SCHOOL ENERGY COALITION

CROSS-EXAMINATION MATERIALS

UNION GAS 2012 CLEARANCES

PANEL 4

EB-2013-0109

UNION GAS LIMITED

Deferral Account Balances

Year Ending December 31, 2012

Line No.	Account Number	Account Name	Balance ($000's)	(1)
	Gas Supply Accounts:			
1	179-108	Unabsorbed Demand Costs (UDC) Variance Account	(1,388)	(2)
2	179-130	Upstream Transportation FT-RAM Optimization	-	(2)
3	Total Gas Supply Accounts (Lines 1 + 2)		(1,388)	
	Storage Accounts:			
4	179-70	Short-Term Storage and Other Balancing Services	1,879	
	Other:			
5	179-75	Lost Revenue Adjustment Mechanism	2,629	
6	179-103	Unbundled Services Unauthorized Storage Overrun	-	
7	179-111	Demand Side Management Variance Account	368	
8	179-112	Gas Distribution Access Rule (GDAR) Costs	194	
9	179-113	Late Payment Penalty Litigation	-	
10	179-115	Shared Savings Mechanism	-	
11	179-117	Carbon Dioxide Offset Credits	-	
12	179-118	Average Use Per Customer	(3,665)	
13	179-120	IFRS Conversion Cost	538	
14	179-123	Conservation Demand Management	-	
15	179-124	Harmonized Sales Tax	(1,167)	
16	179-126	Demand Side Management Incentive	8,598	
17	179-127	Pension Charge on Transition to US GAAP	7,811	
18	Total Other Accounts (Lines 5 through 17)		15,306	
19	Total Deferral Account Balances (Lines 3 + 4 + 18)		15,797	
20		Federal & Provincial Tax Changes	132	
21	**Total Deferral Account Balances (Lines 3 + 4 + 18 + 20)**		15,929	

Notes:

(1) Account balances include interest to December 31, 2012.

(2) With the exception of UDC (No. 179-108) and Upstream Transportation FT-RAM Optimization (No. 179-130), all gas supply-related deferral account balances are disposed of through the QRAM process. In 2012, the Board issued final orders in respect of Union's gas supply-related deferral accounts in EB-2011-0382, EB-2012-0070, EB-2012-0249 and EB-2012-0345.

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
Breakdown of 2012 LRAM Deferral Account Balance

Line No.	Particulars ($)	Amounts by DSM Plan Year 2011[1]	2012 [2]	Total Amount in LRAM Deferral Account
		(a)	(b)	(c)
	South			
1	M1 Residential	205,574	85,858	291,432
2	M1 Commercial	170,713	99,183	269,896
3	M1 Industrial	47,770	1,708	49,478
4	M2 Commercial	249,371	171,709	421,080
5	M2 Industrial	128,723	86,156	214,879
	Industrial			
6	M4	44,170	59,831	104,001
7	M5	262,735	154,170	416,905
8	M7	8,473	1,566	10,038
9	T1	97,678	61,366	159,043
10		1,215,206	721,547	1,936,753
	North			
11	Residential 01	146,891	42,969	189,860
12	Commercial 01	104,603	60,146	164,750
13	Commercial 10	88,428	100,200	188,628
14	Industrial 10	25,365	57,943	83,308
	Industrial			
15	Rate 20	11,967	14,569	26,536
16	Rate 100	19,168	19,685	38,853
17		396,422	295,513	691,935
18	Total	1,611,628	1,017,060	2,628,688

Notes:
(1) EB-2013-0109, Exhibit A, Tab 1, Schedule 2, page 2 of 3, column (g).
(2) EB-2013-0109, Exhibit A, Tab 1, Schedule 2, page 3 of 3, column (c).

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
2011 - Audited

Line No.	Particulars	2011 Audited Volumes (1)	2011 Unaudited Volumes (2)	Delivery Rates: 2011 Rates	Delivery Rates: 2012 Rates	Net Revenue Impact: 2011 (3)	Net Revenue Impact: 2012	Net LRAM Deferral Account Balance Proposed for Disposition
		$10^3\ m^3$	$10^3\ m^3$	$\$/10^3\ m^3$	$\$/10^3\ m^3$	($)	($)	($)
		(a)	(b)	(c)	(d)	(e) = [(a)-(b)]x (c) x 50%	(f) = (a) x (d)	(g) = (e) + (f)
	South							
1	M1 Residential	5,387	5,438	40.757	38.350	(1,025)	206,599	205,574
2	M1 Commercial	4,447	4,438	40.757	38.350	176	170,536	170,713
3	M1 Industrial	1,246	1,246	40.757	38.350	(2)	47,772	47,770
4	M2 Commercial	6,064	6,070	40.763	41.147	(130)	249,501	249,371
5	M2 Industrial	3,129	3,130	40.763	41.147	(21)	128,743	128,723
	Industrial							
6	M4	7,981	7,981	8.764	5.534	-	44,170	44,170
7	M5	14,414	14,414	14.574	18.227	-	262,735	262,735
8	M7	12,780	12,780	2.418	0.663	-	8,473	8,473
9	T1	86,670	86,670	0.913	1.127	-	97,678	97,678
10		142,117	142,167			(1,001)	1,216,207	1,215,206
	North							
11	Residential 01	1,653	1,668	91.828	89.288	(695)	147,586	146,891
12	Commercial 01	1,256	1,253	85.583	83.211	115	104,488	104,603
13	Commercial 10	1,549	1,550	62.162	57.093	(25)	88,453	88,428
14	Industrial 10	484	484	57.001	52.469	(19)	25,385	25,365
	Industrial							
15	Rate 20	4,577	4,577	3.683	2.615	-	11,967	11,967
16	Rate 100	12,067	12,067	2.065	1.588	-	19,168	19,168
17		21,586	21,600			(624)	397,046	396,422
18	Total	163,703	163,766			(1,626)	1,613,254	1,611,628

Notes:

(1) Audited Demand Side Management 2011 Annual Report, page 82 (submitted by Union to the OEB Secretary on June 29, 2012 in compliance with section 2.1.12 of the Board's Reporting and Record Keeping Requirements).

