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May 26, 2009

VIA COURIER

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

Re:

Enbridge Gas Distribution Inc. ("Enbridge") EB-2009-0103 2009 DSM Input Assumptions

In accordance with the Ontario Energy Board's (the "Board") Notice of Application and Hearing and Procedural Order No.1, enclosed please find the submission of Enbridge.

This submission has been filed through the Board's RESS, two copies are being delivered by courier and it will be available on the Enbridge website at www.enbridge.com/ratecase.

If you have any questions, please contact the undersigned.

Yours truly,

Bonnie Jean Adams Regulatory Coordinator

cc: EB-2009-0103 Interest Parties (via email)

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IN THE MATTER OF the *Ontario Energy Board Act 1998,* S.O. 1998, c. 15, (Schedule B);

AND IN THE MATTER OF an application by Enbridge Gas Distribution Inc. seeking approval of certain demand side management input assumptions for the 2009 program year.

REPLY SUBMISSION OF ENBRIDGE GAS DISTRIBUTION INC.

Introduction

1. Enbridge Gas Distribution Inc. ("EGDI") appreciates the opportunity to provide the following response to the written submissions filed in respect of the input assumptions EGDI proposes for the 2009 DSM program year. EGDI notes that the primary focus of Intervenors is on process rather than substantive issues. The following submissions are in response and provide information to address any specific questions or concerns raised.

Context of EB-2009-0103 Proceeding

2. On February 11, 2009, the Board issued a letter and the draft report of Navigant Consulting Inc. which considered DSM input assumptions for 2010 (EB-2008-0346). The input assumption portion of that process just recently concluded with a Board Decision on April 29, 2009. On April 1, 2009, EGDI filed with the Board its updated Input Assumptions and Market Transformation Programs for the 2009 DSM Plan. On April 14, 2009, the Board issued a letter requiring the Utilities to file a one-year plan for 2010 under the DSM framework approved in EB-2006-0021 (EB-2009-0154). A short summary of relevant timelines is set out on the next page.

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Date	EB-2009-0103	EB 2008-0346 and EB 2009-0154
February 11		Draft Navigant Report on 2010 Assumptions released by the Board
March 13		Utility and intervenor comments on Draft Assumptions for 2010 submitted as per Board schedule
March 30	Utilities circulate full 2009 assumption package and back-up substantiation to EAC	
April 1	Utilities submitted 2009 Assumption Update to OEB	
April 14		Board letter released requiring one-year plan for 2010 program year
April 29		Board Decision released related to input assumptions for 2010
May 4	Procedural Order released by OEB with circulation to interested parties for 2009 input assumption proceeding	
May 19	Intervenor Comments due to Board	
May 26	EGDI Receives Final Intervenor Submission	
May 26	Utility response due to Board	
End of May		EGDI to file 2010 DSM Plan

3. EGDI has been operating within the rules outlined in the Board's EB-2006-0021 (DSM Generic Hearing) Decision and is not requesting that the Board re-open this Decision. Similar to past assumption updates, EGDI's April 1, 2009 filing was done based on the best available information at that time. This reflected information from the last completed audit (2007 Audit filed with the OEB July 31, 2008), comments received from any parties, including the Evaluation and Audit Committee ("EAC"), and any updated studies or information that was considered "best available"

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information" at the time of the April 1, 2009 filing. This included a detailed review of intervenor recommendations for similar input assumptions made in March 2009 as part of EB-2008-0346. Following the April 1, 2009 filing date, EGDI has been amenable to receive additional advice or information.

- 4. A full set of the proposed 2009 assumptions and backup substantiation was provided to the EAC on March 30, 2009. This provided over a month's time for review and comment prior to a Procedural Order being generated by the Board. Many of the input assumptions are the same as or similar to those in previous proceedings and audit reviews that included input and agreement from the EAC. EGDI was also aware that one of the EAC members, Mr. Neme on behalf of GEC, was contracted on behalf of a group of intervenors to conduct a detailed review of many of the assumptions in the similar and parallel proceeding (EB-2008-0346). EGDI therefore has difficulty understanding GEC's recent criticisms about its inability to review and comment.
- 5. Interested parties have had an opportunity to provide Board Staff with comments and information prior to the draft Navigant Report being issued. They then had a further opportunity to comment in respect of the inputs and assumptions set out in the Navigant Report, and they have had seven weeks to provide comments to the Board in respect of EGDI's proposed 2009 input assumptions.
- 6. The fact of the matter is that there have been a number of concurrent proceedings, and it should come as no surprise that EGDI's April 1, 2009 assumption filing did not incorporate relevant input assumptions approved by the Board in its April 29, 2009 Decision in respect of 2010. These are the factors which underlie the current situation, not any intentional conduct on the part of the Utilities.

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Summary of Recommended Approach for 2009 Program Year

7. EGDI proposes that where specific input assumptions from the Navigant study approved by the Board in EB-2008-0346 are relevant to EGDI's 2009 DSM program year, that EGDI adopt these assumptions as the best available information, subject to necessary and appropriate additional information or corrections to reflect the realities of 2009. There are, for example, some programs and measures that will exist in 2009 that will not continue in 2010, and vice versa. Program specific information for 2009 may not be applicable to 2010. Accordingly, it is submitted that it is inappropriate to simply adopt the input assumptions approved for 2010 "as is" for the purposes of 2009.

- 8. Briefly stated, EGDI proposes that the assumptions approved by the Board in EB-2008-0346, where relevant for 2009, be acknowledged as the "best available information" and that such further changes and additional information required for 2009, as noted below, be accepted by the Board.
 - (a) The input assumptions based on best available information, as attached in Appendix A should be approved. This table is based on the information submitted by EGDI in its April 1, 2009 submission which has been updated (as indicated by cells highlighted in blue) to align with the 2010 input assumptions approved by the Board in EB-2008-0346 where they are applicable to 2009. All cells that are not highlighted indicate assumptions related to the 2009 DSM Plan that are not referenced in the EB-2008-0346 decision, either because they are programs that are not proposed for 2010, or because it is based on the 2009 program design. Cells highlighted in yellow indicate values that are specific to 2009 based on the incremental costs known for 2009.
 - (b) EGDI notes that one relevant technology assumption (residential and low income programmable thermostats) referenced in the Navigant Report appears to contain a clerical error. The savings values for natural gas and electricity are highlighted in green in Appendix A. The values in the February 6, 2009 Navigant report are based on load research, which EGDI agrees is the best available information. However, in the April 16th Navigant Report it appears that the savings values represent duplicate adjustments for behavioural factors. The value shown in Appendix A reflects the Navigant billing analysis value, without double-counting the behavioural adjustment. EGDI submits this amount should be used.

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(c) The Custom Resource Acquisition Measure life assumptions as outlined in document 2 of EGDI's April 1, 2009 submission should be accepted. EGDI understands that there have not been any concerns raised about these assumptions.

(d) The 2009 Market Transformation programs as outlined in Document 4 of EGDI's April 1, 2009 submission should be accepted. EGDI understands that there have not been any concerns raised about these programs.

