



**uniongas**

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May 9, 2012

Ms. Kirsten Walli  
Board Secretary  
Ontario Energy Board  
2300 Yonge Street, 27<sup>th</sup> Floor  
Toronto, ON M4P 1E4

Dear Ms. Walli:

**Re: EB-2011-0283 – Union Gas Limited (“Union”)  
EB-2011-0242 – Enbridge Gas Distribution Inc. (“Enbridge”)  
Renewable Natural Gas Program – Undertaking Responses.**

Please find attached responses to the following undertakings from the EB-2011-0283/  
EB-2011-0242 hearing held April 30 through May 4, 2012.

J2.4, J2.5, J2.6, J3.2, and J4.2 Union and EGD responses

J4.4, J4.5, J4.6, J4.7, J4.9 Union responses

The remaining undertakings will follow.

These will be filed in the Board’s RESS and 2 copies sent to the Board secretary

Should you have any questions or concerns with respect to this submission, please  
contact me at 519-436-5473.

Sincerely,

*[original signed by]*

Karen Hockin  
Manager, Regulatory Initiatives

c.c.: A.Smith (Torys)  
M.Kitchen (Union)  
Intervenors of Record (EB-2011-0283)

# UNDERTAKING J2.4

## Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 3, page 43.

To provide cost estimates for the period April 2010 to conclusion of this process, for Union and Enbridge, and combined.

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Enbridge's estimated project costs from April 2010 to process conclusion is as follows:

Costs (\$'000)	
Direct costs <sup>1</sup>	322
Additional direct costs (estimated to hearing conclusion) <sup>2</sup>	190
Internal costs <sup>3</sup>	340
Total	852

<sup>1</sup> As outlined in IR IE-5-21.

<sup>2</sup> Estimate based on best available information at the time of the request.

Includes legal costs and 50% share of costs for Alberta Innovates, Electrigaz and Ipsos.

Does not include estimate for Intervenor costs for OEB hearing.

<sup>3</sup> Estimate from April 2010 to conclusion of application.

Union's has also updated the response provided in IU-5-21 to include estimated project costs through to process conclusion.

Costs (\$'000)	
Direct costs <sup>1</sup>	314
Additional direct costs (estimated to hearing conclusion) <sup>2</sup>	114
Total	428

<sup>1</sup> As outlined in IR IU-5-21.

<sup>2</sup> Estimate based on best available information at the time of the request.

Includes legal costs and 50% share of costs for Alberta Innovates, Electrigaz and Ipsos.

Does not include estimate for Intervenor costs for OEB hearing.

(Union does not track internal costs by proceeding).

UNDERTAKING J2.5

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 3, page 103.

For multi-family sector, to provide number of Union customers versus Enbridge customers; and what their average gas use is for those customers versus Enbridge customers; and any other information on similarities or differences, on a best-efforts basis.

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Enbridge and Union use different definitions for the multi-family segment and as such are unable to provide an accurate comparison of customers and average gas use for those customers.

UNDERTAKING J2.6

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 3, page 108.

To advise on cross-tab responses between concern over environment and willingness to support renewable gas program; and percentage increase supported with steps already taken to save energy.

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Part a)

Eighty-five percent of respondents indicate that they are concerned (very or somewhat) about the current state of the environment. The sample size of the sub-group of respondents who say they are not at all concerned about the current state of the environment is too small to draw conclusions when comparing to other segments. The general conclusion is that those who are concerned about the environment are more supportive of premiums than those who are not very concerned.

The tables are shown below.

Using the table below as an example - Respondents who are very concerned (column A) are more supportive of premiums than respondents who are somewhat concerned (column B) and not very concerned (column C) about the environment. Respondents who are somewhat concerned (column B) are more supportive of premiums than respondents who are not very concerned (column C) about the environment.

Q10. If your utility purchased biogas and the result was that your gas utility bill increased by 4% — which is about \$3.00 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

Q1. Overall, how concerned are you about the current state of the environment?						
	Total	Very concerned	Somewhat concerned	Not very concerned	Not at all concerned	Don't know/ Refused
		A	B	C	D	E
Base: All respondents	1052	377	514	125	28**	8**
Strongly support	172	88	70	11	2	1
	16.3%	23.3%	13.6%	8.8%	7.1%	12.5%
		BC				
Somewhat support	432	162	225	40	4	1
	41.1%	43.0%	43.8%	32.0%	14.3%	12.5%
		C	C			
Somewhat oppose	211	62	110	35	3	1
	20.1%	16.4%	21.4%	28.0%	10.7%	12.5%
				A		
Strongly oppose	165	39	72	33	18	3
	15.7%	10.3%	14.0%	26.4%	64.3%	37.5%
				AB		
Don't Know	72	26	37	6	1	2
	6.8%	6.9%	7.2%	4.8%	3.6%	25.0%
Summary						
Top2Box (Strongly/ Somewhat support)	604	250	295	51	6	2
	57.4%	66.3%	57.4%	40.8%	21.4%	25.0%
		BC	C			
Low2Box (Somewhat/ Strongly oppose)	376	101	182	68	21	4
	35.7%	26.8%	35.4%	54.4%	75.0%	50.0%
			A	AB		

\* small base; \*\* very small base (under 30)

Q11. If your utility purchased biogas and the result was that your gas utility bill increased by 2% — which is about \$1.50 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

