



Rakesh Torul
Technical Manager
Regulatory Applications
Regulatory Affairs

tel 416-495-5499
EGIRegulatoryProceedings@enbridge.com

Enbridge Gas Inc.
500 Consumers Road
North York, Ontario M2J 1P8
Canada

VIA EMAIL, RESS and COURIER

December 5, 2019

Christine Long
Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

**Re: EB-2019-0172 Enbridge Gas Inc. (“Enbridge Gas”)
Windsor Line Replacement Project – Hearing Exhibits**

Dear Ms. Long:

In accordance with Procedural Order No.3 dated December 22, 2019, enclosed are Enbridge Gas’ responses to the written questions sent by parties prior to the technical conference.

Please contact the undersigned if you have any questions.

Yours truly,

(Original Signed)

Rakesh Torul
Technical Manager,
Regulatory Applications

cc: Guri Pannu, Sr. Legal Counsel
EB-2019-0172 Intervenors

ENBRIDGE GAS INC.

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

Interrogatory

Reference:

Exhibit C, Tab 3 and Exhibit I.FRPO.7

Preamble:

As was set out in our request for discovery, our main area of interest is information surrounding alternatives considered and the cost of those alternatives. We respect that some of the data we are seeking require results from a simulation and thus are advancing specific questions, well ahead of the deadline for topics. We believe the most efficient and effective approach is seeking the output a few simple scenarios using the existing and future (with attachments through 2029) simulations that were prepared for the project. From our experience, the simulation runs and recording the results should take hours not days allowing communication of the results prior to the Technical Conference.

Question(s):

Working from Windsor Line system as depicted in FRPO.7,

- a) please provide the design day hourly load
 - i. flowing east of Tilbury S. Station
 - 1) currently
 - 2) in 2029 based upon attachments evidenced in Appendix 2
 - ii. for the two small distribution stations between Comber Gate and Tilbury S.
currently
 - 1) in 2029 based upon attachments evidenced in Appendix 2
 - 2) please provide the distance
 - iii. from the T north of Comber Transmission to the Comber Gate
 - 1) from Comber Gate to Tilbury S.
 - 2) from Tilbury S. to Port Alma

Response

a) i)

(1) The current design day hourly load flowing east of Tilbury South Station is approximately 40 m³/hr.

(2) The design day hourly load flowing east of Tilbury South Station in 2029 is approximately 40 m³/hr.

It should be noted that the in-franchise growth for this area in Appendix 2 was assumed to be downstream of Tilbury South Station.

ii)

(1) The current design day hourly load for the two small distribution stations is approximately 27 m³/hr total.

(2) The design day hourly load for the two small distribution stations in 2029 is approximately 27 m³/hr total.

It should be noted that the in-franchise growth for this area in Appendix 2 was assumed to be downstream of Tilbury South Station.

iii) (1) The distance from the T north of Comber Trans to the Comber Gate is approximately 4.8 km.

(2) The distance from Comber Gate to Tilbury South is approximately 10.8 km.

(3) The distance from Tilbury South to Port Alma is approximately 16.6 km.

ENBRIDGE GAS INC.

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

Interrogatory

Reference:

Exhibit C, Tab 3 and Exhibit I.FRPO.7

Preamble:

As was set out in our request for discovery, our main area of interest is information surrounding alternatives considered and the cost of those alternatives. We respect that some of the data we are seeking require results from a simulation and thus are advancing specific questions, well ahead of the deadline for topics. We believe the most efficient and effective approach is seeking the output a few simple scenarios using the existing and future (with attachments through 2029) simulations that were prepared for the project. From our experience, the simulation runs and recording the results should take hours not days allowing communication of the results prior to the Technical Conference.