EAC Opportunity to Provide Comments/Timing

- 9. In the submission of the 2008 Assumption Update (EB 2008-0384), EGDI indicated that the updated assumption list for 2009 would be filed by the end of first quarter 2009. The EAC accepted and endorsed this timing. Ideally, any updates to input assumptions during the multi-year plan should be approved prior to the start of a program year. Due to the consultation process for the 2007 DSM Audit and 2008 Input Assumptions, EGDI was not in a position to file for 2008 assumptions until late in 2008, which was agreed by both EGDI and the EAC to be later than preferred. Both EGDI and its EAC agreed on the deadline of Q1 2009 to submit updates to 2009 input assumptions.
- 10. It is appropriate to provide a brief high-level list of the opportunities that the EAC have had to review draft assumptions and provide input that relate to those filed for 2009.
 - Past audit process which included detailed discussions of assumptions relevant to 2009 (conducted over many meetings with the Auditor and/or EGDI between spring 2008 and fall 2008).
 - Recent EGDI Consultative meetings held July 29, 2008, November 25, 2008 and April 28, 2009.
 - Advice provided for recent studies including programmable thermostat statistical modeling, and studies by Summit Blue (free ridership, spillover and deemed savings).
 - Detailed discussion and review through GEC (Mr. Neme) of similar assumptions referenced by Navigant in EB-2008-0346.

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- Review of EGDI comments on Navigant assumptions, which were closely aligned with the assumptions in this proceeding.
- March 30, 2009 circulation and request for comments on the 2009 assumptions that were submitted in this proceeding.
- Formal comment process as outlined in EB-2009-0103 Procedural Order.
- 11. EGDI operates under the assumption that if an EAC member or other stakeholder has information they consider relevant to an input assumption, the information will be forwarded to EGDI without the Board first constituting a proceeding to consider input assumption updates. EGDI is prepared to receive and review such information on an ongoing, informal basis. If there is additional information in the possession of any stakeholder, presumably it would have been forwarded to EGDI earlier and would now have been placed on the public record.

Changes to the Generic Decision (EB-2006-0021) Framework

- 12. CME and IGUA have recommended that the Board re-open the EB-2006-0021 Decision and apply retrospective decision making on program assumptions for SSM purposes (i.e., "...best available information at the time of the 2009 audit..."). This would be a significant deviation from past Board decisions that have reviewed this issue and, importantly, is inconsistent with the complete settlement these parties reached as part of the Generic Proceeding (EB-2006-0021). To EGDI's knowledge, all previous Board decisions, including the Generic Decision, have rejected what CME, SEC and IGUA now propose.
- 13. IGUA supported the proposed change on the basis that "...the Utilities are in a period between the current DSM program framework as set by the Generic Decision and the next generation DSM program framework." This is factually incorrect. EGDI's 2009 DSM plan was approved in EB-2006-0021. 2009 is not a transition year. 2009 is part of the current multi-year plan and is subject to the framework approved by the Generic Decision which was the subject of a complete settlement, which CME, SEC and IGUA supported.

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14. In its April 14th, 2009 letter in EB-2008-0346, the Board has ordered the gas Utilities to file a one-year DSM plan for 2010, which does not contemplate any changes to the DSM framework. Specifically, the Board stated that:

"It is expected that the 2010 plans will be filed under the current DSM framework..."

15. In addition, it should be noted that the threshold required to trigger a review of the framework established by the Generic Decision is one of "undue harm". Accordingly, it is incumbent upon CME, SEC and GEC to establish that exceptional circumstances exist which warrant revisiting any aspect of the framework. EGDI submits that the required threshold of exceptional circumstances is even more pertinent and necessary where the party now seeking the change was a signatory to a complete settlement in respect of the framework in the first instance. EGDI states that CME, SEC and GEC are simply attempting to expand the scope of this proceeding beyond what the Board contemplated, and their request should be dismissed.

GEC's Concerns Related to Low Flow Showerheads

16. GEC's May 15, 2009 submission commented on the Board-approved savings value for low flow showerheads. The load research value recommended by Navigant and ultimately approved by the Board is based upon the highest standard of information (i.e., load research), rather than a theoretical value. This approach resolves the previous theoretical problems highlighted in the Summit Blue Report and subsequently highlighted by the most recently completed audit. Each comment provided in the GEC submission is addressed below.

A. Use of recent load research vs. previous theoretical value

17. The concerns expressed in respect of the use of theoretical values prompted the move to the more research intensive load research approach. EGDI believed that the previous values significantly underestimated the benefits to ratepayers, but used

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these for 2008, since load research was not possible in the timeframe provided. The problems were highlighted by the authors of the previous study, as follows:

Several aspects to savings from showerhead retrofits related both to baseline showering behavior and to potential changes in behaviour after retrofit— contribute to uncertainty in savings from showerhead replacement (Table E-1 -Recommended annual savings values are shown in a column labeled as such). Recognizing that some parameters have not been well studied in Ontario (or elsewhere), we built an uncertainty analysis into our methodology. Results of this analysis suggest about 50% uncertainty in savings estimates, owing primarily to uncertainty in several key inputs, including (but not limited to) the degree to which shower flow is throttled by users. Excluding adjustments related both to baseline showering behaviour and to potential changes in behaviour after retrofit, the uncertainty in the estimates drops from 50% to between 20% and 30%. Field research in the Enbridge and Union Gas service territories is recommended on the factors shown in table E-1 to provide better estimates of these parameters (or direct estimates of retrofit impacts) in order to mitigate this uncertainty."1

18. In addition, the most recently completed DSM audit did not recommend use of the previous theoretical values in the manner GEC is suggesting. The external third party auditor recommended:

"Develop savings values for showerheads using a sample of metered Enbridge customers. Meter tests for showers. Enbridge should conduct a study on low-flow showerheads that involves metering a randomly selected sample of participants before and after the new showerhead is installed."²

¹ "Resource Savings in Selected Residential DSM Prescriptive Programs", Summit Blue Consulting LLC. June 4, 2008. Page 1.

² "Audit Report on Enbridge Gas Distribution 2007 DSM Evaluation". EcoNorthwest. June 24, 2008. Page 22.

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B. Sampling of Load Research Data

19. The homes that took part in the showerhead study were a sample from the franchise-wide sample that is used for ongoing load research work. It is a stratified random sample from all areas of EGD's franchise area and is representative of the population base. Every house in the sample that did not have low-flow showerheads and for which we had a full year of clean water heating load data was included in the study. Water heating consumption load was isolated for purposes of data collection. Using water heating specific monitoring data from this existing sample of customers was the most cost-effective and least intrusive method for collecting data for the load research analysis.

C. Statistical Analysis

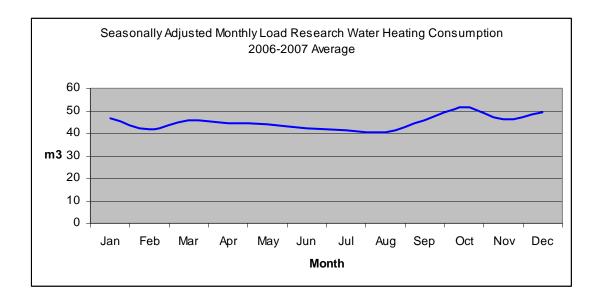
20. It was recognized that members of the EAC are not statisticians. Accordingly, as part of the discussions with EAC members about this research, it was recommended that the statistical work be conducted by a third party firm. EGDI agreed with this EAC recommendation and proceeded on this basis. Statistical analysis of the load research data was conducted by an independent third party expert firm SAS Institute (Canada) Inc. The primary modeler of the load research is a statistical expert that led the expansion of SAS expertise and offerings in data mining, statistics and time series analysis into the Canadian market.

D. Seasonality

21. Seasonality factors are used by the Company in the weather normalization process necessary for budgeting and planning. The seasonality factors are calculated using the ratio of each month's consumption relative to the average of summer consumption (July and August) and the factors are used to isolate baseload. As per standard practice, the load research water heating data was seasonally adjusted using the aforementioned seasonality factors.

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22. For illustration purposes, a two-year average for seasonality factors is shown below. This shows that there are seasonal influences on domestic hot water use in a residential home. This trend is similar on an annual basis.