Q1. Overall, how concerned are you about the current state of the environment?						
	Total	Very concerned	Somewhat concerned	Not very concerned	Not at all concerned	Don't know/ Refused
		A	B	C	D	E
Base: All respondents	1052	377	514	125	28**	8**
Strongly support	352	159	170	21	1	1
	33.5%	42.2%	33.1%	16.8%	3.6%	12.5%
		BC	C			
Somewhat support	353	130	177	39	5	2
	33.6%	34.5%	34.4%	31.2%	17.9%	25.0%
Somewhat oppose	178	51	89	33	4	1
	16.9%	13.5%	17.3%	26.4%	14.3%	12.5%
				AB		
Strongly oppose	124	23	55	27	16	3
	11.8%	6.1%	10.7%	21.6%	57.1%	37.5%
			A	AB		
Don't Know	45	14	23	5	2	1
	4.3%	3.7%	4.5%	4.0%	7.1%	12.5%
Summary						
Top2Box (Strongly/ Somewhat support)	705	289	347	60	6	3
	67.0%	76.7%	67.5%	48.0%	21.4%	37.5%
		BC	C			
Low2Box (Somewhat/ Strongly oppose)	302	74	144	60	20	4
	28.7%	19.6%	28.0%	48.0%	71.4%	50.0%
			A	AB		

\* small base; \*\* very small base (under 30)

Q12. If your utility purchased biogas and the result was that your gas utility bill increased by 1% — which is about \$0.80 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

Q1. Overall, how concerned are you about the current state of the environment?						
	Total	Very concerned	Somewhat concerned	Not very concerned	Not at all concerned	Don't know / Refused
		A	B	C	D	E
Base: All respondents	1052	377	514	125	28**	8**
Strongly support	492	210	248	31	2	1
	46.8%	55.7%	48.2%	24.8%	7.1%	12.5%
		BC	C			
Somewhat support	283	101	133	41	6	2
	26.9%	26.8%	25.9%	32.8%	21.4%	25.0%
Somewhat oppose	125	31	66	24	3	1
	11.9%	8.2%	12.8%	19.2%	10.7%	12.5%
			A	A		
Strongly oppose	107	21	43	24	16	3
	10.2%	5.6%	8.4%	19.2%	57.1%	37.5%
				AB		
Don't Know	45	14	24	5	1	1
	4.3%	3.7%	4.7%	4.0%	3.6%	12.5%
Summary						
Top2Box (Strongly/ Somewhat support)	775	311	381	72	8	3
	73.7%	82.5%	74.1%	57.6%	28.6%	37.5%
		BC	C			
Low2Box (Somewhat/ Strongly oppose)	232	52	109	48	19	4
	22.1%	13.8%	21.2%	38.4%	67.9%	50.0%
			A	AB		

\* small base; \*\* very small base (under 30)

Q13. If your utility purchased biogas and the result was that your gas utility bill increased by ½% — which is about \$0.40 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

Q1. Overall, how concerned are you about the current state of the environment?						
	Total	Very concerned	Somewhat concerned	Not very concerned	Not at all concerned	Don't know / Refused
		A	B	C	D	E
Base: All respondents	1052	377	514	125	28**	8**
Strongly support	562	232	278	47	4	1
	53.4%	61.5%	54.1%	37.6%	14.3%	12.5%
		BC	C			
Somewhat support	239	87	115	29	7	1
	22.7%	23.1%	22.4%	23.2%	25.0%	12.5%
Somewhat oppose	100	25	54	20	0	1
	9.5%	6.6%	10.5%	16.0%	-	12.5%
			A	A		
Strongly oppose	106	21	41	25	16	3
	10.1%	5.6%	8.0%	20.0%	57.1%	37.5%
				AB		
Don't Know	45	12	26	4	1	2
	4.3%	3.2%	5.1%	3.2%	3.6%	25.0%
Summary						
Top2Box (Strongly/ Somewhat support)	801	319	393	76	11	2
	76.1%	84.6%	76.5%	60.8%	39.3%	25.0%
		BC	C			
Low2Box (Somewhat/ Strongly oppose)	206	46	95	45	16	4
	19.6%	12.2%	18.5%	36.0%	57.1%	50.0%
			A	AB		

\* small base; \*\* very small base (under 30)



Part b)

Since 97% of respondents report having taken steps to save energy at home, the sample size of the sub-group of respondents that has not taken steps is too small to draw conclusions between the customers who have and have not done something to save energy.

Q10. If your utility purchased biogas and the result was that your gas utility bill increased by 4% — which is about \$3.00 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

	Save Energy			
	Total	Yes	No	Don't know /Refused
Base: All respondents	1052	V 1025	W 22**	X 5**
Strongly support	172	172	0	0
	16.3%	16.8%	-	-
Somewhat support	432	425	5	2
	41.1%	41.5%	22.7%	40.0%
Somewhat oppose	211	203	6	2
	20.1%	19.8%	27.3%	40.0%
Strongly oppose	165	155	9	1
	15.7%	15.1%	40.9%	20.0%
Don't Know	72	70	2	0
	6.8%	6.8%	9.1%	-
<b>Summary</b>				
Top2Box (Strongly/ Somewhat support)	604	597	5	2
	57.4%	58.2%	22.7%	40.0%
Low2Box (Somewhat/ Strongly oppose)	376	358	15	3
	35.7%	34.9%	68.2%	60.0%

\* small base; \*\* very small base (under 30)

Q11. If your utility purchased biogas and the result was that your gas utility bill increased by 2% — which is about \$1.50 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

