J2.5 received in the hearing on November 23, 2016. Responses will be filed in RESS and copies will be sent to the Board.

If you have any questions with respect to this submission please contact me at 519-436-5473.

Yours truly,

[original signed by]

Karen Hockin
Manager, Regulatory Initiatives

Encl.

cc: Zora Crnojacki, Board staff
Mark Kitchen, Union Gas
Charles Keizer, Torys
All Intervenors (EB-2016-0186)

UNION GAS LIMITED

Undertaking Response
To Mr. Quinn

WITH REFERENCE TO PAGE 22 OF THE COMPENDIUM, SHOWING JT1.8, ATTACHMENT
1, TO RERUN THE SIMULATION WITH 175 FIRM

Please see Exhibit J2.4.

UNION GAS LIMITED

Undertaking Response
To Mr. Quinn

TO PROVIDE AN UPDATED VERSION OF J2.1

Please see Attachment 1 which represents the scenario requested with an assumed import level of 175 TJ/d at Ojibway and no additional facilities. As evidenced by the shortfall figure of 14,743 GJ/d, this is insufficient to meet the demands forecast for the winter of 2021/2022. The pressure constraint in the Leamington/Kingsville market cannot be maintained without reinforcement from Dawn.¹ Additional facilities would be needed to meet winter design.

In addition, incremental facilities (compression at Sandwich and possibly LCU) would be needed to operationalize this significant level of imports, not only in the summer, but also at certain times in the winter given that the 175 TJ/d import level exceeds Union's maximum firm winter import capability of 140 TJ/d².

Regarding this significant level of imports, Union notes that increasing the reliance on Ojibway deliveries to 175 TJ/d to meet a growing system demand from a gas supply perspective is not a viable scenario. Relying on this level of gas supply at Ojibway, which is not a liquid trading point and with limited counterparties, would add significant gas costs to ratepayers and pose increased risk and uncertainty with respect to availability, term and price. This scenario would require Union to purchase an incremental 115 TJ/d which will bring the total Ojibway deliveries to approximately 36% of Union's firm gas supply portfolio, restricting Union's supply diversity and flexibility. An incremental 115 TJ/d of annual firm transportation capacity on Panhandle Eastern Pipeline would not be available, beginning November 1, 2017, given Panhandle Eastern Pipeline's expected available capacity is only 25 TJ/d. Please also reference Exhibit JT1.6.

Attachment 1 is an update to the schematic provided in the hearing room in Exhibit J2.1. In J2.1, four pressure figures were inadvertently taken from the inlet of the downstream station rather than from the takeoff on the NPS 20 Panhandle line in the model when preparing and plotting results in Exhibit J2.1. There are no impacts to the model or the model results, including the identified shortfall, only to the pressure labels noted below.

¹ As noted by Mr. Wallace at the hearing (Day 2 transcript pages 98-101), on design day the NPS 20 continues to feed into the Windsor market by flowing westerly through the Sandwich Transmission Station to meet Windsor market demands. Gas cannot be compressed easterly toward Dawn through the Sandwich Compressor Station at the same time. Available delivery pressure in excess of that required to import the necessary volume from Panhandle Eastern at Ojibway is of no use to Union in meeting design day demands.

² Undertaking JT1.5

The updated pressures are:

Node/location on system	Pressure at NPS 20 take-off (kPa)	Previously labelled pressure (kPa)
Comber	3741	3618
Mersea	3713	2285
Essex	3661	3213
Sandwich Transmission	3625	3598