(2) EB-2012-0087, Exhibit A, Tab 1, Schedule 2, page 3 of 3, column (a).

(3) The 50% factor reflects the Board's ruling in EB-2006-0021 Decision with Reasons (page 11) which states that the first year impact will be calculated as 50% of the annual volumetric impact multiplied by the distribution rate for each of the rate classes that the volumetric variance occurred in.

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
2012 - Unaudited

Line No.	Particulars	2012 - Monthly Unaudited Volumes (1) 10^3 m^3	2012 Delivery Rates \$/10^3 m^3	Revenue Impact (\$)
		(a)	(b)	(c) = (a) x (b)
	South			
1	M1 Residential	2,239	38.350	85,858
2	M1 Commercial	2,586	38.350	99,183
3	M1 Industrial	45	38.350	1,708
4	M2 Commercial	4,173	41.147	171,709
5	M2 Industrial	2,094	41.147	86,156
	Industrial			
6	M4	10,811	5.534	59,831
7	M5	8,458	18.227	154,170
8	M7	2,362	0.663	1,566
9	T1	54,451	1.127	61,366
10		87,218		721,547
	North			
11	Residential 01	481	89.288	42,969
12	Commercial 01	723	83.211	60,146
13	Commercial 10	1,755	57.093	100,200
14	Industrial 10	1,104	52.469	57,943
	Industrial			
15	Rate 20	5,572	2.615	14,569
16	Rate 100	12,393	1.588	19,685
17		22,028		295,513
18	Total	109,246		1,017,060

Notes:

(1) Based on unaudited 2012 DSM evaluation results. The monthly volumetric reductions for the month the measure is implemented and the remaining months of the year is calculated based on the Settlement Agreement in EB-2011-0327 (page 34).

UNION GAS LIMITED
Demand Side Management Variance Account

Line No.	Particulars ($000's)	2012 DSM Costs in 2012 Rates[(1)]	Actual DSM Costs [(2)]	Account Balance	Variance
		(a)	(b)	(c) = (b) - (a)	
	South				
1	M1	10,223,670	9,928,224	(295,446)	-2.9%
2	M2	3,811,036	3,740,320	(70,715)	-1.9%
3	M4	1,572,104	2,708,435	1,136,331	72.3%
4	M5	2,624,378	2,089,944	(534,434)	-20.4%
5	M7	885,953	453,765	(432,188)	-48.8%
6	T1	4,313,703	4,758,916	445,213	10.3%
7		23,430,843	23,679,604	248,760.39	1.1%
	North				
8	Rate 01	3,650,512	3,016,785	(633,726)	-17.4%
9	Rate 10	1,160,460	1,516,814	356,354	30.7%
10	Rate 20	953,332	1,326,339	373,007	39.1%
11	Rate 100	1,758,951	1,782,675	23,724	1.3%
12		7,523,254	7,642,613	119,358.91	1.6%
13	Total	30,954,097	31,322,217	368,119	1.2%

Notes:

(1) Based on Revised settled DSM budgets included in Settlement Agreement EB-2011-0327 filed January 31, 2012.

(2) Allocated as per the Settlement Agreement filed January 31, 2012 and the Decision and Order on the Settlement Agreement EB-2011-0327 issued on February 21, 2012

UNION GAS LIMITED
Shared Savings Mechanism
Based on 2011 Audited Results

Line No.	Particulars ($)	2011 Amount: Amount Based on 2011 Audited Results[(1) (2)]	2011 Amount: Amount Disposed of in EB-2012-0087 [(3)]	2011 Amount: Net Amount
		(a)	(b)	(c) = (a) - (b)
	South			
1	M1	883,881	886,587	(2,706)
2	M2	497,753	497,955	(202)
3	M4	512,983	512,717	266
4	M5	980,927	980,419	508
5	M7	610,676	610,360	316
6	T1	4,404,013	4,401,731	2,282
7		7,890,233	7,889,769	464
	North			
8	Rate 01	251,804	252,721	(917)
9	Rate 10	104,232	104,296	(64)
10	Rate 20	291,511	291,360	151
11	Rate 100	705,587	705,221	366
12		1,353,134	1,353,598	(464)
13	Total	9,243,367	9,243,367	(0)

Notes:

(1) The SSM incentives for 2011 are calculated and allocated among rate classes using the mechanism approved by the Board in EB-2006-0021.

(2) Audited Demand Side Management 2011 Annual Report, page 85 (submitted by Union to the OEB Secretary on June 29, 2012 in compliance with section 2.1.12 of the Board's Reporting and Record Keeping Requirements).

(3) EB-2012-0087 Exhibit A, Tab 1 Schedule 4, Column (d).

Filed: 2013-05-08
EB-2013-0109
Exhibit A
Tab 1
Appendix A
Schedule 9

UNION GAS LIMITED
DSM Incentive Deferrral Account
Based on 2012 Un-Audited Results

Line No.	Particulars ($)	2012 Amount Amount Based on 2012 Un-Audited Results(1)
		(a)
	South	
1	M1	3,508,972
2	M2	1,058,073
3	M4	615,794
4	M5	477,542
5	M7	91,521
6	T1	1,300,316
7		7,052,217
	North	
8	Rate 01	441,257
9	Rate 10	302,710
10	Rate 20	296,016
11	Rate 100	506,279
12		1,546,263
13	Total	8,598,480

Notes:
(1) The DSM incentives for 2012 are calculated and allocated among rate classes using the mechanism approved by the Board in EB-2011-0327

UNION GAS LIMITED
Deferral Account Balances and Market Transformation Incentive and Low-income Incentive
Year Ending December 31, 2011