	Save Energy			
	Total	Yes	No	Don't know /Refused
		V	W	X
Base: All respondents	1052	1025	22**	5**
Strongly support	352	348	4	0
	33.5%	34.0%	18.2%	-
Somewhat support	353	347	2	4
	33.6%	33.9%	9.1%	80.0%
Somewhat oppose	178	171	7	0
	16.9%	16.7%	31.8%	-
Strongly oppose	124	116	7	1
	11.8%	11.3%	31.8%	20.0%
Don't Know	45	43	2	0
	4.3%	4.2%	9.1%	-
Summary				
Top2Box (Strongly/ Somewhat support)	705	695	6	4
	67.0%	67.8%	27.3%	80.0%
Low2Box (Somewhat/ Strongly oppose)	302	287	14	1
	28.7%	28.0%	63.6%	20.0%

\* small base; \*\* very small base (under 30)

Q12. If your utility purchased biogas and the result was that your gas utility bill increased by 1% — which is about \$0.80 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

Save Energy				
	Total	Yes	No	Don't know / Refused
Base: All respondents	1052	V 1025	W 22**	X 5**
Strongly support	492	486	4	2
	46.8%	47.4%	18.2%	40.0%
Somewhat support	283	275	6	2
	26.9%	26.8%	27.3%	40.0%
Somewhat oppose	125	121	4	0
	11.9%	11.8%	18.2%	-
Strongly oppose	107	99	7	1
	10.2%	9.7%	31.8%	20.0%
Don't Know	45	44	1	0
	4.3%	4.3%	4.5%	-
Summary				
Top2Box (Strongly/ Somewhat support)	775	761	10	4
	73.7%	74.2%	45.5%	80.0%
Low2Box (Somewhat/ Strongly oppose)	232	220	11	1
	22.1%	21.5%	50.0%	20.0%

\* small base; \*\* very small base (under 30)

Q13. If your utility purchased biogas and the result was that your gas utility bill increased by ½% —which is about \$0.40 more per month — would you strongly support, somewhat support, somewhat oppose or strongly oppose your utility purchasing biogas?

	Save Energy			
	Total	Yes	No	Don't know /Refused
Base: All respondents	1052	V 1025	W 22**	X 5**
Strongly support	562	553	6	3
	53.4%	54.0%	27.3%	60.0%
Somewhat support	239	230	8	1
	22.7%	22.4%	36.4%	20.0%
Somewhat oppose	100	99	1	0
	9.5%	9.7%	4.5%	-
Strongly oppose	106	98	7	1
	10.1%	9.6%	31.8%	20.0%
Don't Know	45	45	0	0
	4.3%	4.4%	-	-
Summary				
Top2Box (Strongly/ Somewhat support)	801	783	14	4
	76.1%	76.4%	63.6%	80.0%
Low2Box (Somewhat/ Strongly oppose)	206	197	8	1
	19.6%	19.2%	36.4%	20.0%

\* small base; \*\* very small base (under 30)

### UNDERTAKING J3.2

#### Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 4, page 159.

To provide pricing for small, medium and large landfill.

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The landfill sizes used in the Electrigaz reports do not correspond directly to those used by the Ontario Ministry of the Environment ("MOE"). MOE designates *large landfills* as those with total waste disposal capacities of 1.5 million cubic metres of material or greater. Therefore the MOE listing of large landfills found at Exhibit B, Tab 1, Appendix 2, Table 8, pages 18 and 19, includes *large, medium and small* sized example landfills as provided in the Electrigaz Reports.

The Electrigaz Costing report at Exhibit B, Tab 1, Appendix 4 at page 10 defines small, medium and large landfills by the first year RNG volumes to be injected into the distribution grid. The annual volumes of RNG produced increase in each year as more material enters the landfill.

- **Small landfill:** 243 m<sup>3</sup>/hr
- **Medium landfill:** 569 m<sup>3</sup>/hr
- **Large landfill:** 1,896 m<sup>3</sup>/hr

The attached chart shows the average pricing paid in each year for RNG produced by the three representative examples of landfills used in the Electrigaz Reports found at Exhibit B, Tab 1, Appendix 4 and 5, small, medium and large.

The average price paid is calculated as the amount of RNG under the 150,000GJ annual breakpoint (threshold) multiplied by \$13/GJ, and the amount over the 150,000GJ annual breakpoint multiplied by \$6/GJ. The total dollar value paid is then divided by the total volume received to calculate an average price paid.

For calculation of average prices for subsequent years, the \$13 and \$6 program prices are increased annually 30% of the Ontario CPI (inflation index) and the volumes produced by the landfill increase each year. This is representative of the additional gas produced by each year's landfill activity. It should be noted in year 13 of the large landfill project, new capital equipment is added, which increases the effective salable output of the project, which explains the drop in the average price received.

