PA Consulting Group

State of Wisconsin Public Service Commission of Wisconsin

Focus on Energy Evaluation

Business Programs Impact Evaluation Report: First Five Quarters of the 18-month Contract Period

Final: April 2, 2009

Evaluation Contractor: PA Consulting Group

Prepared by: Miriam L. Goldberg, J. Ryan Barry, Ben Jones, Paulo Tanimoto, Jeremiah Robinson, and Tammy Kuiken; KEMA Inc.

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1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

This report presents the results of the Impact Evaluation of the statewide Focus on Energy Business Programs measures implemented during the first five quarters (July 1, 2007, through September 30, 2008) of the 18-month contract period[1] (18MCP). This report combines the results of two rounds of data collection. The first round covered measures implemented between July 1, 2007, and March 31, 2008. The second round covered measures implemented between April 1, 2008, and September 30, 2008. The second round was an abbreviated approach that focused on a small sample of the largest projects implemented between April and September.

The principal objective of the impact evaluation was to determine the energy and demand savings attributable to the program. The analysis calculates a set of adjustment factors that are used to determine evaluation verified gross and net energy savings for the statewide Focus on Energy Business Program.[2] Since the start of the program, the evaluation team has implemented eleven rounds of data collection and document review to estimate net energy savings for Business Programs (BP).

1.2 KEY HISTORIC INDICATORS PRESENTED

Overall the Business Programs achieved kWh, kW, and therm realization rates of 55 percent, 54 percent, and 48 percent respectively. The difference between the 18MCP kWh, kW and therms realization rates and those of Fiscal Year 2007 (FY07) are not statistically significant at the 95 percent confidence level. The realization rate is the ratio of achieved attributable savings to gross reported savings. As in FY07, the realization rates include the effects of the *Participant Spillover Savings Study*[3].

- 18MCP net verified energy savings for the first five quarters of the program year amounted to 161,900,789 kWh/year, 34,908 kW, and 9,226,786 therms/year. This is the first year that the net verified energy savings have included the untracked attributable savings resulting from the Impact Evaluation of the Education and

[1] The "18-month Contract Period" refers to program implementation between July 1, 2007, and December 31, 2008.

[2] The statewide Focus on Energy Business Program and Wisconsin Public Service Business Programs began joint administration in FY06. Wisconsin Public Service funded an oversample in its service territory. This data are included in the statewide results. Results for Wisconsin Public Service only are provided in Appendix B Wisconsin Public Service Results.

[3] *Business Programs: Participant Spillover Savings Study*, State of Wisconsin, Department of Administration, December 22, 2005.

Training Program[4]. These are the energy savings that would not have occurred in the absence of the programs[5].

- The 18MCP attribution rates for kWh, kW, and therms are 60 percent, 58 percent, and 52 percent, respectively. The 18MCP kWh, kW, and therm attribution factors are not statistically different from the FY07 results at the 95 percent confidence interval. Attribution is the fraction of verified gross that is attributable to the program; that is, the fraction of verified gross savings that would not have occurred without the program. It includes effects of program attributable energy efficiency measures implemented outside the program where these effects are well documented.[6]
- The 18MCP gross savings adjustment factors for kWh, kW, and therms are 93 percent, 93 percent, and 91 percent, respectively. The gross savings adjustment factor adjusts gross reported savings for installation rates, tracking system data entry errors, and errors in gross savings calculations including corrections to input assumptions. These results indicate that the program is accurately and appropriately calculating and reporting gross energy savings in WATTS and WISeerts.

1.2.1 Comparison across years

Figures 1-1 through 1-3 show the gross savings, attribution and realization rates over time. These charts incorporate 11 rounds of impact evaluation data collection (earlier fiscal years received multiple rounds of data collection) going back to the start of the program in April 2001. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence.

The Business Programs have been continuously evolving since inception. Many of these changes have resulted in methodological changes over the years that may have affected the trends in adjustment factors and may not reflect improvements or declines in program effectiveness. Eight such changes are highlighted below.

- A revised survey instrument has been developed based on the recent evaluation framework paper.[7]

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[4] *Impact Evaluation of Education and Training Program*, Wisconsin Public Service Commission, Draft Report October 15, 2008.

[5] Unlike the added spillover savings, the untracked attributable savings resulting from the Impact Evaluation of the Education and Training Program are not included in the adjustment factors.

[6] The statistical comparison to FY07 is not based solely on the FY07 data collected as part of the FY07 Abbreviated Impact Evaluation. It is based on a combination of FY06 and FY07 data. For more details on the abbreviated approach, see the *Focus on Energy Evaluation Abbreviated FY07 Business Programs Impact Evaluation* memo.

[7] Rick Winch and Tom Talerico, Glacier Consulting Group; Bobbi Tannenbaum, KEMA, Inc.; Pam Rathbun, PA Consulting Group; Ralph Prahl, Ralph Prahl & Associates. Wisconsin Public Service

- Energy savings values for CFLs were deemed starting in FY06. The only potential adjustment for gross savings is based on the quantity of bulbs installed, not the wattages or operating hours of the bulbs.
- A number of other measures were deemed starting in FY07. Most of these measures were not included as part of the FY07 impact evaluation, but this round includes a significant number of deemed measures. As with the CFLs, deemed measures are only adjusted for the number of units installed or the algorithm inputs used to calculate the deemed savings. Deemed measures include a number of lighting measures, premium efficiency motors, furnaces, boilers, air conditioners, and others.
- In FY06, all CFL savings tracked in the Rebates Database were being credited to the Channel Lighting sector and were not part of the Agriculture or Commercial sectors. However, for the purposes of this report the FY06 Channel savings were rolled up into the four sectors to allow apples-to-apples comparisons across program years.
- The attribution estimation method for CFLs changed in FY06 from one based on self-reported program response to market-based methods. The most current attribution factors calculated by the evaluation team[8] were used for all low wattage (<30 W) CFLs in the CATI sample. These attribution rates were 111 percent for the Commercial sector and 91 percent for the Agricultural sector. This is the first evaluation that uses separate adjustment factors for Commercial and Agriculture[9]. The FY06 evaluation used 100 percent for Commercial and Agriculture CFLs.[10]
- In FY06 the program implemented the Channel Initiatives and allocated energy savings from these measures to the Channels. The FY06 impact evaluation was designed and reported separately by sector and channel. In FY07 the program reverted back to allocating all energy savings to the four primary sectors. The results of the impact evaluations conducted during the 18MCP, beginning with the FY07 evaluation, are presented separately for each of the four primary sectors: Agricultural, Commercial, Industrial, and Schools & Government. For the purposes of this report the FY06 Channel savings were rolled up into the four sectors to allow apples-to-apples comparisons across program years.
- The FY07 evaluation used an abbreviated approach. The approach combined a sample of the largest projects implemented in FY07 and the sample of all BUT the largest projects from the FY06 impact evaluation. This approach assumes that the

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Commission, *Focus on Energy Evaluation: Framework for Self-Report Net-to-Gross (Attribution) Questions*. July 3, 2008.

[8] *Second Annual Comprehensive CFL Market Effects Study – Final Report*, prepared by Glacier Consulting Group, LLC for the State of Wisconsin Public Service Commission, September 30, 2008.

[9] The Commercial value of 111 percent attribution was applied to CFLs in the CATI sample that fell under the Industrial or Schools & Government sectors.

[10] *FY04/05 Net-to-Gross Savings Adjustments for CFLs Rewarded through the ENERGY STAR Products Program*, memorandum to Oscar Bloch, Wisconsin DOA, dated January 11, 2006 (Revised Draft).

net-to-gross components for all projects except the largest are essentially the same in FY06 and FY07. A detailed discussion of the abbreviated approach is provided in the memorandum that reports the FY07 results.[11] Because the FY07 adjustment factors include the effects of participants from both FY06 and FY07, we did not statistically compare the results of those two years. However we did compare FY05 with FY06 and FY07[12] with 18MCP.

- The 18MCP evaluation is the first impact evaluation with a large fraction of deemed savings in the impact evaluation sample frame. The engineering sample includes some deemed measures, but the vast majority of the CATI non-CFL savings come from deemed measures. A modification was made to the calculation of the Gross Savings Adjustment Factor and the Attribution Factor to account for the large fraction of deemed savings in the CATI sample. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent). The deemed sector-level CFL energy savings values were applied to CATI CFLs.

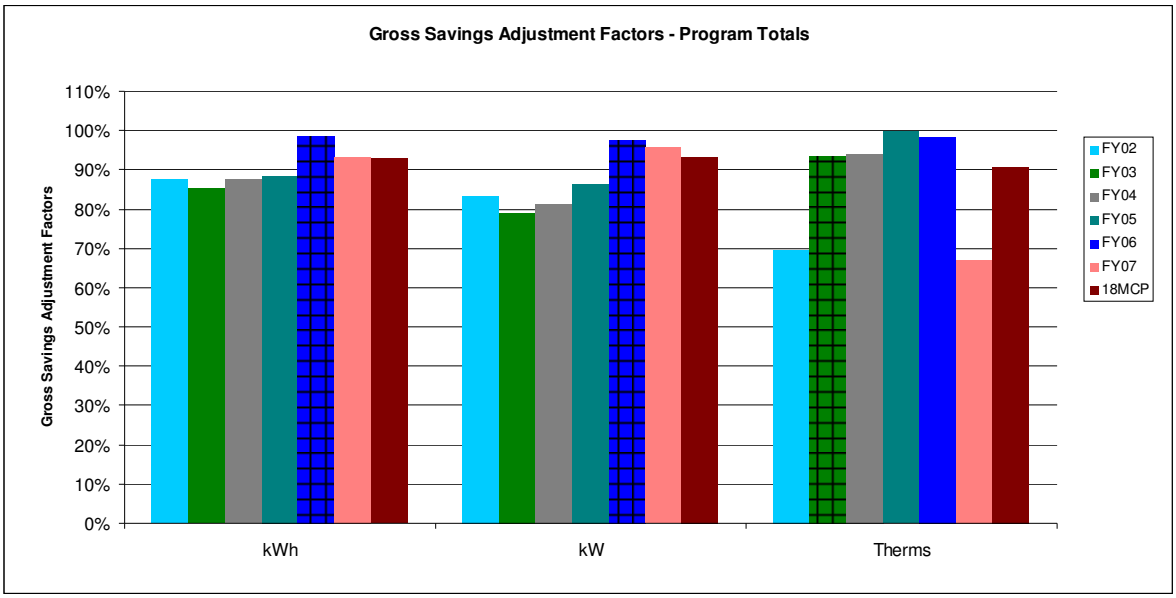
As mentioned above, cross-hatching in Figure 1-1 through Figure 1-3 indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence. There is no statistical difference (95 percent confidence level) between FY07 and 18MCP gross savings adjustment factors at the Business Programs level. However the change in gross savings adjustment factor for therms from 67 percent to 91 percent is just under the threshold for statistical significance at 95 percent confidence (p-value = 0.065). Although not statistically significant the kWh and kW results show a gradually decreasing trend since FY06, the year that market-based CFL attribution began. In general, the high market-based CFL attribution values appear to be masking an overall decline in the attribution for non-CFL measures.

There is no statistical difference at the portfolio level for attribution and the realization rates.

[11] *Focus on Energy Evaluation Abbreviated FY07 Business Programs Impact Evaluation*, memorandum to Oscar Bloch of the Public Service Commission of Wisconsin, dated February 18, 2008.

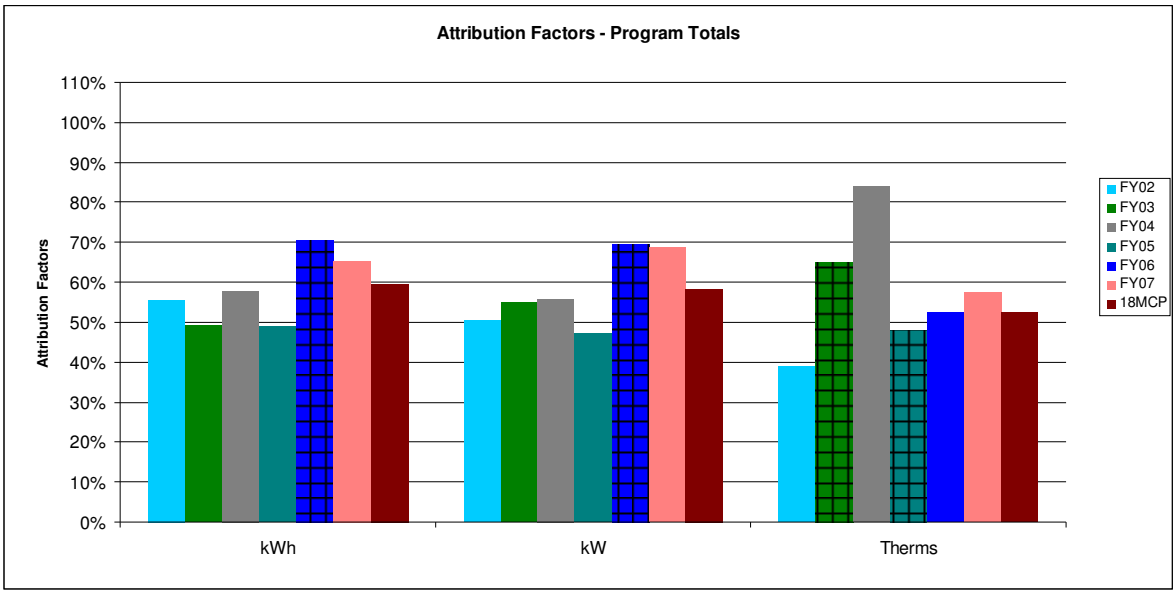
[12] FY07 is an amalgam of FY06 and FY07. For more details, see the *Focus on Energy Evaluation Abbreviated FY07 Business Programs Impact Evaluation* memo.

Figure 1-1. Gross Savings Adjustment Factors by Energy Unit[a b]
Comparison across Fiscal Years



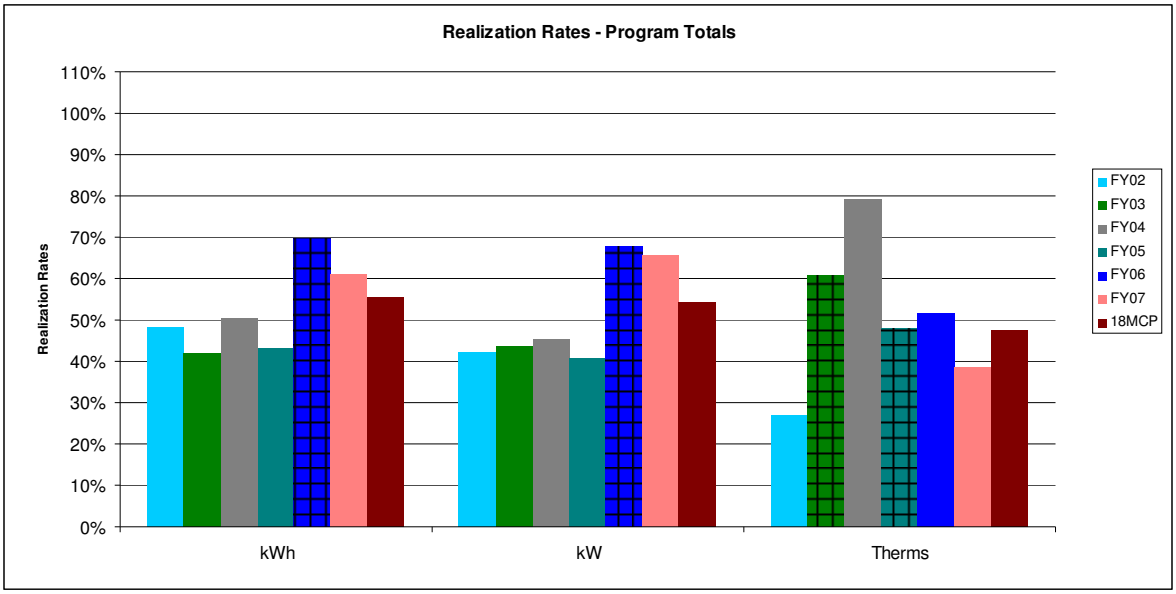
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 1-2. Attribution Factors by Energy Unit[a b]
Comparison across Fiscal Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 1-3. Realization Rates by Energy Unit[a b]
Comparison across Fiscal Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

1.2.2 Reasons for discrepancies between verified and tracked savings

Table 1-1 shows the discrepancies between reported and verified gross savings between this round and the previous two rounds of evaluation[13]. It should be noted that, despite the fact that more projects were adjusted negatively in 18MCP than in previous rounds, the engineering verification factors are consistent. That is, changes in the engineering verification factors from FY07 to 18MCP are not statistically significant at the 95 percent confidence level for the Business Programs overall.[14]

Table 1-1. Discrepancies between Verified and Reported Gross Savings

Comparison With Past Years	FY06						FY07						18MCP Rounds 1 & 2					
	kWh		kW		Therms		kWh		kW		Therms		kWh		kW		Therms	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Not installed	1	1%	1	1%	2	3%	0	0%	0	0%	0	0%	4	1%	3	0%	1	1%
Verified gross savings matches documented gross savings	115	90%	79	92%	66	84%	25	51%	25	60%	9	23%	319	46%	325	51%	74	47%
Verified gross savings doesn't match documented gross savings	12	9%	6	7%	11	14%	24	49%	17	40%	31	78%	368	53%	307	48%	81	52%
Verified gross savings is more than 10% greater than reported gross savings	11	9%	5	6%	10	13%	14	29%	9	21%	28	70%	106	15%	76	12%	26	17%
Verified gross savings is more than 10% less than reported gross savings	1	1%	1	1%	1	1%	10	20%	8	19%	3	8%	262	38%	231	36%	55	35%
Engineering sample by energy unit	**128**		**86**		**79**		**49**		**42**		**40**		**691**		**635**		**156**	
Total engineering sample	**183**						**50**						**801**					

[13] Discrepancies shown in Table 1-1 reflect only the discrepancies for measures that were part of the engineering review and not measures that were part of the computer-aided telephone interview (CATI).

[14] See Tables A-4, A-5, and A-6 in Appendix A.

The first line in Table 1-1 refers to measures that were not installed. There is a relatively small number of measures in this category. The third line shows the number of measures that received an adjustment in the 18MCP evaluation. For the first time, the number of measures adjusted exceeds the number of measures that weren't adjusted. This is primarily because of a single large participant that had a number of similar measures that all received the same adjustment.

1.3 METHODS

KEMA uses the statistical procedure of ratio estimation to develop estimates of evaluation verified gross and net impacts. There are two basic steps to the process.

- **Verify energy savings in a sample of participating customers.** For a sample of customers that installed energy efficient equipment during 18MCP, KEMA estimated actual energy savings under current conditions. For the larger custom projects that accounted for a significant portion of total tracked savings, KEMA conducted detailed engineering reviews to determine how tracking gross savings were calculated. Program tracking data, program documentation, and customer interviews by an energy engineer were part of the engineering reviews. For smaller projects a computer aided telephone interview (CATI) was used to collect information on measure installation and program attribution. The majority of these smaller projects ("CATI non-CFL") are deemed measures. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent). The deemed sector level CFL energy savings values were applied to CATI CFLs.
- **Expand sample results to the population of customers.** The sample results obtained in Step 1 were expanded to the population by calculating the ratios of verified-to-tracked (gross savings adjustment factor) and attributable-to-verified (attribution factor) for the sample. The results of the *Participant Spillover Savings Study*[15] were added to the ratios and they were then applied to the population. Untracked attributable savings (UAS) resulting from the Impact Evaluation of the Education and Training Program were then applied to the population net savings.[16]

The adjustment factors estimated from the data collection and analysis include:

- **Gross savings adjustment factor:** This factor combines the installation rate and the engineering verification factor. It corresponds to the ratio of the verified gross savings to the tracking estimate of savings.
- **Attribution factors:** This factor adjusts verified gross savings for program attribution. It is the estimated proportion of verified gross savings attributable to

[15] *Business Programs: Participant Spillover Savings Study*, State of Wisconsin, Department of Administration, December 22, 2005.

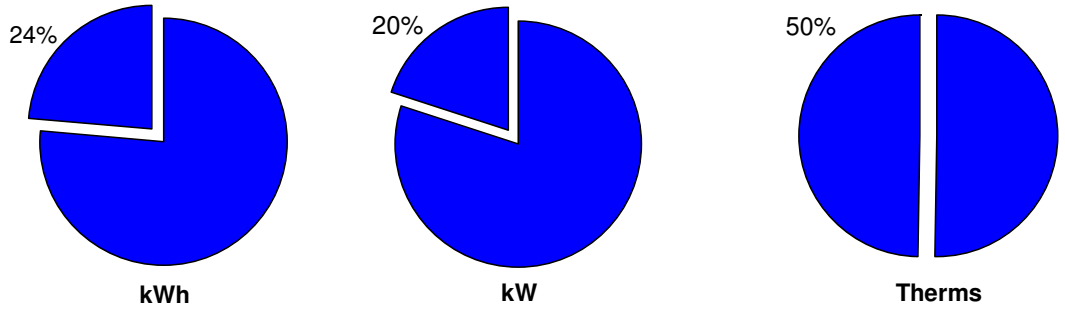
[16] Unlike the added spillover savings, the untracked attributable savings resulting from the Impact Evaluation of the Education and Training Program are not included in the adjustment factors.

the Focus Business Programs. It corresponds to the ratio of net savings to verified gross savings. The attribution factors presented in this report use the historical calculation methodology.

- **Realization rate:** This factor combines the gross savings adjustment factor and the attribution factor. It corresponds to the ratio of the net savings to the tracking estimate of savings.

During the second round of data collection, KEMA obtained 17 sample completes (all engineering). During the first round of data collection, KEMA obtained a total of 522 sample completes (355 CATI completes and 167 engineering completes). Figure 1-4 shows the percentage of population savings included in the sample. The electric savings percentages are comparable to those obtained during FY06 which were 25 percent and 23 percent for kWh and kW respectively. The 18MCP therms percentage is much higher than FY06 which was 35 percent for therms.

Figure 1-4. Percent of 18MCP Tracking Gross Savings Included in Sample



2. INTRODUCTION

This report presents the results of the Impact Evaluation of the statewide Focus on Energy Business Programs measures implemented during the first five quarters (July 1, 2007, through September 30, 2008) of the 18-month contract period[17] (18MCP). This report combines the results of two rounds of data collection. The first round covered measures implemented between July 1, 2007, and March 31, 2008. The second round covered measures implemented between April 1, 2008, and September 30, 2008. The second round was an abbreviated approach that focused on a small sample of the largest projects implemented between April and September.

The principal objective of the impact evaluation was to determine the energy and demand savings attributable to the program. The analysis calculates a set of adjustment factors that are used to determine evaluation verified gross and net energy savings for the statewide Focus on Energy Business Program.[18] Since the start of the program, the evaluation team has implemented eleven rounds of data collection and document review to estimate net energy savings for Business Programs (BP).

In this section we summarize the evaluation approach and describe the organization of the remainder of the report.

2.1 OVERVIEW OF APPROACH

KEMA uses the statistical procedure of ratio estimation to develop estimates of evaluation verified gross and net impacts. There are two basic steps to the process.

- **Verify energy savings in a sample of participating customers.** For a sample of customers that installed energy efficient equipment during 18MCP, KEMA estimated actual energy savings under current conditions. For the larger custom projects that accounted for a significant portion of total tracked savings, KEMA conducted detailed engineering reviews to determine how tracking gross savings were calculated. Program tracking data, program documentation, and customer interviews by an energy engineer were part of the engineering reviews. For smaller projects a computer aided telephone interview (CATI) was used to collect information on measure installation and program attribution. The majority of these smaller projects ("CATI non-CFL") are deemed measures. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent). The deemed sector-level CFL energy savings values were applied to CATI CFLs.

[17] The "18-month Contract Period" refers to program implementation between July 1, 2007, and December 31, 2008.

[18] The statewide Focus on Energy Business Program and Wisconsin Public Service Business Programs began joint administration in FY06. Wisconsin Public Service funded an oversample in its service territory. This data are included in the statewide results. Results for Wisconsin Public Service only are provided in Appendix B Wisconsin Public Service Results.

- **Expand sample results to the population of customers.** The sample results obtained in Step 1 were expanded to the population by calculating the ratios of verified-to-tracked (gross savings adjustment factor) and attributable-to-verified (attribution factor) for the sample. The results of the *Participant Spillover Savings Study*[19] were added to the ratios and they were then applied to the population. Untracked attributable savings (UAS) resulting from the Impact Evaluation of the Education and Training Program were then applied to the population net savings.[20]

The adjustment factors estimated from the data collection and analysis include:

- **Gross savings adjustment factor:** This factor adjusts tracking gross savings for installation and changes based on the engineering review. Applying the gross savings adjustment factor to tracking gross savings produces the estimate of verified gross savings.
- **Attribution factor:** This factor adjusts verified gross savings for program attribution.
- **Realization rate:** This factor combines the gross savings adjustment factor and the attribution factor. (It is the ratio of net savings to tracking gross savings.)

2.2 ORGANIZATION OF REPORT

Section 3 of the report is a summary of the adjustment factors presented in this report followed by the energy savings results. The 18MCP results are provided for kWh, kW, and therms, both by sector and for the Business Program overall. A statistical comparison of adjustment factors across years is also provided. Following the adjustment factor results are a series of tables showing the application of the adjustment factors to the gross reported savings and a discussion of the discrepancies between gross reported and gross verified savings. The energy savings results tables include the effects of the Impact Evaluation of the Education and Training Program.

Section 4 of the report presents a more detailed discussion of the impact evaluation approach. This section includes adjustment factor definitions, sampling plan, and a brief description of major changes to the impact evaluation since the last full evaluation which covered FY06.

Following Section 4 is a series of appendices containing:

- Series of tables and charts showing the 18MCP installation and engineering adjustment factors and additional engineering results.
- Results for projects completed by Wisconsin Public Service customers

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[19] *Business Programs: Participant Spillover Savings Study*, State of Wisconsin, Department of Administration, December 22, 2005.

[20] Unlike the added spillover savings, the untracked attributable savings resulting from the Impact Evaluation of the Education and Training Program are not included in the adjustment factors.

- An overview of some of the survey responses received during data collection.
- Detailed sample design tables showing various components of the sample design.
- A detailed explanation of the process used to determine attribution.
- Discussion on the incorporation of non-CFL spillover into the existing attribution calculation and the addition of untracked attributable savings from the Education and Training impact evaluation.
- An explanation of the process used to expand the sample results to the population.
- A complete list of the deemed savings measures and their values for the time period covered by this evaluation.
- Engineering survey instrument.
- CATI survey instrument.
- Supplier survey instrument.

3. ENERGY SAVINGS RESULTS

The primary objective of this evaluation is to calculate energy and demand savings attributable to the program for 18MCP. This section of the report provides a brief description of the impact evaluation's key indices, the results of the 18MCP adjustment factor analysis, a statistical comparison of adjustment factors across years illustrated with a series of bar charts, a discussion of the discrepancies between gross verified and tracked energy savings, and the application of adjustment factors to gross reported savings.