Line No.	Account Number	Account Name	Balance ($000's)
	Gas Supply Accounts:		
1	179-108	Unabsorbed Demand Costs (UDC) Variance Account	(5,882)
	Storage Accounts:		
2	179-70	Short-Term Storage and Other Balancing Services	7,137
3	179-72	Long-Term Peak Storage Services	-
4	Total Storage Accounts (Lines 2 + 3)		7,137
	Other:		
5	179-26	Deferred Customer Rebates/Charges	-
6	179-75	Lost Revenue Adjustment Mechanism	2,009
7	179-103	Unbundled Services Unauthorized Storage Overrun	-
8	179-111	Demand Side Management Variance Account	3,081
9	179-112	Gas Distribution Access Rule (GDAR) Costs	-
10	179-113	Late Payment Penalty Litigation	1,822
11	179-115	Shared Savings Mechanism	9,664
12	179-117	Carbon Dioxide Offset Credits	-
13	179-118	Average Use Per Customer	(5,105)
14	179-120	IFRS Conversion Cost	335
15	179-121	Cumulative Under-recovery – St. Clair Transmission Line	-
16	179-122	Impact of Removing St. Clair Transmission Line from Rates	-
17	179-123	Conservation Demand Management	(215)
18	179-124	Harmonized Sales Tax	(664)
19	Total Other Accounts (Lines 5 through 18)		10,927
20	Total Deferral Account Balances (Lines 1 + 4 + 19)		12,182
21		Market Transformation Incentive	500
22		Incremental Low-income Incentive	544
23	**Total Deferral Account Balances and Market Transformation and Low-income Incentives (Lines 20 + 21 + 22)**		13,226

Notes:

(1) Account balances include interest to December 31, 2011 per accounting order EB-2010-0148.

(2) With the exception of UDC (No. 179-108), all gas supply-related deferral account balances are disposed through the QRAM process.

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
Breakdown of 2011 LRAM Deferral Account Balance

Line No.	Particulars ($)	Amounts by DSM Plan Year 2010 [1]	Amounts by DSM Plan Year 2011 [2] [3]	Total Amount in LRAM Deferral Account
		(a)	(b)	(c)
	South			
1	M1 Residential	160,212	110,808	271,020
2	M1 Commercial	184,427	90,443	274,871
3	M1 Industrial	1,472	25,387	26,859
4	M2 Commercial	178,864	123,716	302,580
5	M2 Industrial	143,192	63,791	206,984
	Industrial			
6	M4	63,357	34,973	98,330
7	M5	118,901	105,037	223,938
8	M7	27,797	15,450	43,248
9	T1	29,942	39,565	69,507
10		908,164	609,171	1,517,335
	North			
11	Residential 01	73,581	76,588	150,168
12	Commercial 01	48,945	53,618	102,563
13	Commercial 10	41,903	48,178	90,081
14	Industrial 10	16,990	13,808	30,798
	Industrial			
15	Rate 20	24,880	8,429	33,309
16	Rate 100	72,278	12,459	84,737
17		278,577	213,080	491,657
18	Total	1,186,741	822,251	2,008,992

Notes:
(1) EB-2012-0087, Exhibit A, Tab 1, Schedule 2, page 2 of 3, column (g).
(2) EB-2012-0087, Exhibit A, Tab 1, Schedule 2, page 3 of 3, column (c).
(3) Includes $0.0124 million related to incremental Low-income DSM activities per EB-2010-0055.

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
2010 - Audited

Line No.	Particulars	2010 Audited Volumes (1)	2010 Unaudited Volumes (2)	Delivery Rates: 2010 Rates	Delivery Rates: 2011 Rates	Net Revenue Impact: 2010 (3)	Net Revenue Impact: 2011	Net LRAM Deferral Account Balance Proposed for Disposition
		10^3 m^3	10^3 m^3	$\$/10^3$ m^3	$\$/10^3$ m^3	($)	($)	($)
		(a)	(b)	(c)	(d)	(e) = [(a)-(b)]x (c) x 50%	(f) = (a) x (d)	(g) = (e) + (f)
	South							
1	M1 Residential	4,105	4,423	44.749	40.757	(7,108)	167,320	160,212
2	M1 Commercial	4,920	5,639	44.749	40.757	(16,095)	200,522	184,427
3	M1 Industrial	36	36	44.749	40.757	(1)	1,473	1,472
4	M2 Commercial	4,505	4,740	40.470	40.763	(4,763)	183,627	178,864
5	M2 Industrial	3,515	3,519	40.470	40.763	(85)	143,277	143,192
	Industrial							
6	M4	7,254	7,304	8.545	8.764	(216)	63,573	63,357
7	M5	8,174	8,205	14.783	14.574	(230)	119,131	118,901
8	M7	11,495	11,491	2.411	2.418	4	27,794	27,797
9	T1	32,818	32,867	0.884	0.913	(22)	29,963	29,942
10		76,822	78,226			(28,517)	936,680	908,164
	North							
11	Residential 01	843	923	96.673	91.828	(3,867)	77,448	73,581
12	Commercial 01	666	845	90.054	85.583	(8,050)	56,995	48,945
13	Commercial 10	706	766	64.910	62.162	(1,953)	43,856	41,903
14	Industrial 10	298	297	59.486	57.001	13	16,977	16,990
	Industrial							
15	Rate 20	6,759	6,767	3.404	3.683	(13)	24,894	24,880
16	Rate 100	35,022	35,064	2.027	2.065	(42)	72,320	72,278
17		44,294	44,662			(13,912)	292,490	278,577
18	Total	121,116	122,888			(42,429)	1,229,170	1,186,741

Notes:
(1) Audited Demand Side Management 2010 Annual Report, page 76 (submitted by Union to the OEB Secretary on July 29, 2011 in compliance with section 2.1.12 of the Board's Reporting and Record Keeping Requirements).
(2) EB-2011-0038, Exhibit A, Tab 1, Schedule 2, page 3 of 3, column (a).
(3) The 50% factor reflects the Board's ruling in EB-2006-0021 Decision with Reasons (page 11) which states that the first year impact will be calculated as 50% of the annual volumetric impact multiplied by the distribution rate for each of the rate classes that the volumetric variance occurred in.