Year	1	2	3	4	5	6	7	8	9
<b>Small LFG (Annual GJ)</b>	80 939	83 204	85 368	87 438	89 416	91 308	93 116	94 845	96 497
<b>Below threshold</b>									
GJ below threshold	80 939	83 204	85 368	87 438	89 416	91 308	93 116	94 845	96 497
Price below threshold	\$ 13.00	\$ 13.09	\$ 13.18	\$ 13.27	\$ 13.35	\$ 13.44	\$ 13.54	\$ 13.63	\$ 13.72
Cost below threshold	\$ 1 052 209	\$ 1 088 947	\$ 1 124 821	\$ 1 159 866	\$ 1 194 117	\$ 1 227 607	\$ 1 260 368	\$ 1 292 431	\$ 1 323 826
<b>Above threshold</b>									
GJ above threshold	-	-	-	-	-	-	-	-	-
Price above threshold	\$ 6.00	\$ 6.04	\$ 6.08	\$ 6.12	\$ 6.16	\$ 6.21	\$ 6.25	\$ 6.29	\$ 6.33
Cost above threshold	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total cost</b>	<b>\$ 1 052 209</b>	<b>\$ 1 088 947</b>	<b>\$ 1 124 821</b>	<b>\$ 1 159 866</b>	<b>\$ 1 194 117</b>	<b>\$ 1 227 607</b>	<b>\$ 1 260 368</b>	<b>\$ 1 292 431</b>	<b>\$ 1 323 826</b>
<b>Average price</b>	<b>\$ 13.00</b>	<b>\$ 13.09</b>	<b>\$ 13.18</b>	<b>\$ 13.27</b>	<b>\$ 13.35</b>	<b>\$ 13.44</b>	<b>\$ 13.54</b>	<b>\$ 13.63</b>	<b>\$ 13.72</b>
<b>Med LFG (Annual GJ)</b>	188 858	194 142	199 193	204 022	208 638	213 051	217 271	221 304	225 160
<b>Below threshold</b>									
GJ below threshold	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000
Price below threshold	\$ 13.00	\$ 13.09	\$ 13.18	\$ 13.27	\$ 13.35	\$ 13.44	\$ 13.54	\$ 13.63	\$ 13.72
Cost below threshold	\$ 1 950 000	\$ 1 963 163	\$ 1 976 414	\$ 1 989 755	\$ 2 003 185	\$ 2 016 707	\$ 2 030 320	\$ 2 044 024	\$ 2 057 822
<b>Above threshold</b>									
GJ above threshold	38 858	44 142	49 193	54 022	58 638	63 051	67 271	71 304	75 160
Price above threshold	\$ 6.00	\$ 6.04	\$ 6.08	\$ 6.12	\$ 6.16	\$ 6.21	\$ 6.25	\$ 6.29	\$ 6.33
Cost above threshold	\$ 233 148	\$ 266 638	\$ 299 155	\$ 330 738	\$ 361 425	\$ 391 250	\$ 420 248	\$ 448 453	\$ 475 895
<b>Total cost</b>	<b>\$ 2 183 148</b>	<b>\$ 2 229 800</b>	<b>\$ 2 275 569</b>	<b>\$ 2 320 493</b>	<b>\$ 2 364 610</b>	<b>\$ 2 407 957</b>	<b>\$ 2 450 568</b>	<b>\$ 2 492 477</b>	<b>\$ 2 533 716</b>
<b>Average price</b>	<b>\$ 11.56</b>	<b>\$ 11.49</b>	<b>\$ 11.42</b>	<b>\$ 11.37</b>	<b>\$ 11.33</b>	<b>\$ 11.30</b>	<b>\$ 11.28</b>	<b>\$ 11.26</b>	<b>\$ 11.25</b>
<b>Large LFG (Annual GJ)</b>	635 156	652 926	652 926	652 926	652 926	652 926	652 926	652 926	652 926
<b>Below threshold</b>									
GJ below threshold	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000
Price below threshold	\$ 13.00	\$ 13.09	\$ 13.18	\$ 13.27	\$ 13.35	\$ 13.44	\$ 13.54	\$ 13.63	\$ 13.72
Cost below threshold	\$ 1 950 000	\$ 1 963 163	\$ 1 976 414	\$ 1 989 755	\$ 2 003 185	\$ 2 016 707	\$ 2 030 320	\$ 2 044 024	\$ 2 057 822
<b>Above threshold</b>									
GJ above threshold	485 156	502 926	502 926	502 926	502 926	502 926	502 926	502 926	502 926
Price above threshold	\$ 6.00	\$ 6.04	\$ 6.08	\$ 6.12	\$ 6.16	\$ 6.21	\$ 6.25	\$ 6.29	\$ 6.33
Cost above threshold	\$ 2 910 938	\$ 3 037 925	\$ 3 058 431	\$ 3 079 076	\$ 3 099 859	\$ 3 120 784	\$ 3 141 849	\$ 3 163 056	\$ 3 184 407
<b>Total cost</b>	<b>\$ 4 860 938</b>	<b>\$ 5 001 088</b>	<b>\$ 5 034 845</b>	<b>\$ 5 068 830</b>	<b>\$ 5 103 045</b>	<b>\$ 5 137 490</b>	<b>\$ 5 172 169</b>	<b>\$ 5 207 081</b>	<b>\$ 5 242 228</b>
<b>Average price</b>	<b>\$ 7.65</b>	<b>\$ 7.66</b>	<b>\$ 7.71</b>	<b>\$ 7.76</b>	<b>\$ 7.82</b>	<b>\$ 7.87</b>	<b>\$ 7.92</b>	<b>\$ 7.97</b>	<b>\$ 8.03</b>

