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VIA RESS, EMAIL AND COURIER

May 14, 2012

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, Ontario M4P 1E4

Dear Ms. Walli:

Re: Enbridge Gas Distribution Inc. ("Enbridge")
Board No: EB-2012-0192 – Clearance of DSM Variance Accounts Application

Enbridge is filing an application with the Ontario Energy Board (the "Board") for an order or orders approving the balances and clearance of certain Demand Side Management Variance Accounts into rates in the October QRAM, pending Board approval.

Enbridge has provided the results of the independent audit to the Evaluation Audit Committee and has provided the EAC Audit Summary Report ("Report") to the DSM Consultative. This Report received the endorsement of the DSM Consultative with the exception of one member who took no position. Based upon this, it is the belief of Enbridge that no member of the DSM Consultative is opposed to the Board approving the amounts set out in the application and clearing these amounts through to rates.

Enclosed please find two copies of the evidence filed by Enbridge. The application and evidence have also been submitted through the Board's Regulatory Electronic Submission System ("RESS"). A copy of the on-line confirmation RESS submission reference number has also been included in this package.

Please contact the undersigned if you have any questions.

Sincerely,

{original signed}

Shari Lynn Spratt
Supervisor Regulatory Proceedings

cc: Dennis O'Leary, Aird & Berlis

EXHIBIT LIST

A - ADMINISTRATION

EXHIBIT	TAB	SCHEDULE	DESCRIPTION
A	1	1	Exhibit List
		2	Application
		3	Summary of Application

EXHIBIT B – EVIDENCE

EXHIBIT	TAB	SCHEDULE	DESCRIPTION
B	1	1	2010 DSM Annual Report
	2	1	Final Report: Independent Audit of 2010 DSM Program Results
	3	1	2010 DSM EAC Audit Summary Report
	4	1	2010 Rate Allocation by Account
	5	1	2011 Avoided Costs

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998,* S.O. 1998, c. 15, Sched. B, as amended;

AND IN THE MATTER OF an application by Enbridge Gas Distribution Inc. for an order or orders approving the balances and clearance of certain Demand Side Management Variance Accounts into rates, within the next available QRAM following the Board's approval.

APPLICATION

1. Enbridge Gas Distribution Inc. ("Enbridge Gas Distribution" or the "Company") is an Ontario corporation with its head office in the City of Toronto. It carries on the business of selling, distributing, transmitting and storing natural gas within Ontario. The Company also undertakes Demand Side Management (DSM") activities.

2. Enbridge Gas Distribution hereby applies to the Ontario Energy Board (the "OEB" or the "Board"), pursuant to section 36 of the *Ontario Energy Board Act, 1998,* as amended (the "Act"), for an Order or Orders approving the final balances in the following accounts and the disposition of these balances:

SSM Amount Recoverable (Resource Acquisition)	$3,872,804
SSM Amount Recoverable (Market Transformation)	$282,484
LRAM (Reimbursable to Ratepayers)	($42,858)
DSMVA Amount (Reimbursable to Ratepayers)	($2,717,105)

3. Enbridge Gas Distribution applies to the Board for such final and interim orders and/or accounting orders as may be necessary in relation to clearance of the accounts which are the subject of this Application, within the next available QRAM following the Board's approval. The Company further applies to the Board pursuant to the provisions of the Act and the Board's *Rules of Practice and Procedure* for such final and interim Orders and directions as may be necessary in relation to this Application and the proper conduct of this proceeding.

4. The persons affected by this Application are the customers of Enbridge Gas Distribution. It is impractical to set out the names and address of the customers because they are too numerous.

5. Enbridge requests that a copy of all documents filed with the Board by each party to this proceeding be served on the Applicant and the Applicant's counsel, as follows:

Mr. Norm Ryckman
Director, Regulatory Affairs
Enbridge Gas Distribution Inc.

Address for personal service:	500 Consumers Road Willowdale, ON M2J 1P8
Mailing Address:	P.O. Box 650 Scarborough, ON M1K 5E3
Telephone:	416.495-5499
Facsimile:	416.495-6072
E-mail:	EGDRegulatoryProceedings@enbridge.com

Please quote the name or docket number of the proceeding in all communications.

The Applicant's counsel:

Mr. Dennis M. O'Leary
Aird & Berlis LLP

Address for personal service and mailing address: Brookfield Place, Box 754
Suite 1800, 181 Bay Street
Toronto, ON M5J 2T9

Telephone: 416-865-4711
Facsimile: 416-863-1515
E-mail: doleary@airdberlis.com

Dated: 2012-05-14, at Toronto, Ontario.

ENBRIDGE GAS DISTRIBUTION INC.

{original signed}

Per:

SUMMARY OF APPLICATION

1. Enbridge Gas Distribution Inc. ("Enbridge Gas Distribution" or the "Company") is applying to the Ontario Energy Board (the "OEB" or the "Board") pursuant to Section 36 of the *Ontario Energy Board Act, 1998*, as amended (the "Act") for an Order or Orders approving the final balances in certain 2010 Demand Side Management ("DSM") Variance Accounts. The Company is also seeking the disposition of the balances in these accounts and the inclusion into rates, within the next available QRAM following the Board's approval. The accounts which are the subject of this Application and the balances recorded are as follows:

SSM Amount Recoverable (Resource Acquisition)	$3,872,804
SSM Amount Recoverable (Market Transformation)	$282,484
LRAM (Reimbursable to Ratepayers)	($42,858)
DSMVA Amount (Reimbursable to Ratepayers)	($2,717,105)
Total Amount Recoverable	$1,395,325

2. The net impact of the three 2010 DSM accounts is $1,395,325. The Company seeks approval from the Board for clearance of this amount through to rates, in the October QRAM, pending Board Approval.

DSM Framework

3. The variance accounts which are the subject of this proceeding relate to DSM activities in 2010. This was the fourth year of operation of the DSM Framework

approved by the Board by its Decision with Reasons ("Decision") dated August 25, 2006, in the Natural Gas DSM Generic Issues proceeding (EB-2006-0021) ("Generic Proceeding"). The methodologies used by the Company to determine the amounts recorded in each of the 2010 DSMVA, LRAM, and SSM were the subject of the Generic Proceeding and were approved by the Decision.

4. The approved framework also provided for certain stakeholder consultation and monitoring and evaluation steps in respect of a year's DSM activities. This Application summarizes the actions taken by the Company in compliance with the Decision.

Summary of Facts and Events

5. The DSM Consultative elected an Evaluation and Audit Committee ("EAC") for 2010 consisting of representatives from the Canadian Manufacturers and Exporters ("CME"), Green Energy Coalition ("GEC") and Energy Probe ("EP").

6. As required by the Decision at Issue 12.2, the Company arranged for an independent evaluation of its custom projects. Prior to retaining the independent evaluator, the Company first consulted the EAC about the terms of reference for this evaluation. An agreement was subsequently reached between the Company and the EAC in respect of the terms of reference. The review was completed by two independent engineering firms the results of which were provided to the Auditor.

7. Consistent with the Decision at Issue 9.1, the Company prepared an evaluation report for 2010 titled 2010 DSM Draft Annual Report (the "Annual Report") which summarized the savings achieved, the amounts spent and how the results were evaluated. The results of the independent review of custom projects were included in the Annual Report. The Annual Report also includes calculations for

the 2010 SSM and DSMVA. A copy of the Final Annual Report which reflects the post audit results is filed at Exhibit B, Tab 1, Schedule 1.

8. The Draft Annual Report was circulated on April14, 2010.

9. The DSM framework approved by the Decision at Issue 9.3 requires the Company to subject its DSM results to an independent audit. The Company consulted the EAC on the terms of reference for the audit and the selection of the independent Auditor. After consultation with the EAC, it was agreed that Nexant Inc. ("Nexant") would be the 2010 DSM Auditor.

10. The Company consulted the EAC on the Audit Work Plan and the reports prepared by Nexant. The EAC subsequently made recommendations respecting the clearance of the DSM variance accounts which were ultimately accepted by the Company.

11. The Auditor verified the calculations underlying the proposed SSM, LRAM, and DSMVA amounts. The Audit Report is filed at Exhibit B, Tab 2, Schedule 1.

12. In addition, the Auditor reviewed the calculation of the 2011 TRC Target. The Auditor focused on a review of the overall methodology used and adherence to OEB decisions and approved guidelines. The Auditor's findings on this matter are found in the Final Audit Report filed at Exhibit B, Tab 2, Schedule 1.

<u>2010 Demand Side Management Variance Account</u>

13. The final DSMVA is a reimbursable amount to the ratepayers equal to ($2,717,105).

Lost Revenue Adjustment Mechanism Variance Account

14. An LRAM value was not determined at the time of the Draft Annual Report. The final LRAM is a reimbursable amount to the ratepayers equal to ($42,858)

Shared Savings Mechanism Deferral Account

15. The Decision in the Generic Proceeding provided for the method of calculating the SSM. This included an SSM cap of $8.9 million for 2007 and increasing annually by the Ontario CPI as determined in October. The Draft Annual Report calculated an SSM of $3,871,454 for Resource Acquisition programs. In addition, the Draft Annual Report included an incentive claim of $282,484 with respect to Market Transformation programs. The Auditor made recommendations with regard to the following measures that the Company and the EAC accepted:

    i) CFL reduction factors

    ii) Kitchen Aerator reduction factors

    iii) Bathroom Aerator reduction factors

    iv) Showerhead reduction factors

    v) Programmable Thermostat Free-Ridership and reduction factors

    vi) Commercial Custom Project savings

    This resulted in a SSM of $3,872,804 for Resource Acquisition programs.

16. In consideration of comments and recommendations made by the 2009 EAC and the Company with regard to how to interpret the 2006 Board Decision (EB-2006-0021) on the calculation of SSM for Market Transformation programs, the Auditor made recommendations on how to modify the SSM calculation for

Market Transformation programs. Details behind this recommendation can be found on page 18 of the 2009 Audit Report.

17. Continuing with this method in 2010, the 2010 Market Transformation resulted in a SSM of $282,484. The Company and the EAC accepted this recommendation.

Recommendations of the Evaluation Audit Committee

18. Following its review of the Annual Report and the Audit Report, the EAC made the following recommendations regarding the 2010 DSMVA, SSM and LRAM:

    a. The EAC recommended accepting the Company's DSMVA calculation of ($2,717,105) being reimbursable to ratepayers. The Company agrees.
    b. The EAC recommended accepting the Auditor's recommended Resource Acquisition SSM of $3,872,804. The Company agrees.
    c. The EAC recommended a Market Transformation SSM of $282,484. The Company agrees.
    d. The EAC accepted the LRAM of ($42,858) being reimbursable to ratepayers. The Company has agreed.

19. The following table summarizes the claims in the Draft Annual Report, the Auditor's Recommendations, and finally, the post-audit amounts that are the subject of full agreement by intervenors as previously mentioned.

	2010 Draft DSM Annual Report	Final Audit Report	Post Audit Results
TRC Savings	$184,565,726	$184,593,043	$184,593,043
SSM Amount Recoverable (Resource Acquisition)	$3,871,454	$3,872,804	$3,872,804
SSM Amount Recoverable (Market Transformation)	$282,484	$282,484	$282,484
LRAM (Reimbursable to Ratepayers)	N/A	($1,346)	($42,858)

20. During the audit, the Auditor verified the calculations underlying the Company's claims regarding the DSMVA and SSM. The LRAM amount was re-calculated and approved by the EAC post-audit. The re-calculation occurred to align the LRAM calculation with the provisions of the Average Use True Up Variance Account ("AUTUVA") agreement. The EAC Audit Summary Report is filed at Exhibit B, Tab 3, Schedule 1.

Proposal for Clearance

21. The net amount which the Company proposes for clearance through to rates is $1,395,325. The Company respectfully requests that these amounts be included in rates, within the next available QRAM following the Board's approval.

22. The allocation methodology applied by the Company was approved by the Decision. Specifically, the methodologies applied were:

- The actual DSMVA spending variance amount versus budget targeted to each customer class was allocated to that customer class for rate recovery purposes (Issue 6.5).
- The LRAM amount is recovered in rates on the same basis as the lost revenues were experienced so that the LRAM ends up being a full true-up by rate class (Issue 4.5).
- DSM shareholder incentive amounts (SSM) are allocated to the rate classes in proportion to the net TRC benefits attributable to the respective rate classes (Issue 5.4).

A breakdown of these allocations is attached at Exhibit B, Tab 4, Schedule 1.

Benefits to Ratepayers

23. The Company's DSM activities in 2010 generated an estimated natural gas savings of 65.7 million m^3. Net TRC (based on "best available information") during this period totaled approximately $184.6 million.

ENBRIDGE GAS DISTRIBUTION INC.

DEMAND SIDE MANAGEMENT

2010 FINAL DSM ANNUAL REPORT

PREPARED BY:

Enbridge Gas Distribution Inc.,

DSM Research and Evaluation

December, 2011

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1.0 Executive Summary

Enbridge Gas Distribution Inc. (“the Company” or “EGD”) has been delivering Demand Side Management (DSM) programs to its customers since 1995 in alignment with the Report of the Ontario Energy Board (the OEB) in EBO 169-III.

EGD’s long term commitment to DSM initiatives over the last 15 years has resulted in approximately 914 million m^3 of natural gas savings (simple sum of the first year savings since 1995), equivalent to more than $1.8 billion in net benefits to society, based on the Total Resource Cost Test (TRC net benefits).

The 2010 DSM portfolio has generated 65.7 million m^3 in natural gas savings from an expenditure of $ 24 million resulting in a TRC net benefit to the customers of $184.6 million. This will translate into a performance incentive to the Company of $3.9 million for the Resource Acquisition programs under the Shared Saving Mechanism adjustment (SSM).

These net savings are primarily driven by the Commercial portfolio which constitutes 50% of the m3 savings and 46% of the TRC savings. As the Residential market becomes harder to reach with TRC positive programs, the Commercial and Multi-Residential market sectors have steadily increased their performance over the years; from a 34% share of the entire portfolio in 2007 to 46 % of the portfolio in 2010. The Small Commercial sector has also grown from 1% of the total TRC net benefit in 2007 to 6% of the total in 2010.

The limitations and challenges of operating in an extended multi – year plan which was designed to be implemented for a 3 year period (2007 – 2009) did not allow for flexibility and reaction to the quickly changing energy conservation landscape in Ontario. This existing framework was designed to operate on a formulaic escalating factor for budgets and targets over the 3 year period, without adjustments for these changes. The current framework emphasis on TRC achievements puts the Company in competition for energy efficiency initiatives, when other market players are able to offer larger incentives.

Table 1: 2010 Summary of program results

	2009		2010			
Program Area	**Gas Savings**	**Net TRC Results**	**Gas Savings**	**Net TRC Results**	% difference gas savings	% difference TRC savings
EXISTING HOMES	14,084,047	$ 58,286,208	8,125,183	$ 47,342,481	-42%	-19%
RESIDENTIAL NEW CONSTRUCTIO	2,126,653	$ 2,218,179	1,581,307	$ 1,772,919	-26%	-20%
LOW INCOME	991,192	$ 3,045,256	319,353	$ 677,798	-68%	-78%
Total Residential	**17,201,892**	**63,549,643**	**10,025,843**	**$ 49,793,198**	**-42%**	**-22%**
SMALL COMMERCIAL	2,029,469	$ 5,413,335	4,038,642	$ 11,210,656	99%	107%
COMMERCIAL	15,377,676	$ 37,456,208	16,126,217	$ 41,570,211	5%	11%
MULTI RESIDENTIAL	15,094,725	$ 35,265,374	14,687,999	$ 35,569,221	-3%	1%
LARGE NEW CONSTRUCTION	2,287,063	$ 7,906,422	2,228,424	$ 7,348,643	-3%	-7%
INDUSTRIAL	22,330,732	$ 70,984,411	18,547,131	$ 45,176,787	-17%	-36%
Total Business Markets	**57,119,665**	**157,025,752**	**55,628,413**	**$ 140,875,518**	**-3%**	**-10%**
Prog. Dev. & Market Research		**$ (226,716)**	-	$ (220,152)		-3%
Overheads	**-**	**$ (4,515,222)**	-	$ (5,855,521)		30%
TOTAL ALL PROGRAMS	**74,321,558**	**215,833,455**	**65,654,256**	**$ 184,593,043**	**-12%**	**-14%**

1.1 Introduction and Report Overview

Introduction

Enbridge Gas Distribution Inc. ("the Company" or "EGD") has been delivering DSM programs to its customers since 1995 in alignment with the Report of the Ontario Energy Board (the OEB) in EBO 169-III. In 1999, the Company sought and was granted approval to receive a financial incentive for DSM activities in the form of the Shared Savings Mechanism (SSM). In addition, through prior decisions of the Board, the DSM framework also includes a Lost Revenue Adjustment Mechanism (LRAM) and Demand Side Management Variance Account (DSMVA). The LRAM "is a mechanism to adjust for margins the utility loses if its DSM Program is more successful in the period after rates are set than was planned in setting the rates."[1] The DSMVA allows the Company to exceed the DSM budget in a given year, provided that the Company meets the Board approved target. It also allows for the return to ratepayers of any unspent budget amounts.

The 2010 DSM Annual Report (the Report) provides a summary of the year's DSM program results together with the associated SSM, LRAM and DSMVA calculations. The Report is reviewed through an independent audit and the process culminates in the Company filing the SSM, LRAM and DSMVA claims with the Board.

The DSM Regulatory process involves several steps. In 2006, the Company's Multi-year DSM plan for 2007-2009 was approved by the Ontario Energy Board (OEB). The DSM Plan provided detail on the DSM programs and measures, the planned budget expenditure, natural gas savings, and the associated societal benefits (TRC results). In anticipation of the expiration of Enbridge's DSM plans at the end of 2009, the OEB initiated a consultation process in fall of 2008 to review the current framework and to establish guidelines for a revised DSM framework to be used by EGD in developing their next generation DSM multi-year plan (EB-2008-0346). The consultation with the various stakeholders and the utility took place in November 2008. In January 2009 the OEB issued its draft DSM Guidelines for comment along with a Board staff discussion paper. In February 2009 the OEB also issued a draft report on "Measures and Assumptions for Demand Side Management (DSM) Planning" prepared by Navigant Consulting Inc., all three papers were issued for stakeholder comment.

In late February 2009, Bill 150, An Act to enact the Green Energy Act, 2009 ("the Green Energy Act") was introduced. In April 2009 the OEB issued a letter to the natural gas utilities in Ontario advising that due to uncertainties related to the Green Energy Act, it would not proceed with the development of a new multi-year DSM

1 EBRO 495, Decision, Page 100

framework at that time. Instead it instructed the gas utilities to prepare a one year DSM plan for 2010 under the current DSM framework, and to use the input assumptions issued in the final report prepared by Navigant Consulting Inc. The 2010 EGD DSM Plan EB 2009-0154 was filed with the OEB in May 2009; an update to the 2010 EGD DSM Plan was subsequently filed in May 2010.

The 2010 DSM programs and activities were delivered in alignment with this current framework and utilizing the assumptions prepared by Navigant Consulting Inc.

Report Overview

This report presents the results of the Company's DSM program activity for 2010. The Company's DSM portfolio of programs in 2010 included both resource acquisition programs and market transformation initiatives. The resource acquisition programs are of two types – prescriptive and custom programs. Results for prescriptive programs are calculated based on the number of units installed together with the deemed savings and related assumptions for specific DSM measures as approved by the Board in the DSM Plan. Board approved assumptions for 2010 are presented in Appendix B. Results for custom programs are based on calculations for each individual site where efficiency improvements were made.

In addition to the Company's monitoring results, this report also incorporates and presents the results of research activities and third party evaluations undertaken in support of the programs as well as information in support of the Company's 2010 SSM claim and its 2010 DSMVA claim and LRAM claim. The Report is structured as follows:

Section 1	Executive Summary and Introduction
Section 2	Description of Programs
Section 3	Verification and Research Studies
Section 4	Natural Gas Savings
Section 5	LRAM Statement
Section 6	SSM and TRC Statement
Section 7	DSMVA Statement
Section 8	2011 TRC Target
Section 9	Status Updates - 2009 Auditor and EAC recommendations
Appendix A	Summary Overviews of 2010 DSM Program
Appendix B	Approved 2010 Assumptions

1.2 DSM Program Results Summary

Within its portfolio of DSM programs, the Company strives to ensure that all customer classes are provided access to energy efficiency programs that are cost-effective and that the programs use appropriate design to optimize results.

1.2.1 Results for 2010 Resource Acquisition Programs

Results for 2010 Programs are shown below.

Table 2: 2010 DSM Program Results

Program Area	Participants/ Units	Gas Savings	% of Total	DSM Fixed & Variable Costs	% of Total	Net TRC Results	% of Total
Existing Homes	788,039	8,125,183	12%	4,607,753	19%	47,342,481	26%
Residential New Construction	16,080	1,581,307	2%	1,258,120	5%	1,772,919	1%
Low Income	7,523	319,353	0%	1,160,220	5%	677,798	0%
Total Residential	**811,642**	**10,025,843**		**7,026,092**		**49,793,198**	
Small Commercial	7,277	4,038,642	6%	892,404	4%	11,210,656	6%
Large Commercial	305	16,126,217	25%	2,459,911	10%	41,570,211	23%
Multi Residential	32,446	14,687,999	22%	2,768,497	12%	35,569,221	19%
Large New Construction	43	2,228,424	3%	650,728	3%	7,348,643	4%
Industrial	123	18,547,131	28%	2,945,523	12%	45,176,787	24%
Total Business Markets	**40,194**	**55,628,413**		**9,717,062**		**140,875,518**	
Market Transformation Programs				1,181,818	5%		
Prog. Dev. & Market Research				220,152	1%	(220,152)	0%
Overheads				5,855,521	24%	(5,855,521)	-3%
TOTAL ALL PROGRAMS	**851,836**	**65,654,256**		**24,000,645**		**184,593,043**	

Figure 1: 2010 DSM Participant Results

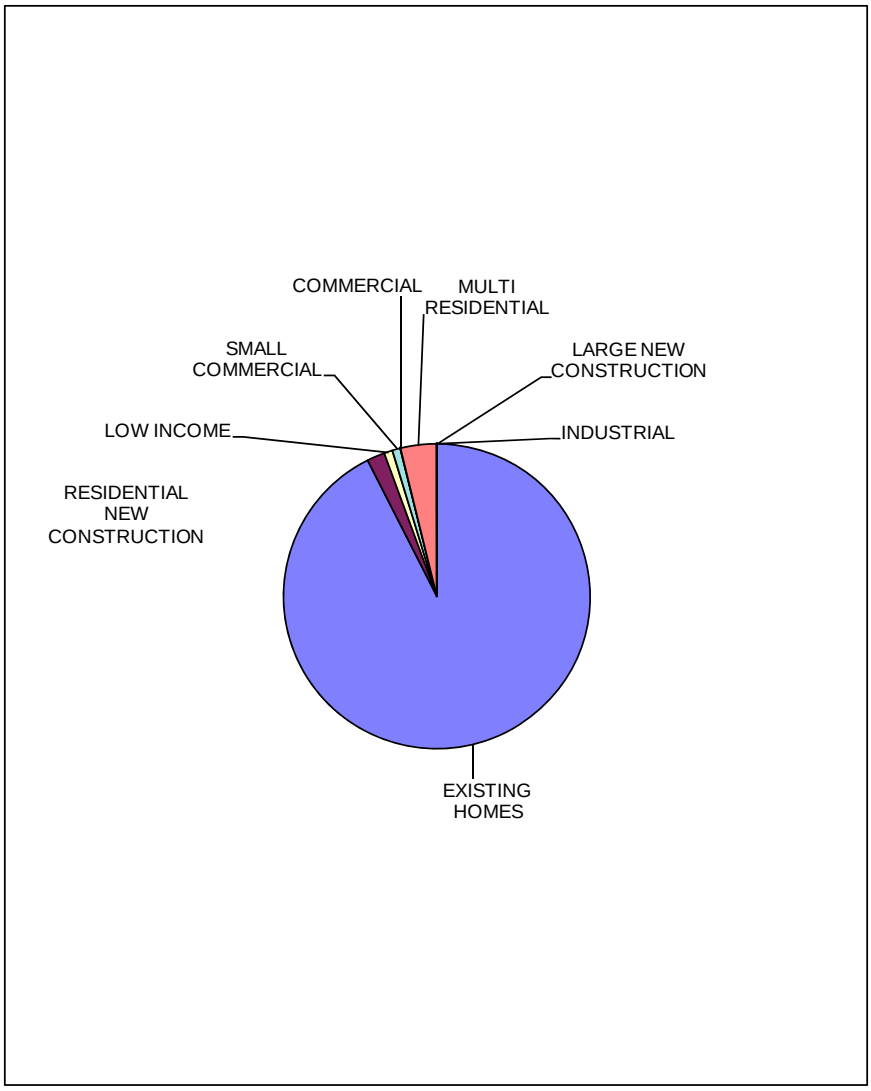


Figure 2: Gas Savings (m^3) by Sector

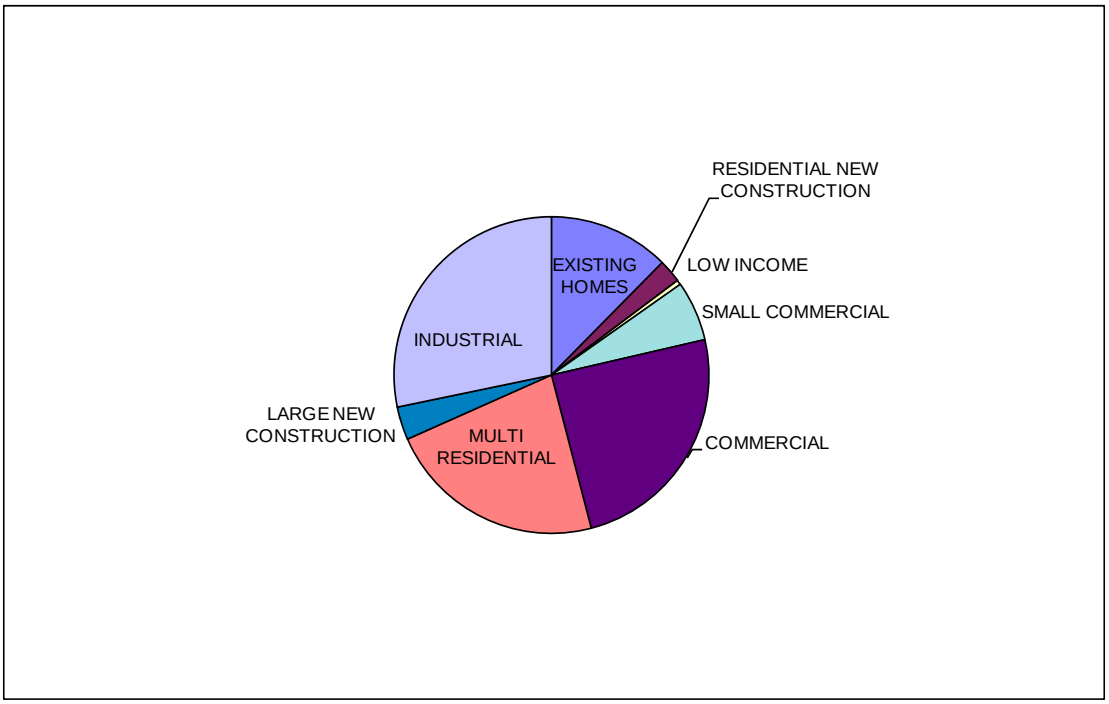
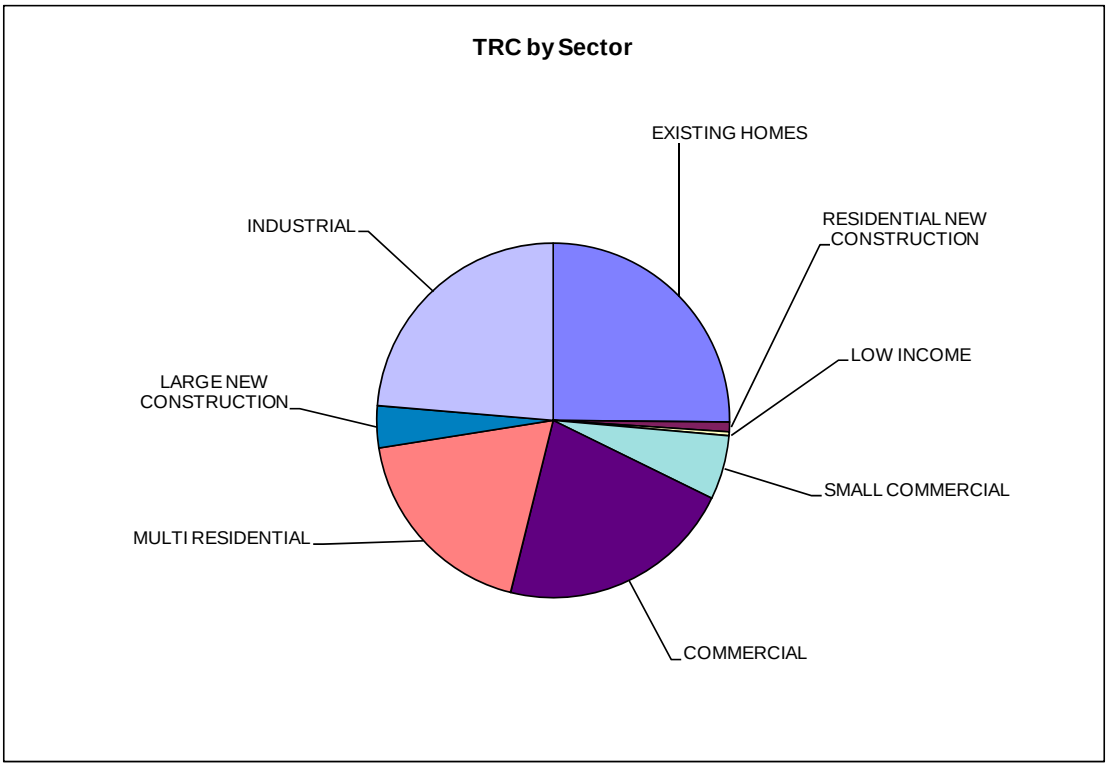


Figure 3: TRC by Sector



As can be seen from the figures & table above, the Business Market sectors continue to be strong contributors to gas savings & TRC results, despite their participation numbers being relatively small in comparison to the Residential sector. It is in the Small Commercial market that there have been significant increases, in both participation and TRC results.

The Residential sectors, although they have not returned the same amount of gas savings or TRC as compared to industrial and commercial, are still contributing significant savings. The Residential participation levels have historically been excellent, and 2010 was no exception. This is mainly driven by the various water conservation programs. Large participation levels tend to foster a greater awareness of energy efficiency practices and promote energy savings behavior beyond the DSM programs offered by EGD.

Appendix A provides summary tables for the 2010 DSM Programs and presents the following information:

- Net TRC Benefits ($)
- Net Natural Gas Savings (m^3)
- Net Electricity Savings (kWh)
- Net Water Savings (m^3)
- Number of Participants or Units Installed
- Average Measure Life
- Incremental Costs
- Total Incentive Payments

This data is presented by program category and by technology. Separate tables have been presented for custom programs and prescriptive programs.

2.0 Description of Programs

This section provides an overview of all programs including the targeted customer class or group (sectors), the objectives of the program, and the activities associated with the program. This section also reports on program performance in terms of number of participants or units installed and net TRC benefits.

This section provides descriptions of resource acquisition programs in the following sectors:

- Residential (including Existing Homes, Residential New Construction, and Low Income)
- Commercial (including Multi-Residential, Small Commercial and Large New Construction)
- Industrial (including Agricultural)

The section also includes descriptions of EGD's Market Transformation Programs.

2.1 Residential

2.1.1 Residential Existing Homes

Water Conservation

Description: The TAPS program offers no-charge installation of a variety of water and energy savings measures. The program relies on eight contractors (TAPS Partners) for delivery and reporting. Participating contractors visit customers' homes to install showerheads, and to provide faucet aerators and four compact fluorescent light bulbs for self-installation. The brochure for this TAPS program is presented in Figure 4.

In 2010 a pilot Energy Savings Kit (ESK) was made available to targeted residential customers through a bill insert. The kit provided low flow aerators, low flow showerheads and compact fluorescent light bulbs for self-installation. This targeted marketing effort was implemented to penetrate a highly saturated area where traditional door to door marketing efforts were not proving effective.

Highlights: Energy Savings Kit (ESK) pilot was introduced in 2010

Objectives: To capture energy savings related to hot water use and lighting.

Metrics: The TAPS program results are tracked by the number of participating households. The Energy Savings Kit pilot is tracked by the number of ESK's delivered to customers.

Tracking Methodology: Monthly reports from the TAPS contractors and return bill insert from the customers who request an ESK.

Evaluation Activities: Quarterly customer surveys of TAPS participants are conducted as well as an ESK Verification study. These reports are summarized in Section 3 of this report.

Program Results:

Table 3: Water Conservation Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Water Conservation	Tankless					7,053	-2,178,367		
	TAPS ESK Showerheads 2.1 - 2.5							541	70,810
	ESK Kitchen Aerator							541	28,127
	ESK Bathroom Aerator							1,082	10,721
	TAPS ESK CFL 13w (4 bulbs)							541	37,735
	TAPS Partners - 13W CFLs (4 bulbs)					135,236	7,407,364	153,172	$ 9,579,293
	TAPS Bag Test	125,573	0	218,601	0	180,344	0	173,461	$ -
	TAPS Partners - Bathroom Aerator			170,949	1,346,180	146,337	1,750,444	153,110	$ 1,790,626
	TAPS Partners - Kitchen Aerator			170,949	6,618,072	146,537	8,671,259	153,148	$ 8,466,024
	TAPS Partners Program over 2.5 gpm	70,912	50,608,233	120,115	18,941,332	95,393	25,981,316	98,683	$ 21,034,365
	TAPS Pipe Wrap	63,076	2,019,251	161,137	4,923,676	0	0		
	TAPS Showerheads 2.0 gpm	348	86,106	371	26,555	0	0		
	TAPS Showerheads 2.1 - 2.5 gpm	20,860	6,985,369	50,463	5,232,555	51,409	8,042,756	53,721	$ 6,321,674
Water Conservation Total		**280,769**	**$59,698,959**	**892,585**	**$ 37,088,371**	**762,309**	**$ 49,674,772**	**788,000**	**$ 47,339,374**

Note: The TAPS program results are tracked by the number of households. Results shown in this table include the reduction factors from the Verification Studies.

Comments:

- In 2010 a limited pilot of a new ESK kit was introduced where a bill insert was sent out to two highly saturated targeted FSAs[1] These FSA's were chosen as delivery partners are less interested in working in highly saturated areas, due to the low success rates realized.

- In an effort to explore cost effective delivery channels the Company will continue to offer the ESK through bill inserts to targeted residential customers. The bill insert will invite customers to request an Energy Savings Kit for self installation.

[1] forward sortation area (FSA) - is a geographical region in which all postal codes start with the same three characters

Figure 4: 2010 TAPS Brochure

ENBRIDGE

TAPS

CONSERVING WATER AND ENERGY IN YOUR HOME

Don't miss this

Free

Energy Conservation Offer

Thank you for participating in the TAPS program.

As a valued Enbridge Gas Distribution customer, we have completed the following energy-efficiency and water saving measures in your home (where possible):

- **Energy-Efficient Showerhead**
  How can this improve energy and water efficiency?
  With the installation of an energy-efficient showerhead and two faucet aerators, you can save approximately 20,687 litres of water per year and approximately 74m³ of natural gas per year.
- **Kitchen and Bathroom Faucet Aerators**
  How can this improve energy and water efficiency?
  By installing the aerators we left for you, you can reduce the faucet water flow rate up to 65%. While they reduce the amount of water used, they often make the flow more forceful and provide more effective wetting and rinsing.
- **Compact Fluorescent Light Bulbs (CFL)**
  How can this improve energy efficiency?
  CFL bulbs provide as much light as regular incandescent bulbs, but use up to 75% less electricity. Their average life is 10,000 hours, with some types lasting as long as 15,000 hours.

How much can I save?

- If you heat your water with natural gas, and use an energy-efficient showerhead in conjunction with kitchen and bathroom faucet aerators, you can save up to $25 per year on your natural gas bill and up to $100 per year on your water and sewer bill.
- When you replace four bulbs in your home with the four free 13 watt compact fluorescent light bulbs, you could save up to $20 a year on your electricity bill. Compact fluorescent light bulbs contain a small amount of mercury and should be disposed of safely. Check with your municipal waste management program for the preferred methods of disposal. Many retailers of CFLs have also started recycling programs.

Did you know that it takes 800 mature trees about a year to remove 2 tonnes of CO_2? The installed energy-efficient showerhead and your self-installed kitchen and bathroom aerators could reduce your household CO_2 emissions by approximately 2 tonnes over a 10-year period! Not only will you save money from the TAPS measures, you will also help contribute to a cleaner environment.

If you have any questions about the products or service you received today, please contact us at

Natural gas savings are based on average annual natural gas consumption of 613m³ for water heating for a typical residential customer. The use of two faucet aerators in conjunction with an energy-efficient showerhead can save approximately 20,687 litres of water per year and approximately 74m³ of natural gas per year. The use of 4 CFL bulbs can save approximately 180 kWh of electricity per year. Actual consumption levels and savings will vary based on household characteristics, lifestyle, natural gas and water prices. Natural gas rate is based on Enbridge Gas Distribution Inc.'s Rate 1 effective April 1, 2010. Water rate is based on the general water and sewer rate for North York, East York, York, Scarborough, Toronto and Etobicoke, effective January 1, 2010. Electricity rates are based on the Toronto Hydro residential rate effective November 1, 2009.

1-877-SAVE-GAS

This special TAPS program is a complimentary service provided by

ENBRIDGE

Enbridge TAPS 2010 Regular Conservation Card

Residential Equipment Replacement

Description: The Equipment Replacement program was not offered in 2010. The results listed were the few participants' rebates that were received just after the end dates of the respective programs. In order to maintain good customer relations the Company honoured the rebate offering.

Table 4: Equipment Replacement Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Equipment Replacement	Furnace Replacement	17,828	4,056,839	23,658	2,396,464	28,518	2,139,578	7	$ 422
	Enhanced Furnace Replacement kWh	3,026	334,830	0	0	0	0		
	Home Rewards - Energuide for House	2,592	2,361,719	0	0	0	0		
	Thermostats	16,704	9,426,398	13,725	3,132,610	20,112	6,089,133	32	$ 2,684
	Novitherm	1,757	169,848	4,182	496,316	2,315	382,725		
	Energy Star Front Load Axis Washer	64	-539	0	0	0	0		
Equipment Replacement Total		**41,971**	**16,349,094**	**41,565**	**6,025,390**	**50,945**	**8,611,436**	**39**	**$ 3,107**

2.1.2 Residential New Construction

***Description**:* In 2010, EGD expanded the offerings available to the Residential New Construction market to encompass an Energy Savings Kit (ESK). Builders can qualify for a kit containing as many as 8 CFL's, 1 programmable thermostat, 4 aerators (1 kitchen, 3 bathroom), and 2 showerheads (1.25 and 1.5) depending on the results of a screening survey.

EGD continued to offered initiatives in the New Home Program portfolio in 2010 supporting the ENERGY STAR® label. The ENERGY STAR® for New Homes (ESNH) program encourages builders to consider building envelope and other energy efficiency improvements by offering $100 to builders for each ENERGY STAR® labeled house. Enbridge claims the savings associated with each home after the home is built. To obtain an Energy Star label the house must meet a required level of energy efficiency as measured through the ENERGY STAR® Version 3 system.

Figure 5: Residential New Construction Customer Information Publication

Highlights: The delivery of the ESK kit changed mid way through the program from a builder install to a customer installation. This is due in part to the late roll out of the program after the builders had established contracts with their trade partners.

Objectives*:* To promote energy efficiency in building practices in residential new construction by encouraging builders who are currently not in the ENERGY STAR® for New Homes initiative to adopt energy efficiency measures.

Metrics*:* The number of ESK kits installed or supplied to new homeowners.

Tracking Methodology: Program results were compiled based on a review of builder reports and customer signed confirmation forms indicating that they received the product.

Evaluation Activities*:* Internal review of customer signed acknowledgment form, as well as a Builder ESK Verification study. The Builder ESK Verification study report is summarized in Section 3 of this report.

Program Results:

Table 5: Residential New Construction Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Res New Construction	EnerGuide for New Houses	227	195,135	0	-94,452	0	0		
	ESK Kitchen Aerator							2,851	$ 85,404
	ESK Bathroom Aerator							2,851	$ 90,850
	ESK Showerhead 1.25							1,427	$ 147,247
	ESK Showerhead 1.5 Handheld							1,424	$ 91,895
	ESK CFL (13w) 6 bulbs							744	$ 81,774
	ESK CFL (13w) 8 bulbs							2,085	$ 278,634
	ESK Programmable Thermostat							2,016	$ 114,930
	EnergyStar for New Houses	864	578,020	1,768	592,959	2,199	2,218,179	2,682	$ 882,185
Res New Construction Total		**1,091**	**773,155**	**1,768**	**498,507**	**2,199**	**2,218,179**	**16,080**	**$ 1,772,919**

Comments*:* Changing the delivery method for the Energy Savings Kit from a builder install to a customer install practice proved to be beneficial, as it helped to directly educate the homeowner on the energy efficiency measures installed in their homes.

Assumption changes in the ENERGY STAR® for New Homes program negatively impacted the TRC Net Benefits in 2010.

2.1.3 Low Income

Description: The Low Income portfolio offers two programs aimed at reducing water and energy use. Both programs are offered free of charge to low income customers. The Enhanced TAPS program includes a programmable thermostat in the standard TAPS offering and uses the TAPS network of approved contractors for delivery and reporting in low income neighborhoods. The Weatherization program focuses on improving the homes' thermal envelope characteristics through ceiling, basement and wall insulation as well as caulking and air sealing installed by designated delivery agents. In 2010 EGD began collaboration with the City of Toronto which provided additional financial incentives for weatherization measures targeted to low income homeowners in order to maximize conservation opportunities; as well as to offer marketing channels for the low income programs through existing City programs for this market sector.

Figure 6: Home Weatherization Publication for EGD Customers

How Can I Save Energy – and Money?

As your home's energy efficiency goes up, your costs can go down.

Enbridge Gas Distribution wants to help customers do just that.

How? Through our Home Weatherization Program.

Enbridge will pay for the cost of the improvements. This program includes improvements like insulation and draft proofing. The program is:

- For people in financial need.
- Whether you own or rent a detached home, semi-detached home, row house or mobile home.

How Do I Qualify?

First, can you answer **"yes"** to all these questions?

1) Do you live in Toronto, Peel, Durham or York Region?
2) Is your home heated by natural gas?
3) Are you a customer of Enbridge Gas Distribution?
4) Do you pay your own natural gas bill?
5) Was your home built at least 30 years ago?

You qualify if you get one of the following government assistance programs:

- Ontario Works
- Guaranteed Income Supplement
- National Child Benefit Supplement
- Allowance for Seniors
- Allowance for Survivors
- Ontario Disability Support Program (also requires income verification)

Note: The Home Weatherization Program will not affect your income from government assistance programs.

You also qualify if your household income (before tax income of all household members 18 years or older) is no more than the amounts on this chart.

Household Size	Maximum Gross Annual Income
One person	$29,931
Two people	$37,261
Three people	$45,810
Four people	$55,617
Five people	$63,081
Six people	$71,144
Seven people or more	$79,208

How Do I Apply?

1) Call GreenSaver at 416-203-3106 or 1-888-855-3106. They may be able to pre-qualify your home over the phone and then you will need to provide a signed application and proof of income eligibility.

Or

2) Contact Enbridge Gas Distribution or GreenSaver to get an application form. When you get the form, fill it out and include "proof of eligibility":
   - The account number on your gas bill.
   - A copy of your last income tax assessment or benefit statement. (We don't need your Social Insurance Number; so, you can black it out.)
3) Mail the application to GreenSaver or Enbridge Gas Distribution by November 30, 2010. The addresses are on the back of this brochure.

Why Should I Take Part?

You have many great reasons to join the Home Weatherization Program:

- Save money. The program can cut your energy demand by 30%. That means lower bills.
- Be more comfortable. An energy-efficient home has fewer drafts, and lets you control the temperature.
- Get healthier. Fewer drafts mean a more comfortable home for you and your family.
- Increase your home's value. Potential buyers and tenants like energy-efficient homes.
- Protect the environment. The less energy you use, the cleaner the air.

ENBRIDGE GAS DISTRIBUTION HOME WEATHERIZATION PROGRAM

***Objectives**:* To capture energy savings through the reduction of hot water use and through improvements to the building envelope.

Metrics: Number of households for the TAPS program and number of participants for the Weatherization program

Tracking Methodology: Monthly reports sent to EGD by contractors were reviewed to track program results.

Evaluation Activities: In 2010, four waves of telephone interviews were conducted to verify installations in the TAPS program. The TAPS Partners Program 2010 Low Income Analysis report is summarized in Section 3 of this report. A Weatherization impact analysis will be conducted in 2011.

Program Results:

Table 6: Low Income Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Low Income	TAPS Low Income - 13W CFLs					3,703	103,804	1,231	$ 52,147
	TAPS Low Income - 23W CFLs					3,703	114,646	1,231	$ 57,941
	Low Income Bag Test	7,033	0	3,420	0	1,764	0	1,024	$ -
	Low Income Kitchen Aerator			2,838	164,500	1,824	93,677	984	$ 74,331
	Low Income Bathroom Aerator			2,838	33,594	1,824	15,418	984	$ 16,596
	Low Income Pipe Wrap	2,718	88,687	2,510	77,765	0	0		
	Low Income Showerheads 2.0	6	1,569	1	70	0	0		
	Low Income Showerheads 2.1	1,265	446,817	436	45,614	22	2,949	101	$ 12,678
	Low Income Thermostats	4,007	2,435,369	2,665	274,732	3,952	1,456,024	896	$ 33,183
	Low Income Weatherization	61	76,299	208	218,273	361	724,840	201	$ 234,741
	Low-Income Showerheads	2,838	2,174,088	2,401	369,605	1,704	533,898	871	$ 196,181
Low Income Total		**17,928**	**5,222,829**	**17,317**	**1,184,153**	**18,857**	**3,045,256**	**7,523**	**$ 677,798**

Note: The TAPS program results are tracked by the number of households, the Weatherization program is also tracked by household participant.

Highlights: The Weatherization program did not meet expectations and was below target both in participation and TRC results due in part to contract negotiations not being completed until July 2010, which resulted in a late start of the program.

As well, the Enhanced or Low Income Taps program fell shy of target, mainly because of delivery issues. As a requirement of the program, the delivery agents had to have the thermostat installed by a licensed gas fitter; this is a costly requirement for the delivery agents. Also the updated showerhead savings assumption based on new research results led to lower per unit TRC results.

2.2 Residential Lessons learned

- In the case of the TAPS program as the franchise area becomes more saturated, it is becoming increasingly more difficult to deliver the program door to door. Approximately 60% of the franchise has participated in the TAPs program – after 2011 – this number will increase to 70%.

- The target for the TAPS program will need to be adjusted downward over the next few years to take into account this market saturation. Currently anecdotal reports from the delivery partners indicate that due to this market saturation, they are only able to gain admittance into approximately 1 out of every 6 houses.

- The 2010 pilot of the Energy Savings Kit to targeted FSA's had positive and promising results. In 2011 a more strategic effort to deliver the program will need to be explored, either utilizing this delivery method for customer self installation or partnering with a community based delivery partner to engage the customer and pre-notify when the TAPS program will be delivered in their area.

- In the Low income market sector and in particular the Weatherization program, targets would have been met if the three delivery agents had been in place at the beginning of the year. Changes have been made to ensure that those contracts are in place as close to the beginning of the year as possible, and that disruptions in momentum are avoided.

- With the roll out of the ESK in the builder market, it would have been beneficial to pilot the program to one or two builders before full roll out. This would have helped to determine some of the barriers up front, such as the difficulties due to the renegotiation of contracts between the trades and the builders.

- Marketing and targeting the Energy Savings kits with senior management of the construction companies would have given direct access to the decision makers, possibly resulting in a higher level of acceptance and implementation.

- Constant follow up is required in the Residential New Construction market as builders are often dealing with other external influences and issues such as the implementation of the H.S.T (Harmonized Sales Tax) or trade contract issues which can affect timeliness and willingness to participate in DSM programs.

- Experience has shown us that the best approach to delivering programs is to have program managers focus on specific market sectors. Program managers develop an in-depth knowledge of contacts and partners in each market sector and the delivery mechanisms best suited to each sector.

2.3 Commercial

2.3.1 Large Commercial

Description: The Large Commercial program portfolio offers customers in the target segments incentives for third party energy audits, equipment retrofits and operational improvements. Retrofit measures include boiler retrofits, improvements to HVAC systems, building automation systems, building envelope improvements and steam trap replacement. Delivery channels include performance and HVAC contractors, consulting engineers and designers and energy management firms.

The Company's Energy Solutions Consultants (ESCs) are company representatives with extensive technical training who maintain contact with customers and also with commercial HVAC contractors, engineering firms, designers and others who serve the Commercial and Industrial markets. The ESCs provide advice on customized energy solutions to suit the customer's business needs. These strong relationships are key to enabling energy efficiency solutions and program success.

Programs are promoted through strong representation at numerous key industry tradeshows, speaker engagements, event sponsorships, the Company's website, print material such as case studies and magazine articles, direct mail, and some print advertising.

In addition the Company supports strategic, sector specific, initiatives such as the Toronto Region Conservation Authority's Greening Healthcare Program and the Mayor's Megawatt Challenge. These initiatives incorporate 3rd party benchmarking, helpful workshops for sharing best practices, and provide an avenue for stimulating, capturing and rewarding operational improvements.

In 2010, the Company began a trial promotion of Enbridge's own benchmarking service to the Large Commercial sector. This service is based on a multi variable statistical model, developed by Enbridge, which benchmarks the energy intensity of buildings within a property management portfolio. The statistical model is automated to capture a large number of participants while minimizing the need for manual processes. The analysis identifies capital and operational opportunities with measure specific recommendations for consideration. ESCs follow up with on-site reviews of buildings that require the most attention. Participating sectors included Multi-Residential, Warehouses, and Long Term Care facilities. By year's end, 8 property management firms with 600 buildings and 140,000,000 square feet were in the process of being evaluated. On average, 25-30% of the participating buildings have been identified in the high energy intensive category, and building specific capital and operational retrofit recommendations were suggested accordingly.

Highlights: In 2010 marketing efforts aimed at the Commercial sectors with specific technologies provided strong overall business results. It was determined that there is a positive market response to time limited, increased incentive amounts offered to commercial customers. Based on the response rate and results, this type of marketing approach may be used more often in the future.

Objectives: To capture energy savings in the Large Commercial segment through retrofit of building components.

Metrics: Number of projects and per project savings. The savings for each customer project are calculated on an individual basis.

Tracking Methodology: Monthly tracking utilizing EGD's sales tracking software.

Evaluation Activities: An internal review was conducted of project applications and savings calculations. In addition, a third party engineering review was conducted for a sample of projects from the Commercial sector. The third party review is summarized in Section 3. Program results as reported include adjustments recommended by the engineering review.

Program Results:

Table 7: Large Commercial Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Large Commercial	Hospitals	8	5,222,073	30	9,192,867	21	$11,062,072	28	$ 8,734,046
	Hotel/Motel	6	1,275,414	11	3,901,189	7	$1,583,604	6	$ 410,897
	Long Term Care	3	94,921	3	172,324	14	$1,333,817	23	$ 670,239
	Municipalities	15	6,108,253	13	1,997,712	81	$6,641,941	34	$ 7,295,675
	Offices	14	1,986,198	28	4,224,856	38	$4,288,542	45	$ 4,755,113
	Other Commercial Sectors	24	911,621	15	2,416,894	14	$4,507,286	30	$ 9,027,506
	Retail	6	515,694	4	84,995	16	$801,806	2	$ 367,406
	Recommissioning							1	$ 161,397
	Schools	46	2,627,321	96	6,638,753	110	$5,597,300	105	$ 5,238,385
	Universities	14	1,383,333	9	4,187,542	7	$1,069,242	15	$ 4,142,820
	Warehouses	5	627,730	10	741,881	10	$570,598	16	$ 766,728
Large Commercial Total		**141**	**20,752,558**	**219**	**33,559,011**	**318**	**37,456,208**	**305**	**$ 41,570,211**

Several very large commercial projects in 2010, contributed to this sector's success. These included projects in the healthcare sector, university sector, municipal sector and hotel/entertainment area.

Comments: Strategically marketing and targeting a campaign or technology to specific sectors with limited time offers proved to be a successful strategy. Examples of this can be seen in the increase in participation in the warehouse sector, a traditionally hard to reach market segment.

Figure 7: Commercial Customer Brochure

ENBRIDGE

Energy Efficiency Services and Incentives for Large Commercial Customers

2010

It's Easier with Enbridge

It's Easier with Enbridge

Implementing energy efficiency doesn't have to be complicated. In fact, when you work with an Energy Solutions Consultant (ESC) from Enbridge, it can be remarkably easy. And since you're an Enbridge customer, their **services are free.**

Enbridge Energy Solutions Consultants can help you:

- Develop an energy conservation plan of action
- Create benchmarking activities for your buildings
- Identify energy efficiency options that will give you the highest return on investment
- Connect with our independent business partners who can provide you with estimates for equipment, installation, maintenance, and ongoing operations
- Maximize returns by taking advantage of all the financial incentives available to you
- Receive consistent, knowledgeable support throughout the entire process
- Stay informed of special time-limited offers available from Enbridge

You can trust that your ESC will help you find the best possible energy solutions for your operation, as well as help you receive your Enbridge incentives.

To obtain these free services, simply call us and you'll be assigned an Energy Solutions Consultant who will help get you started.

At Enbridge we want to make energy efficiency as easy as possible for you. Give us a call—and find out how easy it is.