UNION GAS LIMITED
Lost Revenue Adjustment Mechanism
2011 - Unaudited

Line No.	Particulars	2011 Unaudited Volumes (1) 10^3 m^3	2011 Delivery Rates $\$/10^3$ m^3	Revenue Impact(2) ($)
		(a)	(b)	(c) = (a) x (b) x 50%
	South			
1	M1 Residential	5,438	40.757	110,808
2	M1 Commercial	4,438	40.757	90,443
3	M1 Industrial	1,246	40.757	25,387
4	M2 Commercial	6,070	40.763	123,716
5	M2 Industrial	3,130	40.763	63,791
	Industrial			
6	M4	7,981	8.764	34,973
7	M5	14,414	14.574	105,037
8	M7	12,780	2.418	15,450
9	T1	86,670	0.913	39,565
10		142,167		609,171
	North			
11	Residential 01	1,668	91.828	76,588
12	Commercial 01	1,253	85.583	53,618
13	Commercial 10	1,550	62.162	48,178
14	Industrial 10	484	57.001	13,808
	Industrial			
15	Rate 20	4,577	3.683	8,429
16	Rate 100	12,067	2.065	12,459
17		21,600		213,080
18	Total	163,766		822,251

Notes:

(1) Based on unaudited 2011 DSM evaluation results.

(2) Includes 514 10^3m^3 related to incremental Low-income DSM activities per EB-2010-0055. The revenue impact associated with these volumes is $0.0124 million.

(3) The 50% factor reflects the Board's ruling in EB-2006-0021 Decision with Reasons (page 11) which states that the first year impact will be calculated as 50% of the annual volumetric impact multiplied by

UNION GAS LIMITED
Demand Side Management Variance Account

Line No.	Particulars ($000's)	2011 DSM Costs in 2011 Rates[1]	Actual DSM Costs [2]	Account Balance
		(a)	(b)	(c) = (b) - (a)
	South			
1	M1	7,612	10,106	2,494
2	M2	3,154	3,300	146
3	M4	2,391	987	(1,403)
4	M5	-	2,104	2,104
5	M7	909	588	(320)
6	T1	1,484	4,364	2,880
7		15,549	21,450	5,900
	North			
8	Rate 01	2,269	2,568	299
9	Rate 10	1,951	846	(1,106)
10	Rate 20	1,308	573	(735)
11	Rate 100	2,112	834	(1,278)
12		7,640	4,821	(2,819)
13	Total	23,190	26,271	3,081

Notes:

UNION GAS LIMITED
Shared Savings Mechanism
Based on 2010 Audited and 2011 Unaudited Results

Line No.	Particulars ($)	2010 Amount: Amount Based on 2010 Audited Results[1] [2]	2010 Amount: Amount Disposed of in EB-2011-0038 [3]	2010 Amount: Net Amount	2011 Amount Based on Unaudited Results [1]	Total for 2010 and 2011
		(a)	(b)	(c) = (a) - (b)	(d)	(e) = (c) + (d)
	South					
1	M1	827,888	859,686	(31,798)	886,587	854,790
2	M2	552,247	544,266	7,981	497,955	505,936
3	M4	504,301	467,085	37,216	512,717	549,933
4	M5	393,687	362,449	31,239	980,419	1,011,657
5	M7	574,902	516,139	58,763	610,360	669,123
6	T1	1,418,964	1,264,262	154,701	4,401,731	4,556,433
7		4,271,989	4,013,887	258,102	7,889,769	8,147,871
	North					
8	Rate 01	161,933	173,973	(12,040)	252,721	240,681
9	Rate 10	58,863	60,295	(1,432)	104,296	102,864
10	Rate 20	348,229	318,613	29,616	291,360	320,976
11	Rate 100	1,735,221	1,588,823	146,398	705,221	851,619
12		2,304,246	2,141,704	162,542	1,353,598	1,516,139
13	Total	6,576,235	6,155,591	420,644	9,243,367	9,664,011

Notes:

(1) The SSM incentives for 2010 and 2011 are calculated and allocated among rate classes using the mechanism approved by the Board in EB-2006-0021.

(2) Audited Demand Side Management 2010 Annual Report, page 78 (submitted by Union to the OEB Secretary on July 29, 2011 in compliance with section 2.1.12 of the Board's Reporting and Record Keeping Requirements).

(3) EB-2011-0038 Exhibit A, Tab 1 Schedule 4, Column (d).

Scope of Work

The following list outlines activities that are expected to be carried out for the purpose of this audit. The Auditor is encouraged to propose other tasks that they believe would be helpful in reaching the study objective.

1. Provide a detailed work plan and present to Union at the Launch Meeting. The Launch Meeting will allow the Auditor, Union, and the EAC to finalize the communication protocols that will be established and strictly adhered to for the duration of the 2011 Audit.
2. Attend, via teleconferencing, weekly audit status meetings to discuss Auditor processes, requirements, findings, and concerns with the EAC and Union.
    a. The Auditor will work closely with Union to satisfy all questions and concerns prior to releasing the Draft Audit Report.
3. Audit the draft 2011 DSM Annual Report to identify if there are claims made by Union that have not been substantiated.
4. Review Union's procedures for tracking program participants and determine whether they lead to accurate counts.
5. Verify that Union's claimed input assumptions for SSM are accurate and consistent with the OEB filed and approved SSM input assumptions.
6. Verify that Union's claimed savings for LRAM are accurate and based on best available information at the time of the audit.
    a. Changes to measure inputs must be based on 'best available information' established through relevant research presented during the audit. If alternative values are presented, the Auditor will discuss any derivation with Union and the EAC before rendering any opinions in regard to the alternatives. Proposed alternative values will be presented with a plausible range of values with full documentation from publicly available research made available for the EAC and Union to review at the time of the audit.[3]
7. Verify that the calculation methodology used to determine the SSM incentive and the LRAM amount adheres to the OEB approved method.
8. Review third party verification of commercial and distribution contract custom projects for reasonableness. This review will not duplicate the detailed third party analysis of savings estimates and evaluation findings. Instead, the audit review will provide an opinion on the methods and parameters used in consideration of the OEB framework under which the programs operate.
    a. In addition to reviewing the verification reports, the Auditor may speak with the third party verification consultants and seek clarification as needed with either the verification consultant and/or Union Gas to ensure the Auditor has all the relevant information before forming any opinions.
    b. As above, any recommendations to changing custom project inputs will be supported by relevant research.