10	11	12	13	14	15	16	17	18	19	20
98 077	99 587	101 031	102 411	103 731	104 993	106 199	107 352	108 454	109 507	110 515
98 077	99 587	101 031	102 411	103 731	104 993	106 199	107 352	108 454	109 507	110 515
\$ 13.81	\$ 13.90	\$ 14.00	\$ 14.09	\$ 14.19	\$ 14.28	\$ 14.38	\$ 14.48	\$ 14.58	\$ 14.67	\$ 14.77
\$ 1 354 581	\$ 1 384 725	\$ 1 414 284	\$ 1 443 284	\$ 1 471 748	\$ 1 499 702	\$ 1 527 168	\$ 1 554 168	\$ 1 580 723	\$ 1 606 855	\$ 1 632 582
-	-	-	-	-	-	-	-	-	-	-
\$ 6.37	\$ 6.42	\$ 6.46	\$ 6.50	\$ 6.55	\$ 6.59	\$ 6.64	\$ 6.68	\$ 6.73	\$ 6.77	\$ 6.82
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>\$ 1 354 581</b>	<b>\$ 1 384 725</b>	<b>\$ 1 414 284</b>	<b>\$ 1 443 284</b>	<b>\$ 1 471 748</b>	<b>\$ 1 499 702</b>	<b>\$ 1 527 168</b>	<b>\$ 1 554 168</b>	<b>\$ 1 580 723</b>	<b>\$ 1 606 855</b>	<b>\$ 1 632 582</b>
<b>\$ 13.81</b>	<b>\$ 13.90</b>	<b>\$ 14.00</b>	<b>\$ 14.09</b>	<b>\$ 14.19</b>	<b>\$ 14.28</b>	<b>\$ 14.38</b>	<b>\$ 14.48</b>	<b>\$ 14.58</b>	<b>\$ 14.67</b>	<b>\$ 14.77</b>
228 846	232 370	235 739	238 960	242 039	244 983	247 797	250 487	253 059	255 517	257 868
150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000
\$ 13.81	\$ 13.90	\$ 14.00	\$ 14.09	\$ 14.19	\$ 14.28	\$ 14.38	\$ 14.48	\$ 14.58	\$ 14.67	\$ 14.77
\$ 2 071 712	\$ 2 085 696	\$ 2 099 774	\$ 2 113 948	\$ 2 128 217	\$ 2 142 582	\$ 2 157 045	\$ 2 171 605	\$ 2 186 263	\$ 2 201 021	\$ 2 215 877
78 846	82 370	85 739	88 960	92 039	94 983	97 797	100 487	103 059	105 517	107 868
\$ 6.37	\$ 6.42	\$ 6.46	\$ 6.50	\$ 6.55	\$ 6.59	\$ 6.64	\$ 6.68	\$ 6.73	\$ 6.77	\$ 6.82
\$ 502 605	\$ 528 614	\$ 553 949	\$ 578 637	\$ 602 706	\$ 626 180	\$ 649 083	\$ 671 440	\$ 693 273	\$ 714 604	\$ 735 453
<b>\$ 2 574 317</b>	<b>\$ 2 614 310</b>	<b>\$ 2 653 723</b>	<b>\$ 2 692 585</b>	<b>\$ 2 730 923</b>	<b>\$ 2 768 762</b>	<b>\$ 2 806 128</b>	<b>\$ 2 843 045</b>	<b>\$ 2 879 536</b>	<b>\$ 2 915 624</b>	<b>\$ 2 951 330</b>
<b>\$ 11.25</b>	<b>\$ 11.25</b>	<b>\$ 11.26</b>	<b>\$ 11.27</b>	<b>\$ 11.28</b>	<b>\$ 11.30</b>	<b>\$ 11.32</b>	<b>\$ 11.35</b>	<b>\$ 11.38</b>	<b>\$ 11.41</b>	<b>\$ 11.45</b>
652 926	652 926	652 926	803 657	814 012	823 912	833 376	842 424	851 073	859 342	867 247
150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000
\$ 13.81	\$ 13.90	\$ 14.00	\$ 14.09	\$ 14.19	\$ 14.28	\$ 14.38	\$ 14.48	\$ 14.58	\$ 14.67	\$ 14.77
\$ 2 071 712	\$ 2 085 696	\$ 2 099 774	\$ 2 113 948	\$ 2 128 217	\$ 2 142 582	\$ 2 157 045	\$ 2 171 605	\$ 2 186 263	\$ 2 201 021	\$ 2 215 877
502 926	502 926	502 926	653 657	664 012	673 912	683 376	692 424	701 073	709 342	717 247
\$ 6.37	\$ 6.42	\$ 6.46	\$ 6.50	\$ 6.55	\$ 6.59	\$ 6.64	\$ 6.68	\$ 6.73	\$ 6.77	\$ 6.82
\$ 3 205 902	\$ 3 227 541	\$ 3 249 327	\$ 4 251 683	\$ 4 348 192	\$ 4 442 806	\$ 4 535 608	\$ 4 626 678	\$ 4 716 093	\$ 4 803 926	\$ 4 890 250
<b>\$ 5 277 614</b>	<b>\$ 5 313 237</b>	<b>\$ 5 349 102</b>	<b>\$ 6 365 631</b>	<b>\$ 6 476 409</b>	<b>\$ 6 585 389</b>	<b>\$ 6 692 653</b>	<b>\$ 6 798 283</b>	<b>\$ 6 902 356</b>	<b>\$ 7 004 947</b>	<b>\$ 7 106 127</b>
<b>\$ 8.08</b>	<b>\$ 8.14</b>	<b>\$ 8.19</b>	<b>\$ 7.92</b>	<b>\$ 7.96</b>	<b>\$ 7.99</b>	<b>\$ 8.03</b>	<b>\$ 8.07</b>	<b>\$ 8.11</b>	<b>\$ 8.15</b>	<b>\$ 8.19</b>

UNDERTAKING J4.2

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 60.

To provide annual impact on a residential customer of a starting price of \$12 with an escalator of 0.5 of CPI.

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For Enbridge the impact of changing the average purchase cost of RNG from \$15/GJ as filed at EB-2011-0242, Exhibit C, Tab 1, Schedule 1, pages 1 to 3 to \$12/GJ would result in a decrease in the average customer bill impact from \$18.00 per year to \$12.80 per year, or a decrease of \$5.20 per year. CPI escalators are not factored into this analysis.