23. GEC suggested that there appeared to be a downward trend at the completion of monitoring (around the August-September timeframe) and that "this is the most troubling aspect of the report as it raises questions about the reasonableness of the conclusion that savings were quite substantial." Although each individual year may vary slightly, it can be seen from the typical pattern above that the opposite occurs. In fact, around the August-September timeframe the seasonality pattern reverses from a decline to an incline. If seasonality factors had not been applied to the model, the savings would have been greater than what is stated in the SAS load research report.

E. GEC Intuition

24. GEC states that it is intuitive that "if both sets of households were to switch to the same low flow showerhead, one would expect the post-installation graphic lines to merge together." However, the fact that the post-installation consumption is not identical in both groups after installation is completely consistent with expected behavior. Since people who have lower flow showerheads in their home may have

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been involved in that decision, it is expected that as a group they may also exhibit

more behavior that will lower consumption, such as taking shorter showers than

those who were content to keep the highest flow showerheads. A significant benefit

to load research is to capture hard to predict behavioral aspects. If customer

behaviors were predictable in the manner GEC suggest, it would have removed the

large uncertainties in the previous theoretical calculations, thereby making it

unnecessary to conduct load research.

Conclusion

25. In summary, EGDI submits that the load research values proposed by Navigant and

approved by the Board are far superior to any previous theoretical calculations.

EGDI recommends adoption of these values in 2009.

26. EGDI requests that the Board-approved Navigant 2010 Input Assumptions be

accepted, subject to the several required changes and additions noted.

27. EGDI respectfully requests that the Board issues its decision in this proceeding as

quickly as possible so as to assist EGDI in respect of its 2008 DSM audit filing and

to eliminate any uncertainty about 2009 input assumptions for the purposes of the

programs which EGDI is currently undertaking.

All of which is respectfully submitted.

Dated: May 26, 2009.

ENBRIDGE GAS DISTRIBUTION INC.

Per: Norm Ryckman

Director, Regulatory Affairs

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	2009 DSM Input Assumptions - Including Navigant	- Including Navigant									
		indicates assumptions as per EB 2008-0346 Decision	er EB 2008-	0346 Decisio							
		indicates program specific information for 2009	nformation f	or 2009							
		indicates measure not referenced in EB 2008-0346 but needed in 2009	enced in EB	2008-0346 k	ut needed in						
		indicates corrected value									
				Resource	Resource Savings Assumptions	motions					
				Natural Gas	Electricity		Equipment	Incremental Cost	ital Cost	Free	
Item	Efficient Equipment & Technologies	base Equipment & Technologies	Load	m3	KWh	7	Life	Customer	Contractor	Kidership %	Reference
(a)	(q)	(0)	(p)	(e)	(f)	(b)	(h)	(i)	()	3	(i)
	RESIDENTIAL NEW CONSTRUCTION						,				
-	Tankless Water Heater	Storage Tank Water Heater	base	130	-	-	18		\$750	2%	Savings, measure life and incremental costs as per EB 2008-0346 Decision
2a	Energy Star Home (version 3)	Home built to OBC 2006	weather	1,018	1,450		25		\$4,701	2%	As approved in EB 2008-0384 and 0385.
2b	Energy Star Home (version 4)	Home built to OBC 2006 as of Jan 1, 2009	weather	881	734	1	25	1	\$4,275	2%	
	RESIDENTIAL EXISTING HOMES										
3a	Enhanced Fumace (ECM only)	Mid-Efficiency Furnace	weather	-65	730	1	18	-	\$550	15%	Not referenced in EB 2008-0346 Decision. Savings, measure life, incremental cost, and FR as per EB 2008-0384 and 0385. 2009 is the last year for this measure due to a change in standards.
35	Enhanced Furnace (Furnace only) & High Efficiency Furnace	Mid-Efficiency Furnace	weather	385	-		18		\$650	%06	Not referenced in EB 2008-0346 Decision. Savings, measure life, incremental cost, and FR as per EB 2008-0384 and 0385. 2009 is the last year for this measure due to a change in standards.
4	Faucet Aerator (kitchen, distributed, 1.5 GPM)	Average existing stock, 2.5 GPM	base	23		762,7	10	\$1	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.
2	Faucet Aerator (bathroom, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	9	-	2,004	10	\$1	1	31%	Savings and measure life as per 2010 Board approved. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
9	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	46	-	6,334	10	\$4	1	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.
_	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock, 2.2 GPM	base	63		10,570	10	\$4	1	10%	as above
8a	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.0-2.5 GPM)	2.0 -2.5 GPM showerhead (2.25 GPM)	pase	99	-	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.
9 8	Low-Flow Showerhead (Per household, installed, 1.25 GPM replacing 2.6 + GPM)	2.6 + GPM showerhead (3.0 GPM)	base	116	-	17,168	10		\$19	10%	as above
6	Pipe Insulation	Water Heater w/o pipe insulation	base	18	-		10	\$1	\$4	4%	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.
10	Programmable Thermostat	Standard Thermostat	weather	146	123	1	15	\$50		43%	Measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.

	2009 DSM Input Assumptions - Including Navigant Recommendations	Including Navigant									
		indicates assumptions as per EB 2008-0346 Decision.	ır EB 2008-ı	3346 Decision							
		indicates program specific information for 2009	formation for	or 2009							
		indicates measure not refere 2009	enced in EB	. 2008-0346 bu	nt needed in						
		indicates corrected value									
	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.
	Reflector Panels	Radiant heat w/o reflector panels	weather	143	,		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.
	LOW INCOME										
	5	Average existing stock, 2.5 GPM	base	23		7,797	10	\$1		1%	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.
	Faucet Aerator (bathroom, distributed, 1.5 GPM)	Average existing stock, 2.2 GPM	base	9	1	2,004	10	\$1	-	1%	as above
1		Average existing stock, 2.2 GPM	base	46		6,334	10	\$4	1	2%	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.
1	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	Average existing stock, 2.2 GPM	base	63	1	10,570	10	\$4	ı	%9	as above
	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.0 -2.5 GPM showerhead	base	99	,	10,886	10	-	\$19	2%	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.
	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	2.6 + GPM showerhead	base	116	-	17,168	10	-	\$19	%9	as above
-	Pipe Insulation	Water Heater w/o pipe insulation	base	18	•		10	•	\$4	1%	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.
	Programmable Thermostat	Standard Thermostat	weather	146	123		15	-	69\$	1%	Measure life as per EB 2008-0346 Decision. Incremental cost based on EGD purchase costs. FR as per EB 2008-0384 and 0385.
>	Weatherization	Existing home sample	weather	1,134	165		23	-	\$2,284	%0	Savings, measure life, and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385
O	COMMERCIAL NEW BUILDING CONSTRUCTION										
0	Condensing Gas Water Heater (100 gal/day)	Storage Tank Water Heater	base	332		1	13		\$2,230	%9	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
ш.	Rooftop Unit	Standard Rooftop Unit	weather	255	-		15	-	\$375	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
⊢ ∞	Tankless Water Heater 100 USG/day, 84% thermal efficiency	Storage Tank Water Heater 91 gal tank, 80% efficiency	base	154			18		-\$1,102	5%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
<u></u>	Infrared Heaters (0 - 75,000 BTUH)	Unit Heater	weather	0.015 /Btu/hr	245		20		\$0.02	33%	Savings, measure life and incremental cost as per EB 2008- 0346 Decision. FR as per EB 2008-0382 and 0385
⊆ <u>m</u>	Infrared Heaters (76,000 - 150,000 BTUH)	Unit Heater	weather	0.015 /Btu/hr	559		20		\$0.02	33%	as above
			1	.	1				1	•	