[3] In accordance with the OEB 2006-021 Decision with Reasons, changes to prescriptive measure inputs may impact LRAM but will not be retroactively applied to TRC or SSM.

APPENDIX A. KEY MEETINGS

Meetings and Participants

Kick-off Meeting - March 21, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter Randy Pozdena	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Josh Bachman	Jeff Hare	Craig Phillips	
Audit Discussion - April 11, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Jeff Hare	Craig Phillips		
Audit Discussion - April 18, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Julie Girvan	Kai Millyard		
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Jeff Hare	Craig Phillips		
Audit Discussion - May 2, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Julie Girvan	Kai Millyard		
	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Jeff Hare			
Audit Discussion - May 9, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Craig Phillips			
Review Draft Audit - May 23, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Craig Phillips			
Review Draft Audit - May 30, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	Tom Souhlas
Cascade	Jeff Hare	Craig Phillips		
Review Draft Audit – June 11, 2012				
Union Gas	Leslie Kulperger	Tina Nicholson		
EAC	Vincent DeRose	Julie Girvan	Kai Millyard	
ECONW	Steven Carter	Alec Josephson	Tessa Krebs	
Cascade	Jeff Hare	Craig Phillips		

INVOICE

Diamond Engineering Company
3723 West Hamilton Road
Fort Wayne, IN 46814-9728

← REMIT TO

Invoice Number	**1039**
Date	**12/5/2011**
Your Order #	4500192449
DEC Job Number	**W016**
Ship Date	
Tax Code	**Non Taxable**
Salesman	
Account Number	**UNI001**
Ship Via	**n/a**
FOB	**n/a**
Page	**1 OF 1**
Terms	

TEL (260) 625-5494 FAX (248) 479-0989

TO: **Union Gas Limited**
P.O. Box 2001
Chatham, ON N7M 5M1
FAX (519) 436-4665

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
A	6 sites	DSM Reviews for 2011 Verification	$ 3,600.00 USD	$ 21,600.00 USD
B	725 mi	Mileage for W.E. 12/9/2011	0.50 USD	363.31 USD
C	1 ea	Hotel 12/5/2011, Lansing, MI	109.87 USD	109.87 USD
D	1 ea	Hotel 12/6/2011 Chatham, ONT	94.57 USD	94.57 USD
E	1 ea	Flight from London, ONT to Timmins, ONT	1,690.87 USD	1,690.87 USD
F	1 ea	Rental Car – Timmins to Kapuskasing, ONT	81.51 USD	81.51 USD
G	1 ea	Hotel 12/7/2011 Timmins, ONT	141.91 USD	141.91 USD
H	1 ea	Hotel 12/8/2011 Lansing, MI	99.79 USD	99.79 USD
I	24 hrs	Evaluation of the Non Selected Project	160.00 USD	3,840.00 USD
J	40 hrs	In depth steam trap life analysis	160.00 USD	6,400.00 USD
		Customer Contact Time in Canada (For Tax Purposes)		
		Non-Selected Project – 3 Hours @ $ 160.00 / Hour = $ 480.00		
		Reviews 2 Hours / Review		
		12 Hours @ $ 160 / Hour = $ 1,920.00		
		Total for work conducted in Canada = $ 2,400.00		
		6.97 % of this invoice represents compensation for work conducted in Canada		
		Co. Code (XL Mo) 2 Approver Name (print) VICTORIA FALVO Date 2/17 Signature [signature] Loc Bay St Amt. $ 34,421.83 Currency CAD ☐ USD ☒ Tax Code (West) ____ Cost Element: 471035 / Cost Assignment: 240919 / Amount: 34,421.83 SRO / SES # (West) ____ PO # 4500192449 Description DSM Verification		
			Total this invoice	$ 34,421.83 USD

The Goods and Services Described herein were purchased according to the terms and conditions set forth on the reverse side of this form

INVOICE

Diamond Engineering Company
3723 West Hamilton Road
Fort Wayne, IN 46814-9728

← REMIT TO

TEL (260) 625-5494 FAX (248) 479-0989

TO: **Union Gas Limited**
P.O. Box 2001
Chatham, ON N7M 5M1
FAX (519) 436-4665

Invoice Number	**1044**
Date	**3/12/2012**
Your Order #	4500192449
DEC Job Number	**W016**
Ship Date	
Tax Code	**Non Taxable**
Salesman	
Account Number	**UNI001**
Ship Via	**n/a**
FOB	**n/a**
Page	**1 OF 1**
Terms	

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
A	7 sites	DSM Reviews for 2011 Verification	$ 3,600.00 USD	$ 25,200.00 USD
B	762 mi	Mileage for W.E. 2/11/2012	0.51 USD	388.62 USD
C	2 nights	Hotel 2/6/2012 & 2/7/2012, London, ON	129.95 USD	259.90 USD
D	2 ea	Bluewater Bridge Toll	3.00 USD	6.00 USD
E	3 meals	2/6/2011, 2/7/2011, 2/8/2011	8.00 USD	24.00 USD
F	801 mi	Mileage for W.E. 2/18/2012	0.51 USD	408.51 USD
G	1 night	Hotel 2/13/2011 London, ON	115.26 USD	115.26 USD
H	1 night	Hotel 2/14/2011 Windsor, ON	160.69 USD	160.69 USD
I	3 meals	2/13/2011, 2/14/2011, 2/15/2011	8.00 USD	24.00 USD
J	1 ea	Bluewater Bridge Tolls	3.00 USD	3.00 USD
K	1 ea	Ambassador Bridge Toll	4.00 USD	4.00 USD
		Customer Contact Time in Canada (For Tax Purposes)		
		Selected Project – 14 Hours @ $ 160.00 / Hour = $ 2,240.00		
		8.42% of invoice is for labor conducted while in Canada		
			Total this invoice	$ 26,593.98 USD

The Goods and Services Described herein were purchased according to the terms and conditions set forth on the reverse side of this form

- **Project 240 (Water Savings).** As explained above, reducing steam leaks reduces the amount of feed water by more than just the volume of water lost to the leaks because it also reduces the amount of water lost through boiler blowdown. Assuming a typical blowdown rate of 10 percent results in an increased water savings 12 percent, from 318,876 L/year to 356,471 L/year.