3.1 DESCRIPTION OF KEY INDICES

The impact analysis determines the energy and demand savings attributable to the programs.

Direct impacts are the energy and demand savings of projects that have been implemented through the programs and are tracked by them.

Indirect impacts are energy and demand savings attributable to the programs but not tracked by them. These impacts result from market effects attributable to the programs.

The program reports its estimate of the gross savings due to each tracked measure. The gross savings is the difference between customers' energy use with the tracked measure(s) installed and what usage would have been without the measure(s). The impact analysis for a measure, group of measures, sector, or program area determines two key adjustment factors to the program-reported gross savings:

- The gross savings adjustment factor. This is the ratio of gross savings as verified by the evaluation team to the program-reported savings.
- The attribution factor. This is the ratio of the total savings attributable to the program to the verified gross savings.

Both of these factors are determined at the sector and overall Business Programs levels[21].

The gross savings adjustment factor for each sector is determined by selecting a sample of completed projects from the sector and conducting an engineering review of the program savings estimates for those projects. The sampling and review process is described in Section 4, "General Approach."

The attribution factor is determined by one of two methods:

- **Market sales-based method:** this relies on aggregate data on total sales of a particular technology in Wisconsin, and compares this sales volume with a baseline estimate of the volume that would have been sold in the absence of the program. The accuracy of this method depends on the completeness and accuracy of the sales data as well as the validity of the baseline estimate.

[21] Results for Wisconsin Public Service are provided in Appendix B.

- **Self-reported program response method**: this relies on responses to survey questions asking end users and/or vendors what they would have done in the absence of the program. The accuracy of estimates based on self-reported data depends on the ability (and likely inclination) of the respondent to give accurate answers, as well as on the validity of the statistical sampling and estimation process.

The impact analysis begins with the savings estimates tracked by the Business Programs. The analysis provides the following information:

- Savings estimates by sector as reported in the program tracking systems (WATTS, WISeerts, and the Rebates database).
- Gross savings adjustment factors.
- Attribution adjustment factors.
- Verified gross savings developed by applying the gross adjustment factors to the savings estimates from the program tracking system.
- Verified net savings developed by applying the attribution adjustment factors to the verified gross savings.

The gross savings and attribution adjustment factors are based on two rounds of data collection that cover the first five quarters of the 18MCP. The adjustment factors reported in this document will be used for further impact evaluation reporting until the next revised estimates are developed. The next revised estimates will be developed during the next impact evaluation, scheduled to begin during the fourth quarter of 2009.

3.2 RESULTS

This section provides the results of the 18MCP impact evaluation. The results are presented for the overall program and separately by sector for kWh, kW, and therms. The results are presented in the following order.

1. **Gross savings adjustment factor.** This factor combines the installation rate and the engineering verification factor. It is the product of the Installation Rate and the Engineering Verification Factor.
2. **Attribution factor.** This factor adjusts verified gross savings for program attribution. It is determined from the self-reported survey responses.
3. **Realization rate.** This factor simply combines the effect of all adjustment factors. It is the product of the gross savings adjustment factor and the attribution factor.

The installation rate and engineering verification factors, the components of the gross savings adjustment factor, are provided in Appendix A. The installation rate adjusts the gross savings for non-installation and the engineering verification factor adjusts gross savings for changes based on the engineering review.

3.2.1 18MCP results tables

The 18MCP adjustment factors are provided in the tables below with indicators of statistical precision, the 90 percent confidence interval, and sample sizes. The relative error (%) indicated for each confidence interval is the relative difference between the estimated percentage and the upper or lower confidence bound, not the absolute difference. The ± amount indicated for each confidence interval is the absolute difference in the estimated percentage. For example, the Commercial kWh gross savings adjustment estimate in Table 3-1 is 91 percent, the 90 percent confidence interval is ± 4.1 percentage points (i.e., 91% ± 4.1% or 86.5% to 94.7%) and the relative precision (at 90 percent confidence) is 4.5 percent (4.1%/91%).[22] The adjustment factors are calculated using a SAS® macro provided by SAS for ratio estimation by domains. The procedure also returns the standard error of the estimate. The standard error is calculated using two methods.

The first method recognizes the sample as drawn from a finite population: the measures installed within the analysis period (July 1, 2007–September 30, 2008) with associated energy impacts in the program-tracking database. This calculation uses the Finite Population Correction (FPC) factor. This factor is a reduction to the calculated variance that accounts for the fact that a relatively large fraction of the population of interest has been observed directly and is not subject to uncertainty. It is appropriate to apply precision statistics, such as confidence intervals, based on the standard error calculated in this manner when quantifying the results of the program during the study period only.

The second method treats the population of interest as essentially infinite. Thus, the measures installed to date and the sample selected from them is regarded as random instances of a virtually infinite number of measures that could have been installed under the program. In this case, the FPC is not included. It is appropriate to apply standard errors calculated in this manner when applying the verification factors developed from this study to tracked savings from other years to estimate verified savings in those years.

In this report, the sampling frame includes all measure installed within the analysis period (July 1, 2007–September 30, 2008) with energy impacts associated with the program-tracking database. We use the FPC when applying the calculated adjustment factors to that period. We would not use the FPC when applying these adjustment factors to savings outside the analysis period; for example energy savings associated with measures installed in 2009.

3.2.2 Comparison across years charts

Following the tables of the 18MCP adjustment factor estimates are three charts showing the same adjustment factors over time. A separate chart is provided for kWh, kW, and therms. These charts incorporate eleven rounds of impact evaluation data collection (earlier fiscal years received multiple rounds of data collection) going back to the start of

[22] The critical value for calculating the confidence interval ± for each adjustment factor is determined using Student's t-distribution and n-1 for the degrees of freedom, where n is the sample size. The critical value for the Gross Savings Adjustment Factor and the Realization Rate is determined using the degrees of freedom based on the minimum sample size for the components of the adjustment factor. These two adjustment factors are products of other adjustment factors.

the program in April 2001. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence.

The Business Programs have been continuously evolving since inception. Many of these changes have resulted in methodological changes over the years that may have affected the trends in adjustment factors and may not reflect improvements or declines in program effectiveness. Seven such changes are highlighted below.

- A revised survey instrument has been developed based on the recent evaluation framework paper[23].
- Energy savings values for CFLs were deemed starting in FY06. The only potential adjustment for gross savings is based on the quantity of bulbs installed, not the wattages or operating hours of the bulbs.
- A number of other measures were deemed starting in FY07. Most of these measures were not included as part of the FY07 impact evaluation, but this round includes a significant number of deemed measures. As with the CFLs, deemed measures are only adjusted for the number of units installed or the algorithm inputs used to calculate the deemed savings. Deemed measures include a number of lighting measures, premium efficiency motors, furnaces, boilers, air conditioners, and others.
- In FY06 all CFL savings tracked in the Rebates Database were being credited to the Channel Lighting sector and were not part of the Agriculture or Commercial sectors. However, for the purposes of this report the FY06 Channel savings were rolled up into the four sectors to allow apples-to-apples comparisons across program years.
- The attribution estimation method for CFLs changed in FY06 from one based on self-reported program response to market-based methods. The most current attribution factors calculated by the evaluation team[24] were used for all low wattage (<30 W) CFLs in the CATI sample. These attribution rates were 111 percent for the Commercial sector and 91 percent for the Agricultural sector. This is the first evaluation that uses separate adjustment factors for Commercial and Agriculture[25]. The FY06 evaluation used 100 percent for Commercial and Agriculture CFLs[26].

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[23] *Focus on Energy Evaluation Framework for Self-Report Net-To-Gross (Attribution) Questions*, memorandum to Oscar Bloch of the Public Service Commission of Wisconsin, dated July 2, 2008.

[24] *Second Annual Comprehensive CFL Market Effects Study – Final Report*, prepared by Glacier Consulting Group, LLC for the State of Wisconsin Public Service Commission, September 30, 2008.

[25] The Commercial value of 111 percent attribution was applied to CFLs in the CATI sample that fell under the Industrial or Schools & Government sectors.

[26] *FY04/05 Net-to-Gross Savings Adjustments for CFLs Rewarded through the ENERGY STAR Products Program*, memorandum to Oscar Bloch, Wisconsin DOA, dated January 11, 2006 (Revised Draft).

- In FY06 the program implemented the Channel Initiatives and allocated energy savings from these measures to the Channels. The FY06 impact evaluation was designed and reported separately by sector and channel. In FY07 the program reverted back to allocating all energy savings to the four primary sectors. The results of the impact evaluations conducted during the 18MCP, beginning with the FY07 evaluation, are presented separately for each of the four primary sectors: Agricultural, Commercial, Industrial, and Schools & Government. For the purposes of this report the FY06 Channel savings were rolled up into the four sectors to allow apples-to-apples comparisons across program years.
- The FY07 evaluation used an abbreviated approach. The approach combined a sample of the largest projects implemented in FY07 and the sample of all BUT the largest projects from the FY06 impact evaluation. This approach assumes that the net-to-gross components for all projects except the largest are essentially the same in FY06 and FY07. A detailed discussion of the abbreviated approach is provided in the memorandum that reports the FY07 results.[27] Because the FY07 adjustment factors include the effects of participants from both FY06 and FY07, we did not statistically compare the results of those two years. However we did compare FY05 with FY06 and FY07[28] with 18MCP.
- The 18MCP evaluation is the first impact evaluation with a large fraction of deemed savings in the impact evaluation sample frame. The engineering sample includes some deemed measures, but the vast majority of the CATI non-CFL savings come from deemed measures. A modification was made to the calculation of the Gross Savings Adjustment Factor and the Attribution Factor to account for the large fraction of deemed savings in the CATI sample. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent). The deemed sector-level CFL energy savings values were applied to CATI CFLs.

3.3 GROSS SAVINGS ADJUSTMENT FACTORS BY SECTOR

Table 3-1 shows the 18MCP gross savings adjustment factors by sector. The gross savings adjustment factors combine the installation rates and the engineering verification factors to adjust the tracking estimate of gross savings. Nearly all the sector-level gross savings adjustment factors are about 90 percent; indicating the program is doing an effective job estimating gross energy savings.

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[27] *Focus on Energy Evaluation Abbreviated FY07 Business Programs Impact Evaluation*, memorandum to Oscar Bloch of the Public Service Commission of Wisconsin, dated February 18, 2008.

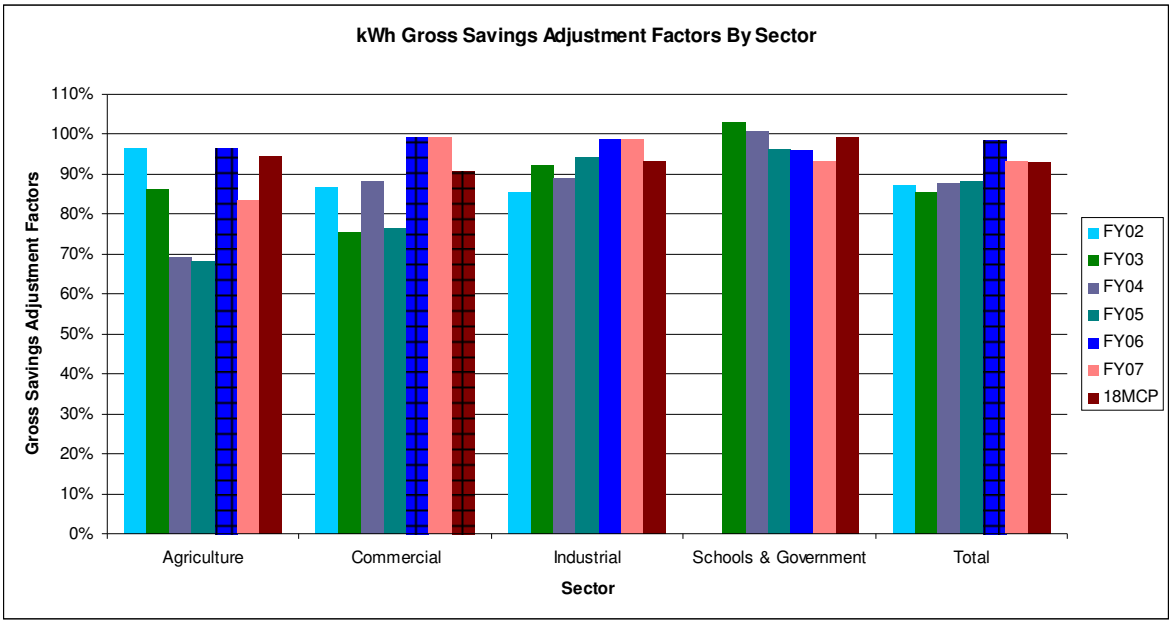
[28] The statistical comparison to FY07 is not based solely on the FY07 data collected as part of the FY07 Abbreviated Impact Evaluation. It is based on a combination of FY06 and FY07 data. For more details on the abbreviated approach, see the *Focus on Energy Evaluation Abbreviated FY07 Business Programs Impact Evaluation* memo.

Table 3-1. Gross Savings Adjustment Factors by Sector
Based on Samples from Participants Who Installed a Measure during 18MCP

	kWh						kW						Therms					
		Gross Savings	90% Confidence Interval					Gross Savings	90% Confidence Interval					Gross Savings	90% Confidence Interval			
Segment	min n	Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	min n	Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	min n	Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound
Agriculture	127	95%	4.2%	4.0%	90.5%	98.5%	107	97%	2.7%	2.6%	94.3%	99.5%	25	77%	7.3%	7.3%	70.0%	84.7%
Commercial	133	91%	4.5%	4.1%	86.5%	94.7%	129	95%	4.4%	4.2%	90.9%	99.2%	26	103%	5.2%	5.2%	98.3%	108.7%
Industrial	131	93%	7.1%	6.7%	86.5%	99.8%	121	91%	10.0%	9.1%	81.5%	99.6%	38	95%	6.1%	5.8%	88.8%	100.3%
S&G	77	99%	2.6%	2.6%	96.6%	101.8%	68	95%	4.5%	4.5%	90.3%	99.3%	63	79%	13.0%	10.2%	68.4%	88.9%
Business Programs Overall	470	93%	4.2%	3.9%	89.1%	96.9%	430	93%	4.5%	4.2%	89.1%	97.5%	152	91%	4.9%	4.4%	86.4%	95.2%

Figure 3-1 through Figure 3-3 show the gross savings adjustment factors over time and by sector for kWh, kW, and therms. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence. The kWh decrease for the Commercial sector is statistically significant at the 95 percent confidence level, as is the kW increase for the Agriculture sector. These are the only changes which are statistically significant at this level.

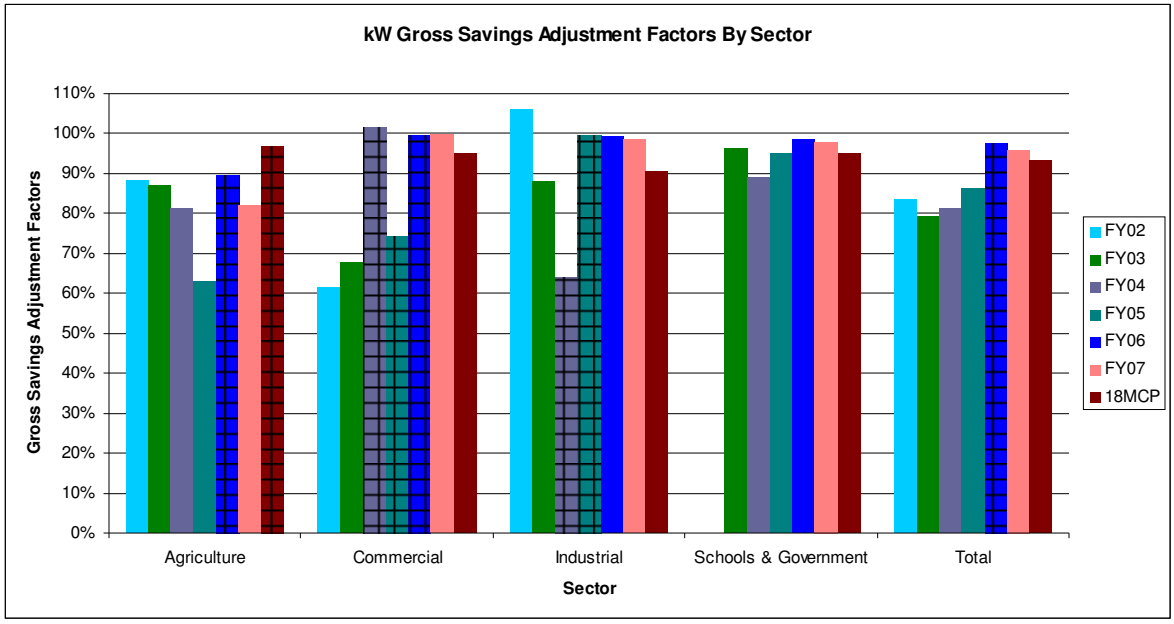
Figure 3-1. kWh Gross Savings Adjustment Factors by Sector[a b]
Comparison across Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.

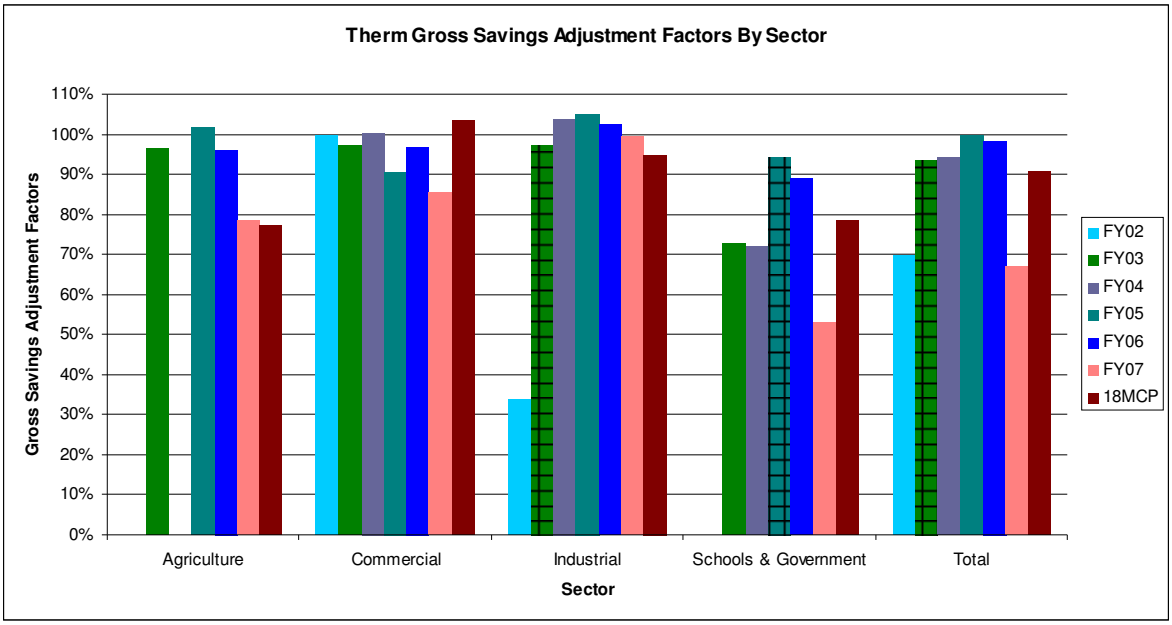
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 3-2. kW Gross Savings Adjustment Factors by Sector[a b]
Comparison across Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

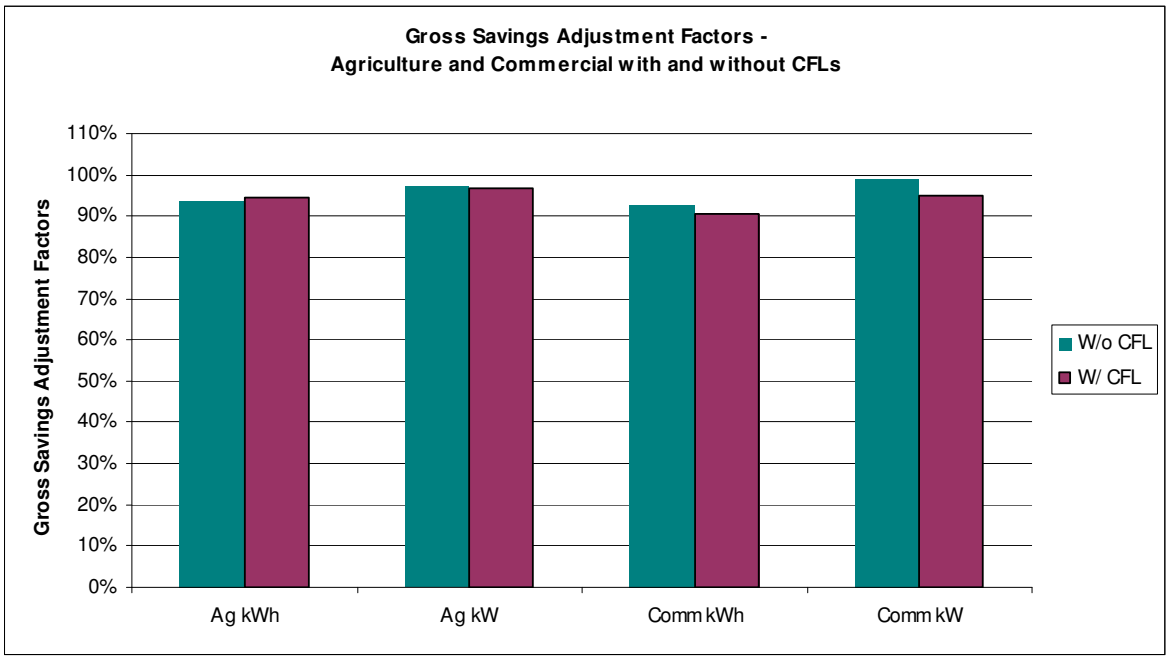
Figure 3-3. Therm Gross Savings Adjustment Factors by Sector[a b c]
Comparison across Years[a]



[a] For the agriculture segment, the FY04 adjustment factor for therms was estimated with inadequate accuracy. Hence, the results are essentially uninformative and they are not reported. In part, the agriculture segment savings adjustment factor for therms was difficult to estimate with adequate accuracy because many of the agriculture segment therms savings (both tracking and verified) were negative due to fuel switching (from electricity to gas).
[b] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[c] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

In the past, the gross savings adjustment factors for the Agriculture and Commercial sectors have been strongly affected by the inclusion of CFLs from the Rebates Database. In FY06, the move from evaluated gross savings to deemed CFL savings drove a strong increase in the Agriculture kW gross savings adjustment factor. Figure 3-4 shows the gross savings adjustment factors for Agriculture and Commercial with and without including CFL measures. The figure shows that CFLs resulted in an increase in Agriculture gross savings adjustment factor and a decrease in Commercial.

Figure 3-4. Gross Savings Adjustment Factors
Agriculture and Commercial with and without CFLs



3.4 ATTRIBUTION FACTORS BY SECTOR

The 18MCP attribution factors by sector are provided in Table 3-2. The 18MCP attribution factors for the program overall are 60 percent, 58 percent, and 52 percent for kWh, kW, and therms, respectively.

Table 3-2. Attribution Factors by Sector
Based on Samples from Participants Who Installed a Measure during 18MCP

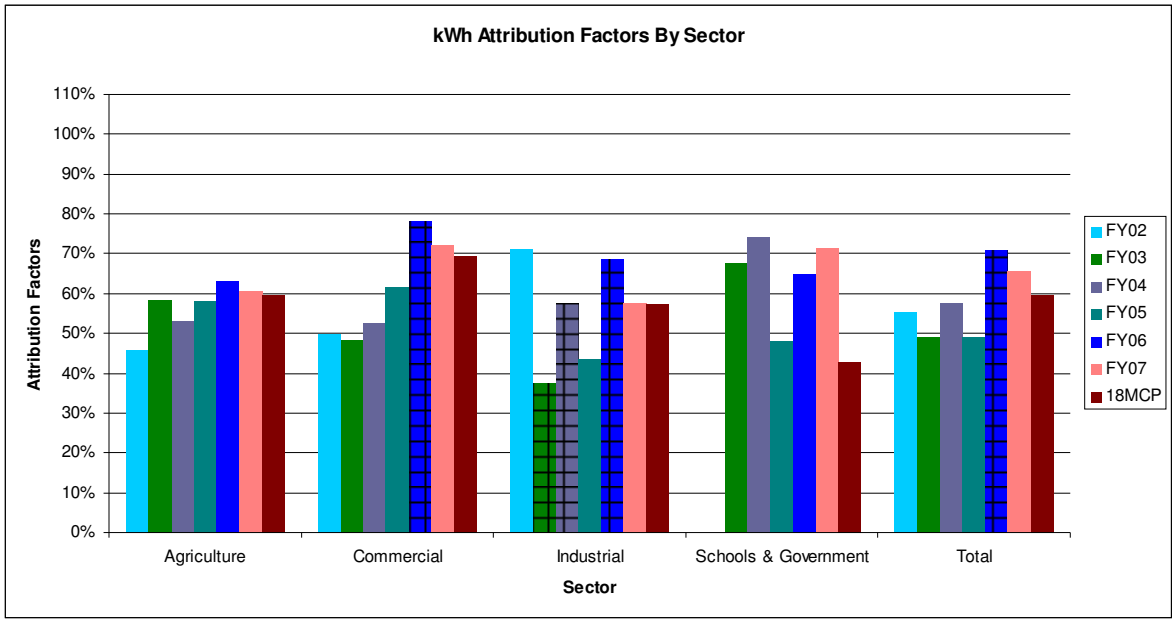
	kWh						kW						Therms					
			90% Confidence Interval						90% Confidence Interval						90% Confidence Interval			
Segment	n	Attribution Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Attribution Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Attribution Adjustment Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound
Agriculture	126	60%	14.2%	8.4%	51.1%	68.0%	107	57%	18.7%	10.6%	46.1%	67.4%	22	17%	8.5%	8.5%	8.1%	25.2%
Commercial	131	70%	12.1%	8.4%	61.1%	77.9%	126	69%	13.9%	9.6%	59.6%	78.9%	26	33%	12.7%	12.7%	20.5%	45.8%
Industrial	130	57%	12.9%	7.4%	49.8%	64.6%	124	54%	14.0%	7.5%	46.2%	61.3%	38	63%	11.6%	7.3%	56.0%	70.7%
S&G	77	43%	26.6%	11.4%	31.5%	54.4%	68	46%	14.1%	14.1%	31.8%	59.9%	62	38%	30.2%	11.5%	26.7%	49.7%
Business Programs Overall	464	60%	8.4%	5.0%	54.6%	64.5%	425	58%	9.0%	5.2%	53.0%	63.4%	148	52%	11.9%	6.2%	46.2%	58.6%

Figure 3-5 through Figure 3-7 show the attribution factors over time and by sector for kWh, kW, and therms. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence. The kW attribution adjustment factor for

the Schools & Government sector decreased from 85 percent to 46 percent. The therm adjustment factor for the Agriculture sector decreased from 46 percent to 17 percent. These decreases are statistically significant at the 95 percent confidence level. No other sector experienced a statistically significant change from the previous year.