Phone: 1-866-844-9994
Fax: 416-495-6047
energyservices@enbridge.com
www.enbridgegas.com/industrial

To be eligible you must be an Enbridge Gas Distribution Inc. customer and approved measures must be implemented in Enbridge Gas Distribution Inc.'s franchise area between January 1, 2010 and December 31, 2010. This advertisement is a summary only and additional terms, conditions and restrictions apply. Programs are subject to cancellation without notice at any time. Please ask your Enbridge Gas Distribution Inc. representative and read our program literature for additional details. Enbridge Gas Distribution Inc. makes no representation, warranty or guarantee regarding the projected savings of any energy efficiency measure undertaken by any customer.

Since 1995, Enbridge has saved enough natural gas to serve just over 1.4 million homes for one year.

Energy Efficiency – For Existing Buildings

The following information summarizes available financial incentives.
For more information and to get started, contact your Energy Solutions Consultant.

Capital Improvement[A]

- One time retrofit incentives are calculated on projected first year's natural gas savings using the following rate: $0.10/m³* saved up to a $100,000 limit
- Incentives remitted upon project completion
- For larger projects, additional incentives may apply

Operational Improvement[B]

- Using monthly or real-time monitoring
- Promotes continuous operational improvements using predictive modeling techniques
- Incentives at a rate of $0.10/m³ saved based on 12 months of operational improvements
- Enbridge training & recognized software required for tracking & reporting purposes

Condensing Boilers[C]

- $0.15/m³ of estimated natural gas savings for condensing boiler technology
- Incentives are a one-time payment based on the estimated first year natural gas savings, up to a maximum of $30,000 per building

Audit Incentives[D]

- Receive either half the cost of the energy audit up to $5,000 per building or receive $0.01 per m³ of gas consumed in the most recent full calendar year (whichever is less) up to $15,000 for a portfolio of buildings

Showerhead Rebate Program[E]

- Receive rebates for replacing existing standard showerheads with energy efficient ones

School Board Boiler Program

- For Space Heating Only
- Combustion efficiency must be 83% or higher, non atmospheric boilers
- $1,000 per elementary school
- $4,300 per secondary school

*m³ refers to cubic metre of natural gas.

Customer service is always consistent and friendly with quick responses to questions

Focus group participant

Program Conditions

A Capital Improvement Guidelines

The following Incentive Guidelines apply to all Commercial retrofit projects:

- Any incentive paid must not exceed 50% of the project capital cost
- All projects must have a positive Total Resource Cost (TRC) to qualify for an incentive, unless otherwise approved. Projects with simple paybacks of up to 5 years typically have positive TRC. However Enbridge will calculate project eligibility on a case by case basis
- Simple Payback is calculated as follows:

$$\text{Simple Payback} = \frac{\text{Total Project Cost (Material + Installation + Engineering + Tax)}}{\text{Cost of Annual EEP Volume Saved (m^3 saved x Cost per m^3)}}$$

- Available for capital projects only. Operational Improvement projects exempted

B Operational Improvement

- Real-time monitoring results may require a shorter time period for reporting. Ask your Energy Solutions Consultant for program updates

C Condensing Boilers

- The boiler must be an upgrade—for example, replacing a conventional atmospheric efficiency boiler with a condensing efficiency boiler
- Boilers must be 90% Combustion Efficiency or greater based upon applicable manufacturer's combustion ratings

D Audit Incentives

- Incentive formula also applies to Steam Saver Surveys and Operational Energy Assessment Audits (M&T) provided by approved third parties
- Minimum natural gas consumption of 150,000 m^3 per year for each facility is required to qualify for an audit incentive
- Before taxes. The "cost of the audit" is the lesser of the estimated cost of the audit set out in the application form or the actual cost on the audit invoice
- Audit incentive payments are "capped" at $15,000 per customer. However, if substantial work is implemented from audits funded by Enbridge, Enbridge may in its sole discretion provide additional audit incentives
- Audit incentive application and audit scope must be pre-approved by Enbridge and must materially meet the requirements of Enbridge's HVAC Building Energy Audit Report Outline

E Showerhead Rebate Program

- Existing showerheads must be more than 2.5 GPM
- Replacement showerhead must have a flow rate of 1.5 GPM or less
- Customer must use natural gas for domestic hot water heating

2.3.2 Small Commercial

Description: The Small Commercial program in 2010 increased the offerings in this sector to better serve this customer base. Incentives were offered for various prescriptive measures including energy recovery ventilators (ERV), heat recovery ventilators (HRV), infrared heaters, demand control kitchen ventilation, pre-rinse spray valves for commercial kitchens, high efficiency roof-top units, tankless water heaters, programmable thermostats, and air doors. The prescriptive savings assumptions for these programs were approved in the Natural Gas DSM Generic Issues Proceeding, Phase II and Phase III and in the 2010 Update to input assumptions.

As in the previous years, the delivery of the program primarily relied on external business partners, channel consultants and manufacturers.

Highlights: The EGD Channel Consultants are company representatives who maintain contact with builders, HVAC contractors and others who serve the residential and small commercial markets. In 2010 these Channel Consultants focused heavily on the Small Commercial market due to the limited programs available in the Residential area. This focused effort translated into an increase in the number of rebates submitted to EGD for most of the programs.

The programs in 2010 were mainly targeted to the business partner (contractor) which also helped increase the number of rebates submitted.

Two enhancements were made to the Spray ‘n Save program during 2010. Midway through 2010, the efficient pre-rinse spray nozzle offering was changed from 1.24 gallons per minute (gpm) to .64 gpm , increasing the savings associated with this technology. Also two new HVAC contractors in the Barrie and Niagara areas were added to deliver the Spray ‘N Save program.

The condensing unit heater and condensing boiler programs were added to the list of Small Commercial offerings in the 3rd and 4th quarters of 2010, after these measure assumptions were OEB approved.

Objectives: To capture energy savings in the Small Commercial segment through installation of specific prescriptive technologies.

Metrics: Number of units installed.

Tracking Methodology: Monthly tracking reports provided by business partners.

Program Results:

Table 8: Small Commercial Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Small Commercial	Energy Recovery Ventilators (ERV)					37	612,258	41	$ 489,004
	Heat Recovery Ventilator (HRV)					5	7,919	67	$ 409,764
	Infrared Heaters					144	693,551	723	$ 2,557,777
	Condensing Boiler							72	$ 261,474
	Condensing Unit Heater							11	$ 10,053
	Demand Control Kitchen V	21	646,879	15	448,615	9	108,415	22	$ 275,189
	Kitchen Ventilation - Tier 2	0	0	11	304,913	18	802,274	33	$ 1,391,817
	Kitchen Ventilation - Tier 3	0	0	3	158,053	2	153,256	13	$ 943,155
	Pre-Rinse Spray Valve	290	1,106,662	627	3,215,331	1,961	2,557,104	2,036	$ 2,626,531
	Rooftop Units	21	35,462	157	412,466	564	258,232	369	$ 132,725
	Small Commercial Hi Eff F	101	59,771	109	79,444	117	90,989		
	Tankless Water Heaters	67	6,049	11	2,642	30	47,763	116	$ 177,108
	Thermostats	141	260,702	111	183,419	334	123,851	3,735	$ 1,896,353
	Air Doors			10	9,840	40	63,391	39	$ 89,358
	Small Commercial General			0	-1,458	-	(46,028)	-	$ (44,010)
	Small Commercial Restaurants			-	-4,263	-	(59,637)		$ (5,640)
Small Commercial Total		**641**	**2,115,525**	**1,040**	**4,346,038**	**3,261**	**5,413,335**	**7,277**	**$ 11,210,656**

Note: Units in the table above refer to the number of measures installed. It is possible that one business owner installed more than one measure.

Comments: The Small Commercial sector has shown steady growth in participation and program offerings year after year and this trend is expected to continue into 2011.

2.3.3 Multi-Residential

Description: The Multi-Residential sector in 2010 benefited from a combination of prescriptive and custom incentives across a broad spectrum of potential technologies and measures. Energy Solutions Consultants (ESCs), leveraged their contacts in the marketplace, both public and private to promote the various initiatives aimed at the Multi- Residential market.

In 2010 the Company focused on increasing the scope of its partnerships and relationships. Enbridge worked closely with energy efficiency organizations such as ACMO, City of Toronto water division and Greensaver to partner with and deliver programs such as the Multi- Residential showerhead program. The Company also began working with Energy Compass in 2010 to help establish energy benchmarking portfolio's of Multi-Residential buildings in EGD's service territory.

Existing programs continue to be modified to improve processes and market uptake. The showerhead program was changed from a direct install to a rebate based program, where the building management purchases the showerhead and applies for a rebate.

Objectives: To capture energy savings in the Multi-Residential segment through the delivery of a combination of custom and prescriptive measures.

Metrics*:* Number of prescriptive measures installed, number of custom projects and per project savings.

Tracking Methodology: Monthly tracking as part of EGD's sales tracking software and as part of rebate processing.

Evaluation Activities: An internal review was conducted of custom project applications and savings calculations. In addition, a third party engineering review was conducted of a sample of projects from the Commercial sector and a site visit was conducted on a random sample of Multi-Residential buildings to verify the number of showerhead installations. These verification studies are summarized in Section 3. Program results as reported include adjustments from the verification studies.

Program Results:

Table 9: Multi-Residential Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Multi-Residential	Multi-Residential Non-Profi	7	619,182	20	1,420,257	11	$730,875	53	$ 3,859,601
	Multi-Residential Private	273	27,289,152	235	25,312,293	257	$31,285,441	275	$ 26,087,753
	Multi-Residential Recommi	1	-6,635	0	-5,009	0	($5,782)		
	Showerheads/Aerators	26,678	11,894,381	22,312	5,037,352	40,332	$3,025,332	31,508	$ 5,313,161
	Front Load Washers	1,471	1,206,261	1,170	1,006,222	453	$229,508	610	$ 308,707
Multi-Residential Total		**28,430**	**41,002,341**	**23,737**	**32,771,114**	**41,053**	**35,265,374**	**32,446**	**$ 35,569,221**

Note: Results for custom projects in the Multi-Residential sector are tracked by participant or building. Units in the table above for Multi-Residential Non-Profit and Multi-Residential Private indicate the number of buildings. The prescriptive programs for low-flow showerheads and front load washers are tracked by number of units installed as shown in the table above.

Comments: In 2009, the Multi-Residential showerhead program participant counts included the number of showerheads and the number of aerators installed. Due to the high non install rate for the aerators in 2009 they were not continued as an offering in 2010. Any aerators claimed in 2010 were installations from 2009, due to the delay in receiving the required documentation of installation. This is the main driver behind the perceived difference in participant numbers for showerheads across the years 2009 and 2010.

2.3.4 Large New Construction

Description: The New Construction program encourages the design and construction of large new buildings to higher levels of energy efficiency and environmental performance than Ontario Building Code 2006.

The New Construction program has four components:

The Design Assistance Program (DAP) is directed towards the integrated design of a building ensuring that an energy simulation model is run and design activities undertaken aimed at improving a building's energy and environmental performance, whether it is a new building, an addition to an existing building, or a major renovation.

The New Building Construction Program (NBCP) targets actual implementation of more efficient options, and helps offset the costs of building more energy efficient buildings for commercial, institutional or multi-family use. Energy savings are defined by energy modeling of the proposed building.

The Enbridge New Construction Program (NCP) provides an incentive for energy savings that result from adding energy efficient natural gas equipment to a new building design; energy efficiency savings are defined by engineering calculations.

Business Partner Implementation Support is designed to help support design decision-makers and encourage building owners to implement energy efficient design.

Highlights: In 2008 EGD entered into an agreement with the Ontario Power Authority (OPA) to deliver the High Performance New Construction Program in the Province of Ontario, outside the 416 area code. This enabled EGD to deliver both the gas and electric programs simultaneously, which was well received by the marketplace. This "one stop shop" approach allowed economies of scale and encouraged the building community to participate in both programs.

Objectives: To capture energy savings in the Large New Construction segment by encouraging designers and builders to "go beyond" the energy performance requirements of the existing building code.

Metrics: Number of projects and per project savings.

Tracking Methodology*:* Monthly tracking as part of EGD's sales tracking software.

***Evaluation Activities**:* An internal review was conducted of project applications and savings calculations. In addition, a third party engineering review was conducted of a sample of projects from the Commercial sector.

Program Results:

Table 10: Large New Construction Program Results

		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Large New Construction	NBCP	56	5,360,755	59	11,667,996	21	7,906,422	43	$ 7,348,643
Large New Construction T		**56**	**5,360,755**	**59**	**11,667,996**	**21**	**7,906,422**	**43**	**$ 7,348,643**

Comments: In 2010 the number of buildings incented doubled from 2009, however overall the TRC was slightly less when compared to 2009. This is due in part to the slow economic recovery being experienced in the Large New Construction market. Generally a slowdown in the large buildings being constructed has been observed, while construction of many of the smaller buildings has continued. It is the construction of these smaller buildings that has increased the participation in these programs; however their contribution to the overall TRC results are less than that of the larger builds experienced in the past.

Figure 8: Design Assistance Program Brochure

ENBRIDGE

NEW CONSTRUCTION PROGRAMS

DESIGNING IN SAVINGS

ENBRIDGE GAS DISTRIBUTION'S
DESIGN ASSISTANCE PROGRAM

What is the Design Assistance Program?

The best buildings result from a design process that considers energy and environmental efficiency from the beginning. Enbridge Gas Distribution's **Design Assistance Program** (DAP) has been created to encourage such a process. It offers applicants a fixed DAP incentive of $3,000 to undertake design activities aimed at improving a building's energy and environmental performance whether it is a new building, an addition to an existing building or a major renovation.

The program supports a variety of activities that can lead to better, more energy efficient buildings:

- Employing an Enbridge pre-approved DAP adviser to assist in the design process
- Developing energy simulation models using EE4, eQUEST Or DOE-2 software
- Undertaking an environmental performance assessment using either LEED™ or Green Globes™
- Examining and evaluating design alternatives to improve energy and/or environmental performance
- Following an Integrated Design Process

The DAP incentive must be used to develop an energy simulation model and for **at least** one other activity from the remaining four activities listed above. Although not required, use of an Enbridge pre-approved DAP adviser is recommended to ensure accurate energy modelling, and to assist in other aspects of the design process.

Who can apply?

Applicants can include:

- Enbridge pre-approved DAP advisers
- Architects
- Professional engineers
- Building owners or developers

To be eligible they must participate in the design of a qualified project.

* Terms, conditions and restrictions apply, please contact an Enbridge Gas Distribution representative for details.

DESIGNING IN SAVINGS

What projects qualify?

To qualify for a DAP incentive a project must be:

- A new structure, OR
- A new addition to an existing structure[1], OR
- A renovation that upgrades the structure to meet MNECB Mandatory Provisions.[1]

The project must conform to Part 3 of the Ontario Building Code (OBC) 2006 and be intended for commercial, institutional or multi-unit residential occupancy. It must be located within the Enbridge Gas Distribution franchise territory[2].

Can a project qualify for more than one Enbridge incentive program?

Yes, an applicant can apply for an Enbridge Design Assistance Program incentive, the new Business Partner Implementation Support and an Enbridge New Building Construction Program incentive for the same qualified project.

Where do qualifying projects need to be located?

To be eligible a project must be located within the Enbridge Gas Distribution franchise territory.

How can I obtain a DAP incentive?

Qualification for a DAP incentive is a three-step process.

1) Before the design process starts – a qualified proponent submits an Enbridge **DAP Application Form** with information on the applicant, design team and project.

2) Enbridge reviews and approves qualified projects and assigns a DAP Reference Number.

3) After the project design is finalized – the applicant submits a **Request for Payment Form**, including the following:

- DAP Reference Number
- Description of actions taken to improve building environmental and energy performance
- Certification by a professional member of the design team that the design is complete and the claimed actions were undertaken[3]
- If using EE4, submit the **Summary Compliance Report** or if using eQUEST submit both the **PS-E - Energy End-Use Summary for all Electric Meters** and the **PS-E - Energy End-Use for all Fuel Meters** (found in the Simulation Output Report)

What are the benefits?

The Design Assistance Program helps you to:

- Quantify benefits and costs of alternative designs
- Find the most cost-effective design solutions.
- Understand the relationship between building systems.
- Establish correct equipment sizing to reduce capital costs
- Achieve ongoing energy savings without sacrificing other performance objectives
- Improve building environmental performance and comfort
- Enhance your building's marketability

Contact

To access the Design Assistance Program you should get in touch with Enbridge Gas Distribution before you start the design process. Visit us at **www.enbridgegas.com/dap** or contact us at **1-866-844-9994** or e-mail **energyservices@enbridge.com**

[1] Meeting Model National Energy Code for Buildings (MNECB) definition and conforming to the OBC 2006: a conditioned space added to an existing building that increases floor surface by more than 100 m².
[2] Where a single building design will be substantially replicated in more than one location, the DAP incentive is available only once to assist in the design of the building.
[3] Enbridge Gas Distribution reserves the right to conduct an audit of any qualified project for which an incentive has been paid for any time up to three years following the date of payment of the final incentive cheque.

Figure 9: New Building Construction Program (NBCP) Brochure

ENBRIDGE

NEW CONSTRUCTION PROGRAMS

BUILDING IN SAVINGS

ENBRIDGE GAS DISTRIBUTION'S
NEW BUILDING CONSTRUCTION PROGRAM

What is the New Building Construction Program?

Building in efficiency during early design stages is the most cost-effective way to ensure ongoing savings and environmental benefits. Enbridge Gas Distribution's New Building Construction Program (NBCP) helps you offset the costs of designing more energy efficient buildings for commercial, institutional or multi-family use.

The program provides an incentive for energy savings that will result from adding natural gas efficiency measures to a new building design. Enbridge will pay $\$0.10/m^3$ of projected annual natural gas savings to a maximum of $30,000.

Who can qualify?

An applicant must be an **owner** or **developer** of a qualified project.

What projects qualify?

To qualify for a NBCP incentive a project must be:

- A new structure, OR
- A new addition to an existing structure[1], OR
- A major renovation that upgrades the structure to meet MNECB Mandatory Provisions.[1]

The new building must conform to Part 3 of the Ontario Building Code (OBC) 2006 and be intended for commercial, institutional or multi-unit residential occupancy and located within the Enbridge Gas Distribution franchise area.

Project savings must come from the design of a more energy efficient building and building systems and cannot be the result of fuel substitution.

Can a project qualify for more than one Enbridge incentive program?

An applicant can apply for an Enbridge Design Assistance Program (DAP) incentive, the new Business Partner Implementation Support and an Enbridge New Building Construction Program incentive for the same qualified project.

Please see the Enbridge Design Assistance Program brochure for details on applying to that Program.

When do I apply?

A NBCP application form is submitted for approval once the building permit has been obtained.

How can I obtain a NBCP incentive?

A successful application is a two-step process centred on modelling building energy performance and accurately assessing project costs.

Step 1
Apply

An NBCP application form is submitted for approval once the building permit has been obtained. Copy of building permit must be submitted with NBCP application form.

Model energy performance

NBCP incentives are awarded on the basis of projected natural gas savings. One of the following **approved energy simulation programs** must be used to determine these projections:

- EE4
- eQUEST
- DOE-2

[1] Meeting Model National Energy Code for Building (MNECB) definition and conforming to the OBC 2006: a conditioned space added to an existing building that increases floor surface by more than 100 m^2.

Step 2
After qualified project design is finalized and building completed – submit

- NBCP Request for Payment form
- If using EE4 submit the Summary Compliance Report or if using eQUEST submit both the PS-E - Energy End-Use Summary for all Electric Meters and the PS-E - Energy End-Use for all Fuel Meters (found in the Simulation Output Report)

Information to be included in the Request for Payment Form

- The project and applicant information
- Final projected annual energy performance by fuel type of the qualified project
- Final projected annual energy performance by fuel type of the reference building
- Expected capital cost increment for the qualified project to achieve the design energy efficiency over the reference building
- Total Project Cost

When the completed forms and supporting documents have been submitted and approved, the incentive will be paid.[1]

What are the benefits?

Building in energy efficiency ensures ongoing benefits:

- Energy savings
- Environmental performance
- Comfort
- Improved marketability

Incentive Guidelines

- All projects must have a Simple Payback of 1 year or greater and must have a positive Total Resource Cost (TRC) to qualify for an incentive, unless otherwise approved. Projects with simple paybacks of up to 8 years typically have positive TRC. However, Enbridge will calculate project eligibility on a case by case basis.
- Simple Payback is calculated as follows:

$$\text{Simple Payback} = \frac{\text{Total Project Incremental Cost (Material + Installation + Engineering + Tax)}}{\text{Cost of Annual EEP Volume Saved (m}^3\text{ saved x Cost per m}^3\text{)}}$$

New!

Business Partner Implementation Support

This $2,000 incentive is to help support design decision-makers in encouraging building owners to implement energy efficient design. It is intended to help offset the administrative cost of assessing and reporting the energy efficient design alternatives included in the new building.

The building owner will identify who will receive the support payment on the NBCP Application. The incentive will be paid upon building completion and when the NBCP Request for Payment Form is completed and accepted by Enbridge.

Contact

If you are interested in applying for a New Building Construction program incentive, visit us at **www.enbridgegas.com/nbcp** or contact us at **1-866-844-9994** or e-mail **energyservices@enbridge.com**

NEW CONSTRUCTION PROGRAMS

NEW CONSTRUCTION PROGRAM (NCP)

If a building simulation has not been completed for a new building, incentives are still available.

The New Construction Program provides an incentive for energy savings that result from adding energy efficient natural gas equipment to a new building design.

Enbridge will pay $0.10/m^3 of projected annual natural gas savings to a maximum of $30,000 per building.

+ m^3 refers to cubic metre of natural gas.

[1] Enbridge Gas Distribution reserves the right to conduct an audit of any qualified project for which an incentive has been paid for any time up to three years following the date of payment of the final incentive cheque.

To be eligible for Enbridge Gas Distribution Inc.'s Energy Efficiency Incentive Programs you must be an Enbridge Gas Distribution Inc. customer and approved measures must be implemented in Enbridge Gas Distribution Inc.'s franchise area between May 1, 2009 - December 31, 2009. This advertisement is a summary only and certain terms, conditions and restrictions apply. Programs are subject to cancellation without notice at any time. Please ask your Enbridge Gas Distribution Inc. Representative and read our program literature for additional details. Enbridge Gas Distribution Inc. makes no representation, warranty or guarantee regarding the projected savings of any energy efficiency measure undertaken by any customer.

2009-03-00296 Rev 05/09

2.4 Industrial

Description: The year 2010 was difficult for industry as the recovery from the economic uncertainties of the previous year was slow to materialize. As a consequence, many companies that had altered to a survival or risk management mode were reluctant or unable to make investments and hire resources as demand for manufactured products slowly recovered. This proved to be a considerable barrier to energy efficiency and energy conservation efforts as many companies were both resource and funding restricted.

Enbridge was also operating in an environment where its 3 year plan had been extended by the Ontario Energy Board beyond its planned term. As a consequence, budgets continued to be determined on a formulaic basis, a condition not particularly responsive to the altered business environment in which DSM was operating.

Enbridge's DSM program for industrial customers employs a three pronged approach aimed at providing a complete solution to the customer's energy needs. Assistance to identify and prioritize opportunities to conserve and reduce energy use, assistance to implement projects that will capture savings and improve energy efficiency, and technical support to ensure that the energy assessments are conducted and that energy saving projects are moved to completion.

Enbridge also engages in enabling activities that are vital to support energy efficiency adoption and energy conservation. Examples are workshops designed to educate customers and business partners on energy matters so that they are aware of the value that energy efficiency and energy conservation can bring to their businesses.

Support for on-site energy engineers or managers is another example of this enabling activity. Major natural gas consumers can justify a dedicated resource to pursue energy efficiency and energy conservation but require assistance to acquire this resource. Enbridge can assist this acquisition by providing an incentive to partially offset the costs. In 2010, five such funding contracts were in place.

Enbridge also introduced a new component to its Monitoring and Targeting program called METERs (Measuring, Evaluating & Targeting of Energy & Resources) to assist customers in making more informed energy management and operations decisions. The program provided subsidies for natural gas sub meters. Enbridge further assisted customers through in house statistical analysis of the customers' data. While the program was well received by the Industrial sector, the initial program offering was scaled back considerably when a clarification of the OEB Decision underpinning this program determined that new funding was not available to sustain this initiative. This program was considered to be such an essential element that resources were reallocated within the existing budget to continue support for this

offering. A number of valuable lessons were learned and are detailed in Section 2.5 of this report.

The Company also continued to emphasize energy assessments. Assessments continue to serve as an enabling mechanism which helps to identify opportunities, quantify savings, and build the funnel of potential projects.

In response to the changed environment, Enbridge was able to increase the implementation incentive to $0.08 /m³ of natural gas saved by eliminating the previous two tier incentive. This change simultaneously simplified the application process for customers, a request that was expressed by customers participating in focus group discussions.

An increased incentive cap that was implemented in 2009 raised the maximum incentive amount from $30K to $100K. The increased cap and rate helped to maintain the participation levels despite the economic downturn that continued to affect the Industrial sector. However, the depressed cost for natural gas was a large barrier to implementing improvements as it lengthened the payback period thereby negatively impacting the economics of projects.

The Industrial DSM program now faces the challenge posed by the emergence of other energy efficiency programs. Enbridge is currently providing the lowest level of incentives as compared to other programs in the electricity market. This situation is increasingly a threat to the comprehensive approach to energy efficiency, given that the current incentive framework rewarding TRC results puts energy programs in direct competition for projects where incentives play a major role.

***Objectives**:* To capture energy savings in the Industrial sector through the delivery of custom energy solutions.

Metrics: Number of projects and per project savings.

Tracking Methodology: Monthly tracking as part of EGD's sales tracking software.

***Evaluation Activities**:* An internal review was conducted of project applications and savings calculations. In addition, a third party engineering review was conducted of a sample of projects from the Industrial sector. The engineering review is summarized in Section 3. Reported results include adjustments as recommended by the engineering review.

Program Results:

Table 11: Industrial Program Results

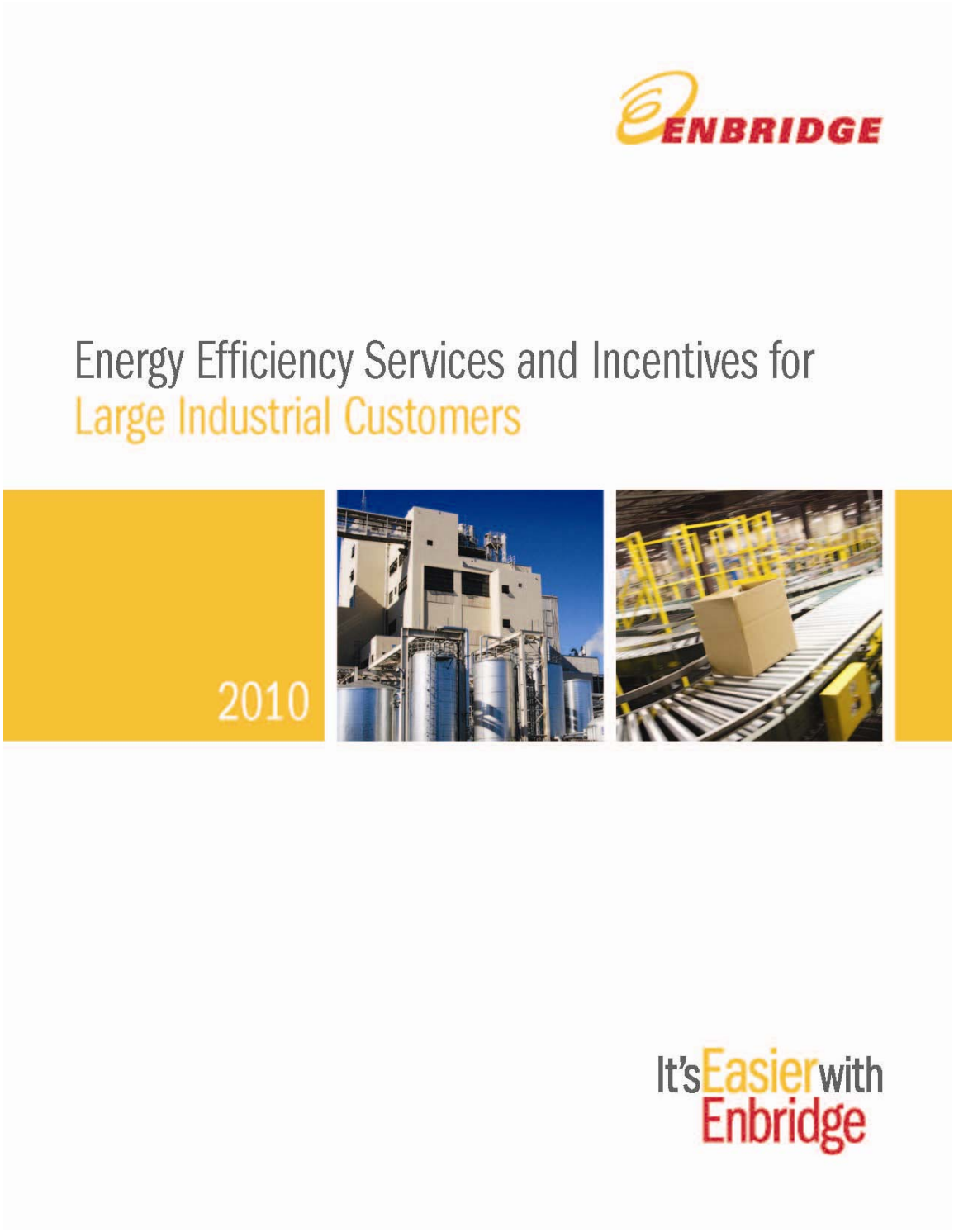
		2007 Audited TRC Results (SSM)		2008 Audited TRC Results		2009 Audited TRC Results		2010 Audited TRC Results	
		Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits	Units	TRC Net Benefits
Industrial	Agriculture	26	3,028,137	29	2,170,914	28	$2,084,435	32	$ 2,014,476
	Industrial-All	121	50,778,056	111	59,179,956	92	$68,899,977	91	$ 43,162,311
Industrial Total		**147**	**53,806,193**	**140**	**61,350,871**	**120**	**70,984,411**	**123**	**$ 45,176,787**

Note: Units in the table above refers to the number of projects completed.

Comments: The increased incentive was a positive factor which assisted in capturing projects at a period where capital was exceedingly tight. The decline in avoided gas costs contributed to a much lower TRC/m^3 of gas savings than had been experienced in previous years. Also the composition of projects captured changed, resulting in reduced electricity savings and induced water savings.

The avoided gas costs are projected to decrease again in 2011 to an even greater year over year extent than previously, a situation that will affect future TRC results. The program delivered similar results in terms of participation in comparison to 2009; however there was a decrease in m^3 savings resulting from lower levels of savings being realized on average per participant in the Industrial sector. The majority of projects claimed in the Industrial sector are custom capital projects which tend to have long development, approval and implementation cycles. For projects to be implemented in 2010 typically they were approved in 2009 or earlier. Given that 2009 was still a weak economic year in the Industrial sector, many capital projects were postponed, scaled back or cancelled and the effects were felt in 2010.

Figure 10: Industrial Customer Incentives Brochure



It's Easier with Enbridge

Implementing energy efficiency doesn't have to be complicated. In fact, when you work with an Energy Solutions Consultant (ESC) from Enbridge, it can be remarkably easy. And since you're an Enbridge customer, their **services are free.**

Enbridge Energy Solutions Consultants can help you:

- Identify opportunities
- Screen projects
- Implement solutions

For more detail on specific services ESCs offer see "Technical Services for You" in this brochure.

You can trust that your ESC will help you find the best possible energy solutions for your operation, as well as help you receive your Enbridge incentives.

To obtain these free services, simply call us and you'll be assigned an Energy Solutions Consultant who will help get you started.

At Enbridge we want to make energy efficiency as easy as possible for you. Give us a call—and find out how easy it is.

Phone: 1-866-844-9994
Fax: 416-495-6047
energyservices@enbridge.com
www.enbridgegas.com/industrial

To be eligible you must be an Enbridge Gas Distribution Inc. customer and approved measures must be implemented in Enbridge Gas Distribution Inc.'s franchise area between January 1, 2010 and December 31, 2010. This advertisement is a summary only and additional terms, conditions and restrictions apply. Programs are subject to cancellation without notice at any time. Please ask your Enbridge Gas Distribution Inc. representative and read our program literature for additional details. Enbridge Gas Distribution Inc. makes no representation, warranty or guarantee regarding the projected savings of any energy efficiency measure undertaken by any customer.

Since 1995, Enbridge has saved enough natural gas to serve just over 1.4 million homes for one year.

Energy Assessments

The following information summarizes financial incentives from Enbridge for third party energy assessments. For more information on additional assessments which are not listed here contact your Energy Solutions Consultant.

Boiler Plant Performance Test and Assessment

Provides an analysis of all the boilers and the entire steam plant, their estimated cost to implement and their financial payback.

Process Heating Equipment Testing Assessment

Identifies energy efficiency measures to affect process improvement and cost savings.

Industrial Heating and Ventilation Assessment

Standardized procedure designed to evaluate the heating and ventilation requirements and systems in medium to large industrial plants.

Enbridge will pay up to 50% of your net assessment cost up to the maximum grant as set in the table below.

Annual energy consumption under assessment	Maximum Grant of:
2,500,000 m^3 or greater	Up to $10,000
1,000,000 m^3 to 2,499,999 m^3	Up to $6,000
340,000 m^3 to 999,999 m^3	Up to $2,000

Process Integration Study

Determine where and how to optimize heat transfer and recovery opportunities from process waste streams. Enbridge will pay half of your net study cost up to $30,000.

Steam Trap Surveys

A test of all accessible steam traps, a report on their condition, as well as an estimate of the achievable savings associated with the repair or replacement of defective traps. Enbridge will pay the lesser of: half your net survey cost or $10 per steam trap surveyed.

When I need help my ESC is always there for me

Focus group participant

Project Implementation

Enbridge incentives are calculated on projected first years natural gas savings.

Incentives are also available for capital and operational energy efficiency projects.

- $0.08 per cubic metre of natural gas savings, up to a maximum amount of $100,000 per project. For projects that meet the simple payback requirements.[1]

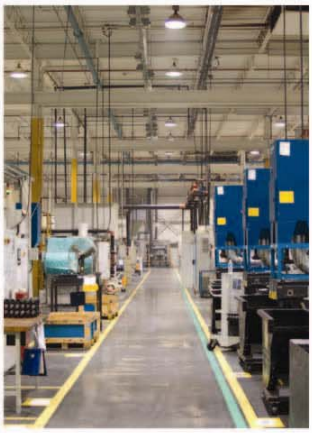
An Enbridge Energy Solutions Consultant must approve each project and should be actively involved in the project from an early stage. Other Terms and Conditions apply, contact your ESC for details.

Technical Services for You

The benefits of working with an Enbridge Energy Solutions Consultant are numerous. Your ESC can:

- Help develop an energy conservation plan of action
- Identify energy efficiency options through on-site assessments and surveys
- Assist with benchmarking activities
- Provide on-site combustion testing for most types of equipment
- Conduct thermal imaging and statistical analyses
- Help you maximize returns by taking advantage of financial incentives
- Help build your internal business case for your energy efficiency project
- Introduce you to our independent business partners who can provide you with estimates for equipment, installation, maintenance, and ongoing operations
- Provide you with consistent, knowledgeable support throughout the entire process
- Keep you aware of special time-limited offers available from Enbridge

Enbridge also hosts industry related Workshops and Training sessions. Please visit **enbridgeonline.com** for updates.



Simple Payback Criteria

[1] The following Incentive Guidelines apply to all Industrial projects:

All projects must have a Simple Payback of 1-5 years and must have a positive Total Resource Cost (TRC) to qualify for an incentive, unless otherwise approved. Projects with simple paybacks of up to 5 years typically have positive TRC. However, EGD will calculate project eligibility on a case by case basis.

Simple Payback is calculated as follows:

$$\text{Simple Payback} = \frac{\text{Total Project Cost (Material + Installation + Engineering + Tax)}}{\text{Cost of Annual EEP Volume Saved (m^3 saved x Cost per m^3)}}$$

Call Us Today

To get started on an energy efficiency project for your building or for more information, contact Enbridge Gas Distribution at:

Phone: 1-866-844-9994
Fax: 416-495-6047
energyservices@enbridge.com
www.enbridgegas.com/industrial

To be eligible you must be an Enbridge Gas Distribution Inc. customer and approved measures must be implemented in Enbridge Gas Distribution Inc.'s franchise area between January 1, 2010 and December 31, 2010. This advertisement is a summary only and additional terms, conditions and restrictions apply. Programs are subject to cancellation without notice at any time. Please ask your Enbridge Gas Distribution Inc. representative and read our program literature for additional details. Enbridge Gas Distribution Inc. makes no representation, warranty or guarantee regarding the projected savings of any energy efficiency measure undertaken by any customer.

It's Easier with Enbridge

2010-06 Large Industrial Incentive Summary (Web Version)

2.5 Business Markets Lessons learned

Commercial lessons learned

- EGD can influence Large Commercial customers with strategic, attractive, limited time offer marketing campaigns.
- The long development cycle of major projects requires long term consistent programs.
- Consistent funding for pilot programs and initiatives must be sustained from year to year. These campaigns take time to collect the benefits and in most cases funding must be sustained till these campaigns can show results.

Small Commercial lessons learned

- Multi targeted “push/pull” approach strategy marketed to both customers and trade partners in the Small Commercial sector works well and allows for more advertising and educational opportunities.

Multi-Residential lessons learned

- The multi-Residential sector continues to grow and makes up a large portion of the overall Large Commercial business. Enbridge business partners are integral to maintaining and growing this sector.
- Benchmarking Portfolio of buildings in the Multi-Residential sector provides property managers strategic direction in identifying capital retrofit projects (boilers, air-handling units etc) and operational improvement projects (low cost / no cost – temperature setback, shutting equipment off when not needed etc). As the number of participants increase, benchmarking a portfolio against past participants will be possible.

Large New Construction Lessons learned

- The size of the dollar incentive is not nearly as important to the success of the program as program design simplicity and available support to the applicants and design partners.

Industrial Lessons learned

The following lessons were learned with respect to the addition of a new component to the Company’s Monitoring and Targeting (M&T) program called METERS (Measuring, Evaluating & Targeting of Energy & Resources :

- Energy use in industry is diverse with each facility converting different raw materials through highly specialized and individualized processes to generate salable products. This is the primary reason why M&T, and similar energy

- The principles behind M&T are understood to be quite simple and draw numerous parallels to various established continuous improvement and quality management systems such as ISO, QS, Six Sigma, and Lean. The caveat however is that M&T, and other similar energy initiatives, still remain in the margins of management attention because energy management is not viewed as a core production cost that can be controlled. As a result, for many customers, using energy information as a means for improved operational management serves as a distraction rather than another input for managing production data. .

- M&T is too limiting a title or program name. Little value is found in the act of measuring parameters and generating graphical representations of performance. It is only when the information collected is analyzed through an experienced professional and a solution is implemented that the tangible value is realized. Unfortunately, the three steps described previously all carry very high costs for participation. Thermal energy measurement is often complex, invasive, and requires an information system infrastructure to be in place in order to be useful. Furthermore, the act of data analysis in the context of the process in which the data was derived can be viewed as the art of applying a science. Through our experiences and conversations with other DSM and energy efficiency agencies, it is the application of the science and not the technologies that is in short supply. Finally, solution implementations can be very costly if the action required is purchase of capital equipment, or they can be very time consuming if an internal sales and training campaign is needed.

- Historically, M&T focused on implementing comprehensive energy management information systems. It also encompassed a large scale wholesale cultural change driven from senior management. A new approach provides a smaller scale commitment on behalf of the customer. It allows them the benefit of seeing and using data on a smaller scale to develop business cases that started with smaller projects. This provided the foundation for customers to migrate to larger projects based on successful implementation.

2.6 Market Transformation Programs

2.6.1 Drain Water Heat Recovery Program (DWHR)

Description: This program was first launched in the low rise Residential New Construction market in 2009 and continued in 2010 with program changes that now complement the program being offered by Union Gas on the same technology. The program offers an incentive to the builder for every Drain Water Heat recovery unit installed. The changes made to the program in 2010 reflect discussions held with the Enbridge Evaluation and Audit committee (EAC) and Union Gas in an effort to align scorecard metrics for this program. Minor differences in metric values reflect that 2010 will be the second year that Enbridge has offered this program while Union Gas has been offering the program for four years.

In 2010 Enbridge offered builder incentives of $400 per Drain Water Heat Recovery (DWHR) unit installed.

Objectives: The goal of the program is to transform the Residential New Construction market such that the installation of DWHR devices becomes standard practice in all new home construction. Three activities that will help attain the long term goal are:

- Educate builders and new home buyers about the technology
- Train builders and contractors to install DWHR units
- Provide incentives to builders: $400 per DWHR unit installed

Drain Water Heat Recovery technology is a simple technology but relatively new to builders in the Enbridge territory. With Enbridge promoting DWHR, awareness of the product amongst builders in the EGD territory should increase.

Tracking Methodology: Number of units installed as reported by the builder participants, and the number of builders enrolled as reported by the channel consultants and rental providers.

Highlights: In 2010 the program design was updated to reduce the number of metrics being tracked, which better focused the evaluation on development of the market and removed unnecessary administrative burden. These changes had the endorsement of both the Evaluation Audit committee and the Company.

Metrics & Program Results:

Table 12: Drain Water Heat Recovery Market Transformation Results

Drain Water Heat Recovery		**2010 Metric Value Levels**			**Weight**	**2010 Metric Value Actual results**
Element	**Metrics**	50%	100%	150%		
ULTIMATE OUTCOMES	a) Units Installed (new build) as percentage of 2010 housing starts (across all builders). Builder incentive of $400 per unit.	2094	2722	3350	/80	1684
PROGRAM PERFORMANCE	b) 1st time new Builders enrolled (incremental)	15	20	25	/20	42

The Ultimate Outcomes metric, number of units installed as a percentage of 2010 housing starts, totaled 1684 units. The less than favourable results in this metric were due in part to the late roll out of the program after the builders had established installation contracts with their trade partners.

The Program Performance metric measured the number of first time builders enrolled which totaled 42 builders, exceeding the 150% target. This achievement in results was mainly due to the enrollment of smaller custom builders.

2.6.2 Low Income Market Transformation

Description: This program improves energy efficiency knowledge and basic weatherization practices among low income Rate 1 home owners and tenants through provision of information and simple energy savings tools by a trusted and confidential source.

The program also includes media and outreach activities to promote participation in the Enhanced TAPS program and the Low Income Weatherization program. Activities completed in 2010 include the following:

- Sponsorship of the GLOBE Community Champion Program
    - GLOBE (Green Light on a Better Environment) is a subsidiary of SHSC (Social Housing Services Corporation), connecting social housing providers, municipal service managers, property managers and social housing tenants with tools and services to help them make smart choices about conservation, efficiency and green sustainable practices in the social housing sector.
    - Community Champion Program objective is to provide an educational program for the purpose of engaging social housing staff and residents to work together on responsible and efficient energy use.
    - Sponsorship Outcomes:
        - Outreach to Municipal Service Managers, housing providers/Board members and residents in four Enbridge service areas – Ottawa, York Region, Durham Region and Niagara
        - A total of 49 participants in the Community Champion Program (26 residents from 18 separate housing provider organizations)
- Redesign of the Energy Efficiency Tips Booklet
- Conferences and promotional materials

The budget for this program in 2010 was $140,000. The actual spend was $140,785.

Objectives:

- To provide energy management tips and simple measures that can be implemented by the customer such as reducing air leakage around windows, doors, switch plates and outlet gaskets and saving electricity with compact fluorescent lights through the distribution of energy saving kits. In addition, offer customers the opportunity to take advantage of the Enhanced TAPS program and the Weatherization program.

- To promote distribution of the kits and participation in the EGD Low Income programs through media and outreach activities.

***Tracking Methodology**:* Tracking of activities and spending.

3.0 Verification and Research Studies

Every year, EGD undertakes a number of research efforts in support of the various programming areas. These studies evaluate the performance of specific market transformation efforts, custom projects, and prescriptive programs such as the TAPS Partners Program.

Annual evaluations of the TAPS Partners Program are undertaken by the Company to verify results and the overall effectiveness of the program.

The custom project portfolio was evaluated with sector specific studies. Custom projects cover opportunities where savings are linked to unique building specifications, uses and technologies. The evaluation research focuses on verifying the detailed project calculations and documentation for a sample of projects in the Business Markets. Third party engineering firms are contracted to undertake the review and are given access to project application files.

In addition, the Company undertakes forward-looking research to update assumptions used in existing programs, to develop assumptions for new prescriptive programs or measures and to assess DSM market potential. This section describes the purpose, methodology, and results of the program evaluations and research undertaken.

3.1 TAPS Partners Program 2010 Follow-Up Study

Background

Enbridge Gas Distribution sponsors and promotes an energy conservation program by the name of TAPS. Participating contractors visit customers' homes to install energy-saving showerheads, provide energy-saving aerators for kitchen and bathroom faucets and provide energy-saving compact fluorescent light bulbs (CFLs). Research is used to measure customer participation and to improve programs in the future.

Objectives

This research study was designed to:

- Determine if the customer received a home visit from a TAPS contractor.
- Determine if the specified procedures were carried out.
- Measure contractor results over time.
- Compare results among contractors.
- Determine if the results differ from the information submitted by contractors.

Methodology

During 2010, four waves of telephone interviews were conducted. In total, 3,200 residential customer interviews were completed across eight contractors in the Enbridge Gas Distribution franchise area.

Customers were chosen for the follow-up research only if the respective contractor reports indicated that a) for showerhead questions, a showerhead was distributed to the premise and b) for light bulb questions, that light bulbs were distributed to the premise. Further, this report reflects only those households that were not identified as low income in the data file.

Results

Verification of Visits

2% of customers contacted did not recall receiving a visit from a TAPS contractor. Individual contractor results were not significantly different. The remainder of the report pertains to the 3,200 customers interviewed who recalled receiving a visit from a TAPS contractor.

Overall Results

- Customers were satisfied overall (97%). All contractors met the 90% satisfaction requirement.

- Most households received energy-efficient showerheads (98%), similar to the past four years. Total (gross) installations were 85% for 2010 year-end and net installations (after removals) was 82%. Contractors installed showerheads in 65% of households during 2010. The majority of contractors (80%) explained the water conservation / savings benefits of using an energy-efficient showerhead, similar to 2009 (78%), but still lower compared to 2007 (83%).

- 89% of homes received aerators, similar to 2008 (90%). 64% of homes installed kitchen aerators,. 54% of homes installed bathroom aerators, an increase over 2009 (50%).

- 97% of homes received energy-efficient compact fluorescent light bulbs which was an increase over 2009 results and 58% installed the light bulbs.

- Overall 55% of customers said the length of visit tended to be over 10 minutes, an increase compared to 2009 (51%). 38% of visits were 10 minutes or less, compared to 42% in 2009.

- Product removals were low – 3% for showerheads, 1% for kitchen aerators, .5 % for bathroom aerators and 1% for CFL light bulbs.

Table 13: Receipt of Products and Services per 100 Households

Receipt and Installation of Products		
	2009	**2010**
Total Households	3,151	3,201
Showerheads		
- received	98%	98%
- total (gross) installed	86%	85%
- net installed	82%	82%
- contractor installed	66%	65%
Kitchen Aerators		
- total installed	64%	64%
- contractor installed	36%	↓ 33%
- removed	2%	1%
Bathroom Aerators		
- total installed	50%	↑ 54%
- contractor installed	29%	30%
- removed	1%	*
	2,572	3,201
CFL Light Bulbs		
- received	94%	↑ 97%
- total installed	59%	58%
- removed	1%	1%
* Less than 0.5%		

The reduction rates shown in the table above have been applied to the savings calculation

3.2 TAPS Partners Program 2010 Low Income Analysis

Background

Enbridge Gas Distribution sponsors and promotes an energy conservation program by the name of TAPS. Participating contractors visit customers' homes to install energy-saving showerheads, provide energy-saving aerators for kitchen and bathroom faucets and provide energy-saving compact fluorescent light bulbs (CFLs), at no charge to customers. Contractors visiting low income households also install programmable thermostats at no charge to customers.

Research is used to measure customer participation and to improve programs in the future.

This analysis was completed to better understand measure distribution, installation and product removal in low income households. This analysis reflects findings among low income households.

Objectives

The objectives of the Low Income TAPS research are to:

- Determine if the customer received a home visit from a TAPS contractor.
- Determine the proportion of customers who received, installed and/or removed each of the energy-efficient products noted above.

Methodology

Telephone interviews were conducted among 57 low income residential customers who received a home visit from a TAPS contractor during 2010. In 2010, three contractors participated in the Low Income TAPS program. Results for 2010 were not weighted. The margin of error for 2010 is +/- 12 percentage points at the 95% confidence level.

Results

Verification of Visits

The chart below shows the proportion of households in 2010 who said they did not receive a visit from a TAPS contractor.

Table 14: Verification of Visits

Call Disposition and Verification of Visit for Total Interviews - Low Income TAPS		
	2009	**2010**
Total household as per data file	1,589	283
Total sample used	1,589	283
Respondent did not receive TAPS visit	5%	1%

The remainder of this report pertains to the 57 customers interviewed who recalled receiving a visit from a TAPS' contractor during 2010.

Summary of Product Receipt, Installation and Removal

- 53 % of households said the contractor installed a programmable thermostat in 2010. This was a decline in comparison to 2009 (53%). It should be noted that the question wording in 2010 was revised. 0% of households said they removed their programmable thermostat in 2009.
- Overall, 93% of households reported receiving aerators in 2010. The proportion of households reporting they had a kitchen aerator installed (63%) was higher than the reported installation of bathroom aerators (53%). 4% of households removed their kitchen aerators and 0% removed their bathroom aerators.
- 98% of households reported receiving energy-efficient CFL light bulbs and 65% had CFL light bulbs installed in 2010.
- 0% of households removed the CFL light bulbs.
- 95% of households received energy-efficient showerheads and 80% had the showerheads installed. After removals, 76% of households had energy-efficient showerheads still installed in 2010.

Summary of Customer Satisfaction and Contractor Visit

- Overall, 96% of customers were satisfied with the service they received from the TAPS' contractor, this is not significantly different compared to 2009 (87%). 30% of households said they received advance notice of a contractor visit.

Table 15: Receipt of Products and Services per 100 Households

Receipt and Installation of Products			
	2008	**2009**	**2010**
Base: Total households	18	144*	57
Programmable Thermostats			
- total installed	39%	69%	53%
- installed (after removals)	33%	67%	53%
- removed	6%	2%	0%
Base: Total households	88	154	57
Kitchen and/or Bathroom Aerators			
- received	91%	66%	93%
Kitchen Aerators			
- total installed	68%	45%	63%
- contractor installed	41%	21%	25%
- removed	1%	2%	4%
Bathroom Aerators			
- total installed	55%	31%	53%
- contractor installed	34%	16%	21%
- removed	1%	1%	0%
Base: Received CFLs as per contractor records	n/a	109	57
CFL Light Bulbs			
- received	n/a	93%	98%
- total installed	n/a	62%	65%
- removed	n/a	3%	0%
Base: Received showerhead as per contractor records	88	101	55
Showerheads			
- received	89%	91%	95%
- gross installed	77%	63%	80%
- net installed	n/a	59%	76%
- contractor installed	56%	42%	56%

* Base lower as question revised part-way through Wave 1 2009

Source: Questions 1,3, 8a,8b,11, 15

3.3 Showerhead Verification among Rental Buildings Research Report

Background

The Multi-Residential Showerhead Program is a water conservation initiative that involves the replacement of conventional showerheads in multi-residential buildings.

To evaluate program energy savings, Enbridge Gas Distribution commissioned a third party to conduct research to verify the percentage of showerheads that have been installed and not removed in multi-residential units (within rental buildings only) that participated in the program during 2010.

Objectives

The objectives of this research are to sample a representative number of multi-residential units that have participated in the program and thereby to establish an estimate of showerheads that have been installed by the program and that remain installed.

Methodology

Statistical Approach

Due to the nature of this research, the 'two-stage random sampling' method was chosen to minimize the otherwise prohibitive cost of a simple random sampling methodology, which would require in-person visits to far more buildings, thus substantially increasing cost. Under this approach, the initial step was to randomly select 29 of the 65 buildings (ensuring that a minimum of one building from Ottawa was included). Then, random samples of approximately 10 - 35 installations (units/apartments) were selected from each of the 29 buildings for auditing. Only the units identified by Enbridge as having had the showerhead installed were included in the sample selection.

The results of this research are accurate to within +/- 10%, 19 times of 20. A total of 662 inspections were conducted across 29 of the 65 buildings. The statistical formula employed in calculating the estimate's accuracy range (plus/minus) is included in the appendix of this report.

Physical Inspection Procedure

The property managers of the selected buildings were contacted, and dates and times were arranged for the inspection visits. The property manager was required to

provide tenants with 24hrs notice of the inspection. On the day of each inspection, the inspector met the property manager at the building, and the property manager provided the inspector with access to each of the randomly selected units. The inspector recorded whether the showerhead installed had a 1.5 gpm marking on it. The inspector photographed the showerhead if the marking was not visible. Each showerhead record (or photo) was associated with a unit number, building number and address.

Upon completion of inspections, the data (including the photographs) were sent to Enbridge for verification.

Results

A total of 662 units were inspected across 29 of the 65 buildings. 85% (564) of the 662 units had showerheads with a 1.5 gpm marking on them. Inferring these results onto the total "population" of 11,705 units across all 65 buildings, using a confidence level of 95%, the true proportion of low-flow showerheads is between 75% and 95%.

Review:

- Percentage of low-flow showerheads in the sample = 85%
- Statistical inference = 85% plus or minus 10%, accurate 19 out of 20 times.

Note, if the data is calculated to be accurate 18 out of 20 times (i.e. 90% confidence level), the statistical plus/minus is reduced to 8%.