Table 10 summarizes the changes described above. The table shows the estimated savings for each of the projects described above, Michaels' verified savings and the audited savings

Table 10. Audit Results for Commercial Custom Projects

Project	Technology	Ex Ante Savings Volume	Verified Savings Volume	Project Savings Rate	Audited Savings Volume	Audited Project Savings Rate
203 Gas (m^3)	HVAC	66,623	45,217	67.9%	56,074	84.0%
207 Electrical (kWh)	Process	69,031	118,715	172.0%	91,711	132.9%
210 Gas (m^3)	Process	240,179	156,237	65.1%	70,140	29.2%
238 Gas (m^3)	HVAC	229,185	6,684	2.9%	48,772	21.0%
240 Gas (m^3)	Process	100,428	105,132	104.7%	118,569	118.1%
240 Water (L)	Process	308,942	318,876	103.2%	356,471	115.4%

Note: The Project Savings Rate value is the ratio of the Verified Savings to Ex-Ante Savings. The Audited Project Savings Rate value is the ratio of the Audited Savings to Ex-Ante Savings.

Distribution Contract Custom Projects

For Distribution Contract (DC) Custom projects, the Audit Team reviewed the Diamond verification report of Union's DC Custom projects.[13] Diamond completed on-site verification visits to each of the 13 Custom projects included in the sample. The facilities included in the Diamond verification study ranged from an oil refinery to a university campus to a large greenhouse facility. The purpose of this component of the audit is to:

- Review the data and assumptions (including incremental costs and EUL) used to describe baseline and upgraded equipment.
- Review the energy savings calculations for natural gas, water, and electrical savings.

To review the results of the Diamond verification study, the Audit Team followed these steps:

- The Audit Team reviewed the documentation and calculations in the Diamond verification study.
- Where engineering approaches or methodologies were unclear, the Audit Team communicated with Diamond for clarification.
- If data from Diamond were insufficient to justify its approach, or other errors were uncovered, the Audit Team made recommendations for changes in the Draft DSM 2011 Annual Report.

[13] Diamonds Engineering. 2012. *2011 Evaluation of Distribution Contract Custom Projects*. March.

After this review, Diamond and the Audit Team resolved all questions. The Audit Team agrees with the energy savings calculated by Diamond, and has no recommendations for adjustments to the realizations rates from the Diamond verification study.

General Recommendations for Custom Projects

The realization rates reported in the Michaels and Diamond verification studies suggest that the information available for the small Commercial Custom projects is less thorough and less reliable than the information available for large Custom projects. Nine of the Commercial Custom projects have realization rates of 25 percent or less. To improve the information available for Commercial Custom projects, the Audit Team makes the following recommendations:

- Collect pre-project documentation of whether the project involves an expansion of production capacity.
- Collect pre-project utility history for the facility or meter where the project will be affected.
- Record baseline conditions (operating hours, operating usage, baseline equipment configuration, etc.).
- Collect post-project documentation of what equipment and operating changes were made.
- Record upgraded condition (operating hours, operating parameters, upgraded equipment configuration, etc.).

2. Realization Rates

Audited Realization Rates

Realization rates are estimated parameters used to extrapolate audited savings from a *sample* of Custom projects to *all* Custom projects. These rates affect claimed program outcomes such as energy savings, incremental costs, and EULs. As such, realization rates affect the calculation of TRC, SSM, and LRAM. The Audit Team recalculated the realization rates based on the audited values of savings for the Commercial Custom projects listed above. These audited realization rates are listed in Table 11. Since the Audit Team found no reason to change verified savings in the sample of DC Custom projects, the realization rates for DC Custom savings remain unchanged from those reported in the Draft DSM 2011 Annual Report.

Table 11. Audited Realization Rates

<table>
<tr><th colspan="2">Program/Measure</th><th>Draft DSM 2011 Annual Report Realization Rate</th><th>Audited Realization Rate</th></tr>
<tr><td colspan="2">Natural Gas Savings – Commercial Custom</td><td>0.665</td><td>0.659</td></tr>
<tr><td colspan="2">Natural Gas Savings – DC Custom</td><td>1.096</td><td>1.096</td></tr>
<tr><td colspan="2">Water Savings – Commercial Custom</td><td>0.862</td><td>0.863</td></tr>
<tr><td colspan="2">Water Savings – DC Custom</td><td>1.076</td><td>1.076</td></tr>
<tr><td colspan="2">Electricity Savings – Commercial Custom</td><td>0.817</td><td>0.797</td></tr>
<tr><td colspan="2">Electricity Savings – DC Custom</td><td>1.078</td><td>1.078</td></tr>
<tr><td>TRC Impact</td><td>SSM Impact (no cap)</td><td>LRAM Impact</td><td>Natural Gas Savings</td></tr>
</table>