Question(s):

In tabular presentation as outlined below, please provide the results of the peak day simulations for the current design day loads and those of 2029 (as above) with Comber Transmission set to 3450 kPa for each of the following scenarios:

- a) Scenario 1: The proposed design from the application (i.e. all NPS 6)
- b) Scenario 2: Keeping NPS 6 west of the T north of Comber, using NPS 4 east of the T to Port Alma
- c) Scenario 3: Keeping NPS 6 west of the T, using NPS 4 to Tilbury S. and reducing to NPS 2 east of Tilbury S. to Port Alma

		Scenerio #		
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Minimum Inlet Surplus Capacity *
	(kPa)	(kPa)	(kPa)	(kPa)
Comber Gate				
Tilbury S.				
Port Alma				

* Surplus Capacity available at Station in 2030 while respecting min. inlet

Response

The scenarios requested were run assuming both 3100 kPa outlet pressure, in accordance with Enbridge Gas's application and 3450 kPa outlet pressure in accordance with the request.

Scenario 1 (NPS 6, 3100 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3098	3098	38200
Tilbury S	1035	3097	3096	22100
Port Alma	1000	3097	3096	15200

Scenario 2 (NPS 4, 3100 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3087	3084	12100
Tilbury S	1035	3080	3074	6600
Port Alma	1000	3080	3074	4700

Scenario 3 (NPS 4 and NPS 2, 3100 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3087	3084	12100
Tilbury S	1035	3080	3074	6600
Port Alma	1000	3079	3073	1100

Note: Capacities available rounded to nearest 100 m3/hr and are separate scenarios. (i.e., the capacity at Port Alma is assuming no additional load elsewhere on the system).

Scenario 1 (NPS 6, 3450 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3449	3448	43500
Tilbury S	1035	3448	3447	25100
Port Alma	1000	3448	3447	17200

Scenario 2 (NPS 4, 3450 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3439	3436	13900
Tilbury S	1035	3432	3427	7600
Port Alma	1000	3432	3427	5400

Scenario 3 (NPS 4 and NPS 2, 3450 kPa)				
Station	Minimum Inlet	2020/21 Design Day Inlet Pressure	2029/30 Design Day Inlet Pressure	Capacity available in 2029/30
	(kPa)	(kPa)	(kPa)	(m3/hr)
Comber Gate	1172	3439	3436	13900
Tilbury S	1035	3432	3427	7600
Port Alma	1000	3431	3426	1300

Note: Capacities available rounded to nearest 100 m3/hr and are separate scenarios. (i.e., the capacity at Port Alma is assuming no additional load elsewhere on the system).

ENBRIDGE GAS INC.

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

Interrogatory

Reference:

Exhibit C, Tab 3 and Exhibit I.FRPO.7

Preamble:

As was set out in our request for discovery, our main area of interest is information surrounding alternatives considered and the cost of those alternatives. We respect that some of the data we are seeking require results from a simulation and thus are advancing specific questions, well ahead of the deadline for topics. We believe the most efficient and effective approach is seeking the output a few simple scenarios using the existing and future (with attachments through 2029) simulations that were prepared for the project. From our experience, the simulation runs and recording the results should take hours not days allowing communication of the results prior to the Technical Conference.

- a) Scenario 1: The proposed design from the application (i.e. all NPS 6)
- b) Scenario 2: Keeping NPS 6 west of the T north of Comber, using NPS 4 east of the T to Port Alma
- c) Scenario 3: Keeping NPS 6 west of the T, using NPS 4 to Tilbury S. and reducing to NPS 2 east of Tilbury S. to Port Alma

Question(s):

For each of the above scenarios, please indicate if the scenario meets the appropriate design criteria and, if not, why not.

Response

The scenarios in Exhibit KT1.2 were completed assuming both 3100 kPa and 3450 kPa out of Comber Transmission Station. The maximum pressure available to the Windsor

Line from the Panhandle Transmission System fed through Comber Transmission Station is 3100 kPa. In order to operate the Windsor Line at 3450 kPa, there will be additional constraints on the Panhandle system which could result in reinforcement sooner than desired. The scenarios assuming 3450 kPa do not meet the design criteria. Each of the scenarios assuming a 3100 kPa outlet meet the requirements for design using Appendix 2. Scenario 1 is the most cost-effective solution for additional un-forecasted growth. It also provides greater operational and emergency flexibility, and reliability of supply to support other systems in the area.