Figure 11: Two-Stage Random Sampling Formula that was used to calculate the statistical estimate

Unbiased estimator of the population mean μ:

$$\hat{\mu} = \left(\frac{N}{M}\right)\frac{\sum_{i=1}^{n} M_i \bar{y}_i}{n} \qquad (1)$$

Estimated variance of $\hat{\mu}$

$$\hat{V}(\hat{\mu}) = \left(\frac{N-n}{N}\right)\left(\frac{1}{nN\bar{M}^2}\right)s_b^2 + \frac{1}{nN\bar{M}^2}\sum_{i=1}^{n} M_i^2\left(\frac{M_i - m_i}{M_i}\right)\left(\frac{s_i^2}{m_i}\right) \qquad (2)$$

where

$$s_b^2 = \frac{\sum_{i=1}^{n}(M_i\bar{y}_i - \bar{M}\hat{\mu})^2}{n-1} \qquad (3)$$

and

$$s_i^2 = \frac{\sum_{i=1}^{m_i}(y_{ij} - \bar{y}_i)^2}{m_i - 1} \qquad i = 1,\ldots,n \qquad (4)$$

Bound on the error of estimation:

$$2\sqrt{\hat{V}(\hat{\mu})} \qquad (5)$$

N = the number of clusters in the population
n = the number of clusters selected in a simple random sample
M_i = the number of elements in cluster i
m_i = the number of elements selected in a simple random sample from cluster i
$M = \sum_{i=1}^{N} M_i$ = the number of elements in the population

$\bar{M} = \frac{M}{N}$ = the average cluster size for the population
y_{ij} = the jth observation in the sample from the ith cluster
$\bar{y}_i = \frac{1}{m_i}\sum_{j=1}^{m_i} y_{ij}$ = the sample mean for the ith cluster

3.4 Verification Study of Commercial Custom Projects

Background

As part of the annual evaluation and DSM audit process, EGD commissions third party firms to undertake an engineering review of a random sample of the custom projects in the Commercial and Industrial sectors.

Purpose of the Study

EGD retained Building Innovation Inc. (BII) to conduct an engineering review of the savings for the 2010 Commercial sector custom projects (including Multi-Residential and Commercial Large New Construction). The purpose of this evaluation was to provide an objective opinion of the reasonableness of the savings (natural gas, as well as induced electricity and water savings) claimed by the Commercial sector custom projects in 2010, through a review of a statistically representative sample of the projects.

Methodology

Using a sampling methodology developed for EGD and Union Gas by Summit Blue Consulting, BII conducted an engineering review of 31 Commercial sector custom projects. The reviews involved site inspections with the clients, verification of installations, utility savings results, project start-up and commissioning of measure, cost and purchase timing, any changes in plant production that would change the impact of savings, any unforeseen disturbances, any savings measurements undertaken by client, a review of savings calculations and methodology and, where a more appropriate calculation was identified, the results of such a calculation were provided.

Results

Table 16 summarizes the variance between the claimed and revised savings as adjustment factors.

Table 16: 2010 Commercial Custom Projects Adjustment Factors

Gas Savings Factor	-4.8%
Electricity Savings Factor	6.0%
Water Savings Factor	0%

Results of the Engineering Review are shown below. Table 17 shows the claimed and revised savings for gas, electricity and water as recommended by BII.

Table 17: 2010 Commercial Sector Custom Project Verification Results

Industrial Projects Sampled	31
Sampled Project with Calculation Discrepancies	13
Gross Natural Gas Savings of all Sampled Projects	10,223,104 m^3
Revised Natural Gas Savings	9,729,044 m^3
Gross Electricity Savings of all Sampled Projects	6,523,700 kWh
Revised Electricity Savings	6,916,729 kWh
Gross Water Savings of all Sampled Projects	414 m^3
Revised Gross Water Savings	414 m^3

3.5 Verification Study of Industrial Custom Projects

Background

As part of the annual evaluation and DSM audit process, EGD commissions third party firms to undertake an engineering review of a random sample of the custom projects in the Commercial and Industrial sectors.

Purpose of the Study

EGD retained Byron J. Landry & Associates Inc. to conduct an engineering review of the savings for the 2010 Industrial custom projects. The purpose of this evaluation was to provide an objective opinion of the reasonableness of the savings (natural gas, as well as induced electricity and water savings) claimed by the Industrial sector custom projects in 2010 through a review of a statistically representative sample of the projects.

Methodology

Using a sampling process developed for EGD and Union Gas by Summit Blue Consulting, Byron J. Landry & Associates Inc. conducted an engineering review of 13 Industrial projects. The reviews involved site inspections with the clients, verification of installations, utility savings results, project start-up and commissioning of measure, cost and purchase timing, any changes in plant production that would change the impact of savings, any unforeseen disturbances, any savings measurements undertaken by client, a review of savings calculations and methodology and, where a more appropriate calculation was identified, the results of such a calculation were provided.

Results

Table 18 summarizes the variance between the claimed and revised savings as adjustment factors.

Table 18: 2010 Industrial Custom Project Adjustment Factors

Gas Savings Factor	0.04%
Electricity Savings Factor	11.9%
Water Savings Factor	0%

Results of the Engineering Review are shown below. Table 17 shows the claimed and revised savings for gas, electricity and water as recommended by BII.

Table 19: 2010 Industrial Sector Custom Project Verification Results

Industrial Projects Sampled	13
Sampled Project with Calculation Discrepancies	4
Gross Natural Gas Savings of all Sampled Projects	14,653,185 m^3
Revised Natural Gas Savings	14,659,143 m^3
Gross Electricity Savings of all Sampled Projects	1,585,471 kWh
Revised Electricity Savings	1,774,367 kWh
Gross Water Savings of all Sampled Projects	19,940 m^3
Revised Gross Water Savings	19,940 m^3

3.6 Commercial Hydronic Boiler Baseline Study

Introduction

As part of the annual evaluation and DSM audit process for 2008 and 2009, it was recommended by both the auditor and Evaluation and Audit Committee that Enbridge Gas Distribution (EGD) undertake additional research into the seasonal efficiency of new boiler systems currently being installed in EGD's franchise area. ICF Marbek was contracted to prepare this report in response to this request.

The scope of this project encompasses all commercial hydronic (hot water) boilers used for both space heating and domestic water heating. Boilers that are used for single-family residential and industrial applications are excluded from the study. The workplan included four steps: Background Research, a Boiler Market Study, a review of EGD's ETools Software, and development of a Baseline Methodology.

In conclusion, the study recommends that EGD adjust three inputs to ETools to better reflect the most common boiler systems installed in Ontario: a baseline thermal efficiency of 80% to 81%, a base case of intermittent pumping in new construction and continuous pumping in retrofit, and a base case with indoor/outdoor controls in both new and existing buildings.

Background Research

ICF Marbek conducted background research into the technology, codes and standards that are currently relevant in the boiler industry in Canada.

The research indicated that there is currently no accepted measure of seasonal efficiency; instead, the industry relies on thermal and combustion efficiency measurements, which do not reflect actual conditions encountered in real boiler installations. The test standard that specifies how measurements are to be made was found to make use of impractical conditions that are not representative of real-world conditions. These measurements, which are often quoted by manufacturers, ultimately lead to confusion among customers.

The research revealed that the current minimum energy performance standard for commercial gas boilers is a thermal efficiency of 75%. This figure has been legislated through the Ontario Building Code. Furthermore, there is currently no overarching national standard for boiler efficiency. The federal government is planning on introducing efficiency standards in the near future. These standards are expected to be much more stringent than the current Ontario standards.

A review of the secondary literature revealed a number of articles and resources that have helped quantify the relationship between a boiler's rated efficiency and ultimately, its seasonal efficiency. One of the largest variables in actual boiler performance is the degree to which the burner is able to turn-down (modulate) the flame in response to changing load. Boilers that only have on-off control are less efficient seasonally, for example. Another major factor affecting efficiency is the boiler inlet entering water temperature (EWT). The boiler test standards specify EWT values that are not typically achieved in practice. The effect of real-world EWT values on efficiency has been identified and quantified by ASHRAE research.

The secondary research concluded with a study performed in California that measured in-field boiler performance. The study reported that most boiler combustion efficiencies measured in the field are at least 4-12% lower than their rated (advertised) performance. This finding lends support to the research discussed above, and helps support the conclusion that true in-field seasonal efficiency values are typically far lower than the reported manufacturer ratings.

Ontario Boiler Market Characterization

ICF Marbek conducted primary research, and reviewed secondary sources in order to characterize the Ontario boiler market. The primary research took the form of a survey that was directed at boiler distributors across the province. The survey results were inconclusive due to a lack of response from distributors across a range of boiler manufacturers. The secondary research made use of the Canadian Institute of Plumbing and Heating (CIPH) boiler shipment data.

The CIPH data revealed that *standard efficiency* boilers (under 85% efficiency) make up 55% of the approximately 2,000 boilers that are sold within Enbridge's territory

each year. This indicates that there is still a lot of potential to influence the market towards higher-efficiency boilers.

ETools Software

Enbridge Gas Distribution uses a custom software tool, called ETools, to estimate boiler seasonal efficiency. The estimation software tool begins with boiler thermal efficiency, and by various inputs and algorithms, produces a seasonal efficiency figure for both the baseline and proposed retrofit boiler. These algorithms were established prior to ICF Marbek's involvement in determining the baseline boiler. ICF Marbek did not have the scope to review the algorithms employed by ETools; instead, the review focused on evaluating the appropriateness of the numerous inputs to the software.

ETools' algorithms rely on user input of a number of parameters, such as indoor/outdoor control, number of burner stages, etc. ICF Marbek reviewed the default settings for these features and conducted a supplementary survey of boiler installation contractors to inform the evaluation of boiler system features including piping, pump operation, and indoor/outdoor controls. The results of the review produced the following recommendations for changes to the base cases for two of the features:

Boiler Pumping. The most common pump operation for standard efficiency boilers installed in new construction is "intermittent"; and the most common for replacement is "continuous". However, there are clear exceptions which represent opportunities for EGD that should be considered in the selection of a base case. For instance, in new condominium buildings, boiler systems are often being installed based on lowest first cost, including continuous pumping.

I/O Controls. At a minimum, standard efficiency boilers installed in new construction are equipped with basic indoor/outdoor controls; and the majority of existing standard efficiency boiler systems has some form of indoor/outdoor controls. However, it is clear that there are varying degrees of performance among these systems which represents an opportunity for further energy savings.

In order to perform seasonal efficiency calculations, ETools has a substantial back-end database that contains most boilers that are available for sale in Ontario. This database was used by ICF Marbek as the basis for the eventual baseline calculations.

Proposed Baseline Methodology

As indicated above, there is no accepted method for establishing the seasonal performance of a boiler. Similarly, there is no accepted method or external guidance for establishing an appropriate seasonal-efficiency base case for utilities to use in their incentive programs. Therefore, ICF Marbek developed a methodology for determining the base boiler, given the available information.

In order to arrive at a baseline thermal efficiency that represents the most common boiler sold in the absence of an incentive program, ICF Marbek proposed the following methodology:

1. ***Divide the boilers up into their two size categories as per the OBC efficiency table***[2]. This size distribution is standard across the industry. Furthermore, as the CIPH data indicate, typical efficiency values differ between size categories, so it is important to consider each size category separately.

2. ***Select boilers in the most common efficiency range; that is, those with less than 85% thermal efficiency***. It is generally accepted within the industry that 85% and lower boilers are categorized as "standard efficiency." The standard-efficiency boilers are candidates for incentive programs, and thus the baseline figure for boiler programs will necessarily be found within this range.

3. ***Compute the* median *of the remaining boilers.*** The median will give the efficiency value for which there are equal numbers of boilers above and

2 300 – 2500 MBH, and over 2500 MBH. The 0-300 MBH boilers were omitted from this study since they are typically installed in residential applications.

below. ICF Marbek believes that this is a better representation for "the most common boiler" than an average, which could be skewed by extreme high and low values.

The resultant baseline thermal efficiency will then be used as the starting point for the ETools calculations. The following table summarizes the baseline thermal efficiencies for each boiler size:

Table 20: Boiler Baseline Thermal Efficiencies

Input Capacity	**Median Thermal Efficiency of Common Boilers(%)**
300 to 2500 MBH	80.6%
Above 2500 MBH	80.4%
300 MBH and up	**80.5%**

These calculated baseline figures are higher than the code-minimum values, but ICF Marbek believes that a baseline efficiency of 80%-81% accurately represents the current market conditions in EGD territory.

Conclusions

ICF Marbek recognizes the value in using the ETools software to calculate the seasonal efficiency of the boiler system. While we have not had the opportunity to evaluate the internal algorithms of the ETools system, we have examined the default inputs that are used by Enbridge to calculate the baseline boiler efficiency. To that end, there are three inputs that we recommend be adjusted to better reflect the most common boilers systems installed in Ontario. These changes are:

Thermal Efficiency. The extensive ETools boiler database was used as a proxy for the distribution of the thermal efficiency of available boilers across Ontario. The median thermal efficiency of the standard-efficiency boilers were taken, resulting in a baseline thermal efficiency of 80% to 81%. Only the standard efficiency boiler efficiencies were considered, since the baseline should not include higher-efficiency boilers that form the partially-transformed market.

Boiler Pumping. The base case for standard efficiency boiler installations in new construction and retrofits should be “intermittent” and “continuous” respectively. However, EGD should consider an alternative base case methodology for sub-markets where there is a clear exception, such as new condominium buildings.

I/O Control. The base case for indoor/outdoor controls is that all new and existing buildings have at least basic I/O controls and some degree of heating water setback.

4.0 Natural Gas Savings

Gas savings estimates are a function of inputs such as participation numbers, free-ridership assumptions, base case assumptions and assumed savings that result from implemented projects & measures.

Table 21: Natural Gas Savings

2010 DSM Program	Net Annual Gas Savings	
EXISTING HOMES		
Water Conservation		
TAPS Partners Program - Showerheads over 2.5	4,841,002	
TAPS Partners Program - 2.1 - 2.5	1,373,620	
TAPS Partners Program - Kitchen Aerators	1,543,643	
TAPS Partners Program - Bathroom Aerators	344,661	
TAPS Partners - 13W CFLs (4 bulbs)	-	
TAPS ESK Showerheads 2.1 - 2.5	13,804	
ESK Kitchen Aerator	5,133	
ESK Bathroom Aerator	2,084	
TAPS ESK CFL 13w (4 bulbs)	-	
TAPS Partners Program - Bag test	-	
Equipment Replacement		
Furnace Replacements	270	
Reflector Panels	-	
Thermostats ($15)	967	
Total Existing Homes		**8,125,183**
RESIDENTIAL NEW CONSTRUCTION		
ESK Kitchen Aerator	26,885	
ESK Bathroom Aerator	17,485	
ESK Showerhead 1.25	30,012	
ESK Showerhead 1.5 Handheld	31,446	
ESK CFL (13w) 6 bulbs	-	
ESK CFL (13w) 8 bulbs	-	
ESK Programmable Thermostat	55,736	
Energy Star Home (version 3)	1,419,744	
Energy Star Home (version 4)	-	
Total Residential New Construction		**1,581,307**
LOW INCOME		
LI TAPS Partners Program - Showerheads 2.5+	45,299	
LI TAPS Partners Program - Showerheads 2.0 - 2.5	2,746	
LI TAPS Partners Program - Bag test	-	
TAPS Low Income - 13W CFLs (2 bulbs)	-	
TAPS Low Income - 23W CFLs (2 bulbs)	-	
LI TAPS Partners Program - Kitchen Aerators	13,551	
LI TAPS Partners Program - Bathroom Aerators	3,098	
LI Prog Thermostats	24,917	
LI Weatherization program	229,743	
Total Low Income		**319,353**
TOTAL RESIDENTIAL		**10,025,843**

2010 DSM Program	Net Annual Gas Savings	
SMALL COMMERCIAL		
Air Doors (Single)	4,436	
Air Doors (Double)	46,482	
Condensing Boiler	115,510	
Condensing Unit Heater	10,665	
Demand Control Kitchen Ventilation (0 - 4999 CFM)	100,341	
Demand Control Kitchen Ventilation (5000 - 9999 CFM	360,086	
Demand Control Kitchen Ventilation (10000 - 15000 Cl	233,711	
Energy Recovery Ventilators (ERV)	190,485	
Small Commercial General	-	
Heat Recovery Ventilator (HRV)	166,467	
Infrared Heaters	877,445	
Pre-Rinse Spray Nozzle (1.24 GPM) (Full Service)	462,453	
Pre-Rinse Spray Nozzle (1.24 GPM) (Limited)	46,813	
Pre-Rinse Spray Nozzle (1.24 GPM) (Other)	69,022	
Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	482,687	
Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	61,461	
Pre-Rinse Spray Nozzle (0.64 GPM) (Other)	53,290	
Small Commercial Restaurants	-	
Rooftop Units	89,390	
Tankless Water Heaters	17,507	
Programmable thermostats (Warehouse, Industrial, Re	138,158	
Programmable thermostats (Multi-family, Food Service	131,124	
Programmable thermostats (Office, Information and Cl	335,912	
Programmable thermostats (Retail, Hotels/Motels)	45,198	
Total Small Commercial		**4,038,642**
LARGE COMMERCIAL		
Hotel/Motel	206,284	
Office	1,852,885	
Retail	135,752	
Warehouses	383,888	
Recommissioning	37,868	
Other Commercial	4,363,641	
Hospitals	3,300,450	
Long Term Health Care	248,921	
Government	2,922,061	
School	1,749,299	
College/University	925,166	
Total Large Commercial		**16,126,217**
MULTI RESIDENTIAL		
Multi-Residential Private	11,631,971	
Multi-Residential Non-Profit	1,562,200	
Multi-Residential Water Conservation		
Condo	62,346	
Rental	1,367,249	
Energy Efficient Washers	64,233	
Total Multi-Residential		**14,687,999**
LARGE NEW CONSTRUCTION	2,228,424	**2,228,424**
INDUSTRIAL		
Industrial	16,830,754	
Agriculture	1,716,376	
Total Industrial		**18,547,131**
TOTAL BUSINESS MARKETS		**55,628,413**

TOTAL GAS SAVINGS (Bus. Markets & Residential)	**65,654,256**

5.0 LRAM Statement

Table 22 illustrates the LRAM by rate class and the variance that will need to be reimbursed to or collected from rate payers. In total, $42,858 needs to be reimbursed to rate payers.

Table 22: 2010 LRAM by rate class

Rate	Budget Net Partially Effective (m3)	Actual Net Partially Effective (m3)	Volume Variance (m3)	Q1 Distribution Margin (cents/m3)	LRAM
Rate 1	(6,792,107)	(4,474,473)	(2,317,634)	~~6.0558~~	~~$ (140,352)~~
Rate 6	(14,568,612)	(10,981,854)	(3,586,758)	~~3.6820~~	~~$ (132,064)~~
Rate 110	(2,142,630)	(1,306,501)	(836,129)	1.6410	$ (13,721)
Rate 115	(1,363,492)	(609,733)	(753,758)	1.0496	$ (7,911)
Rate 135	0	40,685	40,685	1.4409	$ 586
Rate 145	(1,940,562)	(1,263,175)	(677,386)	1.8752	$ (12,702)
Rate 170	(4,563,402)	(3,095,771)	(1,467,631)	0.6207	$ (9,110)
Totals	(31,370,805)	(21,772,193)	(9,598,612)		$ (42,858)

6.0 SSM and TRC Statement

The OEB Decision in the Natural Gas DSM Generic Issues Proceeding stipulated a change to the TRC target and SSM calculation for the multi-year plan period 2007 through 2009[3]. This SSM calculation was continued for 2010 with the OEB Decision to extend the multi-year plan period to encompass 2010. The target for 2010 was $ 202,342,433

The target calculation is presented in the table below.

Table 23: 2010 TRC Target

Actual Audit 2007 TRC Results	Actual 2007 TRC results for LRAM with 2010 avoided costs	Actual Audit 2008 TRC Results	Actual 2008 TRC results for LRAM with 2010 avoided costs	Final 2009 TRC Results	Final 2009 TRC results (col E) with Final 2010 avoided costs with LRAM changes	2010 Target
A	B	C	D	E	F	=(B+D+F)/3 * 1.075%
$199,798,420	$184,156,243	$182,706,679	$200,474,811	$215,833,455	$180,045,503	$202,342,433

6.1 SSM & TRC for Resource Acquisition Programs

6.1.1 Background

The Total Resource Cost (TRC) test is a cost-effectiveness test that values the energy savings resulting from DSM programs for society. The benefits are measured on the basis of discounted avoided gas, electricity, and water costs over the period for which the measure is in place. Costs include utility fixed costs associated with program delivery and customers' incremental equipment costs. The TRC is expressed as a net amount; when benefits exceed costs, a program is cost-effective. When the SSM was first approved, the Ontario Energy Board determined that it should be based on the TRC test results.

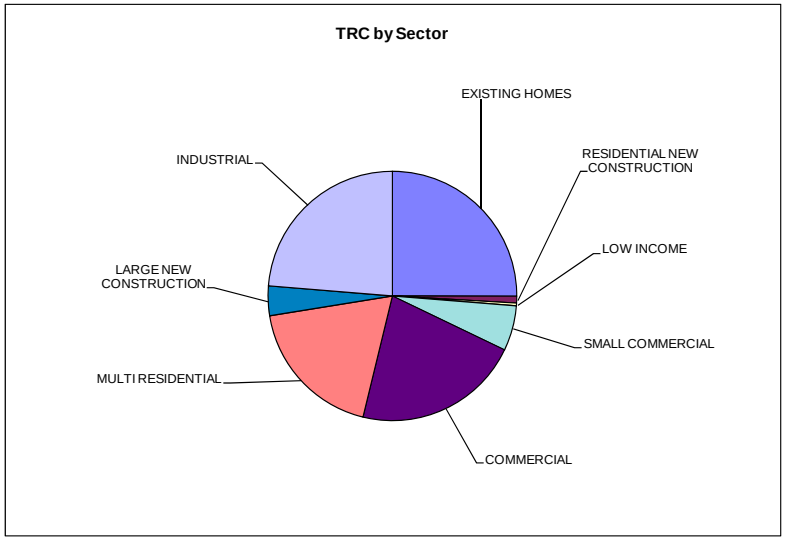
3 EB-2006-0021, Decision with Reasons, Ontario Energy Board, August, 2006, page 25

6.1.2 TRC Results

Table 24: 2010 TRC Results by Sector

	TRC	% of Total
EXISTING HOMES	$ 47,342,481	25%
RESIDENTIAL NEW CONSTRUCTION	$ 1,772,919	1%
LOW INCOME	$ 677,798	0%
SMALL COMMERCIAL	$ 11,210,656	6%
COMMERCIAL	$ 41,570,211	22%
MULTI RESIDENTIAL	$ 35,569,221	19%
LARGE NEW CONSTRUCTION	$ 7,348,643	4%
INDUSTRIAL	$ 45,176,787	24%
Total	**$ 190,668,716**	**100%**
Prog. Dev. & Market Research	$ (220,152)	
Overheads	$ (5,855,521)	
Net Total	**$ 184,593,043**	

Figure 12: 2010 TRC Results by Sector



6.1.3 SSM for Resource Acquisition Programs

The SSM provides for an incentive to the Company for DSM activities. The Ontario Energy Board Decision in the Natural Gas DSM Generic Issues Proceeding stipulated a change to the SSM calculation for resource acquisition programs for the multi-year plan period 2007 through 2009[4]. With the OEB Decision to extend the multi-year plan to encompass 2010 the SSM follows the same structure as the multi-year plan.

The SSM for 2010 is structured as follows:

- "For achievement of between 0 and up to 25.0% of the annual target, the SSM payout shall equal $900 for each 1/10 of 1% of target achieved.
- For achievement of greater than 25.0% up to 50% of the annual target, the SSM payout shall equal $225,000 plus $1,800 for each 1/10 of 1% of target achieved.
- For achievement of greater than 50.0% up to 75.0% of the annual target, the SSM payout shall equal $675,000 plus $6,300 for each 1/10 of 1% of target achieved above 50.0%, and
- For achievement of greater than 75.0% of the annual target, the SSM payout shall equal $2,250,000 plus $10,000 for each 1/10 of 1% of target achieved above 75.0% to a maximum of the SSM annual cap."[5]
- The annual 'cap' of $8.5 million will increase annually by the Ontario CPI as determined in October of the preceding year (i.e., the 2010 cap will increase based on CPI as determined at October of 2008).

The table below provides a summary of the 2010 SSM for all DSM resource acquisition programs.

4 EB-2006-0021, Decision with Reasons, Ontario Energy Board, August, 2006, page 27-30

5 Ibid, page 29

Table 25: 2010 SSM Resource Acquisition Programs

2010 Actual TRC	**$**	**184,593,043**		
2010 TRC Target		**202,342,433**		
% of Target		**% x Target**	**SSM payouts**	**SSM**
25%		50,585,608	225,000	-
50%		101,171,216	675,000	-
75%		151,756,825	2,250,000	-
100%		202,342,433	4,750,000	3,872,804
125%		252,928,041	7,250,000	-

6.2 SSM for Market Transformation Programs

Background

The Drain Water heat recovery program was first launched in 2009 and continued in 2010 with program changes that now complement the program being offered by Union Gas on the same technology, in the low rise residential new construction market. The changes made to the program in 2010 reflect discussions held with the Enbridge Evaluation and Audit committee (EAC) and Union Gas in an effort to align scorecards metrics for this program. Minor differences in metric values reflect that 2010 will be the second year that Enbridge has offered this program while Union gas has been offering the program for four years.

The program design for 2010 was updated to reflect adjustments suggested by EGD and accepted by the Board. This included the Company's proposal to withdraw from one other market transformation program and to direct the subsequent budget and any SSM claim awards towards the Drain water heat recovery market transformation program.

Scorecard

Table 26: SSM Market Transformation Program

Drain Water Heat Recovery		**2010 Metric Value Levels**			**Weight**	**2010 Metric Value Actual results**	**SSM Achievable at 100%**	**SSM Achieved**
Element	**Metrics**	50%	100%	150%				
ULTIMATE OUTCOMES	a) Units Installed (new build) as percentage of 2010 housing starts (across all builders). Builder incentive of $400 per unit.	2542	3305	4068	/80	1684	$400,000	$132,484
PROGRAM PERFORMANCE	b) 1st time new Builders enrolled (incremental)	15	20	25	/20	42	$100,000	$150,000
							Total	**$282,484**

Results

Of the two key metrics measured (units installed and 1st time builders enrolled), the first time builders enrolled totaled 42 builders, exceeding the 150% target. The SSM achievable for this metric at 150% is $150,000. This achievement in results was mainly due to the enrollment of smaller custom builders in the market.

The other key metric, number of units installed as a percentage of 2010 housing starts, totalled1684 units which were 80% of the 10% projection of 2094 units. The SSM available for this metric at 10% of housing starts was $200K, 80% results in a SSM of $132,484.
.

The total SSM achieved for this market transformation program is $282,484.

7.0 DSMVA Statement

As part of its EB-2006-0021 Decision with Reasons, page 30, the Board agreed that "If spending is less than what was built into rates, ratepayers shall be reimbursed. If more is spent than was built into rates, the utility shall be reimbursed up to a maximum of 15% of its DSM budget for the year. All additional funding must be utilized on incremental program expenses only (i.e. cannot be used for additional utility overheads).

There should be no limit on the amount of under spending from budget that should be returned to ratepayers."

Program spending was less than anticipated in 2010 with a resulting under spend of $1.46 million.

EB-2009-0154 filed 2009-05-29 established the budget for 2010 excluding the Low-Income and Industrial Support Program at $23,800,770.

Pursuant to the Board's direction in September 28, 2009 to file a 2010 Low Income DSM Plan, such plan was subsequently approved for an additional $1.67 million. This brought the total 2010 DSM Plan budget to $25.47 million before the proposed budget for the Industrial Support Pilot Programs.

With respect to the funding for the Industrial Support Pilot Programs, the Settlement Agreement filed March 2, 2010 EB-2009-0172 Ex-N1, T-1, S-1, page 10 states, "In order to allow for rates to be implemented at the first possible opportunity, without having to await any Board Decision on this issue, the parties have agreed that Enbridge may include the $1.25 million cost of the pilot project in the DSM Y factor. Enbridge agrees that, in the event that its position is not accepted, then Enbridge will credit $1.25 million to the 2010 DSMVA (and this credit will not impact on any calculation of under or over spending in relation to the 2010 DSM budget)."

On May 18, 2010, the Board issued its EB-2009-0172 Decision and confirmed that the funding for the Company's DSM Industrial Pilot Program referred to in EB-2009-0154 is not to be added to the $23.8 million DSM budget for 2010. The 2010 DSMVA credit of $1.25 million as aforementioned is shown on Table 25.

Table 27 DSMVA

	2010 Budget	2010 Actual
Residential Markets		
Variable	$ 7,311,774	$ 6,457,542
Fixed	$ 644,000	$ 300,733
Business Markets		
Variable	$ 6,151,126	$ 6,649,932
Fixed	$ 1,898,313	$ 2,174,726
Other		
Market Transformation		
Variable	$ 320,000	$ 999,767
Fixed	$ 675,557	$ 41,266
Program Development & Mkt Research	$ 500,000	$ 220,153
Overheads	$ 6,300,000	$ 5,855,521
Low Income		
Variable	$ 1,267,890	$ 982,220
Fixed	$ 259,090	$ 178,000
Other Low Income		
Market Transformation	$ 140,000	$ 140,785
Total 2010 DSM	$ 25,467,750	$ 24,000,645
Variable	$ 15,050,790	$ 15,089,461
Fixed	$ 10,416,960	$ 8,911,184
Total 2010 DSM	$ 25,467,750	$ 24,000,645
DSMVA from 2010 DSM Programs		$ (1,467,105)
Industrial Support Pilot Programs		$ (1,250,000)
Total DSM Payable (Due to Ratepayers)		$ (2,717,105)

8.0 Final 2011 TRC Target

In the table below you will find a final TRC target for 2011. The values in the table have been developed with 2011 avoided costs and 2010 program results as recorded in this Annual Report. The final TRC Target for 2011, also includes updates to assumptions considered best available information at the time of the 2010 DSM audit.

Table 28: 2011 TRC Target Calculation

Actual Audit 2008 SSM TRC Results	Actual 2008 TRC results for LRAM with Final 2011 avoided costs	Actual Audit 2009 SSM TRC Results	Actual 2009 TRC results for LRAM with Final 2011 avoided costs	2010 SSM TRC Audit at Jun 29 2011	Audit 2010 LRAM TRC Results at Dec 13 2011 with Final 2011 avoided costs	Preliminary 2011 Target	2011 TRC Target per settlement
A	B	C	D	E	F	=(B+D+F)/3 * 1.075%	
$182,706,679	$146,216,779	$215,833,455	$130,533,176	$184,593,043	$136,331,856	$148,020,982	$139,735,115

Extension of the 3 Year DSM Framework

On April14, 2009, the Ontario Energy Board informed Enbridge that it would not be appropriate to consider developing a new multi-year DSM framework for implementation in 2010. The OEB made this decision based on the uncertainties surrounding the forthcoming Bill 150, An Act to enact the Green Energy Act, 2009, and to Build a Green Economy, to repeal the Energy Conservation Leadership Act, 2006, and the Energy Efficiency Act.

Following the Board's Directive, EGD filed an application with the OEB on June 1, 2009 seeking an order granting approval of its 2010 Natural Gas Demand Side Management ("DSM") plan. The Board assigned File No. EB-2009-0154 to this application. Following a written proceeding, EGD filed an updated DSM plan with the OEB on Aug. 12th, 2009. This DSM plan was approved by the OEB on September 30, 2009.

9.0 Status Updates for 2009 Auditor and EAC Recommendations

Auditor Recommendations and Comments

1. Custom Commercial Programs, p. 16 of Final Audit Report

"EGD should collect the building simulation runs for the Commercial New Construction program. Currently EGD documents the results of the simulation, but does not provide the inputs and interim results for review. While we feel that the results are reasonable, without the complete files the auditors cannot verify the assumptions. The auditors are not proposing to re-run the simulations."

Enbridge Response:
Enbridge is in agreement with this recommendation and will begin to collect simulation runs by the end of 3Q 2010. The files collected will provide a summary of as built and as assumed for baseline conditions.

EAC Response:
The EAC endorses this response.

Status Update:
This recommendation was implemented prior to the finalization of the 2009 Audit Summary Report. It was reviewed and approved as being implemented and requested to be included in the EAC Response.

2. Customs Savings Programs, p. 15 of Final Audit Report

"*EGD should consider claiming savings for measures and operation changes recommended by staff, but not available for program incentives, if these measures are adopted and save energy.* Discussions with program staff indicated that efficiency improvements have been recommended in addition to program measures for commercial and industrial customers. These adoptions cannot be classified as "spillover", but rather they are direct effects of the program interaction with customers. While "spillover" is currently not counted, direct program effects legitimately could be. The process for claiming savings should include developing methodologies for documenting, monitoring and verification of the claims as well as independently evaluating the claims."

Enbridge Response:
Enbridge intends to study this recommendation further. A trial program may be implemented in 2011 in order to provide an opportunity for issues and topics of discussion such as, but not limited to, the following to be discussed and reviewed between the EAC and Enbridge.

- What are the appropriate free ridership rates to be applied to these measures?
- How can the Company best motivate customers to adopt more energy savings measures in the absence of approved incentives or savings metrics specific to these measures?
- Is a scorecard approach appropriate for such a program?

- What is the appropriate evaluation, measurement and validation (EM&V) requirements for these measures or programs? EGD will work with the EAC to define the appropriate EM&V requirements.

EAC Response:
The DSM Auditor recommended that EGD consider claiming savings for measures and operational changes recommended by EGD staff, but not available for program incentives.

The issue of whether such savings are appropriate to be claimed is one that must go to the broader Consultative for consideration, and ultimately must be ruled on by the OEB. Until this happens there should not be any program initiated or any savings said to result from such a program included in EGD's SSM or LRAM claims.

It would be appropriate for EGD to "consider" the matter, which is what the auditor recommended. If EGD wishes to provide a proposal for consideration by the EAC and, ultimately, the OEB, it would be perfectly reasonable for EGD to take steps to gather some empirical evidence to support such a proposal, and perhaps even consult with the EAC on how such a program could best work and be evaluated. The EAC would support such steps expressly in the interests of providing the best information for consideration of a program proposal, and not with any implicit acceptance or approval for such a program proposal.

Status Update:

EGD may consider this recommendation in the future. At present, other issues relating to the DSM Guidelines and Plan for 2012 as well as DSM research in 2011 have greater priority.

3. Recommendations, p.20 of Final Audit Report

"EGD should provide the disposition of prior year recommendations as part of the draft Annual Report. The disposition document was late and in draft form. Certainly an update would be reasonable as the Audit report is finalized, but an early disposition document would minimize surprises."

Enbridge Response:
Enbridge is in agreement with this recommendation. The 2010 DSM Draft Annual Report will have a summary disposition of prior year Auditor and EAC recommendations.

EAC Response:
The EAC endorses this response.

Status Update:
A section has been added to the 2010 Draft DSM Annual Report.

4. Recommendations, p.20 of Final Audit Report

"EGD should begin implementing agreed-upon action items within a month of the final OEB close of proceedings. While many of the recommendation were acted upon expeditiously, those involving commissioning of new studies lagged significantly. The effect of the lag means that results of new studies or activities may not be available until the end of 2010 or early 2011. In some cases the studies would have been useful to have for the 2009 Audit (the Steam Trap measure life review, for example).We understand that EGD staff is busy, and cannot control the regulatory process, but earlier attention to these action items agreed to would be helpful."

Enbridge Response:

Of the 20 recommendations made by the auditor as part of the 2008 DSM audit, as of May 2010, 5 were still in process, 12 had been implemented and 3 were no longer warranted. 15 of the 20 had been addressed and closed.

Enbridge is in agreement with this recommendation and will begin to implement agreed upon action items within a month of the final OEB approval to clear the accounts for the 2009 DSM Program year.

EAC Response:

The EAC endorses Enbridge's response.

Status Update:

We are still waiting for Board approval of the 2009 Clearance of Accounts however this document provides a status of all recommendations. A Summary table is provided at the end of this Appendix.

5. Drain Water Heat Recovery System Market Transformation Program (DWHR), p. 19 of Final Audit Report

"EGD should work with their evaluators to refine the market transformation surveys of builders and market actors to eliminate "leading" questions that can bias responses. Although we commend the approach to evaluating new market transformation programs (DWHR) and linking metrics to program logic models, care must be taken to ensure that questions and response categories lead to unbiased responses. This includes eliminating questions that steer respondents to response that EGD prefers. Since this is the first evaluation of the DWHR Program there is room for improvement."

Enbridge Response:

Enbridge designed their survey based on a survey that had been developed and used by Union in previous years for a similar DWHR Market transformation program. There was no indication from previous audits of the Union program or from Union staff that the survey should have been improved or was inappropriate. Enbridge assumed the survey was acceptable for our program. Enbridge understands that multiple choice surveys are not always the best choice and may not provide the necessary insights to understand the performance of a program.

The survey was removed from the 2010 DWHR program design as developed in consultation with the EAC and approved by the Board in 2009. Metrics for the 2011 program have been developed in consultation with the DSM consultative; the metrics do not include such a survey and are presently before the Board for approval. If approved, this ongoing concern will no longer exist.

EAC Response:
The EAC accepts Enbridge's response.

Status Update:
Metrics for the 2011 Drain Water Market Transformation program were approved by the Board therefore this issue is closed.

6. Custom Commercial Programs, p. 17 of Final Audit Report
"EGD should update the commercial and industrial sampling methodology if water savings becomes more prevalent. The sampling methodology established in a memo from Summit Blue dated October 31, 2008 notes that water savings account for less than 1% of the TRC benefits. Consequently, sites with water savings are only evaluated if they happen to be part of the sample drawn for gas and electric savings. In the memo, Summit Blue notes that this may need to be revisited – "If TRC benefits from water savings increase substantially in the future, then this approach—that only verifies water savings if these savings happen to occur in conjunction with sampled gas and electric savings within the joint-sample—might need to be modified".

Chronology of sampling methodology re: custom project water savings:

August 2008 – following recommendation from the 2007 audit, EGD requested Summit Blue to revise sampling methodology for the Engineering Review to address electricity and water savings as well as gas savings.

October 2008 – Summit Blue recommended a revised sampling methodology which included electricity savings. Re: water savings, Summit Blue recommended that water savings only be verified if they occurred in a project that happened to be selected on the basis of gas or electricity savings.

Nov, 2008 – Summit Blue's proposed methodology reviewed by joint Union / Enbridge EAC. EAC expressed concern that sampling methodology address water savings as well as gas and electricity.

December, 2008 – EGD memo to joint EAC outlined response of Summit Blue to EAC concerns and utilities' resulting method for sampling re: 2008 custom projects. The method involved a separate sample pull for industrial and commercial projects with respect to gas and electricity savings and a common sample pull from the industrial and commercial sectors for water projects. In other words, the Engineering Review of water savings to be based on six projects to be selected from the total population of water projects regardless of sector.

January 2010 - Summit Blue presented the final sample pull for 2009 projects which resulted in all sampled water projects originating in the industrial sector. In response to EGD's query, Summit Blue replied that the results from the sample of 6 projects should be applied to all water savings. In previous years, the methodology resulted in projects being pulled from both the commercial and the industrial sector. This year was not a typical year and thus the recommendation from the auditor and exploration of the issue.

Enbridge Response:
Enbridge will develop and implement, with the EAC, an updated sampling approach to select custom projects with water savings from both the commercial and industrial sectors separately. This sampling approach will allow different water savings realization rates to be developed for the industrial and commercial sectors.

As part of the updated sampling approach, Enbridge and the EAC will develop a guideline to determine when and how many commercial custom projects with water savings will be selected and reviewed by a 3rd party to verify savings. The guideline will clarify questions such as when water savings are significant enough to warrant an outside party to verify claimed savings.

EAC Response:
The EAC accepts Enbridge's response.

Status Update:

This topic was initially discussed with the EAC prior to the commencement of the 2010 Commercial Engineering Review (Jul. 2010). It was recommended by the EAC that a decision be deferred until November 2010, when a better estimation of the 2010 "actual" commercial water savings could be provided.

The topic was discussed with the EAC on Nov. 30th, Jan. 24th 2011, and Feb. 2nd.

The EAC recommended on Feb. 2nd, 2011, that a separate commercial water stratum was not required, due to the limited number of commercial projects with water savings.

7. Showerheads, p.12 of Final Audit Report
"EGD should update the showerhead savings values based on the 2009 SAS study."

Enbridge Response:
Enbridge is in agreement with this recommendation. Showerhead gas savings assumptions used in the following calculations have been changed based on the 2009 SAS study:

- Calculation of the 2009 LRAM
- Calculation of the 2010 TRC target

Enbridge brought forward the 2009 SAS Report in the 2009 audit. Due to timing of the audit, the SAS Report results were not included in the 2010 Assumptions Update or the 2011 DSM Plan submission (EB2010-0175). As the audit is now complete and the SAS report is considered best available information by the auditor, the EAC and Enbridge, Enbridge will notify the OEB and update the 2010 assumptions and 2011 DSM Plan at the earliest opportunity.

Note:
When the recommendation from the 2009 SAS Report was first published, it was hypothesized that a reduction in gas savings would have a corresponding reduction in water savings. If this hypothesis was held to be true, the reduction in gas savings seen from March 31, 2009 to those based on the last 2009 SAS study would suggest a decrease in water savings would be appropriate. Although this hypothesis was thought to be true, it had not been determined if the same ratio of old to new gas savings from the load research could be applied to calculate new water savings. Factors such as incoming cold water temperature and hot water tank energy factors also influence gas savings. How to account for these factors in an updated water savings value was unclear. Enbridge asked Navigant to review water savings assumptions for showerheads and recommend how to proceed.

Navigant published a memo on July 14 presenting a timeline of events that led to the final OEB approved gas and water savings and their recommendation not to change water savings for the showerhead measure. A copy of this memo can be found in Appendix C.

The following figure was pulled from the Navigant memo and serves to better understand the sequence of events that led to the final gas and water savings assumptions for 2010.

Timeline of Gas and Water Savings Estimates for Low-Flow Showerheads

Nomenclature key:

Scenario Name - Feb 6 Draft Sheet	Scenario Name - Approved and Published by OEB	Scenario Description
Scenario A:	N/A	1.25 GPM replacing 2.0 GPM
Scenario B:	Scenario A:	1.25 GPM replacing 2.25 GPM
Scenario C:	Scenario B:	1.25 GPM replacing 3.0 GPM

For clarity, the scenario nomenclature used in the OEB approved subsantiation sheets is that which applies below.

Feb 6, 2009 Draft

Scenario	Gas Savings (m^3)	Water Savings (L)
A	62	10,866
B	102	17,168

↓ Intervenors provide updated input assumptions related to the quantity of gas required to heat a given quantity of water.

Savings revised based on intervenor feedback (unpublished) - mid-March 2009

Scenario	Gas Savings (m^3)	Water Savings (L)
A	43	10,866
B	71	17,168

↓ March 26, 2009 – Enbridge provides first SAS load study

March 31, 2009 Final Draft - Approved and Published by OEB

Scenario	Gas Savings (m^3)	Water Savings (L)
A	66	10,866
B	116	17,168

↓

SAS Institute Revised Savings, 2010

Scenario	Gas Savings (m^3)	Water Savings (L)
A	45	10,866
B	88	17,168

In February of 2009, Navigant published Draft Assumptions for prescriptive measures. In mid-March, Navigant revised the gas savings for low-flow showerheads based on intervenor comments regarding values used in the savings calculation for inlet water temperature and water heater efficiency. This calculation was not published.

On March 26, 2009, EGD provided Navigant with a SAS load study. With this study, gas savings increased from the numbers developed in mid-March 2009. Navigant did not see cause to adjust water savings numbers. From mid-March 2009 to March 31, 2009, gas savings estimates increased but water savings remained the same.

In 2010, EGD provided Navigant with a revised SAS study. With this study, gas savings were reduced in 2010. However, as in March 2009, there was no cause to change water savings. The mid-March gas savings and water savings estimates were unpublished and, as a result, the EAC, Consultative and others did not see the reduction in gas savings with unchanged water savings from Feb. 6, 2009 to mid-March 2009. Without this missing piece of information, the hypothesis that a reduction in gas savings would have a corresponding reduction in water savings appeared to be appropriate.

EAC Response:
The EAC accepts this response.

Status Update:
Enbridge updated the showerhead savings for 2010 (DSM Plan EB-2009-0154) and 2011 (DSM Plan EB-2010-0175) as per the 2009 SAS Showerhead Load Research study.

8. ENERGY STAR for New Houses, p. 13 of Final Audit Report

"EGD should conduct a free-rider study for the ENERGY STAR® for New Houses if the program is continued."

Enbridge Response:
Due to the low TRC and projected short life span of this program, the EAC and Enbridge feel a free-ridership study is not warranted at this time. Enbridge will not conduct a free ridership study for this program.

In discussing this program with the EAC, the EAC recommended that a 48% free ridership rate be applied to this program. The 48% recommendation was based on comments made by the auditor in the Final Audit Report when presenting their view of the Salt River Project's (SRP) Power Wise Homes program (FY2009) in Arizona.

In the interest of expediting the close of the 2009 DSM audit process and clearing the 2009 DSM accounts, Enbridge will adopt a 48% free ridership rate for the Energy Star program. Enbridge notes that no compelling evidence is available to suggest an appropriate free ridership rate for Enbridge's program. Other programs such as the Arizona Public Service (APS) Residential New Construction program publish free

ridership rate of 20% and a net to gross ratio of 90%. It can be argued that 20% is also an appropriate free ridership rate for our program based on the APS program. A 48% free ridership will be applied when calculating 2010 results. 2011 assumptions will be updated and approved by the Board at the earliest appropriate time.

A 48% free ridership rate for the Energy Star program has been implemented and used in the following calculations:

- Calculation of the 2009 LRAM
- Calculation of the 2010 TRC target

EAC Response:
The EAC accepts this response.

Status Update:
Enbridge did not complete a free-rider study due to the low TRC and projected short life span of this program. The EAC and Enbridge agreed it is not warranted at this time.

9. CFL, Table 3@ p. 7 and p.13 of Final Audit Report
"EGD should adjust the CFL distribution rate based on the result of the participant surveys."

Enbridge Response:
Enbridge is in agreement with this recommendation.

CFL per unit savings remain unchanged. Data from results of recent participant surveys have been used to adjust the number of CFLs installed per household. With this adjustment, the following were updated:

- 2010 CFL program savings
- Calculation of the 2010 TRC target
- Calculation of 2009 TRC

EAC Response:
The EAC accepts this response.

Status Update:
EGD has continued to use an adjustment factor in 2010 for CFL's based on participant survey results.

10. Thermostats, p.13 of Final Audit Report
"EGD should adopt the final Navigant thermostat savings assumptions for the 2009 LRAM and the 2010 savings estimate."

Enbridge Response:

Enbridge is in agreement with this recommendation and has implemented it in the calculation of 2009 LRAM. The Navigant savings assumptions were already approved by the OEB in the Enbridge 2010 DSM Plan (EB-2009-0154).

EAC Response:
The EAC accepts this response.

Status Update:
The Navigant savings assumptions were already approved by the OEB in the Enbridge 2010 DSM Plan (EB-2009-0154).

11. Low Income Weatherization, p. 13 of Final Audit Report
"EGD should conduct an impact evaluation of the low income program savings before adjusting the current OEB approved savings estimate."

Enbridge Response:
This recommendation is specific to the low income weatherization program, not all low income programs. Based on modeling of participant homes, Enbridge has proposed to increase savings by 44% over OEB approved savings values. However, after EGD completed a rough cursory review of pre and post gas consumption data for a small sample of homes that participated in the low income weatherization program, it was concluded that although the trend of growing gas savings was true, the model used to estimate savings would benefit from being calibrated based on more extensive pre and post gas consumption data. This calibration will be part of an impact evaluation to be conducted by EGD. Target completion for the terms of reference for this impact evaluation is end of 3Q, 2010. Target completion for the impact evaluation is end of 1Q 2011.

OEB approved savings assumptions were used for the calculation of low income weatherization energy savings in reporting the 2009 program results. Enbridge did not apply the proposed savings numbers to 2009 results.

Any future proposed changes will be based on the results of forthcoming impact evaluation.

EAC Response:
The EAC endorses Enbridge's response.

Status Update:

As requested by the Board, the Company submitted a separate Low Income DSM plan for 2011. This plan included a budget of up to $100,000 for an impact evaluation of the low income weatherization program. The plan was approved on December 20, 2010. The Company is presently preparing Terms of Reference for the impact evaluation for discussion with the EAC.

EAC Recommendations & Comments

1. Commercial tankless water heater incremental cost assumption.

The current Board-approved assumptions for commercial applications of tankless water heaters (replacing a 30 gallon standard water heater) include both a substantially negative incremental cost (-$1102) and a free rider rate of only 2%. This combination of assumptions raises serious questions. Normally, a measure with a substantially negative incremental cost would quickly penetrate the market – even a niche market – naturally (i.e. without a DSM program). That would not happen only if the non-cost barriers to market adoption were extremely high. A classic example would be proper sizing (with lower costs to consumers) rather than over-sizing (with attendant efficiency penalties) of HVAC equipment. In that example, there are a combination of barriers that lead to over-sizing even though proper sizing would be cheaper, including:

A. consumers do not know what size equipment they need;
B. consumers do not understand that there is an efficiency penalty for over-sizing;
C. many contractors do not know how to properly size equipment;
D. contractors tend to err on the side of over-sizing because it covers up for other typical installation problems and therefore reduces likelihood of "call-backs", while proper sizing raises risks of under-sizing, which always produces "call-backs";
E. consumers do not know how to identify which contractors are knowledgeable and capable of quality sizing and installation.

It is hard to imagine how or why sales of tankless water heaters would have similarly steep market barriers. While consumer lack of information on product benefits is likely, that alone would not be enough to offset a substantial negative incremental cost. If tankless water heaters do not face such steep barriers, then either the incremental cost is not actually negative (perhaps because the initial assessment of incremental cost did not capture costs of adding pipe or other costs) or the free ridership rate is very high. Thus, the EAC recommends that Enbridge conduct an assessment of the severity of the barriers to installation of tankless water heaters with the aim of either confirming that barriers are so steep that a significant negative incremental cost (and low free rider rate) is plausible or flagging adjustments that should be made to either the incremental cost or free ridership assumptions.

Enbridge Response:

Enbridge intends to conduct an assessment of the nature and severity of the barriers to the installation of tankless water heaters as recommended by the EAC. This study will be included on the list of possible research and study activities for review of evaluation priorities with the EAC.

Status Update:

This issue will be discussed with the 2011 EAC as part of their review of research priorities.

2. Prescriptive approach to school boilers.

The 2008 auditor recommended that the Company revert back to custom (rather than prescriptive) calculations of school boiler savings because that approach would more accurately estimate savings without imposing undue burdens on participants. The EAC concurred with that recommendation. However, the Company did not concur and has not changed its approach to estimating school boiler savings. Indeed, it is has proposed and received Board approval to make some other commercial boiler savings estimates prescriptive rather than custom calculations. At the same time, there have been on-going discussions between the Company and the EAC regarding the need to assess appropriate baseline efficiency assumptions for boilers. The Company recently committed to conducting a comprehensive study of boilers that would identify the key features of boilers (i.e. not just efficiency ratings, but also outdoor resets, modulation and others) that affect actual operating efficiency and assess the frequency with which all such features are typically installed in its service territory (i.e. a comprehensive baseline assessment). That study is expected to be complete by March 2011. Since the results of that study may have some bearing on the question of whether savings should be calculated prescriptively or not, the Company and the EAC have agreed to defer, until after the completion of the study, further discussions on what to do with the 2008 auditor's recommendation on this matter.

Enbridge Response:
Enbridge agrees with the approach recommended by the EAC.

Status Update:

Boiler baseline study is underway and the study is expected to be completed by May 2011

3. Steam trap measure life.

Following the 2008 audit, Enbridge agreed to both lower its assumption regarding the measure life of steam traps from 13 to 6 years and conduct a new measure life study that was consistent with the auditor's proposed approach. Neither of those things happened. GEC identified during its review of the Company's 2009 Annual Report that Enbridge had inadvertently neglected to revise its measure life assumption. The Company subsequently corrected this assumption before the auditor reviewed its TRC and SSM calculations. Thus, while the final TRC and SSM values reported in the audit report reflect the correct steam trap measure life, the audit report does not discuss the issue. Enbridge has also agreed to use the 2008 Auditor's recommended 6 year measure life in future years' TRC and SSM calculations unless and until better information is developed.

Enbridge Response:

The Company has filed corrections to its assumptions for 2010 and 2011 with the Board that reflect this commitment. Enbridge plans to conduct a new study of steam trap measure life in the second half of 2010, using a study design that is also consistent with the 2008 Auditor's recommendations. The Company is consulting with the EAC on the design of the study and will also seek input from the EAC both on draft work products from the study and on any proposed change to measure assumptions resulting from the study.

Status Update:

The Company has consulted with the EAC on design of the work being conducted by the Université du Quebec. Further statistical analysis is being conducted on Enbridge customer steam trap audit reports. The results of this additional analysis should be available in the spring of 2011.