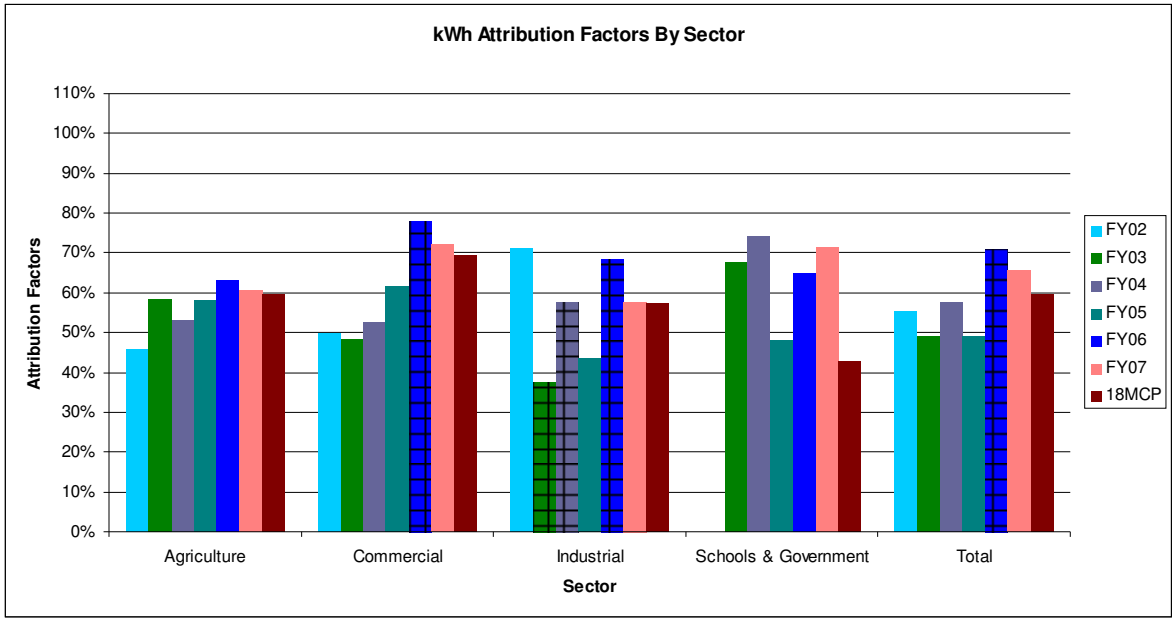
This impact evaluation follows a dramatic increase in program incentive levels. The increase in incentives was expected to result in an increase in attribution as well. The results in this section directly contradict this thinking. An analysis of the attribution rates and why they changed is currently being conducted and will be released early in the next contract in a memo that addresses additional looks at attribution. The additional analysis will use the information from this impact evaluation and analyze the attribution factors by customer and measure characteristics. The evaluation team has provided similar reports in the past few years.

Figure 3-5. kWh Attribution Factors by Sector[a b]
Comparison across Years



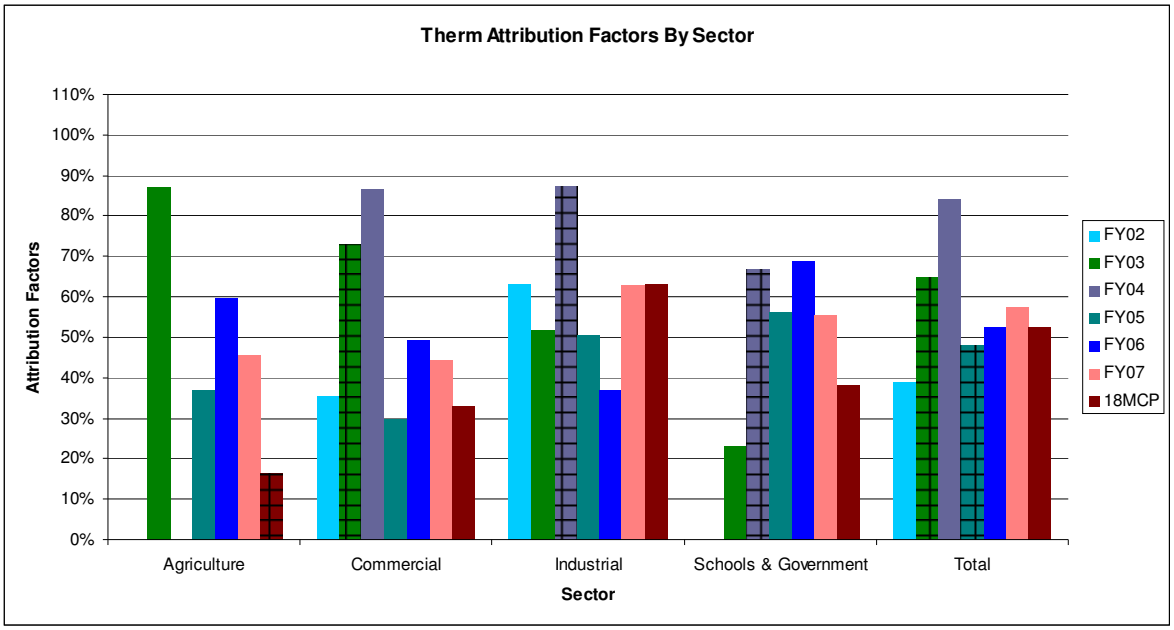
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 3-6. kW Attribution Factors by Sector[a b]
Comparison across Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

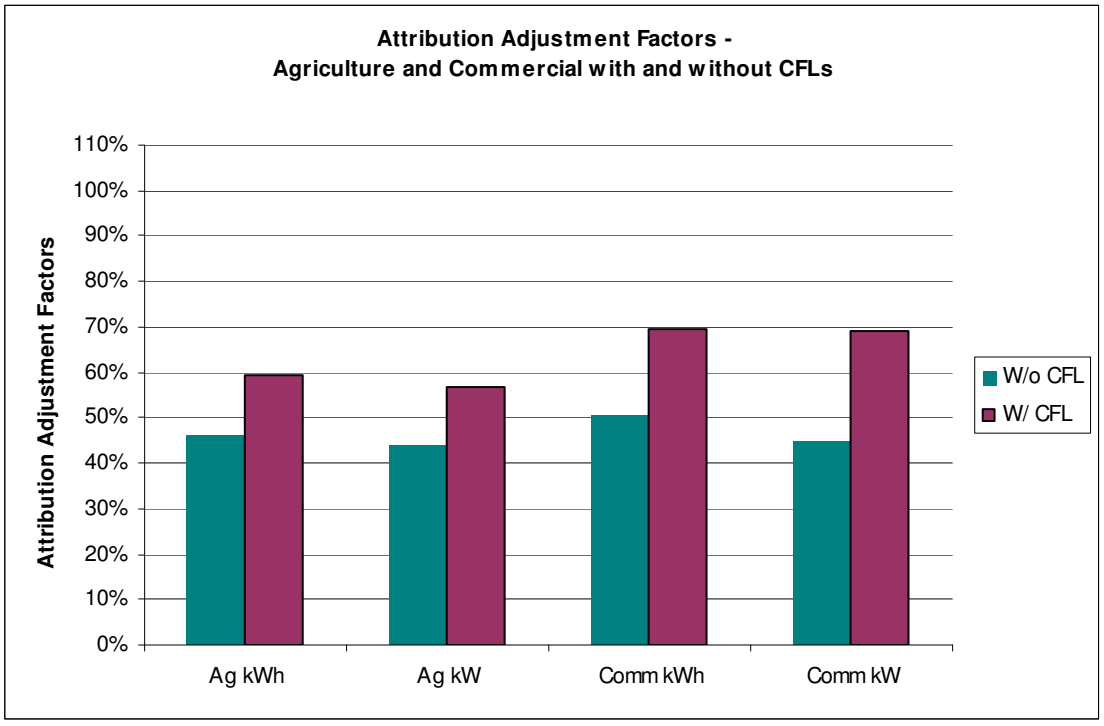
Figure 3-7. Therm Attribution Factors by Sector[a b c]
Comparison across Years



[a] For the agriculture segment, the FY04 adjustment factor for therms was estimated with inadequate accuracy. Hence, the results are essentially uninformative and they are not reported. In part, the agriculture segment savings adjustment factor for therms was difficult to estimate with adequate accuracy because many of the agriculture segment therms savings (both tracking and verified) were negative due to fuel switching (from electricity to gas).
[b] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[c] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 3-8 shows the Agriculture and Commercial attribution rates with and without CFLs. The CFLs increased the overall attribution for both sectors for kWh and kW. This is the first contract period that used deemed attribution values specific to the Business Programs instead of one that encompassed both the Business and Residential Focus programs. The attribution rates for the current round of evaluation are 91 percent for Agriculture and 111 percent for Commercial compared to 100 percent for both in FY06. The effect of the CFLs on Agriculture increased the attribution rates from 47 percent and 44 percent for kWh and kW respectively to 60 percent and 57 percent. The effect on Commercial increased the attribution rates from 49 percent and 43 percent to 69 percent and 69 percent, respectively.

Figure 3-8. Attribution Factors
Agriculture and Commercial with and without CFLs



3.5 REALIZATION RATES BY SECTOR

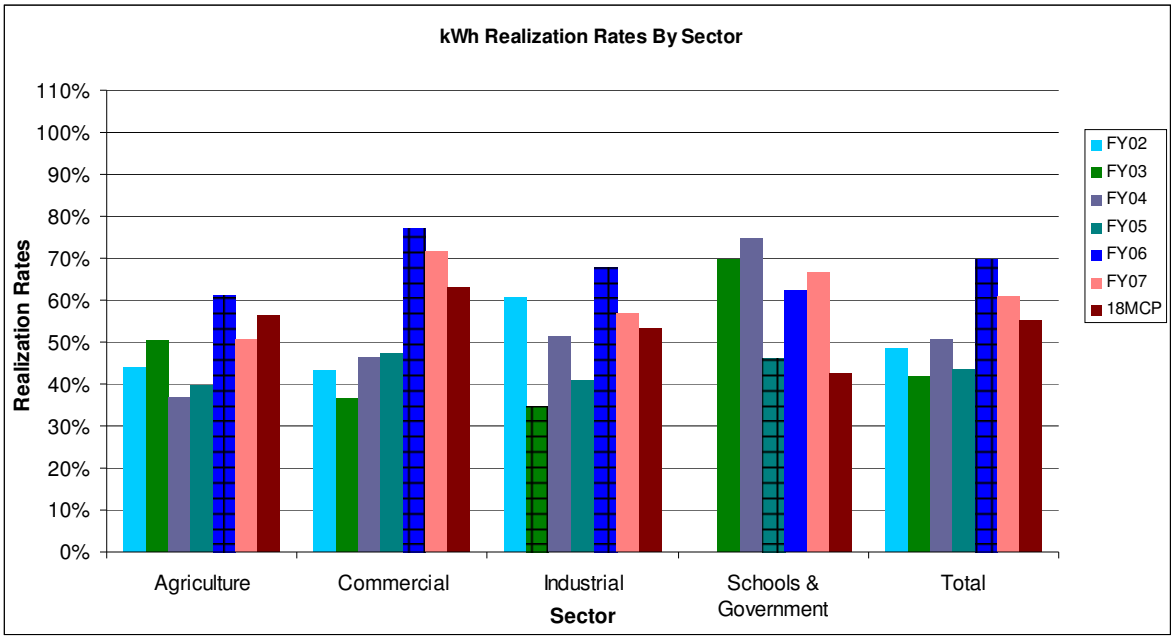
Table 3-3 shows the 18MCP realization rates by sector. The realization rates combine the effect of the gross savings adjustment factors and the attribution factors.

Table 3-3. Realization Rates by Sector
Based on Samples from Participants Who Installed a Measure during 18MCP

	kWh						kW						Therms					
			90% Confidence Interval						90% Confidence Interval						90% Confidence Interval			
Segment	min n	Realization Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound	min n	Realization Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound	min n	Realization Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound
Agriculture	126	56%	14.8%	8.3%	48.0%	64.6%	107	55%	18.9%	10.4%	44.6%	65.4%	22	13%	6.7%	6.7%	6.2%	19.6%
Commercial	131	63%	12.9%	8.1%	54.9%	71.1%	126	66%	14.6%	9.6%	56.2%	75.4%	26	34%	13.2%	13.2%	21.1%	47.5%
Industrial	130	53%	14.8%	7.9%	45.4%	61.1%	121	49%	17.2%	8.4%	40.3%	57.1%	38	60%	13.1%	7.8%	52.1%	67.8%
S&G	77	43%	26.7%	11.4%	31.2%	54.0%	68	43%	13.5%	13.5%	30.0%	57.0%	62	30%	32.9%	9.9%	20.2%	39.9%
Business Programs Overall	464	55%	9.3%	5.2%	50.2%	60.5%	425	54%	10.0%	5.4%	48.9%	59.8%	148	48%	12.8%	6.1%	41.5%	53.7%

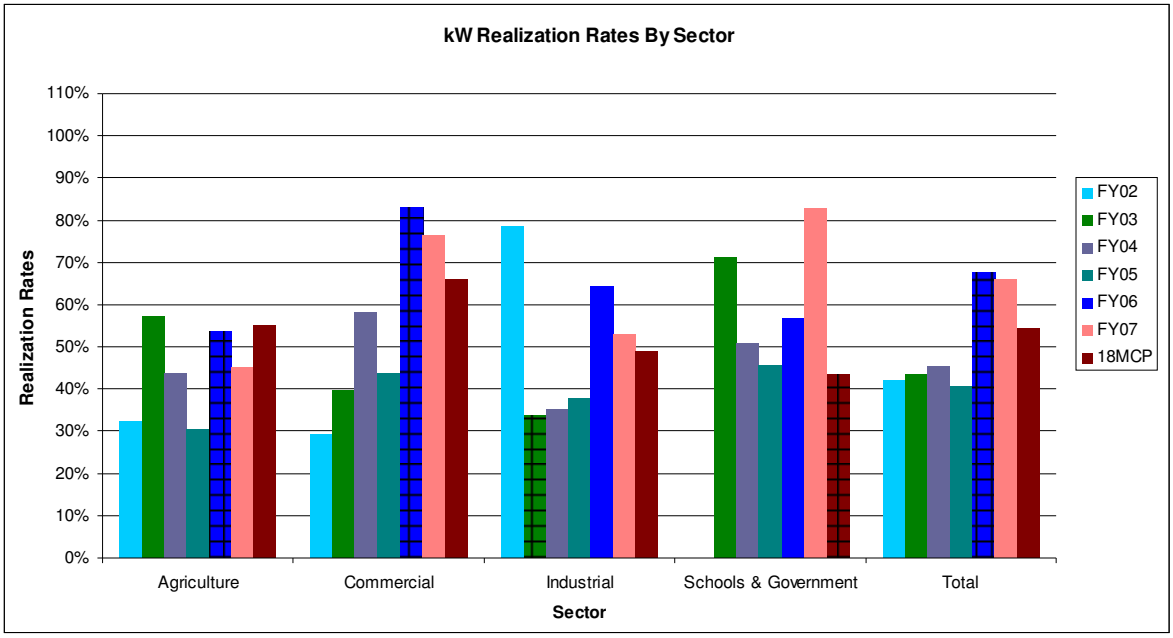
Figure 3-9 through Figure 3-11 show the realization rates over time and by sector for kWh, kW, and Therms. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence.

Figure 3-9. kWh Realization Rates by Sector[a b]
Comparison across Years



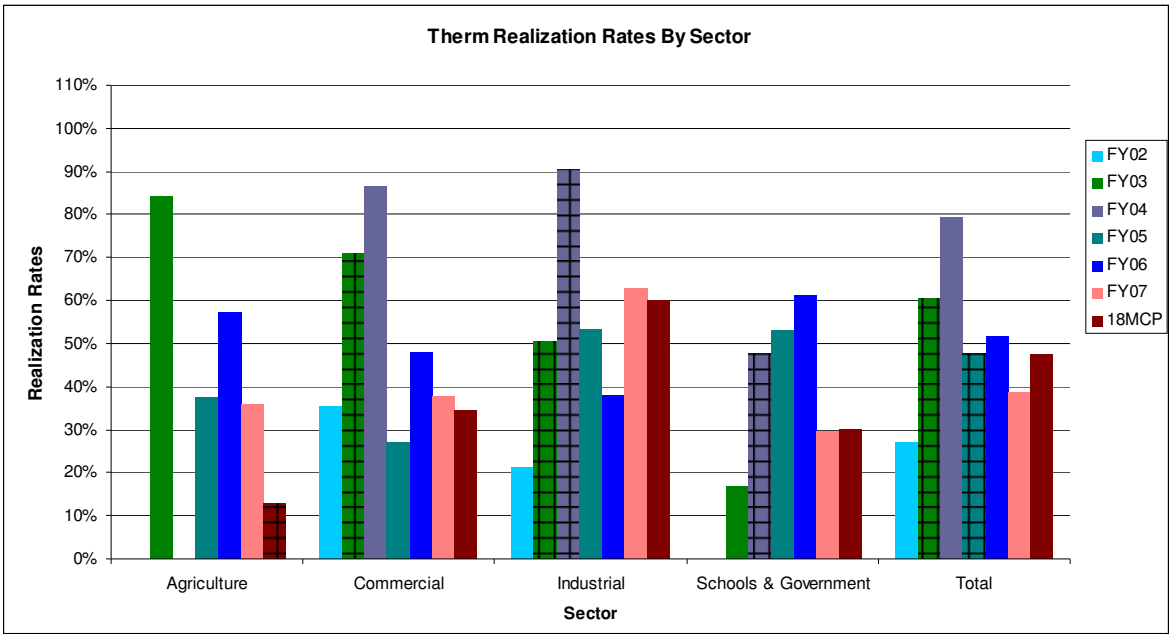
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 3-10. kW Realization Rates by Sector[a b]
Comparison across Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure 3-11. Therm Realization Rates by Sector[a b c]
Comparison across Years



[a] For the agriculture segment, the FY04 adjustment factor for therms was estimated with inadequate accuracy. Hence, the results are essentially uninformative and they are not reported. In part, the agriculture segment savings adjustment factor for therms was difficult to estimate with adequate accuracy because many of the agriculture segment therms savings (both tracking and verified) were negative due to fuel switching (from electricity to gas).
[b] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[c] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

3.6 ENGINEERING VERIFICATION FINDINGS

The engineering review determined the verified gross savings for each measure reviewed in the engineering sample.[29] An evaluation engineer conducted a review of the energy savings estimates for each project installed by customers that were part of the engineering sample and completed a telephone survey. The engineer used information from the telephone survey and the project paperwork to determine whether the reported savings were reasonable.

The review had two main components:

- **Evaluation of the calculation parameters.** The engineer reviewed the parameters used in the energy savings equations to determine whether they were reasonable. Some parameters (i.e., motor power, operating hours) were verified through information gathered from the site contact over the telephone. Other parameters were verified using secondary sources (i.e., light fixture wattage, cooling degree days).
- **Evaluation of the calculation method.** The engineer reviewed the method used to calculate the energy savings. Most energy savings estimates can be calculated in a variety of ways and still produce reasonable, though not equal, energy savings values. The engineer reviewed the method used for each project to ensure that it followed the general conventions of energy savings calculations and could produce a reasonably accurate result.

For some measures, the engineering review process produced an energy savings estimate that differed from the estimate reported by the program. The program savings estimate was judged "reasonable" if the engineering estimate was within 10 percent of the program estimate. As an example, say a prescriptive lighting project was installed and prescriptive savings and operating hours assumptions were used for the program energy savings estimate. The engineer collected the actual operating hours of the lights during the telephone survey and used that value, not the prescriptive estimate, to estimate the energy savings resulting from that measure. If the calculated energy savings were within 10 percent of the program prescriptive estimate, the program estimate was considered "reasonable" and the verified gross energy savings were set equal to the program savings. If the calculated savings were greater than 10 percent different from the program prescriptive estimate the verified gross energy savings were set equal to the engineering review estimate.

Table 3-4, **Table 3-5**, and **Table 3-6** show the count, energy savings, and percent savings of the adjusted projects for Business Programs overall. The percentage in the tables is not the amount adjusted, but is the percent of tracking savings in the engineering review represented by projects which were adjusted. See APPENDIX A: for a more detailed analysis at the sector-level.

[29] All measures that are reviewed by an engineer on the evaluation team are considered part of the engineering sample.

In contrast with past evaluations, the majority of measures in this round did receive an engineering adjustment. This is primarily because of one participant with a very high number of similar measures that all received an adjustment.

Table 3-4. Business Programs Discrepancy Count and Percent Savings, kWh Savings

	BP Overall kWh								
	Count			Reported Savings			% Total Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	4	4	na	679,341	679,341	na	1%	1%
10% to 20%	26	32	58	2,370,775	615,089	2,985,864	4%	1%	5%
20% to 30%	12	165	177	948,479	7,323,064	8,271,543	2%	13%	14%
30% to 50%	19	16	35	926,835	1,758,044	2,684,879	2%	3%	5%
50% to 100%	17	27	44	791,194	1,144,547	1,935,742	1%	2%	3%
100% or Greater	26	21	47	1,228,001	977,675	2,205,676	2%	2%	4%
Verified shows savings (+ or -) where reported = 0	6	0	6	0	0	0	0%	0%	0%
Adjusted	106	265	371	6,265,284	12,497,760	18,763,045	11%	21%	32%
Not Adjusted			314			39,778,245			68%
Total			685			58,541,290			100%
Notes: V = Verified; R=Reported									

Table 3-5. Business Programs Discrepancy Count and Percent Savings, kW Savings

	BP Overall kW								
	Count			Reported Savings			% Total Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	3	3	na	10	10	na	0%	0%
10% to 20%	15	7	22	449	423	871	4%	4%	8%
20% to 30%	10	159	169	175	389	564	2%	4%	5%
30% to 50%	16	10	26	187	399	586	2%	4%	6%
50% to 100%	8	17	25	222	843	1,065	2%	8%	10%
100% or Greater	6	37	43	115	279	394	1%	3%	4%
Verified shows savings (+ or -) where reported = 0	21	1	22	0	0	0	0%	0%	0%
Adjusted	76	234	310	1,147	2,343	3,490	11%	22%	33%
Not Adjusted			303			7,071			67%
Total			613			10,562			100%
Notes: V = Verified; R=Reported									

Table 3-6. Business Programs Discrepancy Count and Percent Savings, Therm Savings

	BP Overall Therms								
	Count			Reported Savings			% Total Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	1	1	na	9,720	9,720	na	0%	0%
10% to 20%	4	14	18	33,592	371,345	404,937	1%	7%	7%
20% to 30%	8	8	16	617,684	460,756	1,078,440	11%	8%	19%
30% to 50%	6	11	17	56,840	222,003	278,843	1%	4%	5%
50% to 100%	4	13	17	74,377	662,096	736,473	1%	12%	13%
100% or Greater	4	9	13	4,876	170,087	174,963	0%	3%	3%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	26	56	82	787,368	1,896,007	2,683,375	14%	33%	47%
Not Adjusted			74			2,948,274			53%
Total			156			5,631,649			100%
Notes: V = Verified; R=Reported									

Most of the adjustments to the program energy savings estimates resulted in a decrease in energy savings.

Table 3-7 displays the number of sample projects in which KEMA adjusted the savings estimate for each energy unit. The cause for the largest number of kWh and kW adjustments was “engineering research led to different input values.” This was primarily the result of one customer with a large number of measures where the initial estimate made a faulty assumption about the portion of building energy use used by a particular technology.

The second largest cause for adjustment was that the customer supplied new or different information during the engineering survey which disagreed with or improved upon the initial estimate. It is reasonable that this would change a lot of adjustments, as post-installation data often disagrees with pre-installation estimates.

The items marked "unclear how calculated" are a result of the response to the data request at the beginning of the evaluation. The engineering fieldwork begins with a data request sent to each sector lead indicating the customers and measures that are included in the engineering sample. The sector lead then provides a round of documentation which is reviewed by the engineering team. The team then identifies measures or projects where additional data is needed to complete the engineering review and at least one additional data request is sent. Some of the sectors were less responsive to additional data requests than they had been in the past, resulting in a number of projects where the evaluation team could not identify the calculation methods used to calculate the program estimate. In those cases, the evaluation team relies on the data that can be gleaned from the documentation as well as the customer-reported information and our best engineering judgment to determine the evaluation estimate.

Table 3-7. Discrepancies between Reported and Verified Energy Savings

	kWh			kW			Therms		
Reasons for Changes	**V>R**	**V<R**	**Total**	**V>R**	**V<R**	**Total**	**V>R**	**V<R**	**Total**
Not Installed	N/A	4	4	N/A	3	3	N/A	1	1
Duplicate Measure	N/A	0	0	0	0	0	2	2	0
Data Entry Error (correct savings in documentation)	11	10	21	19	5	24	0	0	0
Unclear How Calculated	22	21	43	24	18	42	8	8	16
Customer Supplied Additional or Different Information	52	55	107	9	28	37	9	22	31
Different Calculation Method	13	13	26	15	12	27	7	12	19
Corrected Calculation Errors	2	2	4	1	3	4	1	3	4
Used Site-Specific Data Rather than Prescriptive	9	0	9	2	6	8	0	0	0
Corrected to Use Deemed Savings	1	2	3	0	4	4	0	0	0
Different Baseline	4	17	21	3	13	16	3	6	9
Engineering research led to different input values	8	159	167	8	158	166	3	4	7
Propane/LP Measure	0	0	0	0	0	0	0	5	5
Total Projects Adjusted	106	265	371	77	233	310	26	56	82

Notes: V = Verified; R=Reported

- As a measure may have more than one type of discrepancy, the total number of projects does not equal the sum of the number of measure discrepancies above.

It is important to note that a number of projects were adjusted for multiple reasons. Therefore, the total number of adjustments listed is greater than the number of measures that were adjusted. For example, there may have been a situation where the customer provided information that resulted in a change in the baseline energy estimate. This measure would be included in both the "Different Baseline" and "Customer Supplied Additional or Different Information" categories.

Figure 3-12 provides a graphical representation of Table 3-7. The figure shows that "engineering research led to different input values" caused the largest number of kWh and kW adjustments. This was primarily the result of one customer with a large number of measures where the initial estimate made a faulty assumption about the portion of building energy use used by a particular technology.