Production Control State		2009 DSM Input Assumptions - Including Navigant Recommendations	- Including Navigant ons									
Indicates programmatical part of the process of t												
Indicates program specific information for 2009 Indicates program specific information for 2009 Indicates contended on the action of the floater (1.14 dec.) Indicates (1.15 f.) Indicates (1.14 dec.) Indicates (indicates assumptions as pe	er EB 2008	0346 Decision	۲.						
Inclination Protected value Inclination Protected Protected Inclination Protected Protecte			indicates program specific ii	nformation t	or 2009							
Formation (Section Control Kitchen Verifiation Without DCKV Weather 13,1221 15 15 15 15 15 15 15			indicates measure not refer 2009	enced in Ef	3 2008-0346 E	ut needed in						
BTTH Headers (>151,000 - 300,000 Unit Header Weather Gotts State			indicates corrected value									
Densend Control Kirchen Vernilation Vernilation without DCKV weather 13.521 15 15 \$10,000 5% (90.00 CFM) Choose Control Kirchen Vernilation Vernilation without DCKV weather 11,466 30,301 - 15 - \$15,000 5% (10,000 CFM) Vernilation without DCKV weather 18,824 49,102 - 15 - \$20,000 5% (15,000 CFM) Vernilation without DCKV weather 18,824 49,102 - 15 - \$20,000 5% (15,000 CFM) Vernilation without HCV	24c		Unit Heater	weather	0.015 /Btu/hr	870		20		\$0.02	33%	as above
Demand Counce (Kitchen Verifiation without DCXV weather 11,486 30,901 15 515,000 5%	25a	Demand Control Kitchen Ventilation (5000 CFM)	Ventilation without DCKV	weather	4,801	13,521	1	15		\$10,000	2%	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 2008-0382 and 0385
Programmable Thermostate (savings) Standard thermostate (saving stock) Average existing stock	25b	Demand Control Kitchen Ventilation (10,000 CFM)	Ventilation without DCKV	weather	11,486	30,901		15	ı	\$15,000	2%	as above
Energy Recovery Ventilations (ERV) Ventilation without ERV weather 1764-86/Lem 20 \$50,000FM 5% Heat Recovery Ventilations (ERV) Ventilation without HRV weather 1054-657/1 20 \$34,00CFM 5% Condensing Boilers (90% estimated seasonal efficiency) Non-condensing Boilers (90% estimated seasonal efficiency) weather 0.0104 25 \$12,00/Log 5% \$12,00/Log 5% \$12,00/Log \$12,00/Log \$12,00/Log \$12,00/Log \$12,00/Log \$12,00/Log \$12,00/Log \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00 \$10,00	25c	Demand Control Kitchen Ventilation (15000 CFM)	Ventilation without DCKV	weather	18,924	49,102		15	Î	\$20,000	2%	as above
Heat Recovery Ventilation (HRV) Ventilation without HRV weather 1624-55 (CFM) - 20 - \$340CFM 5% Condensing Boliers (90% estimated seasonal efficiency) Mon-condensing Boliers (90% estimated seasonal efficiency) Loss (1000) - \$12,00010³ 5% Destratification Fans No destratification fans weather 0.0104 - 15 - \$1000 5% Programmable Thermostats (savings) Standard thermostat weather 82-538 63-266 - 15 \$110 - \$7021 10% Programmable Thermostats (savings Switch Reconstruction of the master segment) Standard thermostat base 913 - 15 \$210 - \$20% Energy Efficient Fiyers Standard thermostats (savings Stock Base) base 332 - 12 \$2548 - 10% 9 Commercial Relation (witchen, installed, 1.5 Average existing stock base 16 - 13 - 10 \$2 - 10% 9 - 10% - <	26	Energy Recovery Ventilators (ERV)	Ventilation without ERV	weather	1.75-4.89 / CFM	-	1	20		\$3.00/CFM	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Condensing Boilers (90% estimated seasonal seasonal seasonal seasonal efficiency) Non-condensing Boilers (90% estimated seasonal efficiency) Destrainfication Fans Cytes estimated seasonal efficiency) Destrainfication Fans No destrainfication fans weather seasonal efficiency) Cytestimated seasonal efficiency Standard thermostats Weather seasonal efficiency Standard thermostats Standard ther	27	Heat Recovery Ventilator (HRV)	Ventilation without HRV	weather	1.62-4.55 / CFM	-		20		\$3.40/CFM	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Programmable Thermostate (savings variable 1.1.0) No destratification fans weather 6.5.56/Hz (+)0.0034/Hz 15 57.021 10% Programmable Thermostate (savings variable	78	Condensing Boilers (90% estimated seasonal efficiency)	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.0104 m3/BTUH	,	1	25		\$12.00/10 ³ BTUH	2%	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 2008-0382 and 0385
Programmable Thermostats (savings standard thermostat weather 82-538 63-266 - 15 \$110 - 20% vary per market segment) Energy Efficient Fryers Standard fryer base 913 - 12 \$2.648 - 200	29	Destratification Fans	No destratification fans	weather	0.56/ft²	(-)0.0034/ft²		15		\$7,021	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Condensity Efficient Fryers Standard fryer base 913 - 12 \$2.648 - P Condensity Gas Water Heater (100 Heater 100 all of park Mater Heater (100) Heater 100 (kitchen, installed, 1.5) Storage Tank Water Heater (100 Heater 100) Average existing stock base base 16 - 13 - \$2.230 by 5% 10% 5% Faucet Aerator (kitchen, installed, 1.5) Average existing stock base by the parameter (bathroom, installed, 1.6) Average existing stock base by the parameter (bathroom, installed, 1.0) Average existing stock base by the parameter (bathroom, installed, 1.0) Average existing stock base by the parameter (bathroom, installed, 1.0) Average existing stock base by the parameter (bathroom, installed, 1.0) Town base by the parameter (bathroom, installed,	30a	Programmable Thermostats (savings vary per market segment)	Standard thermostat	weather	82-238	63-266	1	5	\$110		50%	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 2008-0382 and 0385
Condensing Gas Water Heater (100 Heater (100 Heater (100)) Storage Tank Water Heater (100) base 332 - - 13 - \$2,230 5% GPM) Faucet Aerator (kitchen, installed, 1.5 GPM) Average existing stock (base existing stock (base existing stock)) base 16 - 5,377 10 \$2 - 10% Faucet Aerator (kitchen, installed, 1.5 GPM) Average existing stock (base existing stock) base 4 - 1,382 10 \$2 - 10% Faucet Aerator (bathroom, installed, 1.5 GPM) Average existing stock (base existing stock) base 11 - 2,371 10 \$1.50 - 10%	31	Energy Efficient Fryers	Standard fryer	base	913			12	\$2,648			Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Condensing Gas Water Heater (100) Storage Tank Water Leater base 332 . 43 . \$2,230 5% Paucet Aerator (kitchen, installed, 1.5 Average existing stock base 16 . 5,377 10 \$2 . 10% Faucet Aerator (kitchen, installed, 1.5 Average existing stock base 39 . 8,072 10 \$2 . 10% Faucet Aerator (bathroom, installed, 1.5 Average existing stock base 11 . 2,371 10 \$1.50 . 10% Faucet Aerator (bathroom, installed, 1.0 Average existing stock base 11 . 2,371 10 \$1.50 . 10%		COMMERCIAL EXISTING BUILDINGS										
Faucet Aerator (kitchen, installed, 1.5 Average existing stock base 16 - 6,377 10 \$2 - 10% Faucet Aerator (kitchen, installed, 1.5 Average existing stock base 11 - 2,371 10 \$1.50 - 10% Faucet Aerator (bathroom, installed, 1.5 Average existing stock base 11 - 2,371 10 \$1.50 - 10%	32	Condensing Gas Water Heater (100 gal/day)	Storage Tank Water Heater	base	332	1		13	ı	\$2,230	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Faucet Aerator (kitchen, installed, 1.0 Average existing stock base 39 - 8,072 10 \$2 - 10% Faucet Aerator (bathroom, installed, 1.5 Average existing stock base 11 - 2,371 10 \$1.50 - 10% Faucet Aerator (bathroom, installed, 1.0 Average existing stock base 11 - 2,371 10 \$1.50 - 10%	33a	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 2008-0382 and 0385
Faucet Aerator (bathroom, installed, 1.5 Average existing stock base 4 - 1,382 10 \$2 - 10% GPM) Faucet Aerator (bathroom, installed, 1.0 Average existing stock base 11 - 2,371 10 \$1.50 - 10%	33b	Faucet Aerator (kitchen, installed, 1.0 GPM)	Average existing stock	base	33	,	8,072	10	\$2		10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision for 1.5GPM aerator adjusted for 1.0 GPM aerator. Measure life, incremental cost and FR as per EB 2008-0384 and 0385.
Faucet Aerator (bathroom, installed, 1.0 Average existing stock base 11 - 2,371 10 \$1.50 - 10% GPM)	34a		Average existing stock	base	4	1	1,382	10	\$2		10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
	34b		Average existing stock	base	-	1	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 1.5GPM aerator adjusted for 1.0 GPM aerator. Measure life, incremental cost and FR as per EB 2008-0384 and 0385.