4. Rules for market transformation incentive payments.

In its review of Enbridge's 2009 Annual Report, GEC noted that Enbridge incorrectly calculated the market transformation incentive payment to which it was entitled because it incorrectly applied the Board approved rules for calculating payments for partial achievement of goals. Consider, for example, the Company's EnerGuide Fireplace program. One of the performance metrics for that program was the "% point increase in customer awareness of the EnerGuide label", with the Company eligible for 50% of the performance incentive for that metric if it achieved an 80% awareness level and 100% of the incentive if it achieved an 85% awareness level. The Company actually achieved an 81% awareness level. Thus, using what we will call the correct "interpolation approach" hereafter, the Company should have been entitled to 60% (50% for 80% awareness plus, interpolating between 80% and 85%, 10% incentive for every 1% point above 80% awareness). However, the Company calculated that it was entitled to only 20% of the performance incentive for that metric. There were other metrics with similar miscalculations that were too low, as well as others with miscalculations that were too high. Enbridge corrected all of these calculations before providing its estimates of the market transformation incentives to the Auditor. As a result, the Auditor does not discuss this issue in its report. A spreadsheet showing the revised market transformation shareholder

incentive calculations using the correct interpolation approach is attached as Appendix D to this report. The Company has committed to using the interpolation approach discussed above to calculate shareholder incentives to which it may be entitled in future years. The Company has also committed to capping shareholder incentives for any one performance metric at 150% of what would be earned for reaching 100% of the metric target. Both of these commitments are consistent with recent Board rulings.

The EAC understands that the Company applies the Board's rules for market transformation incentive calculations such that shareholder incentives are available, on a pro-rated basis, even if the Company does not reach the first performance incentive metric tier (i.e. even if it does not reach the target associated with earning 50% of the assigned incentive to the metric). The EAC is concerned that this approach could result in incentives being awarded even if the market retracts rather than expands, if metrics are not carefully designed as year over year metrics. If not resolved in the interim, this issue should be addressed in the new DSM framework under consideration by the Board.

Enbridge Response:
Please refer to appendix D for a spreadsheet that presents the SSM calculation for 2009 Market transformation programs. The SSM calculation was audited and follows the Board approved rules as described above. A cap of 150% on individual market transformation metrics was also implemented in the 2009 MT SSM calculation. This is in line with the Board Decision regarding the Enbridge 2010 DSM plan, found in EB-2009-0154.

Status Update:
This recommendation was implemented in the 2009 Market Transformation SSM calculation and endorsed by the EAC in the 2009 Audit Summary Report.

5. Logic models for market transformation programs.
(Audit Report pages 18- 19)
In its 2008 Audit Report Cadmus recommended development of "logic models" and new metrics for market transformation programs. In their 2009 audit Cadmus noted similar concerns with the EnerGuide for Natural Gas Fireplaces and the Home Performance Contractor Market Transformation programs. The latter program was discontinued in 2009.

The EAC requested an update on the status of this recommendation.

Enbridge Response:
Enbridge has adopted logic models for Market Transformation programs as part of its DSM practice. The Company will continue to review and discuss logic models with the EAC. As an example, Enbridge developed a logic model for the Drain Water Heat Recovery program. The model was circulated to the EAC and was reviewed by the 2009 auditor, Cadmus.

Metrics for the Drain Water Heat Recovery program in the 2010 plan were developed in consultation with the EAC and approved by the OEB. Metrics for scorecard programs in the 2011 plan were developed in consultation with a working group of the DSM Consultative and submitted to the OEB with the consensus of the full

Consultative. At time of this report, the 2011 DSM Plan application is still before the Board.

Status Update:
Closed: The update was provided as requested in EGD's response above**.**

6. Custom project "advancement" vs. "replacement" rules.
(Audit Report page 31)
In its 2008 Audit Report Cadmus recommended that Enbridge document the decision rules for categorizing customer project equipment upgrades as "replacements" versus "advancements". Enbridge agreed with this recommendation and proposed to use the rules suggested by the auditor as a starting point for development of Enbridge-specific decision rules, for phase in during 2009 and full implementation in 2010.

The EAC requested an update on the status of this recommendation.

Enbridge Response:
The following decision rules (as recommended by Cadmus) have been adopted as business guidelines.

- If a boiler is replaced beyond its effective useful life (if a boiler is older than 25 years), it should be categorized a replacement.
- If a boiler burns out or is inoperable, regardless of its age, it should be categorized as a replacement.
- If a customer had already decided to replace a boiler, regardless of age or condition, it should be a replacement.
- Installing new equipment should be characterized as advancement only when there is evidence that the utility program convinced the customer to replace an operating boiler before the end of its effective useful life. Evidence that the utility program convinced the customer to replace an operating boiler before the end of its effective useful life may come in many forms including e-mails from customers, meeting minutes and correspondence between Enbridge and partners.

7. Site visits for commercial custom project verification studies.
(Audit Report page 32)
In its 2008 Audit Report Cadmus recommended conducting site verification visits for commercial custom project verification studies. EGD agreed to do so for 2009 and to use that experience to inform future commercial project verification efforts. The EAC has asked for a status update on this recommendation.

Enbridge Response:
In 2010, all commercial custom projects that will be verified include a site visit. Enbridge intends to continue with this practice for 2011.

Status Update
Closed. The update was provided as requested in the EGD Response above.

8. Annual free ridership studies for custom projects.
(Audit Report page 33)
In its 2008 Audit Report Cadmus recommended conducting annual free-rider surveys for custom project participants. There was discussion in the 2008 audit about the cost/benefit trade off of this recommendation. EGD agreed to investigate this recommendation. EGD's internal resolution is documented under the "status" heading for this item in the 2009 Audit Report. That internal resolution indicates that free ridership studies would be conducted each year, and the free-ridership rates developed in one year will be applied to custom projects in the following year. Enbridge has not discussed this internal resolution with the EAC.

The EAC requested an update on the status of this recommendation.

Enbridge Response:
Enbridge is preparing to bring the Terms of Reference for a free ridership study of custom projects to the EAC for review in Q3 of 2010. The issue of free ridership is a matter of some discussion in the consultation regarding the 2012 DSM Framework and will be addressed in the Board's Guidelines for natural gas DSM. Publication of the Guidelines is expected later this year. Due to the ambiguity surrounding the 2012 DSM Framework and the significant costs associated with free ridership studies, it may not be prudent to undertake a free ridership study when the results would only apply to the 2011 DSM program year. In reviewing the draft Terms of Reference, EGD will discuss this matter with the EAC.

Status Update
The Company is awaiting publication of the Board's DSM Guidelines for 2012. The document is now expected at the end of March, 2011.

9. Documentation of program process flow and quality assurance/quality control procedures.

(Audit Report page 35)

In its 2008 Audit Report, Cadmus praised EGD's practices in respect of program process quality assurance and quality control, and recommended that Enbridge better document such procedures. The "status" report in the 2009 Audit Report indicates that this will be done for new programs. The EAC suggests that Enbridge should consider whether there are any existing programs of a scale and scope sufficient to justify additional documentation in this respect.

Enbridge Response:

As a matter of continuous improvement in DSM practice, Enbridge has undertaken to develop program evaluation plans as an integrated element of the planning process beginning with new programs as they are introduced. The evaluation plans will include a description of any verification requirements as well as a description of quality assurance procedures in tracking program results. In documenting existing programs, Enbridge will give priority to programs of larger scale and significance in the overall DSM portfolio.

Status Update:

This documentation process is in progress and ongoing.

Table 29: Auditor & EAC Recommendation Summary Table

Auditor recommendations	Enbridge response	Status
1. EGD should collect the building simulation runs for the Commercial New Construction program	Enbridge is in agreement with this recommendation and will begin to collect simulation runs by the end of 3Q 2010.	Implemented
2. EGD should consider claiming savings for measures and operation changes recommended by staff, but not available for program incentives, if these measures are adopted and save energy.	EGD may consider this recommendation in the future. At present, other issues relating to the DSM Guidelines and Plan for 2012 as well as DSM research in 2011 have greater priority	On hold
3. EGD should provide the disposition of prior year recommendations as part of the draft Annual Report.	Enbridge is in agreement with this recommendation	Implemented
4. EGD should begin implementing agreed-upon action items within a month of the final OEB close of proceedings	Enbridge is in agreement with this recommendation	In progress
5. EGD should work with their evaluators to refine the market transformation surveys of builders and market actors to eliminate “leading”	The survey was removed from the 2010 DWHR program design as developed in consultation with the EAC and approved by the Board in 2009.	Implemented
6. *EGD should update the commercial and industrial sampling methodology if water savings becomes more prevalent*.	Enbridge will develop and implement, with the EAC, an updated sampling approach to select custom projects with water savings from both the commercial and industrial	Implemented

	sectors separately… The EAC recommended on Feb. 2nd, 2011, that a separate commercial water stratum was not required, due to the limited number of commercial projects with water savings.	
7. EGD should update the showerhead savings values based on the 2009 SAS study.	Enbridge is in agreement with this recommendation	Implemented
8. EGD should conduct a free-rider study for the ENERGY STAR® for New Houses if the program is continued.	Due to the low TRC and projected short life span of this program, the EAC and Enbridge feel a free-ridership study is not warranted at this time	Not required
9. EGD should adjust the CFL distribution rate based on the result of the participant surveys.	EGD has continued to use an adjustment factor in 2010 for CFL's based on participant survey results.	Implemented
10. EGD should adopt the final Navigant thermostat savings assumptions for the 2009 LRAM and the 2010 savings estimate"	Enbridge is in agreement with this recommendation and has implemented it in the calculation of 2009 LRAM. The Navigant savings assumptions were already approved by the OEB in the Enbridge 2010 DSM Plan (EB-2009-0154).	Implemented
11. EGD should conduct an impact evaluation of the low income program savings before adjusting the current OEB approved savings estimate.	As requested by the Board, the Company submitted a separate Low Income DSM plan for 2011. This plan included a budget of up to $100,000 for an impact evaluation of the low income weatherization program. The plan was approved on December 20, 2010. The Company is presently preparing Terms of Reference for the impact evaluation for discussion with the EAC	In progress
EAC Recommendations and comments	**Enbridge response**	**Status**
1. Commercial tankless water heater incremental cost assumption.	This issue will be discussed with the 2011 EAC as part of their review of research priorities.	In progress
2. Prescriptive approach to school boilers.	Boiler baseline study is underway and the study is expected to be completed by May 2011	In progress
3. Steam trap measure life.	The Company has consulted with the EAC on design of the work being conducted by the Université du Quebec. Further statistical analysis is being conducted on Enbridge customer steam trap audit reports. The results of this additional analysis should be	In progress

	available in the spring of 2011.	
4. Rules for market transformation incentive payments.	This recommendation was implemented in the 2009 Market Transformation SSM calculation and endorsed by the EAC in the 2009 Audit Summary Report.	Implemented
5. Logic models for market transformation programs	Enbridge has adopted logic models for Market Transformation programs as part of its DSM practice.	Implemented
6. Custom project "advancement" vs. "replacement" rules.	The following decision rules (as recommended by Cadmus) have been adopted as business guidelines.	Implemented
7. Site visits for commercial custom project verification studies.	In 2010, all commercial custom projects that will be verified include a site visit. Enbridge intends to continue with this practice for 2011	Implemented
8. Annual free ridership studies for custom projects.	The Company is awaiting publication of the Board's DSM Guidelines for 2012. The document is now expected at the end of March, 2011.	Ongoing
9. Documentation of program process flow and quality assurance/quality control procedures.	As a matter of continuous improvement in DSM practice, Enbridge has undertaken to develop program evaluation plans as an integrated element of the planning process beginning with new programs as they are introduced.	Ongoing

Appendix A: Summary Overviews of 2010 DSM Program

This section of the report provides a summary of the 2010 DSM Program results. This data is presented by program category and by technology. Separate tables are presented for custom programs and prescriptive programs.

Note: Tables 30 – 35 are based on pre-audit results and are suitable for illustrative purposes only.

Table 30: Summary Overview by Program Category: Prescriptive Programs

Program Category	Sum of Net TRC Benefits	Sum of Net Gas savings m³	Sum of Net kWh savings	Sum of Net Water Savings m³	Sum of Participants /Units	Average of Measure Life	Sum of Total Net Incremental costs	Sum of Total Incentive payments
Equipment Replacement	3,107	1,236	985	0	39	16	1,367	22,859
Low Income	674,016	318,356	263,067	18,111	7,523	10	539,090	982,220
Residential New Construction	1,702,743	1,553,201	2,742,043	28,246	16,080	13	6,668,938	1,152,481
Schools	3,521,581	1,102,645	0	0	73	25	623,651	119,200
Small Commercial	11,210,656	4,038,642	2,539,617	228,186	7,279	13	2,673,904	788,261
Multi-Residential Water Conse	5,621,867	1,493,828	217,404	283,867	32,118	10	567,922	143,720
Water Conservation	47,704,966	8,123,946	18,637,174	2,315,532	788,000	10	2,820,494	4,493,941

Table 31: Summary Overview by Program Category: Custom Programs

Program Category	Sum of Net TRC Benefits	Sum of Net Gas savings m³	Sum of Net kWh savings	Sum of Net Water Savings m³	Sum of Participants /Units	Average of Measure Life	Sum of Total Net Incremental costs	Sum of Total Incentive payments
Agriculture	2,014,476	1,716,376	20,153	0	32	13	1,912,539	225,215
Hospitals	8,734,046	3,300,450	4,167,217	3,802	28	12	2,957,696	369,317
Hotel/Motel	410,897	206,284	63,520	0	6	15	149,599	134,181
Industrial	43,162,311	16,830,754	2,737,326	72,621	91	13	5,649,149	1,872,486
Large New Construction	7,348,643	2,228,424	4,381,459	0	43	23	4,877,674	178,706
Long Term Health Care	670,239	248,921	330,645	0	23	18	373,967	46,937
Multi-Res Non-Profit	3,859,601	1,562,200	1,134,573	0	53	14	1,148,282	341,179
Multi-Res Private	26,087,753	11,631,971	4,898,137	0	275	15	9,165,193	1,926,750
Government/Municipalities	7,295,675	2,922,061	344,765	0	34	15	1,410,744	223,064
Office	4,755,113	1,852,885	1,302,711	0	45	14	1,404,362	283,163
Other Commercial	9,027,506	4,363,641	503,160	0	30	17	3,219,614	352,714
Recommissioning	161,397	37,868	84,702	0	1	15	20,280	4,520
Retail	367,406	135,752	-17,738	0	2	18	107,332	11,200
Schools	1,441,015	646,654	163,349	0	32	14	595,700	87,068
College/University	4,142,820	925,166	3,034,429	1,962	15	17	1,163,716	131,891
Warehouses	766,728	383,888	1,432	0	16	15	351,540	68,085

Table 32: Summary Overview by Technology: Prescriptive Programs

Technology	Sum of Net TRC Benefits	Sum of Net Annual Gas savings m^3	Sum of Net kWh	Sum of Net Water savings m3	Sum of Participants /Units	Average of Measure Life	Sum of Total Net Incremental costs	Sum of Total incentive payments
Aerator	10,573,232	1,958,456	-	662,071	315,551	10	222,398	887,031
Aerators	453,259	85,413	-	28,766	12,004	10	19,102	-
Air Doors	89,358	50,917	32,243	-	39	15	86,973	11,800
CFL	10,458,998	-	19,526,555	-	159,004	8	-	-
Condensing Boiler	261,474	115,510	-	-	71	25	133,280	-
Condensing Unit Heater	10,053	10,665	(3,145)	-	11	18	21,802	-
Demand Control Kitchen Ventilat	2,610,161	694,138	1,857,745	-	68	15	926,250	117,700
Energy Recovery Ventilators (ERV)	489,004	190,485	-	-	44	20	162,749	32,250
Energy Star Home	882,185	1,419,744	2,022,228	-	2,682	25	6,556,203	265,450
Front Load Washer	308,707	64,233	217,404	31,908	610	11	329,400	51,450
Furnace	422	270	-	-	7	18	455	-
Heat Recovery Ventilator (HRV)	409,764	166,467	-	-	67	20	159,743	18,250
Infrared Heaters	2,557,777	877,445	279,708	-	723	20	715,045	117,050
Pre-Rinse Spray Nozzle	2,626,531	1,175,726	-	228,186	2,036	5	133,202	144,476
Programmable thermostats	1,896,353	650,393	373,066	-	3,735	15	328,680	157,015
Rooftop Units	132,725	89,390	-	-	369	15	131,456	67,170
Showerhead	27,830,380	6,328,342	-	1,699,817	156,768	10	2,668,315	4,610,327
Showerheads	4,859,901	1,344,182	-	223,193	19,504	10	219,420	92,270
Small Commercial General	(44,010)	-	-	-	-		-	95,000
Small Commercial Restaurants	(5,640)	-	-	-	-	1	-	-
Tankless Water Heaters	177,108	17,507	-	-	116	18	(125,275)	27,550
Thermostats	104,874	60,186	61,322	-	2,944	15	123,434	(13,538)
Weatherization	234,741	229,743	33,165	-	201	23	459,084	865,835

CFL: Compact Fluorescent Light bulb

Table 33: Summary Overview by Technology: Custom Programs

Technology	Sum of Net TRC Benefits	Sum of Net Annual Gas savings m³	Sum of Net kWh	Sum of Net Water savings m3	Sum of Participants /Units	Average of Measure Life	Sum of Total Net Incremental costs	Sum of Total incentive payments
Air Curtain	783,051	349,208	(38,449)	-	4	15	184,474	44,970
Air Handling Unit	109,807	66,312	44,706	-	3	15	122,991	12,097
Blowdown Heat Recovery	477,401	158,910	83,477	232	1	15	26,589	25,415
Boiler - Hydronic Condensing	307,983	183,399	-	-	4	22	256,255	38,978
Boiler - Hydronic Condensing - Ad	2,590,451	2,140,556	-	-	40	10	2,398,764	398,611
Boiler - Hydronic Condensing - Re	1,399,712	486,621	-	-	15	25	409,336	84,627
Boiler - Hydronic High Efficiency	13,259,614	4,105,590	4,009,131	-	182	25	6,108,541	554,249
Boiler - Hydronic High Efficiency -	8,553,613	5,740,222	16,539	-	93	10	4,964,170	745,358
Boiler - Hydronic High Efficiency -	2,163,208	814,272	-	-	24	25	828,429	108,164
Boiler - Steam - Replacement	522,462	184,056	-	2,856	2	25	162,784	29,437
Boiler - Watertube	14,156	6,309	-	-	1	15	3,000	1,009
Building Envelope	348,952	154,012	(7,262)	-	4	25	201,182	21,579
Burner	846,062	327,202	-	-	1	15	43,750	52,331
Condensing Economizer	3,740,183	1,719,606	(108,632)	-	2	15	1,238,796	108,255
Controls	30,243,152	8,433,907	15,148,641	949	186	15	6,869,141	1,320,896
Destratification	418,473	252,016	(135,687)	-	12	15	213,557	28,260
Direct Contact Water Heater - Rep	128,552	66,577	-	-	2	25	99,765	8,761
Economizer	5,214,264	2,213,325	(60,221)	-	10	15	1,114,634	246,097
ERV/HRV	1,514,640	597,678	262,378	-	4	15	467,822	73,645
Evapourator	523,368	213,172	-	-	1	15	56,343	34,094
Furnace	11,354,351	4,256,228	738,049	1,091	10	18	2,082,945	507,305
Greenhouse Curtains	1,174,756	1,291,275	-	-	20	10	1,557,193	176,340
Heat Exchanger	795,417	307,411	-	3,216	1	15	83,391	46,485
Heat Recovery	6,570,085	2,586,531	(654)	40,070	16	16	1,030,177	349,774
Hydronic Boiler	577,511	195,609	-	-	2	18	84,624	31,285
Industrial Equipment	12,550,424	4,140,178	185,578	21,992	11	20	1,011,338	433,005
Infrared	414,037	301,720	-	-	-	10	279,042	36,015
Insulation	897,748	427,263	-	-	9	15	264,173	59,812
Insulation/Caulking/Sealing	1,096,284	508,614	-	-	7	15	406,861	61,496
Kitchen Ventilation	824,445	253,812	622,491	-	12	15	438,361	46,500
Leak Repair	300,227	21,447	363,069	-	1	15	57,128	3,430
Make Up Air Unit	438,748	130,515	112,465	-	1	15	39,602	23,795
Reflective Panel	519,299	285,255	-	-	30	15	323,734	36,950
Roof Top Unit	127,535	37,040	90,650	-	4	15	56,593	6,662
Showerheads	83,124	17,363	-	5,400	2	10	8,325	899
Steam Trap	3,005,837	2,170,477	(41,739)	700	26	6	158,700	60,254
Thermostat - Programmable	306,524	106,382	57,750	-	3	15	55,440	25,200
VFD	4,642,995	1,293,503	1,872,278	-	33	15	684,255	206,159
Window	34,479	16,258	-	-	1	25	26,640	2,597

ERV: Energy Recovery Ventilation
HRV: Heat Recovery Ventilation
VFD: Variable Frequency Drive

Table 34: Natural Gas Savings per $1 of Incremental Cost and $1 of Incentive Payments by Technology

Technology	Sum of Net Annual Gas savings	Sum of Total Net Incremental costs	Gas Savings/m³ per $1 of Incremental costs	Sum of Total Incentive payments	Gas Savings/m³ per $1 of Incentive Payments
Aerator	1,958,456	222,398	8.81	887,031	2.21
Aerators	85,413	19,102	4.47	-	0.00
Air Curtain	349,208	184,474	1.89	44,970	7.77
Air Doors	50,917	86,973	0.59	11,800	4.32
Air Handling Unit	66,312	122,991	0.54	12,097	5.48
Blowdown Heat Recovery	158,910	26,589	5.98	25,415	6.25
Boiler - Hydronic Condensing	183,399	256,255	0.72	38,978	4.71
Boiler - Hydronic Condensing - Adva	2,140,556	2,398,764	0.89	398,611	5.37
Boiler - Hydronic Condensing - Repl	486,621	409,336	1.19	84,627	5.75
Boiler - Hydronic High Efficiency	4,105,590	6,108,541	0.67	554,249	7.41
Boiler - Hydronic High Efficiency - A	5,740,222	4,964,170	1.16	745,358	7.70
Boiler - Hydronic High Efficiency - R	814,272	828,429	0.98	108,164	7.53
Boiler - Steam - Replacement	184,056	162,784	1.13	29,437	6.25
Boiler - Watertube	6,309	3,000	2.10	1,009	6.25
Building Envelope	154,012	201,182	0.77	21,579	7.14
Burner	327,202	43,750	7.48	52,331	6.25
CFL	-	-	0.00	-	0.00
Condensing Boiler	115,510	133,280	0.87	-	0.00
Condensing Economizer	1,719,606	1,238,796	1.39	108,255	15.88
Condensing Unit Heater	10,665	21,802	0.49	-	0.00
Controls	8,433,907	6,869,141	1.23	1,320,896	6.38
Demand Control Kitchen Ventilatio	694,138	926,250	0.75	117,700	5.90
Destratification	252,016	213,557	1.18	28,260	8.92
Direct Contact Water Heater - Repla	66,577	99,765	0.67	8,761	7.60
Economizer	2,213,325	1,114,634	1.99	246,097	8.99
Energy Recovery Ventilators (ERV)	190,485	162,749	1.17	32,250	5.91
Energy Star Home	1,419,744	6,556,203	0.22	265,450	5.35
ERV/HRV	597,678	467,822	1.28	73,645	8.12
Evapourator	213,172	56,343	3.78	34,094	6.25
Front Load Washer	64,233	329,400	0.20	51,450	1.25
Furnace	4,256,228	2,082,945	2.04	507,305	8.39
Furnace	270	455	0.59	-	0.00
Greenhouse Curtains	1,291,275	1,557,193	0.83	176,340	7.32
Heat Exchanger	307,411	83,391	3.69	46,485	6.61
Heat Recovery	2,586,531	1,030,177	2.51	349,774	7.39
Heat Recovery Ventilator (HRV)	166,467	159,743	1.04	18,250	9.12
Hydronic Boiler	195,609	84,624	2.31	31,285	6.25
Industrial Equipment	4,140,178	1,011,338	4.09	433,005	9.56
Infrared	301,720	279,042	1.08	36,015	8.38
Infrared Heaters	877,445	715,045	1.23	117,050	7.50
Insulation	427,263	264,173	1.62	59,812	7.14
Insulation/Caulking/Sealing	508,614	406,861	1.25	61,496	8.27
Kitchen Ventilation	253,812	438,361	0.58	46,500	5.46
Leak Repair	21,447	57,128	0.38	3,430	6.25
Make Up Air Unit	130,515	39,602	3.30	23,795	5.49
Pre-Rinse Spray Nozzle	1,175,726	133,202	8.83	144,476	8.14
Programmable thermostats	650,393	328,680	1.98	157,015	4.14
Reflective Panel	285,255	323,734	0.88	36,950	7.72
Roof Top Unit	37,040	56,593	0.65	6,662	5.56
Rooftop Units	89,390	131,456	0.68	67,170	1.33
Showerhead	6,328,342	2,668,315	2.37	4,610,327	1.37
Showerheads	17,363	8,325	2.09	899	19.31
Showerheads	1,344,182	219,420	6.13	92,270	14.57
Small Commercial General	-	-	0.00	95,000	0.00
Steam Trap	2,170,477	158,700	13.68	60,254	36.02
Tankless Water Heaters	17,507	(125,275)	(0.14)	27,550	0.64
Thermostat - Programmable	106,382	55,440	1.92	25,200	4.22
Thermostats	60,186	123,434	0.49	(13,538)	-4.45
VFD	1,293,503	684,255	1.89	206,159	6.27
Weatherization	229,743	459,084	0.50	865,835	0.27
Window	16,258	26,640	0.61	2,597	6.26

Table 35: Natural Gas Savings per $1 of Incremental Cost and $1 of Incentive Payments by Program

Program Category	Sum of Net Gas savings	Sum of Total Net Incremental costs	Gas Savings/m³ per $1 of Incremental Cost	Sum of Total Incentive payments	Gas Savings/m³ per $1 of Incentive Payments
Agriculture	1,716,376	1,912,539	0.90	225,215	7.62
Equipment Replacement	1,236	1,367	0.90	22,859	0.05
Hospitals	3,300,450	2,957,696	1.12	369,317	8.94
Hotel/Motel	206,284	149,599	1.38	134,181	1.54
Industrial	16,830,754	5,649,149	2.98	1,872,486	8.99
Large New Construction	2,228,424	4,877,674	0.46	178,706	12.47
Long Term Health Care	248,921	373,967	0.67	46,937	5.30
Low Income	318,356	539,090	0.59	982,220	0.32
Multi-Res Non-Profit	1,562,200	1,148,282	1.36	341,179	4.58
Multi-Res Private	11,631,971	9,165,193	1.27	1,926,750	6.04
Multi-Residential Water Conservatio	1,493,828	567,922	2.63	143,720	10.39
Government/Municipalities	2,922,061	1,410,744	2.07	223,064	13.10
Office	1,852,885	1,404,362	1.32	283,163	6.54
Other Commercial	4,363,641	3,219,614	1.36	352,714	12.37
Recommissioning	37,868	20,280	1.87	4,520	8.38
Residential New Construction	1,553,201	6,668,938	0.23	1,152,481	1.35
Retail	135,752	107,332	1.26	11,200	12.12
Small Commercial	4,038,642	2,673,904	1.51	788,261	5.12
Schools-Custom	646,654	595,700	1.09	87,068	7.43
Schools-Prescriptive	1,102,645	623,651	1.77	119,200	9.25
College/University	925,166	1,163,716	0.80	131,891	7.01
Warehouses	383,888	351,540	1.09	68,085	5.64
Water Conservation	8,123,946	2,820,494	2.88	4,493,941	1.81

Appendix B: Approved 2010 Assumptions

Custom Resource Acquisition Technologies

Table 36: Measure Life Assumptions
May 2009

	Commercial	Industrial	Multi-residential
Boiler Related			
Boilers – DHW	25[1]	n/a	25[1]
Boilers - Industrial Process	n/a	20	n/a
Boilers – Space Heating	25[1]	25[1]	25[1]
Combustion Tune-up	5	5	n/a
Controls	15	15	15
Steam pipe/tank insulation	n/a	15	n/a
Steam trap	13[3]	13[3]	n/a
Building Related			
Building envelope	25	25	25
Windows	25	25	25
Greenhouse curtains	na	10	na
Double Poly greenhouse	n/a	5	n/a
HVAC Related			
Desiccant cooling	15	n/a	n/a
Heat Recovery	15	15	n/a
Infra-red heaters	10	10	n/a
Make-up Air	15	15	15
Novitherm panels	15	n/a	15
Furnaces (gas-fired)	18[2]	n/a	18[2]
Re-Commissioning	**5**[4]	n/a	**5**[4]
Process Related			
Furnaces (gas-fired)	n/a	18[2]	n/a

Source: EB-2006-0021.
[1]Source: ASHRAE
[2]Source: ASHRAE updated in EB-2006-0021
[3]Source: Measure Life of Steam Traps Research Study, Enbridge Gas Distribution, November, 2007.
[4]Source: Measure Life for Retro-Commissioning and Continuous Commissioning Projects, Finn Projects,

Table 37: Resource savings Assumptions EB 2009-0154 (filed 2009-05-29)

Enbridge Gas Distribution

DSM Input Assumptions for 2010 Program Year

	indicates assumptions as per EB 2008-0346
	indicates measure assumption not referenced in EB 2008-0346
	indicates program specific information for 2009
	indicates corrected value

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Resource Savings Assumptions: Natural Gas (m3)	Electricity (kWh)	Water (L)	Equipment Life (Years)	Incremental Cost: Customer Installed	Incremental Cost: Contractor Installed	Free Ridership (%)	Reference
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	
	RESIDENTIAL NEW CONSTRUCTION										
1	Tankless Water Heater	Storage Tank Water Heater	base	130	-	-	18	-	$750	2%	Savings, measure life and incremental costs as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
2	Faucet Aerator (kitchen, installed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23	0	7,797	10		4.00	31%	Not referenced in EB 2008-0346 Decision. Savings and equipment life as per EB 2008-0346 Decision Residential Existing. Incremental costs as per utility purchase costs. FR as per EB 2008-0384 and 0385 for Existing homes.
3	Faucet Aerator (bathroom, installed, 1.5 GPM) (3 aerators)	Average existing stock, 2.2 GPM	base	18	0	6,012	10		5.65	31%	as above
4	Low-Flow Showerhead (Per unit, installed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	46	0	6,334	10		30.00	10%	Not referenced in EB 2008-0346 Decision. Savings and equipment life as per EB 2008-0346 Decision Residential Existing. Incremental costs as per utility purchase costs. FR as per EB 2008-0384 and 0385 for Existing homes and EGD builder survey.
5	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	66	0	10,886	10	-	11.50	10%	as above
6	CFL (13W) (6 bulbs)	60W Incandescent	n/a	0	270	0	8		0.00	24%	Not referenced in EB 2008-0346 Decision. Savings, measure life and FR as per EB 2008-0384 and 0385. Incremental cost as per utility purchase costs.
7	Programmable Thermostat	Standard Thermostat	weather	146	54	0	15		35.50	43%	Not referenced in EB 2006-0346 Decision. Gas savings as per Navigant Draft Report. Electricity savings and measure life as per EB 2008-0346 Decision Existing Homes. Incremental cost as per EGD purchase costs. FR as per EB 2008-0384 and 0385.
8	Energy Star Home (version 3)	Home built to OBC 2006	weather	1,018	1,450	0	25	0	$4,701	5%	As approved in EB 2008-0384 and 0385
9	Energy Star Home (version 4)	Home built to OBC 2006 as of Mar 31, 2009	weather	881	734	0	25	0	$4,275	5%	Savings, measure life and incremental costs: see Substantiation Sheet. FR as per EB 2008-0384 and 0385 for Energy Star V3.
	RESIDENTIAL EXISTING HOMES										
10	High Efficiency Condensing Furnace AFUE 96	High-Efficiency Furnace AFUE 90	weather	129	0	-	18	-	$1,767		As per EB 2008-0346 Decision
11	Faucet Aerator (kitchen, distributed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23	0	7,797	10	$1	-	31%	Savings and measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
12	Faucet Aerator (bathroom, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	6	0	2,004	10	$1	-	31%	as above

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost		Free Ridership		Reference
				m3	kWh	L	Years	Customer Installed	Contractor Installed	%		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)		
	RESIDENTIAL NEW CONSTRUCTION											
13	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	46	0	6,334	10	$4	-	10%		Savings and measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
14	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock, 2.2 GPM	base	63	0	10,570	10	$4	-	10%		as above
15	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	66	0	10,886	10	-	$19	10%		Savings and measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
16	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.6 + GPM)	2.6 + GPM showerhead (3.0 GPM)	base	116	0	17,168	10	-	$19	10%		as above
17	Pipe Insulation	Water Heater w/o pipe insulation	base	18	-	-	10	$2	$4	4%		Savings, measure life and increnmental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
18	Programmable Thermostat	Standard Thermostat	weather	146	54	0	15	$50		43%		Gas savings as per Navigant Draft Report. Electricity savings and measure life as per EB 2008-0346 Decision. Incremental cost as per EGD purchase costs. FR as per EB 2008-0384 and 0385.
19	Tankless Water Heater	Storage Tank Water Heater	base	130	-	-	18	-	$750	2%		Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
20	Reflector Panels	Radiant heat w/o reflector panels	weather	143.0	-	-	18	-	$238	0%		Savings and measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
	COMMERCIAL NEW BUILDING CONSTRUCTION											
21	Condensing Gas Water Heater 100 gals	Storage Tank Water Heater	base	332			13		$2,230	5%		Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
22	Condensing Gas Water Heater 500 gals	Storage Tank Water Heater	base	873			13		$2,230	5%		as above
23	Condensing Gas Water Heater 1000 gals	Storage Tank Water Heater	base	1,551			13		$2,230	5%		as above
24	Rooftop Unit (2 stage roof top unit)	Single stage rooftop unit	weather	255	-	-	15	-	$375	5%		Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
25	Tankless Water Heater 50 - 150 USG/day, 84% thermal efficiency	Storage Tank Water Heater 91 gal tank, 80% efficiency	base	154	-	-	18	-	-$1,102	2%		Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
26	Infrared Heaters (0 - 75,000BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	245	-	20	-	$0.0122/$10^3$ BTUH/hr	33%		Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
27	Infrared Heaters (76,000 - 150,000 BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	559	-	20	-	$0.0122/$10^3$ BTUH/hr	33%		as above
28	Infrared Heaters (151,000 0 - 300,000 BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	870	-	20	-	$0.0122/$10^3$ BTUH/hr	33%		as above
29	Demand Control Kitchen Ventilation (0 - 4999 CFM)	Ventilation without DCKV	weather	4,801	13,521	-	15	-	$10,000	5%		Not referenced in EB 2008-0346 Decision. Savings, measure life and incremental cost as per EB 2008-0346 Decision for Commercial Existing. FR as per EB 2008-0384 and 0385.
30	Demand Control Kitchen Ventilation (5000 - 9999 CFM)	Ventilation without DCKV	weather	11,486	30,901	-	15	-	$15,000	5%		as above
31	Demand Control Kitchen Ventilation (10000 - 15000 CFM)	Ventilation without DCKV	weather	18,924	49,102	-	15	-	$20,000	5%		as above

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost		Free Ridership	Reference
				m3	kWh	L	Years	Customer Installed	Contractor Installed	%	
32	Energy Recovery Ventilators (ERV) savings vary by sector	Ventilation without ERV	weather	1.75-4.89 / CFM	-	-	20	-	$3.00/CFM	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
33	Heat Recovery Ventilator (HRV) - savings vary by sector	Ventilation without HRV	weather	1.62-4.55 / CFM	-	-	20	-	$3.40/CFM	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
34	Condensing Boilers (90% estimated seasonal efficiency)	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.014 m^3/BTUH	-		25		$12.00/$10^3$ / BTUH	5%	Not referenced in EB 2008-0346 Decision. Savings, measure life and incremental cost as per EB 2008-0346 Decision for Commercial Existing. FR as per EB 2008-0384 and 0385.
35	Destratification Fans	No destratification fans	weather	0.56/ft^2	(-)0.0034/ft^2	-	15	-	$7,021	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
36	Pre-Rinse Spray Nozzle (1.24 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	886	-	170,326	5	$60	-	12.4%	Not referenced in EB 2008-0346 Decision. Savings, measure life and incremental cost as per EB 2008-0346 Decision for Commercial Existing. FR as per Union Gas research.
37	Pre-Rinse Spray Nozzle (1.24 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	190	-	36,484	5	$60	-	12.4%	as above
38	Pre-Rinse Spray Nozzle (1.24 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	200	-	38,383	5	$60	-	12.4%	as above
39	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	1,286	-	252,000	5	$88	-	0%	Not referenced in EB 2008-0346 Decision. Savings and free ridership as per Union Gas research. Measure life as per EB 2008-0346 Decision. Incremental cost as per Union Gas purchase price.
40	Pre-Rinse Spray Nozzle (0.64 GPM)	standard pre-rinse spray	base	339	-	66,400	5	$88	-	0%	as above
41	Pre-Rinse Spray Nozzle 0.64 GPM)	standard pre-rinse spray	base	318	-	62,200	5	$88	-	0%	as above
	COMMERCIAL EXISTING BUILDINGS										
42	Condensing Gas Water Heater 100 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	332	-	-	13	-	$2,230	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
43	Condensing Gas Water Heater 500 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	873			13		$2,230	5%	as above
44	Condensing Gas Water Heater 1000 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	1,551			13		$2,230	5%	as above
45	Faucet Aerator (kitchen, installed, 1.5 GPM)	Average existing stock	base	16	-	5,377	10	$2	-	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
46	Faucet Aerator (kitchen, installed, 1.0 GPM)	Average existing stock	base	39	-	8,072	10	$2	-	10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision for 1.5 GPM aerator adjusted for 1.0 GPM aerator. Measure life, incremental cost and FR as per EB 2008-0384 and 0385.
47	Faucet Aerator (bathroom, installed, 1.5 GPM)	Average existing stock	base	4	-	1,382	10	$2	-	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
48	Faucet Aerator (bathroom, installed, 1.0 GPM)	Average existing stock	base	11	-	2,371	10	$1.50	-	10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision for 1.5 GPM aerator adjusted for 1.0 GPM aerator. Measure life, incremental cost and FR as per EB 2008-0384 and 0385.
49	High Efficiency Condensing Furnace (AFUE 96)	High Efficiency Furnace (AFUE 90)		1.7/kBtu/hr			18		8.4/kBtu/hr	17.5	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385
50	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	Average existing stock	base	33	-	5,228	10	$4	-	10%	Savings and measure life as per EB 2008-0346 Decision. Incremental cost as per EGD purchase costs. FR as per EB 2008-0384 and 0385.

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost		Free Ridership	Reference
				m3	kWh	L	Years	Customer Installed	Contractor Installed	%	
51	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock	base	45	-	8,824	10	$4	-	10%	as above
52	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	48	-	9,088	10	$17	-	10%	as above
53	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.6 + GPM showerhead and above (3.0GPM)	base	84	-	14,333	10	$17	-	10%	as above
54	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	28	-	5,197	10	$17	-	10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision showerhead at 1.25 GPM. Incremental cost as per utility purchase costs. FR as per EB 2008-0384 and 0385.
55	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	55	-	9,490	10	$17	-	10%	as above
56	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	3.1 - 3.5 GPM showerhead (3.25 GPM)	base	79	-	13,250	10	$17	-	10%	as above
57	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	3.6 GPM and above (3.6 GPM)	base	91	-	15,114	10	$17	-	10%	as above
58	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	4	-	1,727	10	$17	-	10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision showerhead at 1.25 GPM. Incremental cost as per utility purchase costs. FR as per EB 2008-0384 and 0385.
59	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	3.1 o 3.5 GPM (3.25 GPM)	base	28	-	5,487	10	$17	-	10%	as above
60	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	3.6 GPM and above (3.6 GPM)	base	40	-	7,351	10	$17	-	10%	as above
61	Pre-Rinse Spray Nozzle (1.24 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	886	-	170,326	5	$60	-	12.4%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
62	Pre-Rinse Spray Nozzle (1.24 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	190	-	36,484	5	$60	-	12.2%	as above
63	Pre-Rinse Spray Nozzle (1.24 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	200	-	38,383	5	$60	-	12.4%	as above
64	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	1,286	-	252,000	5	$88	-	0%	Not referenced in EB 2008-0346 Decision. Savings and free ridership as per Union Gas research. Measure life as per EB 2008-0346 Decision. Incremental cost as per Union Gas purchase price.
65	Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	339	-	66,400	5	$88	-	0%	as above
66	Pre-Rinse Spray Nozzle (0.64 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	318	-	62,200	5	$88	-	0%	as above
67	Programmable Thermostats (Warehouse, Recreation, Agriculture, Industrial)	Standard thermostat	weather	538	266	-	15	$110	-	20%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
68	Programmable Thermostats (Multi family, food service)	Standard thermostat	weather	223	156	-	15	$110	-	20%	as above
69	Programmable Thermostats (Office, Information & Culture, Educational services)	Standard thermostat	weather	211	112		15	$110		20%	as above
70	Programmable Thermostats (Retail, hotel/motel)	Standard thermostat	weather	82	63		15	$110		20%	as above

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost		Free Ridership	Reference
				m3	kWh	L	Years	Customer Installed	Contractor Installed	%	
71	Rooftop Unit	Standard Rooftop Unit	weather	255	-	-	15	-	$375	5%	Not referenced in EB 2008-0346 Decision. Savings, measure life, and incremental cost as per EB 2008-0346 Decision Commercial New Construction. FR as per EB 2008-0384 and 0385.
72	Tankless Water Heater 100 USG/day	84% Thermal Efficiency	base	154	-	-	18	-	-$1,102	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
73	Enhanced Furnace (continuous)	Standard PSC motor	weather	-2.7 kBtu/hr	22.7kBtu/hr	-	15	-	$960	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. Free ridership as per EB 2008-0384
74	Enhanced Furnace (Non-continuous)	Standard PSC motor	weather	-0.4 kBtu/hr	4.8kBtu/hr		15		$960	10%	as above
75	Heat Recovery Ventilator (HRV)-savings vary by sector	Ventilation without HRV	weather	1.75-4.90 / CFM	-	-	20	-	$3.40/CFM	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
76	Energy Recovery Ventilators (ERV)-savings vary by sector	Ventilation without ERV	weather	1.84-5.14 m3/CFM	-	-	20	-	$3.00/CFM	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
77	Condensing Boilers	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.0104 m3/BTUH	-	-	25	-	$12.00/$10^3$ BTUH	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
78	Infrared Heaters (0 - 75,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	245	-	20	-	$0.0122/$10^3$ BTUH/hr	33%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
79	Infrared Heaters (76,000 - 150,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	559	-	20	-	$0.0122/$10^3$ BTUH/hr	33%	as above
80	Infrared Heaters (151,000 - 300,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	870	-	20	-	$0.0122/$10^3$ BTUH/hr	33%	as above
81	Demand Control Kitchen Ventilation (0 - 49,999 CFM)	Ventilation without DCKV	weather	4,801	13,521	-	15	-	$10,000	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
82	Demand Control Kitchen Ventilation (5000 - 9999 CFM)	Ventilation without DCKV	weather	11,486	30,901	-	15	-	$15,000	5%	as above
83	Demand Control Kitchen Ventilation (10000 - 15000 CFM)	Ventilation without DCKV	weather	18,924	49,102	-	15	-	$20,000	5%	as above
84	Air Curtains (Single Door)		weather	667	172	-	15	-	$1,650	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
85	Air Curtains (Double Door)		weather	1,529	1,023	-	15		$2,500	5%	as above
86	Destratification Fans	No destratification fans	weather	0.56 / ft^2	(-)0.0034 / ft^2	-	15	-	$7,021	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
87	CEE Qualified Energy Efficient Washers	Conventional top loading washers.	base	117	396	58,121	11	-	$600	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
88	Prescriptive School Boilers (Elementary)	Space Heating, Hydronic Boiler with Comb. Eff. Of 80%-82%.	base	10,830	-	-	25	-	$8,646	12%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
89	Prescriptive School Boilers (Secondary)	Space Heating, Hydronic Boiler with Comb. Eff. Of 80%-82%.	base	43,859	-	-	25	-	$14,470	12%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
90	Energy Efficient Fryers	Standard fryer	base	913	0	-	12	$2,648	-		Savings, measure life and incremental cost as per EB 2008-0346 Decision.
91	High Efficiency Boilers (DHW) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 300-1500 MBH 83-84% efficient	base	1,075-4,317	-	-	25	-	$3900 -$5900	10/12/20%	Not referenced in EB 2008-0346 Decision. FR for Small Commercial / Large Commercial / Multi-residential as per EB 2008-0384.

Item	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost		Free Ridership		Reference
				m3	kWh	L	Years	Customer Installed	Contractor Installed	%		
92	High Efficiency Boilers (DHW) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 600 MBH 85-88% efficient	base	1,766-7,095	-	-	25	-	$4500-$7400	10/12/20%		as above
93	High Efficiency Boilers (Space) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 1000 MBH 83-84% efficient	base	2,105-16,452	-	-	25	-	$3900-$4950	10/12/20%		as above
94	High Efficiency Boilers (Space) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 1500 MBH 85-88% efficient	base	3,125-24,431	-	-	25	-	$4500-$7050	10/12/20%		as above
	COMMERCIAL/INDUSTRIAL CUSTOM PROJECTS											
95	Custom Projects			Actual	Actual	Actual	Actual	-	Actual			
96	Agriculture									40%		as per EB 2008-0384
97	Industrial									50%		as above
98	Commercial									12%		as above
99	Multi-Residential									20%		as above
100	New construction									26%		as above
	OTHER MEASURES											
100	CFL (13W)	60W Incandescent	n/a	0	45	0	8	$0.00	-	24%		Not referenced in EB 2008-0346 Decision. Savings, measure life and FR as per EB 2008-0384 and 0385. Incremental costs as per utility purchase costs.
101	CFL (23W)	75W Incandescent	n/a	0	49.7	0	8	$0.00	-	24%		

Table 38 Resource savings Assumptions EB 2009-0154 Update (filed 2010-05-21)

Enbridge Gas Distribution

DSM Input Assumptions for 2010 Program Year

as per EB 2009-0154

indicates new program

indicates update based on change in program

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Resource Savings Assumptions			Equipment Life	Incremental Cost	Free Ridership	Reference
				Natural Gas	Electricity	Water				
				m3	kWh	L	Years	$	%	
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	
	RESIDENTIAL NEW CONSTRUCTION									
1	Tankless Water Heater	Storage Tank Water Heater	base	130	-	-	18	$750.00	2%	
2	Faucet Aerator (Kitchen, installed, 1.0 GPM)	Ontario Building Code 2006 (2.2 gpm)	base	32	0	10,631	10	$1.00	31%	
3	Faucet Aerator (Bathroom, installed, 1.0 GPM)	Ontario Building Code 2006 (2.2 gpm)	base	10	0	3,435	10	$0.55	31%	
4	Faucet Aerator (kitchen, installed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23	0	7,797	10	$1.65	31%	Incremental cost change based on supplier's cost of product, inventory, packaging etc.
5	Faucet Aerator (bathroom, installed, 1.5 GPM) (3 aerators)	Average existing stock, 2.2 GPM	base	18	0	6,012	10	$2.72	31%	Incremental cost change based on supplier's cost of product, inventory, packaging etc.
6	Low-Flow Showerhead (Per unit, installed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	46	0	6,334	10	$12.50	10%	Incremental cost change based on supplier's cost of product, inventory, packaging etc.
7	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	66	0	10,886	10	$4.26	10%	Incremental cost change based on supplier's cost of product, inventory, packaging etc.
8	CFL (13W) (8 bulbs)	60W Incandescent	n/a	0	360	0	8	$0.00	24%	Program delivery changed increasing the number of CFL bulbs from 6 to 8.
9	High Efficiency Fireplace with Pilotless Ignition - Freestanding = Minimum 70% EnerGuide Rating	Freestanding fireplace = 65% median efficiency	base	110	(31)	0	20	$135.00	17%	
10	High Efficiency Fireplace with Pilotless Ignition - Insert = Minimum 60% EnerGuide Rating	Insert = 55% median efficiency	base	109	(31)	0	20	$135.00	17%	
11	High Efficiency Fireplace with Pilotless Ignition - Zero Clearance >= 40 kBtu.h =Minimum 60% EnerGuide Rating	Zero Clearance >= 40kBtu/h median efficiency	base	122	(31)	0	20	$135.00	17%	
12	High Efficiency Fireplace with Pilotless Ignition - Zero Clearance < 40 kBtu.h =Minimum 70% EnerGuide Rating	Zero Clearance <40kBtu/h median efficiency	base	108	(31)	0	20	$135.00	17%	

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership	Reference
				m3	kWh	L	Years	$	%	
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	
	RESIDENTIAL NEW CONSTRUCTION									
13	Programmable Thermostat	Standard Thermostat	weather	53	54	0	15	$53.22	10%	Incremental cost change based on supplier's cost of product, inventory, packaging etc.
14	Energy Star Home (version 3)	Home built to OBC 2006	weather	1,018	1,450	0	25	$4,701.00	5%	
15	Energy Star Home (version 4)	Home built to OBC 2006 as of Mar 31, 2009	weather	881	734	0	25	$4,275.00	5%	
	RESIDENTIAL EXISTING HOMES									
16	High Efficiency Condensing Furnace AFUE 96	High-Efficiency Furnace AFUE 90	weather	129	0	-	18	$1,767.00		
17	Solar Pool Heater	Natural Gas Pool Heater	base	1,116	(57)	0	20	$1,450.00	10%	
18	High Efficiency Fireplace with Pilotless Ignition - Freestanding = Minimum 70% EnerGuide Rating	Freestanding fireplace = 65% median efficiency	base	110	(31)	0	20	$135.00	17%	
19	High Efficiency Fireplace with Pilotless Ignition - Insert = Minimum 60% EnerGuide Rating	Insert = 55% median efficiency	base	109	(31)	0	20	$135.00	17%	
20	High Efficiency Fireplace with Pilotless Ignition - Zero Clearance >= 40 kBtu.h =Minimum 60% EnerGuide Rating	Zero Clearance >= 40kBtu/h median efficiency	base	122	(31)	0	20	$135.00	17%	
21	High Efficiency Fireplace with Pilotless Ignition - Zero Clearance < 40 kBtu.h =Minimum 70% EnerGuide Rating	Zero Clearance <40kBtu/h median efficiency	base	108	(31)	0	20	$135.00	17%	
22	Faucet Aerator (Kitchen, installed, 1.0 GPM)	Average Existing Stock (2.5 gpm)	base	35	0	11,694	10	1.00	31%	
23	Faucet Aerator (Bathroom, installed, 1.0 GPM)	Average Existing Stock (2.2 gpm)	base	10	0	3,435	10	.55	31%	
24	Faucet Aerator (kitchen, distributed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23	0	7,797	10	$1	31%	
25	Faucet Aerator (bathroom, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	6	0	2,004	10	$1	31%	
26	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	46	0	6,334	10	$4	10%	
27	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock, 2.2 GPM	base	63	0	10,570	10	$4	10%	
28	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	66	0	10,886	10	$19.00	10%	
29	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.6 + GPM)	2.6 + GPM showerhead (3.0 GPM)	base	116	0	17,168	10	$19.00	10%	
30	Pipe Insulation	Water Heater w/o pipe insulation	base	18	-	-	10	$2/$4	4%	
31	Programmable Thermostat	Standard Thermostat	weather	53	54	0	15	$50	43%	
32	Tankless Water Heater	Storage Tank Water Heater	base	130	-	-	18	$750.00	2%	
33	Reflector Panels	Radiant heat w/o reflector panels	weather	143.0	-	-	18	$238.00	0%	

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership	Reference
				m3	kWh	L	Years	$	%	
	RESIDENTIAL LOW INCOME									
34	Faucet Aerator (Kitchen, installed, 1.0 GPM)	Average Existing Stock (2.5 gpm)	base	35	0	11,694	10	1.00	1%	
35	Faucet Aerator (Bathroom, installed, 1.0 GPM)	Average Existing Stock (2.2 gpm)	base	10	0	3,435	10	.55	1%	
36	Faucet Aerator (kitchen, distributed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23	0	7,797	10	$0.94	1%	
37	Faucet Aerator (bathroom, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	6	0	2,004	10	$0.46	1%	
38	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	66	0	10,886	10	$18.71	5%	
39	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.6 + GPM)	2.6 + GPM showerhead (3.0 GPM)	base	116	0	17,168	10	$18.71	5%	
40	CFL (13W) (2 bulbs)	60 W Incandescent	n/a	0	90	0	8	$0.00	5%	
41	CFL (23W) (2 bulbs)	75 W Incandescent	n/a	0	100	0	8	$0.00	5%	
42	Programmable Thermostat	Standard Thermostat	weather	53	54	0	15	$69.18	1%	
43	Weatherization	No Weatherization	weather	1,134.0	165	-	23	$2,284.00	0%	
	COMMERCIAL NEW BUILDING CONSTRUCTION									
44	Condensing Unit Heater	% Sales Weighted Average model - Equivalent in efficiency to a power-vented or separated combustion unit heater (78% Annually Efficient)		.00631 m3 / (BTU/H)	(.00186) kWh / (BTU/H)	0	18	$.0129 / (BTU/H)	0%	
45	Energy Star Dishwasher - Undercounter - High Temperature	Non- Energy Star Dishwasher		801	3,754	112,795	10	($13.00)	40%	
46	Energy Star Dishwasher - Undercounter - Low Temperature	Non- Energy Star Dishwasher		326	559	45,891	10	($13.00)	40%	
47	Energy Star Dishwasher - Stationary Rack (Door type or single rack) - High Temperature	Non- Energy Star Dishwasher		619	3,553	87,119	15	($350.00)	20%	