Figure 3-12. Number of Measures with Discrepancies between Program and Verified Savings

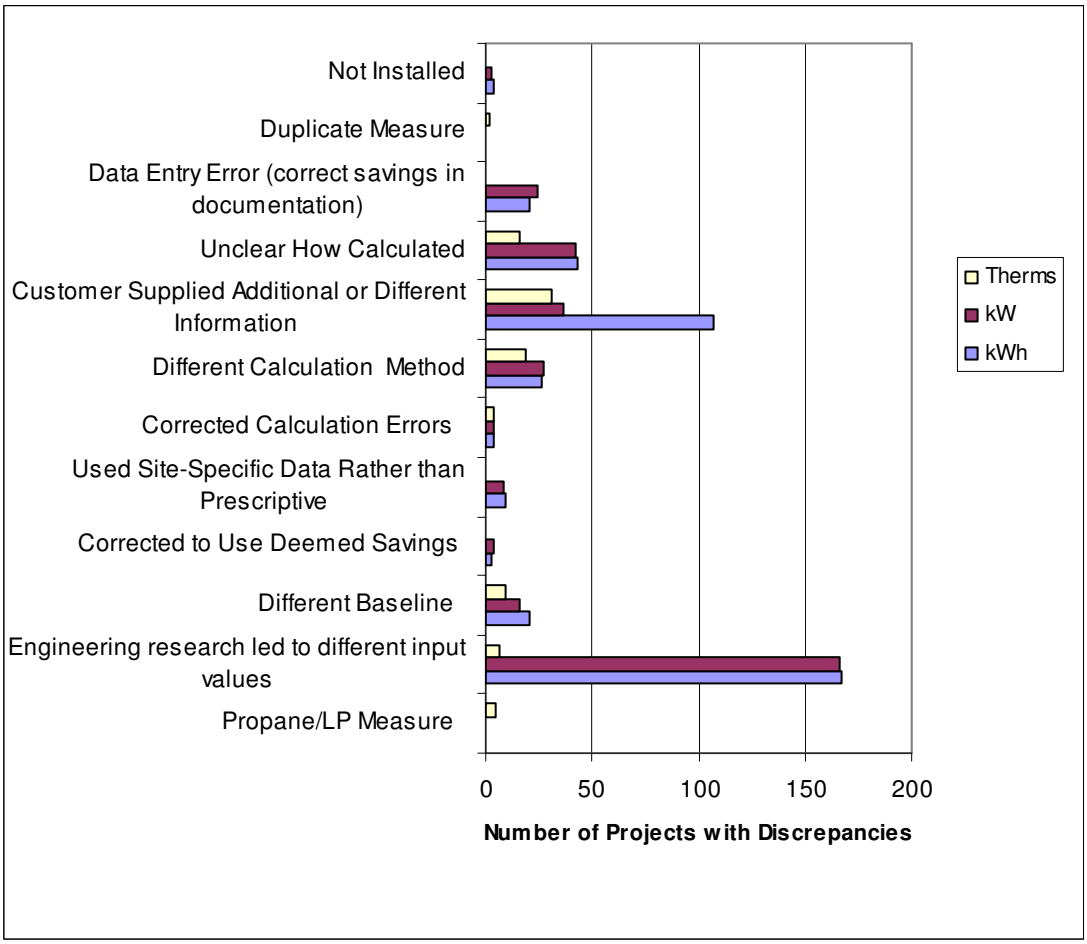


Figure 3-13 shows the percentage of engineering sample savings represented by the measures adjusted and shown in Figure 3-12. In this figure we see that, though "engineering research led to different input values" represents the largest number of adjusted projects, they were relatively small projects. The largest portion of savings adjusted is from the customer supplying additional or different information from what was initially estimated. This could have been related to operating hours, efficiency, or other site-specific characteristics where the customer had new or different information where the post-installation characteristics disagreed with the pre-installation estimate.

Figure 3-13. Percent of Engineering Sample Savings for Measures with Discrepancies between Program and Verified Savings

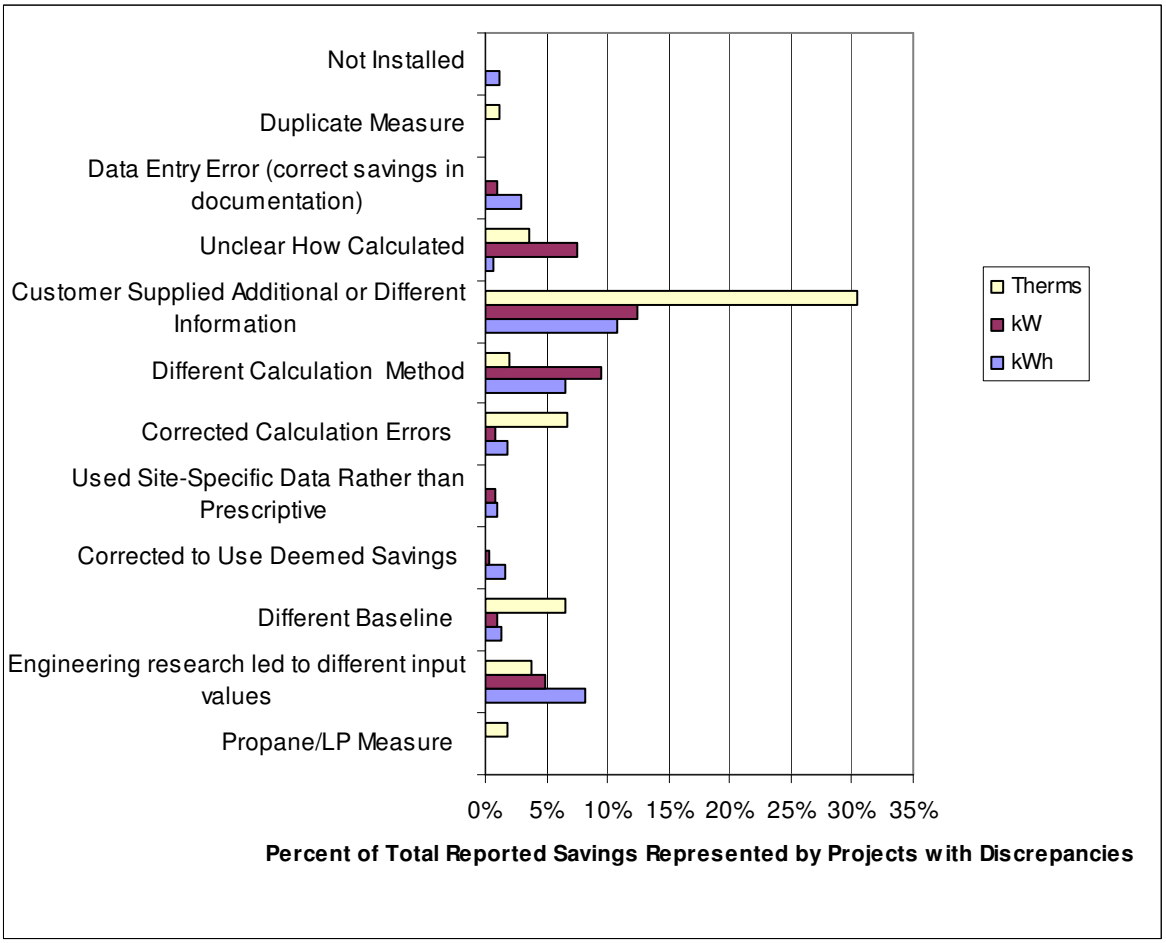


Table 3-8 shows the discrepancies between reported and verified gross savings between this round and the previous two rounds of evaluation[30]. It should be noted that, despite the fact that more projects were adjusted negatively in 18MCP than in previous rounds, the engineering verification factors are consistent. That is, changes in the engineering

[30] Discrepancies shown in Table 3-8 reflect only the discrepancies for measures that were part of the engineering review and not measures that were part of the computer-aided telephone interview (CATI).

verification factors from FY07 to 18MCP are not statistically significant at the 95 percent confidence level for the Business Programs overall.[31]

Table 3-8. Discrepancies between Verified and Reported Savings

Comparison With Past Years	FY06						FY07						18MCP Rounds 1 & 2					
	kWh		kW		Therms		kWh		kW		Therms		kWh		kW		Therms	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Not installed	1	1%	1	1%	2	3%	0	0%	0	0%	0	0%	4	1%	3	0%	1	1%
Verified gross savings matches documented gross savings	115	90%	79	92%	66	84%	25	51%	25	60%	9	23%	319	46%	325	51%	74	47%
Verified gross savings doesn't match documented gross savings	12	9%	6	7%	11	14%	24	49%	17	40%	31	78%	368	53%	307	48%	81	52%
Verified gross savings is more than 10% greater than reported gross savings	11	9%	5	6%	10	13%	14	29%	9	21%	28	70%	106	15%	76	12%	26	17%
Verified gross savings is more than 10% less than reported gross savings	1	1%	1	1%	1	1%	10	20%	8	19%	3	8%	262	38%	231	36%	55	35%
Engineering sample by energy unit	**128**		**86**		**79**		**49**		**42**		**40**		**691**		**635**		**156**	
Total engineering sample	**183**						**50**						**801**					

- Measures which were "equal to other savings in the documentation" or "unclear how calculated" are also included in the sections below them, depending on how the savings changed from what was entered into the tracking database.

The sum of "Not Installed," "Verified gross savings matches documented gross savings," and "Verified gross savings doesn't match documented gross savings" is equal to the total number of measures in each energy group. The sum of "Verified gross savings is more than 10% greater than reported gross savings" and "Verified gross savings is less than 10% greater than reported gross savings" is equal to "Verified gross savings doesn't match documented gross savings."

In contrast with past contract periods, the majority of measures in this round did receive an engineering adjustment. This is primarily because of one participant with a very high number of similar measures that all received an adjustment.

18MCP Round 1 was the first full impact evaluation with a significant number of deemed savings measures. The expectation was that the deemed savings measures would reduce the quantity of adjustments made and increase the engineering verification factors because the per-unit energy savings are decided before the evaluation and not adjusted based on the engineering review. This was not the case. As mentioned above, the quantity of adjustments is higher for this round than it has been in the past. In addition, the engineering verification factors have decreased compared to FY06 instead of increased for kWh and kW. The decrease in verification factors may indicate that the prescriptive savings estimates that were replaced by the deemed savings estimates were overly conservative, resulting in more frequent upward adjustments than downward adjustments and an overall increase in the engineering verification factor for those measures.

3.7 EVALUATED TRACKED ENERGY IMPACTS

For 18MCP (July 1, 2007, through September 30, 2008), Table 3-10a gives tracking and verified gross savings and net savings by sector and for Focus Business Programs overall.

The estimates of the adjustment factors by sector reported above are used to calculate verified gross savings and net savings for this time period. Multiplying tracking gross savings by the gross savings adjustment factor (which is the product of the installation rate

[31] See Tables A-4, A-5, and A-6 in Appendix A.

and the engineering verification factor) yields verified gross savings. Multiplying verified gross savings, in turn, by the attribution factor yields net savings. (Net savings may also be obtained by multiplying tracking gross savings by the realization rate.)

The values reported in this section include the effects of the Impact Evaluation of the Education and Training Program in the Focus Business Programs result.

Table 3-10a. All Business Programs: Tracked Energy Impacts
18MCP (July 1, 2007–September 30, 2008)

Segment	Sector/Prog	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture	Agriculture	27,056,057	25,573,120	15,226,090	6,944	6,730	3,819	690,018	533,841	88,941
Commercial	Commercial	90,241,320	81,776,073	56,837,224	21,950	20,862	14,443	1,324,547	1,370,874	454,252
Industrial	Industrial	127,183,265	118,421,382	67,701,464	20,704	18,755	10,077	6,555,228	6,198,998	3,928,889
Schools & Government	Schools & Government	30,944,737	30,705,369	13,187,665	9,477	8,985	4,123	3,116,541	2,450,943	936,432
Untracked Attributable				8,948,346			2,447			3,818,271
Total 18MCP Rounds 1&2, WPS		**275,425,380**	**256,475,944**	**161,900,789**	**59,076**	**55,332**	**34,908**	**11,686,334**	**10,554,656**	**9,226,786**

[a] Tracking gross savings for measures installed during 18MCP are from two versions of the WATTS database and three versions of the WISeerts database. The two versions of the WATTS database used are: (1) WATTS database as synchronized on May 12, 2008: measures installed in the first nine months of the 18MCP included in the sampling frame; and (2) WATTS database as synchronized on November 17, 2008: a small number of WPS measures installed in the second six months of 18MCP included in the sampling frame and measures installed in the 18MCP not included in the sampling frame. The three versions of the WISeerts database used are: (1) WISeerts database as synchronized on April 29, 2008: measures installed in 18MCP included in the sampling frame; and (2) WISeerts database as synchronized on November 7, 2008: measures installed in the second six months of the 18MCP included in the sampling frame; (3) WISeerts database as synchronized on February 27, 2009: measures installed in 18MCP not included in the sampling frame.

Tables 3–10b through 3–10g provide tracking and verified gross savings and net savings by program and for Business Programs overall for FY07 (July 1, 2006, through June 30, 2007), FY06 (July 1, 2005, through June 30, 2006), FY05 (July 1, 2004, through June 30, 2005), FY04 (July 1, 2003, through June 30, 2004), FY03 (July 1, 2002, through June 30, 2003), and FY02 (program start through June 30, 2002), respectively. Adjustment factors determined from earlier rounds of similar data collection and analysis are used to calculate verified gross savings and net savings for FY02 through FY07.[32]

[32] FY07: *Abbreviated FY07 Business Programs Impact Evaluation memo, February 18, 2008.*
FY06: *Business Programs Impact Evaluation Report–Fiscal Year 2006, March 2, 2007.*
FY05: *Business Programs Impact Evaluation Report–Year 4, Round 1, June 1, 2005.*
FY04: *Business Programs Impact Evaluation Report–Year 3, Round 1, June 17, 2004.*
FY03: *Business Programs Impact Evaluation Report–Contract Year 2 Complete, January 14, 2004.*
FY02: *Volume III, Impact Evaluation of the Business Programs Comprehensive Report, December 23, 2002.*

Table 3-10b. All Business Programs: Tracked Energy Impacts
FY07 (July 1, 2006–June 30, 2007)

Segment	Sector/Progra	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture	Agriculture	14,201,305	11,830,921	7,179,717	3,899	3,197	1,761	757,220	595,356	271,983
Commercial	Commercial	41,193,748	40,849,432	29,496,805	8,764	8,740	6,693	1,480,056	1,264,036	561,175
Industrial	Industrial	62,455,412	61,733,041	35,497,637	10,526	10,372	5,605	7,828,288	7,784,241	4,907,494
Schools & Government	Schools & Government	23,220,101	21,618,090	15,474,645	5,864	5,734	4,846	3,590,759	1,905,073	1,056,650
Total FY07, Focus (July 1, 2006 to June 30, 2007)		**141,070,566**	**136,031,485**	**87,648,804**	**29,053**	**28,042**	**18,906**	**13,656,324**	**11,548,706**	**6,797,303**

[a] Tracking gross savings for measures installed during FY07 are from two versions of the WATTS database. The two versions of the WATTS database used are: (1) WATTS database as synchronized on August 7, 2007: measures installed in FY07 included in the sampling frame; and (2) WATTS database as synchronized on October 1, 2008 measures installed in FY07 not included in the sampling frame.

Table 3-10c. All Business Programs: Tracked Energy Impacts FY06 (July 1, 2005–June 30, 2006)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture	Agriculture	10,380,773	10,844,886	5,506,946	2,569	2,379	1,060	169,600	162,261	97,784
Commercial	Commercial	25,128,760	24,477,896	14,697,541	3,489	3,436	1,988	1,395,712	1,349,793	685,019
Industrial	Industrial	40,327,629	39,913,615	31,819,533	6,966	6,898	5,279	5,135,468	5,261,531	1,951,784
Schools & Government	Schools & Government	15,119,767	14,513,009	9,413,490	4,444	4,373	2,528	2,586,683	2,287,500	1,334,962
Channel EHCI	Channel EHCI-Agriculture	3,206	3,089	1,144	2	2	1	2,482	2,275	1,927
Channel EHCI	Channel EHCI-Commercial	710,322	684,315	253,511	664	658	285	287,520	263,569	223,256
Channel EHCI	Channel EHCI-Industrial	14,316	13,792	5,109	1	1	1	16,674	15,285	12,947
Channel EHCI	Channel EHCI-Schools & Government	11,629	11,203	4,150	4	4	2	59,924	54,932	46,530
Channel Lighting	Channel Lighting-Agriculture	5,834,805	5,708,084	4,135,403	1,487	1,462	1,098	1,594	1,566	984
Channel Lighting	Channel Lighting-Commercial	21,919,547	21,443,494	15,535,423	5,957	5,857	4,397	978	961	604
Channel Lighting	Channel Lighting-Industrial	12,647,805	12,373,117	8,964,099	2,877	2,829	2,123	0	0	0
Channel Lighting	Channel Lighting-Schools & Government	501,190	490,305	355,217	111	109	82	0	0	0
Channel Motors	Channel Motors & VSDs-Agriculture[b]	412	430	218	0	0	0	0	0	0
Channel Motors	Channel Motors & VSDs-Commercial[b]	99,835	97,249	58,392	2	2	1	0	0	0
Channel Motors	Channel Motors & VSDs-Industrial[b]	21,941	21,716	17,312	2	2	1	0	0	0
Channel Motors	Channel Motors & VSDs-Schools & Government[b]	1,737	1,668	1,082	0	0	0	0	0	0
	CTT	0	0	0	0	0	0	0	0	0
	Total FY06, Focus (July 1, 2005 to June 30, 2006)	**132,723,673**	**130,597,866**	**90,768,572**	**28,576**	**28,011**	**18,845**	**9,656,634**	**9,399,673**	**4,355,798**

[a] Tracking gross savings for measures installed during FY06 are from two versions of the WATTS database. The two versions of the WATTS database used are: (1) WATTS database as synchronized on July 25, 2006: measures installed in FY06 included in the sampling frame; and (2) WATTS database as synchronized on October 1, 2008: measures installed in FY06 not included in the sampling frame.

[b] The sector-level adjustment factors were applied to the measures in Channel Motors.

Table 3-10d. All Business Programs: Tracked Energy Impacts
FY05 (July 1, 2004–June 30, 2005)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture	Agriculture	14,290,200	9,761,272	5,664,060	3,544	2,235	1,078	266,533	271,115	99,916
Commercial	Commerical	39,991,452	30,585,968	18,851,973	8,779	6,501	3,854	1,016,078	919,691	274,946
Industrial	Industrial	59,293,344	55,881,423	24,270,711	8,752	8,708	3,329	4,193,799	4,406,258	2,230,603
Schools & Government	Schools & Government	16,877,246	16,238,035	7,828,656	4,167	3,955	1,901	1,786,812	1,685,105	945,915
	Channel Lighting-Agriculture[b]	312,579	0	0	79	0	0	225	0	0
	Channel Lighting-Commercial[b]	2,390,318	0	0	683	0	0	66	0	0
	EE Products	0	0	0	0	0	0	0	0	0
	Existing Buildings	0	0	0	0	0	0	0	0	0
	General Industrial[c]	9,704,474	0	0	1,140	0	0	134,682	0	0
	Industry of the Future	0	0	0	0	0	0	0	0	0
	New Buildings[d]	0	0	0	0	0	0	0	0	0
	Small Retail & Services	0	0	0	0	0	0	0	0	0
	Water - Waste Water	0	0	0	0	0	0	0	0	0
Total FY05 (July 1, 2004 to June 30, 2005)		**142,859,613**	**112,466,698**	**56,615,400**	**27,144**	**21,399**	**10,163**	**7,398,195**	**7,282,169**	**3,551,381**

[a] Tracking gross savings for measures installed during FY05 are from two separate extracts from the Focus tracking system. The two versions of the Focus tracking database used are: (1) STAR database as synchronized on January 17, 2005: measures installed during the first half of FY05 and included in the FY05 sampling frame; and (2) WATTS database as synchronized on October 1, 2008: measures installed in FY05 not included in the sampling frame.

[b] The WATTS database includes measures in the lighting channel for FY05, however, the program confirmed that savings for channels did not start until October 2005.

[c] The tracking gross savings associated with "General Industrial" were also associated with "Industrial." Therefore, these savings were evaluated as part of the industrial segment and the "General Industrial" verified gross (and net) savings are set to zero.

[d] Adjustment factors were generated only for programs/sectors that were known to exist.

Table 3-10e. All Business Programs: Tracked Energy Impacts
FY04 (July 1, 2003–June 30, 2004)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture/Business Programs Overall[b]	Production Agriculture	8,355,974	5,796,265	3,073,926	1,815	1,473	794	62,016	58,394	49,142
Agriculture	Agriculture	7,654,233	5,309,491	2,815,775	1,728	1,403	756	5,333	5,022	4,226
Commercial	Commercial	42,898,833	37,837,194	19,906,541	9,503	9,629	5,514	584,477	585,706	506,642
Industrial	Industrial	77,624,175	69,095,159	39,903,009	11,651	7,472	4,085	9,678,274	10,032,355	8,745,272
Schools & Government	Schools & Government	18,007,954	18,166,810	13,477,540	3,935	3,498	1,999	2,378,564	1,709,958	1,141,175
	EE Products	0	0	0	0	0	0	0	0	0
	Existing Buildings	0	0	0	0	0	0	0	0	0
	Industry of the Future	0	0	0	0	0	0	0	0	0
	MM Renewables	0	0	0	0	0	0	0	0	0
	New Buildings	0	0	0	0	0	0	0	0	0
	Pilot - General Industrial	0	0	0	0	0	0	0	0	0
	Small Retail & Services	0	0	0	0	0	0	0	0	0
	Water - Waste Water	0	0	0	0	0	0	0	0	0
Total FY04 (July 1, 2003 to June 30, 2004)		**154,541,169**	**136,204,919**	**79,176,791**	**28,633**	**23,475**	**13,149**	**12,708,664**	**12,391,433**	**10,446,457**

[a] Tracking gross savings for measures installed during FY04 are from two separate extracts from the Focus tracking system. The two versions of the Focus tracking database used are: (1) STAR database as synchronized on January 20, 2004: measures installed during the first half of FY04 and included in the FY04 sampling frame; and (2) WATTS database as synchronized on October 1, 2008: measures installed in FY04 not included in the sampling frame.

[b] The Business Programs overall adjustment factors for therms were used because the agriculture segment adjustment factors (with the exception of the installation rate) for therms were estimated with inadequate accuracy.

Table 3-10f. All Business Programs: Tracked Energy Impacts
FY03 (July 1, 2002–June 30, 2003)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture	Agriculture	7,785,645	6,716,282	3,905,035	1,980	1,722	1,134	60,906	58,897	51,166
Commercial	Commercial	0	0	0	0	0	0	938	914	666
Commercial	Existing Buildings	16,332,823	12,357,439	5,995,214	3,033	2,048	1,206	726,169	707,218	515,452
Commercial	New Buildings	500,166	378,426	183,594	197	133	78	222,294	216,493	157,790
Commercial	Pilot - Commercial	278,178	210,470	102,110	37	25	15	10,666	10,388	7,571
Commercial	Small Retail & Services	30,974,155	23,435,093	11,369,540	8,385	5,660	3,334	266,418	259,465	189,110
Industrial	General Industrial	49,974,712	46,053,342	17,363,524	7,026	6,190	2,378	1,490,593	1,451,245	755,266
Industrial	Industrial	2,202,094	2,029,302	765,109	441	389	149	94,049	91,566	47,654
Industrial	Pilot - General Industrial	3,058,760	2,818,748	1,062,755	448	395	152	219,482	213,688	111,209
Industrial	Water - Waste Water	6,455,315	5,948,785	2,242,875	851	750	288	3,100	3,018	1,571
Institutional	Government	6,177,040	6,371,227	4,303,723	1,365	1,313	971	91,275	66,240	15,287
Institutional	Schools	6,906,206	7,123,316	4,811,754	983	945	699	1,612,075	1,169,921	270,002
Institutional	Schools & Government	794,300	819,270	553,412	274	263	195	29,840	21,656	4,998
EE Products	EE Products	0			0			0		
Industries of the Future	Industry of the Future	15,691,186	14,262,206	9,899,931	1,638	1,628	1,182[b]	1,235,975	1,235,975	833,046
Renewables	MM Renewables	0			0			701,849	678,278	677,718
Total FY03 (July 1, 2002 to June 30, 2003)		**147,130,580**	**128,523,908**	**62,558,574**	**26,658**	**21,462**	**10,599**	**6,765,629**	**6,184,962**	**3,638,503**

[a] Tracking gross savings for measures installed during FY03 are from three separate extracts from the Focus tracking system. The three versions of the Focus tracking database used are: (1) STAR database as synchronized on January 7, 2003: measures installed during the first half of FY03 and included in the sampling frame for the first half of FY03; (2) STAR database as synchronized on July 10, 2003: measures installed during the second half of FY03 and included in the sampling frame for the second half of FY03, and (3) WATTS database as synchronized on October 1, 2008: measures installed in FY03 not included in either FY03 sampling frames.

[b] The Industries of the Future segment attribution adjustment factor for kWh was used to calculate net kW because the attribution adjustment factor kW was suppressed to preserve confidentiality.

Table 3-10g. All Business Programs: Tracked Energy Impacts
FY02 (Program start–June 30, 2002)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net	Tracking Gross[a]	Verified Gross	Net
Agriculture / Commerical[b]	Agriculture	993,447	957,662	438,982	282	249	91	1,319	1,316	466
Commercial	Existing Buildings	5,544,182	4,799,946	2,390,906	922	567	270	120,903	120,627	42,676
Commercial	Government	461,295	399,372	198,932	55	34	16	3,997	3,988	1,411
Commercial	Pilot - Commercial	1,647,891	1,426,683	710,646	405	249	118	74,069	73,900	26,145
Commercial	Schools	4,099,112	3,548,858	1,767,726	1,787	1,098	523	418,326	417,372	147,661
Commercial	Schools & Government	1,077,050	932,470	464,473	280	172	82	46,791	46,684	16,516
Commercial	Small Retail & Services	1,967,208	1,703,135	848,351	768	472	225	267,178	266,568	94,308
Industrial	General Industrial	13,083,660	11,179,260	7,937,940	2,099	2,223	1,648	727,413	244,577	154,766
Industrial	Industrial	939,330	802,605	569,897	159	168	125	74,304	24,983	15,809
Industrial	Industry of the Future	528,654	451,705	320,738	65	68	51	0	0	0
Industrial	MM Renewables	0	0	0	0	0	0	984,201	330,916	209,401
Industrial	Pilot - General Industrial	3,246,314	2,773,795	1,969,559	336	356	264	91,080	30,624	19,378
Industrial	Water - Waste Water	1,163,789	994,393	706,078	344	364	270	160	54	34
New Buildings	New Buildings	2,608,160	2,608,160	143,279	1,034	1,034	46	53,914	53,914	0
Programs overall	Unknown	981	858	476	.	.	.	.	.	.
Total FY02 (Program Start to June 30, 2002)		**37,361,073**	**32,578,902**	**18,467,983**	**8,536**	**7,054**	**3,727**	**2,863,655**	**1,615,522**	**728,572**

[a] Tracking gross savings for measures installed during FY02 prior to January 1, 2002, and included in the FY02, round 1, frame were provided by the program. The remaining tracking gross savings for measures installed during FY02 are from three separate extracts from the Focus tracking system: (1) STAR database as synchronized on April 13, 2002: measures installed between January 1, 2002, and March 31, 2002, and included in the FY02, round 2, sampling frame; (2) STAR database as synchronized on July 11, 2002: measures installed between April 1, 2002, and June 30, 2002, and included in the FY02, round 3, sampling frame; and (3) WATTS database as synchronized on October 1, 2008: measures installed during FY02 not included in any of the three FY02 sampling frames.