Indicates assumptions as per EB 2008-0346 Decision. Indicates program specific information for 2008 Mid-Efficiency Furnace and in EB 2008-0346 but needed in Capacity Mid-Efficiency Furnace and in EB 2008-0346 but needed in Capacity Mid-Efficiency Furnace and in EB 2008-0346 but needed in Capacity Mid-Efficiency Furnace and in EB 2008-0346 but needed in Capacity Mid-Efficiency Furnace and in Capaci	1009 DSM Inpi	ut Assumptions - Inc Recommendations	2009 DSM Input Assumptions - Including Navigant Recommendations									
Indicates program specific information for 2008			a co cocitaminaco cotocitari	00000	rejeiee O avec							
Indicates progress by agreement in ES S.C.O.236 but needed in indicates progressed value in the ferenced in ES S.C.O.236 but needed in indicates progressed value wealther furnace and the following strokes wealther furnace and the following strokes are as a second of the following strokes base as a second of the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following strokes and the following strokes are as a second of the following are as a second of the fo			maicates assumptions as p	-0007 GI IA	0340 Decision	<u>-</u>						
Mid-Efficiency Furnace Mid-Efficiency Furn			indicates program specification indicates measure not refer 2009	enced in EB	3 2008-0346 b	ut needed in						
Average existing stock Dase Capacity Dase Capacity Dase Capacity Dase Capacity Dase Capacity Capa			indicates corrected value									
Average existing stock base 45 - 6,228 10 54 - 10% 2.0 -2.5 GPM showerhead base 48 - 9,088 10 517 - 10% 2.0 -2.5 GPM showerhead base 84 - 14,333 10 517 - 10% 2.0 -2.5 GPM showerhead base 28 - 9,490 10 517 - 10% 3.1 -3.5 GPM showerhead (2.75 GPM) 3.1 -3.5 GPM showerhead (3.05 G	High Efficiency Furnace		Mid-Efficiency Furnace	weather	5.1 per 1000 BTUH furnace capacity		1	18	1	\$650	17.50%	Not referenced in EB 2008-0346 Decision. Savings, measure life, incremental cost and FR per EB 2008-0384 and 0385. This is the last year for this measure due to a change in furnace standards.
2.0 - 2.5 GPM showerhead base 45 . 9,088 10 547 . 10% 2.0 - 2.5 GPM showerhead base 48 . 9,088 10 517 . 10% 2.0 - 2.5 GPM showerhead base 28 . 14,333 10 517 . 10% 2.0 - 2.5 GPM showerhead base 28 . 5,197 10 517 . 10% 3.1 - 3.5 GPM showerhead base 55 . 9,490 10 517 . 10% 3.6 GPM and above (3.6 Base 91 . 13,250 10 517 . 10% 3.6 GPM and above (3.6 Base 91 . 1,727 10 517 . 10% 3.1 0.3.5 GPM (3.25 GPM) base 40 . 7,351 10 517 . 10% 3.1 0.3.5 GPM (3.25 GPM) base 12,286 . 5,487 10 517 . 10% 3.1 0.4 0.5 0.5 0.5 0	Low-Flow Showerhead (Per unit, distributed, 1.5 GPM)	jį,	Average existing stock	base	33	-	5,228	10	\$4	1	10%	Savings and measure life as per EB 2008-0346 Decision. Incremental cost to reflect utility purchase. FR as per EB 2008-0384 and 0385.
2.0-2.5 GPM showerhead base (2.5 GPM) base (3.6 House) -48 - 14,333 10 \$17 - 10% 2.6 + GPM showerhead and above (3.0 GPM) base (2.5 GPM) 2.6 + 30 GPM showerhead base (2.5 GPM) 2.6 - 30 GPM showerhead base (2.5 GPM) - 13,250 10 \$17 - 10% 2.0 - 2.5 GPM showerhead base (2.5 GPM) base (3.6 GPM) - 13,250 10 \$17 - 10% 3.1 - 3.5 GPM showerhead base (3.5 GPM) base (3.5 GPM) - 1,727 10 \$17 - 10% 3.6 GPM and above (3.6 Base (2.7 GPM) base (3.6 GPM) - 1,727 10 \$17 - 10% 3.6 GPM and above (3.6 Base (2.7 GPM) base (3.6 GPM) - 1,727 10 \$17 - 10% 3.6 GPM and above (3.6 Base (3.3 GPM) base (3.6 GPM) - 1,286 - 1,727 10 \$17 3.6 GPM and above (3.6 Base (3.0 GPM) base (3.0 GPM) - 1,286 - 1,703 - 10% - 10% 3.8 GPM and above (3.6 GPM) base (3.0 GPM) - 1,286 - 1,703 - 10% - 10% 3.8 GPM and above (3.6 GPM) base (3.0 GPM) - 1,286 - 1,286	Low-Flow Showerhead (Per unit, distributed, 1.25 GPM)	it,	Average existing stock	base	45	-	8,824	10	\$4	-	10%	as above
2.6 + GPM showerhead and above (3.0GPM) base 84 - 14,333 10 \$17 - 10% 2.0 - 2.5 GPM showerhead (2.25 GPM) base 28 - 5,197 10 \$17 - 10% 3.1 - 3.5 GPM showerhead (2.75 GPM) base 55 - 9,490 10 \$17 - 10% 3.6 GPM and above (3.6 Base) 91 - 13,250 10 \$17 - 10% 3.6 GPM and above (3.6 Base) 92 - 1,727 10 \$17 - 10% 3.1 0.3.5 GPM (3.25 GPM) base 40 - 7,351 10 \$17 - 10% 3.1 0.3.5 GPM and above (3.6 Base) 40 - 7,351 10 \$17 - 10% 3.1 0.3.5 GPM (3.25 GPM) base 28 - 5,487 10 \$17 - 10% 3.1 0 and and pre-rinse spray base 190-886 - 5,487 10 \$10 - 3.1 0 and	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	ousehold,	2.0 -2.5 GPM showerhead (2.25 GPM)	base	48		880'6	10	\$17	-	10%	Savings and measure life as per EB 2008-0346 Decision. Incremental cost to reflect utility purchase. FR as per EB 2008-0384 and 0385.
2.0-2.5 GPM showerhead base 28 - 5,197 10 \$17 - 10% 2.6-3.0 GPM GPM base 55 - 9,490 10 \$17 - 10% 3.1-3.5 GPM showerhead base 79 - 13,250 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 91 - 15,114 10 \$17 - 10% showerhead (2.75 GPM) base 28 - 1,727 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 28 - 5,487 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 40 - 7,351 10 \$17 - 10% standard pre-rinse spray base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray base 339 - 66,400 5 \$88 - 0%	Low-Flow Showerhead (Per household, Installed, 1.25 GPM)	nousehold,	2.6 + GPM showerhead and above (3.0GPM)	base	84	-	14,333	10	\$17	-	10%	as above
2.6 -3.0 GPM GPM base 55 - 9,490 10 \$17 - 10% 3.1 - 3.5 GPM showerhead base (3.25 GPM) base 79 - 13,250 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 91 - 15,114 10 \$17 - 10% 2 6 -3.0 GPM GPM base 4 - 1,727 10 \$17 - 10% 3.1 o 3.5 GPM and above (3.6 GPM) base 28 - 5,487 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 40 - 7,381 10 \$17 - 10% standard pre-rinse spray base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray base 318 - 62,200 5 \$88 - 0%	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	nousehold,	2.0 -2.5 GPM showerhead (2.25 GPM)	base	28		5,197	10	\$17		10%	Not referenced in EB 2008-0346. Savings formula and measure life based on EB 2008-0346 Decision showerhead at 1.25GPM. Incremental cost updated to reflect utility purchase and installation costs. FR as per EB 2008-0384 and 0385.
3.1 - 3.5 GPM showerhead base 79 - 13,250 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 91 - 15,114 10 \$17 - 10% 2.6 -3.0 GPM GPM) base 4 - 1,727 10 \$17 - 10% 3.1 o 3.5 GPM (3.25 GPM) base 28 - 5,487 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 40 - 7,351 10 \$17 - 10% standard pre-rinse spray nozzle (3.0 GPM) base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 318 - 66,400 5 \$88 - 0%	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	household,	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	55	-	9,490	10	\$17	-	10%	as above
3.6 GPM and above (3.6 base 91 - 15,114 10 \$17 - 10% showerhead (2.75 GPM) base 44 - 1,727 10 \$17 - 10% showerhead (2.75 GPM) base 28 - 5,487 10 \$17 - 10% showerhead (2.75 GPM) base 40 - 7,351 10 \$17 - 10% standard pre-rinse spray nozzle (3.0 GPM) base 1,286 - 252,000 5 \$88 - 00% standard pre-rinse spray base 339 - 66,400 5 \$88 - 00% standard pre-rinse spray base 318 - 62,200 5 \$88 - 00%	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	household,	3.1 - 3.5 GPM showerhead (3.25 GPM)		62	-	13,250	10	\$17	-	10%	as above
2.6-3.0 GPM GPM showerhead (2.75 GPM) base 4 - 1,727 10 \$17 - 10% 3.1 o 3.5 GPM (3.25 GPM) base 28 - 5,487 10 \$17 - 10% 3.6 GPM and above (3.6 GPM) base 40 - 7,351 10 \$17 - 10% standard pre-rinse spray nozzle (3.0 GPM) base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 318 - 62,200 5 \$88 - 0%	Low-Flow Showerhead (Per household, Installed, 1.5 GPM)	household,	3.6 GPM and above (3.6 GPM)	base	91		15,114	10	\$17		10%	as above
3.6 GPM and above (3.6 Pase 40 - 7,351 10 \$17 - 10% 10% standard pre-rinse spray hase 190-886 - 170,326 5.000 5 \$88 - 10% 10.	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	household,	2.6 -3.0 GPM GPM showerhead (2.75 GPM)	base	4	1	1,727	10	\$17	1	10%	Not referenced in EB 2008-0346 Decision. Savings formula and measure life based on EB 2008-0346 Decision showerhead at 1.25GPM. Incremental cost updated to reflect utility purchase and installation costs. FR as per EB 2008-0384 and 0385.
3.6 GPM and above (3.6 GPM) and above (3.6 GPM) base 190-886 - 7,351 10 \$17 - 10% standard pre-rinse spray base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray base 318 - 62,200 5 \$88 - 0% 60,000 5 \$100 000 000 000 000 000 000 000 000 00	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	household,	3.1 o 3.5 GPM (3.25 GPM)	base	28	-	5,487	10	\$17	-	10%	as above
standard pre-rinse spray base 190-886 - 36,484 - 170,326 5 \$60 - 12.4% standard pre-rinse spray nozzle (3.0 GPM) base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 318 - 62,200 5 \$88 - 0%	Low-Flow Showerhead (Per household, Installed, 2.0 GPM)	household,	3.6 GPM and above (3.6 GPM)	base	40	-	7,351	10	\$17	-	10%	as above
standard pre-rinse spray nozzle (3.0 GPM) base 1,286 - 252,000 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray nozzle (3.0 GPM) base 318 - 62,200 5 \$88 - 0%	Pre-Rinse Spray Nozzle (1.24 GPM) (savings vary depending on market segment)	:4 GPM) market	standard pre-rinse spray nozzle (3.0 GPM)	base	190-886		36,484 - 170,326	5	\$60	-	12.4%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. Free ridership adjusted as per Union Gas research with PA Consulting.
standard pre-rinse spray base 339 - 66,400 5 \$88 - 0% standard pre-rinse spray base 318 - 62,200 5 \$88 - 0%	Pre-Rinse Spray Nozzle (0.64 GPM) (Full Service)	4 GPM) (Full		base	1,286		252,000	5	\$88	-	%0	Not referenced in EB 2008-0346 Decision. Savings and free ridership as per Union Gas research with PA Consulting. Incremental cost as per Union Gas purchase price. Measure life as per EB 2008-0384 and 0385.
standard pre-rinse spray base 318 - 62,200 5 \$88 - 0%	Pre-Rinse Spray Nozzle (0.64 GPM) (Limited)	4 GPM)	standard pre-rinse spray nozzle (3.0 GPM)	base	339	-	66,400	5	\$88	-	%0	as above
102216 (3:0 GFIW)	Pre-Rinse Spray Nozzle (0.64 GPM) (Other)	4 GPM)	standard pre-rinse spray nozzle (3.0 GPM)	base	318	-	62,200	5	\$88	-	%0	as above