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership		Reference
				m3	kWh	L	Years	$	%		
48	Energy Star Dishwasher - Stationary Rack (Door type or single rack) - Low Temperature	Non- Energy Star Dishwasher		841	855	118,369	15	($350.00)	20%		
49	Energy Star Dishwasher - Rack conveyor, single (tank) - High Temperature	Non- Energy Star Dishwasher		2,203	9,811	310,271	20	$2,375.00	27%		
50	Energy Star Dishwasher - Rack conveyor, multi (tank) - High Temperature	Non- Energy Star Dishwasher		3,708	15,822	522,192	20	$288.00	27%		
51	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Washer extractor - 60 lbs	base	.0328 m3 / (lbs/yr)	.00219 kWh / (lbs/yr)	2.01 L / (lbs/yr)	15	$10,970.00	8%		
52	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Washer extractor - 500 lbs	base	.0328 m3 / (lbs/yr)	.00219 kWh / (lbs/yr)	2.01 L / (lbs/yr)	15	$30,270.00	8%		
53	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Tunnel Washer - 120 lbs	base	.0240 m3 / (lbs/yr)	.00152 kWh / (lbs/yr)	1.22 L / (lbs/yr)	15	$49,667.00	8%		
54	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Tunnel Washer - 500 lbs	base	.0240 m3 / (lbs/yr)	.00152 kWh / (lbs/yr)	1.22 L / (lbs/yr)	15	$160,065.00	8%		
55	Condensing Gas Water Heater 100 gals	Storage Tank Water Heater	base	332			13	$2,230.00	5%		
56	Condensing Gas Water Heater 500 gals	Storage Tank Water Heater	base	873			13	$2,230.00	5%		
57	Condensing Gas Water Heater 1000 gals	Storage Tank Water Heater	base	1,551			13	$2,230.00	5%		
58	Rooftop Unit (2 stage roof top unit)	Single stage rooftop unit	weather	255	-	-	15	$375.00	5%		
59	Tankless Water Heater 50 - 150 USG/day, 84% thermal efficiency	Storage Tank Water Heater 91 gal tank, 80% efficiency	base	154	-	-	18	-$1,102.00	2%		

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership	Reference
				m3	kWh	L	Years	$	%	
60	Infrared Heaters (0 - 75,000BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	245	-	20	$0.0122 BTUH/hr	33%	
61	Infrared Heaters (76,000 - 150,000 BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	559	-	20	$0.0122 BTUH/hr	33%	
62	Infrared Heaters (151,000 0 - 300,000 BTUH)	Regular Unit Heater	weather	0.015 m3/BTUH	870	-	20	$0.0122 BTUH/hr	33%	
63	Demand Control Kitchen Ventilation (0 - 4999 CFM)	Ventilation without DCKV	weather	4,801	13,521	-	15	$10,000.00	5%	
64	Demand Control Kitchen Ventilation (5000 - 9999 CFM)	Ventilation without DCKV	weather	11,486	30,901	-	15	$15,000.00	5%	
65	Demand Control Kitchen Ventilation (10000 - 15000 CFM)	Ventilation without DCKV	weather	18,924	49,102	-	15	$20,000.00	5%	
66	Energy Recovery Ventilators (ERV) savings vary by sector	Ventilation without ERV	weather	1.75-4.89 / CFM	-	-	20	$3.00/CFM	5%	
67	Heat Recovery Ventilator (HRV) - savings vary by sector	Ventilation without HRV	weather	1.62-4.55 / CFM	-	-	20	$3.40/CFM	5%	
68	Condensing Boilers (90% estimated seasonal efficiency)	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.014 m^3/BTUH	-		25	$12.00/$10^3$ / BTUH	5%	
69	Destratification Fans	No destratification fans	weather	0.56/ft^2	(-)0.0034/ft^2	-	15	$7,021.00	10%	
70	Pre-Rinse Spray Nozzle (1.24 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	886	-	170,326	5	$60	12.4%	
71	Pre-Rinse Spray Nozzle (1.24 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	190	-	36,484	5	$60	12.4%	
72	Pre-Rinse Spray Nozzle (1.24 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	200	-	38,383	5	$60	12.4%	
73	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	1,286	-	252,000	5	$88	0%	
74	Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	339	-	66,400	5	$88	0%	
75	Pre-Rinse Spray Nozzle 0.64 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	318	-	62,200	5	$88	0%	
	COMMERCIAL EXISTING BUILDINGS									
76	Condensing Unit Heater	% Sales Weighted Average model - Equivalent in efficiency to a power-vented or separated combustion unit heater (78% Annually Efficient)		.00631 m3 / (BTU/H)	(.00186) kWh / (BTU/H)	0	18	$.0129 / (BTU/H)	0%	
77	Energy Star Dishwasher - Undercounter - High Temperature	Non- Energy Star Dishwasher		801	3,754	112,795	10	($13.00)	40%	
78	Energy Star Dishwasher - Undercounter - Low Temperature	Non- Energy Star Dishwasher		326	559	45,891	10	($13.00)	40%	
79	Energy Star Dishwasher - Stationary Rack (Door type or single rack) - High Temperature	Non- Energy Star Dishwasher		619	3,553	87,119	15	($350.00)	20%	
80	Energy Star Dishwasher - Stationary Rack (Door type or single rack) - Low Temperature	Non- Energy Star Dishwasher		841	855	118,369	15	($350.00)	20%	

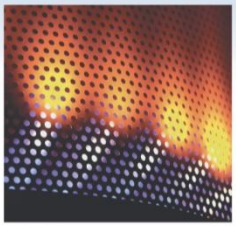
Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership	Reference
				m3	kWh	L	Years	$	%	
81	Energy Star Dishwasher - Rack conveyor, single (tank) - High Temperature	Non- Energy Star Dishwasher		2,203	9,811	310,271	20	$2,375.00	27%	
82	Energy Star Dishwasher - Rack conveyor, multi (tank) - High Temperature	Non- Energy Star Dishwasher		3,708	15,822	522,192	20	$288.00	27%	
83	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Washer extractor - 60 lbs	base	.0328 m3 / (lbs/yr)	.00219 kWh / (lbs/yr)	2.01 L / (lbs/yr)	15	$10,970.00	8%	
84	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Washer extractor - 500 lbs	base	.0328 m3 / (lbs/yr)	.00219 kWh / (lbs/yr)	2.01 L / (lbs/yr)	15	$30,270.00	8%	
85	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Tunnel Washer - 120 lbs	base	.0240 m3 / (lbs/yr)	.00152 kWh / (lbs/yr)	1.22 L / (lbs/yr)	15	$49,667.00	8%	
86	Ozone Laundry - Commercial Laundry Washing Equipment with Ozone	Commercial Laundry Washing Equipment without Ozone - Tunnel Washer - 500 lbs	base	.0240 m3 / (lbs/yr)	.00152 kWh / (lbs/yr)	1.22 L / (lbs/yr)	15	$160,065.00	8%	
87	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	standard pre-rinse spray nozzle (1.6 GPM)	base	457	-	97,292	5	$150	0%	
88	Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	standard pre-rinse spray nozzle (1.6 GPM)	base	90	-	19,197	5	$150	0%	
89	Pre-Rinse Spray Nozzle 0.64 GPM) (Other)	standard pre-rinse spray nozzle (1.6 GPM)	base	109	-	23,166	5	$150	0%	
90	Condensing Gas Water Heater 100 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	332	-	-	13	$2,230.00	5%	
91	Condensing Gas Water Heater 500 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	873			13	$2,230.00	5%	
92	Condensing Gas Water Heater 1000 gals 95% thermal efficiency	Storage Tank Water Heater 80% eff, 91 Gal tank	base	1,551			13	$2,230.00	5%	
93	Faucet Aerator (kitchen, installed, 1.5 GPM)	Average existing stock	base	16	-	5,377	10	$2	10%	
94	Faucet Aerator (kitchen, installed, 1.0 GPM)	Average existing stock	base	24	-	8,072	10	$2	10%	
95	Faucet Aerator (bathroom, installed, 1.5 GPM)	Average existing stock	base	4	-	1,382	10	$2	10%	
96	Faucet Aerator (bathroom, installed, 1.0 GPM)	Average existing stock	base	7	-	2,371	10	$1.50	10%	
97	High Efficiency Condensing Furnace (AFUE 96)	High Efficiency Furnace (AFUE 90)		1.7/kBtu/hr			18	8.4/kBtu/hr	17.5%	
98	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	Average existing stock	base	33	-	5,228	10	$4	10%	

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership		Reference
				m3	kWh	L	Years	$	%		
99	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock	base	45	-	8,824	10	$4	10%		
100	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	48	-	9,088	10	$17	10%		
101	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.6 + GPM showerhead and above (3.0GPM)	base	84	-	14,333	10	$12.50	10%		Change in incremental cost due to program delivery change.
102	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	base	28	-	5,197	10	$17	10%		
103	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	55	-	9,490	10	$17	10%		
104	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	3.1 - 3.5 GPM showerhead (3.25 GPM)	base	79	-	13,250	10	$17	10%		
105	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	3.6 GPM and above (3.6 GPM)	base	91	-	15,114	10	$12.50	10%		Change in incremental cost due to program delivery change.
106	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	4	-	1,727	10	$17	10%		
107	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	3.1 o 3.5 GPM (3.25 GPM)	base	28	-	5,487	10	$17	10%		
108	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	3.6 GPM and above (3.6 GPM)	base	40	-	7,351	10	$12.50	10%		Change in incremental cost due to program delivery change.
109	Pre-Rinse Spray Nozzle (1.24 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	886	-	170,326	5	$60	12.4%		
110	Pre-Rinse Spray Nozzle (1.24 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	190	-	36,484	5	$60	12.2%		
111	Pre-Rinse Spray Nozzle (1.24 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	200	-	38,383	5	$60	12.4%		
112	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	standard pre-rinse spray nozzle (3.0 GPM)	base	1,286	-	252,000	5	$88	0%		
113	Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	standard pre-rinse spray nozzle (3.0 GPM)	base	339	-	66,400	5	$88	0%		
114	Pre-Rinse Spray Nozzle (0.64 GPM) (Other)	standard pre-rinse spray nozzle (3.0 GPM)	base	318	-	62,200	5	$88	0%		
115	Programmable Thermostats (Warehouse, Recreation, Agriculture, Industrial)	Standard thermostat	weather	538	266	-	15	$110	20%		
116	Programmable Thermostats (Multi family, food service)	Standard thermostat	weather	223	156	-	15	$110	20%		
117	Programmable Thermostats (Office, Information & Culture, Educational services)	Standard thermostat	weather	211	112		15	$110	20%		
118	Programmable Thermostats (Retail, hotel/motel)	Standard thermostat	weather	82	63		15	$110	20%		
119	Rooftop Unit	Standard Rooftop Unit	weather	255	-	-	15	$375.00	5%		
120	Tankless Water Heater 100 USG/day	84% Thermal Efficiency	base	154	-	-	18	-$1,102.00	2%		
121	Enhanced Furnace (continuous)	Standard PSC motor	weather	-2.7 kBtu/hr	22.7kBtu/hr	-	15	$960.00	10%		
122	Enhanced Furnace (Non-continuous)	Standard PSC motor	weather	-0.4 kBtu/hr	4.8kBtu/hr		15	$960.00	10%		
123	Heat Recovery Ventilator (HRV)-savings vary by sector	Ventilation without HRV	weather	1.75-4.90 / CFM	-	-	20	$3.40/CFM	5%		
124	Energy Recovery Ventilators (ERV)-savings vary by sector	Ventilation without ERV	weather	1.84-5.14 m3/CFM	-	-	20	$3.00/CFM	5%		

Item #	Efficient Equipment & Technologies	Base Equipment & Technologies	Load Type	Natural Gas	Electricity	Water	Equipment Life	Incremental Cost	Free Ridership	Reference
				m3	kWh	L	Years	$	%	
125	Condensing Boilers	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.0104 m3/BTUH	-	-	25	$12.00/10^3 BTUH	5%	
126	Infrared Heaters (0 - 75,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	245	-	20	$0.0122/10^3 BTUH/hr	33%	
127	Infrared Heaters (76,000 - 150,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	559	-	20	$0.0122/10^3 BTUH/hr	33%	
128	Infrared Heaters (151,000 - 300,000 BTUH)	Unit Heater	weather	0.015 m3/BTUH	870	-	20	$0.0122/10^3 BTUH/hr	33%	
129	Demand Control Kitchen Ventilation (0 - 49,999 CFM)	Ventilation without DCKV	weather	4,801	13,521	-	15	$10,000.00	5%	
130	Demand Control Kitchen Ventilation (5000 - 9999 CFM)	Ventilation without DCKV	weather	11,486	30,901	-	15	$15,000.00	5%	
131	Demand Control Kitchen Ventilation (10000 - 15000 CFM)	Ventilation without DCKV	weather	18,924	49,102	-	15	$20,000.00	5%	
132	Air Curtains (Single Door)		weather	667	172	-	15	$1,650.00	5%	
133	Air Curtains (Double Door)		weather	1,529	1,023	-	15	$2,500.00	5%	
134	Destratification Fans	No destratification fans	weather	0.56 / ft^2	(-)0.0034 / ft^2	-	15	$7,021.00	10%	
135	CEE Qualified Energy Efficient Washers	Conventional top loading washers.	base	117	396	58,121	11	$600.00	10%	
136	Prescriptive School Boilers (Elementary)	Space Heating, Hydronic Boiler with Comb. Eff. Of 80%-82%.	base	10,830	-	-	25	$8,646.00	12%	
137	Prescriptive School Boilers (Secondary)	Space Heating, Hydronic Boiler with Comb. Eff. Of 80%-82%.	base	43,859	-	-	25	$14,470.00	12%	
138	Energy Efficient Fryers	Standard fryer	base	913	0	-	12	$2,648.00		
139	High Efficiency Boilers (DHW) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 300-1500 MBH 83-84% efficient	base	1,075-4,317	-	-	25	$3900 -$5900	10/12/20%	
140	High Efficiency Boilers (DHW) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 600 MBH 85-88% efficient	base	1,766-7,095	-	-	25	$4500-$7400	10/12/20%	
141	High Efficiency Boilers (Space) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 1000 MBH 83-84% efficient	base	2,105-16,452	-	-	25	$3900-$4950	10/12/20%	
142	High Efficiency Boilers (Space) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 1500 MBH 85-88% efficient	base	3,125-24,431	-	-	25	$4500-$7050	10/12/20%	
	COMMERCIAL/INDUSTRIAL CUSTOM PROJECTS									
143	Custom Projects			Actual	Actual	Actual	Actual	Actual		
	Agriculture								40%	
	Industrial								50%	
	Commercial								12%	
	Multi-Residential								20%	
	New construction								26%	
	OTHER MEASURES									
144	CFL (13W)	60W Incandescent	n/a	0	45	0	8	$0.00	24%	
145	CFL (23W)	75W Incandescent	n/a	0	49.7	0	8	$0.00	24%	







Independent Audit of 2010 DSM Program Results

Prepared for Enbridge Gas Distribution

June 30, 2011

Nexant

CONTENTS

1 EXECUTIVE SUMMARY

Enbridge Gas Distribution retained Nexant, Inc. (Nexant) to complete the Independent Audit of the 2010 DSM Annual Report as required by Ontario Energy Board guidelines. The objective of the Audit is to provide an independent opinion as to the reasonableness of the Company's claims regarding DSMVA, LRAM, and SSM.

In order to accomplish this goal, the major audit activities were focused on a review of the 2010 program results which impact these financial mechanisms. Nexant reviewed the reported results from each program, completed a technical review of the Engineering Reviews conducted for the Custom programs, reviewed the 2010 Annual Report, and checked Enbridge's DSMVA, LRAM, SSM, and MT SSM calculations.

In setting 2010 audit priorities, Nexant considered several sources including: the relative net TRC benefits of programs or measures, comments from the 2010 EAC raised during the audit, comments from Enbridge staff, and recommendations from the 2009 Audit (either from the 2009 Auditor or 2009 EAC).

The adjustments as a result of this audit which impact net TRC benefits were all related to residential programs, except for one adjustment to the commercial program. In several cases the results of the third-party Verification Reports for residential programs were not applied appropriately or accurately. The overall impact on net TRC benefits is an increase in net TRC benefit of $27,317. No changes were made to the calculation methods for SSM, DSMVA, LRAM, TRC Target, or MT SSM calculations as a result of this audit. However net TRC benefit adjustments made by Nexant do impact the SSM value and adjustments to natural gas savings using best available information do impact the LRAM and TRC Target values.

Nexant also made several recommendations for improvements which do not impact 2010 results. Each recommendation is detailed within this report. The recommendations are summarized here:

- Complete an evaluation study to investigate showerhead "bag testing" accuracy to determine existing stock (baseline) showerhead flow rates.
- For prescriptive measures, include in the tracking databases and spreadsheets the definition of a participation unit (i.e. household, device or device group)
- Create a uniform, consistent calculation format for calculation of reduction factors based on Verification Reports for residential programs
- Remove unused fields in TRC/SSM spreadsheet (which is used to calculate final impacts for the Annual Report)
- Change the manner (i.e. format) that adjustment factors are incorporated in the TRC/SSM spreadsheet for ease of use
- Complete a Custom Projects Attribution Study

- Specify that contractors completing Engineering Reviews provide statement of advancement vs. replacement issue in final report
- Complete a pre-rinse spray valve verification study
- Consider making efforts to track custom project applications resulting from industrial support programs
- Require that contractors use consistent significant digits within each Verification Report for Residential programs
- Require that contractors calculate the final reduction factors in each Verification Report for Residential programs
- Determine a responsible party for calculation of precision levels for adjustment factors resulting from Commercial & Industrial Custom Engineering Reviews
- Include a focus on validating participation numbers and key project level data entered in the TRC/SSM spreadsheet in future audits. Key metrics should be validated upstream in the tracking process.
- Require that future Engineering Reviews include a more detailed review and discussion of industrial project costs. In addition, Enbridge should consider tracking additional program metrics which may provide more information to explain the benefit-cost ratios such as savings per participant and number of projects implemented as a percentage of the projects recommended by Enbridge.
- Consider allocating more program budget to custom project verification in order to increase precision levels to 90/10.
- Require that the consultants in future years completing the residential verification work analyze the effects of using the results of the verification surveys on participants outside of the sampled population on the confidence and precision levels. In addition, the consultants should make adjustments required to the sampling strategy in order to ensure that the target 90/10 confidence and precision level is achieved.
- Improve the steam trap research in future iterations of the work by providing additional details regarding the types of steam traps studied. In addition, include in the report an analysis of the statistical significance of the results.

2 INTRODUCTION AND OVERVIEW

Enbridge Gas Distribution retained Nexant, Inc. (Nexant) to complete the Independent Audit of the 2010 DSM Annual Report as required by Ontario Energy Board guidelines. The objective of the Audit is to provide an independent opinion as to the reasonableness of the Company's claims regarding DSMVA, LRAM, and SSM. This section summarizes Nexant's approach to the Audit, highlights the specific focus areas for the 2010 Audit, and provides a summary of the key findings and recommendations resulting from the Audit activities.

2.1 APPROACH TO SCOPE OF WORK

Nexant organized the audit activities into seven tasks. These tasks are summarized below, and the Final Work Plan is included in Appendix A of this document.

Task 1 Review of Custom Project Engineering Reviews

Nexant conducted a technical review of the third-party Engineering Reviews which were conducted on a sample of Enbridge's Industrial and Commercial custom projects. The goal of this task was to provide an opinion as to the quality of the review and on the reliability and reasonableness of the error ratio (and/or realization rate) when applied to a larger population of custom projects.

Task 2 Kick-Off Meeting

Nexant met with Enbridge staff and the Evaluation Audit Committee (EAC) for a kick-off meeting. The primary objective of the kick-off was to review the initial Work Plan. Nexant also obtained Enbridge and EAC input on Audit priorities. Following the kick-off, Nexant completed a "walk-through" at the Enbridge offices, meeting with key Enbridge DSM staff. Four meetings with Enbridge staff provided an introduction to the program management structure as well as the tracking and reporting process.

Task 3 Prepare Draft and Final Work Plan

The Draft Work Plan was circulated and discussed with the EAC and Enbridge in order to further define audit priorities. Although audit priorities continued to evolve throughout the process, the Final Work Plan in Appendix A captures the majority of the audit's focus areas.

Task 4 Audit 2010 Annual DSM Report & Report Deliverables

The objective of this Task was to ensure correct calculations using reasonable assumptions, based on data gathered and recorded using reasonable methods and accurate in all material respects and applicable to the 2010 DSM programs. This task included detailed review of supporting deliverables including the 2009 and 2010 Annual DSM Reports, EAC and other stakeholder comments on 2010 Annual DSM Report, and the 2009 EAC DSM Audit Summary Report.

Task 5 Verify Claimed Savings and Associated Calculations

Task 5 was completed concurrently with Task 4. In order to verify the accuracy of the 2010 Draft DSM Annual Report's calculation of TRC and associated metrics, Nexant completed an in-depth review of the following documents or data sources:

- All DSM evaluation and research conducted during 2010 (see Tasks 1 and 4 above)
- EGD's reporting on program metric results used to support the Market Transformation incentive
- Program tracking methods and results
- Participation results
- Individual measure's (both prescriptive and custom) assumptions and results (savings, measure life, free-ridership, costs)
- Methodology and assumptions used to calculate LRAM, DSMVA, MT incentive, and SSM amounts
- Program costs
- Compliance with the requirements of the Board approved methodology
- Inputs to, and results from, cost-effectiveness models used to calculate net benefits.

Task 6 Prepare Draft Audit Report

This Audit Report outlines the principles of the Audit and the Audit processes and methods. The report documents all findings and makes recommendations for additional research, evaluation, and/or program tracking activities that may be conducted in the future to reduce uncertainties identified and not resolved as a result of the audit.

Task 7 Prepare Final Audit Report

Based on the input received during distribution of the first two report drafts, present a final Audit Report.

2.2 2010 AUDIT PRIORITIES

In setting 2010 Audit Priorities, Nexant considered several sources including: the relative Net TRC Benefits of programs or measures, priorities set in preparing the Work Plan, comments from the 2010 EAC raised during the audit, and recommendations from the 2009 Audit (either from the Auditor or 2009 EAC).

Nexant focused the 2010 Audit on programs with greatest Net TRC Benefits. As outlined in Table 2-1, Nexant found that the programs with the largest impact were: Regular TAPS (in particular,

showerhead measures), all Custom projects (commercial, industrial, and multi-residential), and Prescriptive boiler projects in schools.

Table 2-1: Largest Net TRC Benefit Contributions for 2010

Program Area	Percent of Total Net TRC[1]	Significant Programs or Measures
Existing Homes	25%	The **Regular TAPS** program comprises a majority of the Existing Homes Net TRC Benefit. Of the individual measures included in the TAPS program, **showerheads** have the largest impacts.
Residential New Construction	1%	None
Low Income	<1%	None
Small Commercial	6%	None
Commercial	23%	**Commercial Custom Projects** comprise a majority of the Large Commercial Benefits. **Prescriptive Boiler Projects in Schools** were the only significant prescriptive category of measures impacting Large Commercial.
Multi-Residential	20%	**Multi-residential Custom Projects** comprise a majority of the Multi-Residential Benefits.
Large New Construction	4%	None
Industrial	25%	**Industrial Custom Projects** comprise all of the Large Industrial Savings

[1] *Percent of Total Net TRC is based on Draft Annual Report. Totals do not sum to 100% because other program costs which decrease Net TRC Benefit are not included in this table.*

Additional 2010 Audit Priorities were set with guidance from the EAC and the Company during preparing of the Work Plan. A full list of the initial Audit Priorities is included in the Final Work Plan in Appendix A. The priorities included:

- Showerhead measure life assumptions
- Use of the showerhead "bag test" to determine flow rate
- Use of quasi-prescriptive approach to showerhead measures
- Pre-rinse spray nozzle reduction factors
- Energy Recovery Ventilators/Heat Recovery Ventilators quasi-prescriptive calculations
- Application of the 2008 Custom Project net-to-gross values to current programs

- Application of CFL distribution rates from Verification Reports to ESK and TAPS Program results
- Appropriateness of Company's internal protocol for determining if measures/projects are analyzed as equipment advancement or replacement

Nexant also reviewed the 2009 Audit Report and the EAC Audit Summary Report. Enbridge provided a 'Status Update' for each 2009 recommendation in the 2010 Draft Annual Report. If Nexant agreed with Enbridge's statement that the recommendation issue was resolved, the item is not discussed in this Report. If the item remained open, Nexant included discussion of that item in this report.

Finally, additional focus areas resulted from the EAC's review of the Draft 2010 Annual Report. Some of the identified items were addressed by the Company and are not discussed herein. Items that required closer examination during the Audit are included in this report. Within this report, specific issues raised by the EAC are identified with the header *EAC Comments* in order to easily identify those issues.

2.3 KEY MEETING AND DISCUSSIONS

- Project Kick-Off Meeting with Enbridge and EAC, Meetings at Enbridge office: February 9 and 10
- Review Meeting for Draft Work Plan with Enbridge and EAC: April 7
- Weekly Audit Update Meetings with Enbridge and EAC: April 18 through June 27
- Introduction to eTools with Enbridge (Enbridge's energy analysis calculation tool): May 4
- SSM/TRC Spreadsheet Detailed Review Discussion with Enbridge Staff: May 10

Enbridge initiated an Action Log spreadsheet to track open issues related to the Audit. Nearly forty questions were addressed by the Company in response to Auditor requests through the Action Log.

2.4 KEY FINDINGS

Nexant has audited the Annual Report, Total Resource Cost (TRC) savings, Shared Savings Mechanism (SSM), Lost Revenue Adjustment Mechanism (LRAM) and Demand Side Management Variance Account (DSMVA) of Enbridge Gas Distribution for the calendar year ended December 31, 2010. The Annual Report and the calculations of TRC, SSM, LRAM, and DSMVA are the responsibility of the company's management. Our responsibility is to express an opinion on these amounts based on our audit.

Nexant conducted our audit in accordance with the rules and principles set down by the Ontario Energy Board in its Decision with Reasons dated August 6, 2006 in EB-2006-0021. Details of the steps taken in this audit process are set forth in the Audit Report that follows, and this opinion is subject to the details and explanations therein described.

In our opinion, and subject to the qualifications set forth above, the following figures are calculated correctly using reasonable assumptions, based on data that has been gathered and recorded using reasonable methods and accurate in all material respects, and following the rules and principles set down by the Ontario Energy Board that are applicable to the 2010 DSM programs of Enbridge Gas Distribution:

TRC Savings	-	$184,593,043
SSM Amount Recoverable	-	$4,155,288
LRAM Amount Reimbursable	-	$1,346
DSMVA Amount Refunded	-	($2,717,105)

Table 2-2 details the specific changes made and their individual impacts on SSM TRC and LRAM Net Gas Savings. Table 2-3 and Table 2-4 provide a summary of the audited program results used for SSM, LRAM, and 2011 TRC Target calculations.

Table 2-2: SSM/LRAM Adjustment Detail

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	Report Page
TAPS Partners	1.25 GPM Showerhead Replacing 2.6+ GPM Savings	88m3	82m3	$0	0	($690,202)	(330,068)	p. 20
	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	0	$249,770	119,445	p. 20
	CFL Reduction Factor	11.41%	14.65%	($364,082)	0	$0	0	p. 24
TAPS - Mail Insert Pilot	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	$0	$2,510	1,200	p. 20
	CFL Reduction Factor	1.00%	4.81%	($1,510)	0	$0	0	p. 26
Residential Equip. Replcmt.	Reflector Panel Measure Life	15	18	$0	0	$0	0	p. 27
Residential New Construction ESK	Kitchen Aerator Reduction Factor	40.09%	40.58%	($1,243)	(224)	$0	0	p. 28

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	Report Page
	Bathroom Aerator Reduction Factor	45.84%	50.62%	($9,310)	(1,692)	$0	0	P. 28
	1.25 GPM Showerhead Reduction Factor	57.72%	49.20%	$26,528	5,033	$0	0	p. 28
	1.25 Showerhead GPM Gas Savings	46m3	48m3	$0	0	$2,729	1,305	p. 20
	1.5 GPM Showerhead Reduction Factor	54.38%	46.66%	$17,942	4,552	$0	0	p. 28
	1.5 GPM Showerhead Gas Savings	46m3	48m3	$0	0	$2,859	1,367	p. 20
	CFL (13W) 8 bulbs Reduction Factor	6.88%	8.81%	($5,882)	0	$0	0	p. 28
	Programmable Thermostats Free-Ridership Percentage	43.00%	10.00%	$42,141	20,437	$0	0	p. 28
Low Income TAPS Partners	1.25 GPM Showerhead Replacing 2.6+ GPM Showerhead Savings	88m3	82m3	$0	0	($6,458)	(3,089)	p. 20
	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	0	$499	239	p. 20
	Programmable Thermostats Reduction Factor	49.12%	47.00%	$3,782	997	$0	0	p. 25
Small Commercial	Condensing Boiler Participants	71	72	$0	0	$0	0	p. 35

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	Report Page
	ERV Quasi-Prescriptive Gas Savings	200,510 m3	192,342 m3	$0	0	($26,574)	(7,760)	p. 35
	HRV Quasi-Prescriptive Gas Savings	175,228 m3	122,748 m3	$0	0	($60,886)	(17,778)	p. 35
	ERV Participants	44	41	$0	0	$0	0	p. 35
	Infrared Heater Quasi-Prescriptive Electricity Savings	245-870 kWh	16-873 kWh	$0	0	($63,436)	0	p. 35
	Programmable Thermostats	82 m3 - 538 m3 and 63 - 266 kWh	13-84 m3 and 15-48 kWh	$0	0	($1,730,463)	(510,772)	p. 35
Multi-Residential	1.25 Showerhead Replacing 3.6 GPM	91m3	69m3	$0	0	($652,056)	(311,826)	p. 20
	1.25 Showerhead Replacing 3.6 GPM	91m3	69m3	$0	0	($27,479)	(13,141)	p. 20
Commercial Custom	Electric savings were not entered in initial results	0 kWh	415,154 kWh	$318,951	0	$0	0	p. 16
Industrial & Commercial Custom	Reduce steam trap measure life per Steam Trap Study	6 years	5 years	0	0	($473,225)	0	p. 54
Total				$27,317	29,103	($3,472,413)	(1,070,877)	

Table 2-3: Adjusted TRC and Gas Savings for SSM

Program	From Enbridge Draft 2010 Annual Report			Audit Adjusted Values	
	Units	Net Gas Savings (m^3)	Net TRC Benefits	Net Gas Savings (m^3)	Net TRC Benefits
Existing Homes	788,039	8,125,183	$47,708,073	8,125,183	$47,342,481
Residential New Construction	16,080	1,553,201	$1,702,743	1,581,307	$1,772,919
Low Income	7,523	318,356	$674,016	319,353	$677,798
Total Residential	**811,642**	**9,996,740**	**$50,084,833**	**10,025,843**	**$49,793,198**
Small Commercial	7,277	4,038,642	$11,210,656	4,038,642	$11,210,656
Large Commercial	305	16,126,217	$41,251,260	16,126,217	$41,570,211
Multi Residential	32,446	14,687,999	$35,569,221	14,687,999	$35,569,221
Large New Construction	43	2,228,424	$7,348,643	2,228,424	$7,348,643
Industrial	123	18,547,131	$45,176,787	18,547,131	$45,176,787
Total Business Markets	**40,196**	**55,628,413**	**$140,556,566**	**55,628,413**	**$140,875,518**
Prog. Development	-	-	$(154,688)	-	($154,688)
Market Research	-	-	$(65,465)	-	($65,465)
Overhead	-	-	$(5,855,521)	-	($5,855,521)
Total All Programs	**851,836**	**65,625,153**	**$184,565,726**	**65,654,256**	**$184,593,043**

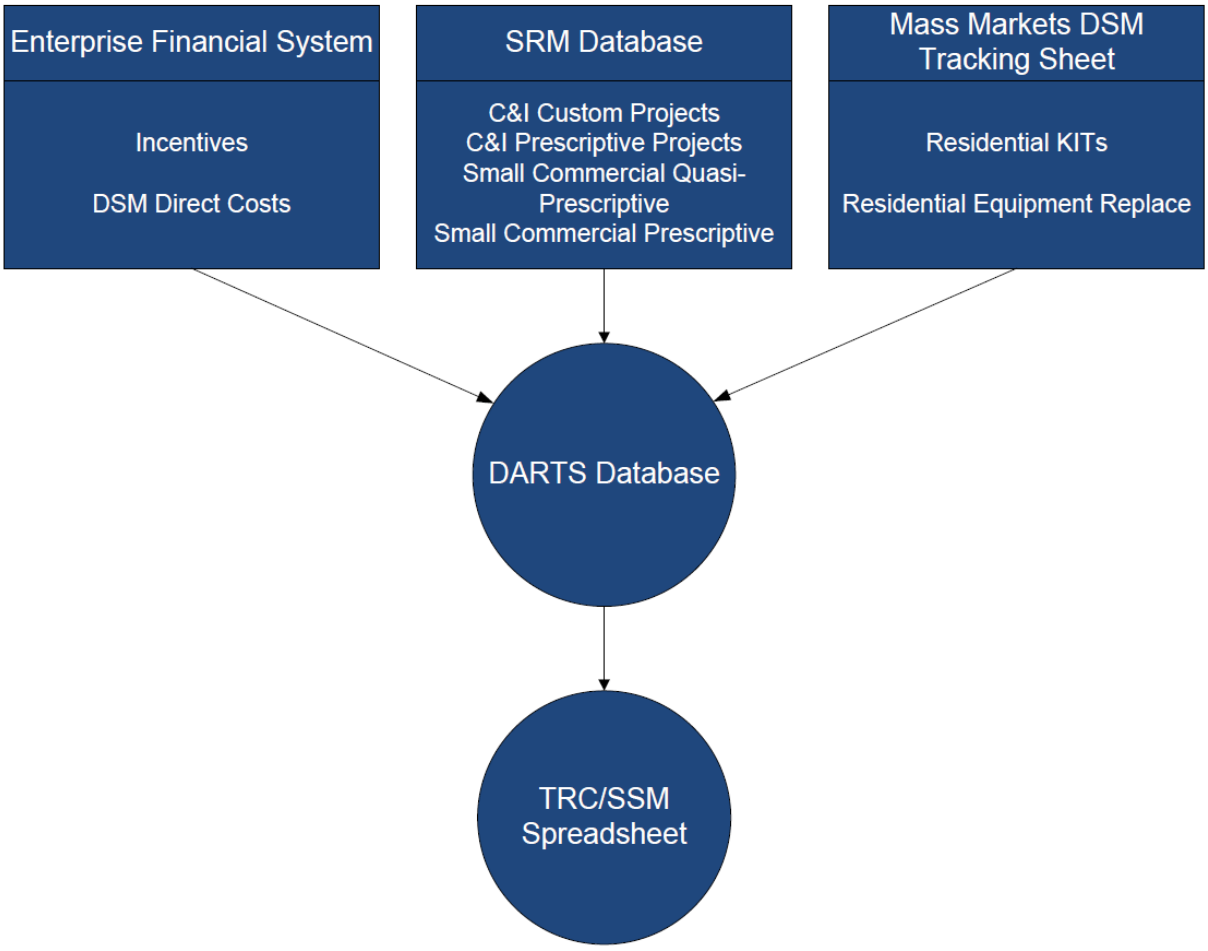
Table 2-4: Adjusted Gas and TRC Savings using Best Available Information for LRAM and 2011 TRC Target

Program	Audit Adjusted Values	
	Net Gas Savings (m^3) for LRAM	Net TRC Results for 2011 TRC Target
Existing Homes	7,915,760	$ 46,904,560
Residential New Construction	1,583,979	$ 1,778,506
Low Income	316,503	$ 671,839
Total Residential	**9,816,242**	**$ 49,354,905**
Small Commercial	3,502,333	$ 9,329,296
Large Commercial	16,126,217	$ 41,420,882
Multi Residential	14,363,032	$ 34,889,686
Large New Construction	2,228,424	$ 7,348,643
Industrial	18,547,131	$ 44,852,891
Total Business Markets	**54,767,137**	**$ 137,841,398**
Prog. Development	-	$ (154,688)
Market Research	-	$ (65,465)
Overhead	-	$ (5,855,521)
Total All Programs	**64,583,379**	**$ 181,120,630**

3 PROGRAM TRACKING AND REPORTING REVIEW

Nexant completed a review of the program tracking and reporting process. Through discussions with Enbridge staff and review of key tracking tools, Nexant found that the tracking methods in place generally result in accurate reporting. There are three databases and two tracking spreadsheets that comprise the primary data sources for the DSM Program results. Figure 3-1 depicts the tracking and reporting process as it pertains to the results presented in the Annual Report (additional steps and workflows exist but do not directly impact the Annual Report).

Figure 3-1: Enbridge Tracking and Reporting Process Summary



3.1 DATA SOURCES

The company utilizes the DARTS database to report on all DSM programs. DARTS calculates program net TRC benefits and serves as the central reporting location for DSM programs. Nexant did not access DARTS for the purpose of this Audit.

The Company's sales relationship management (SRM) database is the source of project information for the Business Markets programs which includes the Large Commercial, Multi-Residential, and Industrial Custom Projects, Multi-Residential and Large Commercial Prescriptive Projects, and Large Commercial Quasi-Prescriptive projects. The database interfaces with DARTS through an automatic upload. Nexant did not access the SRM database for the purpose of this Audit.

The "Mass Markets DSM Tracking Sheet" spreadsheet tracks all residential projects as well as the Small Commercial prescriptive projects. The information from this spreadsheet is manually input to the DARTS database. Nexant obtained a copy of this spreadsheet tool. Nexant did not complete a detailed review of the spreadsheet functionality for the purpose of this Audit.

The company's enterprise financial software is used to report all financial information. Incentives paid as well as Direct DSM Costs are tracked in this system and are automatically uploaded to DARTS. Nexant did not access this system for the purpose of this Audit.

For the purposes of the Annual Report and Audit, Enbridge creates a SSM/TRC spreadsheet and provides it to the Auditor. Relevant project information is entered in the spreadsheet from DARTS and the spreadsheet is used to recalculate net TRC benefits. Nexant completed a detailed review of this SSM/TRC spreadsheet, as detailed below.

3.2 TRC/SSM SPREADSHEET DETAILED REVIEW

The TRC/SSM spreadsheet is the central source of information for the Annual Report and SSM and DSMVA calculations. Nexant completed a line-by-line review of the portion of the spreadsheet which is used to calculate net TRC benefits. Nexant confirmed that the calculation method used for net TRC benefits is accurate and that the inputs (detailed below) appear reasonable.

For Prescriptive Measures, the TRC spreadsheet uses the following information to calculate net TRC benefits:

- Deemed savings, deemed incremental costs, deemed free-ridership values
- Reduction factors calculated in separate spreadsheets and based on results of Verification Reports
- Participation numbers from DARTS
- Incentives paid from EFS (which are only used for DSMVA calculation)

For quasi-prescriptive measures, the TRC spreadsheet uses the following information to calculate net TRC benefits:

- Measure level participation values, and calculated savings and incremental costs from DARTS
- Deemed free-ridership values
- Incentives paid from EFS (which are only used for DSMVA calculation)

For Custom Projects the TRC spreadsheet uses the following information to calculate net TRC benefits:

- Individual project level savings and incremental costs from DARTS
- Adjustment factors based on results of Engineering Reviews
- Incentives paid from EFS (which are only used for DSMVA calculation)

3.3 FINANCIAL REPORTING

Nexant reviewed the process for tracking financial results for use in the TRC/SSM spreadsheet.

Direct Program Costs

Direct Program costs are uploaded automatically from EFS to DARTS, and programmed into the TRC/SSM spreadsheet. Direct program costs are rolled up by program or by a group of similar measures. For this reason individual measure net TRC benefit calculations cannot be accurately calculated in each line of the TRC/SSM spreadsheet. Direct program costs are only accurate at a program level (i.e. Residential Existing Homes, Residential New Construction, Residential Low Income, or Small Commercial).

Incentives

For prescriptive and quasi-prescriptive measures, incentive payments are reported in EFS at a program level. The incentives are not necessarily a product of the advertised measure incentive times the number of participants. According to program staff, the reason for the discrepancy is that the financial reporting database reports actual incentives paid or accrued in 2010, while the participants included in 2010 participant counts are those that completed installation of a project in 2010.

Individual incentives for custom projects are provided in the TRC/SSM spreadsheet as reported through the company's SRM database. Total incentives for each individual sector are reported in DARTS based on the company's financial reporting database (EFS). Nexant noted that the individual incentives do not equal the total incentives reported by EFS. The reason for this is as noted above: the financial reporting database reports actual incentives paid or accrued in 2010, while the SRM system reports incentives for projects installed in 2010.

Incentive payments do not impact net TRC benefit calculations. Therefore the only reason to note the discrepancy is that incentives are included in the total program costs for the DSMVA calculation. Nexant finds that the reporting process described above is reasonable, as long as it is used consistently each year.

Nexant did not review individual project incentive payments nor check the accuracy of the EFS financial reporting system.

3.4 FINDINGS

With the goal of reporting accurate information in the SSM/TRC spreadsheet, Nexant found that the most important metrics in the tracking process are:

- *Prescriptive Participation Numbers* Participation numbers in combination with deemed values produce the savings and incremental costs required for calculation of program impacts and financial mechanisms. Since deemed values are hard coded and can easily be cross-referenced with OEB approved assumptions, tracking of deemed values through the tracking process is not critical. Participation numbers, however, are tracked in Enbridge's SRM database for Commercial and Multi-residential, and in the Mass Markets Spreadsheet for Residential & Small Commercial. After entry, they are reported to DARTS. Importantly, the definition of a participation unit varies by program. A participation unit is defined as either a household, a device (e.g. showerhead, aerator), or a group of devices (e.g. 4 CFL bulbs). This differentiation is necessary because deemed values are sometimes defined on a household basis and in other cases on a device or device group basis. The accurate tracking of participation through the tracking and reporting process is critical.
- *Quasi-Prescriptive Calculation Inputs and Individual Project Results* Quasi-prescriptive programs rely on project specific information to calculate project impacts. For example, heat recovery ventilators in the Small Commercial program, the unit's air flow capacity in CFM must be tracked to calculate the savings and incremental cost. These inputs are tracked in SRM where project savings, costs, and incentives are calculated. Therefore accurate tracking of the inputs needed to calculate the quasi-prescriptive savings and incremental cost are critical. From SRM, the project savings, costs, and incentives are uploaded into DARTS. For quasi-prescriptive programs, tracking of the quasi-prescriptive inputs initially, and later, the project-level results, is critical.
- *Individual Custom Projects Results* Individual project savings and costs must be tracked through the entire process as project impacts and costs will be unique for each entry.

Generally, Nexant found that the tracking and reporting process did result in accurate reporting for the purpose of the Annual Report and associated financial metrics. One major concern is that Enbridge identified an error for several custom projects where project level results were not tracked properly. For those projects, the electricity savings were not entered properly at some point in the tracking process, and a review of project information by Enbridge staff uncovered the error while the audit was being conducted. Several small errors made by Enbridge and found during the Audit may have been avoided by improving the process.

In addition to these tracking errors, the system is cumbersome to review or validate the data from an Auditor perspective. We recommend the following improvements.

1. For each prescriptive measure, track the definition of a participation unit (i.e. household, device or device group). The TRC/SSM spreadsheet, Mass Markets Spreadsheet, and DARTS should each have a field next to the participation number which defines participation unit.

2. Calculation of individual reduction factors should be done more systematically. During the audit, errors in calculation were found which would likely have been avoided with a consistent calculation spreadsheet. Specifically, reduction factors for the new construction

program were calculated as the sum of percentages instead of the product. Reduction factors for each program and adjustments made are discussed in further detail in Section 4. Miscalculated reduction factors accounted for about $38,000 in decrease in net TRC benefit. For consistency and clarity, Nexant recommends that a table similar to Table 3-2 below be populated using each programs' verification survey. Examples for two measures are shown below. The calculation for the reduction factor is shown in Column E.

Table 3-2: Reduction Factor Calculation

Column	A	B	C	D	E
Measure	% Materials Distributed	% Materials Installed	% Material Remaining after Removal	% Showers taken on Enbridge Showerhead or # CFLs Replacing Incandescents /# CFLs Installed *(If not applicable use 100%)*	Reduction Factor =1-(A*B*C*D)
Showerheads	100%	86%	96%	72%	40.56%
CFLs (4 bulbs)	=3.5/4	100%	98%	=2.7/2.9	20.16%

3. Unused fields in TRC spreadsheet should be removed to ensure that those which are not accurate are not mistakenly referenced. For example, individual measure TRC is calculated in the TRC spreadsheet for Custom Projects. However, as previously stated this calculation is not accurate as some DSM Direct Costs are reported only at a program level and are included in program level net TRC benefits calculation.

4. Adjustment factors for Custom projects should be more clearly indicated in the TRC/SSM spreadsheet. These factors were applied correctly in the 2010 TRC/SSM spreadsheet; however, they are not labeled and are difficult to locate in the sheet. Since these factors apply to more than two-thirds of the total 2010 Net TRC Benefit, their application should be clear in the TRC/SSM spreadsheet.

In addition, Nexant recommends that future Audit priorities include a focus on validating participation numbers and key project level data entered in the TRC/SSM spreadsheet. (During this audit, validation custom project project-level data was not an audit priority.) Key metrics (see above for a discussion of key tracking metrics) should be validated upstream in the tracking process.

3.5 AVOIDED COSTS

Nexant reviewed the values used for avoided costs for natural gas, electricity, and water to determine if they appear reasonable and if they are calculated using sources and calculation methods approved by the OEB and consistent with prior years.

Avoided costs for natural gas were updated for commodity prices. Overall avoided costs for natural gas decreased by about 7%.

Electricity costs were updated per IESO data. Overall, electricity costs increased by about 8%. The November 2009 IESO wholesale market price was used for the 2010 avoided costs, and the avoided costs for future years were adjusted using the consumer price index (CPI).

Water costs were not updated from 2009 values as certain municipalities did not have updated costs at the time avoided costs were determined. The 2009 avoided cost was applied to 2010, and the avoided costs for future years were adjusted using the consumer price index (CPI).

Nexant finds that the avoided costs appear reasonable and are calculated using OEB approved methods.

4 REVIEW OF PROGRAM RESULTS

4.1 RESIDENTIAL PROGRAMS

The audit included the review of deemed savings, free-ridership, reduction factors, program costs, and other key assumptions used by Enbridge for all Residential programs. Questions or issues raised by the EAC in regard to specific program segments or technologies were also a focus in the audit.

4.1.1 Showerhead

Low flow showerheads are an important piece of the residential programs. In 2010, they contributed over 63% of the net TRC benefits for the entire residential suite of programs. Several items relating to the low flow showerhead offerings including showerhead measure life and bag testing were addressed during the audit, and our findings are presented below.

Deemed Savings

The 2009 Audit identified adjustments to the deemed gas and water savings values for 1.25 GPM showerheads based on the *Phase II Showerhead Load Analysis Report* by SAS. Nexant verified that the reported values, shown as "Existing Natural Gas Savings" in Table 4-1 below, were used to calculate gross gas and water savings for all 1.25 GPM low-flow showerheads offered in the 2010 program year.

Substantiation Sheets for the 2011 program year were provided to Nexant by Enbridge. They included revisions to the deemed gas savings for all showerhead measures. The revised savings, calculated by Navigant and approved by the EAC, adjust the deemed savings values from the *Phase II Showerhead Load Analysis Report* using average baseline flow rates from bag tested showerheads in Enbridge's territory. The revised deemed savings values for the 2011 program year are shown in Table 4-1. These values should be used in the LRAM calculation for the 2010 program year.

In consideration of the discussion regarding Bag Tests in the TAPS Partner Program (detailed under the *Bag Testing* heading later in this Section), Nexant recommends that the deemed savings relying on average, bag-tested, baseline flow rates be revisited as results from a bag test evaluation study become available.

Table 4-1: Showerhead Deemed Values

Program	Efficient Equipment & Technologies	Base Equipment & Technologies	Existing Natural Gas Savings	2010 LRAM Natural Gas Savings
			m^3	m^3
TAPS Partners (Standard and Low Income)	Low-Flow Showerhead (Per household installed, 1.25 GPM)	2.6+ GPM showerhead	88	82
TAPS Partners (Standard and Low Income)	Low-Flow Showerhead (Per household installed, 1.25 GPM)	2.0-2.5 GPM showerhead	46	50
TAPS – Mail Insert Pilot	Low-Flow Showerhead (Per household installed, 1.25 GPM)	2.0-2.5 GPM showerhead	46	50
ESK New Construction	Low-Flow Showerhead (Per household installed, 1.25 & 1.5 GPM)	Maximum allowable by OBC (2.5GPM)	46	48

Measure Life

Nexant does not recommend any changes to the filed showerhead equipment life. The current equipment life of 10 years is consistent with industry standards.

Bag Testing

Currently, Bag Tests are conducted by a contractor on site for the TAPS Partners and TAPS Low Income programs. Contractors conduct a bag test on each showerhead to be replaced, note the existing showerhead flow rate, classify the showerhead as low flow (under 2.0 GPM), medium flow (2.0-2.5 GPM) or high flow (2.6 GPM and above) and replace any medium or high flow showerheads.

Bag testing is a common method used for testing flow rates. The test is simple and involves only a marked container (bag) and a timer. For the TAPS Partners programs, contractors use a provided bag which is marked with the test directions. Nexant made the following observations regarding the standard bag tests:

- Timing instructions for the bag tests state that each test should last “exactly 5 seconds.” The short test duration could make the bag tests sensitive to human timing errors. As little as a one second difference in test duration would result in a minimum 20% error in flow reading and can easily cause misclassification of showerheads. For example:
    - A test lasting only four seconds would classify showerheads with flow rates between 2.6 and 3.3 GPM as medium instead of high flow showerheads, causing Enbridge to claim reduced savings, and showerheads with flow rates under 2.5 GPM as low flow, causing medium flow showerheads to be left in place and Enbridge to claim zero savings.

- A test lasting six seconds would classify showerheads with flow rates between 1.7 and 2.0 GPM as medium flow, causing Enbridge to replace existing low flow showerheads and overstate savings while showerheads with flow rates between 2.2 and 2.5 GPM would be classified as high flow, causing Enbridge to overstate savings.

- Measurement instructions for the bag tests direct the user to "hold the top edge of the bag…look at the water level. The line which is closest to the water level indicates what your showerhead flow rate is..." The lines indicating flow rate on the bag are 2.0 GPM, 2.4 GPM and 3.0 GPM. Reading of the flow rate from the bag test could result in several inaccuracies:
  - The bag can be held at an angle, which could skew results
  - The limited markings do not align with the programs medium and high flow definitions, therefore any high flow classification to be an estimate.
  - Similarly, limited markings make all readings between 2.0 and 2.4 GPM and 2.4 and 3.0 GPM estimates and interpretation likely varies between contractors.

Given the potential inaccuracies discussed above, the impact of showerheads on the TAPS Partners and LI TAPS Partners program (over 6.2 million m^3 of net gas savings in 2010) and the expenses incurred from bag testing (over $520,000), Nexant recommends the Enbridge fund an evaluation study on Bag Testing and Baseline Flow Rates. Goals of the study might be:

- Evaluate the accuracy of bag testing as it is currently employed, using on-site measured data and observations;
- Comment on the use of bag test results to classify baseline flow rates for showerheads;
- Understand the baseline flow rates of showerheads in Enbridge territory;
- Consider the application of measured baseline flow rates for use in other Enbridge programs (i.e. TAPS Mail Insert Pilot);
- Consider the use of measured baseline flow rates from this evaluation study as a possible replacement for bag testing.
- Investigate cost-effective, accurate alternatives to bag testing which contractors can easily employ in the field.

4.1.2 CFL

Nexant recommends that the reduction factor take into account whether the distributed CFL bulbs replaced incandescent bulbs. For example, the results from the 2010 survey of TAPS Partners participants determined that of the average 2.9 CFLs installed, 2.8 CFLs replaced incandescent bulbs. This data had not been previously used. We adjusted the reduction factor for all CFL measures to reflect the incandescent replacement rate from the appropriate survey. The average numbers of CFLs installed and replacing incandescents are shown in Table 4-2.

Table 4-2: Average CFLs Installed and Replacing Incandescents by Program

Program	Average CFLs Installed	Average Incandescents Replaced by CFLs	Percent of CFLs Replacing Incandescent
TAPS Partners	2.9	2.8	97%
TAPS Low Income	2.9	2.9	100%
TAPS Mail Insert ESK	2.6	2.5	96%
Residential New Construction ESK	5.4	5.4	100%

Enbridge and previous EAC committees have agreed that all received CFLs would be considered installed (assuming that stored CFLs would replace existing fixtures in the near future) so the 'Average CFL Installed' values in the table above are only used as a baseline to determine the portion of CFLs replacing incandescent. Due to the way the survey was conducted, this is the proper calculation.

EAC Comments

A comment from the EAC questioned whether a heating penalty should be applied to CFL measures. A review of DSM program practices showed that most residential programs did not calculate a heating penalty for CFL lighting measures. One program that did consider a residential heating penalty, Efficiency Vermont, determined that the increased heating usage as zero[1].

While a heating penalty could be investigated and calculated for Enbridge's residential market, this does not appear to be standard industry practice, likely because the calculation is complex and would include several variables which are difficult to accurately obtain and apply for most service territories.[2] Additionally, as Enbridge is discontinuing the CFL program in 2012, Nexant does not recommend adding this investigation to the list of Enbridge's evaluation priorities. Nexant does not recommend including a heat penalty adjustment for LRAM gas savings calculations.

[1] Calculation for residential uses in Burlington, Vermont, pp. 324. *Technical Reference User Manual*, Efficiency Vermont, Feb. 19, 2010.

[2] *ACES: Default Deemed Savings Review*, State of Wisconsin Public Service Commission of Wisconsin, Focus on Energy Evaluation, Final Report June 28, 2008.

4.1.3 TAPS Partner Program

Deemed Savings

Deemed savings for the TAPS Partners program were found to be in accordance with OEB approved values. In the case of showerhead measures, adjusted deemed savings values as discussed in Section 4.1.1 apply.

Free-ridership

Free-ridership percentages for the program were found to be in accordance with OEB approved values.

Reduction Factors

Reduction factors for all water conservation measures were applied to the 2010 deemed savings based on results from the Verification Report. Nexant's review confirmed that the reduction factors for kitchen and bathroom aerators were correctly calculated from the not-installed and removal rates published in the quarterly surveys and that showerhead reduction factors took into account the verified percentage of showers taken on Enbridge showerheads in additional to the installation and removal rates.