[b] The commercial segment adjustment factors for therms were used because agriculture segment adjustment factors for therms were not available.

Table 3–10h summarizes tracking and verified gross savings and net savings for Business Programs overall for the program through the first five quarters of the 18-month Contract Period (program start through September 30, 2008).

Table 3-10h. All Business Programs: Tracked Energy Impacts
Program to Date (Program start–September 30, 2008)

Fiscal Year	kWh			kW			Therms		
	Tracking Gross	Verified Gross	Net	Tracking Gross	Verified Gross	Net	Tracking Gross	Verified Gross	Net
2002 (Program start to June 30, 2002)	37,361,073	32,578,902	18,467,983	8,536	7,054	3,727	2,863,655	1,615,522	728,572
2003 (July 1, 2002 to June 30, 2003)	147,130,580	128,523,908	62,558,574	26,658	21,462	10,599	6,765,629	6,184,962	3,638,503
2004 (July 1, 2003 to June 30, 2004)	154,541,169	136,204,919	79,176,791	28,633	23,475	13,149	12,708,664	12,391,433	10,446,457
2005 (July 1, 2004 to June 30, 2005)	142,859,613	112,466,698	56,615,400	27,144	21,399	10,163	7,398,195	7,282,169	3,551,381
2006 (July 1, 2005 to June 30, 2006)	132,723,673	130,597,866	90,768,572	28,576	28,011	18,845	9,656,634	9,399,673	4,355,798
2007 (July 1, 2006 to June 30, 2007)	141,070,566	136,031,485	87,648,804	29,053	28,042	18,906	13,656,324	11,548,706	6,797,303
18MCP (July 1, 2007 to Sep. 30, 2008)	275,425,380	256,475,944	161,900,789	59,076	55,332	34,908	11,686,334	10,554,656	9,226,786
Total Focus (Program start to Sep. 30, 2008)	**1,031,112,053**	**932,879,723**	**557,136,912**	**207,675**	**184,775**	**110,297**	**64,735,436**	**58,977,122**	**38,744,800**

4. GENERAL APPROACH

The broad approach of the impact evaluation fieldwork was similar to that used in the past. For the majority of the work we used approaches and protocols developed in the evaluation work conducted so far. However, the 18MCP evaluation included a new engineering survey instrument and new survey attribution sequences for the CATI and supplier surveys. This section discusses these changes and other changes following general descriptions of the adjustment factors used in this analysis, reporting format, and a discussion of this round's sample design.

4.1 APPROACH AND DEFINITIONS

The evaluation team has implemented 11 rounds of data collection and a document review to estimate net energy savings for Business Programs. Each evaluation has included a telephone survey of Wisconsin Focus on Energy (Focus) Business Programs participants who installed measures in the appropriate time frame. Table 4-1 shows the fiscal year and the implementation time period for measures included in each round. Some fiscal years (including 18MCP) have included multiple rounds of data collection. The most recent round included measures installed between April 1, 2008, and September 30, 2008, according to the Business Programs' tracking systems (WATTS, WISeerts, and Rebates databases).[33] This report represents the results from both rounds of impact evaluation in the 18-month Contract Period, covering the first five quarters of 18MCP or the period from July 1, 2008 to September 30, 2008.

[33] In the WATTS database, a measure is the level at which data is recorded in the WATTSMeasures table. Each measure is assigned a "WATTSMeasureID" which is synonymous to the "recid" or recommendation assigned in the former database, STAR. Gross savings estimates are provided in the WATTS database at the measure level. Typically, a measure is a single energy-saving measure. In the rebates database, the measures are: compact fluorescent lightbulbs, clothes washers, dishwashers, indoor "lighting fixtures," outdoor "lighting fixtures," torchieres, and refrigerators.

Table 4-1. Eleven Rounds of Impact Evaluation Data Collection

Impact Evaluation Round	Fiscal or Calendar Year of Implementation	Implementation Time Period[a]
1	F2001-2002	April 2001 - December 2001
2	F2002	January 2002 - March 2002
3	F2002	April 2002 - June 2002
4	F2003	July 2002 - December 2002
5	F2003	January 2003 - June 2003
6	F2004	July 2003 - December 2003
7	F2005	July 2004 - December 2004
8	F2006	July 2005 - June 2006
9	F2007	July 2006 - June 2007
10	F2008[b]	July 2007 - March 2008
11	C2009[c]	April 2008 - September 2008

[a]Partners included in the sample frame for each round are those with implementation completed in the indicated time period

[b]Measures were implemented during the 2008 fiscal year but are part of the 18 Month Contract Period.

[c]Measures were implemented during the 2008 fiscal year but are part of the 18 Month Contract Period.

The survey addresses measure installation and characteristics (e.g., quantities, equipment efficiencies, operating hours), program attribution, and measure cost, among other topics. Each evaluation has also included an engineering review of program documentation on how the tracking gross savings were calculated, where the tracking gross savings are the gross savings reported in the WATTS, WISeerts, and rebate databases. Finally, each evaluation has included on-site measurement at some participant sites to verify measure information and provide actual measured or metered data to support gross energy savings estimates.[34] The results of the survey, engineering review, and on-site data are combined to create several adjustment factors described below.

4.1.1 Adjustment factors defined

The adjustment factors estimated from the data collection and analysis are as follows:

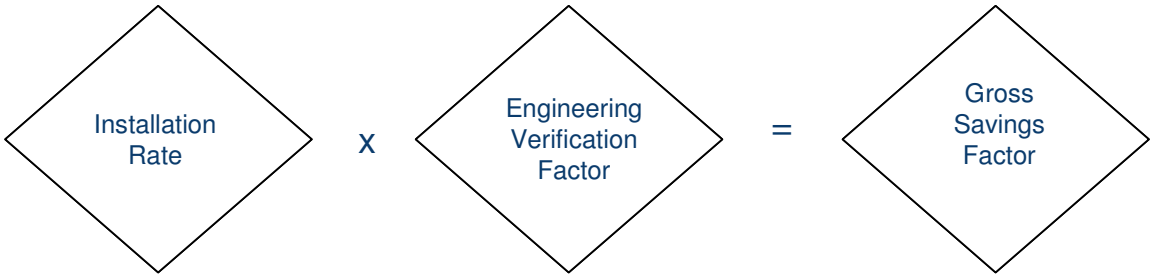
- **Installation rate:** This factor corresponds to the fraction of measures that were installed. Each measure is assigned a binary factor that identifies whether it was installed or not installed. Adjustments to the number of units installed for a particular measure are included in the engineering verification factor, not in the installation rate.
- **Engineering verification factor:** This is the ratio of the verified gross savings to the tracking estimate of gross savings for installed measures. The engineering verification factor includes corrections to the numbers of units installed, changes in operating hours, changes in operating levels, etc. This correction is applied only to measures that were installed by participants in the engineering sample, both

[34] We performed one site visit during the 18MCP evaluation. We also utilized on-site data and reports provided by the Focus M&V team.

custom and deemed. Participants in the CATI sample that installed CFLs receive the deemed sector-level CFL energy savings adjustment. Participants in the CATI sample that installed non-CFL measures do not receive an engineering verification adjustment. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent).

- **Gross savings adjustment factor:** This factor combines the installation rate and the engineering verification factor. It corresponds to the ratio of the verified gross savings to the tracking estimate of savings. Figure 4-1 shows how the installation rate and engineering verification factor are combined to produce the gross savings factor.

Figure 4-1. Gross Savings Adjustment Factor Calculation



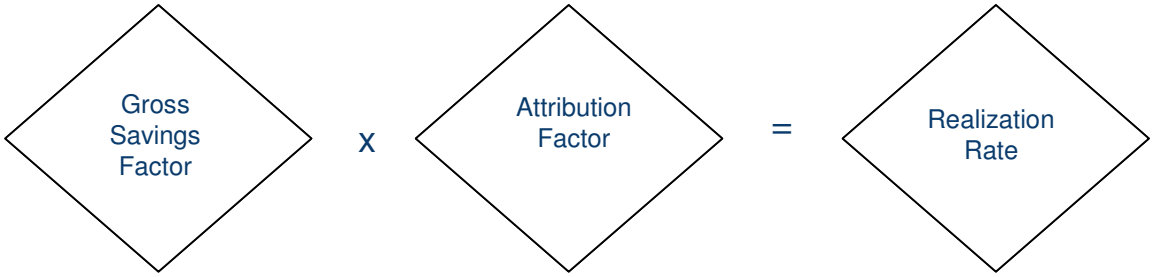
- **Attribution factors:** This factor adjusts verified gross savings for program attribution. It is the estimated proportion of verified gross savings attributable to the Focus Business Programs. It corresponds to the ratio of net savings to verified gross savings. Attribution factors used to estimate the net savings are calculated in one of two methods. The selection of market-based versus self-reported approaches is based on the white paper *Net-to-Gross Method Selection Framework for Evaluating Focus on Energy Program*[35] developed by the Focus evaluation team (March 2006). Based on the criteria laid out in the white paper it was determined that a market-based approach would be used only for CFLs; all other technologies would continue to use self-reported approaches.
  - *Self-reported program response* methods determine attribution to the program on a measure-by-measure or an end use-by-end use basis using participant self-reported information about their plans and intentions. The calculation includes adjustments for the efficiency, quantity, and timing of measures that the participant may have installed in the absence of the program.
  - *Market sales-based* methods were added to the Business Programs impact evaluation for FY06. This method relies on aggregate sales data in total sales of a particular technology in Wisconsin. Sales volume data are compared with

[35] Miriam L. Goldberg, KEMA Inc, principle author, Oscar Bloch, Division of Energy, Wisconsin Department of Administration; Ralph Prahl, Prahl & Associates; David Sumi and Bryan Ward, PA Consulting Group; Rick Winch and Tom Talerico, Glacier Consulting Group; contributing authors. *Net-to-Gross Method Selection Framework for Evaluating Focus on Energy Programs.* March 16, 2006.

a baseline estimate of the volume that would have been sold in the absence of the program. Beginning with the FY06 impact evaluation, the attribution factor for CFLs has been determined using a market-based approach conducted jointly for the Business and Residential programs. The attribution factor for this report is based on the results in the most recent CFL Market Effects Study. The most recent study produced attribution results for the Commercial and Agricultural sectors separate from the Residential Program. These attribution rates were 111 percent and 91 percent respectively.[36] The Commercial value of 111 percent attribution was applied to CFLs in the CATI sample that fell under the Industrial or Schools & Government sectors.

- **Realization rate:** This factor combines the gross savings adjustment factor and the attribution factor as shown in Figure 4-2. It corresponds to the ratio of the net savings to the tracking estimate of savings.

Figure 4-2. Realization Rate Calculation



4.1.2 Reporting format

Each of the adjustment factors defined in the previous section is calculated separately for each energy unit (kWh, kW, and therms) in combination with each sector as well as for Business Programs overall. The sectors used in this analysis are Agriculture, Commercial, Industrial, and Schools & Government.

Additional Wisconsin Public Service sample points were included in 18MCP to allow analysis of the WPS program separate from Focus measures. The rationale for the oversample and Wisconsin Public Service specific results are provided in Appendix B.

In previous impact evaluation reports a separate series of adjustment factors were provided for compact fluorescent light bulbs (CFL) and non-CFL measures. These results were particularly meaningful because all of the CFL savings in the Rebates Database were credited to the Agriculture and Commercial sectors. Historically CFLs have accounted for more than half of the Agriculture and Commercial sectors' electric savings. Changes in the manner that the program calculates and reports CFL savings shifted the emphasis of these comparisons to the non-CFL components addressed in the previous section. Therefore we did not repeat this portion of the analysis. These changes include:

[36] *Second Annual Comprehensive CFL Market Effects Study – Final Report*, prepared by Glacier Consulting Group, LLC for the State of Wisconsin Public Service Commission, September 30, 2008.

- Energy savings values for CFLs were deemed starting in FY06. The only potential adjustment to gross energy savings is based on the quantity of bulbs installed. There is no other engineering adjustment for CFLs.
- A market-based approach was used to determine the attribution factor for CFLs. As mentioned above, the current market-based attribution factor calculated for the Commercial and Agricultural sectors was 111 percent and 91 percent, respectively. The Commercial value of 111 percent was applied to CFLs from the CATI survey that fell under the Industrial and Schools & Government sectors.

The adjustment factors shown in the tables in the results section are based on data from both rounds of 18MCP data collection and documentation review. The first round covered the first three quarters of the 18MCP (July 1, 2007, through March 31, 2008). The second round covered the next two quarters of the 18MCP (April 1, 2008, through September 20, 2008) for a total of five quarters evaluated. The reported adjustment factors are weighted according to the sampling rate within each stratum. The main objective in designing the sample drawn in the most recent round was to provide the best possible estimates for each of the sectors and the Business Programs overall.

4.1.3 Sampling

The 18MCP adjustment factors are based on two rounds of data collection and documentation review, which cover energy efficiency measures installed between July 1, 2007, and September 30, 2008. In these rounds, data were collected from and documentation was reviewed for a random sample of participants who installed measures during the first five quarters of the 18MCP. This determination is made based on the "implementeddate" variable entered in the WATTS database[37] and the "WECCAuthorizedDt" variable entered in the WISeerts database[38]. If the variable value is on or between July 1, 2007, and September 30, 2008 then the measure is considered to have been installed during the first five quarters of the 18MCP.

A. WE ENERGIES SAMPLE COORDINATION

Prior to designing the Business Programs' sample, the Focus evaluation team first needed to establish the sampling frame. As with previous rounds, KEMA coordinated with the evaluation coordinator hired by We Energies (WE)[39] in an attempt to reduce customer fatigue and avoid double-counting energy savings. The WE evaluator provided KEMA with a list of projects with an application date between July 1, 2007, and December 31, 2007. KEMA compared the WE list with our own sample and found that there was no overlap between samples. KEMA has also provided the WE evaluator with our sample list so they can perform the same check prior to conducting their next round of evaluation.

[37] For measures implemented before January 1, 2008.

[38] For measures implemented on or after January 1, 2008.

[39] Itron

B. SAMPLE DESIGN

The main objective in designing the sample was to provide the best possible estimates for each of the four primary sectors (Agriculture, Commercial, Industrial, and Schools & Government) and Business Programs overall.

For these rounds of sample design, the evaluation team attempted to contact the same number of customers for each Focus Business Programs sector. The actual allocation was determined after reviewing the gross savings and mix of measures installed by each sector. Smaller projects have a smaller incremental improvement on the accuracy of the adjustment factors; therefore additional resources are not usually allocated to complete interviews with customers who completed small projects. The exception is if there are a large number of customers who completed the same type of small project.

The sample has two components: an engineering sample and a computer-assisted telephone interview (CATI) sample. Participants selected for the engineering sample receive an expert interview and their implemented measures undergo an engineering review. Participants selected for the CATI sample receive a telephone interview only. The CATI-only assignment is primarily for small, simple, or deemed projects.

A detailed description of the steps in the sample selection process as follows:[40]

1. All customers are classified as WPS or non-WPS depending on whether at least one of the measures they installed during 18MCP was entirely or partially funded by WPS. Wisconsin Public Service provided additional evaluation funding for an oversample of projects in its service territory. The additional evaluation funds allowed KEMA to select a sample of WPS measures larger than might have been selected at random if these measures were simply considered as part of the general Focus program. The number of WPS customers was doubled to provide a sample of participants large enough to allow for meaningful adjustment factors when analyzing WPS by itself. The oversample also contributes to improving the precision of the statewide results.[41]

2. All measures implemented during the evaluation period are assigned to analysis categories based on the size, type, and complexity of the project. The initial analysis categories are condensed into similar cost groups that become sampling strata.

3. The sampling strata within each sector are divided into engineering and CATI. The cases drawn for the engineering sample receive both gross savings verification and net-to-gross (attribution) analysis. Non-CFL cases drawn for the CATI sample receive only telephone interviews for net-to-gross analysis and installation confirmation. CFL cases drawn for the CATI sample receive only telephone interviews for installation confirmation. Since FY06, a market-based

[40] See “Appendix D” for detailed tables showing the distribution of the frame and sample by strata. These tables also show characteristics used to divide the frame into our sampling stratum.

[41] See “Appendix B. Wisconsin Public Service” for more information on the Wisconsin Public Service oversample.

method has been used to determine attribution for CFL-only participants.

Each participant is given a customer size designation of "Very Small" or "Not Very Small." "Not Very Small" participants account for 0.05 percent or more of the total program avoided costs savings for the evaluation period. Of the "Not Very Small" participants, six were further designated as "Large." These participants accounted for five percent or more of their sector avoided cost goal for the program year.

a. All "Large" participants were assigned to the engineering sample.

b. All "Not Very Small" participants who installed at least one custom project were assigned to the engineering sample.

c. "Very Small" participants who installed at least one custom project were assigned to either the CATI or the engineering sample.

d. The remaining participants were assigned to the CATI sample. These are "Very Small" and "Not Very Small" participants who did not install a custom project and some of the "Very Small" participants who did install a custom project.

4. Within each sector or high-level stratum, we allocate the engineering sample based on three analysis categories; the participant's contribution to the Business Programs' gross savings, the likely variance of the gross savings adjustment factor, and the unit evaluation cost. Participants are sampled at a higher rate if we expect their gross savings adjustment factor to vary more than other projects. For example, custom projects are more likely to be sampled for the engineering survey because we expect their gross savings adjustment factors to vary more than deemed projects. Participants are sampled at a lower rate if they have higher analysis cost per unit. The engineering sample is selected to optimize the accuracy of the adjustment factors for a fixed data collection and analysis budget, subject to the allocations across the sectors described above.

   The sample is stratified by sector as well as by the analysis categories described above. The sampling procedure allocates sample in proportion to the total savings (measured by estimated avoided cost) for the projects in each stratum, times the projected relative variability of gross savings adjustment, divided by the square root of the average evaluation cost per project for that analysis category. That is, larger projects and those with greater relative variability are more likely to be in the sample, but their sampling rate is reduced somewhat because larger projects are more expensive to analyze. Some adjustments to the samples are made to ensure coverage of all three types of energy units (kWh, kW, and therms) and all programs that had activity.

   An oversample of about 50 percent is taken to allow for partners that will not respond to attempted contacts within the field period. As shown in the Appendix D tables the majority of "Not Very Small" strata did not have enough population to oversample by 50 percent.

5. Within each sector, CATI surveys are allocated to the CATI-only strata proportional to the projected savings in the stratum. In 18MCP Round 1, the Very

Small participants with custom projects made up approximately 25 percent of the overall program kWh and kW savings and 16 percent of the overall therm savings. As a result, we decided to include some of the Very Small participants with custom projects in the engineering sample as well. A detailed list of the stratum can be found in Appendix D.

The process outlined above was followed to determine the sample design and structure for Round 1 of the 18MCP evaluation. Round 2 was an "abbreviated" evaluation with a limited number of large participants selected as part of the engineering review sample. For Round 2, we identified the top 10 participants by sector (based on avoided cost) installed between April 1, 2008, and September 30, 2008. We completed surveys with five participants in each sector. The completed projects were mapped back to the original sample design stratum and a new evaluation result was determined based on the combined results of the two rounds.

Table 4-2 indicates how the final sample was distributed by sector. For all sectors, a relatively large proportion of the participants who installed measures with the Not Very Small classification during the first five quarters of the 18MCP are in the samples.

Table 4-2. 18MCP Population and Sample By Sector

Tracking Avoided Cost	Population or Sample	Number of Participants Who Installed a Measure				
		Agriculture	Commercial	Industrial	Schools & Government	Business Programs Overall
Not Very Small	Population	24	101	218	112	455
	Sample	16	28	76	34	154
Very Small	Population	7555	9907	1069	677	19208
	Sample	120	119	68	78	385
Total	**Population**	**7579**	**10008**	**1287**	**789**	**19663**
	Sample	**136**	**147**	**144**	**112**	**539**

A summary of the target and achieved sample sizes for the 18MCP are indicated in Table 4-3. The "BOTH" survey type indicates that some of the participants in those strata were given the engineering survey and some were given the CATI survey. During the second round of data collection, KEMA obtained 17 sample completes (all engineering). During the first round of data collection, KEMA obtained a total of 522 sample completes (355 CATI completes and 167 engineering completes). We exceeded the Not Very Small engineering target by three and the Very Small "Both" target by 69. We achieved the Very Small engineering target of five. However, we missed the Not Very Small CATI target by eight and the Very Small CATI target by 67.

Table 4-3. 18MCP Sample Allocation and Disposition

Tracking Avoided Cost	Survey Type	# Participants			Strata Exhausted
		Frame	Target	Complete	
Very Small	BOTH	2,804	109	178	6%
Very Small	CATI	16,383	269	202	5%
Very Small	ENG	21	5	5	80%
Not Very Small	CATI	70	23	15	56%
Not Very Small	ENG	385	136	139	68%
Total		**19,663**	**542**	**539**	**36%**

Figure 4-3 shows the percentage of population savings included in the sample. These percentages are larger than those obtained during FY06 which were 25 percent, 23 percent, and 35 percent for kWh, kW, therms, respectively. Table 4-4 also shows the percentage of tracking gross savings included in the sample by the Tracking Avoided Cost classification. It also presents the distribution of savings by these two groups in the populations. The Not Very Small group accounts for the overwhelming majority of therm savings and approximately half of the kWh savings. Within the Not Very Small group, 57 percent of the measures are custom measures and 43 percent are deemed. The breakdown in savings between custom and deemed measures is similar to the breakdown in count for electricity (kWh: 66 percent custom, 34 percent deemed; kW: 62 percent custom, 38 percent deemed) but the majority of therm savings (86 percent) are for custom measures.

The table shows that the Very Small sample is small compared to the population contribution to total savings. This lower sampling rate reflects the lower levels of uncertainty associated with these projects and the low levels of savings per project. The lower uncertainty stems from simpler projects, deemed savings, and the non-survey-based CFL attribution estimate. There is very little incremental improvement to the quality of the estimates by adding additional very small sample completes.

Figure 4-3. Percent of Tracking Gross Savings Represented by Projects Included in the Sample

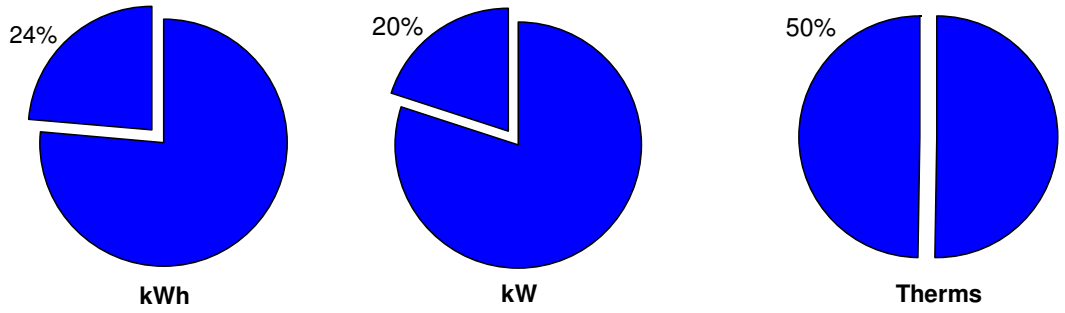


Table 4-4. Percentage of 18MCP Tracking Gross Savings Included in the Sample

Tracking	Population			Sample		
Avoided Cost	kWh	kW	Therms	kWh	kW	Therms
Very Small	47%	54%	16%	2%	3%	2%
Not Very Small	53%	46%	84%	21.4%	17.5%	48.0%
Total	**100%**	**100%**	**100%**	**23.6%**	**20.1%**	**49.7%**

4.2 SUMMARY OF MAJOR CHANGES

Although the general impact evaluation approach was similar to that used in the past, changes in the program and evaluation environment have resulted in some significant modifications to the impact evaluation methodology and process.

It is important to appreciate these methodological changes especially when interpreting the comparisons across years. Statistical tests consider the sample design but do not consider programmatic and methodological changes, such as the program's move to deemed savings or changes in the calculation of attribution rate adjustment factors.

Major changes affecting the impact evaluation methodology during 18MCP include:

- **Updated survey instrument.** During this contract year a working group of Focus on Energy evaluation team members completed a review of self-report program attribution batteries used to determine net program impacts. According to the July 2, 2008, *Framework for Self-Report Net-To-Gross (Attribution) Questions*[42] white paper submitted to the Wisconsin Public Service Commission, the key objective of this review was to develop a framework to guide the revision of existing survey instruments used for determining attribution. The Business Program's survey instruments were revised for this round of evaluation based on the guidelines laid out in the framework.

[42] Rick Winch and Tom Talerico, Glacier Consulting Group; Bobbi Tannenbaum, KEMA, Inc.; Pam Rathbun, PA Consulting Group; Ralph Prahl, Ralph Prahl & Associates. Wisconsin Public Service

The first priority for survey instrument revisions was the engineering survey instrument. The engineering survey received many changes, including slight wording changes, alterations to the order of questions, the addition of set-up and confirmation questions, additional questions for lifetime savings/acceleration questions, and more significant changes to the direct attribution sequence. The direct attribution questions are those used in the algorithm to calculate program attribution. The most significant change in the attribution sequence involved removing a question that allowed respondents to skip past the three attribution sections if they indicated that they would not have installed the measure without the influence of Focus. In the new survey instrument, every respondent is asked about how Focus influenced the quantity, efficiency, and timing of the measure installed.

The second priority for survey instrument review was the CATI survey instrument. The direct attribution questions were changed to match those in the engineering survey but the rest of the instrument was not changed. The supplier survey did not receive any adjustments for these rounds of evaluation. The CATI and supplier surveys did not receive the full adjustments because the timing of the impact evaluation analysis and the distribution of the framework paper did not allow for it. Additional changes based on the framework white paper and lessons learned from these rounds of impact evaluation will be a top priority in future impact evaluations.[43]

Minor changes were made to the engineering survey instrument between the first and second rounds of evaluation the implemented lessons learned from the first round. Both versions of the engineering survey are included in Appendix I and J.

- **Changes for Channels.** In FY06, we produced adjustment factors for the four primary sectors and the Efficient Heating and Cooling and Lighting Channels. Savings for the channels are now rolled up into the sectors and therefore we did not calculate separate adjustment factors in this round.
- **CFL savings no longer credited to Channel Lighting.** In FY06, all CFLs recorded in the Rebates Database were credited to the Lighting Channel. These savings are now once again credited to the Agriculture and Commercial sectors depending on the sector identified by the customer on the instant or mail-in rebate form.