State Stat		2009 DSM Input Assumptions - Including Navigant Recommendations	Including Navigant									
Inclusione Straightform is point for Straightform in point for Strai												
Programmable Thermostatis (swings) Standard thermostatis (swin			indicates assumptions as pe	₃r EB 2008-	0346 Decision	-						
Indicates measure not referenced in EB 2008-0346 but meeted in EB 2008-03			indicates program specific ir	oformation f	or 2009							
Programmable Planemostate (sevings) Standard Phormostate Weather Septembly Standard Phormostate (septembly) Stand			indicates measure not refere 2009	enced in EE	3 2008-0346 b	ut needed in						
Roofing Luni Standard thermostatal (savings) Standard thermostatal (savings) Standard thermostatal (savings) Standard Roofing Unit 265 1 15 15 15 20% Roofing Dunit Storoge Took Wildow Storoge Took Wildow Storoge Took Wildow 164 18 18 55.102 2% Enhanced Finance - up to 289 mblush (ECM) control (storoge) Mind-Efficiency Funace weather (100 BTUH) (100 BTUH) 18 18 55.00 10% Enhanced Funace - up to 289 mblush (100 BTUH) Mind-Efficiency Funace weather (100 BTUH) (100 BTUH) 18 55.00 10% Enhanced Funace - up to 289 mblush (100 BTUH) Mind-Efficiency Funace weather (100 BTUH) (100 BTUH) 18 55.00 10% Enhanced Funace - up to 289 mblush (100 BTUH) Verifiation virthout HRV (100 BTUH) (100 BTUH) 16 20 53.00 10% Enhanced Funace - up to 289 mblush (100 BTUH) (100 BTUH) (100 BTUH) Verifiation virthout HRV (100 BTUH) (100 BTUH) 166 20 53.00 10% Enhanced Funace (100 BTUH) (100			indicates corrected value									
Fundamental Planter Fundamental Routing Unit Washer CAST Fundamental Routing Unit Storage Tark Washer CAST CAST Fundamental Routing Cast CAST	43a	Programmable Thermostats (savings vary per market segment)	Standard thermostat	weather	82-238	63-266		15	\$110	1	20%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Tankless Water Heater 100 USG/day, Heater 91 gal tank, 80% Bossep Editionary Plant Water Heater 100 USG/day Heater 91 gal tank, 80% base 154 Tankless Water Heater 100 USG/day 110 21,102 2% 10% Enhanced Furnace - Up to 299 mbluth Indeed Find Control Mark Efficiency Furnace Services only) MakEfficiency Furnace Weather 100 BTUH 1000 BTUH	44	Rooftop Unit	Standard Rooftop Unit	weather	255		1	15	1	\$375	2%	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.
Enhanced Funace - up to 299 mbtuh Mid-Efficiency Funace weather 100 BTUH 100 BTUH </td <td>45</td> <td>Tankless Water Heater 100 USG/day, 84% thermal efficiency</td> <td>Storage Tank Water Heater 91 gal tank, 80% efficiency</td> <td>base</td> <td>154</td> <td></td> <td></td> <td>18</td> <td>1</td> <td>-\$1,102</td> <td>2%</td> <td>Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385</td>	45	Tankless Water Heater 100 USG/day, 84% thermal efficiency	Storage Tank Water Heater 91 gal tank, 80% efficiency	base	154			18	1	-\$1,102	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Enhanced Furnace - up to 299 mbtuh Mid-Efficiency Furnace weather furnace only) 5, 1 per 1000 mode) To 100 mode) To 100 mode) To 100 mode) To 100 mode) SSGO 30% Heat Recovery Ventilator (HRV) Ventilation without ERV veather furnace 1624.55 for the condensing Boilers 1000 mode) 20 53.00 CFM 5% Condensing Boilers (70% estimated beates seasonal efficiency) Ventilation without DRV weather for the condensing Boilers 1000 mode) 26 53.00 CFM 5% ENTLHY Unit Heater Weather life and Heater (Antilation without DRV) weather (Antilation mode) 11,486 30,901 15 50.00 5% Air Curtains (Bouble Door) Arc Curtains (Bouble Door) Ventilation without DRV) weather (Antilation Place) 11,486 30,901 15 57,000 5% Air Curtains (Bouble Door) Arc Curtains (Bouble Door) Weather (Antilation without Doug) weather (Antilation Weather (Antilation Place) 11,023 15 15 57,000	46a	Enhanced Furnace - up to 299 mbtu/h (ECM only)	Mid-Efficiency Fumace	weather	-0.87 per 1000 BTUH	9.7 per 1000 BTUH	1	18	ı	\$550	10%	Not referenced in EB 2008-0346 Decision. Savings, measure life and incremental cost per EB 2008-0384 and 0385. This is the last year for this measure due to a change in furnace standards.
Fleat Recovery Ventilator (HRV) Ventilation without HRV weather CFM CFM - 20 - 53.40CFM 5% Energy Recovery Ventilators (ERV) Ventilation without ERV weather CFM weather CFM - - 20 - 53.00CFM 5% Condensing Boilers (76% estimated seasons) (76% estimated seasons) Weather CMFM - 26 - 51.00r 5% Infrared Heaters (0 - 75,000 BTUH) Unit Heater Weather CMFM BTUH - 20 - 50.02 33% BITUH) Infrared Heaters (75,000 - 150,000 Unit Heater weather CMM BTUH - 20 - 50.02 33% BITUH Infrared Heaters (75,000 - 150,000 Unit Heater weather CMM BTUH - 20 - 50.02 33% Demand Control Kitchen Ventilation Ventilation without DCKV weather CMM 4801 - 15 51,000 5% Actoology CFMJ Ventilation without DCKV weather CMM Weather CMM 49,102	46b		Mid-Efficiency Fumace	weather	5.1 per 1000 BTUH furnace capacity	,	,	18	,	\$650	30%	as above
Energy Recovery Ventilations (ERV) Ventilation without ERV weather 184-5.14 (1-4) \$3.00.CFM 5% Condensing Boilers (76% estimated seasonal ficiency) base 0.0104 (1-4) 25 \$12.00 (1-4) 5% Infrared Heaters (0 - 75.000 BTUH) Unit Heater weather 0.015 (1-4) 5.04 \$0.02 \$0.02 33% BTUH) Unit Heater weather 0.015 (1-4) 870 20 \$0.02 33% 8 BTUH) Infrared Heaters (75,000 - 150,000 Unit Heater weather 0.015 (1-4) 870 \$0.02 33% 8 BTUH) Infrared Heaters (75,000 - 150,000 Unit Heater weather 13.521 20 \$0.02 33% 8 BTUH) Demand Control Kitchen Ventilation Ventilation without DCKV weather 11.486 30.901 \$1.000 55.000 5% 9 9 9 9 9 <t< td=""><td>47</td><td>Heat Recovery Ventilator (HRV)</td><td>Ventilation without HRV</td><td>weather</td><td>1.62-4.55 / CFM</td><td></td><td></td><td>20</td><td></td><td>\$3.40/CFM</td><td>2%</td><td>Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.</td></t<>	47	Heat Recovery Ventilator (HRV)	Ventilation without HRV	weather	1.62-4.55 / CFM			20		\$3.40/CFM	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