Project ID	TRC Input	Claimed	Verified	Difference from Claimed	TRC Claimed	TRC Verified	Difference in TRC from Claimed	Reasons for adjustments during verification	Audited	Difference from Verified	TRC Audited	Difference in TRC from Verified	Reasons for adjustments during audit
2011 Commercial/Industrial Custom Project Savings Verification, Michaels Energy													
2011-COM-0011	Gas Savings (m3)	139,203	144,571	5,368	$284,681	$192,169	-$92,512	CPSV firm adjusted the way outdoor air temperature assumptions were applied	No change	0	No Change	$0	
	Electricity Savings (kWh)	235,524	68,905	-166,619					No change	0			
	EUL	20	15	-5				CPSV firm adjusted EUL to match average value found in literature review	No change	0			
2011-COM-0013	Gas Savings (m3)	12,176	5,873	-6,303	$83,963	$69,886	-$14,077	CPSV used a different outdoor air temperature input assumption	No change	0	No Change	$0	
	Electricity Savings (kWh)	160,064	171,021	10,957					No change	0			
	EUL	20	15	-5				CPSV firm adjusted EUL to match average value found in literature review	No change	0			
2011-COM-0035	Gas Savings (m3)	57,908	79,151	21,243	$43,458	$71,600	$28,142	CPSV firm corrected the basecase insulation levels to reflect the information provided in the original project file	No change	0	No Change	$0	
2011-COM-0055	Gas Savings (m3)	93,175	97,734	4,559	$216,419	$221,676	$5,258	CPSV applied weather normalized gas meter regression analysis to verify the project	No change	0	No Change	$0	
2011-COM-0062	Gas Savings (m3)	49,178	44,457	-4,721	$690,200	$604,322	-$85,878	CPSV applied gas meter regression analysis to verify the project	No change	0	No Change	$0	
	Water Savings (L)	85,145,984	76,243,254	-8,902,730				CPSV adjusted water savings to be consistent with the gas meter regression analysis	No change	0			
2011-COM-0133	Gas Savings (m3)	270,259	296,826	26,567	$358,399	$369,330	$10,931	CPSV resulted in change in operating hours and normalization for weather conditions.	No change	0	No Change	$0	
	Electricity Savings (kWh)	197,294	47,052	-150,242					No change	0			
	Incremental Cost	$182,085	$95,573	-86,512				CPSV found the installed units were less expensive	No change	0			
2011-COM-0135	Gas Savings (m3)	105,842	55,102	-50,740	$189,855	$94,580	-$95,275	CPSV corrections in the amount of condensate recovered	No change	0	No Change	$0	
	Water Savings (L)	7,979,309	4,764,070	-3,215,239				CPSV corrections in the amount of condensate recovered	No change	0			
2011-COM-0139	Gas Savings (m3)	35,068	8,106	-26,962	$28,314	-$13,457	-$41,771	CPSV adjusted hot water usage as dependent on production instead of being held constant.	No change	0	No Change	$0	
	Electricity Savings (kWh)	502	3	-499					No change	0			
	Incremental Cost	$41,600	$52,349	10,749				CPSV found the installed cost to be more expensive	No change	0			
2011-COM-0150	Gas Savings (m3)	186,609	43,432	-143,177	$250,843	$43,588	-$207,255	CPSV applied of metered regression analysis and normalizing energy usage for weather	No change	0	No Change	$0	
	Electricity Savings (kWh)	41,516	20,393	-21,123					No change	0			
	EUL	20	15.75	-4				CPSV weighted EUL based on savings contribution of the measures installed to the project	No change	0			
2011-COM-0156	Incremental Cost	$8,159	$7,239	-920	$144,698	$145,121	$423	CPSV found the installed cost to be less expensive	No change	0	No Change	$0	
2011-COM-0163	Gas Savings (m3)	179,300	157,739	-21,561	$211,181	$159,784	-$51,398	CPSV adjusted savings due to differences in the operation characteristics obtained from the customer.	No change	0	No Change	$0	
	Incremental Cost	$51,718	$102,027	50,309				CPSV adjusted to reflect equipment invoices instead of vendor quotes.	No change	0			
2011-COM-0177	Gas Savings (m3)	482,626	45,373	-437,253	$598,115	$25,098	-$573,017	CPSV adjusted due to customer reassessment of anticipated grain production	No change	0	No Change	$0	
2011-COM-0178	Gas Savings (m3)	371,379	367,965	-3,414	$465,451	$460,977	-$4,474	CPSV adjustment relating to actual moisture content of the process drying compared to the estimated moisture content	No change	0	No Change	$0	
2011-COM-0182	Gas Savings (m3)	43,132	36,610	-6,522	$45,214	$39,999	-$5,215	CPSV modified for the average outdoor air temperature	No change	0	No Change	$0	
	Electricity Savings (kWh)	40,525	43,516	2,991					No change	0			
2011-COM-0183	Gas Savings (m3)	31,060	2,045	-29,015	$8,073	-$18,094	-$26,167	Result of metered regression analysis.	No change	0	No Change	$0	
2011-COM-0189	Gas Savings (m3)	64,197	63,548	-649	$61,766	$60,057	-$1,709	CPSV included an additional heating term in the savings equation	No change	0	No Change	$0	
	Water Savings (L)	688,031	716,170	28,139					No change	0			
	Electricity Savings (kWh)	5,655	1,177	-4,478					No change	0			
2011-COM-0197	Gas Savings (m3)	171,675	269,609	97,934	$222,580	$350,922	$128,342	CPSV found a change in production hours	No change	0	No Change	$0	
2011-COM-0203	Gas Savings (m3)	66,623	45,217	-21,406	$124,835	$64,679	-$60,156	CPSV corrected through use of meter regression	56,074	10,857	$78,907	$14,228	Auditor adjusted savings to more accurately interpret baseline data. Auditor found verification adjustments overly conservative
	Electricity Savings (kWh)	100,100	24,807	-75,293				Original savings assumption was not supported	No change	0			
2011-COM-0207	Gas Savings (m3)	175,679	114,922	-60,757	$40,861	-$17,577	-$58,437	CPSV adjusted by applying building-specific data instead of average data	No change	0	-$29,091	-$11,514	
	Electricity Savings (kWh)	69,031	118,715	49,684					91,711	-27,004			Auditor adjusted electricity savings by revising a load factor under which an installed motor operates
2011-COM-0210	Gas Savings (m3)	240,179	156,237	-83,942	$300,194	$190,189	-$110,005	CPSV corrected a calculation error	70,140	-86,097	$77,359	-$112,830	Auditor adjusted savings by using a more appropriate heater tank size
2011-COM-0224	Gas Savings (m3)	209,106	94,821	-114,285	$78,144	-$46,892	-$125,036	CPSV adjusted by applying building-specific data instead of average data	No change	0	No Change	$0	
	Electricity Savings (kWh)	53,733	111,742	58,009					No change	0			
2011-COM-0238	Gas Savings (m3)	229,185	6,684	-222,501	$110,836	-$185,364	-$296,200	Savings were adjusted during verification based on meter regression analysis	48,772	42,088	-$138,631	$46,733	Auditor adjusted savings to use of dynamic air densities (instead of static) when calculating savings
	EUL	20	14	-6				EUL revised to be consistent with literature reviews	No change	0			
2011-COM-0240	Gas Savings (m3)	100,428	105,132	4,704	$69,294	$72,586	$3,292	CPSV found an additional unit was repaired	118,569	13,437	$82,011	$9,425	Auditor adjusted savings to account for interactive effects
	Water Savings (L)	308,942	318,876	9,934					356,471	37,595			
	Electricity Savings (kWh)	981	1,013	32					No change	0			
2011-COM-0242	Gas Savings (m3)	67,602	23,486	-44,116	$54,579	$10,122	-$44,457	CPSV adjustment through use of different modelling software	No change	0	No Change	$0	
	Water Savings (L)	866,317	-	-866,317					No change	0			
	Electricity Savings (kWh)	-	49,513	49,513					No change	0			
2011-COM-0302	Gas Savings (m3)	103,193	14,373	-88,820	$115,178	-$1,220	-$116,398	CPSV found future production rates to be lower than originally assumed	No change	0	No Change	$0	