Deemed measures. A number of measures used deemed savings or deemed algorithms to determine savings. Measures installed before May 1, 2008, were applied deemed savings using one finalized list while measures installed after May 1, 2008, were applied deemed savings using a second list. Both lists are located in Appendix H.

Commission, *Focus on Energy Evaluation: Framework for Self-Report Net-to-Gross (Attribution) Questions. July* 3, 2008.

[43] KEMA has developed an alternative attribution analysis methodology (life cycle net savings, or LCNS) that uses the same survey instruments. We will release a memo that describes the LCNS method and provides attribution results based on the data collected during the 18MCP. The results using the LCNS method will be provided for comparison only.

The 18MCP evaluation is the first impact evaluation with a large fraction of deemed savings in the impact evaluation sample frame. The engineering sample includes some deemed measures, but the vast majority of the CATI non-CFL savings come from deemed measures. A modification was made to the calculation of the Gross Savings Adjustment Factor (GSA) and the Attribution Factor (AF) to account for the large fraction of deemed savings in the CATI sample. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent). Similar to previous evaluations the deemed sector-level CFL energy savings values were applied to CATI CFLs.

The following highlights the differences between the prior and 18MCP methods of calculating the GSA and AF.

Prior Method: Results were based on installation rates for all measures and engineering verification for the engineering sample and the CFL measures in the CATI. CATI non-CFL measures were not included in the engineering verification factor calculation because engineering verification information is not obtained via the CATI survey. GSA is needed for the calculation of AF (it is the denominator in the ratio). For the engineering sample and CFLs, AF was calculated using the actual measure-level GSA and for the CATI non-CFLs the sector-level GSA from the engineering sample was applied to installed savings.

18MCP Method: Results were based on installation rates and engineering verification for all measures. GSA and AF for the engineering sample and the CFL measures in the CATI were calculated in the same manner as the prior method. Engineering verification information is still not obtained via the CATI survey. To account for the large fraction of deemed measures in the CATI sample we assumed CATI non-CFL verified gross savings equals installed tracked savings. That is, we assumed a 100 percent engineering verification factor for all CATI non-CFL measures. This assumption was used for the calculation of GSA and AF for CATI non-CFLs. This assumption will be refined in the next round of impact evaluation with the evolution to measure-level sampling.

- **Untracked attributable savings.** Inclusion of participant spillover effects for Non-CFLs in the attribution estimates based on the *Participant Spillover Savings Study* (December 22, 2005) (see Appendix F) was added to the impact analysis in FY06. CFL participant spillover was added to the impact analysis as part of the CFL market-based attribution approach in FY06. New in these rounds is the addition of Untracked Attributable Savings based on KEMA's *Impact Evaluation of the Education and Training Program* (Final: November 20, 2008) (see Appendix F).
- **WISeerts replaces WATTS.** This impact evaluation encompasses two tracking databases. The program-maintained database (WATTS) is being replaced by a PSC-maintained database (WISeerts) that will contain the energy savings impacts for Focus on Energy programs starting in January 2008. Other utility programs will transition to WISeerts sometime in the future. This round of evaluation used data from six months of the WATTS database and nine months of the WISeerts database. To the extent that we were able, the two databases were combined to

produce a single sample frame using records from each. The WISeerts database was not populated with or linked to any of the data in the WATTS database, making it difficult and at times impossible to identify participants that were found in both databases. KEMA and the program worked together to resolved duplicated records that were found during the sample design stage.

APPENDIX A: OTHER ADJUSTMENT FACTORS & ENGINEERING REVIEW DATA

Appendix A provides the 18MCP installation rate and engineering verification factors and the statistical comparison across years. It also provides additional engineering review results broken out by sector.

A.1 OTHER ADJUSTMENT FACTORS

The installation rate and engineering verification factors are provided in the appendix instead of the main body of the report because the combined effect is reported as the gross savings adjustment factor. Table A-1 and Table A-2 give the installation rates and engineering verification factors by sector.

Table A-1. Installation Rates by Sector
Based on Samples from Participants Who Installed a Measure during 18MCP

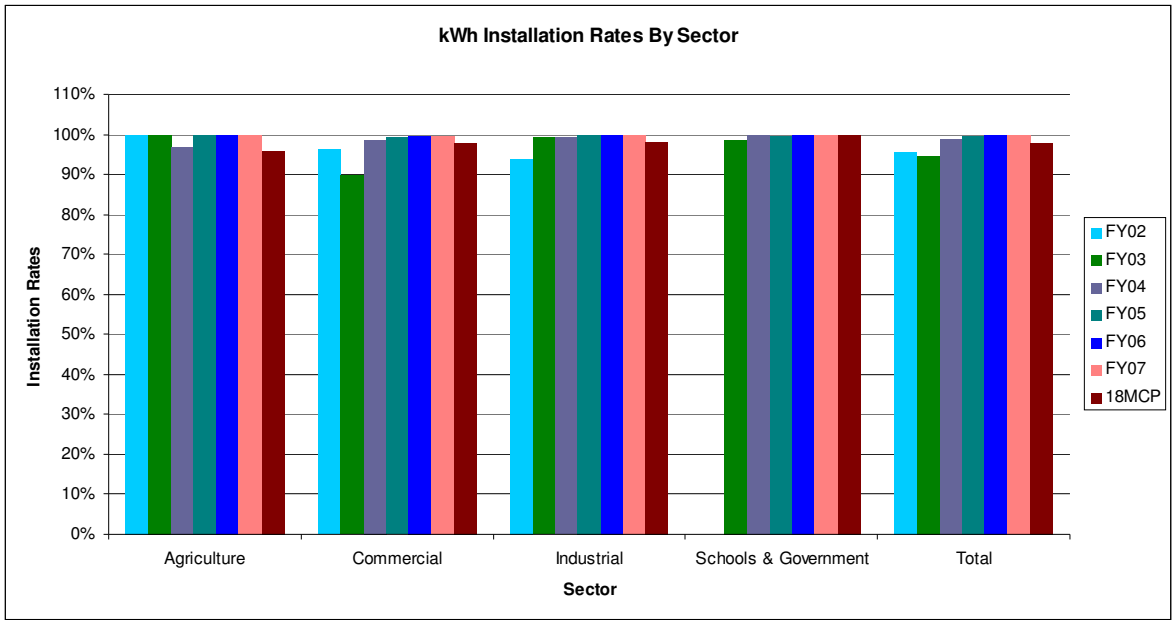
	kWh						kW						Therms					
			90% Confidence Interval						90% Confidence Interval						90% Confidence Interval			
Segment	n	Installation Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Installation Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Installation Rate	Relative Error (%)	+/-	Lower Bound	Upper Bound
Agriculture	129	96%	3.7%	3.6%	92.2%	99.4%	109	98%	2.3%	2.3%	95.4%	99.9%	25	100%	<0.1%	<0.1%	100.0%	100.0%
Commercial	137	98%	2.3%	2.2%	95.6%	100.1%	133	97%	3.1%	3.0%	94.0%	100.1%	26	100%	<0.1%	<0.1%	100.0%	100.0%
Industrial	131	98%	2.7%	2.6%	95.5%	100.7%	121	100%	0.1%	0.1%	99.7%	100.0%	38	100%	0.4%	0.3%	99.4%	100.1%
S&G	77	100%	0.2%	0.2%	99.7%	100.1%	68	100%	<0.1%	<0.1%	99.9%	100.0%	65	99%	0.9%	0.8%	98.4%	100.1%
Business Programs Overall	474	98%	1.6%	1.6%	96.4%	99.6%	431	99%	1.1%	1.0%	97.7%	99.8%	154	100%	0.3%	0.3%	99.4%	99.9%

Table A-2. Engineering Verification Factors by Sector
Based on Samples from Participants Who Installed a Measure during 18MCP

	kWh						kW						Therms					
			90% Confidence Interval						90% Confidence Interval						90% Confidence Interval			
Segment	n	Engineering Verification Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Engineering Verification Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound	n	Engineering Verification Factor	Relative Error (%)	+/-	Lower Bound	Upper Bound
Agriculture	127	99%	1.9%	1.9%	96.7%	100.5%	107	99%	1.3%	1.2%	98.0%	100.5%	25	77%	7.3%	7.3%	70.0%	84.7%
Commercial	133	93%	3.9%	3.6%	89.0%	96.2%	129	98%	3.1%	3.1%	94.9%	101.0%	26	103%	5.2%	5.2%	98.3%	108.7%
Industrial	132	95%	6.6%	6.3%	88.6%	101.2%	125	91%	10.0%	9.1%	81.6%	99.7%	38	95%	6.1%	5.8%	89.1%	100.6%
S&G	78	99%	2.6%	2.6%	96.8%	101.9%	69	95%	4.5%	4.5%	90.4%	99.3%	63	79%	13.0%	10.3%	69.0%	89.5%
Business Programs Overall	470	95%	3.9%	3.7%	91.2%	98.5%	430	95%	4.4%	4.2%	90.4%	98.7%	152	91%	4.8%	4.4%	86.7%	95.5%

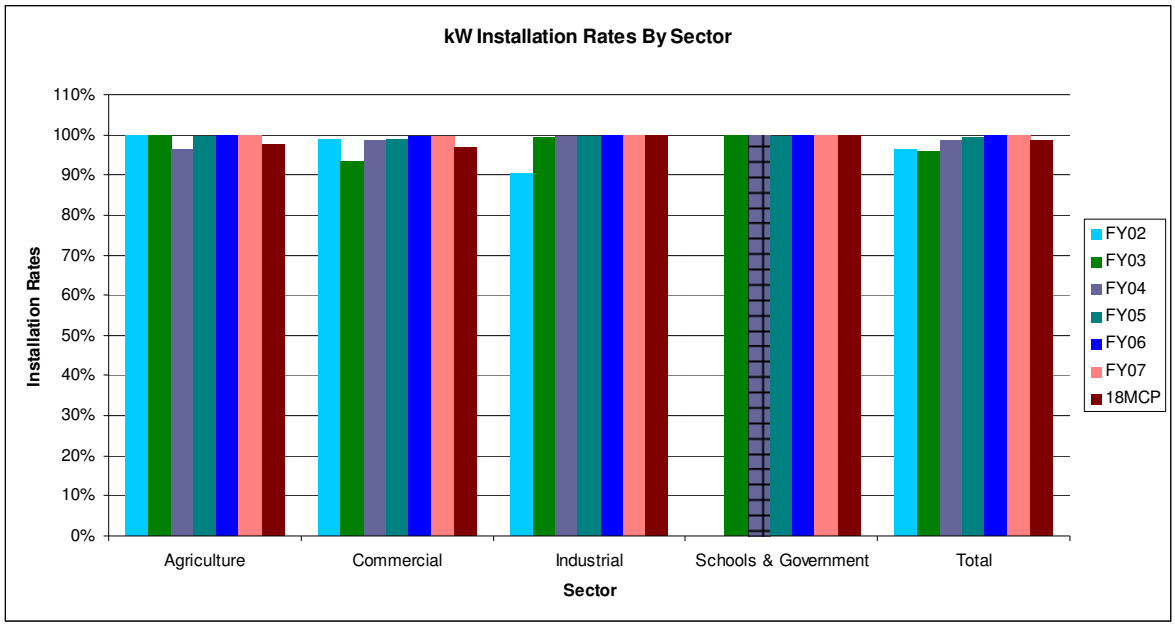
Figure A-1 through Figure A-6 provide a comparison across years for the installation rates and engineering verification factors by sector. The gross savings adjustment factors discussed earlier are a product of the installation rates and the engineering verification factors. These charts show the savings for the statewide program. A crosshatched bar in the charts indicates that the increase or decrease of the adjustment factor compared to the previous fiscal year's result is statistically significant at the 95 percent level of confidence.

Figure A-1. kWh Installation Rates by Sector[a b]
Comparison across Years



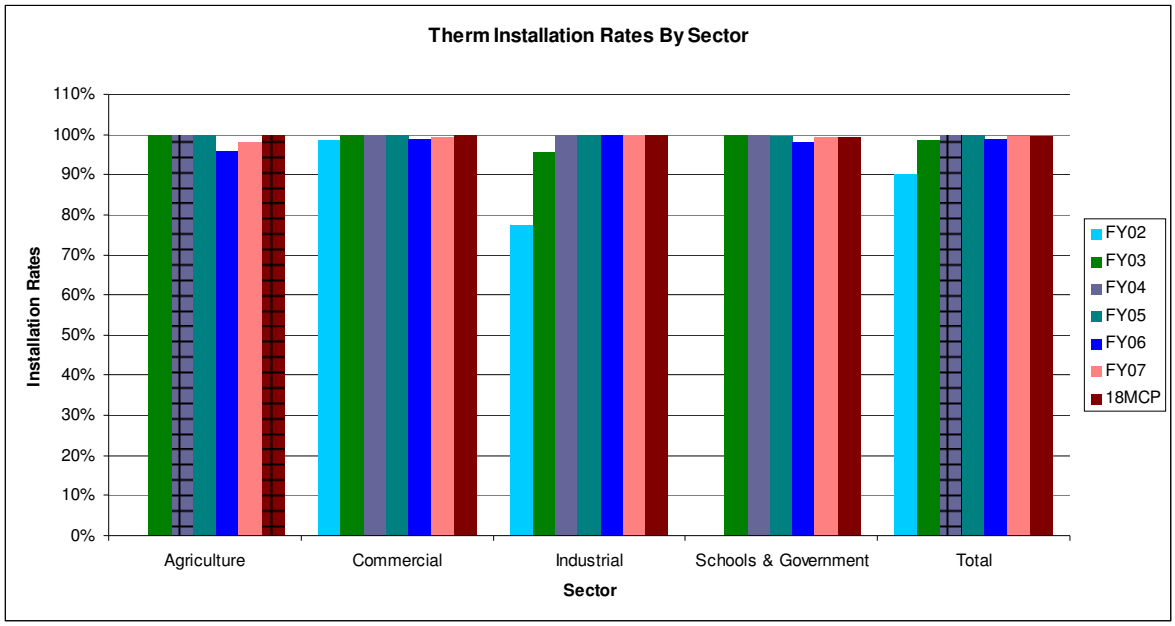
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure A-2. kW Installation Rates by Sector[a b]
Comparison Across Years



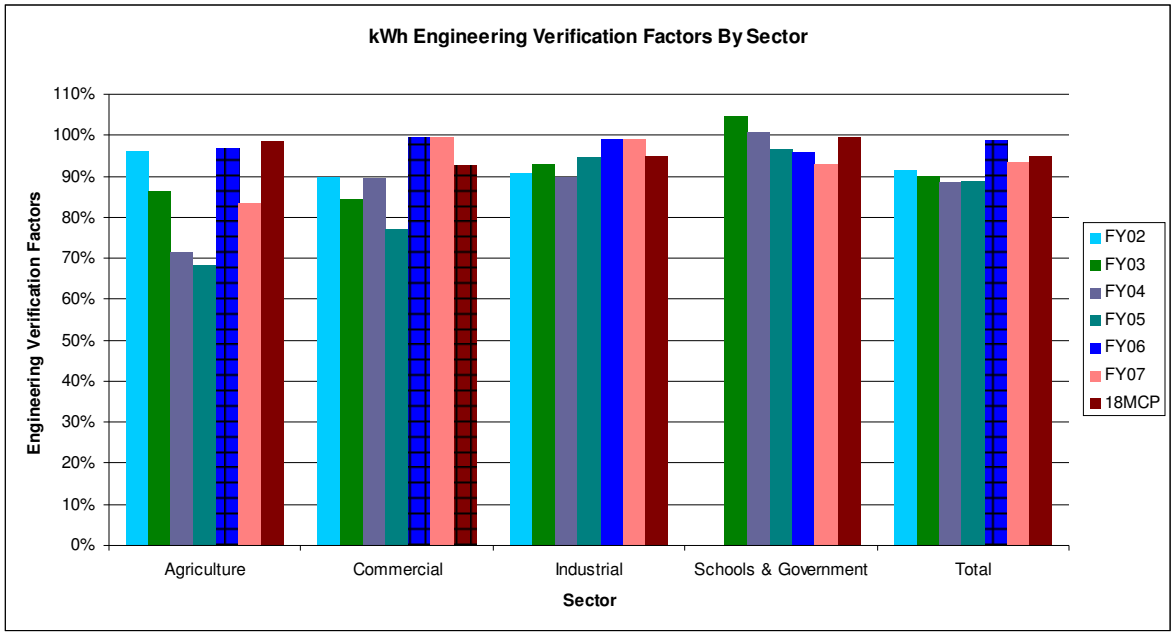
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure A-3. Therm Installation Rates by Sector[a b]
Comparison across Years



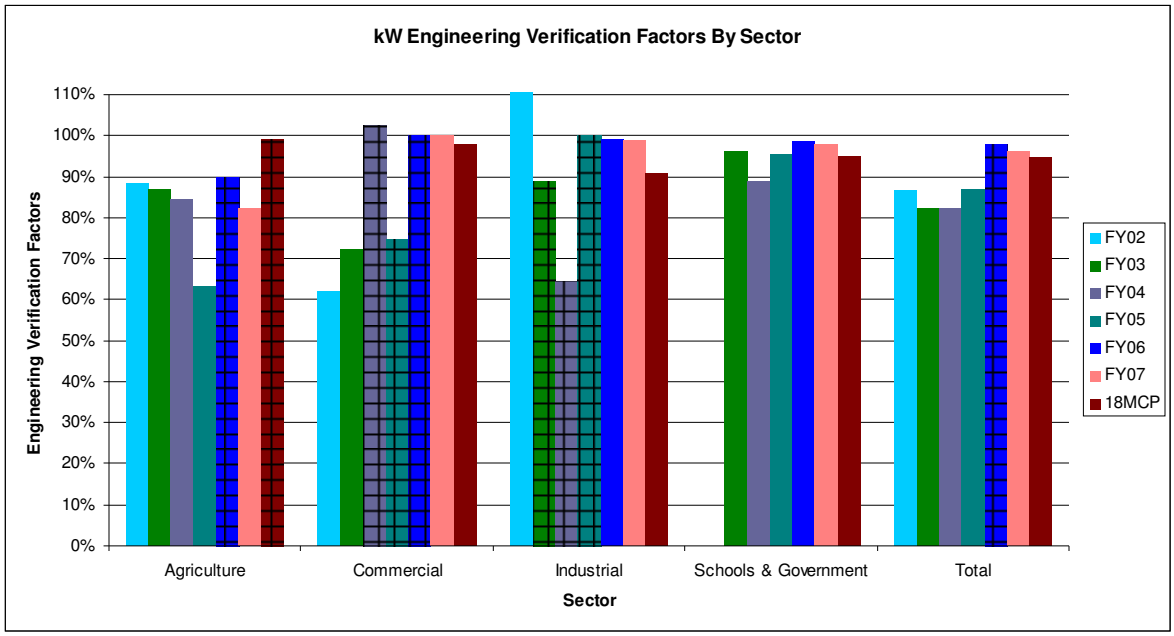
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure A-4. kWh Engineering Verification Factors by Sector[a b]
Comparison across Years



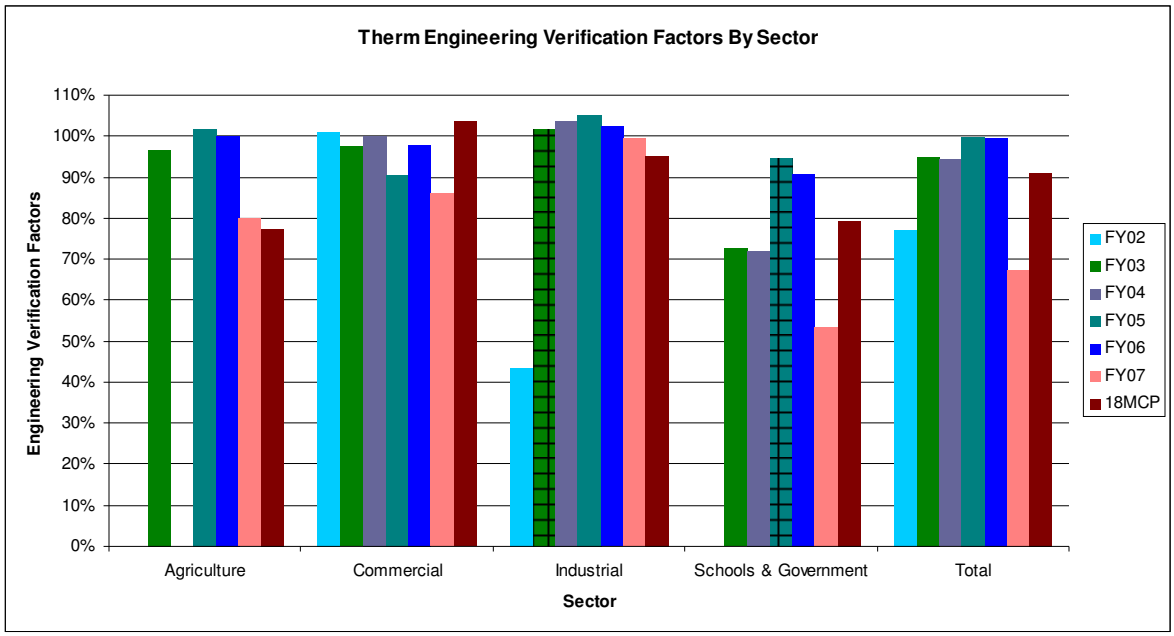
[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure A-5. kW Engineering Verification Factors by Sector[a b]
Comparison across Years



[a] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[b] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

Figure A-6. Therm Engineering Verification Factors by Sector[a b c]
Comparison across Years[a]



[a] For the agriculture segment, the FY04 adjustment factor for therms was estimated with inadequate accuracy. Hence, the results are essentially uninformative and they are not reported. In part, the agriculture segment savings adjustment factor for therms was difficult to estimate with adequate accuracy because many of the agriculture segment therms savings (both tracking and verified) were negative due to fuel switching (from electricity to gas).

[b] Differences over time reflect some methodological changes. FY06 increases in kWh and kW adjustment factors are primarily due to methodological changes.
[c] FY07 results are an amalgam of FY06 and FY07 projects. See the FY07 impact evaluation memo for more details.

A.2 ADDITIONAL ENGINEERING REVIEW DATA

Table A-3 shows the number of and percentage of measures by sector for the participants that were part of the engineering review. It also shows the tracking savings and the percentage of the total tracking savings, both by sector, of projects in the engineering review. For example, we see that 209 of 685 kWh measures were Industrial, which represents 31% of total measures. These 209 measures represent 32,912,114 kWh, which is 56% of total kWh.

Table A-3. Number of Measures and Savings for Measures in Engineering Review

Sector	kWh				kW				Therms			
	Meas	%	Sav	%	Meas	%	Sav	%	Meas	%	Sav	%
Industrial	209	31%	32,912,114	56%	184	30%	4,410	42%	38	24%	4,030,464	72%
S&G	121	18%	8,700,163	15%	96	16%	2,773	26%	80	51%	771,952	14%
Commercial	277	40%	13,792,072	24%	269	44%	2,647	25%	23	15%	348,459	6%
Agriculture	78	11%	3,136,940	5%	64	10%	731	7%	15	10%	480,774	9%
Total	685	100%	58,541,290	100%	613	100%	10,562	100%	156	100%	5,631,649	100%

A.2.1 Degree of Difference

Table A-4, Table A-5, and Table A-6 show the degree of difference between the program savings estimate and the evaluation verified savings estimate for each measure that was part of the engineering review. This information is the same as was found in the main body of the report for Business Programs overall. The following tables provide sector-level breakouts.

Table A-4. Number of Measures with Discrepancies by Sector, kWh Savings

kWh: Adjusted Measures															
	Industrial			S&G			Commercial			Agriculture			BP Overall		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	2	2	na	0	0	na	1	1	na	1	1	na	4	4
10% to 20%	15	20	35	3	2	5	5	3	8	3	7	10	26	32	58
20% to 30%	3	5	8	0	4	4	6	155	161	3	1	4	12	165	177
30% to 50%	9	3	12	0	4	4	5	6	11	5	3	8	19	16	35
50% to 100%	9	11	20	5	4	9	2	2	4	1	10	11	17	27	44
100% or Greater	14	4	18	3	3	6	2	0	2	7	14	21	26	21	47
Total	50	45	95	11	17	28	20	167	187	19	36	55	100	265	365
Percent of Total Adjusted Measures	13.7%	12.3%	26.0%	3.0%	4.7%	7.7%	5.5%	45.8%	51.2%	5.2%	9.9%	15.1%	27.4%	72.6%	100.0%
Notes: V = Verified; R=Reported															

Table A-5. Number of Measures with Discrepancies by Sector, kW Savings

kW: Adjusted Measures															
	Industrial			S&G			Commercial			Agriculture			Total		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	1	1	na	0	0	na	1	1	na	1	1	na	3	3
10% to 20%	3	1	4	4	2	6	8	2	10	0	2	2	15	7	22
20% to 30%	1	1	2	1	2	3	6	153	159	2	3	5	10	159	169
30% to 50%	4	5	9	0	3	3	7	1	8	5	1	6	16	10	26
50% to 100%	4	8	12	1	4	5	1	0	1	2	5	7	8	17	25
100% or Greater	1	11	12	1	10	11	1	1	2	3	15	18	6	37	43
Total	13	27	40	7	21	28	23	158	181	12	27	39	55	233	288
Percent of Total Adjusted Measures	4.5%	9.4%	13.9%	2.4%	7.3%	9.7%	8.0%	54.9%	62.8%	4.2%	9.4%	13.5%	19.1%	80.9%	100.0%
Notes: V = Verified; R=Reported															

Table A-6. Number of Measures with Discrepancies by Sector, Therm Savings

Therms: Adjusted Measures															
	Industrial			S&G			Commercial			Agriculture			Total		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	1	1	na	0	0	na	0	0	na	0	0	na	1	1
10% to 20%	1	3	4	1	6	7	1	3	4	1	2	3	4	14	18
20% to 30%	4	3	7	1	4	5	1	0	1	2	1	3	8	8	16
30% to 50%	1	3	4	3	4	7	2	2	4	0	2	2	6	11	17
50% to 100%	2	5	7	2	7	9	0	0	0	0	1	1	4	13	17
100% or Greater	2	0	2	1	5	6	0	0	0	1	4	5	4	9	13
Total	10	15	25	8	26	34	4	5	9	4	10	14	26	56	82
Percent of Total Adjusted Measures	12.2%	18.3%	30.5%	9.8%	31.7%	41.5%	4.9%	6.1%	11.0%	4.9%	12.2%	17.1%	31.7%	68.3%	100.0%
Notes: V = Verified; R=Reported															

Table A-7, Table A-8, and Table A-9 show the percentage of tracking energy savings corresponding to the measures adjusted in the engineering review. The percentage in the tables is not the amount adjusted, but is the ratio between the tracking savings represented by measures which were adjusted and the total tracking savings in the engineering review. For example, consider the one Industrial sector measure with kW savings that was not installed (Table A-8). The kW savings for that measure represents 0.2 percent of the total industrial sector tracking kW savings for participants in the engineering review (Table A-8). A negative value refers to negative energy savings, or increased energy use. For example, one Industrial project increased kWh use to achieve a reduction in Therm usage (Table A-7). The totals represent the percentage of total sector and program savings represented by measures which were adjusted. For example, adjusted Industrial kWh measures represent 25.1% of Industrial kWh savings and 14.1% of total kWh savings (Table A-7).