For Union, the impact of changing the average purchase cost of RNG from \$15/GJ as filed at EB-2011-0242, Exhibit C, Appendix 1, Schedule 1, to \$12/GJ would result in a decrease in the average customer bill impact from \$17.96 for the South and \$18.28 for the North to \$12.86 and \$13.49 respectively per year, or a decrease of approximately \$5.10 and \$4.79 respectively per year. CPI escalators are not factored into this analysis. Detailed description of bill impact calculations can be found in Attachment 1.

An increase in CPI escalator factor from 0.3% to 0.5% would result in an increase ROE for all projects. To maintain an ROE target of 11%, the prices paid for RNG would need to decrease. An example is illustrated in response to APAO Interrogatory #7, part 4, where the large farm case was recalculated using a 50% CPI escalation factor to provide an 11% ROE. This resulted in a price decrease from \$17.00/GJ to \$16.75/GJ for volumes up to 50,000GJ/year and from \$11.00/GJ to \$10.70/GJ for volumes over 50,000GJ/year. The need to reduce prices paid for RNG would hold true in all cases if the CPI escalator factor were increased, and returns were held at 11% level. Baseline Farm and Industrial, despite increasing the CPI escalation factor, still do not have a positive ROE.

## UNION'S BILL IMPACT CALCULATIONS

When using an RNG price of \$12/GJ:

### **Impact of RNG Purchases on South General Service Customers**

For the Southern Operations Area, when comparing to the Board-approved July 2011 QRAM filing, an RNG purchase of 1.7 PJs (1.8%) of South Sales Service Supply reduces the 12-month projected deferral amount credit in the South Purchased Gas Variance Account ("SPGVA") by \$13.172 million, from \$76.816 million to \$63.643 million. The SPGVA tracks the difference between actual gas supply costs and the gas supply costs included in rates approved by the Board for Union's Southern Operations area. As a result, there is a decrease of \$0.131/GJ in the Southern Portfolio Cost Differential ("SPCD"). The SPCD is determined by comparing the projected cost of serving south sales service customers, based on Union's south portfolio, to the cost of serving south sales service customers based on the Ontario Landed Reference Price, then dividing the difference by the south sales service demand. The reduction in the SPCD results in a corresponding increase of \$0.131/GJ (0.4945 cents/m<sup>3</sup>) in the south transportation rate.

Based on the increase of 0.4945 cents/m<sup>3</sup> in the transportation rate, a typical M1 residential customer consuming 2,600 m<sup>3</sup> per year will see a net bill increase of \$12.86 per year (1.5% of average residential bill) when compared to current Board-approved July 2011 QRAM rates. Bundled M1 direct purchase customers will see no bill impact.

### **Impact of RNG Purchases on North General Service Customers**

For the Northern and Eastern Operations area, when comparing to the Board-approved July 2011 QRAM filing, an RNG purchase of 0.5 PJs (1.2%) of north system supply increases the 12-month projected deferral amounts in the North Purchased Gas Variance Account ("NPGVA") by \$4.277 million. The NPGVA tracks the difference between actual gas supply costs and the gas supply costs included in rates approved by the Board for Union's Northern and Eastern Operations area. The incremental deferral amount is divided by the forecast north sales volume to determine the corresponding increase in the commodity & fuel price adjustment of 0.5190 cents/m<sup>3</sup>.

Based on the increase of 0.5190 cents/m<sup>3</sup> in the commodity & fuel price adjustment rate, a typical Rate 01 Eastern Zone residential customer consuming 2,600 m<sup>3</sup> per year will see a net bill increase of \$13.49 per year (1.2% of average residential bill) when compared to current approved July 2011 QRAM rates. North Bundled Rate 01 direct purchase customers will see no bill impact.



UNDERTAKING J4.4

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 98.

To update Union Gas commodity and fuel rates to reflect current QRAM rates.

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	Gas Commodity and Fuel Rate (cents/m <sup>3</sup> )	Gas Commodity and Fuel Price Adjustment Rate (cents/m <sup>3</sup> )	Total Gas Commodity and Fuel Rate (cents/m <sup>3</sup> )	Total Gas Commodity and Fuel Rate (\$/GJ)
<b>Union North</b>				
Fort Frances Zone (R01, R10)	9.3029	(1.1524)	8.1505	2.155
Fort Frances Zone (R20, R100)	9.3197	(1.1524)	8.1673	2.156
Western Zone (R01, R10)	9.3537	(1.1524)	8.2013	2.169
Western Zone (R20, R100)	9.3705	(1.1524)	8.2181	2.169
Northern Zone (R01, R10)	9.4180	(1.1524)	8.2656	2.186
Northern Zone (R20, R100)	9.4350	(1.1524)	8.2826	2.186
Eastern Zone (R01, R10)	9.4749	(1.1524)	8.3225	2.201
Eastern Zone (R20, R100)	9.4919	(1.1524)	8.3395	2.201
<b>Union South</b>				
M1, M2, M4, M5A, M10	9.4749	(1.3418)	8.1331	2.150

Notes:

All rates sourced from EB-2012-0070, Appendix A, excluding temporary charges/(credits).

Reflects heat value of 37.82 GJ/10<sup>3</sup>m<sup>3</sup> for Union North R01, R10 and Union South.

Reflects heat value of 37.89 GJ/10<sup>3</sup>m<sup>3</sup> for Union North R20 and R100.

UNDERTAKING J4.5

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 99.

To provide range of local gas producers connected to Union's system.