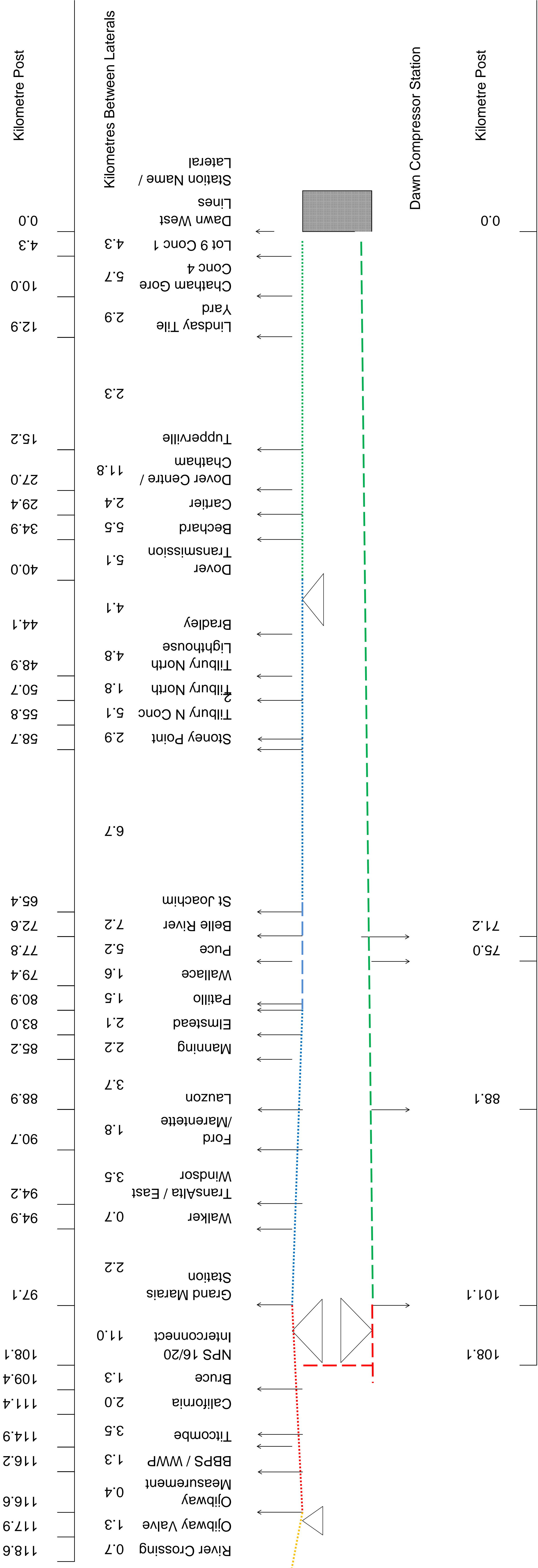
Union presented a similar schematic for a scenario in response to Undertaking JT1.8 from the technical conference. In that scenario, Union was to assume imports of 140 TJ/d with no additional facilities, and provide schematics representing Design Day 2017/2018, as well as Design Day for 2021/2022. In that case, the 2021/2022 demands could not be met, as evidenced by the shortfall figure of 30,359 GJ/d.

Union reviewed previously filed schematics, and notes that similar updates to labelling are required for the schematics filed in response to Undertaking JT1.8 (from which JT2.1 was derived) to reflect pressures at the NPS 20 take-off. Again, there are no impacts to the model or the model results, including the identified shortfall, only to the pressure labels noted below.

The updated pressures are:

Node/location on system	JT1.8 Att 1 Pressure at NPS 20 Take-off (kPa)	JT1.8 Att 1 Previously labelled Pressure (kPa)	JT1.8 Att 2 Pressure at NPS 20 Take-off (kPa)	JT1.8 Att 2 Previously labelled Pressure (kPa)
Comber	3905	3829	3783	3055
Mersea	3864	2620	3732	3134
Essex	3795	3383	3635	3094
Sandwich Transmission	3746	3760 (*typo -3670)	3561	2923

Union Gas Panhandle System (Design Day)



Design Day Demands		Design Day Pressure	
	(GJ/d)		(kPag)
Ojibway Measurement	31436		1884
BBPS / WWP	94345		1870
Titcombe	17933		1858
California	18180		1852
Bruce	6604		1839
Grand Marais Station	46215		1836
Walker	63141		1835
TransAlta / East Windsor	35466		1805
Ford /Marentette	3934		1961
Lauzon	25127		2010
Manning	11551		2180
Elmstead	1298		2294
Patillo	5146		2402
Wallace	57		2417
Puce	1827		2433
Belle River	4174		2550
St Joachim	668		2659
Stoney Point	1288		2986
Tilbury N Conc 2	10		3124
Tilbury North	3547		3368
Tilbury North Lighthouse	201		3453
Bradley	22		3755
Bechard	391		4110
Cartier	38		4227
Dover Centre / Chatham	64210		4481
Tupperville	2234		5216
Lindsay Tile Yard	19		5340
Chatham Gore Conc 4	19		5495
Lot 9 Conc 1	3		5800
Dawn West Lines	7558		6030
Comber	144084		3741
Mersea	46599		3713
Essex	18942		3661
Sandwich Transmission	14957		3625
Total	671224		

System Capacity		(GJ/d)	
Total System Capacity including Ojibway Supplies		656,481	
Total Requirements		671,224	
Shortfall		14,743	

WINTER DESIGN DAY
PANHANDLE SYSTEM
WINTER 2021/2022
NO ADDITIONAL FACILITIES BUILT

Legend

..... 6040 kPag MOP

--- 4140 kPag MOP

△ Station 3450 kPag MOP

2930 kPag MOP

NPS 16		6040 kPag MOP	
NPS 20		4140 kPag MOP	
Station		3450 kPag MOP	
		2930 kPag MOP	