Table A-7. Percent of Sample Savings with Discrepancies, kWh Savings

kWh: Percent of Tracked Savings Represented by Adjusted Projects															
	Industrial			S&G			Commercial			Agriculture			Total		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	2.1%	2.1%	na	0.0%	0.0%	na	0.0%	0.0%	na	0.0%	0.0%	na	1.2%	1.2%
10% to 20%	5.7%	0.3%	5.9%	2.1%	2.9%	5.0%	1.3%	0.8%	2.2%	4.0%	5.3%	9.3%	4.0%	1.1%	5.1%
20% to 30%	2.0%	10.0%	12.0%	0.0%	2.9%	2.9%	1.6%	27.3%	28.8%	2.8%	0.4%	3.2%	1.6%	12.5%	14.1%
30% to 50%	1.5%	1.1%	2.6%	0.0%	2.1%	2.1%	1.4%	6.5%	7.9%	7.2%	10.4%	17.6%	1.6%	3.0%	4.6%
50% to 100%	0.6%	-2.3%	-1.7%	2.9%	6.1%	8.9%	2.1%	7.2%	9.3%	2.1%	12.0%	14.1%	1.4%	2.0%	3.3%
100% or Greater	2.5%	1.8%	4.3%	1.1%	3.9%	5.0%	1.1%	0.0%	1.1%	5.2%	1.7%	7.0%	2.1%	1.7%	3.8%
Percent of Sector Savings	12.3%	12.9%	25.1%	6.1%	17.9%	24.0%	7.5%	41.8%	49.3%	21.4%	29.8%	51.1%	na	na	na
Percent of Total Savings	6.9%	7.2%	14.1%	0.9%	2.7%	3.6%	1.8%	9.8%	11.6%	1.1%	1.6%	2.7%	10.7%	21.3%	32.1%
Notes: V = Verified; R=Reported															

Table A-8. Percent of Sample Savings with Discrepancies, kW Savings

kW: Percent of Tracked Savings Represented by Adjusted Projects															
	Industrial			S&G			Commercial			Agriculture			Total		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	0.2%	0.2%	na	0.0%	0.0%	na	0.0%	0.0%	na	0.0%	0.0%	na	0.1%	0.1%
10% to 20%	4.0%	0.0%	4.0%	9.3%	3.1%	12.4%	0.6%	9.3%	9.9%	0.0%	12.3%	12.3%	4.2%	4.0%	8.3%
20% to 30%	1.0%	0.3%	1.4%	2.2%	0.7%	2.9%	0.5%	12.6%	13.0%	7.8%	2.8%	10.6%	1.7%	3.7%	5.3%
30% to 50%	2.3%	7.4%	9.7%	0.0%	1.8%	1.8%	1.6%	0.0%	1.6%	6.2%	2.8%	9.1%	1.8%	3.8%	5.5%
50% to 100%	2.9%	12.0%	14.9%	2.0%	9.0%	11.0%	1.0%	0.0%	1.0%	1.5%	9.0%	10.5%	2.1%	8.0%	10.1%
100% or Greater	1.3%	3.4%	4.7%	0.0%	3.8%	3.9%	1.6%	0.0%	1.6%	2.1%	3.3%	5.4%	1.1%	2.6%	3.7%
Percent of Sector Savings	11.5%	23.4%	34.8%	13.5%	18.4%	32.0%	5.2%	21.9%	27.1%	17.7%	30.2%	47.9%	na	na	na
Percent of Total Savings	4.8%	9.8%	14.5%	3.6%	4.8%	8.4%	1.3%	5.5%	6.8%	1.2%	2.1%	3.3%	10.9%	22.1%	33.0%
Notes: V = Verified; R=Reported															

Table A-9. Percent of Sample Savings with Discrepancies, Therm Savings

Therms: Percent of Tracked Savings Represented by Adjusted Projects															
	Industrial			S&G			Commercial			Agriculture			Total		
Percent Difference	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	na	0.2%	0.2%	na	0.0%	0.0%	na	0.0%	0.0%	na	0.0%	0.0%	na	0.2%	0.2%
10% to 20%	0.4%	7.4%	7.8%	0.1%	2.8%	2.9%	0.1%	7.4%	7.5%	3.4%	5.3%	8.7%	0.4%	7.4%	7.8%
20% to 30%	10.9%	7.9%	18.7%	0.1%	10.1%	10.2%	8.3%	0.0%	8.3%	31.3%	13.8%	45.1%	10.9%	7.9%	18.7%
30% to 50%	0.2%	1.2%	1.4%	2.5%	1.8%	4.3%	9.0%	0.2%	9.1%	0.0%	33.0%	33.0%	0.2%	1.2%	1.4%
50% to 100%	1.6%	10.8%	12.3%	1.4%	29.5%	30.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	1.6%	10.8%	12.3%
100% or Greater	0.1%	0.0%	0.1%	0.6%	14.0%	14.6%	0.0%	0.0%	0.0%	-0.4%	12.9%	12.4%	0.1%	0.0%	0.1%
Percent of Sector Savings	13.0%	27.5%	40.5%	4.7%	58.2%	62.9%	17.3%	7.5%	24.9%	34.3%	65.1%	99.4%	na	na	na
Percent of Total Savings	9.3%	19.7%	29.0%	0.6%	8.0%	8.6%	1.1%	0.5%	1.5%	2.9%	5.6%	8.5%	13.0%	27.5%	40.5%
Notes: V = Verified; R=Reported															

Table A-10, Table A-11, and Table A-12 show the count, energy savings, and percent savings of the adjusted projects for the Industrial sector. The percentage in the tables is not the amount adjusted, but is the percent of tracking savings in the engineering review represented by projects which were adjusted.

Table A-10. Industrial Sector Discrepancy Count and Percent Savings, kWh Savings

	Industrial kWh								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	2	2	na	678,792	678,792	na	2%	2%
10% to 20%	15	20	35	1,874,826	83,324	1,958,150	6%	0%	6%
20% to 30%	3	5	8	643,042	3,292,577	3,935,619	2%	10%	12%
30% to 50%	9	3	12	506,762	352,728	859,490	2%	1%	3%
50% to 100%	9	11	20	185,121	-754,159	-569,038	1%	-2%	-2%
100% or Greater	14	4	18	823,631	586,710	1,410,341	3%	2%	4%
Verified shows savings (+ or -) where reported = 0	2	0	2	0	0	0	0%	0%	0%
Adjusted	52	45	97	4,033,382	4,239,972	8,273,354	12%	13%	25%
Not Adjusted			24			24,638,760			75%
Total			121			32,912,114			100%

Table A-11. Industrial Sector Discrepancy Count and Percent Savings, kW Savings

	Industrial kW								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	9	9	na	0%	0%
10% to 20%	3	1	4	174	1	175	4%	0%	4%
20% to 30%	1	1	2	46	15	61	1%	0%	1%
30% to 50%	4	5	9	100	328	428	2%	7%	10%
50% to 100%	4	8	12	129	528	657	3%	12%	15%
100% or Greater	1	11	12	57	149	206	1%	3%	5%
Verified shows savings (+ or -) where reported = 0	15	1	16	0	0	0	0%	0%	0%
Adjusted	28	28	56	506	1,031	1,537	11%	23%	35%
Not Adjusted			40			2,874			65%
Total			96			4,410			100%
Notes: V = Verified; R=Reported									

Table A-12. Industrial Sector Discrepancy Count and Percent Savings, Therm Savings

	Industrial Therms								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	9,720	9,720	na	0%	0%
10% to 20%	1	3	4	16,380	298,557	314,937	0%	7%	8%
20% to 30%	4	3	7	437,544	316,747	754,291	11%	8%	19%
30% to 50%	1	3	4	6,300	48,894	55,194	0%	1%	1%
50% to 100%	2	5	7	63,327	433,895	497,222	2%	11%	12%
100% or Greater	2	0	2	2,036	0	2,036	0%	0%	0%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	10	15	25	525,587	1,107,813	1,633,400	13%	27%	41%
Not Adjusted			55			2,397,064			59%
Total			80			4,030,464			100%
Notes: V = Verified; R=Reported									

Table A-13, Table A-14, and Table A-15 show the count, energy savings, and percent savings of the adjusted projects for the Schools and Government sector.

Table A-13. Schools & Government Sector Discrepancy Count and Percent Savings, kWh Savings

	Schools & Government kWh								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	0	0	na	0	0	na	0%	0%
10% to 20%	3	2	5	184,223	252,586	436,809	2%	3%	5%
20% to 30%	0	4	4	0	256,235	256,235	0%	3%	3%
30% to 50%	0	4	4	0	183,173	183,173	0%	2%	2%
50% to 100%	5	4	9	248,090	528,660	776,750	3%	6%	9%
100% or Greater	3	3	6	94,288	336,864	431,152	1%	4%	5%
Verified shows savings (+ or -) where reported = 0	3	0	3	0	0	0	0%	0%	0%
Adjusted	14	17	31	526,601	1,557,518	2,084,119	6%	18%	24%
Not Adjusted			90			6,616,044			76%
Total			121			8,700,163			100%
Notes: V = Verified; R=Reported									

Table A-14. Schools & Government Sector Discrepancy Count and Percent Savings, kW Savings

	Schools & Government kW								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	0	0	na	0	0	na	0%	0%
10% to 20%	4	2	6	258	85	343	9%	3%	12%
20% to 30%	1	2	3	60	21	81	2%	1%	3%
30% to 50%	0	3	3	0	50	50	0%	2%	2%
50% to 100%	1	4	5	56	250	306	2%	9%	11%
100% or Greater	1	10	11	1	106	107	0%	4%	4%
Verified shows savings (+ or -) where reported = 0	4	0	4	0	0	0	0%	0%	0%
Adjusted	11	21	32	375	512	887	14%	18%	32%
Not Adjusted			64			1,886			68%
Total			96			2,773			100%
Notes: V = Verified; R=Reported									

Table A-15. Schools & Government Sector Discrepancy Count and Percent Savings, Therm Savings

	Schools & Government Therms								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	0	0	na	0	0	na	0%	0%
10% to 20%	1	6	7	456	21,620	22,076	0%	3%	3%
20% to 30%	1	4	5	649	77,721	78,370	0%	10%	10%
30% to 50%	3	4	7	19,335	14,035	33,370	3%	2%	4%
50% to 100%	2	7	9	11,050	227,593	238,643	1%	29%	31%
100% or Greater	1	5	6	5,000	108,085	113,085	1%	14%	15%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	8	26	34	36,490	449,054	485,544	5%	58%	63%
Not Adjusted			46			286,408			37%
Total			80			771,952			100%
Notes: V = Verified; R=Reported									

Table A-16, Table A-17, and Table A-18 show the count, energy savings, and percent savings of the adjusted projects for the Commercial sector. The percentage in the tables is not the amount adjusted, but is the percent of tracking savings in the engineering review represented by projects which were adjusted.

Table A-16. Commercial Sector Discrepancy Count and Percent Savings, kWh Savings

	Commercial kWh								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	350	350	na	0%	0%
10% to 20%	5	3	8	186,084	112,761	298,845	1%	1%	2%
20% to 30%	6	155	161	216,652	3,762,318	3,978,970	2%	27%	29%
30% to 50%	5	6	11	195,428	895,497	1,090,925	1%	6%	8%
50% to 100%	2	2	4	291,072	995,030	1,286,102	2%	7%	9%
100% or Greater	2	0	2	146,119	0	146,119	1%	0%	1%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	20	167	187	1,035,355	5,765,956	6,801,311	8%	42%	49%
Not Adjusted			-66			6,990,761			51%
Total			121			13,792,072			100%
Notes: V = Verified; R=Reported									

Table A-17. Commercial Sector Discrepancy Count and Percent Savings, kW Savings

	Commercial kW								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	0	0	na	0%	0%
10% to 20%	8	2	10	16	247	263	1%	9%	10%
20% to 30%	6	153	159	12	332	344	0%	13%	13%
30% to 50%	7	1	8	41	0	42	2%	0%	2%
50% to 100%	1	0	1	26	0	26	1%	0%	1%
100% or Greater	1	1	2	42	0	42	2%	0%	2%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	23	158	181	137	580	716	5%	22%	27%
Not Adjusted			-85			1,931			73%
Total			96			2,647			100%
Notes: V = Verified; R=Reported									

Table A-18. Commercial Sector Discrepancy Count and Percent Savings, Therm Savings

	Commercial Therms								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	0	0	na	0	0	na	0%	0%
10% to 20%	1	3	4	333	25,692	26,025	0%	7%	7%
20% to 30%	1	0	1	28,891	0	28,891	8%	0%	8%
30% to 50%	2	2	4	31,205	544	31,749	9%	0%	9%
50% to 100%	0	0	0	0	0	0	0%	0%	0%
100% or Greater	0	0	0	0	0	0	0%	0%	0%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	4	5	9	60,429	26,236	86,665	17%	8%	25%
Not Adjusted			71			261,794			75%
Total			80			348,459			100%
Notes: V = Verified; R=Reported									

Table A-19, Table A-20, and Table A-21 show the count, energy savings, and percent savings of the adjusted projects for the Agriculture sector. The percentage in the tables is not the amount adjusted, but is the percent of tracking savings in the engineering review represented by projects which were adjusted.

Table A-19. Agriculture Sector Discrepancy Count and Percent Savings, kWh Savings

	Agriculture kWh								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	199	199	na	0%	0%
10% to 20%	3	7	10	125,642	166,418	292,060	4%	5%	9%
20% to 30%	3	1	4	88,785	11,934	100,719	3%	0%	3%
30% to 50%	5	3	8	224,645	326,646	551,291	7%	10%	18%
50% to 100%	1	10	11	66,911	375,016	441,927	2%	12%	14%
100% or Greater	7	14	21	163,963	54,101	218,064	5%	2%	7%
Verified shows savings (+ or -) where reported = 0	1	0	1	0	0	0	0%	0%	0%
Adjusted	20	36	56	669,946	934,314	1,604,260	21%	30%	51%
Not Adjusted			65			1,532,680			49%
Total			121			3,136,940			100%
Notes: V = Verified; R=Reported									

Table A-20. Agriculture Sector Discrepancy Count and Percent Savings, kW Savings

	Agriculture kW								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	1	1	na	0	0	na	0%	0%
10% to 20%	0	2	2	0	90	90	0%	12%	12%
20% to 30%	2	3	5	57	21	78	8%	3%	11%
30% to 50%	5	1	6	46	21	66	6%	3%	9%
50% to 100%	2	5	7	11	66	77	2%	9%	11%
100% or Greater	3	15	18	16	24	39	2%	3%	5%
Verified shows savings (+ or -) where reported = 0	2	0	2	0	0	0	0%	0%	0%
Adjusted	14	27	41	129	221	350	18%	30%	48%
Not Adjusted			55			381			52%
Total			96			731			100%
Notes: V = Verified; R=Reported									

Table A-21. Agriculture Sector Discrepancy Count and Percent Savings, Therm Savings

	Agriculture Therms								
	Count			Reported Savings			% Sector Savings		
Percent Change	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Sector
Not Installed	na	0	0	na	0	0	na	0%	0%
10% to 20%	1	2	3	16,423	25,475	41,898	3%	5%	9%
20% to 30%	2	1	3	150,600	66,288	216,888	31%	14%	45%
30% to 50%	0	2	2	0	158,530	158,530	0%	33%	33%
50% to 100%	0	1	1	0	608	608	0%	0%	0%
100% or Greater	1	4	5	-2,160	62,002	59,842	0%	13%	12%
Verified shows savings (+ or -) where reported = 0	0	0	0	0	0	0	0%	0%	0%
Adjusted	4	10	14	164,863	312,903	477,766	34%	65%	99%
Not Adjusted			66			3,008			1%
Total			80			480,774			100%
Notes: V = Verified; R=Reported									

Figure A-7, Figure A-8, and Figure A-9 show the relative count of measures in each adjustment category broken out by sector and for BP overall. The top line in each category represents the total number of measures in the engineering review. The second line represents the number of measures adjusted, and the third and fourth lines are for negative and positive adjustments respectively.

Figure A-7. Business Programs Count of Measures with Discrepancies, kWh Savings

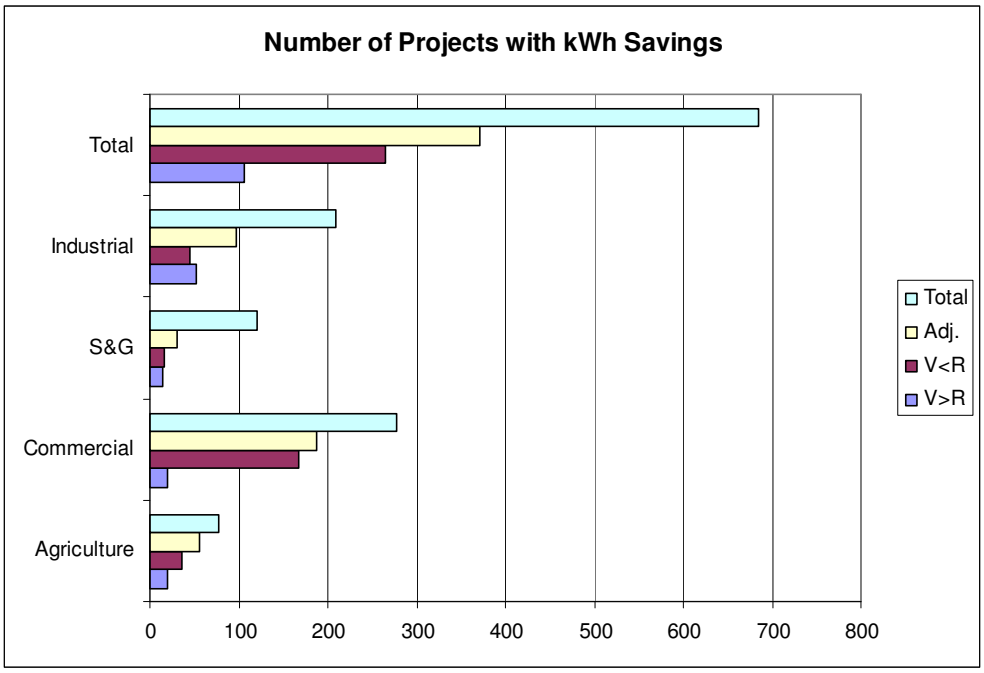


Figure A-8. Business Programs Count of Measures with Discrepancies, kW Savings

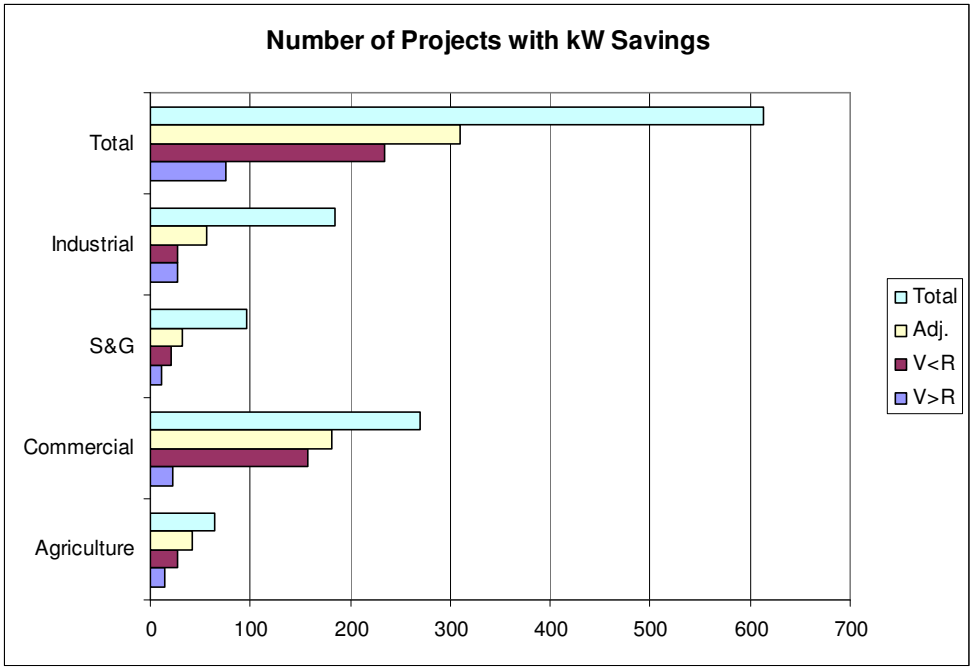


Figure A-9. Business Programs Count of Measures with Discrepancies, Therm Savings

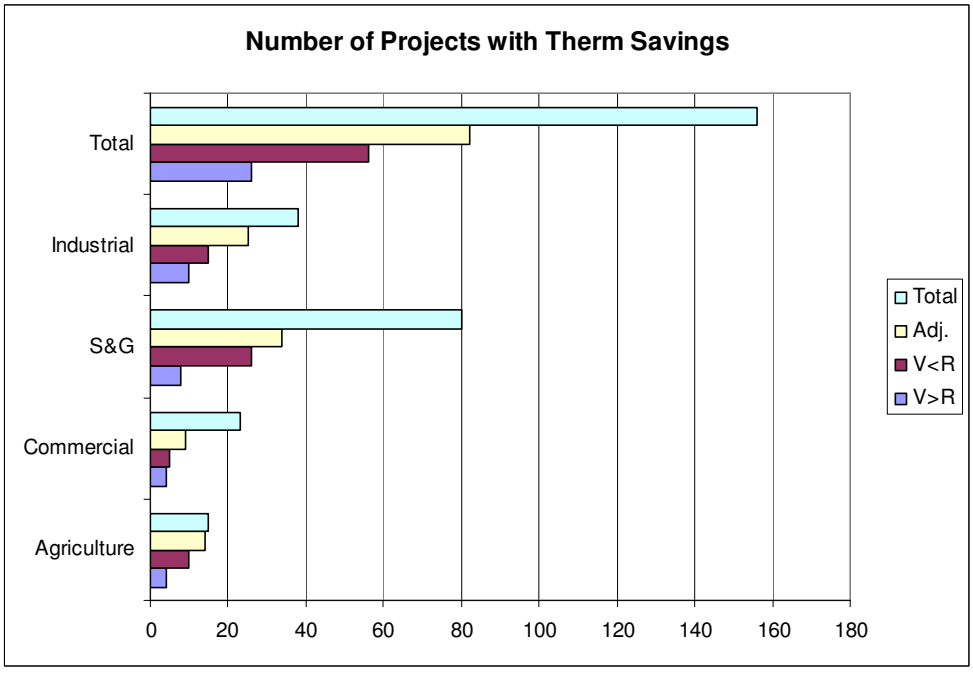


Figure A-10, Figure A-11, and Figure A-12 show the percentage of engineering review energy savings in each adjustment category broken out by sector and for BP overall. The top line in each category represents the total percentage of overall BP tracking savings. The second line represents the percentage of savings in measures that were adjusted, and the third and fourth lines are for negative and positive adjustments respectively. The percentage is not the amount adjusted, but is the percent of tracking savings in the engineering review represented by projects which were adjusted.

Figure A-10. Business Programs Percent Savings with Discrepancies, kWh Savings

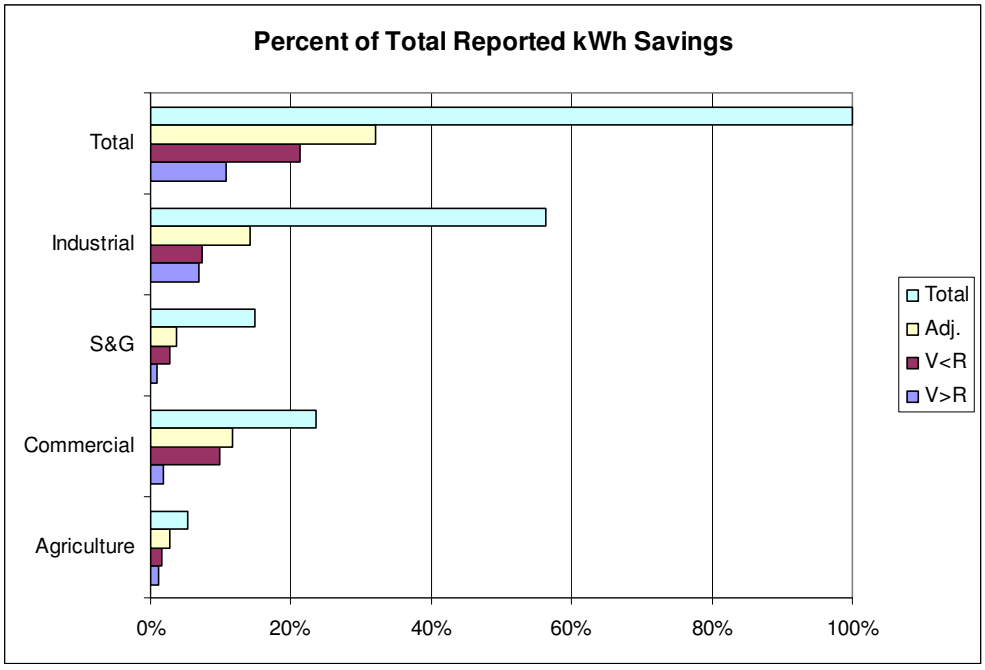


Figure A-11. Business Programs Percent Savings with Discrepancies, kW Savings

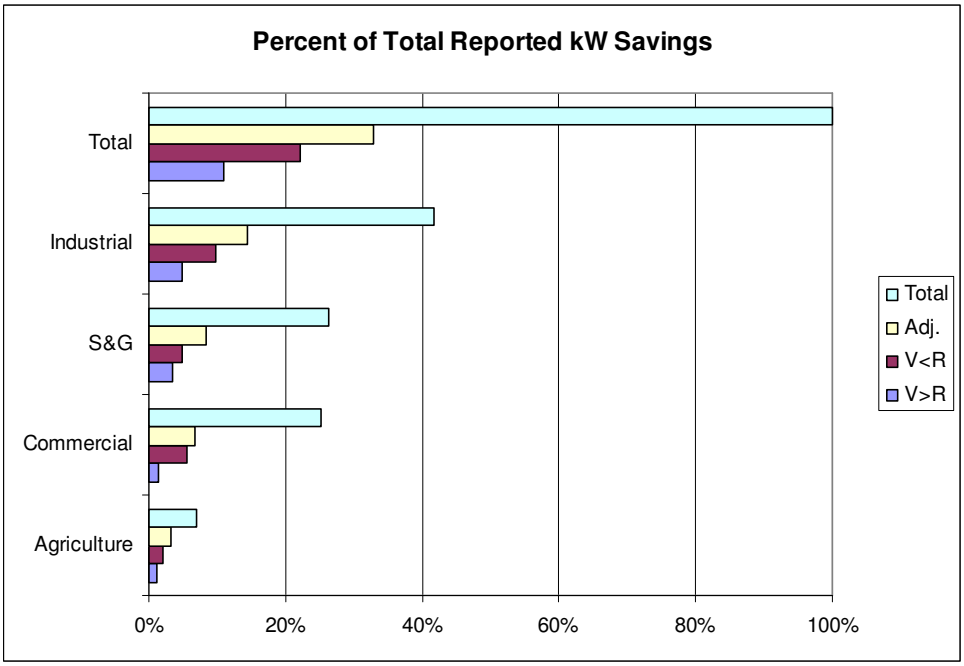
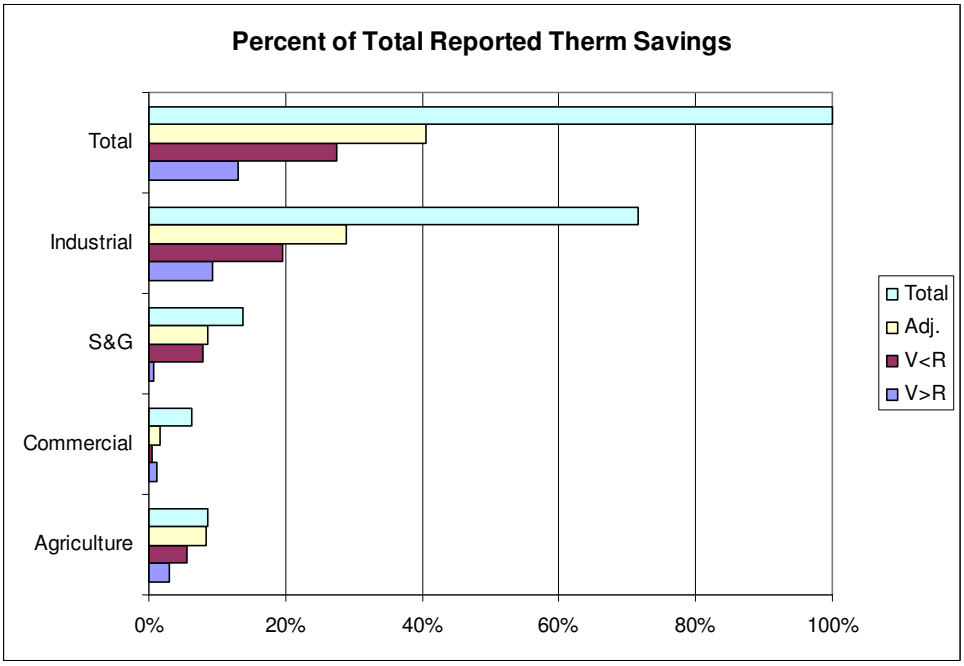


Figure A-12. Business Programs Percent Savings with Discrepancies, Therm Savings



A.2.2 Reasons for changes

The following section includes tables that show the reasons why the engineering team adjusted energy savings values. The numbers in each section do not add up to the totals at the bottom of each table, because a single project may have been adjusted for more than one reason and so would have been listed in more than one row.