As discussed in Section 4.1.2, Nexant recommends that the reduction factor applied to the CFL measure be adjusted to account for incandescent replacements only. The reduction factor for CFLs was increased from 11.41% to 14.65%. This adjustment resulted in a decrease of $364,082 in the net TRC benefits for the TAPS Partners Program.

Application of Verification Results

One Verification Report that related to the TAPS Partner Program was completed in 2010. The *Regular TAPS Partner Program 2010 Year-End Research Report* surveyed 3,200 residential customers who received a home visit from a TAPS' contractor during 2010. The annual report results were based on surveys completed each quarter for the program. Results from the quarterly surveys were used to determine the appropriate reduction factor for each measure. This Verification Report and survey methods are reviewed in Section 5. Reduction factors and their applications are reviewed in the preceding Reduction Factors section.

EAC Comments

The EAC raised a concern that low flow showerheads replacing those with a high flow may have a larger removal rate than those replacing medium flow and that the current verification surveys do not take baseline flow rates into account when determining removal rate. Currently, verification surveys are conducted on a random sample of customer projects. However, since TAPS contractors report only one flow rate per household, identifying the baseline showerhead flow rate for each showerhead installed is not trivial. While it would be possible to calculate independent reduction

factors based on baseline showerhead flow rate, this change would require changes to contractor data collection techniques. Furthermore, additional analysis would need to be added to the verification reports to correlate baseline flow rate results with removal rates.

Tracking of independent removal rates will likely have a small effect on total TRC.

Since we have considerable reason to believe that the bag tests may be inaccurate we do not recommend using those results to calculate unique reduction factors. Nexant recommends that the accuracy of the baseline flow rates, as discussed Section 4.1.1 should be addressed first. Nexant does not recommend this topic as an evaluation priority for 2011.

4.1.4 Residential Low Income

Deemed Savings

Deemed savings for the Low Income TAPS Partners program were found to be in accordance with OEB approved values. In the case of showerhead measures, adjusted deemed savings values as discussed in Section 4.1.1 apply.

Free-ridership

Free-ridership values for the program were found to be in accordance with OEB approved values.

Reduction Factors

Reduction factors for all measures were applied to the 2010 deemed savings based on results from the Verification Report. Nexant's review confirmed that the reduction factors for kitchen and bathroom aerators were correctly calculated from the not-installed and removal rates published in the Verification Report and that showerhead reduction factors took into account the verified percentage of showers taken on Enbridge showerheads in additional to the installation and removal rates.

Reduction factors for the programmable thermostat measure were incorrectly calculated using a removal rate of 4%. Nexant recalculated the reduction factor for the measure using the 0% removal rate published in the Verification Report. The reduction factor for programmable thermostats was decreased from 49.12% to 47.00%. This adjustment resulted in an increase of $3,781.93 in the net TRC benefits for the TAPS Low Income Program.

As discussed in Section 4.1.2, Nexant recommends that the reduction factor applied to the CFL measures be adjusted to take incandescent replacement into account. The reduction factor for CFLs did not change due to this adjustment.

Application of Verification Results

One Verification Report that related to the Low Income TAPS program was completed in 2010. The *Low Income TAPS Partner Program 2010 Year-End Research Report* surveyed 57 low income residential customers who received a home visit from a TAPS contractor during 2010. Results from the survey were used to determine the appropriate reduction factor for each measure. This Verification Report and survey methods are reviewed in Section 5.

4.1.5 TAPS Partners Program – Mail Insert Pilot

Deemed Savings

Deemed savings for the TAPS – Mail Insert Pilot program were found to be in accordance with OEB approved values. In the case of showerhead measures, adjusted deemed savings values as discussed in Section 4.1.1 apply.

Free-ridership

Free-ridership values for the program were found to be in accordance with OEB approved values.

Reduction Factors

Reduction factors for all measures were applied to the 2010 deemed savings based on results from the Verification Report. Nexant's review confirmed that the reduction factors for kitchen and bathroom aerators were correctly calculated from the not-installed and removal rates published in the Verification Report and that showerhead reduction factors took into account the verified percentage of showers taken on Enbridge showerheads in additional to the installation and removal rates.

As discussed in Section 4.1.2, Nexant recommends that the reduction factor applied to the CFL measures be adjusted to take incandescent replacement into account. The reduction factor for CFLs is increased from 1% to 4.81%. This adjustment results in a decrease of $1,510 in the Net TRC Benefits for the TAPS – Mail Insert Pilot program.

Application of Verification Results

One Verification Report that relates to the TAPS – Mail Insert Pilot program was completed in 2010. The *TAPS Energy Conservation Offer – Mail Inset Test Verification Research Report* surveyed 150 Enbridge customers who requested and received a kit of energy efficiency products through the mail at no charge. Results from the survey were used to determine the appropriate reduction factor for each measure. This verification report and survey methods are reviewed in Section 5. Reduction factors and their applications are reviewed in the preceding Reduction Factors section.

EAC Comments

The EAC raised a question regarding the baseline flow rate for the mail-insert showerhead measure. Currently, all baseline flow rates are assumed to be between 2.0 and 2.5 GPM, classifying all

replaced showerheads as medium flow. The EAC questioned whether a study to verify average baseline would be warranted. Given the small size of the program, less than 0.04% of net TRC benefits, Nexant did not focus on this question for the audit. Nexant did analyze the effect of applying the baseline flow rate distribution from the TAPS Partners program to the Mail Insert Pilot as shown in Table 4-3 and found that the current claimed gas savings are likely more conservative.

Table 4-3: Analysis of Mail Insert Pilot Gas Savings using Bag Test Baseline Flow Rate Results

TAPS Mail Insert Pilot	Deemed Gas Savings (m^3)	Current Participant Distribution	Gross Gas Savings (m^3)	Participant Distribution based on Bag Test Results		Gross Gas Savings (m^3)
Low Flow (under 2.0 GPM)	0	0	-	12%	65	0
Medium Flow (2.0-2.5 GPM)	46	541	24,886	31%	168	7,715
High Flow (2.6+ GPM)	88	0	-	57%	308	27,137
Totals		541	**24,886**	100%	541	**34,851**

Nexant is comfortable with the assumptions used by Enbridge for the showerhead baseline flow rate for the Mail insert Pilot. In Section 4.1.1, Nexant recommended a baseline flow rate study as part of an evaluation of bag testing. The results of such a study should be evaluated for application to the Mail Insert Program and would eliminate the need for a dedicated mail insert baseline evaluation.

4.1.6 Residential Equipment Replacement

Because the Equipment Replacement program was not offered in 2010, Nexant did not focus on the review of these programs. Program deemed savings, free ridership and measure life and incremental costs were checked against the 2010 filed assumptions. The few incentives honored in 2010 were found to be in accordance with filed assumptions. No adjustments to net TRC benefits were made for this program.

One typo was found in the SSM spreadsheet. The measure life for reflector panels was incorrectly entered as 15 years instead of 18. This typo was corrected but had no effect as there were zero program participants in 2010

4.1.7 Low Income Weatherization

The Low Income Weatherization gas savings is incorrectly stated in the filed assumptions. Enbridge noted that the savings are incorrectly listed as 1,134 m^3 when the actual approved value should be 1,143 m^3. Nexant recommends that Enbridge correct this error in the filed assumptions table moving forward to eliminate confusion. No adjustment to the net TRC benefits was required for this measure because the correct value was used in the calculations.

4.1.8 Residential New Construction Energy-Savings Kit

Deemed Savings

Deemed savings for the Residential New Construction Energy-Savings Kit (ESK) program were found to be in accordance with OEB approved values. In the case of the 1.25 GPM low flow showerhead measure, adjusted deemed savings values as discussed in Section 4.1.1 apply.

Nexant found that the 1.5 GPM hand-held showerhead gas savings were not adjusted based on the results of the SAS load study. Nexant recommends that savings value be reduced in-line with all other residential showerhead savings as discussed in Section 4.1.1. The 1.5 GPM hand-held showerhead gas savings would be decreased from 46m^3 to 32m^3. This adjustment results in a decrease of 9,559 m^3 in net gas savings for the measure. This change will be accounted for in the LRAM calculation for 2010.

Free-ridership

The free-ridership percentage for the programmable thermostat measure was incorrectly entered as 43%. The approved value per the May 2010 filed assumptions for the 2009 program is 10%. This adjustment resulted in an increase of $42,140.91 in the Net TRC Benefits for the Residential New Construction ESK program. Other free-ridership percentages for the program were found to be in accordance with OEB approved values.

Reduction Factors

The program delivery model for the Residential New Construction program changed in August 2010 from builder installed measures to an energy-savings kit for customer installation. Given this change in delivery, the program reduction factors for May to July 2010 differ from those for the August to December timeframe. For May to July 2010 a 0% reduction factor was applied, given that all measures were installed by the builder. For the customer installed model offered August to December, Nexant found that the reduction factors were calculated incorrectly. It was found that reduction factors for the program had been calculated as the sum of the not-installed rate, removal rate and percent of showers on non-Enbridge showerheads instead of the product of the installation rate, the percent remaining after removal and the percent of shower on Enbridge showerheads. Because of the way the Verification survey was done, this is the correct calculation. Nexant recalculated the reduction factors and applied the corrected factors to the 2010 deemed savings.

In addition, Nexant adjusted the reduction factor for CFLs to take incandescent replacement into account as discussed in Section 4.1.2.

Nexant also adjusted the reduction factor for bathroom aerators to include the distribution rate and the ratio of number of aerators received to those installed reported in the Verification Report.

The corrected reduction factor values and their impacts for the Residential New Construction ESK Program are listed in Table 4-4. Note that the programmable thermostat reduction factor did not change since the only contributing factor was the material installation rate.

Table 4-4: Revised Reduction Factor and TRC Impacts for Residential New Construction ESK Program

Measure	Revised Reduction Factor	TRC Impact for SSM
Kitchen Aerators	40.58%	($1,243)
Bathroom Aerators	50.62%	($9,310)
1.25 GPM Showerheads	49.20%	$26,528
1.5 GPM Hand-held Showerhead	46.66%	$17,942
CFL (13W) 8 bulb	8.81%	($5,882)

Application of Verification Results

One Verification Report that related to the Residential New Construction program was completed in 2010. The *Builders' Energy-Savings Kit Verification Research Report* surveyed 150 new homeowners who received Enbridge's energy-savings kit, courtesy of their builders. Results from the survey were used to determine the appropriate reduction factor for each measure. This verification report and survey methods are reviewed in Section 5. Reduction factors and their applications are reviewed in the preceding Reduction Factors section.

4.2 BUSINESS MARKETS

4.2.1 Free-Ridership for Custom Projects

Custom measures use free-ridership values by sector as reported in the *Custom Projects Attribution Study Final* report (Summit Blue, October 31, 2008). Table 4-5 provides a summary of the results.

Table 4-5: Free Ridership Deemed Values for Enbridge Custom Projects

Sector	Free-Ridership
Agriculture	40%
Commercial Retro-fit	12%
Industrial	50%
Multifamily	20%
New Construction	26%
Total	41%

Enbridge and the EAC agreed with a recommendation made by the 2008 Auditor to update the attribution study. However, this work has been delayed since the new DSM Guidelines may change how free-ridership is handled. Enbridge and the EAC have agreed that they would wait for the 2012 DSM Guidelines to be finalized before initiating an Attribution Study.

Due to the unforeseen delay of the updated DSM Guidelines, free-ridership rates determined from projects completed largely in 2007 (the Study included custom projects completed between Q4 2006 and Q3 2007) are now being applied three years later to 2010 projects, and will also be applied to 2011 projects. Nexant agrees with the decision to apply these results for more than one year, but due to the ongoing delay in obtaining updated results, we believe that a discussion of the application of results three to four years out of date is warranted.

Summit Blue noted in the Final Report that the following key factors drive the particular results of the Study:

- Several large projects in the study population had high free-ridership rates. Summit Blue stated that if those large projects were eliminated from the population, the overall combined (Union & Enbridge) free-ridership would drop from 48% to 34% (Summit Blue, Page v, page 30).

- Machine/process measures accounted for 44% of the gross savings and had a combined (Union & Enbridge) free-ridership rate of 56% (Summit Blue, Page 31).

- HVAC measures accounted for 39% of the gross savings and had a combined (Union & Enbridge) free-ridership rate of 46% (Summit Blue, Page 31).

In addition, it is notable that the impacts of the projects on which the Study was based were distributed across Sectors much differently than the 2010 impacts (Table 4-6). Because the sample sizes for individual sectors were often small, Summit Blue recommended that the overall free-ridership rate should have been used instead of the sector-specific rates (Summit Blue, page ii). Despite this recommendation, the sector-specific results would be applied instead. Nexant does not challenge this decision as it has been presumably reviewed in previous audits; however, we believe it is important to note these changes in program participation as they are one indicator of changes in custom programs since 2007.

Table 4-6: Custom Projects Gross Savings by Sector, 2007 and 2010

Sector	Gross m^3 Savings as Percent of Total, Q4 2006-Q3 2007	Gross m^3 Savings as Percent of Total, Q1 2010 to Q4 2010
Agriculture	3%	4%
Industrial	77%	35%
Multifamily	8%	27%
New Construction	2%	5%
Commercial Retrofit	10%	30%

The most significant concern regarding the use of the Attribution Study results is specific to the Industrial Sector. The 2010 Draft Annual Report states that the industrial sector was significantly affected by the economic recovery (or lack thereof) in 2010. In 2009 and 2010 incentives were increased. These facts, combined with Summit Blue's observation that several large projects did drive the findings of the 2008 study, lead us to believe that utilizing the 2008 free-ridership study as substantiation for the 2010 free-rider assumptions is likely resulting in conservative calculations of net TRC benefits (i.e. we would suspect that free-ridership rates would be less than documented in the 2008 study).

It is not with the scope of this study to complete the work to update the free-ridership values.

Because the free-ridership rates are likely conservative and better information is not available, we do accept the use of these free-ridership rates in 2010. We strongly believe that updating the Attribution Study for Commercial and Industrial Custom projects must be a priority going forward. Continued application of the free-ridership results that are invalid for the current program year to such a large portion of Enbridge's program impacts is not appropriate and needs to be corrected going forward.

EAC Comments

The 2010 EAC raised a concern about low incentive levels in some program areas and the possible relationship to free-ridership. It is standard practice in energy efficiency program design is to ensure a program offers an incentive that is a large enough percentage of the incremental cost to be a significant and primary influence in the customer's decision to implement energy efficiency. The logic is that offering a small percentage of the incremental cost may result in a program with high free-ridership rates. For this reason, the EAC raised concerns with the low incentive levels overall, most notably New Construction.

Nexant reviewed incentive levels compared to free-ridership rates. Incentive levels were reviewed at a program level based on the ratio of the incentive to the incremental cost. Table 4-7 provides a

summary of this review. Nexant does share the same concern raised by the EAC; low incentive levels may result in high free-ridership rates.

Table 4-7: Free-ridership Rates and Incentive/Incremental Cost Ratios, 2010

Sector	Deemed Free-Ridership	Incentive / Incremental Cost
Agriculture	40%	12%
Commercial Retro-fit	12%	16%
Industrial	50%	33%
Multifamily	20%	22%
New Construction	26%	4%
Total	41%	19%

Wisconsin's Focus on Energy program (Focus) has studied this topic over the last several years with interesting results. An evaluation of July 2004 through December 2004 projects[1] studied the impact of incentive level to attribution. The author found that the expected relationship was true for commercial & industrial sectors: higher incentive appeared to be related to lower free-ridership values. But in agriculture programs, there was no relationship. The recommendation resulting was that "the financial assistance provided by the program should be sufficiently high to encourage rebated measures to be installed by those other than early adopters".

In the evaluation of the July 2007 to September 2008 programs[2], the author revisited the issue. Based on the previous recommendations, Focus had raised incentive levels in some program areas hoping to increase attribution. The evaluation found that attribution levels did not increase. The author notes that the economic decline during the examination period may have had an effect. They stated that economic decline could be argued either to increase or decrease attribution. (Enbridge commented that their industrial sector was affected by economic decline in 2010.) This report provides a well-supported study of the effect of changing incentive levels and concluded that the correlation is not strong enough to use incentive levels alone to predict or control free-ridership.

[1] *Business Programs: A Behind-the-Scenes Look at Attribution,* State of Wisconsin, Public Service Commission of Wisconsin, Focus on Energy Statewide Evaluation, June 21, 2006, PA Consulting Group, Inc.

[2] *Business Programs: Additional Looks at Attribution*, State of Wisconsin, Public Service Commission of Wisconsin, Focus on Energy Statewide Evaluation, February 26, 2010, PA Consulting Group, Inc.

Therefore, based on the outdated free-ridership values available (as discussed above), and in the absence of a complete study of factors affecting Enbridge custom project attribution, we cannot provide an opinion on the relationship between incentive levels and attribution for Enbridge's 2010 programs.

4.2.2 Equipment Replacement Projects Advancement and Replacement

Both the 2008 and 2009 Audits included discussion of the decision rules for categorizing Custom projects as advancement or replacement. The rules suggested by the 2008 Auditor have been adopted by Enbridge.

For replacement type measures, Nexant discussed the program approach with Enbridge staff in order to determine if energy savings were being calculated on an incremental basis. For custom projects calculated in eTools, Enbridge staff indicated that the eTools calculator does determine incremental energy savings for replacement type measures. Enbridge staff also state that savings calculated for custom projects analyzed using third-party analysis tools are also calculated on an incremental basis. Additionally, Enbridge reported that incremental savings were also included in the third-party Engineering Review. Nexant's audit of the Engineering Review did not uncover any issues with the treatment of replacement type measures, however Nexant did not conduct an additional focused review to identify and assess replacement type projects. In the case of New Construction projects, Nexant did verify during the audit of the Engineering Review that energy savings were calculated on an incremental basis.

Nexant conducted similar discussions with Enbridge regarding the cost calculation for replacement measures. Enbridge reported that costs are calculated on an incremental basis for replacement type measures, comparing the cost of the high-efficiency equipment to the cost of standard efficiency or code-required equipment and that the Engineering Review checks that this is done properly. Again, Nexant did not specifically audit projects to validate that this was reviewed appropriately but did not find any issues within the audited projects.

For advancement type measures, Nexant reviewed the list of Custom projects to determine if measure life was appropriately adjusted. (Full energy savings for advancement measures should not be claimed over the full life of the new equipment.) Nexant found that for boiler measures coded as "advancements" a discounted measure life was used. According to Enbridge staff, this discounted measure life was agreed upon with the 2007 EAC. Nexant was satisfied with Enbridge's explanation of the treatment of advancement measures.

Enbridge stated that the Engineering Review included study of the treatment of advancement versus replacement. To report on this work, we recommend the Engineering Reviews include a statement on the following issues for replacement and advancement type measures:

- Were the decision rules set by Enbridge applied correctly to categorize measures as advancement or replacement?

- For replacement measures, were energy savings and project costs calculated on an incremental basis?

4.2.3 Large Commercial Custom and Prescriptive

The Large Commercial program accounts for 26% of the total net TRC benefit for 2010. Custom measures comprise a large majority of the Large Commercial program (about 90%) and while prescriptive measures are also offered, the only significant prescriptive measure for 2010 was the high efficiency boilers measure for schools.

Custom Savings Estimates

Savings for commercial custom projects are determined using either calculations from third-party engineering firms or, where applicable, Enbridge's eTools calculator. Savings for custom measures are addressed by the Engineering Review discussed in Section 5. Measure life assumptions used for custom projects used OEB approved values where available, or otherwise used reasonable assumptions. We do not recommend any changes to the 2010 results.

Deemed Values

In 2010, about 100 prescriptive projects were completed, where the large majority of those were high efficiency boilers in schools. Nexant found that savings, measure life, and incremental costs for prescriptive measures were based on deemed values approved by the OEB.

Free-ridership

Prescriptive measures follow OEB approved free-ridership values.

Custom projects use deemed free-ridership values from the 2008 Attribution Study discussed in Section 4.2.1. Nexant found that these values were correctly applied in the calculation of net savings.

Application of Engineering Review

The results of the Engineering Review were applied appropriately to the natural gas, electricity, and water savings for all commercial custom projects. (See Section 5 for discussion of the Engineering Review). The adjustment factors were applied to the entire population of commercial custom project energy savings.

Incentives

The discussion in Section 3.3 regarding incentive reporting also applies here. For the Large Commercial Programs, the SRM reported total incentive is $1,755,335 while the EFS reported incentives used for the DSMVA calculation were $1,961,877. We do not recommend any changes to the 2010 results.

4.2.4 Small Commercial Prescriptive and Quasi-Prescriptive

The Small Commercial program was relatively small in 2010, although not insignificant (about 5% of net TRC benefits). The program includes both prescriptive and quasi-prescriptive measures including water conservation, HVAC measures, and water heating applications.

Deemed Values

Deemed values for prescriptive measures were accurately based on deemed savings, incremental cost, and free-ridership values from OEB approved assumptions.

Savings and incremental cost for several quasi-prescriptive measures were not reviewed in detail during this audit. Those values appear to be based on the OEB approved quasi-prescriptive deemed values, and Nexant did not review project files to check that the project-specific information such as ERV or HRV air delivery capacity (CFM) or boiler or unit heater heating capacity (BTU/hr) was properly used in the quasi-prescriptive calculation. See Section 3 for discussion of the tracking and reporting review performed during this audit.

Enbridge notified Nexant that a change to the deemed values for infrared heating measures was accepted by the OEB in May of 2010. The natural gas savings do not change. The change in quasi-prescriptive electricity savings applies to the 2011 TRC Target calculation. Nexant reviewed the calculations completed by Enbridge to adjust the infrared electricity savings and finds that the adjusted values are correct. The results are included in Table 2-2.

A change in deemed values for programmable thermostats has been agreed up on with the EAC and is being filed for use in 2011 assumptions. This is considered best available information for LRAM and TRC Target calculations. Nexant reviewed the calculations completed by Enbridge to adjust the multi-residential programmable thermostat quasi-prescriptive savings for both gas and electricity. The calculations are correct, and the adjustments which apply to LRAM and TRC Target calculations are included in Table 2-1.

Application of Verification Results

No verification work was completed for small commercial measures.

Reduction Factors

Enbridge currently uses a 2% reduction factor for pre-rinse spray valves to account for removal of the valves after contractor installation. Unlike other reduction factors used, this value is not based on any survey work. The value was agreed upon with the Enbridge and the 2009 EAC after exploring options to obtain a more accurate value by either completing Verification work or obtaining a value from another utility program. At the time, Verification work was not possible because it would be difficult to locate the appropriate staff person to confirm installation and because site visits would need to occur during off-peak restaurant hours. Enbridge attempted to obtain a reduction value

from another utility program. The only value available (from a Manitoba Hydro program) was 0.6%. This discussion is summarized in a Memorandum dated January 2010.

Enbridge has taken the following actions, as agreed upon with the 2009 EAC, to establish contact information with participants so that in the future, verification work would be feasible:

- Enbridge has begun confirming the installation of the pre-rinse spray valve only with the restaurant manager and
- Enbridge has begun collecting contact information for that person and
- Old pre-rinse spray valves are discarded upon installation of the new product, making it more difficult for the customer to revert to the old technology

About 2,000 pre-rinse spray valves projects were completed in 2010. Pre-rinse spray valves account for less than 2% of total volume of natural gas savings, 8% of total volume of water savings, and 1% of total net TRC benefit. Nexant recommends that Enbridge implement a Verification Study for 2011 if such a study is feasible.

Incentives

Incentive payments reported are based on the Company's financial tracking system.

EAC Comments

The EAC raised the issue of the application of recent ERV/HRV research (*Evaluation of Natural Gas DSM Measures: Energy Recovery Ventilators & Heat Recovery Ventilators*, Nexant, 2010) to the custom ERV/HRV measures. Since Nexant authored the report, it was agreed that review of the content of the ERV/HRV study would not be included in the scope for the 2010 Audit. The ERV/HRV study has been accepted as best available information for 2010 LRAM assumptions and 2011 Assumptions.

As mentioned in the preceding Deemed Values section, Nexant does not have access to the quasi-prescriptive calculators used to determine ERV/HRV savings. However, Nexant was able to modify the savings for each of the quasi-prescriptive ERV or HRV measures using the 2010 Mass Markets DSM Tracking spreadsheet to reflect the updated assumptions accepted by Union Gas and their EAC during the 2009 Audit. The current values used by Enbridge and the best available values from Union Gas' updated substantiation sheets are shown in Table 4-8 and Table 4-9. Applying the updated gas savings to the ERV and HRV projects for 2010 resulted in a net gas savings decrease of 7,756 m^3 for ERV projects and 49,856m^3 for HRV projects. This change will be accounted for in the LRAM calculation for 2010. The quasi-prescriptive formulas for savings and cost should be fully revised in-line with the corresponding Union Gas substantiation sheets (#s 36, 37, 40 & 41) for the 2011 program year.

Table 4-8: Current and Best Available Gas Savings values for Existing and New Commercial ERV Measures

Market Segment	Existing Commercial ERV		New Commercial ERV	
	Current Gas Savings per CFM Value (m^3/CFM)	Best Available Gas Savings per CFM Value (m^3/CFM)	Current Gas Savings per CFM Value (m^3/CFM)	Best Available Gas Savings per CFM Value (m^3/CFM)
Hotel	5.14	3.40	4.89	3.21
Restaurant	3.30	3.40	3.14	3.21
Retail	3.30	3.40	3.14	3.21
Office	1.84	2.17	1.75	2.05
School	2.57	2.17	2.44	2.05
Health Care	5.14	6.12	4.89	5.77
Nursing Home	5.14	6.12	4.89	5.77
Warehouse	5.14	2.17	4.89	2.05

Table 4-9: Current and Best Available Gas Savings values for Existing and New Commercial HRV Measures

Market Segment	Existing Commercial HRV		New Commercial HRV	
	Current Gas Savings per CFM Value (m^3/CFM)	Best Available Gas Savings per CFM Value (m^3/CFM)	Current Gas Savings per CFM Value (m^3/CFM)	Best Available Gas Savings per CFM Value (m^3/CFM)
Hotel	4.90	2.61	4.55	2.38
Restaurant	3.15	2.61	2.92	2.38
Retail	3.15	2.61	2.92	2.38
Office	1.75	1.67	1.62	1.52
School	2.45	1.67	2.27	1.52
Health Care	4.90	4.70	4.55	4.28
Nursing Home	4.90	4.70	4.55	4.28
Warehouse	4.90	1.67	4.55	1.52

4.2.5 Multi-Residential Custom and Prescriptive

The multi-residential program included both custom and prescriptive incentive offerings. A majority of the savings and net TRC benefits for 2010 were from custom projects at multi-residential private facilities. The prescriptive measures with the largest impact were showerheads and aerators.

Custom Saving Estimates

Custom savings estimates were analyzed in the same way as Large Commercial Custom projects, and Multi-residential impacts were included in the Engineering Review. See Section 5 for discussion of Nexant's audit of the Engineering Review. We do not recommend any changes to the 2010 results.

Deemed Values

Multi-residential prescriptive measures followed OEB approved assumptions for deemed savings, incremental cost, and free-ridership.

Per the discussion in Section 4.1.1 regarding the revision of deemed gas savings values for showerheads, revised gas savings for the 2011 program year for Multi Residential Showerhead measures should be taken into account in the calculation of the 2010 LRAM. The revised deemed gas savings values are shown in Table 4-10 below.

Table 4-10 Showerhead Deemed Savings Values, Multi-Residential

Program	Efficient Equipment & Technologies	Base Equipment & Technologies	Existing Natural Gas Savings	2010 LRAM Natural Gas Savings
			m^3	m^3
Multi Family (Existing Buildings)	Low-Flow Showerhead (Per household installed, 1.5 GPM)	3.6 GPM	91	69

Free-ridership

Prescriptive measures used OEB approved free-ridership values.

Custom measures use deemed free-ridership values from the 2008 Attribution Study. The discussion of the application of this work to the 2010 program in Section 4.2.1 also applies to the Multi-residential custom projects. We do not recommend any changes to the 2010 results.

Application of Verification Results

One Verification Report that related to the Multi-residential prescriptive program was completed in 2010. The *Showerhead Verification among Rental Buildings Research Report* randomly selected 662 units across 29 of 65 buildings for verification. Results from the audit were used to determine the number of showerheads in participating rental buildings that were installed and not removed. This work is reviewed in Section 5. Nexant found that those results were properly applied to the deemed savings for multi-residential showerheads.

Reduction factors for all other prescriptive multi-residential measures were applied to 2010 deemed savings based on work completed in previous years. Nexant's review confirmed that those reduction factors were consistent with the 2009 approved values, but Nexant did not re-review those results.

Incentives

The discussion in Section 3.3 regarding incentive reporting also applies here. The total custom incentive as reported in EFS is $2,411,648 while the total incentive as reported in SRM is $2,275,836.

For the multi-residential program as a whole, the difference between the EFS and SRM values was reasonable. We do not recommend any changes to the 2010 results.

4.2.6 Large New Construction Custom

Savings Estimates

Custom savings estimates were analyzed in the same way as Large Commercial Custom projects, and new construction impacts were included in the Engineering Review. See Section 5 for discussion of Nexant's audit of the Engineering Review. We do not recommend any changes to the 2010 results.

Free-ridership

Deemed free-ridership values from the 2008 Attribution Study are used for New Construction projects. The discussion of the application of this work to the 2010 program in Section 4.2.1 also applies to the New Construction projects. We do not recommend any changes to the 2010 results.

Application of Engineering Review

The results of the Engineering Review were applied appropriately to the natural gas, electricity, and water savings for all commercial custom projects. (See Section 5 for discussion of the Engineering Review). The Adjustment Factors were applied to the entire population of commercial custom projects energy savings.

Incentives

The discussion in Section 3.3 regarding incentive reporting also applies here. The total custom incentive as reported in EFS is $178,706 while the total incentive as reported in SRM is $298,687. For the New Construction program as a whole, the difference between the EFS and SRM values was more significant than for Multi-residential or Large Commercial. However, due to the small participation numbers (43 projects) the differences are not unreasonable – carryover of several large projects from a population of 43 projects could change the incentive significantly. We do not recommend any changes to the 2010 results.

EAC Comments

The 2010 EAC raised a question regarding the relatively low incentives for Commercial New Construction. As discussed in Section 4.2.1, the incentive levels alone do not prove either high or low attribution. However, the 4% incentive level for new construction is certainly low. Whether or not it indicates attribution levels, it raises questions about the accuracy of the cost information used as well as the possibility that participation is not growing as quickly as it could if incentives were higher. Nexant recommends that Enbridge consider raising incentive levels after a review of the current program, including: incentive levels for similar programs, customer satisfaction with current program, and the affect of the construction industry on the program, at a minimum. This work is not

recommended as an evaluation priority for 2011 due to the small size of the New Construction program.

4.2.7 Industrial Custom

The program accounted for 25% of net TRC benefits. The Industrial program is comprised entirely of custom projects. Projects are categorized as Industrial or Agriculture, with the Agriculture projects accounting for about 5% of the net TRC benefits for the Industrial Custom projects. The most significant measures contributing to natural gas savings were furnaces for process heating, industrial process equipment, and heat recovery for process heating or space heating. These top three measures accounted for 33 of 123 participants and more than half of the natural gas savings. Other significant measures included steam traps, ventilation controls, and greenhouse curtains.

Enbridge noted in the Draft Annual Report that the economic conditions in 2010 affected participation.

Savings Estimates

Savings for industrial custom projects are determined using either calculations from third-party engineering firms or, where applicable, Enbridge's eTools calculator. Savings for custom measures are addressed by the Engineering Review discussed in Section 5. Measure life assumptions used for custom projects were all per OEB approved values. We do not recommend any changes to the 2010 results.

Free-ridership

A deemed free-ridership value from the 2008 Attribution Study is used for Industrial projects. The discussion of the application of this work to the 2010 program in Section 4.2.1 also applies to the Industrial projects. We do not recommend any changes to the 2010 results.

Application of Engineering Review

The results of the Engineering Review were applied appropriately to the natural gas, electricity, and water savings for all industrial custom projects. (See Section 5 for discussion of the Engineering Review). The adjustment factors were applied to the entire population of industrial custom projects energy savings.

Incentives

The discussion in Section 3.3 regarding incentive reporting also applies here. The total custom incentive as reported in EFS is $2,097,700 while the total incentives as reported in SRM are $2,148,889. For the industrial program as a whole, the difference between the EFS and SRM values was not significant. We do not recommend any changes to the 2010 results.

EAC Comments

The EAC raised a concern regarding the high benefit-cost ratios for the custom programs, with Industrial being of most concern. Table 4-11 summarizes the 2010 benefit-cost ratios (values are based on the Draft Annual Report). The benefit-cost ratio was calculated as:

$$Benefit{:}\,cost\ ratio = \frac{NPV\ Benefits}{Incremental\ Costs + DSM\ Direct\ Costs}$$

Table 4-11: Benefit-Cost Ratio for 2010 Custom Programs

Custom Program Area	Benefit-Cost Ratio
Large New Construction	2.4
Large Commercial	4.2
Multi-Residential	3.8
Agriculture	2.0
Other Industrial	7.7
Total	4.3

Nexant reviewed Enbridge Program results for 2007 and 2009 in order to compare the 2010 results to results for previous years. In 2007, the custom projects benefit- cost ratio overall was about 3.0; in 2009 and 2010, it was about 4.3. For each sector individually, 2010 benefit-cost ratios were about the same as 2009. Compared to 2007, each sectors had a slightly higher benefit-cost ratios in 2009 and 2010. The industrial sector has consistently had the highest ratio and the largest increase from 2007 to 2009. The benefit-cost ratio in 2007 was about 4.3, in 2009 it was 7.5 and 2010 it was 7.7.

The high value for industrial raises concern. We considered three potential causes for this high benefit-cost ratio: poor economic conditions, incorrect (and high) energy savings claimed, and incorrect (and low) project costs reported. Each of these possible causes is discussed further below.

The increasing benefit-cost ratios may be the result of customers implementing only those projects with very favorable economic returns (and high B/C ratios) due to the poor economic conditions. The effects of the economic downturn may have impacted the industrial sector more strongly than other sectors. Enbridge did note in the Draft Annual Report that the industrial sector was impacted by the economic downturn. Although we cannot analytically prove what impact this had on benefit-cost ratios, we believe it to be the most likely explanation.

The accuracy of the energy savings claims were audited in detail as we reviewed the Engineering Review (see Section 5). For the industrial programs, the most significant measures contributing to natural gas savings were furnaces for process heating, industrial process equipment, and heat recovery for process heating or space heating. These top three measures accounted for 33 of 123

participants and more than half of the natural gas savings. Other significant measures included steam traps, ventilation controls, and greenhouse curtains. Based on our audit of the Engineering Reviews of Industrial Custom Projects, Nexant does not find any evidence that savings are being overestimated. In fact, in projects included in the sample, estimates are generally conservative (see Section 5 for complete discussion).

Regarding project costs, the consultant (BJL) who completed the Engineering Review for industrial projects did state that costs were supported with actual contractor pricing specific to each job and in general the Engineering Review found those prices to be in line with industry standards. However, this audit did not include a detailed review of project costs. We recommend that future Engineering Reviews include a more detailed review and discussion of industrial project costs.

Although we suspect the economic effects may be the reason for the high benefit-cost ratios, due to the large impacts of the industrial custom projects, and the exceptionally high benefit-cost ratio for the program, increased attention to this topic is recommended. Enbridge should consider tracking additional program metrics which may provide more information to explain the benefit-cost ratios. We suggest that Enbridge consider tracking the savings per participant and number of projects implemented as a percentage of the projects recommended by Enbridge. Enbridge should consider the required time and effort to track these metrics and weigh the benefits of the additional data compared to the time and effort required. As discussed above, Nexant does recommend that the 2011 Engineering Review include a more rigorous review and discussion of project costs than was done in 2010.

We do not recommend any changes to the 2010 results; the energy savings claimed are reasonable.

4.2.8 Other Industrial Initiatives

Enbridge offered several industrial support programs in 2010 which did not result in measurable gas savings for 2010. Industrial support programs offered in 2010 were:

- METERs (Measuring, Evaluating & Targeting of Energy & Resources)
- Workshops and training
- Funding for on-site energy managers for select large facilities
- Energy assessments

Nexant commends the Company for their efforts providing these types of activities. Nexant does believe that given the current economic environment, driving participation into mature programs is an on-going challenge which does require proactive outreach, training, and technical assistance to be provided to the customer. In the future, Nexant recommends Enbridge make efforts to track

custom projects and the associated impacts which result from these support programs in order to gauge the impact of the programs.

EAC Comments

The EAC asked Nexant to consider the impacts of the on-site energy managers. Enbridge does not claim any savings for the on-site energy managers and did not track projects resulting from the deployment of energy managers. Therefore, it is difficult to assess and provide an opinion regarding the impacts. Nexant recommends, as stated above, that Enbridge consider making efforts to track custom project applications resulting from this or any of the other industrial support programs.

5 REVIEW OF VERIFICATION AND RESEARCH STUDIES

5.1 COMMERCIAL AND INDUSTRIAL ENGINEERING REVIEWS

This section evaluates the review of the third-party Engineering Reviews which were completed for custom commercial and industrial project impacts for the Enbridge Gas Distribution Engineering Review for 2010 by Building Innovation Inc (BII) and Byron J Landry & Associates respectively (BJL).

Thirty-one (31) custom commercial projects were sampled in the BII impact evaluation and they included a wide range of customer facility types including retrofit projects for multi-family condominiums, large offices buildings, hospital retrofits, and a district steam heating plant retrofit. In addition to retrofit projects, several new construction projects were evaluated including a school, a conference center, retail center, new apartment buildings and a water park amusement center.

For the industrial program BJL reviewed a total of 13 projects including two projects in the agricultural sector for greenhouse thermal curtains.

Tasks performed by both BII and BJL included:

1) A review of customer applications, supporting documentation, engineering estimates, simulation inputs and outputs for new construction projects, and commercial or industrial specific eTools model inputs for many of the retrofit projects

2) Site visits to verify that measures were installed and operational

3) Collection of supporting information including operating practice, system operating data and design information from customers and Enbridge files.

4) Reporting on investigations of file reviews and site inspections including recommendations to accept savings claims, or recommendations for adjustments to savings to reflect review conclusions.

5.1.1 Technical Review of Engineering Custom Engineering Reviews

Calculation Methodology Review

Commercial retrofit projects were typically calculated using the commercial version of the Enbridge's eTools, while new construction projects were modeled using the EE4-CBIB simulation software with the exception of a water park amusement center, for which energy savings were calculated using an alternative calculation approach not explicitly identified in the report. Industrial projects reviewed by BJL were typically calculated with spreadsheet calculations, although several projects were calculated with the industrial version of eTools. Energy savings adjustments by BII and BJL were calculated with standard engineering calculations, or through revised inputs to eTools calculation models which were re-run by Enbridge.

However, savings estimates for the majority of the commercial projects reviewed by BII were developed with Enbridge's eTools, and potential issues with the calculations internal to the tools were beyond the scope of the evaluation team's efforts, and of Nexant in this custom project review. New construction projects reviewed in the sample of commercial projects were also calculated using computer simulation models, some of which the reviewer noted did not appear to be consistent with or the latest versions of the building modeling software appropriate for the project. The projects within the industrial project sample group were calculated with tools including Industrial eTools and spreadsheet calculations based on sound engineering principles. Generally these project reviews revealed use of trend data, spot measured or snap shot data from the distributed control system (DCS) screens, and assumptions regarding some of the variables for inputs to the calculation models.

Nexant reviewed the BII and BJL reports on all projects, and requested additional information on a subset of the projects in both the industrial and commercial samples that had been reviewed by the two consultants. Additional data was requested for projects that had savings claims that made up a significant fraction of the sector samples overall claimed savings, where savings were a significant fraction of the baseline gas use at a particular project, where the consultants pointed out significant discrepancies in their review findings from the original project calculations, or where Nexant felt that calculation assumptions, notes on site visit findings or calculation approaches warranted additional investigation. Comments on Nexant's evaluation of the reviewer's calculation methodology for each project are summarized in Table 5-1 below.

Table 5-1: Review of Calculation Methodology for Distribution Contract Projects

Project and Description	Comment
CM.HOS.002.10 AHU Controls to reduce OA fraction from 100%	BII noted that project calculations from the original project review did not account for heat recovery on AHUs, or VSD control of AHU fans. Nexant reviewed the spreadsheet alternative calculation bin model BII used to reassess savings and identified what appears to be an error on the gas heating energy sum; however, the sum is a hard coded number with no formulas to trace back through the spreadsheet. The spreadsheet also uses assumptions about HRU effectiveness and changes due to reduced air flow rates that aren't well supported. Nexant's evaluation of the BII calculations shows that the gas heating savings are strongly affected by the assumed pre- and post-installation HRU effectiveness; even small variations in actual performance from the assumed 85% value will change the gas savings. Nexant agrees that the HRU effectiveness will increase, but suggests that better documentation or verification of this and similar assumptions are warranted. With an adjustment of gas savings of -62% by BII, Nexant does not believe that the magnitude of change resulting from a potential math error or the unsupported HRU effectiveness assumptions will significantly impact the adjusted savings total at the reduced level recommended by BII. Nexant recommends that both the gas and electric savings are reasonable given the VSD control of AHU fans and observed operations, but suggests better documentation or verification of the assumed values is necessary for future project reviews.
CM.MULTI.PRIV.283.10 Install new heating and DHW boiler plants including make-up air controls for residential apartments	Site visit observations by BII indicate that the DHW equipment in use is inconsistent with inputs to eTools; BII reviewer comment is reasonable that the change to DHW from the heating boiler and plate HX during heating season is based on the similar efficiency ratings of the proposed DHW boilers and the new heating boilers. The explanation is satisfactory and savings are reasonable.
CM.MULTI.PRIV.195.10 Install new heating and DHW boiler plants for residential apartments	Savings claimed and reviewed by BII at 32% of total gas use; the BII reviewer suggested no adjustments, and Nexant agrees the estimate is reasonable considering improved annual heating boiler and DHW boiler efficiency estimates calculated by eTools.
CM.OTHER.002.10 Replace lead heating boiler for large office building	Savings claimed and reviewed by BII at 31% of total gas use; the BII reviewer suggested no adjustments, and Nexant agrees the estimate is reasonable considering improved annual heating boiler and DHW boiler efficiency estimates calculated by eTools.

Project and Description	Comment
CM.OTHER.014.10 Install condensing and non-condensing economizers on 8 boilers in district heating steam plant	Nexant asked for additional documentation on this project review because a significant fraction of the total gas savings for the commercial project sample was from this project. In the BII project review, they noted that the observed firing rate was higher than input to the eTools; this suggests that savings recommended by BII are potentially slightly higher, but the reviewer chose not to adjust gas savings as the conservative approach. Also noted by BII, additional gas savings are likely from elimination of steam pumps (savings not claimed), but additional electric use for new pumps was calculated. Nexant concludes that the BII review is reasonable and their conclusions are valid given the conservative approach and minor impact of the steam pump energy savings and variation in firing rate on the savings results.
CM.MULTI.PRIV.017.10 Ventilation and AHU controls including new supply air temp, and scheduling of VSD fan control	The BII savings adjustments for this project appear to be related primarily to operational changes to AHU VFD settings from the condo operators based on mould noted on the 7th and 8th floors. A letter sent to Enbridge confirmed a re-scheduling of the MAU fan speeds, but not according to the original design. The BII reviewer requested a new eTools run to reflect the new VFD fan schedule. Nexant agrees that the explanation is reasonable for the significant gas and electric savings adjustments by BII.
CM.MULTI.PRIV.129.10 Heating and DHW boiler controls and MAU and AHU controls for residential apartments	Gas savings claimed for this project are primarily associated with scheduling of MAU and AHU VFD controls to reduce fan flows with additional savings related to changing to intermittent pumping for heating and DHW boilers. Savings were adjusted by the BII reviewer for heating boiler and DHW jacket temperature reductions outside of eTools as the reviewer felt that the 40 deg F temperature drop was excessive. The reductions in gas savings are relatively minor (approximately 3,000 m3/year), but indicates a potential modeling problem with the eTools in calculating the reduction in jacket losses from intermittent boiler operations. Nexant recommends that Enbridge review this modeling issue in eTools for improved modeling accuracy. The BII reviewer's explanation of the adjustment to savings is reasonable.
CM.MULTI.PRIV.052.10 Install new heating boilers and condensing DHW boilers with VFD controls for AHU ventilation for residential apartments	Overall gas savings were a significant fraction of weather normalized gas use, but calculated annual efficiency differences between existing and new boilers provide reasonable case for savings. The BII reviewer required no adjustments of savings from eTools, and Nexant agrees with the assessment.

Project and Description	Comment
ALL.008.1 Install Regenerative Thermal Oxidizer to destroy VOCs and odors from facility exhaust	The project includes installation of a regenerative thermal oxidizer (RTO) to destroy VOC's and odors in exhaust gasses. The new process in the facility required either extensive modifications to the existing non regenerative system, or installation of the new efficient RTO system. The gas savings claims seem well supported and the calculations appear to be consistent with on-site observations by BJL with the exception of the calculation of post-project implementation gas use by the RTO. BJL noted that during their site visit with ambient temperatures at -5 degrees C the gas valve was off and the burner was not operating. BJL further notes that the post-install gas consumption was conservatively estimated to operate at minimum fire rate during similar conditions and concluded that the post-install gas consumption was probably less than the calculated value. However, the potential increase in savings would be less than 1% of the claimed savings, and BJLs reviewer recommended no adjustments to the project savings. Nexant agrees that the savings are likely slightly conservative, but also likely well within an overall uncertainty level of the individual variables including mass flow, temperatures, and chemical loading of exhaust air in the RTO. Nexant agrees that the savings claim and BJL's recommendation to accept the original savings claim is reasonable for this project.
ALL.043.10 Install thermo compressor to recycle and re-compress blow-through steam for Yankee dryer in tissue paper making machine	This thermo compressor project to recompress blow through steam in a Yankee dryer used to make tissue paper is well documented by the original project consultant for steady state calculations of steam flows and steam savings from recycling of the blow through steam. However, the facility appears to have varying levels of steam flow and steam recovery through the thermo compressor as noted in the BJL project review. BJL consultant noted that the most recent 4-month period was not factored in when observed steam flows were in the 4700-5100PPH range, as much as 8% greater or 1% less than the calculated assumed steady state steam rate. Although the conservative estimate is easily supportable for the savings claim, Nexant believes the higher steam flows noted by BJL on the recent 4-month trend suggest savings are actually somewhat higher than the savings claimed. On the basis of the information presented by the original consultant and BJL, the claim is reasonable, albeit conservative.
ALL.093.10 Austenizing furnace redesign for side loading and heat loss control	The first of two projects to change the design of austenizing furnaces to side loading to minimize heat losses is well documented by the original project consultant as to the heat and mass balances once the full production occurs. However, BJL's evaluation of this project was based on projected production rates in tons/year of pipe that had not yet been achieved as of the project review time period. BJL notes that the calculations were reviewed and were reasonable, and that based on the facility projections for ramping up of production the predicted savings level would be reached in mid year. The report, however, is not clear on the level of production during the review period, or the savings at the lower production rates that were occurring during the review period. The original consultant's savings approach appears to be sound and reasonable, but savings claims based on future production rates suggest that this project should be revisited after the furnaces are fully commissioned and actual savings can be documented based on demonstrated production rates. For the 2010 impact evaluation, Nexant recommends accepting the savings claim without adjustment based on the facility projections of production ramp-up.
ALL.095.10 Austenizing furnace redesign for side loading and heat loss control	See comments above for companion project.

Based on our review of the verification reports and the supplemental information made available during this audit, the verification contractors appear to have completed an accurate evaluation. The methodologies used by BII and BJL to assess the energy savings claims in the Enbridge project files are mostly well explained and documented in the report.

Both BII and BJL did conduct site inspections for all the projects involved and were able to verify the accuracy of the operating or design parameters used for the savings calculations. In a number of the project reviews the energy savings estimates were revised based on observed conditions or operating profiles that were significantly different than shown in the original savings calculations. There were also a number of references to information obtained through conversations with plant and facility personnel discussing scheduling of VFDs for air handlers, loading of boilers or similar situations that might have impacted the reviewer's evaluation of the savings claims. Information from these conversations and discussions were incorporated into savings adjustments, and noted in the individual project discussions.

The overall quality of the BII and BJL verification reviews does vary between projects and between the commercial and industrial programs. This is particularly true with projects evaluated with EGDs eTools, since the calculations performed in the eTools are not visible to either Nexant, or BII and BJL. However, each project appears to be evaluated fairly and the project reviewer used the information provided to assess the accuracy of the reported gas savings. Although this audit did not obtain all the relevant data (e.g. site inspection notes and eTools calculator for example) to perform a due diligence check all of the assumptions used in the savings calculations for each project, we did not identify reasons that would suggest the reviewer's due diligence reviews were insufficient. No savings adjustments for projects in either the commercial or industrial programs are recommended at this time.

5.1.2 Review of Custom Project Sampling Methodologies

This section provides a review of the sampling methodology for the Engineering Reviews of Custom Commercial Projects.

Relevant background documents reviewed were:

- *Sampling Methodology for Engineering Reviews of Custom Projects* dated April 3, 2008 (final report)
- *Proposed Sampling Method for Custom Projects* dated October 31, 2008 (Memorandum)
- *Memorandum on Enbridge Sample Selection for 2008 CI Projects - Wave I 2008-12-19* (Memorandum)

The document reviewed in detail which specifically relates to the 2010 results was:

- *2010 Custom Random Sample_SAS Summary _Final* (Final Report)

Sampling Methodologies

The sampling methodology used to draw the second of two sample batches is documented in the SAS Sampling Report and is based on a series of sampling reports and memos produced by Summit Blue in 2008, noted above. It is assumed that SAS followed the methodology outlined by the October memo to select the first sample batch from Q1-Q3 projects. The SAS Sampling Report specifically references the December memo, which builds upon the other two Summit Blue documents, to select the second sample batch from Q1-Q4 projects (excluding those projects selected in the first sample batch). The October memo specifically recommends this two-step (or two batch) sample selection process to allow better overall results by allowing additional calendar time to perform verification work.

The April report builds a defense for flexible confidence and precision levels that cater to the needs of the utility by carefully considering the value of the program and the cost of verification. Accordingly, the April report states that statistical expectations between 90/20 (90% confidence and 20% precision) and 80/20 are sufficient for a custom program. With this guideline, the April report and October memo set the confidence and precision target at 90/15 with a caution that results may be closer to 90/20, depending on the specific characteristics of the program. Our experience has been that 90/10 is preferable for custom programs, which tend to have highly variable results, especially considering the large percentage contribution from the custom program to the overall Enbridge portfolio. Considering the history of the program and sampling methodologies approved in the past years, the current statistical expectations are sufficient based on currently available verification budgets. Although we did not review in detail the current annual verification budgets compared to total DSM budgets, it appears that increased attention to verification is warranted. Nexant recommends that Enbridge consider allocating more program budget to verification in order to increase precision levels to 90/10.

The SAS methodology outlines a stratification technique to verify savings for gas projects and electricity projects simultaneously, ensuring that the sample is representative of the population and improving the relative precision estimates by intelligently stratifying the population. Continued use of stratification is recommended to improve the efficiency of the sample design. For the fourth quarter sample, the industrial sector was stratified into three stratum and the commercial sector into six stratum.

As agreed upon with Enbridge and the EAC, water projects are a separate sampling stratum for industrial projects but not for commercial. This issue has been discussed with previous auditors and the EAC, and Nexant finds no issue with there being no separate strata for sampling commercial water savings; the number of commercial projects with water savings remains very low.

Custom Program Sampling Results Achieved

A summary of the actual sample selected is shown in Table 5-2. The actual samples selected for each batch were taken from Tables 8 and 9 of the SAS Sampling Report and the actual samples selected overall by stratum were taken from Tables 6 and 7 of the SAS Sampling Report. Overall, 44 samples were selected, surpassing the target number of 35 listed on page 5 of the October memo.

Table 5-2: Planned and Actual Sample Design for the Custom Program

Stratum	Batch 1 (Q1-Q3)		Batch 2 (Q1-Q4)		Total	
	Planned	Actual	Planned	Actual	Planned	Actual
Industrial – Top Electric	N/A	4	1	9	3	1*
Industrial – Top Gas	N/A		2		3	6
Industrial – Remaining Projects	N/A		3		6	6*
Building Retrofit – Top Electric	N/A	5	1	6	3	2*
Building Retrofit – Remaining	N/A		2		4	9
Multi-Family – Top Electric	N/A	7	2	6	2	3
Multi-Family – Remaining	N/A		2		4	10
New Construction – Top Electric	N/A	1	2	6	3	1*
New Construction – Remaining	N/A		2		4	6
Water	N/A	N/A	2	N/A	N/A	1
Other	N/A	N/A	N/A	N/A	3	N/A
TOTAL	**13**	**17**	**26**	**27**	**35**	**44**

Overall, 44 samples were selected for a sample design requiring only 35 samples. However, although SAS oversampled overall, some of the stratum requirements were not met. These fields are marked with an asterisk. The significance of under-sampling at the stratum level may be insignificant, considering that sample sizes overall were sufficient and the sample design may have been modified.

It must be noted that the Summit Blue methodology was developed for the custom program in 2008 for a particular population size. Due to a potential difference in population sizes, following the Summit Blue sampling methodology may not yield results within expected precision bounds. Assuming that simple random sampling was used with a coefficient of variance of 0.5, a sample size of 44 projects out of a total population of 639 projects yields a precision of ±12.0% at 90% confidence. However, realization rates were in fact applied separately for commercial and industrial programs. There has been no analysis of the achieved confidence levels for the commercial and

industrial adjustment factors of the 2010 sample. Nexant recommends that Enbridge ensure that the actual achieved confidence and precision levels for gas, electricity, and water savings for both commercial and industrial programs are calculated moving forward (in total, up to six confidence intervals). Even though the Summit Blue methodology has been accepted, we believe that continued review of the actual achieved precision levels is critical in order to make decisions moving forward regarding use of the sampling methodologies and the results achieved.