ENBRIDGE GAS INC.

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

Interrogatory

Reference:

Exhibit C, Tab 3 and Exhibit I.FRPO.7

Preamble:

We are interested in understanding better the difference in cost associated with different sizes of HP Steel pipe constructed in rural areas.

Question(s):

Over the last 10 years, for projects that installed, or have Board approval to be installed, over 5 km of High Pressure Steel pipe from NPS 2 to NPS 6, please provide the following data:

Project Name	OEB Proceeding (if applicable)	Forecast Cost	Actual Cost	New of Replacement	Size	Length	Unit Cost
		\$	\$		(NPS)	(km)	(\$/km)

a) For each of the above projects, please breakdown the costs in the same format as Exhibit C, Tab 4, Schedule 1

Response

The response to this question was done on a best effort basis. Enbridge Gas was able to find three projects that meet the criteria identified in the question. Rather than populate the chart as requested, Enbridge Gas has provided the cost schedules as filed

and post construction financial reports for the following projects. Please see the following attachments:

- I. Creekford Reinforcement Project (EB-2009-0061 – cost schedules (Attachment 1) and post-construction financial report (Attachment 2).
- II. Trenton Reinforcement Project (EB-2010-0329) – cost schedules (Attachment 3) and post-construction financial report (Attachment 4).
- III. Milverton Rostock Wartburg Community Expansion Project (EB-2015-0179) – cost schedules (Attachment 5) – (note: as per OEB decision post construction financial report to be filed as part of Rebasing proceeding).

**CREEKFORD REINFORCEMENT PROJECT
TOTAL ESTIMATED PROJECT COSTS**

Pipeline and Equipment

4500 meters of NPS 6	\$	158,940
Valves, fittings, misc.		25,092
Stores Overhead		<u>14,889</u>

Total Pipeline and Equipment \$ 198,921

Construction and Labour

Prime Contract	\$	1,610,500
Ancillary Contracts		128,700
Company Labour		15,600
Land Rights		<u>90,500</u>

Total Construction and Labour \$1,845,300

Total Pipeline and Equipment and Construction and Labour \$2,044,221

Contingencies 50,000

Sub-Total 2,094,221

Interest during Construction 44,600

Total Estimated Project Costs \$2,138,821

Includes the Estimated Environmental Costs Identified in Schedule 18

Schedule 12 - Final Financial Report

Category	Estimated	Actual	Difference	Notes
Pipeline and Equipment				
4500 m of NPS 6	158,940	167,891	-8,951	
Valves, fittings, misc	25,092	19,154	5,938	¹
Store Overhead	14,889	0	14,889	²
Total Pipeline and Equipment	\$198,921	\$187,045	\$11,876	
Construction and Labour				
Prime Contract	1,610,500	1,858,022	-247,522	³
Ancillary Contracts	128,700	235,997	-107,297	⁴
Company Labour	15,600	29,489	-13,889	⁵
Land Rights	90,500	39,179	51,321	⁶
Total Construction and Labour	\$1,845,300	\$2,162,687	-\$317,387	
Total Pipeline/Equipment/Construction/Labour	\$2,044,221	\$2,349,732	-\$305,511	
Contingencies	50,000	0	50,000	
Sub-Total	2,094,221	2,349,732	-255,511	
Interest During Construction	44,600	0	44,600	⁷
Total Estimated Project Costs	\$2,138,821	\$2,349,732	-\$210,911	
(Includes estimated environmental costs identified in Schedule 18)				

1. Bids received for valves and fittings were less than forecast
2. Warehouse overheads were included in material prices
3. Costs were increased due to additional rock in area
4. Additional costs were incurred to complete environmental studies for water course crossings
5. Additional costs were incurred for company inspection of construction
6. Land rights were not required in some areas as the city had previously taken additional road widening
7. IDC was not calculated for this project