Kilometres Between Laterals

71.2 3.8 13.1 88.1 13.0 101.1 7.0

NPS 16/20 Interconnect Sandwich Transmission Essex Mersea Comber Dawn

UNION GAS LIMITED

Undertaking Response
To Mr. Mondrow

FOR THE 140 GJ A DAY OPTION, TO ESTIMATE THE COST FOR THOSE FACILITIES,
ASSUMING A WINTER-ONLY OJIBWAY DELIVERY TO SERVE THE INCREMENTAL
DEMAND OVER THE PLANNING PERIOD

In order to meet the 106 TJ/d of incremental demand for Winter 2021/2022 using 140 TJ/d of total Ojibway deliveries (incremental 80 TJ/d), additional facilities are required. As shown in response to JT1.8, imports alone are insufficient to satisfy the demands for 2021/2022 and a shortfall of 30.5 TJ/d results. Additional facilities are required in order to get the gas to market. There is too much pressure loss between Dawn and the market in the absence of any reinforcements.

The following facilities are required:

- Replace (lift) 15.0 kilometres of the existing NPS 16 pipeline from Dawn to Simpson Rd Valve site (east of Tupperville) and replace (lay) with a new NPS 36 pipeline, plus upgrade Dawn and Mersea stations along the Panhandle System, and upgrade the valve site at Simpson Rd;
- Install approximately 16 kilometres of NPS 12 pipeline from the existing NPS 20 pipeline into the Town of Kingsville and build a new station to serve the distribution network; and,
- Install approximately 12 kilometres of NPS 6 pipeline looping upstream of McCormick Station in the Municipality of Essex.

The estimated capital cost of these facilities is \$188 million. Note that this option assumes Union does not need to operationalize Ojibway deliveries in excess of 115 TJ/d during the summer (April 1 – Oct 31). Union does not believe this is realistic. Operationalizing 140 TJ/d of year-round deliveries, given the maximum summer import limitation of 115 TJ/d, would result in an additional compression requirement at Sandwich. The NPV noted below is based on winter only deliveries and NOT operationalizing for the summer 115 TJ/d constraint.

In this scenario the Windsor market (approximately 250 TJ/d) is larger than the total Ojibway deliveries (140 TJ/d), so the NPS 20 continues to feed the Windsor market by flowing westerly through the Sandwich Transmission Station. The limitation in serving the Leamington / Kingsville market is caused by the pressure loss between the NPS 20 Panhandle Line and the market, which is controlled by the minimum inlet pressure to Leamington North Gate Station, located at the end of an approximately 20 kilometre long lateral fed from the NPS 20 at the Comber Transmission Station (see Exhibit A, Tab 4, Schedule 3). The incremental Ojibway deliveries plus the 15 kilometres of new NPS 36 pipeline from Dawn, as identified above under

this scenario, does not yield a sufficient increase in pressure along the NPS 20 to allow for all the additional Leamington / Kingsville market to be served by the existing laterals, therefore the additional reinforcements, also described above, are required to reduce the pressure drop between the NPS 20 and the market. Although not yet determined, it is expected that the takeoff for the NPS 12 lateral into the Town of Kingsville will be located between the existing laterals to Mersea Gate Station and Essex Transmission Station.

The 20 year NPV of this scenario is \$(248) million which is \$36 million worse than Union's proposed project NPV of \$(212) million.

The NPV of \$(248) million is based on 80 TJ/day of pipeline demand charge on Panhandle Eastern at posted tolls equal to \$15.9 million per year, less gas molecule difference of \$3.6 million resulting in net gas cost of \$12.3 million per year for the 151 days of winter.¹

This scenario was completed for illustrative purposes only. In addition to this scenario being uneconomic, it is not viable from a gas supply perspective. Purchasing an incremental 80 TJ/d brings Union's total Panhandle Field Zone commitment to 140 TJ/d which will represent approximately 30% of Union's firm transportation portfolio which would restrict Union's supply diversity and flexibility. This scenario forces more volume to be delivered during the winter when gas prices are typically higher, lessening the benefit storage provides. As well, an incremental 80 TJ/d of annual firm transportation capacity on Panhandle Eastern Pipeline will not be available. Beginning November 1, 2017, Panhandle Eastern Pipelines expected available capacity is 25 TJ/d.

¹ The landed gas cost analysis for the winter only scenario assumes Union acquiring Panhandle Eastern Pipeline capacity for the full year (365 days) and filling the capacity with the commodity in the winter only (151 days). The premium of \$1.03 CAD/GJ is a winter season premium, if you were to annualize the premium it would be equivalent to \$0.43 CAD/GJ. The landed cost analysis was prepared using 10 year winter commodity price forecasts for November 2017 through October 2027 from ICF's fourth quarter data.