The April report states a requirement of the OEB that "the projects selected for assessment should consist of a random selection of 10% of the large custom projects representing at least 10% of the total volume savings for all custom projects and consist of a minimum number of five projects."[2] The sampling methodology outlined in the Summit Blue documents was designed to meet this criterion. 64 projects must be sampled to meet this requirement for a population of 639 projects. However, this requirement is intended for large custom projects only and it is not clear which of the 639 projects fall into this category. In addition, the sampling methodology specified that some projects may have been combined, making it difficult to recreate the population from which the sample was drawn. It is recommended that in 2011, the contractor hired to determine and draw the sample set determine and report that that the OEB's requirement was met.

5.2 RESIDENTIAL PROGRAMS VERIFICATION REPORTS

This section provides a review of the verification reports conducted for Enbridge Gas in 2010 for residential programs. The following Verification Reports were reviewed:

- TAPS Mail Insert Test Final 20110125
- Showerhead Verification Among Rental Buildings Research Report
- Regular TAPS 2010 Year End Report 20110302
- Low Income TAPS 2010 Year End_Report_20110302
- ESK Building Verification Program Report 20110224

5.2.1 Review of Report Content

The results of these Verification Reports are used to calculate reduction factors to discount deemed savings and costs due to factors such as product removal rates. For a discussion of how the results applied to each individual program, see Section 4.1 above.

[2] EB-2006-0021, Decision With Reasons, Ontario Energy Board, page 45-46

Generally, Nexant finds that this research resulted in usable results that increase the accuracy of Enbridge's claimed gas savings, and Nexant encourages these efforts to continue. However, we recommend several improvements to the Verification Reports:

- Contractors should use consistent significant digits throughout each verification effort. Nexant found that rounding of values was not done consistently. Although rounding errors are small, when applied to large programs the impacts could be significant.

- Contractors should be required to calculate the final reduction factors that Enbridge can apply to program results as they are tracked. Currently, Enbridge interprets the Verification Report results to calculate reduction factors. During the Audit, Nexant checked the reduction factor calculations and found that incorrect interpretation of the Verification Reports lead to incorrect reduction factors in several cases. This problem is understandable as the contractors are not involved in Enbridge reporting, nor are Enbridge staff involved in the execution of the Verification work. If Enbridge staff communicate to the contractors how Enbridge plans to use the results, contractors can calculate the exact reduction factor application to the participant population.

5.2.2 Review of Sampling Methodologies

Enbridge noted that though no formal sampling approach had been adopted for the programs, contractors aim to achieve a 90/10 confidence and precision level at the program level.

For these programs, verification was performed by telephone survey. Confidence and precision levels were reported by the evaluation contractor at 95% confidence while assuming a coefficient of variance of 0.50 for all programs except the showerhead verification study, which reported results at 90% confidence. Confidence and precision levels calculated by the contractor and verified by Nexant are shown in Table 5-3. The coefficient of variance is assumed to be 0.5 and we find this assumption reasonable.

The Showerhead Verification report used a technique called cluster sampling, in which random sample of "clusters" was selected. Then for each cluster, a random sample of units was selected. For the purposes of this program, a cluster was a residential complex and a unit was a residential unit.

Nexant compared the program populations in the verification surveys to those from the TRC/SSM spreadsheet. In many cases, the results of the verification surveys (reduction factors) were applied not only to the population of projects from which the random sample was drawn, but also to other projects outside of that population. The additional participants to which the results were applied are noted in Table 5-3. There are three different reasons that this occurred:

- Unusable records: Participant records were unusable for the phone survey (i.e. phone numbers bad)

- Late completion: Project completion was after survey start. Surveys are done before the 2010 program is closed out because survey results are required in order to incorporate the results into SSM calculation.
- 2009 participants: Project was installed in 2009 and therefore not included in 2010 survey, but project paperwork was received in 2010 and reported in 2010 Annual Report

Table 5-3: Confidence and Precision Levels of Verification Reports

Program	Sampled Population	Sample Size	Confidence and Precision	Additional Participants outside of Sampled Population
TAPS Mail Insert	531	150	95% ± 6.7%	10 unusable records or late installation
Multi-Residential Showerhead	11,705	662	90% ± 8.0%	~5,000 2009 participants ~1,500 late installation
Regular TAPS	143,831	3,201	95% ± 1.7%	~7,000 unusable records
Low Income TAPS	283	57	95% ± 11.6%	
New Construction ESK	370	150	95% ± 6.2%	~1,300 late installation

Because these additional participants were not included in the random sample, the samples are not representative of the program population to which the results (reduction factors) are applied. We find that using the results of the verification surveys to calculate reduction factors is the best available information for the 2010 Annual Report, and therefore suggest no adjustments to the results. However, for future work Nexant recommends that the consultants completing this verification work analyze the effects of un-sampled participants on the confidence and precision levels and make adjustments to sampling strategy in order to ensure that the target 90/10 confidence and precision level is achieved.

5.3 RESEARCH REPORTS

5.3.1 Steam Trap Measure Life Research

Both the 2008 and 2009 Auditors recommended that Enbridge complete research to substantiate the steam trap measure life assumption. The current measure life (valid through 2010) is six years. Enbridge completed a Steam Trap study in 2010. The study included a third party literature review and a study of available information from steam trap audits completed through Enbridge's Custom programs.

Nexant reviewed the three documents provided as part of the report review:

- The Steam Trap Measure Life Analysis Report, completed by Enbridge,
- Appendix A –Steam Trap Measure Life Analysis (from the Enbridge report), and

- Literature Search and Review - Failure of Steam Traps prepared by the Université du Québec's École de Technologie Supérieure

The literature review covered 74 sources; however, only 16 sources that contained useful and/or relevant information were identified. Of these, the overwhelming majority was at least 10 years old, with one 35 year old source. The most recent identified sources were two reports dating from 2002. No work completed after 2002 was found. Only two of the 16 relevant references reviewed were studies that presented failure rate curves. Due to age of one article and the use of a manufacturer's proprietary software in the other, the supporting data was unavailable for review by the researchers.

One Armstrong international article [1] studied showed steam trap useful life varies with both type of steam trap and conditions under which the trap is used. Mean time to failure ranged from a low of 3 months (3-12 month range depending on model) for high pressure steam systems (650 psig) using bimetallic thermostatic traps to 15 years (range of 12-15 years) for inverted bucket type traps operating on low pressure systems (30psig). Unfortunately, the article is aged, and no data could be located to back up the conclusions from the table.

The literature review points out the importance of not using general failure rate curves for any type of steam trap, stating "such curves should be based on extensive test results conducted for different type of steam traps and for different operating conditions." However, the review concludes that these extensive test results are not available and therefore general curves are used.

The literature review concludes that there is no credible, publicly available research that can be used to adequately defend the choice of a single steam trap average useful life and the only generalized claim made is that inverted bucket traps typically have longer useful lives than disk types. Nexant finds that the literature review was thorough. The fact that little information was found in this literature research reflects the fact that well-supported, industry standard information regarding steam trap measure life is difficult to come by.

In the Enbridge *Measure Life Analysis (Appendix A),* Enbridge identified customers who had participated in steam trap audits since 2000, and selected a sample of six sites out of 20 for a total sample set of 82 steam traps. All 82 steam traps had been audited and replaced on year zero and revisited at least three times in subsequent audits and were identified/numbered.

[1] *Choosing a Better Steam Trap*, Trap Magazine, Armstrong International, 1993.

Curve fits were generated to fit the frequency of failure at each site for each year of the study, and R-squared statistics were generated to rate the "goodness of fit". The R-squared statistics depend on an assumption of normal distribution of the underlying failure rate data, and with such a small sample size, the statistics may lack significance. Therefore the conclusions from audit data on the failure frequencies inherently contain a large measure of uncertainty. Although the Enbridge summary report does echo the literature review conclusions in a generalized sense, the measure analysis uses a small sample of data to conclude that a five year measure life is warranted, without a concurrent description of the trap-type studied, or the system pressure assumed. In the analysis and report, there was no discussion of homogeneity involved in the six sites, or within each site, either in terms of trap type, or steam pressure and steam flow rates. Enbridge states that the types of steam traps included in the study as well as the facility operational characteristics were varied throughout the sample, but specific information on the distribution of steam trap types and applications was not made available during this audit.

This work is commended by Nexant. Having empirical evidence of steam trap failures rates, despite the limitations of the study, is strong information, especially given the scarcity of data from the literature review. The information is specific to Enbridge's service territory and based on well documented failures. Nexant recommends that the measure life for steam traps was adjusted to five years for the 2010 LRAM calculation. The impact on LRAM and TRC Target calculation is included in Table 2-2.

However, Nexant also suggests improving the conclusions of the measure analysis by providing additional details regarding the types of steam traps included in the analysis, and the steam pressures associated with the traps studied. In addition, Nexant recommends including statistical significance of the results in the reporting.

Enbridge plans to dedicate efforts to follow-up steam trap studies, and Nexant encourages these efforts. Collection of additional information will expand the sample size and, for sites that are repeat participants, it will increase the overall time period covered by the data (currently the maximum number of years between the first observations and the final observations available for the study is six years).

5.3.2 Boiler Study

A research project regarding boilers is underway. However, results were not available for this Audit Report.

6 REVIEW OF FINANCIAL MECHANISMS AND TRC TARGET

6.1 SHARED SAVINGS MECHANISM (SSM)

Nexant reviewed the SSM calculation in the 2010 Draft Annual Report and found that the calculation was accurate and in accordance with OEB SSM Guidelines. The SSM calculation and final audited value is shown in Table 6-1.

Table 6-1: SSM Calculation

	Original Value	Audit Adjusted Value
2010 Actual TRC	$184,565,726	$,184,593,043
2010 TRC Target	$202,342,433	$202,342,433
Percent of Target	91%	91%
Base Target	75%	75%
Percent over 75%	16.21%	16.23%
$ per 1/10 of 1%	$10,000	$10,000
SSM at 75% of Target	$2,250,000	$2,250,000
SSM over 75% of Target	$1,621,454	$,1622,804
Program Total	**$3,871,454**	**$3,872,804**
Market Transformation	$282,484	$282,484
Total SSM	**$4,153,938**	**$4,155,288**

6.2 DEMAND SIDE VARIANCE ACCOUNT (DSMVA)

Nexant reviewed the DSMVA calculation in the Draft Annual Report and found that the calculation is accurate. The amount reimbursable to ratepayers is $2,717,105 as stated in the Draft Annual report.

The 2010 Actual Costs used in the DSMVA calculation were correctly based on a sum of the Direct DSM Costs and Incentives reported from the Company's financial reporting system. Nexant's review did not include accessing the financial reporting system or auditing the financial record keeping.

The 2010 Budget used in the DSMVA calculations were correctly based on OEB approved filings. The 2010 Filing included the budget for all programs except the low-income programs. The low income program budget was correctly based on the OEB approved low income plan which was filed separately.

A $1,250,000 credit is applied to the DSMVA because an Industrial Pilot Program was originally proposed in March 2010, and the cost of that program was included in the DSM Y Factor. In May 2010, the OEB decided not to approve the Industrial Pilot Program. Therefore, the program cost would be reimbursed to the ratepayer as a credit in the 2010 DSMVA. A full explanation of this issue

is provided in the Annual Report; Nexant's audit confirmed that the $1,250,000 credit was applied to the DSMVA.

6.3 LOST REVENUE ADJUSTMENT MECHANISM (LRAM)

Nexant reviewed the LRAM calculation to determine that lost revenue was calculated in accordance with OEB guidelines.

The annual savings reported for each project were discounted to calculate the actual impact on 2010 revenue. This was done using the turn-on month (installation month) for each project and calculating the savings realized in 2010. The result is an *Actual Net Partially Effective* savings value in m3.

The *Actual Net Partially Effective* savings realized in 2010 is compared to the savings budgeted and accounted for in customer rates in 2010. Both the Budget and Actual savings were calculated individually by Rate Class.

The difference between the Budget and Actual savings is defined as the *Volume Variance.* That variance is then used to determine if payment is due to the ratepayers or if there is additional revenue not accounted for in 2010 rates to be collected. The amount of the LRAM payment is determined using a distribution margin (cents per m3 natural gas) based on Decision 2010 EB 2009-0172 as approved by the OEB.

Table 6-2 2010 LRAM Calculation, Excluding Rates 1 and 6

Rate	Budget Net Partially Effective (m3)	Actual Net Partially Effective (m3)	Volume Variance (m3)	Q1 Distribution Margin (cents/m3)	LRAM
Rate 100	0	1,127,498	(1,127,498)	3.6820	$ (41,514)
Rate 110	2,142,630	1,306,345	836,285	1.6410	$ 13,723
Rate 115	1,363,492	609,733	753,758	1.0496	$ 7,911
Rate 135	0	40,685	(40,685)	1.4409	$ (586)
Rate 145	1,940,562	1,263,175	677,386	1.8752	$ 12,702
Rate 170	4,563,402	3,095,771	1,467,631	0.6207	$ 9,110
Total	**10,010,086**	**7,443,208**	**2,566,877**	**-**	**$ 1,346**

In reviewing the LRAM calculation, we found that:

- No LRAM was applied for the gas savings related to Rates 1 and 6. (Natural gas savings under Rates 1 and 6 include some participants from each sector, and all participants from the residential and small commercial sectors.) No LRAM was applied for these rates because

a true-up variance account (AUTUVA) mechanism is used in place of LRAM. The AUTUVA mechanism is accounted for at the beginning of each year. Nexant did not review the AUTUVA mechanism calculations but based on discussions with Enbridge and the EAC, use of the AUTUVA mechanism was agreed upon during previous audits.

- The Rate 100 and 135 LRAM were calculated using a Budget Net Partially Effective Value of zero. The reason for this is that Rate 100 and 135 customers were expected to migrate to Rate 6 and 145, respectively, therefore no natural gas savings were expected on Rate 100 or 135 and the rates did not account for any lost revenue associated with DSM programs.

- The Rate 100 LRAM was calculated using the distribution margin for Rate 6.

The above points were discussed with Enbridge and the EAC. Nexant finds that Enbridge's calculation of LRAM is accurate, and the amount reimbursable to rate payers is $1,346.

6.4 2011 TRC TARGET

Nexant reviewed Enbridge's 2011 TRC Target calculation. A *Preliminary TRC Target* was calculated per OEB approved methods. Nexant found that the calculation of the TRC target correctly adjusted 2008, 2009, and 2010 net TRC benefits results using 2011 avoided costs. The Preliminary Target was an average of the three values, escalated by a percentage. The calculations are summarized in Table 6-3.

The preliminary TRC Target was adjusted to arrive at a final 2011 TRC Target. The adjusted calculation was per an agreement included in the 2011 Plan filing and approved by the OEB. The adjusted calculation is required because low income programs are being moved to market transformation, and will no longer be included in resource acquisition (and therefore calculation of net TRC benefits) beginning in 2011.

Nexant reviewed the calculation of the Final TRC Target and found that it is per the agreed upon calculation.

Table 6-3 2011 TRC Target Calculation

2008		2009		2010		2011	
Audit SSM TRC Results	TRC results for LRAM with Final 2011 avoided costs	Audit SSM TRC Results	TRC results for LRAM with Final 2011 avoided costs	Audit SSM TRC Results	TRC results for LRAM with Final 2011 avoided costs	Preliminary Target	TRC Target per Settlement
A	B	C	D	E	F	=(B+D+F)/3 * 1.075%	
$182,706,679	$146,216,779	$215,833,455	$130,533,176	$181,120,630	$135,620,896	$147,766,222	$139,493,103

6.5 MARKET TRANSFORMATION INCENTIVE

Nexant reviewed the Drain water Heat Recovery Market Transformation Scorecard and found that Enbridge followed the OEB approved scorecard evaluation approach. The scorecard assigns a weighted value to two performance metrics: ultimate outcomes (80% of total score) and program performance (20% of total score). The ultimate outcomes metric depended on *Units Installed* which was defined as the percentage of 2010 housing starts across all builders. The program performance metric depended on *Builders Enrolled* which was defined as the number of first time new builders enrolled in the program. For the evaluation scorecard, results were calculated with the understanding that all of the reported results would have a maximum value of 150% of the reported outcome. Nexant's verification of the calculations is shown in Table 6-4. For 2010, the Drain Water Heat Recovery program was eligible for a total SSM Incentive of $500,000.

Table 6-4: Drain Water Heat Recovery Market Transformation Scorecard

Element	Weight	50% Goal	100% Goal	150% Goal	Reported Outcome	Result	MT SSM Incentive
Ultimate Outcomes *Units Installed*	80% ($400,000)	*% of housing starts(units installed)*			*% of housing starts (units installed)*	*% of goal*	*(6.6%/10%)*50%*$400,000*
		10% (2,542)	13% (3,305)	16% (4,068)	6.6% (1,684 units)	< 50%	$132,484
Program Performance *New Builders Enrolled*	20% ($100,000)	*New Builders Enrolled*			*New Builders Enrolled*	*% of goal*	*1.5*$100,000*
		15	20	25	42	>150%	$150,000
					Total SSM Incentive		**$282,484**

Appendix A AUDITOR WORK PLAN

Independent Audit of Enbridge Gas Distribution 2010 DSM Annual Report

Auditor Work Plan



submitted to:
Enbridge Gas Distribution
April 25, 2011

submitted by:
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Contents

Auditor Work Plan

The objective of the audit is to provide an independent opinion as to the reasonableness of the Company's claims regarding DSMVA, LRAM & SSM.

Task 1 Review of Custom Project Engineering Reviews

Nexant will conduct a thorough review of the final reports on Enbridge's Industrial and Commercial custom projects. Nexant will provide an opinion as to the quality of the review and on the reliability and reasonableness of the error ratio (and/or realization rate) when applied to a larger population of custom projects. We will communicate with those firms contracted to collect necessary project information to provide this opinion. Enbridge will coordinate communication between Nexant and the firms.

Task 2 Kick-Off Meeting

The project kick-off meeting was conducted on February 9, 2011, with follow-up meetings at the Enbridge offices on February 10.

Task 3 Prepare Draft and Final Work Plan

The draft Work Plan is provided herein. The Final Work Plan will be provided one week after the 2010 DSM Annual Report is available to Nexant, or April 8, 2011, whichever is later.

Task 4 Audit 2010 Annual DSM Report & Report Deliverables

The objective of this Task is to ensure correct calculations using reasonable assumptions, based on data gathered and recorded using reasonable methods and accurate in all material respects and applicable to the 2010 DSM programs. This task includes review of supporting deliverables including the 2009 and 2010 Annual DSM Reports, EAC and other stakeholder comments on 2010 Annual DSM Report, and the 2009 EAC DSM Audit Summary Report.

Nexant will prioritize programs by relative impacts in portfolio (largest programs being of most importance) as well as participation trajectory (programs which are growing being more important than those being phased out).

Through initial review of background documentation, feedback received during the kick-off meeting with Enbridge and EAC, and discussions during the Nexant's Enbridge site visit, initial focus areas have been established. The following topics have been highlighted for consideration during the audit:

- Low-flow showerhead programs
    - Builders' Energy-Savings Kit Verification Research Report results
    - Low Income TAPS Partners Program Research Report results
    - TAPS Partners Program Research Report results

    - Showerhead Verification among Rental Buildings Research Report results
    - Measure life assumptions
    - Use of "bag test" for flow rate
    - Alternatives to "bag test" for flow rate
    - Use of quasi-prescriptive approach
        - If Company is using an approach wherein the baseline showerhead flow rate is a weighted average of the high- and medium-flow showerhead flow rates, assess implications for TRC. Consider if weighted average baseline flow rate is reasonable.
        - Consider if Company's approach to baseline flow rate assumption is valid in the context of the results of previous showerhead research conducted by Company.
- Pre-rinse spray nozzle input assumptions
    - Recommend if any changes to current input assumptions are justified based on available data
- Use of quasi-prescriptive approach versus prescriptive approach
    - Provide opinion on current industry best practices
    - If identified, flag prescriptive measures which should be considered by Company for a quasi-prescriptive approach
- Boiler Efficiency Study (if available before completion of Audit)
- Steam Trap Study (if available before completion of Audit)
- Energy Recovery Ventilators/Heat Recovery Ventilators
    - Provide opinion if more reliable data is available on balance points
- Portfolio net-to-gross assumptions
    - Applicability of Custom Program net-to-gross assumptions substantiated by the 2008 Sumit Blue study to the current Custom program design
    - Appropriateness of net-to-gross values used for SSM calculation
    - Appropriateness of net-to-gross values used for LRAM calculation (best available information)
- CFL distribution rates for ESK and TAPS Programs (confirm that CFL distribution rates are correctly based on participant survey results)
- Accuracy of participation level reporting, with a focus on prescriptive measures
- Appropriateness of Company's internal protocol for determining if measures/projects are analyzed as equipment advancement or replacement

Additionally, Nexant will provide insight into program design and implementation issues which, while not of immediate significance to the 2010 Annual Report, may affect the Company's programs in the long term. These questions will be examined to the extent possible within the audit timeline and cost requirements:

- Are research funds being focused in the most appropriate areas?
- How can participation levels in Prescriptive programs be increased?
- Should the quality control process for Custom projects be changed?

- What best practices in program design can be implemented to enhance Enbridge's programs?

Task 5 Verify Claimed Savings and Associated Calculations

Task 5 will be concurrent with Task 4. In order to verify the accuracy of the 2010 Draft DSM Annual Report's calculation of TRC and associated metrics, we will complete a detailed review of the following:

- All DSM evaluation and research conducted during 2010 (see Tasks 1 and 4 above)
- EGD's reporting on program metric results used to support the Market Transformation incentive
- Program tracking methods and results
- Participation results
- Individual measures (both prescriptive and custom) assumptions and results (savings, measure life, free-ridership, costs)
- Methodology and assumptions used to calculate LRAM, DSMVA, MT incentive, and SSM amounts
- Program costs (Nexant will check program costs used in DSMVA calculation against those reported in the program TRC calculation spreadsheet)
- Compliance with the requirements of the Board approved methodology
- Inputs to, and results from, cost-effectiveness models used to calculate net benefits

Task 6 Prepare Draft Audit Report

The Audit Report will outline the principles of the Audit and the Audit processes and methods. The report will document all findings and make recommendations for additional research, evaluation, and/or program tracking activities that may be conducted in the future to reduce uncertainties identified and not resolved as a result of the audit. Additionally, we understand that Enbridge and the OEB may request a recommendation from Nexant to help prioritize program measures to be reviewed in 2011.

Task 7 Prepare Final Audit Report

Based on the input received during presentation of the first two report drafts, Nexant will present a final Audit Report per the project schedule in Table 1.

Current Project Schedule

Table 1 Project Schedule as of April 21

Task	Start	End	Milestone
1 Custom Project Engineering Reviews	25-Jan-11	13-May-11	
2 Project Kick-Off Meeting (Enbridge Office)			Kick-Off: 9-Feb-11
3 Prepare Draft Work Plan	1-Mar-11	8-Apr-11	Draft Work Plan Available: 1-Apr-11
Review Draft Work Plan with EAC			Meeting: 7-Apr-11
2010 DSM Annual Report Circulated			Annual Report Available: 14-Apr-11
Comments on Annual Report, EAC and Consultative			Comments Available: 21-Apr-11
Finalize Detailed Work Plan	7-Apr-11	18-Apr-11	Final Work Plan Available: 25-Apr-11
4 Review Available Supporting Documentation	1-Mar-11	27-May-11	
Audit 2010 Annual DSM Report and Deliverables	1-Apr-11	27-May-11	
5 Verify Claimed Savings and Calculations	1-Apr-11	27-May-11	
6 Discuss Initial Audit Findings with the EAC			Weekly Meetings begin: 21-Apr-11
Generate and Deliver Draft Audit Report #1	1-Apr-11	27-May-11	Draft Audit Report Available: 27-May-11
Review Draft #1 with the EAC	1-Jun-11	2-Jun-11	1st Meeting: 1-Jun-11 2nd Meeting: 2-Jun-11
Revise and Deliver Draft Audit Report #2	28-May-11	3-Jun-11	Draft Audit Report Available: 3-Jun-11
Review Draft #2 with the EAC			Meeting: 15-Jun-11
7 Revise and Deliver Final Audit Report	15-Jun-11	17-Jun-11	Final Audit Report:17-Jun-11

Appendix B COMMENTS ON 2010 DRAFT DSM ANNUAL REPORT

During our review of the 2010 Draft DSM Annual Report, Nexant made the following observations:

- **Page 8.** TAPS and ESK program descriptions do not mention quantity or rating (flow rate and wattage) of distributed device. The program descriptions would be clearer to the reader if that was included. E.g. (4) 13W CFL bulbs, (1) Low Flow Showerhead rated at 1.25 GPM flow and (2) faucet aerators, (1) bathroom and (1) kitchen, rated at 1.5 GPM flow.
- **Page 9.** Does Table 3 reflect the number of households as the note below the table states? We understand that some individual TAPS items were tracked by units delivered.
- **Page 9.** Table 3 includes a row titled "TAPS Partners Program over 2.5 GPM". This title should be changed to "TAPS Partners Program *Showerheads* over 2.5 GPM" for clarity.
- **Page 12.** ESK program description should be corrected: (4) aerators, (1) kitchen and (3) bathroom, are provided. The current description, 3 aerators, (1) kitchen and (2) bathroom, is incorrect.
- **Page 12.** The program description does not mention the rating for each item. The program descriptions would be clearer to the reader if that was included. E.g. (8) 13W CFL bulbs, (2) Low Flow Showerheads, (1) rated at 1.25 GPM and a handheld showerhead rated at 1.5 GPM and (4) faucet aerators, (3) bathroom and (1) kitchen, rated at 1.5 GPM flow.
- **Page 13.** Table 5 lacks a note clarifying tracking units for ESK program.
- **Page 14.** LI TAPS program description should be corrected. LI TAPS is not equivalent to the Regular TAPS program plus a programmable thermostat as stated. Programs offer different CFLs and should be described independently, e.g. (2) 13W CFL bulbs, (2) 23W CFL bulbs, (1) Low Flow Showerhead rated at 1.25 GPM and (2) faucet aerators, (1) bathroom and (1) kitchen, rated at 1.5 GPM flow.
- **Page 15.** Showerhead load results and gas savings changes were not new to 2010 program. The lower per unit TRC results on showerheads was applied to 2009 LRAM results as well.
- **Page 53.** In the first bullet, the last sentence should read "0% of households said they removed their programmable thermostat in 2010." 2009 is written in the report.
- **Page 59.** Table 17. Row 1 should be labeled "Commercial Projects Sampled"
- **Page 71.** The results summary incorrectly summarizes the Market Transformation results. The 10% goal for housing starts is 2,542 not 2,094. Additionally, the actual starts value of 1,684 is 66% of the 10% projection. 66% results in an SSM of $132,484.
- **Page 73.** 2010 Residential Costs and Residential budgets include Small Commercial. This should be included in Business Markets. This change does not affect overall DSMVA calculation.
- **Page 80**. Refers to Appendix C. No Appendix C is attached.
- **Appendix A.** Due to the way costs are rolled up, incentives are not attributed by measure. It is advisable to remove or footnote this column of Table 30 to eliminate confusion. Similarly, it may not be appropriate to use "Savings per $1 of incentive payment" as a metric in Table 32.

The Power of Experience

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Filed: 2012-05-14
EB-2012-0192
Exhibit B
Tab 3
Schedule 1

ENBRIDGE GAS DISTRIBUTION

2010 DSM AUDIT SUMMARY REPORT

MARCH 13, 2012

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ENBRIDGE GAS DISTRIBUTION'S 2010 DSM EAC AUDIT SUMMARY REPORT

1. INTRODUCTION

In accordance with Ontario Energy Board (the Board) requirements, an independent audit was conducted of the Enbridge 2010 DSM program results as reported in the Company's 2010 DSM Draft Annual Report.

This document provides a summary of:

- the process followed to audit the 2010 DSM Draft Annual Report;
- Enbridge Gas Distribution Inc.'s (EGD) responses to the Auditor's recommendations;
- Evaluation and Audit Committee (EAC) responses to the Auditor's recommendations and EGD responses;
- additional recommendations and issues raised by the Evaluation and Audit Committee (EAC) and EGD responses;
- impact of Audit results on the 2010 DSM savings, associated Shared Savings incentive (SSM), Lost Revenue Adjustment (LRAM) claims; and
- calculation of the 2011 TRC Target.

The EAC has endorsed the 2010 Audit and Enbridge's post-audit SSM, LRAM, and DSMVA claims as presented in this report.

As stated in the Board's Decision in the Generic Proceeding (EB-2006-0021):

> The auditor will be retained by the utility who determines the scope of the audit. It will be the role of the auditor to:
>
> - Provide an opinion on the DSMVA, SSM and LRAM amounts proposed and any amendment thereto
> - Verify the financial results in the Evaluation Report to the extent necessary to give that opinion
> - Review the reasonableness of any input assumptions material to the provision of that opinion
> - Recommend any forward looking evaluation work to be considered
>
> The auditor shall be expected to take such actions by way of investigation, verification or otherwise as are necessary for the auditor to form their opinion. The

auditor, although hired by the utility, must be independent and must ultimately serve to protect the interests of stakeholders.[1]

This document is organized in the following sections:

1. Introduction
2. Audit Process
3. TRC Results and SSM Calculations
4. LRAM
5. 2011 TRC Target

In each of Sections 3 and 4, the recommendations of the auditor are presented first, including EGD and EAC responses on the recommendation, followed by additional advice from the EAC which was not part of the auditor's recommendations.

2.0 AUDIT PROCESS

2.1 SELECTION OF 2010 EVALUATION AND AUDIT COMMITTEE

The 2010 Evaluation and Audit Committee (EAC) was comprised of three representatives elected from the DSM Consultative and one representative from the utility. The 2010 EAC representatives are:

- Vince DeRose - Borden Ladner Gervais (BLG) representing Canadian Manufacturers and Exporters (CME)
- Chris Neme – Energy Futures Group (EFG) representing Green Energy Coalition (GEC)
- Norman Rubin – Energy Probe
- Judith Ramsay – Enbridge Gas Distribution

2.2 TERMS OF REFERENCE AND SELECTION OF AUDITOR

The EAC participated in development of the Auditor Terms of Reference and the review of proponents' proposals. The EAC and Enbridge agreed to select Nexant Inc. as the auditor of the 2010 Draft Annual Report.

[1] EBO 2006-0021, Decision with Reasons, Issue 9.3, page 17.

The 2010 Audit Terms of Reference described the overall objective of the audit as well as required tasks and deliverables; it was on this basis that the Auditor accepted the assignment. A copy of the Terms of Reference can be found in Appendix A.

2.3 PROJECT START UP AND WORK PLAN

The Draft 2010 Annual Report was circulated to the 2010 EAC and Nexant on April 14, 2011 with Appendix A circulated on May 3, 2011.

After receiving comments on the 2010 Draft Annual Report from the EAC members, Nexant gathered issues which the EAC requested the auditor to investigate, and informed by their work reviewing Enbridge's 2010 DSM Annual Report, the auditor submitted a Final Work Plan on April 25, 2010. A copy of the Final Work Plan can be found in Appendix B.

2.4 INFORMATION EXCHANGE

At the outset of the audit, Enbridge provided the auditor with background materials related to the 2010 DSM activities. In addition, at the outset of the audit, Enbridge arranged for the auditor to make a site visit to the Enbridge offices in order to examine the program tracking system, interview the staff who operate the system and meet the contractors responsible for the independent third party engineering review of custom projects. Enbridge also provided additional materials to the auditor throughout the course of the audit.

2.5 2010 AUDIT SCOPE OF WORK AND APPROACH TO AUDIT

As described in their Work Plan, Nexant's approach to the scope of work was to assess the following:

- "Low-flow showerhead programs
    - Builders' Energy-Savings Kit Verification Research Report results
    - Low Income TAPS Partners Program Research Report results

- TAPS Partners Program Research Report results
    - Showerhead Verification among Rental Buildings Research Report results
    - Measure life assumptions
    - Use of “bag test” for flow rate
    - Alternatives to “bag test” for flow rate
    - Use of quasi-prescriptive approach
        - If Company is using an approach wherein the baseline showerhead flow rate is a weighted average of the high- and medium-flow showerhead flow rates, assess implications for TRC. Consider if weighted average baseline flow rate is reasonable.
        - Consider if Company’s approach to baseline flow rate assumption is valid in the context of the results of previous showerhead research conducted by Company.
- Pre-rinse spray nozzle input assumptions
    - Recommend if any changes to current input assumptions are justified based on available data
- Use of quasi-prescriptive approach versus prescriptive approach
    - Provide opinion on current industry best practices
    - If identified, flag prescriptive measures which should be considered by Company for a quasi-prescriptive approach
- Boiler Efficiency Study (if available before completion of Audit)
- Steam Trap Study (if available before completion of Audit)
- Energy Recovery Ventilators/Heat Recovery Ventilators
    - Provide opinion if more reliable data is available on balance points

- Portfolio net-to-gross assumptions
    - Applicability of Custom Program net-to-gross assumptions substantiated by the 2008 Summit Blue study to the current Custom program design
    - Appropriateness of net-to-gross values used for SSM calculation
    - Appropriateness of net-to-gross values used for LRAM calculation (best available information)
- CFL distribution rates for ESK and TAPS Programs (confirm that CFL distribution rates are correctly based on participant survey results)
- Accuracy of participation level reporting, with a focus on prescriptive measures
- Appropriateness of Company's internal protocol for determining if measures/projects are analyzed as equipment advancement or replacement

Additionally, Nexant will provide insight into program design and implementation issues which, while not of immediate significance to the 2010 Annual Report, may affect the Company's programs in the long term. These questions will be examined to the extent possible within the audit timeline and cost requirements:

- Are research funds being focused in the most appropriate areas?
- How can participation levels in Prescriptive programs be increased?
- Should the quality control process for Custom projects be changed?
- What best practices in program design can be implemented to enhance Enbridge's programs?
- All DSM evaluation and research conducted during 2010
- EGD's reporting on program metric results used to support the Market Transformation incentive

- Program tracking methods and results
- Participation results
- Individual measures (both prescriptive and custom) assumptions and results (savings, measure life, free-ridership, costs)
- Methodology and assumptions used to calculate LRAM, DSMVA, MT incentive, and SSM amounts
- Program costs (Nexant will check program costs used in DSMVA calculation against those reported in the program TRC calculation spreadsheet)
- Compliance with the requirements of the Board approved methodology
- Inputs to, and results from, cost-effectiveness models used to calculate net benefits "

2.6 2010 AUDIT REPORTS

A first draft of the Nexant 2010 Draft Audit Report was circulated to the EAC on May 30, 2011 and a second Draft on June 11, 2011. The Final Audit Report was circulated to the EAC and filed with the Board pursuant to the Regulatory Reporting Requirements on June 30, 2011.

2.7 2010 RECOMMENDED TRC, SSM, LRAM AND DSMVA

Table 1: TRC, SSM, LRAM and DSMVA Recommendations

	2010 Draft DSM Annual Report	Final Audit Report	Post Audit Results
TRC Savings	$184,565,726	$184,593,043	$184,593,043
SSM Amount Recoverable (Resource Acquisition)	$3,871,454	$3,872,804	$3,872,804
SSM Amount Recoverable (Market Transformation)	$282,484	$282,484	$282,484
LRAM (Reimbursable to Ratepayers)	N/A	$1,346	($42,858)
DSMVA (Reimbursable to Ratepayers)	$2,717,105	$2,717,105	($2,717,105)*

The Post Audit Results shown in Table 1 for LRAM and DSMVA are different from the values shown for the Final Audit Report. For LRAM different values were computed post-audit as Rate 100 amounts were rolled up into Rate 6 due to AUTUVA rules. In addition, a decision was made post-audit (per the EAC recommendation on how to present LRAM adjustments described below) to begin to show values that are reimbursable to ratepayers as negative values and values that are payable by ratepayers to the utility as positive values, rather than the other way around (i.e. rather than the way these values had historically been reported).

* The EAC supports the foregoing DSMVA calculation.

The following Table 2 from the Audit Report [2] is a summary of the adjustments recommended by the auditor that reflect the differences in the values found in Columns 2 and 3 of Table 1: The adjustments include

- changes to the calculation of adjustment factors for some programs
- corrections to tracking of participant numbers

[2] Independent Audit of 2010 DSM Program Results, Nexant, June 30, 2011, pg 10-12.

- application of the 2011 Updated assumptions to the 2010 programs for purposes of the LRAM calculation

Table 2: SSM/LRAM Adjustment Detail

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	
TAPS Partners	1.25 GPM Showerhead Replacing 2.6+ GPM Savings	88m3	82m3	$0	0	($690,202)	(330,068)	
	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	0	$249,770	119,445	
	CFL Reduction Factor	11.41%	14.65%	($364,082)	0	$0	0	
TAPS - Mail Insert Pilot	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	0	$2,510	1,200	
	CFL Reduction Factor	1.00%	4.81%	($1,510)	0	$0	0	
Residential Equip. Replace-ment	Reflector Panel Measure Life	15	18	$0	0	$0	0	
Residential New Construction ESK	Kitchen Aerator Reduction Factor	40.09%	40.58%	($1,243)	(224)	$0	0	
	Bathroom Aerator Reduction Factor	45.84%	50.62%	($9,310)	(1,692)	$0	0	
	1.25 GPM Showerhead Reduction Factor	57.72%	49.20%	$26,528	5,033	$0	0	
	1.25 Showerhead GPM Gas Savings	46m3	48m3	$0	0	$2,729	1,305	
	1.5 GPM Showerhead Reduction Factor	54.38%	46.66%	$17,942	4,552	$0	0	

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	
	1.5 GPM Showerhead Gas Savings	46m3	48m3	$0	0	$2,859	1,367	
	CFL (13W) 8 bulbs Reduction Factor	6.88%	8.81%	($5,882)	0	$0	0	
	Programmable Thermostats Free-Ridership Percentage	43.00%	10.00%	$42,141	20,437	$0	0	
Low Income TAPS Partners	1.25 GPM Showerhead Replacing 2.6+ GPM Showerhead Savings	88m3	82m3	$0	0	($6,458)	(3,089)	
	1.25 GPM Showerhead Replacing 2.1 GPM - 2.5 GPM Savings	46m3	50m3	$0	0	$499	239	
	Programmable Thermostats Reduction Factor	49.12%	47.00%	$3,782	997	$0	0	
Small Commercial	Condensing Boiler Participants	71	72	$0	0	$0	0	
	ERV Quasi-Prescriptive Gas Savings	200,510 m3	192,342 m3	$0	0	($26,574)	(7,760)	
	HRV Quasi-Prescriptive Gas Savings	175,228 m3	122,748 m3	$0	0	($60,886)	(17,778)	
	ERV Participants	44	41	$0	0	$0	0	
	Infrared Heater Quasi-Prescriptive Electricity Savings	245-870 kWh	16-873 kWh	$0	0	($63,436)	0	
	Programmable Thermostats	82 m3 - 538 m3 and 63 - 266 kWh	13-84 m3 and 15-48 kWh	$0	0	($1,730,463)	(510,772)	

Program	Adjustment	Original Value	Adjusted Value	TRC Adjustment for SSM	Net m^3 Impact for SSM	TRC Adjustment for TRC Target	Net m^3 Impact for LRAM	
Multi-Residential	1.25 Showerhead Replacing 3.6 GPM	91m3	69m3	$0	0	($652,056)	(311,826)	
	1.25 Showerhead Replacing 3.6 GPM	91m3	69m3	$0	0	($27,479)	(13,141)	
Commercial Custom	Electric savings were not entered in initial results	0 kWh	415,154 kWh	$318,951	0	$0	0	
Industrial & Commercial Custom	Reduce steam trap measure life per Steam Trap Study	6 years	5 years	0	0	($473,225)	0	
***Prescriptive Boiler**	Adjust as per the boiler study recommendations			0	0	0	251,429	

* Boiler study results were not available until after the Final Audit Report. In order to include the results in this Audit, the Auditor, EAC and EGD agreed to review and include results within this EAC Audit Summary report.

3. TRC RESULTS AND SSM CALCULATIONS

3.1 AUDITOR RECOMMENDATIONS

The auditor made the following recommendations that may affect SSM and LRAM for application in the current year and/or future years:

1. Complete an evaluation study to investigate showerhead “bag testing” accuracy to determine existing stock (baseline) showerhead flow rates.

Enbridge Response:

EGD will discuss this with the 2011 EAC in its review of evaluation research priorities.

EAC Response:

The EAC endorses this response.

2. For prescriptive measures, include in the tracking databases and spreadsheets the definition of a participation unit (i.e. household, device or device group)

Enbridge Response:

EGD agrees to define participant units in the tracking databases, spreadsheets and tables in the Annual report.

EAC Response:

The EAC endorses this response.

3. Create a uniform, consistent calculation format for calculation of reduction factors based on Verification Reports for residential programs

Enbridge Response:

EGD agrees to implement the calculation format proposed by Nexant to consistently track residential reduction factors for TAPS and ESK. An example of the format is shown below.

2010 Reduction Factor Summary								
Quarter	Q1	Q2	Q3	Q4	Full Year			
Program	Reduction Factor	Reduction Factor	Reduction Factor	Reduction Factor	Total Participants	Total Adjusted Participants	Final Reduction Factor	ssm values
Participant SH2.6+	40.56%	37.34%	38.91%	37.32%	98,683	61,126	38.06%	38.06%
Participant SH2.0-2.5	40.56%	37.34%	38.91%	37.32%	53,721	33,181	38.24%	38.24%
Aerators(K)	39.61%	32.38%	38.62%	37.63%	153,148	97,268	36.49%	36.49%
Aerators(B)	50.50%	45.00%	45.00%	45.55%	153,110	83,251	45.63%	45.63%
CFL 13 w (4 bulbs)	19.76%	13.82%	14.51%	14.16%	153,172	130,729	14.65%	11.41%

Quarter	Q1						
Input Source	*Verification Survey Results*				*Calculated*	*From Mass Market Reports*	*Calculated*
Program	% Materials Distributed	% Materials Installed	% Material Remaining after Removal	% Showers taken on Enbridge Showerhead or #CFLs Replacing Incandescents/	Reduction Factor	Participants	Adjusted Participants
Participant SH2.6+	100%	86%	96%	72%	40.56%	8,035	4,776
Participant SH2.0-2.5	100%	86%	96%	72%	40.56%	5,175	3,076
Aerators(K)	100%	61%	99%	100%	39.61%	13,213	7,979
Aerators(B)	100%	50%	99%	100%	50.50%	13,200	6,534
CFL 13 w (4 bulbs)	88%	100%	98%	93%	19.76%	13,193	10,586

Note: Q1 reduction factor calculated by 1-(100%*86%*96%*72%) and participation number * reduction factor = adjusted participant number

Reduction factors from each month carried up into year summary chart and final reduction factor is calculated by taking 1-(adjusted participants/total participants)

EAC Response:

The EAC endorses this response.

4. Remove unused fields in TRC/SSM spreadsheet (which is used to calculate final impacts for the Annual Report)

Enbridge Response:

EGD has requested a list of specific fields from Nexant and will agree to hide fields that have proven not to be valuable for past auditors or for explanation of EGD results.

EAC Response:

The EAC endorses this response.

5. Change the manner (i.e. format) that adjustment factors are incorporated in the TRC/SSM spreadsheet for ease of use

Enbridge Response:

EGD will label adjustment factors within the TRC/SSM spreadsheet for ease of use for future auditors.

EAC Response:

The EAC endorses this response.

6. Complete a Custom Projects Attribution Study

Enbridge Response:

EGD will discuss this with the 2011 EAC in review of evaluation research priorities.

EAC Response:

The EAC endorses this response.

7. Specify that contractors completing Engineering Reviews provide statement of advancement vs. replacement issue in final report

Enbridge Response:

EGD will incorporate this recommendation into the RFPs for future Engineering Reviews under scope of work.

EAC Response:

The EAC endorses this response.

8. Complete a pre-rinse spray valve verification study

Enbridge Response:

As per agreement with the 2010 EAC, EGD is proceeding with spot checks and if warranted, a verification study will be considered. EGD will discuss this item further with the 2011 EAC when reviewing evaluation priorities.

EAC Response:

The EAC endorses this response.

9. Consider making efforts to track custom project applications resulting from industrial support programs

Enbridge Response:

EGD agrees to investigate the feasibility of tracking custom project applications resulting from industrial support programs.

EAC Response:

The EAC endorses this response.

10. Require that contractors use significant digits within each Verification Report for Residential Programs

Enbridge Response:

EGD will request that the verification contractors present their report results using $1/10^{th}$ of a percent. .

EAC Response:

The EAC endorses this response.

11. Require that contractors calculate the final reduction factors in each Verification Report for residential programs

Enbridge Response:

See recommendation #3 – EGD will calculate final reduction factors using format proposed by Nexant.

EAC Response:

The EAC endorses this response.

12. Determine a responsible party for calculation of precision levels for adjustment factors resulting from Commercial & Industrial Custom Engineering Reviews

Enbridge Response:

The sampling methodology for Custom Engineering Reviews was developed in consultation with both EGD and Union's EACs. EGD will initiate discussions with Union and with the EACs to:

- Revisit level of precision after initial sample taken
- Determine where in process this should be done and by when in order to meet deadlines
- Where precision is less than target, determine whether to revisit and if so, how

EAC Response:

The EAC endorses this response.

13. Include a focus on validating participation numbers and key project level data entered in the TRC/SSM spreadsheet in future audits. Key metrics should be validated upstream in the tracking process.

Enbridge Response:

The 2010 Audit Terms of Reference and years prior included auditing for validation of participant numbers.

EGD will consider this recommendation as a candidate for priority audit review in future audits.

EAC Response:

The EAC endorses this response.

14. A) Require that future Engineering Reviews include a more detailed review and discussion of industrial project costs. B) In addition, Enbridge should consider tracking additional program metrics which may provide more information to explain the benefit-cost ratios such as savings per participant and number of projects implemented as a percentage of the projects recommended by Enbridge.

Enbridge Response:

A) Project Costs – EGD will incorporate this recommendation into the RFP's in future Engineering Reviews under scope of work. B) EGD will estimate the cost and benefits and bring the analysis forward to the 2011 EAC for discussion.

EAC Response:

The EAC endorses this response.

15. Consider allocating more program budget to custom project verification in order to increase precision levels to 90/10

Enbridge Response:

EGD will consider this recommendation when allocating budget on evaluation priorities and will also discuss with Union and the EACs. Also refer to audit recommendation #12.

EAC Response:

The EAC endorses this response.

16. Require that the consultants in future years completing the residential verification work analyse the effects of using the results of verification surveys on participants outside of the sampled population on the confidence and precision levels. In addition, the consultants should make adjustments required to the sampling strategy in order to ensure that the target 90/10 confidence and precision level is achieved.

Enbridge Response:

EGD will continue to ensure that 90/10 level of confidence is reached and will have the consultants document in the reports the effect of un-sampled population on the validity of results.

EAC Response:

The EAC endorses this response.

17. Improve the steam trap research in future iterations of the work by providing additional details regarding the types of steam traps studied. In addition, include in the report an analysis of the statistical significance of the results.

Enbridge Response:

As feasible, EGD will collect information regarding the types of steam traps studied. In addition, EGD will include, in future RFP's, that an analysis of the statistical significance of the results be documented.

EAC Response:

The EAC endorses this response.

3.2 EAC RECOMMENDATIONS & COMMENTS

A) AUTUVA (Average Use True-Up Variance Account and LRAM

During discussions of the LRAM calculation the question arose at to why the rate adjustment for Rates 1 and 6 was not included in the LRAM variance. This is due to the fact that variance for Rates 1 and 6 is recovered through the Average Use True-Up Variance Account (AUTUVA).

Enbridge Response

The exclusion of Rate 1 and Rate 6 was discussed with the EAC and it was agreed that documentation in regards to this matter be included in the Audit Summary Report. The following note provides an explanation of AUTUVA and LRAM.

LRAM

In preparing rates for a given year the forecast DSM volumes are taken into account. The Lost Revenue Adjustment Mechanism was established to account for the revenue impact of any variance between the forecast DSM volumes and post audit DSM volumes. LRAM only addresses the variance in DSM volumes.

AUTUVA

DSM is one of several factors contributing to declining average use in Rate 1 and Rate 6. The purpose of the 2011 AUTUVA is to record ("true-up") the revenue impact, exclusive of gas costs, of the difference between the forecast of average use per customer, for general service rate classes (Rate 1 and Rate 6), embedded in the volume forecast that underpins Rates 1 and 6 and the actual weather normalized average use experienced during the year. The calculation of the volume variance between forecast average use and actual normalized average use will exclude the volumetric impact of Demand Side Management programs in that year.

The Company's rates for Rate 1 and Rate 6 are based on budgeted average volumes per customer. At the end of each year the actual average volumes are calculated from the total metered usage which includes the impact of any DSM activities. During year-end if either the audited DSM volume information or an updated estimate is not available, the budget DSM volume information which is the best available estimate of the actual DSM volume information will be utilized in the AUTUVA calculation. If it turns out that the current year actual audited DSM volumes are different from the budget when this information is not available for current year AUTUVA calculation, the LRAM calculation is only required for other rate classes.

B) LRAM adjustments should be consistent, logical, and clear:

In the 2010 Auditor's Report, several charts (including one duplicated below as our Table 6: Auditor Recommended LRAM Calculation) summarized the Auditor's calculations of the LRAM. Unfortunately, the treatment of these calculations was inconsistent in mathematical "sign" -- a reduction in one chart appeared as an increase in the other -- and there were no footnotes or other notes to explain which direction was which.

The situation is unusually confusing in the case of the LRAM, since its purpose -- as a Lost Revenue Adjustment Mechanism -- is to provide positive relief to the Utility to compensate for a shortfall (a negative variance) in gas-distribution

revenues resulting from above-forecast DSM activities (a positive variance). So, for example, if a DSM Audit determines that the Company's DSM programs over-achieved in first-year volumetric savings, that should represent a positive variance (actuals>budget), although it means that actual gas sales and distribution revenues were lower than the Company forecasted. This positive variance in savings calls for an increase in LRAM, i.e., a greater payment from ratepayers. Clearly, there is ample room for confusion when presenting that many "double negatives"!

In the present case, the total net LRAM post Audit from all rate classes was negative $1,343, a refund to ratepayers, reflecting a net shortfall in actual net first-year DSM gas savings, compared to the budget. Unfortunately, although Table 6 (verbatim from the Audit) presents the Budget and Actual volumes and the Distribution Margins correctly, the Volume Variance column confusingly shows exceedences (actual > budget) as negative (in parentheses), and shortfalls (actual < budget) as positive. The final column -- LRAM in $ -- preserves that confusing "sign", presenting a positive total that actually represents a negative LRAM, i.e., a refund from the Company to ratepayers.

The EAC proposes that future presentations of LRAM should reflect its purpose, and its "natural" direction, and should also provide a note to clarify the meaning of positive and negative variances -- specifically that a positive LRAM variance indicates that more money will flow from ratepayers to compensate the Company's lost DSM distribution revenues, and a negative LRAM variance indicates that less money will flow from ratepayers to the Company.

Enbridge Response:

EGD will reflect the information as suggested in the final Annual Report and advise future Auditors to reflect the same in future Audit Reports.

C) Steam Trap Measure Life Study Limitations

Enbridge completed a study of steam trap measure life late in the 2010 Audit process. The study focused on steam traps installed at six different customer sites. For each site, the company reviewed data it had collected during site DSM audits (no additional visits were conducted just for the purpose of this study) on the number of traps that had failed and the year that they had failed.

Using the data available for each site, it then developed a curve or line that best correlated the percent of traps that had failed with the number of years since they were installed. For example, if a site had 0% of its traps fail after 1 year, 15%

after 2 years and 20% after three years – and there were no more years of data available – an equation that best fit those three data points (0% - 1, 15% - 2, 20% - 3) was developed. From these lines the company estimated the number of years after which 50% of the traps would have failed at each site. The average of those 50% failure rate estimates across all six sites – 4.63 years – was put forward as the resulting average measure life.

The EAC appreciates the effort that went into this study. The data collected certainly have value, particularly given the paucity of data available from other studies on this question. However, we are concerned that the approach the study took to estimating measure life may have a couple of important limitations:

1. The study implicitly assumes that the pattern of failure rates in future years can be imputed from the pattern in the early years for which the Company had data. However, there is no evidence available to suggest that is a reasonable assumption, particularly for sites with data for only a few years after installations occurred. Of the six sites examined, the company had data on failure rates for only three years after installation for two of them, for only four years after installation for another two, and for six years after installation for the other two.
2. The report notes that industry literature suggests failure rates may be strongly affected by the type of trap installed. However, the analysis conducted by the Company did not control for this effect.

Given these concerns, the EAC believes that some additional research should be conducted to improve the study and ensure that its results are reasonably accurate.

One option might be to make additional visits (even if only for the purpose of this study, rather than as part of a DSM audit) to the six sites already analyzed to collect additional data. That should allow collection of additional data later in the life-cycle of the steam traps. Another would be to add additional sites. The six sites analyzed were chosen, in part, because they had at least three audits over a 4 year period. An additional intentional site visit/audit (even if just for this study) might create the "3rd audit" necessary to be included in the study.

Finally, it would be important to explicitly assess whether different types of traps had shorter or longer lives.

Additional comments regarding Steam Traps:

In our brief discussions regarding Enbridge's DSM activities with Steam Traps (primarily focused on the eleventh-hour study of steam-trap measure life), we learned that there are several different kinds of Steam Traps, with different characteristics including energy consumption, and also that the sizing of Steam Traps is variable and has energy-efficiency impacts. Our understanding is that Enbridge works with industrial customers to ensure that failed Steam Traps are replaced, and takes credit for the energy savings of the new Steam Traps over their estimated measure lives -- but that Enbridge does not attempt to influence the customer's choice of the type of Steam Traps, or the size of Steam Traps. If indeed, there are opportunities to save energy with improved choices in these areas, the EAC encourages Enbridge to attempt to locate and seize those opportunities.