**CFB Alternate Route Project
Total Estimated Project Costs - Pipe**

Pipeline and Equipment

11,740 m of NPS 6 ST	\$	615,499
1,160 m of NPS 8 ST	\$	74,588
Valves, fittings, miscellaneous	\$	173,374
Stores Overhead	\$	74,312

Total Pipeline and Equipment \$ **937,773**

Construction and Labour

Prime Contract	\$	3,345,322
Ancillary Contracts	\$	676,500
Company Labour	\$	22,080
Land Rights	\$	117,375

Total Construction and Labour \$ **4,161,277**

Total Pipeline and Equipment and Construction and Labour \$ **5,099,050**

Contingencies	\$	254,952
Sub-Total	\$	5,354,002
Interest During Construction	\$	-

Total Estimated Project Costs \$ **5,354,002**

Includes the Estimated Environmental Costs Identified in Schedule 13

Post Construction Financial Report

Category	Estimated	Actual	Difference	Notes
Pipeline and Equipment				
11,740 m of NPS 6 ST	615,499	583,517	31,982	
1,160 m of NPS 8 ST	74,588	57,710	16,878	
Valves, fittings, misc	676,429	644,821	31,608	
Plant Items	94,054	40,165	53,889	
Store Overhead	74,312	143,657	-69,345	
Total Pipeline and Equipment	\$1,534,882	\$1,469,870	\$65,012	
Construction and Labour				
Prime Contract	4,835,724	4,512,533	323,191 ¹	
Ancillary Contracts	1,105,000	624,209	480,791 ²	
Company Labour	111,080	114,227	-3,147	
Land Rights	192,575	167,281	25,294	
Total Construction and Labour	\$6,244,379	\$5,418,250	\$826,129	
Total Pipeline/Equipment/Construction/Labour	\$7,779,261	\$6,888,120	\$891,141	
Contingencies	513,568	0	513,568 ³	
Sub-Total	8,292,829	6,888,120	1,404,709	
Interest During Construction	0	0	0	
Total Estimated Project Costs	\$8,292,829	\$6,888,120	\$1,404,709	
(Includes estimated environmental costs identified in Schedule 18)				
CFB Trenton Invoiced Amount	\$8,500,000	\$6,873,102	\$1,626,898 ⁴	

1. Efficiencies were found through changes to running line resulting in a shorter project schedule. HDD drilling fluid was estimated to be disposed as hazardous waste, but Union Gas was able to obtain environmental approval to bury the dried returns on our property resulting in savings of roughly \$105,000.

2. Union Gas was required under IFRS accounting principles to budget \$500,000 for engineering design, drafting, and project management. This money was never charged directly to the project but instead absorbed through regular departmental O&M budgets.

3. Contingency was not required.

4. High level estimate of \$8.5 million was approved by Department of National Defence in letter dated October 21 2010. DND was billed on actual costs from our financial tracking system SAP. Late charges after the final invoicing date were not charged to the DND.

TOTAL ESTIMATED PIPELINE CAPITAL COSTS

**MILVERTON, ROSTOCK,
WARTBURG
EXPANSION PROJECT**

Total Materials	\$717,914	\$717,914
Total Contract Cost	\$2,881,406	\$2,881,406
Total Company Costs	\$81,093	\$81,093
Miscellaneous (XRay, Construction Survey, Lands)	\$519,143	\$519,143
Station Labour and Materials	\$348,703	\$348,703
Contingency	\$199,447	\$199,447
Interest During Construction	\$0	
Total Estimated Pipeline Capital Costs		\$4,747,706

TOTAL ESTIMATED CAPITAL COSTS – YEAR 1

**MILVERTON, ROSTOCK,
WARTBURG
EXPANSION PROJECT**

Total Materials	\$702,533	\$702,533
Total Contract Cost	\$2,827,919	\$2,827,919
Total Company Costs	\$81,102	\$81,102
Miscellaneous (XRay, Construction Survey, Lands)	\$458,443	\$458,443
Station Labour and Materials	\$348,703	\$348,703
Contingency	\$196,000	\$196,000
Interest During Construction	\$0	
Service Costs	\$418,556	\$418,556
Total Estimated Capital Costs		\$5,033,256