Condensing Boilers Non-condensing Boilers Non-condensing Boilers About Condensing	48	Energy Recovery Ventilators (ERV)	Ventilation without ERV	weather	1.84-5.14 / CFM			20		\$3.00/CFM	%9	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
Infrared Heaters (76,000 BTUH) Unit Heater weather Q015 (BTUH) 559 - 20 - \$0.02 33% Bunn thraved Heaters (76,000 - 150,000 Unit Heater Weather Agunn Abunn Abunn DCKV weather Agunn Abunn Abunn Abunn DCKV Weather Agunn Abgo CFM) - 50 - \$0.02 33% Bunn Abunn Abunn Abunn Abunn Abunn Abunn Abunn Abgo CFM) - \$0.01 - \$0.02 - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 33% - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02 - \$0.02	49	Condensing Boilers	Non-condensing Boiler (76% estimated seasonal efficiency)	base	0.0104 /Btu/hr			25		\$12.00/ KBtu/hr	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Infrared Heaters (76,000 - 150,000 Unit Heater weather 0.015 Out 559 - 20 - \$0.02 33% BTUH) Infrared Heaters (>151,000 - 300,000 Unit Heater Weather 0.015 Out R70 - 20 - \$0.02 33% 33% BTUH) Demand Control Kitchen Ventilation (0 - Ventilation without DCKV) weather 4,801 13,521 - 15 - \$10,000 5% 5 Demand Control Kitchen Ventilation (0 - Ventilation without DCKV) weather 11,486 30,901 - 15 - \$10,000 5% 5 Demand Control Kitchen Ventilation (10 - Ventilation without DCKV) weather 18,924 49,102 - 15 - \$10,000 5% 7 Air Curtains (Single Door) Air Curtains (Single Door) weather 1,529 1,023 - 15 - \$1,000 5% 7 Air Curtains (Southe Door) No destratification fans weather 0.56/H² (10,00034/H² - 15 -	50a	Infrared Heaters (0 - 75,000 BTUH)	Unit Heater	weather	0.015 /Btu/hr	245		20	-	\$0.02	33%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Infrared Heaters (>151,000 - 300,000) Unit Heater weather ABUNT 870 - 20 - \$0.02 33% 8 BTUH) Appeared Control Kitchen Ventilation (0 - Ventilation without DCKV weather (5000 - 9999 CFM) Ventilation without DCKV weather (11,486) 11,486 30,901 - 15 - \$15,000 5% Demand Control Kitchen Ventilation Ventilation without DCKV weather (10000 - 15000 CFM) Ventilation without DCKV weather (667) 172 - 15 - \$15,000 5% Air Curtains (Single Door) Air Curtains (Single Door) Air Curtains (Single Door) weather (677) 1,023 - 15 - \$1,650 5% Air Curtains (Double Door) Air Curtains (Single Door)	909	Infrared Heaters (76,000 - 150,000 BTUH)	Unit Heater	weather	0.015 /Btu/hr	559		20	-	\$0.02	33%	as above
Demand Control Kitchen Ventilation () - Ventilation without DCKV weather 4,801	50c	Infrared Heaters (>151,000 - 300,000 BTUH)	Unit Heater	weather	0.015 /Btu/hr	870	-	20	-	\$0.02	33%	as above
Demand Control Kitchen Ventilation Ventilation without DCKV weather 11,486 30,901 - 15 - \$15,000 5% 8 Modestratification Fans Ventilation without DCKV weather 18,924 49,102 - 15 - \$20,000 5% 8 Air Curtains (Single Door) Air Curtains (Double Door) weather 1,529 1,023 - 15 - \$1,650 5% 8 Destratification Fans No destratification fans weather 0,56/ft² (-)0.0034/ft² - 15 - \$7,021 10% 8 CEE Qualified Energy Efficient Washers Conventional top loading base 117 396 58,121 11 - \$500 10% 9	51a	Demand Control Kitchen Ventilation (0 - 4999 CFM)	Ventilation without DCKV	weather	4,801	13,521		15	-	\$10,000	2%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
Demand Control Kitchen Ventilation Ventilation without DCKV weather 18,924 49,102 - 15 - \$20,000 5% 8 Air Curtains (Single Door) Air Curtains (Single Door) Air Curtains (Double Door) weather 1,529 1,023 - 15 - \$1,650 5% Air Curtains (Double Door) No destratification fans weather 0.56/ft² (-)0.0034/ft² - 15 - \$7,021 10% CEE Qualified Energy Efficient Washers Conventional top loading washers. base 117 396 58,121 11 - \$600 10%	51b	Demand Control Kitchen Ventilation (5000 - 9999 CFM)	Ventilation without DCKV	weather	11,486	30,901		15	-	\$15,000	2%	as above
Air Curtains (Single Door) weather 667 172 - 15 - \$1,650 5% 5% 8 Air Curtains (Double Door) Air Curtains (Double Door) weather 1,529 1,023 - 15 - \$2,500 5% 1 Destratification Fans No destratification fans washers. weather 0.56/ft² (-)0.0034/ft² - 15 - \$7,021 10%	51c		Ventilation without DCKV	weather	18,924	49,102		15	-	\$20,000	2%	as above
Air Curtains (Double Door) No destratification fans weather weather 1,529 1,023 - 15 - \$2,500 5% - Destratification Fans No destratification fans weather 0.56/ft² (.)0.0034/ft² - 15 - \$7,021 10% 10% CEE Qualified Energy Efficient Washers Conventional top loading washers. base 117 396 58,121 11 - \$600 10% 10%	52a	Air Curtains (Single Door)		weather	299	172		15	-	\$1,650	%9	Savings, measure life, incremental cos as per EB 2008-0346 Decision. FR as per EB 2008-0384 and 0385.
Destratification Fans No destratification fans weather 0.56/H² (-)0.0034/H² - 15 - \$7,021 10% CEE Qualified Energy Efficient Washers washers.	52b	Air Curtains (Double Door)		weather	1,529	1,023	,	15		\$2,500	2%	as above
CEE Qualified Energy Efficient Washers Conventional top loading base 117 396 58,121 11 - \$600 10% 10%	23	Destratification Fans	No destratification fans	weather	0.56/ft²	(-)0.0034/ft²		15		\$7,021	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385
	54	CEE Qualified Energy Efficient Washers	Conventional top loading washers.	base	117		58,121	11	•	009\$	10%	Savings, measure life and incremental cost as per EB 2008-0346 Decision. FR as per EB 2008-0382 and 0385