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Based on Calendar 2011 actual production, Ontario Producers connected to Union's system produced between 0 and 52,000  $10^3\text{m}^3$ /year (approximately 2 PJs) per production site.

UNDERTAKING J4.6

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 100.

To update Exhibit IU-11, No. 28 (A) and (B) to reflect April 1 QRAM price.

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- a) Based on the increase of 0.6921 cents/m<sup>3</sup> in the transportation rate, a typical Rate M2 commercial system gas customer consuming 73,000 m<sup>3</sup> per year will see a net bill increase of \$505.23 per year (3.7% of average commercial bill) when compared to Board-approved April 2012 QRAM rates. Please see Attachment 1, Page 1.

Based on the increase of 0.6921 cents/m<sup>3</sup> in the transportation rate, a typical Rate M4 commercial system gas customer with a contracted demand of 11,173 m<sup>3</sup>/day consuming 2,335,191 m<sup>3</sup> per year (load factor of 57%) will see a net bill increase of \$16,161.85 per year (4.3% of average commercial bill) when compared to Board-approved April 2012 QRAM rates. Please see Attachment 1, Page 2.

Based on the net increase of 0.7933 cents/m<sup>3</sup> in the gas commodity & fuel price adjustment, a typical Rate 10 Eastern Zone commercial customer consuming 93,000 m<sup>3</sup> per year will see a net bill increase of \$737.77 per year (3.2% of average commercial bill) when compared to Board-approved April 2012 QRAM rates. Please see Attachment 1, Page 3.

- b) For the Southern Operations Area, when comparing to the Board-approved April 2012 QRAM filing, an RNG purchase of 1.7 PJs of South Sales Service Supply increases the forecasted gas purchase costs by \$20.345 million.

For the Northern and Eastern Operations area, when comparing to the Board-approved April 2012 QRAM filing, an RNG purchase of 0.5 PJs of North system supply increases the forecasted gas purchase costs by \$6.385 million.

		Rate M2 Commercial			
		(Annual Consumption of 73,000 m <sup>3</sup> )			
Line No.	Particulars	EB-2012-0070	EB-2011-0283	Annual Bill Impact	
		Approved 01-Apr-12 Total Bill	Including RNG (1) 01-Jan-12 Total Bill		
		(\$)	(\$)	(\$)	
		(a)	(b)	(c) = (b) - (a)	
	<u>Delivery Charges</u>				
1	Monthly Charge	840.00	840.00	-	
2	Delivery Commodity Charge	2,599.28	2,599.28	-	
3	Prospective Recovery - Delivery	0.06	0.06	-	
4	Storage Services	523.56	523.56	-	
5	Total Delivery Charge	3,962.90	3,962.90	-	
	<u>Supply Charges</u>				
6	Transportation to Union	3,763.09	4,268.32	505.23	
7	Commodity & Fuel	6,916.67	6,916.67	-	
8	Prospective Recovery - Commodity & Fuel	(979.51)	(979.51)	-	
9	Subtotal	5,937.16	5,937.16	-	
10	Total Gas Supply Charge	9,700.25	10,205.48	505.23	
11	Total Bill	13,663.15	14,168.38	505.23	3.7%
12	Impacts for Customer Notices - Sales (line 11)			505.23	
13	Impacts for Customer Notices - Direct Purchase (line 5)			-	

Notes:

(1) RNG Purchase of 1.7 PJ (1.8%) of Union South System Supply.

Rate M4 Commercial (CD of 11,173 m <sup>3</sup> /day & Annual Consumption of 2,335,191 m <sup>3</sup> )				
Line No.	Particulars	EB-2012-0070 Approved 01-Apr-12 Total Bill (\$) (a)	EB-2011-0283 Including RNG (1) 01-Apr-12 Total Bill (\$) (b)	Annual Bill Impact (\$) (c) = (b) - (a)
	<u>Delivery Charges</u>			
1	Monthly Demand Charge	52,301.71	52,301.71	-
2	Delivery Commodity Charge	12,518.96	12,518.96	-
3	Prospective Recovery - Delivery	2.34	2.34	-
4	Total Delivery Charge	64,823.01	64,823.01	-
	<u>Supply Charges</u>			
5	Transportation to Union	120,376.75	136,538.60	16,161.85
6	Commodity & Fuel	221,256.99	221,256.99	-
7	Prospective Recovery - Commodity & Fuel	(31,333.59)	(31,333.59)	-
8	Subtotal	189,923.40	189,923.40	-
9	Total Gas Supply Charge	310,300.14	326,462.00	16,161.85
10	Total Bill	375,123.15	391,285.00	16,161.85 4.3%
11	Impacts for Customer Notices - Sales (line 10)			16,161.85
12	Impacts for Customer Notices - Direct Purchase (line 4)			-

Notes:

(1) RNG Purchase of 1.7 PJ (1.8%) of Union South System Supply.