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff ("Staff")

Interrogatory

Reference:

Exhibit C/Tab 3/Sch 1/p.11,12
Exhibit C/Tab 3/Sch 1/p. 26 –Appendix 2
Exhibit I/FRPO 15

Question(s):

Enbridge Gas Inc. (Enbridge Gas) states that design day demands for the Windsor Line system were developed from the 2018 Region of Windsor Facilities Business Plan (FBP) Study. Enbridge Gas provided a summary of the forecasted demands on the Windsor pipeline.

- a) The table provided in Appendix 2 reflects forecasted attachments based on historical averages and known contract increases. Please replicate the table, providing actual attachments for the customer groups shown in the table – residential, commercial and industrial for the period 2010-2019.
- b) In its response to FRPO 15 a), Enbridge states that the solution proposed by FRPO would result in no capacity being available to any unforecasted demand outside of the FBP. The application mentions that the new Windsor Mega Hospital is likely to attract large commercial and industrial customers above and beyond the FBP forecast.
 - i. What is the estimated buffer in the demand forecast in the FBP?
 - ii. Please comment on any other known demands outside of the FBP forecast.

Response

- a) The table below provides historical attachments for the Windsor Line area between 2007 and 2016. The historical attachment data underpins the 2018 FBP for the Windsor area. The Windsor Line supports a significant portion of the attachments shown.

		Actual Attachments per Year										Avg Attachment per year (10 year average)
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Residential	Total Attachments											
New	1936	162	174	128	203	193	214	186	207	223	246	194
Commercial	Total Attachments											
Small	118	18	27	8	12	8	6	10	5	2	22	12
Large	6	0	1	1	1	0	0	2	1	0	0	1
Industrial	Total Attachments											
Small	1	0	0	0	0	0	0	0	0	1	0	0
Large	1	0	0	0	0	0	0	0	0	0	1	0

- b)
- i. There is negligible capacity available on the Windsor Line if the pipeline is installed as per the alternative requested in Exhibit I.FRPO.15 part a).
 - ii. Enbridge Gas generally receives unforecasted demands in the rural Windsor areas from large agricultural and greenhouse customers. It is difficult to predict the locations and demand of these customers, hence they are generally not included in the scope of an FBP. It should be noted that Enbridge Gas has received inquiries in the Port Alma area in the past two years. These demands were in excess of 6,600 m³/hr, with the potential for additional future demand requests from those customers. Demands in these quantities at Port Alma would likely require reinforcement if either Scenario 2 or 3 from Exhibit KT1.2 is installed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ontario Energy Board Staff ("Staff")

Interrogatory

Reference:

Exhibit I/FRPO 16

Question(s):

In response to FRPO's interrogatory, Enbridge states that a cost was not determined for either a NPS 4 alternative or a combined NPS 6 and NPS4 alternative as these were either not feasible or not realistic options to meet the current and forecasted demand. In its questions for the technical conference, the FRPO has requested information on two combined alternatives based on a replacement of the Windsor Line replacement at a MOP of 3450kPa.

- a) Please comment on operational implications of the proposed combined alternatives, identifying any existing or potential constraints and how this may affect meeting future growth/demand.
- b) If a combined alternative(s) can be considered, please provide an estimate of the costs of the proposed combined alternative(s).

Response

- a) If an NPS 4 and NPS 6 combined alternative is installed instead of the Proposed Project, this will reduce the pressure and flows available on the newly replaced pipeline. It will also reduce the ability to provide a backfeed to other systems for both operational and emergency scenarios in the area. In addition, future growth on the Windsor Line system will require reinforcement sooner than if all NPS 6 was installed.
- b) Enbridge Gas estimates the cost difference between NPS 4 and NPS 6 to be approximately 2%, or \$0.8 million.