	2009 DSM Input Assumptions - Including Navigant Recommendations	Including Navigant									
		indicates assumptions as per EB 2008-0346 Decision.	r EB 2008-	346 Decision							
	-	indicates program specific information for 2009	formation fo	or 2009							
		indicates measure not referenced in EB 2008-0346 but needed in 2009	nced in EB	2008-0346 bı	nt needed in						
		indicates corrected value									
55a	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 costs as per EB 2008-0346 Decision. Free ridership as per Board Decision re: 2008 Update.
55b	Prescriptive School Boilers (Secondary)	Space Heating, Hydronic Boiler with Comb. Eff. Of 80%-82%.	base	43,859			25	•	\$14,470	12%	as above
26		Standard fryer	base	913	0	-	12	\$2,648	1		
57a	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	1	1	25	1	0065\$-0068\$	Enbridge: 10/12/20%	Not referenced in EB 2008-0346 Decision. FR for Small Commercial / Large Commercial / Multi-residential
58a	High Efficiency Boilers (DHW) Small Commercial, Large Commercial and Multi-residential	higher efficiency boilers 300-1500 MBH 85-88% efficient	base	17,66-7,095	1	1	25	1	\$4500-\$7400	Enbridge: 10/12/20%	as above
59a		higher efficiency boilers 300-2000 MBH 83-84% efficient	weather 2	2,105-16,452			25	1	\$3900-\$4950	Enbridge: 10/12/20%	as above
60a		higher efficiency boilers 300-2000 MBH 85-88% efficient	weather 3	3,125-24,431		1	25	1	\$4500-\$7050	Enbridge: 10/12/20%	as above
	COMMERCIAL/INDUSTRIAL CUSTOM PROJECTS										
	Custom Projects			Actual	Actual	Actual	Actual	1	Actual	By sector from S.B. Report (dated Oct., 2008)	
64	Agriculture									40%	as per EB 2008-0384
65										20%	as per EB 2008-0384
99	Multi-Residential									%02	as per EB 2008-0384 as per EB 2008-0384
99										76%	as per EB 2008-0384
	OTHER MEASURES									Free Ridership	
69	1. CFL (13W)	60W Incandescent	n/a		45	ı	8	\$0.00	ı	24%	Not referenced in EB 2008-0346 Decision. Savings, Measure life and FR as per EB 2008-0384 and 0385.
70	2. CFL (23W)	75W Incandescent	n/a	1	49.7	-	8	\$0.00	-	24%	as above
	See also attached Custom Resource Acqusition Technologies - Measure life assumptions										
	-		1								