Note: TRC impacts are through a portfolio RR, however these are calculated with actual adjustements for the specific project.

2011 Industrial (Contract) Custom Project Savings Verification, Diamond Engineering

Project ID	TRC Input	Claimed	Verified	Difference from Claimed	TRC Claimed	TRC Verified	Difference in TRC from Claimed	Reasons for adjustments during verification	Audited	Difference from Verified	TRC Audited	Difference in TRC from Verified	Reasons for adjustments during audit
2011-IND-0186	Gas Savings (m3)	8,973,524	15,503,284	6,529,760	$11,788,445	$21,298,335	$9,509,889	CPSV found original baseline more conservative than observed by customer during interview	No change	0	No Change	$0	
	Electricity Savings (kWh)	1,182,066	2,211,900	1,029,834					No change	0			
	Water (L)	111,015,033	166,939,320	55,924,287					No change	0			
2011-IND-0026	Gas Savings (m3)	7,053,588	7,130,434	76,846	$20,362,925	$20,354,344	-$8,581	CPSV applied a different approach to calculate various heat flows	No change	0	No Change	$0	
	Electricity Savings (kWh)	26,078,330	25,821,658	-256,672					No change	0			
2011-IND-0165	Gas Savings (m3)	4,369,691	4,181,597	-188,095	$2,906,987	$2,835,583	-$71,404	CPSV adjustment based on site speicfic more current meter data	No change	0	No Change	$0	
	Electricity Savings (kWh)	135,745	493,516	357,771					No change	0			
	Water (L)	10,260,306	5,534,130	-4,726,176					No change	0			
2011-IND-0367	Gas Savings (m3)	906,807	1,002,829	96,022	$837,358	$963,385	$126,027	CPSV adjustment based on site speicfic more current meter data	No change	0	No Change	$0	
2011-IND-0276	Gas Savings (m3)	517,430	557,410	39,980	$755,229	$851,798	$96,568	CPSV adjustment based on site speicfic more current meter data	No change	0	No Change	$0	
	Water (L)	48,452,500	53,378,580	4,926,080					No change	0			
2011-IND-0203	Gas Savings (m3)	4,138,652	793,768	-3,344,884	$5,842,985	$980,719	-$4,862,266	CPSV adjustment due to a review of ambient air temperature compared with reported plume observations and steam pressure	No change	0	No Change	$0	
	Electricity Savings (kWh)	394,086	79,331	-314,755					No change	0			
	Water (L)	45,455,426	7,700,040	-37,755,386					No change	0			
2011-IND-0216	Gas Savings (m3)	2,580,024	2,545,114	-34,910	$3,486,733	$4,098,719	$611,986	CPSV adjusted the leak area based on additional information collected during he site visit.	No change	0	No Change	$0	
	Electricity Savings (kWh)	705,002	941,700	236,698					No change	0			
	EUL	20	30	10				EUL adjusted due to type of equipment and customer maintenance standards	No change	0			
2011-IND-0282	Gas Savings (m3)	1,193,899	1,413,899	220,000	$1,641,479	$1,987,181	$345,702	CPSV applied a different savings calculation method and adjusted for ambient temperature	No change	0	No Change	$0	
	Electricity Savings (kWh)	107,835	187,245	79,410					No change	0			
	Water (L)	11,698,487	14,278,800	2,580,313					No change	0			
2011-IND-0665	Gas Savings (m3)	1,323,931	1,523,659	199,728	$1,511,862	$2,277,233	$765,371	CPSV applied different approaches to calculate various heat flows	No change	0	No Change	$0	
	Electricity Savings (kWh)	343,418	1,523,659	1,180,241					No change	0			
2011-IND-0379	Gas Savings (m3)	1,801,896	1,372,819	-429,077	$2,207,249	$1,689,624	-$517,625	CPSV site visit water and gas meter data revealed a modification to the original project that impacted the savings	No change	0	No Change	$0	
	Water (L)	14,453,369	19,539,821	5,086,452					No change	0			
2011-IND-0441	Gas Savings (m3)	760,488	673,970	-86,518	$757,192	$750,187	-$7,005	Change in the estimated leak area resulting from additional information collected by the Auditor during the site visit.	No change	0	No Change	$0	
	Electricity Savings (kWh)	102,356	69,500	-32,856					No change	0			
	Water (L)	13,784,359	7,192,772	-6,591,587					No change	0			
	EUL	10	13.5	4				CPSV adjustment based on weighted average of savings from three measures involved in the project	No change	0			
2011-IND-0518	Gas Savings (m3)	187,430	361,071	173,641	$363,725	$605,281	$241,556	CPSV applied alternate approaches to calculate heat flows	No change	0	No Change	$0	
	Electricity Savings (kWh)	766,780	798,807	32,027					No change	0			
2011-IND-0335	Gas Savings (m3)	630,329	2,474,324	1,843,995	$564,671	$2,351,571	$1,786,899	CPSV applied an alternate approach to calculating the savings based on an updated leakage rate and duration	No change	0	No Change	$0	
	Water (L)	2,022,400	25,147,755	23,125,355					No change	0			