		(Eastern)			
		Rate 10 - Commercial			
		(Annual Consumption of 93,000 m <sup>3</sup> )			
Line No.	Particulars	EB-2012-0070 Approved 01-Apr-12 Total Bill (\$) (a)	EB-2011-0283 Including RNG (1) 01-Apr-12 Total Bill (\$) (b)	Annual Bill Impact (\$) (c) = (b) - (a)	
	<u>Delivery Charges</u>				
1	Monthly Charge	840.00	840.00	-	
2	Delivery Commodity Charge	4,515.86	4,515.86	-	
3	Total Delivery Charge	5,355.86	5,355.86	-	
	<u>Supply Charges</u>				
4	Transportation to Union	7,742.72	7,742.72	-	
5	Prospective Recovery - Transportation	772.93	772.93	-	
6	Storage Services	1,758.38	1,758.38	-	
7	Prospective Recovery - Storage	-	-	-	
8	Subtotal	10,274.03	10,274.03	-	
9	Commodity & Fuel	8,811.66	8,811.66	-	
10	Prospective Recovery - Commodity & Fuel	(1,071.73)	(333.96)	737.77	
11	Subtotal	7,739.93	8,477.70	737.77	
12	Total Gas Supply Charge	18,013.96	18,751.73	737.77	
13	Total Bill	23,369.82	24,107.59	737.77	3.2%
14	Impacts for Customer Notices - Sales (line 13)			737.77	
15	Impacts for Customer Notices - Direct Purchase (line 3 + line 8)			-	

Notes:

(1) RNG Purchase of 0.5 PJ (1.2%) of Union North System Supply.

UNDERTAKING J4.7

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 102.

To break out premium cost of gas by rate class.

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When comparing to the January 2012 QRAM, the incremental cost of RNG is:

- \$6.028 million for Union North
- \$19.091 million for Union South

For Union North, the incremental cost of \$6.028 million divided by a 12-month forecast sales volume of  $823,475 \times 10^3 \text{ m}^3$  yields a unit rate of 0.7320 cents/ $\text{m}^3$ .

Forecast sales service consumption volumes for Union North by rate class are:

- Rate 01 –  $652,762 \times 10^3 \text{ m}^3$
- Rate 10 –  $157,199 \times 10^3 \text{ m}^3$
- Rate 20 –  $13,514 \times 10^3 \text{ m}^3$

Accordingly, the \$6.028 million incremental cost of RNG by rate class in Union North is:

- Rate 01 -  $652,762 \times 0.7320 = \$4.778$  million
- Rate 10 -  $157,199 \times 0.7320 = \$1.151$  million
- Rate 20 -  $13,514 \times 0.7320 = \$0.099$  million

For Union South, the incremental cost of \$19.091 million decreases the SPCD by \$0.177/GJ, which in turn increases the transportation rate by 0.6682 cents/ $\text{m}^3$ .

Forecast sales service consumption volumes for Union South by rate class are:

- Rate M1:  $2,423,188 \times 10^3 \text{ m}^3$
- Rate M2:  $402,079 \times 10^3 \text{ m}^3$
- Rate M4:  $16,946 \times 10^3 \text{ m}^3$
- Rate M5A:  $14,816 \times 10^3 \text{ m}^3$
- Rate M10:  $50 \times 10^3 \text{ m}^3$

Accordingly, the \$19.091 million incremental cost of RNG by rate class in Union South is:

- Rate M1:  $2,423,188 \times 0.6682 = \$16.192$  million
- Rate M2:  $402,079 \times 0.6682 = \$2.687$  million
- Rate M4:  $16,946 \times 0.6682 = \$0.113$  million
- Rate M5A:  $14,816 \times 0.6682 = \$0.099$  million
- Rate M10:  $50 \times 0.6682 = \$0.000$  million

UNDERTAKING J4.9

Undertaking of Enbridge Gas Distribution Inc. and Union Gas Limited

Transcript Volume 5, page 111.

To update Table 3 Bill Impacts to match April QRAM.

For the purposes of this response, Union has assumed that RNG purchased for company use would be utilized to meet compressor fuel requirements per the 2007 Board-approved cost allocation study. Purchasing RNG for compressor fuel needs results in an incremental cost of \$22.670 million when compared to the Board-approved April 2012 QRAM. The calculation of the incremental cost if RNG is purchased for company use purposes is provided below.

Total RNG Volume	58,000 10 <sup>3</sup> m <sup>3</sup>
RNG Price (\$15/GJ)	56.7300 cents/m <sup>3</sup>
April 2012 QRAM WACOG (\$4.665/GJ)	<u>17.6430</u> cents/m <sup>3</sup>
Price Variance	39.0870 cents/m <sup>3</sup>
Incremental Cost related to RNG	\$22.670 million

When compared to the Board-approved April 2012 QRAM (EB-2012-0070), the impact on both a percentage of the sales service bill and annual dollar basis for an average system gas customer by rate class is summarized in the table below.

<b>Rate Class</b>	<b>Annual Impact (\$)</b>	<b>Annual Impact (%)</b>
R01	2.89	0.3
R10	39.29	0.2
M1	1.46	0.2
M2	65.41	0.5
M4	1,413.54	0.4

When compared to the Board-approved April 2012 QRAM, the impact on both a percentage of the sales service bill and annual dollar basis for an average system gas customer in other rate classes with sales service volumes is provided in the table below.



<b>Rate Class</b>	<b>Annual Impact (\$)</b>	<b>Annual Impact (%)</b>
R20	581.51	0.0
M5A	2,338.97	0.4
M10	35.02	0.4

When compared to the Board-approved April 2012 QRAM, the impact on both a percentage and annual dollar basis for the delivery bill of an average customer in rate classes with no sales service volumes is provided in the table below.

<b>Rate Class</b>	<b>Annual Impact (\$)</b>	<b>Annual Impact (%)</b>
R100	26,293.61	3.4
M7	22,201.07	1.3
M9	8,490.27	3.4
T1	22,550.56	3.0
T3	222,739.30	4.0

Of the incremental \$22.670 million cost if RNG is purchased for company use to meet compressor fuel requirements, \$6.346 million (28%) would be allocated to in-franchise rate classes and \$16.324 million (72%) would be allocated to ex-franchise rate classes.