Enbridge Response:

EGD agrees there is merit in completing additional research and is considering the best way to proceed.

D) Boiler Study

Over the course of the past several years, one of the recurring themes of Enbridge EAC discussions has been concern regarding the reasonableness of assumptions underlying Enbridge's savings estimates for large (i.e., greater than 300 kBtuh) commercial boilers – both assumptions used to develop prescriptive savings assumptions and similar assumptions used in custom savings calculations in the Company's "E-tools" software. (Some boiler installations and savings estimates are prescriptive and some are custom.)

To begin addressing those concerns, in the summer of 2010 Enbridge and the EAC made it a priority to launch an independent evaluation study of typical baseline conditions for such boilers. A scope of work was developed together, an RFP was issued and ultimately a contractor – Marbek – was hired by Enbridge in the Fall of 2010 to conduct the study. The final report on the study was completed on June 23, 2011 – too late for its results to be included in the 2010 Auditor's report.

The EAC has reviewed the report, provided Enbridge a number of comments and questions and had the opportunity to discuss the issues raised with Marbek. Several conclusions emerge from that process:

- The report contains a lot of good and useful data and recommendations. Chief among these are the recommendations that Enbridge: (1) revise three of its approximately 10 key baseline assumptions that together are used to estimate average baseline seasonal operating efficiencies; and (2) establish both a "floor" for the lowest seasonal efficiency that it assumes results from the combination of baseline assumptions and a "ceiling" for the highest seasonal efficiency that it assumes results from the combination of efficiency features included in rebated equipment.
- The report recommends no changes to other baseline assumptions, which essentially implies that baseline equipment has the least efficient option with respect to those other equipment features that affect seasonal operating efficiency. This approach appears to have been taken for two reasons: (1) data limitations; and (2) an approach that assumes the "median" condition is the appropriate baseline rather than the "average" condition (e.g. if 75% of all standard equipment models have only 1 stage and 25% have two stages, the median is 1 stage even though the average is 1.25 stages). The EAC believes this approach likely leads to some conservatisms in savings estimates, though it is not possible to determine the extent to which that may be true without more data and a better understanding how of E-Tools uses the various input assumptions.
- Marbek focused only on the reasonableness of baseline input assumptions (consistent with its scope of work). It did not review the reasonableness of prescriptive assumptions for more efficient equipment.
- Marbek did not examine the reasonableness of how E-Tools uses input assumptions to develop estimates of seasonal equipment efficiencies.

From those conclusions the EAC has the following recommendations:

1. Enbridge's prescriptive savings assumptions for large commercial boilers should be revised to reflect the two recommendations identified in the first bullet above. Those changes should go into effect for the 2011 program year.
2. The changes in prescriptive assumptions for 2011 should be used to make LRAM adjustments for the 2010 program year.
3. Baseline assumptions used in custom savings calculations (in the E-tools software) for large commercial boilers should be modified for the 2011 calendar year and beyond.

4. An estimate of the impact that using the study-recommended baseline assumptions would have had on 2010 TRC net benefits from 2010 custom boiler projects should be developed by the company. If substantial enough to materially affect the 2010 SSM calculation, the 2010 SSM should be adjusted accordingly, as custom project savings assumptions are, by definition, not “locked in”.
5. The Marbek baseline boiler study should be extended (i.e. additional work should be done) to:
    a. Assess the reasonableness of the savings algorithms in the Company’s E-Tools software;
    b. Assess the impact of more realistic equipment sizing assumptions on savings estimates; and
    c. Assess the reasonableness of assumed characteristics of mid-efficiency and high efficiency (boilers that were used to develop prescriptive savings estimates).

Enbridge Response:

Enbridge has implemented EAC recommendations from the Boiler Study #1 through 3 listed above and the results are reflected in the Final Annual Report and this Audit Summary Report.

Regarding recommendation #4, after further discussion the EAC determined that the 2010 custom project results would not be adjusted as the boiler baseline was included in the Engineering Review of custom projects for 2010.

Enbridge will discuss recommendation #5 with the EAC and the Technical Evaluation Committee as part of the discussion of evaluation priorities.

E. Confidentiality Agreement

Enbridge declined to provide full copies of a Steam Trap Measure Life Study report and Commercial Boiler Baseline Study report to the members of the EAC until the members had signed confidentiality agreements.

The confidentiality agreements that Enbridge provided required the signatories to, among other things, keep the material received confidential, not copy the materials (including not saving electronic files to a computer system), and destroying the material following the end of the EAC process.

The EAC has two fundamental concerns about this issue. First, the EAC fundamentally believes that there is no basis for treating these studies as confidential (as long as they do not reveal individual customer information, which they do not). The studies are ultimately paid for by rate-payers and should therefore be in the public domain. That said, for the sake of expediency only, and without prejudice to the ability to argue in future proceedings that the studies should not be treated as confidential, the EAC members have signed the confidentiality agreements in order to review full documents potentially applicable to the 2010 SSM and LRAM.

However, going forward, we believe that all full studies, with confidential customer information redacted, should be provided to all members of the EAC without the condition that a confidentiality agreement be signed. Further, we believe that this approach is consistent with the OEB's Demand Side Management Guidelines for Natural Gas Utilities (EB-2008-0346) which confirms that:

> The natural gas utilities should include, as an appendix to their Evaluation Report, the verifications studies provided by their third party evaluators, and any other relevant research and evaluation documents. (OEB, "Demand Side Management Guidelines for Natural gas Utilities, EB-2008-0346, June 30, 2011, p. 40)

Second, if there are to be confidentiality agreements, the EAC believes that the requirements in the confidentiality agreement that material received not be copied to a computer system and be destroyed following the end of the current EAC process are both unnecessary and burdensome. Since the signatories have agreed to keep the material confidential in perpetuity, there is no need to require that they not be copied and that they be deleted at the end of the EAC process.

Further, while electronic versions can be deleted on the file folders directly accessible on each EAC members' computer, it is not possible to delete, with complete certainty, all versions contained on secured back-up tapes and/or unknowingly mirrored on a hard drive. Moreover, since some members of the 2010 EAC are continuing as members of the 2011 EAC (this is a common occurrence), and studies completed in one year are often very important to savings estimation, evaluation and audit activities in subsequent years, requiring that materials be destroyed only so that they can be re-requested under a new confidentiality agreement creates unnecessary administrative burdens and costs on all parties and harms the "corporate memory" of the EAC, thereby potentially jeopardizing its effectiveness.

At a minimum, the EAC recommends that (1) the requirements to not copy the material be eliminated altogether; and (2) the requirements to destroy materials

received be put in place only after an EAC member is leaving the EAC process in its entirety (that is, is not participating in the following EAC process).

Enbridge Response:

Regarding the current confidentiality agreement, relating to this audit process, Enbridge recognizes that it is not possible to delete, with complete certainty, all versions contained on secured back-up tapes and/or unknowingly mirrored on a hard drive. For the current confidentiality agreement Enbridge adopted wording that was in use with the Union Gas EAC. For future agreements, Enbridge will look to revise the wording to account for the circumstances of automatic electronic backup.

Following consultation conducted jointly with Union Gas and with five intervenors nominated from the broader DSM Consultative for the 2012-2014 DSM Plan, EGD filed a Settlement Agreement including Stakeholder Agreement Terms of Reference which addressed confidentiality agreements.

3.3 TRC RESULTS

The following table was taken from the auditor's Final Audit Report[3]. It presents TRC adjusted as per the adjustments recommended by the auditor and described in Table 2.

[3] Ibid, page 13.

Table 3: Auditor Recommended Adjusted Gas savings and TRC

Program	From Enbridge Draft 2010 Annual Report			Audit Adjusted Values	
	Units	Net Gas Savings (m^3)	Net TRC Benefits	Net Gas Savings (m^3)	Net TRC Benefits
Existing Homes	788,039	8,125,183	$47,708,073	8,125,183	$47,342,481
Residential New Construction	16,080	1,553,201	$1,702,743	1,581,307	$1,772,919
Low Income	7,523	318,356	$674,016	319,353	$677,798
Total Residential	**811,642**	**9,996,740**	**$50,084,833**	**10,025,843**	**$49,793,198**
Small Commercial	7,277	4,038,642	$11,210,656	4,038,642	$11,210,656
Large Commercial	305	16,126,217	$41,251,260	16,126,217	$41,570,211
Multi Residential	32,446	14,687,999	$35,569,221	14,687,999	$35,569,221
Large New Construction	43	2,228,424	$7,348,643	2,228,424	$7,348,643
Industrial	123	18,547,131	$45,176,787	18,547,131	$45,176,787
Total Business Markets	**40,196**	**55,628,413**	**$140,556,566**	**55,628,413**	**$140,875,518**
Prog. Development	-	-	$(154,688)	-	($154,688)
Market Research	-	-	$(65,465)	-	($65,465)
Overhead	-	-	$(5,855,521)	-	($5,855,521)
Total All Programs	**851,836**	**65,625,153**	**$184,565,726**	**65,654,256**	**$184,593,043**

3.4 SSM CALCULATION

The following table was taken from the auditor's Final Audit Report[4]. It presents the original SSM from the Enbridge Draft Annual Report and the SSM as adjusted based on the adjusted TRC results following the audit.

[4] Ibid, Table 6-1, page 57

Table 4: Auditor Recommended SSM Calculation

	Original Value	Audit Adjusted Value
2010 Actual TRC	$184,565,726	$,184,593,043
2010 TRC Target	$202,342,433	$202,342,433
Percent of Target	91%	91%
Base Target	75%	75%
Percent over 75%	16.21%	16.23%
$ per 1/10 of 1%	$10,000	$10,000
SSM at 75% of Target	$2,250,000	$2,250,000
SSM over 75% of Target	$1,621,454	$,1622,804
Program Total	**$3,871,454**	**$3,872,804**
Market Transformation	$282,484	$282,484
Total SSM	**$4,153,938**	**$4,155,288**

EAC Response:

The EAC supports the foregoing SSM calculations.

4.0 LRAM

4.1 AUDITOR RECOMMENDATIONS

The following are recommendations made by the auditor that affect 2010 LRAM:

- *EGD should update the following based on the proposed assumption document to be filed for the 2011 Update*
    - *Showerhead – Residential New, Existing and Multi-Residential*
    - *Heat Recovery Ventilators- Commercial New, Existing*
    - *Programmable Thermostats – Multi-Residential*
- *EGD should adjust the Steam Trap measure life from 6 years to 5 years*

As agreed with the Auditor, EAC and EGD, the Boiler Study Report recommendations will only affect 2010 LRAM and not SSM where the program is prescriptive in nature. The custom boiler projects will not impact the 2010 SSM or LRAM as the engineering review Terms of Reference included a review of the base case used for replacement projects and all custom projects were then adjusted based on the results of the engineering review.

All recommendations have been implemented by Enbridge and used in the calculation of 2010 LRAM and the 2011TRC Target calculation.

4.2 LRAM RESULTS

Table 5 below presents a summary of all changes in gas savings fromTables 2-3 and 2-4 from the Final Audit Report[5] published by the auditor and the subsequent changes resulting from the Boiler Study.

Table 6 illustrates the LRAM by rate class and the variance that will need to be reimbursed to (negative number) or collected from (positive number) rate payers. In total, $42,858 needs to be returned to rate payers.

[5] Ibid, page 13

Table 5: Auditor Recommended LRAM Calculation to Net Gas Savings

Program	Audit Adjusted for TRC/SSM	Audit Adjusted for LRAM m3 (Before Boiler Changes)	Audit Adjusted for Boiler Changes	Net Effect of Boiler Changes
Existing Homes	8,125,183	7,915,760	7,915,760	0
Residential New Construction	1,581,307	1,583,979	1,583,979	0
Low Income	319,353	316,503	316,503	0
Total Residential	**10,025,843**	**9,816,242**	**9,816,242**	0
Small Commercial	4,038,642	3,502,333	3,502,333	0
Large Commercial	16,126,217	16,126,217	16,296,458	170,241
Multi Residential	14,687,999	14,363,032	14,434,856	71,824
Large New Construction	2,228,424	2,228,424	2,237,790	9,366
Industrial	18,547,131	18,547,131	**18,547,131**	0
Total Business Markets	**55,628,413**	**54,767,137**	**55,018,566**	251,429
Prog. Development	-	-	-	-
Market Research	-	-	-	-
Overhead	-	-	-	-
Total All Programs	**65,654,256**	**64,583,379**	**64,834,808**	251,429

* Change from Audit Adjusted m3 of 65,654,256 to 64,583,379 before boiler changes is due to the Audit Recommendations that were only to affect LRAM and not TRC/SSM.

Table 6: LRAM Recovery by Rate Class

2010 Rate Allocation by Account

Rate Class	SSM	Market Transformation	LRAM	DSMVA	TOTAL
Rate 1	1,011,384	282,484	~~-140,352~~	(445,024)	848,844
Rate 6	1,682,443	0	~~-132,064~~	81,712	1,764,155
Rate 100	86,297	0	0	0	86,297
Rate 110	323,567	0	(13,721)	(408,879)	(99,033)
Rate 115	119,160	0	(7,911)	(965,826)	(854,577)
Rate 135	8,500	0	586	50,082	59,168
Rate 145	114,336	0	(12,702)	(882,041)	(780,407)
Rate 170	527,117	0	(9,110)	(147,129)	370,878
Total	$3,872,804	$282,484	($42,858)	(2,717,105)	1,395,325

Rate 1 and Rate 6 are not included in the LRAM calculation above as it is covered under AUTUVA, Average Use True-Up Variance Account.

EAC Response:

The EAC supports the foregoing LRAM calculations.

5.0 2011 TRC TARGET

The Decision in the DSM Generic Proceeding provides that the DSM target is calculated "by averaging the Utility's actual audited TRC results over the previous three years and applying to this figure an escalation factor equal to 1.5 times the amount by which the utility's budget is increased." The Decision provides that the formula be phased in.

As a part of the 2011 DSM Plan filing (EB-2010-0175) the DSM budget formula was not changed from EB-2006-0021 however there was an adjustment between the budget allocation between Resource Acquisition and Market Transformation programs. Therefore, the TRC target and SSM calculations were adjusted accordingly while retaining the maximum SSM allowable through EB-2006-0021

formulas. The charts below are from the EB-2010-0175 filing which illustrates how the calculations are to be completed.

Settlement 2011 TRC and SSM 100% Target Calculation

This scenario assumes reduction of 2011 TRC equivalent of LI weatherization O&M

CURRENT

Operating Budget and TRC

		RA	MT	OH	
O&M (Baseline for 2011)	$26,708,068	$19,030,001.00	$ 1,600,000.00	$ 6,078,067.00	
O&M excldg LI Weatherization	$26,708,068	$ 17,752,201.00	$ 1,600,000.00	$ 6,078,067.00	
TRC (Baseline for 2011)	$148,020,982	$ 154,099,049.32	$ -	$ (6,078,067.00)	**O&M related to LI weatherization $1,277,800**
TRC excluding LI Weatherization		$ 153,494,067.32			**TRC related to LI weatherization $604,982**
	TRC per RA O&M	**$ 8.65**	**after LI-W adjustment**	$ 6,078,067.00	

SSM

	SSM - 2010	Prescribed O&M $	Consultative Offer April 20 O&M $
RA	$ 4,750,000	$ 17,752,201.00	$ 16,863,876.00
MT	$ 500,000	$ 1,600,000.00	$ 3,766,125.00
SSM Base	$ 5,250,000	$ 19,352,201.00	$ 20,630,001.00

Settlement Calculation

Operating Budget and TRC

	Settlement Summary	MT Breakdown	
A) Total O&M	$ 26,708,068.00	$ 1,536,125.00	Low Income Weatherization (Original)
B) MT O&M (settled value)	$ 3,766,125.00	$ 2,230,000.00	DWHR
C) Overheads	$ 6,078,067.00	$ 3,766,125.00	Total MT before Amended Low Income Weatherization
D) RA O&M (A-B-C)	$ 16,863,876.00	$ 1,366,375.00	Amended Low Income Weatherization
		$ 5,132,500.00	
E) TRC per RA O&M (from above)	$ 8.65		
F) Resulting TRC Gross value	$ 145,813,182.15		
G) Resulting TRC target (net of OH)	**$ 139,735,115.15**		

SSM

	SSM -2010	Consultative Last Counter 100% SSM Split	Consultative Last Counter 100% MT Split	Consultative Last Counter MT Split
RA	$ 4,750,000	4,000,000.00	650,000.00	DWHR
MT	$ 500,000	900,000.00	250,000.00	LI Weatherization
SSM Base	$ 5,250,000	4,900,000.00	900,000.00	Total

Settlement 2011 SSM Payment vs Target Calculation

% of pivot	2010 RA SSM Payouts	Revised MT SSM Payouts	Revised Total Available SSM	Revised Increment Payments	Revised
25%	***$200,000***			**$800**	For achievement of between 0 and up to 25.0% of the annual target, the SSM payout shall equal $800 for each 1/10 of 1% of target achieved.
50%	***$600,000***			**$1,600**	For achievement of greater than 25.0% up to 50% of the annual target, the SSM payout shall equal $200,000 plus $1,600 for each 1/10 of 1% of target achieved.
75%	***$2,000,000***			**$5,600**	For achievement of greater than 50.0% up to 75.0% of the annual target, the SSM payout shall equal $600,000-plus $5,600 or each 1/10 of 1% of target achieved above 50.0%, and
100%	***$4,000,000***	$900,000	$4,900,000	**$8,000**	For achievement of greater than 75.0% of the annual target, the SSM payout shall equal $2,000,000 plus $8,000 for each 1/10 of 1% of target achieved above 75.0% to a maximum of the SSM annual cap.
125%	***$6,000,000***	$900,000	$6,900,000		Up to 125% of the annual target, a total payout of $6,000,000.
over 125% (Note2)	***$8,100,000***	$900,000	$9,000,000		In excess of 125% of the annual target, a total that is capped at no more than $8,100,000 for 2007. The parties agree that the annual 'cap' of $8.1 million will increase annually by the Ontario CPI as determined in October of the preceding year.

Notes:

1. Proposed 2011 Resource Acquisition SSM payouts are set based on settled 100% of Target SSM value

2. 2010 over 125% Resource Acquisition SSM cap will be adjusted for October, 2010 CPI value. This is as per the 2006 Generic Hearing decision

Cap + CPI Calculation

	$8,100,000
1.73%	$8,240,130
1.05%	$8,326,651
1.82%	$8,478,196

For Enbridge the 2011 target formula is presented in Table 7: 2011 TRC Target calculation.

The target calculation has been reviewed and approved by the auditor, Nexant.

Table 7: 2011 TRC Target Calculations

Actual Audit 2008 SSM TRC Results	Actual 2008 TRC results for LRAM with Final 2011 avoided costs	Actual Audit 2009 SSM TRC Results	Actual 2009 TRC results for LRAM with Final 2011 avoided costs	2010 SSM TRC Audit at Jun 29 2011	Audit 2010 LRAM TRC Results at Dec 13 2011 with Final 2011 avoided costs	Preliminary 2011 Target	2011 TRC Target per settlement
A	B	C	D	E	F	=(B+D+F)/3 * 1.075%	
$182,706,679	$146,216,779	$215,833,455	$130,533,176	$184,598,043	$136,331,856	$148,020,992	$139,735,115

APPENDIX A

Terms of Reference: Audit of 2010 DSM Program Results

Enbridge

Terms of Reference:

INDEPENDENT AUDIT OF 2010 DSM PROGRAM RESULTS

BACKGROUND

Since 1995, Enbridge Gas Distribution ("Enbridge") has been delivering Demand-Side Management (DSM) programs to its customer markets. Each year since then, Enbridge has been successful in achieving significant natural gas savings through its program portfolio. (See the attached DSM Factsheet for an overview of the Enbridge DSM programs.) Enbridge delivers its DSM programs in accordance with the rules and procedures defined by the Ontario Energy Board ("OEB").

The OEB DSM procedures include three financial mechanisms: the Demand Side Management Variance Account (DSMVA), the Lost Revenue Adjustment Mechanism (LRAM), and the Shared Savings Mechanism (SSM).

The DSM budget is set at the beginning of the year.

> The DSMVA (DSM Variance Account) shall be used to "true up" the variance between the spending estimate built into rates for the year and the actual spending in that year. If spending is more than what was built into rates, the utility shall be reimbursed up to a maximum of 15% of its DSM budget for the year. All additional funding must be utilized on incremental program expenses only (i.e., cannot be used for additional utility overheads). [6]

As described in the Board's Decision that first established the LRAM, "LRAM is a mechanism to adjust for margins the utility loses if its DSM Program is more successful in the period after rates are set than was planned in setting the

[6] EBO 2006-0021, Decision with Reasons, Issue 6.1, 6.2 and 6.3, page 30

rates."[7] The continuance of the LRAM was confirmed in the Board's Decision in the Generic Proceeding.[8]

The SSM provides the Company a share of the DSM results. In the Generic Proceeding the Board approved a proposal whereby the amount of the SSM is determined by a formula based on a percentage of the actual net benefits.[9] The net benefits are calculated using the "Total Resource Cost Test", developed by the California Energy Commission and the California Public Utilities Commission.[10]

Enbridge maintains systems to monitor and track DSM results. In addition, the Company commissions independent evaluations of selected DSM programs. The DSM Annual Report is the Company's documentation of program results, evaluation research, and calculation of the DSMVA, LRAM, and SSM amounts.

OBJECTIVE

The objective of the audit is to provide an independent opinion as to the reasonableness of the Company's claims regarding DSMVA, LRAM & SSM. The Company intends to use the audit as evidence to clear the relevant DSM accounts at the OEB.

The auditor should include in their final report or subsequent memo an independent professional opinion in the following form, with or without qualifications:

> We have audited the Annual Report, Total Resource Cost (TRC) savings, Shared Savings Mechanism (SSM), Lost Revenue Adjustment Mechanism (LRAM) and Demand Side Management Variance Account (DSMVA) of Enbridge Gas Distribution for the calendar year ended December 31, 2010. The Annual Report, and the calculations of TRC, SSM, LRAM, and DSMVA are the responsibility of the company's management. Our responsibility is to express an opinion on these amounts based on our audit.
>
> We conducted our audit in accordance with the rules and principles set down by the Ontario Energy Board in its Decision with Reasons dated August 6, 2006 in EB-2006-0021. Details of the steps taken in this audit process are set forth in the Audit Report that follows, and this opinion is subject to the details and explanations therein described.

[7] EBRO 495, Decision, Pg 100, item 4.2
[8] EBO 2006-0021, Decision with Reasons, Issue 4.1, page 39
[9] EBO 2006-0021, Decision with Reasons, Issue 5.2, page 27-30
[10] "Standard Practice Manual. Economic Analysis of Demand-Side Management Programs." California Energy Commission and California Public Utilities Commission, 1987.

In our opinion, and subject to the qualifications set forth above, the following figures are calculated correctly using reasonable assumptions, based on data that has been gathered and recorded using reasonable methods and accurate in all material respects, and following the rules and principles set down by the Ontario Energy Board that are applicable to the 2010 DSM programs of Enbridge Gas Distribution:

TRC Savings	-	$xxx,xxx,xxx
SSM Amount Recoverable	-	$x,xxx,xxx
LRAM Amount Recoverable	-	$x,xxx,xxx
DSMVA Amount Recoverable	-	$xxx,xxx

SCOPE AND REQUIREMENTS

As stated in the Decision from the Generic Proceeding,

> The parties agree that a third party audit of the Evaluation Report is required. The auditor will be retained by the utility who determines the scope of the audit.
>
> It will be the role of the auditor to:
>
> - Provide an opinion on the DSMVA, SSM and LRAM amounts proposed and any amendment thereto
> - Verify the financial results in the Evaluation Report to the extent necessary to give that opinion
> - Review the reasonableness of input assumptions.
> - Recommend any forward looking evaluation work to be considered
>
> The auditor shall be expected to take such actions by way of investigation, verification or otherwise as are necessary for the auditor to form their opinion. The auditor, although hired by the utility, must be independent and must ultimately serve to protect the interests of stakeholders.[11]

The Auditor selected for this task will be expected to exercise his/her expert judgment to determine the elements of the audit, and to set the approach and process that will be followed in the audit in order to meet the regulatory requirements as stated above.

The deliverable will be written reports outlining the principles of the audit, the methodology followed, and the findings and recommendations of the audit, including an opinion in the form set forth above.

The following list of audit activities is suggested. It represents the minimum set of tasks the auditor will be expected to carry out. The Auditor is encouraged to

[11] EBO 2006-0021, Decision with Reasons, Issue 9.3, page 17

propose other tasks that it believes would be helpful in reaching the ultimate goal of assessing the accuracy of Enbridge's DSMVA, LRAM, and SSM calculations.

Audit Activities

- Consider and respond to stakeholder comments on Enbridge's Annual DSM Report for 2010, including those of the EAC.
- Review Enbridge's 2010 procedures for tracking program participants and determine whether they lead to accurate counts, particularly for programs that do not provide customer rebates.
- Determine whether Enbridge's reported values for participation, costs, measure lives and savings (gas, electricity and water) are appropriate for calculation of TRC, LRAM and SSM. This shall include assessing: (1) whether values are adequately documented by program records, evaluation studies and other relevant data; (2) where applicable, whether assumptions regarding measure costs, savings and lives are in line with Board approved values for calculation of the SSM; and (3) the reasonableness of costs, measure lives and savings for the calculation of LRAM and SSM. Where appropriate, the auditor shall recommend alternative costs, measure lives and savings values to be used for LRAM purposes. For measure assumptions that were not previously approved by the Board, the auditor is expected to propose alternatives to those put forward by EGD if it deems the EGD values less accurate. Consideration should be made to measures that are considered advancements rather than replacements to ensure costs, measure lives and savings are treated appropriately. As part of such consideration of advancement measures the auditor shall assess both whether cost, savings and measures lives are estimated in line with models developed in the last 2 years and whether such models are reasonable.
- Determine that all other assumptions are consistent with those approved in the forecast or that they properly reflect accepted recommendations from previous audits or new program designs.
- Review and verify the accuracy of all calculations leading up to the proposed TRC, DSMVA, LRAM, and SSM amounts.
- Verify that the methodology and assumptions used to calculate the "actual" LRAM volume savings are consistent with the methodology and assumptions used to calculate the LRAM budget volume savings and identify and quantify any inconsistencies.
- Verify that the calculations are consistent with the OEB-approved prescribed methodology.

- Verify the calculation of the Market Transformation incentive. As part of such efforts, the auditor should provide an opinion on the accuracy of EGD's reporting of performance against program metrics and the reasonableness of EGD's interpretation of program metric results. The auditor shall also provide an opinion as to the usefulness of Enbridge's market transformation metrics as indicators of success in market transformation and, where applicable, propose alternatives that may be better indicators to use in the future.
- In accordance with OEB direction, Enbridge has retained independent third party engineering consultants to undertake a detailed review of the savings estimates for Industrial and Commercial custom projects. The auditor should review the final reports from these consultants and provide an opinion as to the quality of their review and the consultant's adherence to the terms of reference. The auditor should also provide an opinion on the reliability and reasonableness of the error ratio (and/or realization rate) when applied to a larger population of custom projects.
- Review other studies conducted in support of the DSM Annual Report.
- Identify any assumptions underlying Enbridge's DSM program design strategy, and TRC calculations, that should be modified prospectively, based on the auditor's experience, the results of the audit, and knowledge of other studies or data. Propose the amounts of those modified assumptions.
- Identify opportunities to enhance the assumptions used to calculate the SSM and LRAM that should be addressed in future evaluation work.
- Work with the EAC and Enbridge to resolve any relevant issues prior to completion of the audit.
- Work with firms contracted to review custom projects and provide guidance to these firms and Enbridge to ensure the final reports from these firms meet the needs of the audit.
- Review methodology and calculation used to calculate 2010 TRC target. Ensure methodology used is in line with Board approved guidelines and decisions. Recommend 2011 TRC Target.
- Any other matters considered by the auditor to be relevant to an assessment of Enbridge's DSMVA, LRAM and SSM claims.

Audit Resources

To assist the Auditor in conducting the audit, all relevant Company documentation will be made available to the Auditor for review. The Company is

committed to providing the necessary data and tools the Auditor deems reasonably necessary in order to meet the ultimate goal of the audit. The list below provides examples of the resources that can be made available to the Auditor, but the list should not be considered as necessarily complete or exhaustive:

Access to the Company's program tracking system and documentation of program participants;

Access to the Company's cost-effectiveness screening spreadsheet tool;

Access to all regulatory decisions and agreements which outline the requirements for DSM evaluation and the independent audit;

Access to all regulatory decisions and guidelines that outline the DSMVA, LRAM and SSM calculations and procedures;

Access to comments provided by DSM Consultative members on the 2010 DSM Annual Report;

Access to all relevant evaluation and market research conducted by the Company relating to or informing the results for 2010 including a third party engineering review of a sample of custom projects in business markets, and including any research carried out after 2010, whether final or in draft form;

Access to all previous audit reports;

Enbridge's DSM and Program Evaluation department staff time; and

Communication as required by the Auditor with the EAC.

REPORTING STRUCTURE

The Auditor will be under contract with Enbridge. Pursuant to the requirements established by the Board, a group of stakeholder representatives has been selected by the interveners to act in an advisory role to the auditor and Enbridge during this process. This group is defined as the "EAC" below.

Decision Issue 9.4, page 17 and 18

> …the EAC (Evaluation Audit Committee) will continue to have an advisory role in …
> - Selection of the independent auditor to audit the Evaluation Report and determine the scope of the audit. The EAC will ensure that all comments on the Evaluation Report from the Consultative are reviewed by the auditor.
> - The EAC will be responsible for meeting the reporting guidelines of the Board (found at Section 2.1.12 of the Natural Gas Reporting & Record Keeping Requirements Rule for Gas Utilities). The EAC will provide a final report within 10 weeks from the later of, the receipt of the Evaluation Report and supporting

> evaluation studies from the Utility, or the hiring of the auditor. Recommendations of the EAC with respect to DSMVA, LRAM and SSM clearances shall be included in the EAC's final report. The EAC shall not consider any further information subsequent to the Board's filing deadline each year.

The EAC consists of a Company representative and three stakeholders elected from the DSM Consultative Group. The DSM Consultative Group is a multi-stakeholder body which meets from time to time to discuss and review the Company's DSM activities.

In keeping with the guidelines above, the auditor will be selected by the Company in consultation with the EAC.

The EAC will also help to ensure that the process enables the Company to file the completed audit and recommended DSMVA, LRAM and SSM claims by June 30th as required by the OEB Directive.

The start-up meeting with the Auditor will be held with all members of the EAC to ensure a consistent understanding among all parties of the scope and expectations of the independent audit. Additional meetings between all Committee members and the Auditor will be arranged for group discussion and progress reporting. Meetings will be held at Enbridge offices or through conference calls as appropriate.

The Company may review preliminary drafts of the Audit Report to resolve matters of clarification, prior to review by the EAC. If any member of the EAC seeks to review drafts of the Audit Report from time to time, the auditor, subject to approval by the Company, will be required to provide those drafts to the EAC. In keeping with the independence of the auditor, neither the Company nor any members of the EAC will seek to influence the Audit Report in any way, other than by providing factual information and asking questions to clarify the intent of the report. The independent auditor will present their Draft Report to the Company and the Committee for review and possible revisions before it is finalized.

SCHEDULE

Following the Board Directive of December 2004, the independent audit of DSM results is to be completed and a recommendation filed with the Board by the last day of the sixth month after the financial year end.

Due to the importance to meet these Board imposed deadlines, the Auditor will be contractually bound to meet the deadlines outlined in their proposal. If due to the Auditor's negligence, the Auditor has not provided Enbridge with the deliverables, Enbridge may, in its sole discretion and after consulting with the EAC, deduct 10% of the amount payable to the Auditor for each week beyond the deliverable dates specified herein that the Auditor has not provided Enbridge with the deliverables.

The schedule below meets this requirement.

RFP issued	Friday , December 10, 2010
Proposals due	Friday , January 7, 2011
Contract awarded	Wednesday, January 19, 2011
Contract signed	Wednesday, February 2, 2011
Auditor Review of Custom Project Engineering Reviews	Tuesday, January 25, 2011
Auditor Meeting At Enbridge Offices	Wednesday, February 2, 2011
2010 DSM Annual Report circulated	Friday, April 01, 2011
Comments on DSM Annual Report from EAC and Consultative	Friday, April 15, 2011
Draft Work Plan	Friday, April 08, 2011
Meeting with EAC to review scope and work plan	Thursday, April 14, 2011
Final Detailed Work Plan	Friday, April 15, 2011
Progress meetings with EAC	Weekly
Draft Audit Report #1 submitted	Friday, May 27, 2011
Review Meeting with EAC	Wednesday, June 01, 2011
Review Meeting with EAC	Thursday June 02, 2011
Draft Audit Report #2 submitted	Friday, June 03, 2011
Review Meeting with EAC	Wednesday, June 08, 2011
Final Audit Report submitted	Friday, June 10, 2011

CRITERIA

Proposals will be evaluated on the following criteria:

- Experience and qualifications of the firm: direct experience in evaluation or audit of utility DSM programs,
- Methodology proposed,
- Demonstrated understanding of Enbridge rules and requirements,
- Proposed schedule and ability to meet timelines, and
- Price proposal.

PROPOSAL REQUIREMENTS

The proposal should include the following elements:

- A description of the methodology and approach to be used in the audit,
- A list of proposed tasks,
- Suitable information for Enbridge to determine the qualifications of individuals and their roles in the project,
- Confirmation that the proponent will be able to meet the Enbridge contractor insurance and WSIB requirements as described in the attachment, and
- Confirmation of ability to meet timelines or specific reasons why a deviation from the schedule is required.

The cost proposal should include:

- Breakout of costs by task and roles,
- Assumptions regarding the number of meetings at the Enbridge offices and the associated costs, and
- Hourly rates for additional related work such as appearing as an expert witness at the OEB.

Proposals are due no later than 4:00 PM on January 7, 2011. Proposals may be submitted in hard copy or via email.

Questions of clarification should be directed to Corrie Morton at the coordinates indicated below. Responses to questions of clarification will be circulated to all respondents.

All correspondence should be sent to the attention of:

Corrie Morton, DSM Research and Evaluation
Phone: 416-495-6467 Email: corrie.morton@enbridge.com

Enbridge contract requirements regarding Insurance and WSIB

Insurance

Save and except where Enbridge specifies otherwise in writing, the Consultant shall at its own expense maintain and keep in full force and effect during the Term hereof and for a period of two (2) years following the expiry of the Term or other termination of this Agreement:

(a) worker's compensation insurance as required under applicable laws;

(b) commercial general liability insurance having a minimum inclusive coverage limit, including personal injury and property damage, of at least Two Million Dollars ($2,000,000). Enbridge must be added as an additional named insured in the insurance policy, which should be extended to cover contractual liability, products/completed operations liability, owners'/ contractors' protective liability and must also contain a cross liability clause;

(c) automobile liability insurance on all vehicles used in connection with this Agreement and such insurance shall have a limit of at least Two Million Dollars ($2,000,000) in respect of bodily injury (including passenger hazard) and property damage inclusive of any one accident;

(d) non-owned automobile liability insurance and such insurance shall have a limit of at least Two Million Dollars ($2,000,000) in respect of bodily injury (including passenger hazard) and property damage, inclusive in any one accident;

(e) professional liability or errors and omissions insurance and such insurance shall have a limit of at least Two Million Dollars ($2,000,000); and

(f) such other insurance as Enbridge may in its discretion determine to be necessary.

WSIB

The Consultant agrees to comply with the Occupational Health and Safety Act (Ontario) and the Workplace Safety and Insurance Act (Ontario) and with all other prevailing federal, provincial and municipal laws and regulations or any other laws or regulations in force in any jurisdiction where the consulting services are performed (the "Laws") and which are applicable to the Consultant, its subcontractors and the consulting services provided hereunder, and the Consultant shall familiarize itself and procure all required permits and licenses and pay all charges and fees necessary or incidental to the due and lawful prosecution of this Agreement and shall indemnify and save harmless Enbridge, its directors, officers, agents and employees thereof against any claim or liability from or based on the violation of any Laws, whether by the Consultant, its officers, employees, subcontractors, representatives or agents

APPENDIX B

Audit Final Work Plan

Independent Audit of Enbridge Gas Distribution 2010 DSM Annual Report

Auditor Work Plan

submitted to:
Enbridge Gas Distribution
April 25, 2011
submitted by:
Nexant, Inc.
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Contents

Auditor Work Plan

The objective of the audit is to provide an independent opinion as to the reasonableness of the Company's claims regarding DSMVA, LRAM & SSM.

Task 1 Review of Custom Project Engineering Reviews

Nexant will conduct a thorough review of the final reports on Enbridge's Industrial and Commercial custom projects. Nexant will provide an opinion as to the quality of the review and on the reliability and reasonableness of the error ratio (and/or realization rate) when applied to a larger population of custom projects. We will communicate with those firms contracted to collect necessary project information to provide this opinion. Enbridge will coordinate communication between Nexant and the firms.

Task 2 Kick-Off Meeting

The project kick-off meeting was conducted on February 9, 2011, with follow-up meetings at the Enbridge offices on February 10.

Task 3 Prepare Draft and Final Work Plan

The draft Work Plan is provided herein. The Final Work Plan will be provided one week after the 2010 DSM Annual Report is available to Nexant, or April 8, 2011, whichever is later.

Task 4 Audit 2010 Annual DSM Report & Report Deliverables

The objective of this Task is to ensure correct calculations using reasonable assumptions, based on data gathered and recorded using reasonable methods and accurate in all material respects and applicable to the 2010 DSM programs. This task includes review of supporting deliverables including the 2009 and 2010 Annual DSM Reports, EAC and other stakeholder comments on 2010 Annual DSM Report, and the 2009 EAC DSM Audit Summary Report.

Nexant will prioritize programs by relative impacts in portfolio (largest programs being of most importance) as well as participation trajectory (programs which are growing being more important than those being phased out).

Through initial review of background documentation, feedback received during the kick-off meeting with Enbridge and EAC, and discussions during the Nexant's Enbridge site visit, initial focus areas have been established. The following topics have been highlighted for consideration during the audit:

- Low-flow showerhead programs
  - Builders' Energy-Savings Kit Verification Research Report results
  - Low Income TAPS Partners Program Research Report results
  - TAPS Partners Program Research Report results

- Showerhead Verification among Rental Buildings Research Report results

- Measure life assumptions

- Use of "bag test" for flow rate

- Alternatives to "bag test" for flow rate

- Use of quasi-prescriptive approach

- If Company is using an approach wherein the baseline showerhead flow rate is a weighted average of the high- and medium-flow showerhead flow rates, assess implications for TRC. Consider if weighted average baseline flow rate is reasonable.

- Consider if Company's approach to baseline flow rate assumption is valid in the context of the results of previous showerhead research conducted by Company.

 Pre-rinse spray nozzle input assumptions

- Recommend if any changes to current input assumptions are justified based on available data

 Use of quasi-prescriptive approach versus prescriptive approach

- Provide opinion on current industry best practices

- If identified, flag prescriptive measures which should be considered by Company for a quasi-prescriptive approach

 Boiler Efficiency Study (if available before completion of Audit)

 Steam Trap Study (if available before completion of Audit)

 Energy Recovery Ventilators/Heat Recovery Ventilators

- Provide opinion if more reliable data is available on balance points

 Portfolio net-to-gross assumptions

- Applicability of Custom Program net-to-gross assumptions substantiated by the 2008 Sumit Blue study to the current Custom program design

- Appropriateness of net-to-gross values used for SSM calculation

- Appropriateness of net-to-gross values used for LRAM calculation (best available information)

 CFL distribution rates for ESK and TAPS Programs (confirm that CFL distribution rates are correctly based on participant survey results)

 Accuracy of participation level reporting, with a focus on prescriptive measures

 Appropriateness of Company's internal protocol for determining if measures/projects are analyzed as equipment advancement or replacement

Additionally, Nexant will provide insight into program design and implementation issues which, while not of immediate significance to the 2010 Annual Report, may affect the Company's programs in the long term. These questions will be examined to the extent possible within the audit timeline and cost requirements:

 Are research funds being focused in the most appropriate areas?

 How can participation levels in Prescriptive programs be increased?

 Should the quality control process for Custom projects be changed?

 What best practices in program design can be implemented to enhance Enbridge's programs?

Task 5 Verify Claimed Savings and Associated Calculations

Task 5 will be concurrent with Task 4. In order to verify the accuracy of the 2010 Draft DSM Annual Report's calculation of TRC and associated metrics, we will complete a detailed review of the following:

 All DSM evaluation and research conducted during 2010 (see Tasks 1 and 4 above)

 EGD's reporting on program metric results used to support the Market Transformation incentive

 Program tracking methods and results

 Participation results

 Individual measures (both prescriptive and custom) assumptions and results (savings, measure life, free-ridership, costs)

 Methodology and assumptions used to calculate LRAM, DSMVA, MT incentive, and SSM amounts

- Program costs (Nexant will check program costs used in DSMVA calculation against those reported in the program TRC calculation spreadsheet)

- Compliance with the requirements of the Board approved methodology

- Inputs to, and results from, cost-effectiveness models used to calculate net benefits

Task 6 Prepare Draft Audit Report

The Audit Report will outline the principles of the Audit and the Audit processes and methods. The report will document all findings and make recommendations for additional research, evaluation, and/or program tracking activities that may be conducted in the future to reduce uncertainties identified and not resolved as a result of the audit. Additionally, we understand that Enbridge and the OEB may request a recommendation from Nexant to help prioritize program measures to be reviewed in 2011.

Task 7 Prepare Final Audit Report

Based on the input received during presentation of the first two report drafts, Nexant will present a final Audit Report per the project schedule in Table 1.

Current Project Schedule

Table 1 Project Schedule as of April 21

Task	Start	End	Milestone
1 Custom Project Engineering Reviews	25-Jan-11	13-May-11	
2 Project Kick-Off Meeting (Enbridge Office)		Kick-Off: 9-Feb-11	
3 Prepare Draft Work Plan	1-Mar-11	8-Apr-11	Draft Work Plan Available: 1-Apr-11
Review Draft Work Plan with EAC		Meeting: 7-Apr-11	
2010 DSM Annual Report Circulated		Annual Report Available: 14-Apr-11	
Comments on Annual Report, EAC and Consultative		Comments Available: 21-Apr-11	
Finalize Detailed Work Plan	7-Apr-11	18-Apr-11	Final Work Plan Available: 25-Apr-11
4 Review Available Supporting Documentation	1-Mar-11	27-May-11	
Audit 2010 Annual DSM Report and Deliverables	1-Apr-11	27-May-11	
5 Verify Claimed Savings and Calculations	1-Apr-11	27-May-11	
6 Discuss Initial Audit Findings with the EAC		Weekly Meetings begin: 21-Apr-11	
Generate and Deliver Draft Audit Report #1	1-Apr-11	27-May-11	Draft Audit Report Available: 27-May-11
Review Draft #1 with the EAC	1-Jun-11	2-Jun-11	1st Meeting: 1-Jun-11 2nd Meeting: 2-Jun-11
Revise and Deliver Draft Audit Report #2	28-May-11	3-Jun-11	Draft Audit Report Available: 3-Jun-11
Review Draft #2 with the EAC		Meeting: 15-Jun-11	
7 Revise and Deliver Final Audit Report	15-Jun-11	17-Jun-11	Final Audit Report:17-Jun-11

ALLOCATION TO DSM VARIANCE ACCOUNTS

1. Below is a chart indicating the rate allocation to the DSM Variance Accounts.

2010 Rate Allocation by Account

Rate Class	SSM	Market Transformation	LRAM	DSMVA	TOTAL
Rate 1	1,011,384	282,484	~~-140,352~~	(445,024)	848,844
Rate 6	1,682,443	0	~~-132,064~~	81,712	1,764,155
Rate 100	86,297	0	0	0	86,297
Rate 110	323,567	0	(13,721)	(408,879)	(99,033)
Rate 115	119,160	0	(7,911)	(965,826)	(854,577)
Rate 135	8,500	0	586	50,082	59,168
Rate 145	114,336	0	(12,702)	(882,041)	(780,407)
Rate 170	527,117	0	(9,110)	(147,129)	370,878
Total	$3,872,804	$282,484	($42,858)	(2,717,105)	1,395,325

2. The chart below provides the estimated impact of DSM Clearance on a typical customer's bill.

Estimated Impact of DSM Clearance on a Typical Customer

2010 DSMVA Account Clearing for 2012***				
	Annual Volume for Typical Customer (m3)	Annual Bill for Typical Customer ($)	DSM Amount for Recovery** ($)	Estimated % of Annual Bill
Rate 1	3,064	1,021	1	0.1%
Rate 6	22,606	6,324	9	0.1%
Rate 100	339,188	82,012	1,295	1.6%
Rate 110	598,568	127,576	(105)	-0.1%
Rate 115	4,471,609	867,683	(7,995)	-0.9%
Rate 135	598,567	112,092	485	0.4%
Rate 145	598,568	121,545	(2,003)	-1.7%
Rate 170	9,976,120	1,749,267	5,995	0.3%

* *Annual bills based on January 1, 2012 rates.*

** *DSM amounts for Recovery do not include interest amounts that will apply at the time* of clearing.

2011 AVOIDED COSTS

1. 2011 AVOIDED COSTS

The purpose of this information is to update commodity costs for 2011, in accordance with the Board Decision in EB-2006-0021. The Board Decision stated: "The avoided costs will be submitted for review as part of the multi-year plan filing and should be in place for the duration of the plan. The commodity portion of the avoided costs will be updated annually".[1]

1.1 AVOIDED GAS COSTS

The commodity price forecast has been updated for the four load types: water heating, space heating, industrial process, and water and space heating combination as shown in Table 9. This has resulted in a higher unit avoided gas cost, in comparison with the forecast provided in EB-2006-2001. Forecast values beyond those shown for 2019 are adjusted for a nominal growth rate of 2%.

1.2 AVOIDED ELECTRICITY COSTS

Avoided electricity costs have been updated using the same methodology as for previous DSM plans. The avoided electricity costs are based on the wholesale price of electricity as reported in the Annual Report of the Independent Electricity System Operator ("IESO"). The avoided electricity costs represent the wholesale cost of electricity, i.e., the cost of the commodity price plus wholesale market services, transmission and debt retirement charges which are passed from the IESO to the Local Distribution Utilities. The values represent the latest full year of data available from the IESO. Forecast values are adjusted for the Consumer Price Index.

[1] EB-2006-0021. Decision With Reasons. Ontario Energy Board. August 25, 2006. Page 38.

1.3 AVOIDED WATER COSTS

The avoided water costs are based on the wholesale cost of water which includes the cost of water and sewage treatment, but not the cost of water distribution and sewage collection.

A weighted average cost of water was developed by applying the number of customers in each region to the water costs in each region. For subsequent years the values are adjusted for the Consumer Price Index.

Table 1:

2011 Avoided Cost Summary

Year		Water Heating		Space Heating		Space & Water Heating		Industrial	
		Avoided Costs	NPV	Avoided Costs	NPV	Avoided Costs	NPV	Avoided Costs	NPV
1	2011	$ 0.1762	$0.18	$ 0.1945	$0.19	$ 0.1912	$0.19	$ 0.1785	$0.18
2	2012	$ 0.1561	$0.32	$ 0.1707	$0.35	$ 0.1679	$0.35	$ 0.1581	$0.32
3	2013	$ 0.2056	$0.49	$ 0.2240	$0.54	$ 0.2206	$0.53	$ 0.2079	$0.50
4	2014	$ 0.2170	$0.66	$ 0.2393	$0.72	$ 0.2354	$0.71	$ 0.2195	$0.67
5	2015	$ 0.2286	$0.82	$ 0.2520	$0.90	$ 0.2478	$0.89	$ 0.2311	$0.83
6	2016	$ 0.2394	$0.97	$ 0.2639	$1.07	$ 0.2595	$1.05	$ 0.2420	$0.99
7	2017	$ 0.2363	$1.11	$ 0.2605	$1.23	$ 0.2561	$1.21	$ 0.2389	$1.13
8	2018	$ 0.2241	$1.24	$ 0.2470	$1.36	$ 0.2429	$1.34	$ 0.2266	$1.25
9	2019	$ 0.2141	$1.34	$ 0.2360	$1.48	$ 0.2321	$1.45	$ 0.2165	$1.36
10	2020	$ 0.2184	$1.44	$ 0.2408	$1.59	$ 0.2368	$1.56	$ 0.2208	$1.46
11	2021	$ 0.2228	$1.53	$ 0.2456	$1.69	$ 0.2415	$1.66	$ 0.2252	$1.55
12	2022	$ 0.2272	$1.62	$ 0.2505	$1.78	$ 0.2463	$1.75	$ 0.2297	$1.64
13	2023	$ 0.2318	$1.70	$ 0.2555	$1.87	$ 0.2512	$1.84	$ 0.2343	$1.72
14	2024	$ 0.2364	$1.78	$ 0.2606	$1.96	$ 0.2563	$1.92	$ 0.2390	$1.80
15	2025	$ 0.2411	$1.85	$ 0.2658	$2.04	$ 0.2614	$2.00	$ 0.2438	$1.87
16	2026	$ 0.2460	$1.92	$ 0.2711	$2.11	$ 0.2666	$2.07	$ 0.2487	$1.94
17	2027	$ 0.2509	$1.98	$ 0.2766	$2.18	$ 0.2720	$2.14	$ 0.2537	$2.00
18	2028	$ 0.2559	$2.04	$ 0.2821	$2.24	$ 0.2774	$2.20	$ 0.2587	$2.06
19	2029	$ 0.2610	$2.09	$ 0.2877	$2.30	$ 0.2829	$2.26	$ 0.2639	$2.11
20	2030	$ 0.2662	$2.14	$ 0.2935	$2.36	$ 0.2886	$2.32	$ 0.2692	$2.16
21	2031	$ 0.2716	$2.19	$ 0.2994	$2.41	$ 0.2944	$2.37	$ 0.2746	$2.21
22	2032	$ 0.2770	$2.23	$ 0.3053	$2.46	$ 0.3003	$2.42	$ 0.2801	$2.26
23	2033	$ 0.2825	$2.27	$ 0.3115	$2.50	$ 0.3063	$2.46	$ 0.2857	$2.30
24	2034	$ 0.2882	$2.31	$ 0.3177	$2.54	$ 0.3124	$2.50	$ 0.2914	$2.34
25	2035	$ 0.2939	$2.35	$ 0.3240	$2.58	$ 0.3186	$2.54	$ 0.2972	$2.37
26	2036	$ 0.2998	$2.38	$ 0.3305	$2.62	$ 0.3250	$2.58	$ 0.3031	$2.41
27	2037	$ 0.3058	$2.41	$ 0.3371	$2.66	$ 0.3315	$2.61	$ 0.3092	$2.44
28	2038	$ 0.3119	$2.44	$ 0.3439	$2.69	$ 0.3381	$2.64	$ 0.3154	$2.47
29	2039	$ 0.3182	$2.47	$ 0.3508	$2.72	$ 0.3449	$2.67	$ 0.3217	$2.50
30	2040	$ 0.3245	$2.49	$ 0.3578	$2.75	$ 0.3518	$2.70	$ 0.3281	$2.52
Discount Rate: 9.14%									

Year		Ont. CPI	Electricity		Water	
			¢ / Kwh	NPV	Water Rates $ / 1000 litres	NPV
1	2011	2.41	$ 0.0861	$0.09	$ 1.7220	$1.72
2	2012	2.06	$ 0.0879	$0.17	$ 1.7574	$3.33
3	2013	2.26	$ 0.0899	$0.24	$ 1.7971	$4.84
4	2014	2.10	$ 0.0917	$0.31	$ 1.8349	$6.25
5	2015	2.08	$ 0.0937	$0.38	$ 1.8731	$7.57
6	2016	2.01	$ 0.0955	$0.44	$ 1.9108	$8.81
7	2017	1.93	$ 0.0974	$0.50	$ 1.9477	$9.96
8	2018	1.97	$ 0.0993	$0.55	$ 1.9860	$11.04
9	2019	2.04	$ 0.1013	$0.60	$ 2.0265	$12.04
10	2020	2.11	$ 0.1035	$0.65	$ 2.0693	$12.98
11	2021	2.09	$ 0.1056	$0.69	$ 2.1125	$13.87
12	2022	2.10	$ 0.1078	$0.73	$ 2.1570	$14.69
13	2023	2.12	$ 0.1101	$0.77	$ 2.2026	$15.46
14	2024	2.15	$ 0.1125	$0.81	$ 2.2499	$16.18
15	2025	2.10	$ 0.1149	$0.84	$ 2.2971	$16.86
16	2026	2.19	$ 0.1174	$0.87	$ 2.3473	$17.49
17	2027	2.21	$ 0.1200	$0.90	$ 2.3991	$18.08
18	2028	2.25	$ 0.1227	$0.93	$ 2.4532	$18.64
19	2029	2.19	$ 0.1254	$0.96	$ 2.5070	$19.16
20	2030	2.22	$ 0.1281	$0.98	$ 2.5625	$19.64
21	2031	2.00	$ 0.1307	$1.00	$ 2.6138	$20.10
22	2032	2.00	$ 0.1333	$1.03	$ 2.6661	$20.52
23	2033	2.00	$ 0.1360	$1.05	$ 2.7194	$20.92
24	2034	2.00	$ 0.1387	$1.06	$ 2.7738	$21.29
25	2035	2.00	$ 0.1415	$1.08	$ 2.8293	$21.64
26	2036	2.00	$ 0.1443	$1.10	$ 2.8858	$21.96
27	2037	2.00	$ 0.1472	$1.11	$ 2.9436	$22.26
28	2038	2.00	$ 0.1501	$1.13	$ 3.0024	$22.55
29	2039	2.00	$ 0.1531	$1.14	$ 3.0625	$22.81
30	2040	2.00	$ 0.1562	$1.15	$ 3.1237	$23.06
Discount Rate: 9.14%						