The Reasons for Changes tables below each include three sections for Business Programs overall. The three sections for the overall tables are as follows:

First, the tables show the count of measures which were adjusted positively or negatively for each reason listed. For example, in Table A-22, twenty-one kWh measures were adjusted because of a data entry error. For ten of these measures the verified savings were greater than the reported savings (i.e. they were adjusted positively), and for eleven measures the verified savings were less than reported savings (i.e. they were adjusted negatively).

Second, the tables show the amount of reported energy savings associated with these adjusted measures. Using the same example, in Table A-22, the ten positively adjusted kWh measures due to a data entry error correction had a total reported savings of 485,575 kWh, where the eleven negatively adjusted kWh measures had a total reported savings of 1,280,675 kWh. In this case, negatively adjusted kWh measures due to data entry errors were generally larger than positively adjusted kWh measures. These tables do *not* show how large the adjustment was, only the size of the measures that were adjusted.

Third, the tables show the percentage of total energy savings represented by the measures in question. Using the same example, in Table A-22, the measures adjusted to correct data entry errors (either positively or negatively) represent 3.0% of total kWh savings. The adjusted measures represent three percent of total reported energy savings.

Tying all the sections together, the ten positively adjusted kWh measures due to data entry errors represent 458,575 kWh, which is 0.8% of total reported kWh savings. If, let's say, the engineering team adjusted each of these measures by 20%, this 20% adjustment would raise the Verified Gross Savings by 91,715 kWh or 0.16%.

The bottom of each table includes a summary of energy savings. In Table A-22, we see that 371 kWh measures were adjusted and 314 were not, for a total of 685 measures. The adjusted measures represent 18,083,704 kWh or 31% of total reported energy savings. Non-adjusted measures represent 40,457,586 kWh or 69% of total reported energy savings. In this case, adjusted kWh measures had smaller reported kWh savings than non-adjusted measures.

Table A-22, Table A-23, and Table A-24 show the reasons for changes for the Business Programs overall.

Table A-22. Business Programs Reasons for Changes by Count and Percent Savings, kWh Savings

Reasons for Changes	BP Overall kWh								
	Count			Reported Savings			% Program Sav		
	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	4	4	N/A	679,341	679,341	N/A	1.2%	1.2%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	11	10	21	458,575	1,280,645	1,739,220	0.8%	2.2%	3.0%
Unclear How Calculated	22	21	43	1,064,691	-661,598	403,093	1.8%	-1.1%	0.7%
Customer Supplied Additional or Different Information	52	55	107	2,046,323	4,276,719	6,323,042	3.5%	7.3%	10.8%
Different Calculation Method	13	13	26	2,343,169	1,483,584	3,826,753	4.0%	2.5%	6.5%
Corrected Calculation Errors	2	2	4	2,952	1,087,953	1,090,905	0.0%	1.9%	1.9%
Used Site-Specific Data Rather than Prescriptive	9	0	9	542,605	0	542,605	0.9%	0.0%	0.9%
Corrected to Use Deemed Savings	1	2	3	3,456	972,092	975,548	0.0%	1.7%	1.7%
Different Baseline	4	17	21	181,992	583,809	765,801	0.3%	1.0%	1.3%
Engineering research led to different input values	8	159	167	800,966	3,961,302	4,762,268	1.4%	6.8%	8.1%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total Adjusted	106	265	371	6,265,284	11,818,419	18,083,704	11%	20%	31%
Not Adjusted			314			40,457,586			69%
Total			685			58,541,290			100%
Notes: V = Verified; R=Reported									

Table A-23. Business Programs Reasons for Changes by Count and Percent Savings, kW Savings

Reasons for Changes	BP Overall kW								
	Count			Reported Savings			% Program Sav		
	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	3	3	N/A	10	10	N/A	0.1%	0.1%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	19	5	24	38	57	95	0.4%	0.5%	0.9%
Unclear How Calculated	23	19	42	196	602	798	1.9%	5.7%	7.6%
Customer Supplied Additional or Different Information	9	28	37	247	1,061	1,308	2.3%	10.0%	12.4%
Different Calculation Method	15	12	27	506	494	1,000	4.8%	4.7%	9.5%
Corrected Calculation Errors	1	3	4	0	85	85	0.0%	0.8%	0.8%
Used Site-Specific Data Rather than Prescriptive	2	6	8	31	61	92	0.3%	0.6%	0.9%
Corrected to Use Deemed Savings	0	4	4	0	40	40	0.0%	0.4%	0.4%
Different Baseline	3	13	16	27	71	98	0.3%	0.7%	0.9%
Engineering research led to different input values	8	158	166	161	357	519	1.5%	3.4%	4.9%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%
Adjusted	76	234	310	1,147	2,333	3,481	11%	22%	33%
Not Adjusted			303			7,081			67%
Total			613			10,562			100%
Notes: V = Verified; R=Reported									

Table A-24. Business Programs Reasons for Changes by Count and Percent Savings, Therm Savings

Reasons for Changes	BP Overall Therms								
	Count			Reported Savings			% Program Sav		
	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	9,720	9,720	N/A	0.2%	0.2%
Duplicate Measure	N/A	2	2	N/A	67,100	67,100	N/A	1.2%	1.2%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%
Unclear How Calculated	8	8	16	113,822	85,556	199,378	2.0%	1.5%	3.5%
Customer Supplied Additional or Different Information	9	22	31	581,169	1,128,815	1,709,983	10.3%	20.0%	30.4%
Different Calculation Method	7	12	19	49,627	62,589	112,216	0.9%	1.1%	2.0%
Corrected Calculation Errors	1	3	4	35,170	338,392	373,562	0.6%	6.0%	6.6%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%
Different Baseline	3	6	9	91,924	276,323	368,247	1.6%	4.9%	6.5%
Engineering research led to different input values	3	4	7	48,729	166,539	215,268	0.9%	3.0%	3.8%
Propane/LP Measure	0	5	5	0	98,987	98,987	0.0%	1.8%	1.8%
Adjusted	26	56	82	787,368	1,886,287	2,673,655	14%	33%	47%
Not Adjusted			74			2,957,994			53%
Total			156			5,631,649			100%
Notes: V = Verified; R=Reported									

The following tables (for the rest of section A.2.2) include Reasons for Changes by sector, beginning with Industrial. The first two sections in each of these tables is the same as that for the Business Programs Overall. The third and fourth sections of each table, however, are different. The third section represents the percent of sector savings represented by adjusted projects, while the fourth section represents the percent of total savings represented by adjusted projects.

For example, in Table A-25, we see that five industrial kWh measures were adjusted because the evaluating engineer used site-specific data for the calculation rather than the assumed prescriptive data that the program paperwork used. All five measures were adjusted positively, and these measures represent 277,103 kWh. The third section shows that this is 0.8% of the total industrial reported energy savings. The fourth section shows that this is 0.5% of total business programs reported energy savings.

The bottom of each table includes a summary. In Table A-25, for example, we see 97 adjusted industrial kWh measures. These measures represent 7,594,562 kWh, which is 23% of total industrial kWh savings and 13% of total kWh savings. On the other hand, 24 kWh projects were not adjusted. These projects represent 25,317,552 kWh, or 77% of industrial kWh savings and 43% of total reported kWh savings. In sum, industrial kWh savings represents 56% of total kWh savings, as we see at the bottom-right of the table.

Again, the numbers in each section do not add up to the totals at the bottom of each table, because a single project may have been adjusted for more than one reason and so would have been listed in more than one row.

The tables for Commercial, Schools & Government, and Agriculture are identical in format to those for industrial, and so are not discussed in detail.

Table A-25, Table A-26, and Table A-27 show the count, energy savings, and percent savings of the adjusted measures by the reasons for the changes for the Industrial sector.

Table A-25. Industrial Sector Reasons for Changes by Count and Percent Savings, kWh Savings

	Industrial kWh											
	Count			Reported Savings			% Industrial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	2	2	N/A	678,792	678,792	N/A	2.1%	2.1%	N/A	1.2%	1.2%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	3	3	0	814,475	814,475	0.0%	2.5%	2.5%	0.0%	1.4%	1.4%
Unclear How Calculated	14	8	22	951,522	-1,463,046	-511,524	2.9%	-4.4%	-1.6%	1.6%	-2.5%	-0.9%
Customer Supplied Additional or Different Information	31	26	57	1,128,476	2,692,087	3,820,562	3.4%	8.2%	11.6%	1.9%	4.6%	6.5%
Different Calculation Method	6	6	12	2,072,179	941,739	3,013,917	6.3%	2.9%	9.2%	3.5%	1.6%	5.1%
Corrected Calculation Errors	1	2	3	2,681	1,087,953	1,090,634	0.0%	3.3%	3.3%	0.0%	1.9%	1.9%
Used Site-Specific Data Rather than Prescriptive	5	0	5	277,103	0	277,103	0.8%	0.0%	0.8%	0.5%	0.0%	0.5%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	1	1	2	48,766	263,978	312,744	0.1%	0.8%	1.0%	0.1%	0.5%	0.5%
Engineering research led to different input values	1	1	2	289,080	29,342	318,422	0.9%	0.1%	1.0%	0.5%	0.1%	0.5%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	52	45	97	4,033,382	3,561,180	7,594,562	12%	11%	23%	7%	6%	13%
Not Adjusted			24			25,317,552			77%			43%
Total			121			32,912,114			100%			56%

Notes: V = Verified; R=Reported

Table A-26. Industrial Sector Reasons for Changes by Count and Percent Savings, kW Savings

	Industrial kW											
	Count			Reported Savings			% Industrial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	9	9	N/A	0.2%	0.2%	N/A	0.1%	0.1%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	1	1	0	35	35	0.0%	0.8%	0.8%	0.0%	0.3%	0.3%
Unclear How Calculated	20	8	28	173	412	585	3.9%	9.3%	13.3%	1.6%	3.9%	5.5%
Customer Supplied Additional or Different Information	3	9	12	108	453	561	2.5%	10.3%	12.7%	1.0%	4.3%	5.3%
Different Calculation Method	4	7	11	238	144	382	5.4%	3.3%	8.7%	2.3%	1.4%	3.6%
Corrected Calculation Errors	1	3	4	0	85	85	0.0%	1.9%	1.9%	0.0%	0.8%	0.8%
Used Site-Specific Data Rather than Prescriptive	0	5	5	0	61	61	0.0%	1.4%	1.4%	0.0%	0.6%	0.6%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	1	1	2	6	44	50	0.1%	1.0%	1.1%	0.1%	0.4%	0.5%
Engineering research led to different input values	1	1	2	33	5	38	0.7%	0.1%	0.9%	0.3%	0.1%	0.4%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	28	28	56	506	1,021	1,527	11%	23%	35%	5%	10%	14%
Not Adjusted			40			2,883			65%			27%
Total			96			4,410			100%			42%

Notes: V = Verified; R=Reported

Table A-27. Industrial Sector Reasons for Changes by Count and Percent Savings, Therm Savings

	Industrial Therms											
	Count			Reported Savings			% Industrial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	9,720	9,720	N/A	0.2%	0.2%	N/A	0.2%	0.2%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	3	0	3	43,223	0	43,223	1.1%	0.0%	1.1%	0.8%	0.0%	0.8%
Customer Supplied Additional or Different Information	5	11	16	410,096	814,664	1,224,760	10.2%	20.2%	30.4%	7.3%	14.5%	21.7%
Different Calculation Method	1	3	4	37,098	38,694	75,792	0.9%	1.0%	1.9%	0.7%	0.7%	1.3%
Corrected Calculation Errors	1	2	3	35,170	313,600	348,770	0.9%	7.8%	8.7%	0.6%	5.6%	6.2%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Engineering research led to different input values	1	0	1	37,098	0	37,098	0.9%	0.0%	0.9%	0.7%	0.0%	0.7%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	10	15	25	525,587	1,098,093	1,623,680	13%	27%	40%	9%	19%	29%
Not Adjusted			55			2,406,784			60%			43%
Total			80			4,030,464			100%			72%

Notes: V = Verified; R=Reported

Table A-28, Table A-29, and Table A-30 show the count, energy savings, and percent savings of the adjusted measures by the reasons for the changes for the Schools and Government sector.

Table A-28. Schools & Government Sector Reasons for Changes by Count and Percent Savings, kWh Savings

	Schools & Government kWh											
	Count			Reported Savings			% S&G Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	1	0	1	89,040	0	89,040	1.0%	0.0%	1.0%	0.2%	0.0%	0.2%
Unclear How Calculated	3	5	8	68,341	226,270	294,611	0.8%	2.6%	3.4%	0.1%	0.4%	0.5%
Customer Supplied Additional or Different Information	4	6	10	174,073	1,003,747	1,177,820	2.0%	11.5%	13.5%	0.3%	1.7%	2.0%
Different Calculation Method	1	1	2	9,128	252,551	261,679	0.1%	2.9%	3.0%	0.0%	0.4%	0.4%
Corrected Calculation Errors	1	0	1	271	0	271	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	1	0	1	680	0	680	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	1	1	2	3,456	52,818	56,274	0.0%	0.6%	0.6%	0.0%	0.1%	0.1%
Different Baseline	0	1	1	0	14,304	14,304	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%
Engineering research led to different input values	4	3	7	191,420	7,828	199,248	2.2%	0.1%	2.3%	0.3%	0.0%	0.3%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	14	17	31	526,601	1,557,518	2,084,119	6%	18%	24%	1%	3%	4%
Not Adjusted			90			6,616,044			76%			11%
Total			121			8,700,163			100%			15%
Notes: V = Verified; R=Reported												

Table A-29. Schools & Government Sector Reasons for Changes by Count and Percent Savings, kW Savings

	Schools & Government kW											
	Count			Reported Savings			% S&G Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	2	6	8	22	157	179	0.8%	5.7%	6.5%	0.2%	1.5%	1.7%
Customer Supplied Additional or Different Information	4	6	10	133	294	428	4.8%	10.6%	15.4%	1.3%	2.8%	4.0%
Different Calculation Method	2	1	3	167	9	176	6.0%	0.3%	6.3%	1.6%	0.1%	1.7%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	0	1	1	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	4	4	0	40	40	0.0%	1.4%	1.4%	0.0%	0.4%	0.4%
Different Baseline	0	1	1	0	2	2	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%
Engineering research led to different input values	4	4	8	56	18	75	2.0%	0.7%	2.7%	0.5%	0.2%	0.7%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	11	21	32	375	512	887	14%	18%	32%	4%	5%	8%
Not Adjusted			64			1,886			68%			18%
Total			96			2,773			100%			26%
Notes: V = Verified; R=Reported												

Table A-30. Schools & Government Sector Reasons for Changes by Count and Percent Savings, Therm Savings

	Schools & Government Therms											
	Count			Reported Savings			% S&G Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	2	2	N/A	67,100	67,100	N/A	8.7%	8.7%	N/A	1.2%	1.2%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	3	4	7	21,485	84,431	105,916	2.8%	10.9%	13.7%	0.4%	1.5%	1.9%
Customer Supplied Additional or Different Information	1	5	6	4,050	63,249	67,299	0.5%	8.2%	8.7%	0.1%	1.1%	1.2%
Different Calculation Method	4	8	12	14,356	23,576	37,932	1.9%	3.1%	4.9%	0.3%	0.4%	0.7%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	0	4	4	0	60,262	60,262	0.0%	7.8%	7.8%	0.0%	1.1%	1.1%
Engineering research led to different input values	1	4	5	649	166,539	167,188	0.1%	21.6%	21.7%	0.0%	3.0%	3.0%
Propane/LP Measure	0	2	2	0	36,985	36,985	0.0%	4.8%	4.8%	0.0%	0.7%	0.7%
Adjusted	8	26	34	36,490	449,054	485,544	5%	58%	63%	1%	8%	9%
Not Adjusted			46			286,408			37%			5%
Total			80			771,952			100%			14%
Notes: V = Verified; R=Reported												

Table A-31, Table A-32, and Table A-33 show the count, energy savings, and percent savings of the adjusted measures by the reasons for the changes for the Commercial sector.

Table A-31. Commercial Sector Reasons for Changes by Count and Percent Savings, kWh Savings

	Commercial kWh											
	Count			Reported Savings			% Commercial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	350	350	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	10	7	17	369,535	466,170	835,705	2.7%	3.4%	6.1%	0.6%	0.8%	1.4%
Unclear How Calculated	4	2	6	44,796	455,136	499,932	0.3%	3.3%	3.6%	0.1%	0.8%	0.9%
Customer Supplied Additional or Different Information	2	1	3	180,406	894	181,300	1.3%	0.0%	1.3%	0.3%	0.0%	0.3%
Different Calculation Method	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	3	0	3	264,822	0	264,822	1.9%	0.0%	1.9%	0.5%	0.0%	0.5%
Corrected to Use Deemed Savings	0	1	1	0	919,274	919,274	0.0%	6.7%	6.7%	0.0%	1.6%	1.6%
Different Baseline	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Engineering research led to different input values	2	155	157	320,466	3,924,132	4,244,598	2.3%	28.5%	30.8%	0.5%	6.7%	7.3%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	20	166	186	1,035,355	5,765,606	6,800,961	8%	42%	49%	2%	10%	12%
Not Adjusted			-65			6,991,111			51%			12%
Total			121			13,792,072			100%			24%
Notes: V = Verified; R=Reported												

Table A-32. Commercial Sector Reasons for Changes by Count and Percent Savings, kW Savings

	Commercial kW											
	Count			Reported Savings			% Commercial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	19	3	22	38	6	44	1.4%	0.2%	1.7%	0.4%	0.1%	0.4%
Unclear How Calculated	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Customer Supplied Additional or Different Information	0	2	2	0	245	245	0.0%	9.3%	9.3%	0.0%	2.3%	2.3%
Different Calculation Method	0	2	2	0	245	245	0.0%	9.3%	9.3%	0.0%	2.3%	2.3%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	2	0	2	31	0	31	1.2%	0.0%	1.2%	0.3%	0.0%	0.3%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Engineering research led to different input values	2	151	153	67	328	396	2.5%	12.4%	14.9%	0.6%	3.1%	3.7%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	23	157	180	137	579	716	5%	22%	27%	1%	5%	7%
Not Adjusted			-84			1,931			73%			18%
Total			96			2,647			100%			25%
Notes: V = Verified; R=Reported												

Table A-33. Commercial Sector Reasons for Changes by Count and Percent Savings, Therm Savings

	Commercial Therms											
	Count			Reported Savings			% Commercial Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	2	3	5	49,114	1,125	50,239	14.1%	0.3%	14.4%	0.9%	0.0%	0.9%
Customer Supplied Additional or Different Information	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Calculation Method	1	1	2	333	319	652	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
Corrected Calculation Errors	0	1	1	0	24,792	24,792	0.0%	7.1%	7.1%	0.0%	0.4%	0.4%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Engineering research led to different input values	1	0	1	10,982	0	10,982	3.2%	0.0%	3.2%	0.2%	0.0%	0.2%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	4	5	9	60,429	26,236	86,665	17%	8%	25%	1%	0%	2%
Not Adjusted			71			261,794			75%			5%
Total			80			348,459			100%			6%
Notes: V = Verified; R=Reported												

Table A-34, Table A-35, and Table A-36 show the count, energy savings, and percent savings of the adjusted measures by the reasons for the changes for the Agriculture sector.

Table A-34. Agricultural Sector Reasons for Changes by Count and Percent Savings, kWh Savings

	Agriculture kWh											
	Count			Reported Savings			% Agriculture Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	199	199	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	1	6	7	32	120,042	120,074	0.0%	3.8%	3.8%	0.0%	0.2%	0.2%
Customer Supplied Additional or Different Information	15	22	37	563,368	579,992	1,143,360	18.0%	18.5%	36.4%	1.0%	1.0%	2.0%
Different Calculation Method	6	6	12	261,862	289,294	551,156	8.3%	9.2%	17.6%	0.4%	0.5%	0.9%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	3	15	18	133,226	305,527	438,753	4.2%	9.7%	14.0%	0.2%	0.5%	0.7%
Engineering research led to different input values	1	0	1	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	20	35	55	669,946	934,115	1,604,061	21%	30%	51%	1%	2%	3%
Not Adjusted			66			1,532,879			49%			3%
Total			121			3,136,940			100%			5%
Notes: V = Verified; R=Reported												

Table A-35. Agricultural Sector Reasons for Changes by Count and Percent Savings, kW Savings

	Agriculture kW											
	Count			Reported Savings			% Agriculture Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	1	1	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	1	1	0	17	17	0.0%	2.3%	2.3%	0.0%	0.2%	0.2%
Unclear How Calculated	1	5	6	2	32	34	0.2%	4.4%	4.6%	0.0%	0.3%	0.3%
Customer Supplied Additional or Different Information	2	11	13	6	69	74	0.8%	9.4%	10.2%	0.1%	0.7%	0.7%
Different Calculation Method	9	2	11	101	97	198	13.8%	13.2%	27.1%	1.0%	0.9%	1.9%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	2	11	13	22	25	47	3.0%	3.5%	6.5%	0.2%	0.2%	0.4%
Engineering research led to different input values	1	2	3	5	5	10	0.6%	0.7%	1.4%	0.0%	0.1%	0.1%
Propane/LP Measure	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted	14	26	40	129	221	350	18%	30%	48%	1%	2%	3%
Not Adjusted			56			381			52%			4%
Total			96			731			100%			7%
Notes: V = Verified; R=Reported												

Table A-36. Agricultural Sector Reasons for Changes by Count and Percent Savings, Therm Savings

	Agriculture Therms											
	Count			Reported Savings			% Agriculture Sav			% Program Sav		
Reasons for Changes	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total	V>R	V<R	Total
Not Installed	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Duplicate Measure	N/A	0	0	N/A	0	0	N/A	0.0%	0.0%	N/A	0.0%	0.0%
Data Entry Error (correct savings in documentation)	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Unclear How Calculated	0	1	1	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Customer Supplied Additional or Different Information	3	6	9	167,023	250,901	417,924	34.7%	52.2%	86.9%	3.0%	4.5%	7.4%
Different Calculation Method	1	0	1	-2,160	0	-2,160	-0.4%	0.0%	-0.4%	0.0%	0.0%	0.0%
Corrected Calculation Errors	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Used Site-Specific Data Rather than Prescriptive	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corrected to Use Deemed Savings	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Different Baseline	3	2	5	91,924	216,061	307,985	19.1%	44.9%	64.1%	1.6%	3.8%	5.5%
Engineering research led to different input values	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Propane/LP Measure	0	3	3	0	62,002	62,002	0.0%	12.9%	12.9%	0.0%	1.1%	1.1%
Adjusted	4	10	14	164,863	312,903	477,766	34%	65%	99%	3%	6%	8%
Not Adjusted			66			3,008			1%			0%
Total			80			480,774			100%			9%
Notes: V = Verified; R=Reported												

APPENDIX B: WISCONSIN PUBLIC SERVICE RESULTS

This appendix presents energy impact evaluation results for the Wisconsin Public Service Business Programs.

B.1 BACKGROUND

KEMA Inc and PA Consulting Group have contracted with Integrys Energy Group Inc (the parent company of Wisconsin Public Service) to evaluate the Wisconsin Public Service 10 MW Programs.[44] KEMA's primary role in the evaluation is to conduct an energy impact evaluation of the Wisconsin Public Service Business Programs. These programs include the Prescriptive and Custom Programs and the Hometown Energy Checkup Program.

The Prescriptive and Custom Programs are the same offerings in the Wisconsin Public Service territory as the statewide Focus on Energy Business Programs, with enhanced funding from Wisconsin Public Service and special promotional efforts. The Hometown Energy Checkup Program offers Focus on Energy audits, double value incentives, and some direct install measures.

B.2 APPROACH

The Wisconsin Public Service Business Programs' services and delivery mechanisms are substantially the same as those of the statewide Focus on Energy Business Program, and the measure savings are shared between Wisconsin Public Service and Focus, the evaluation approach to the Wisconsin Public Service programs is an extension of Focus evaluation efforts. The approaches, protocols, and instruments reported in this document for the statewide Focus on Energy Business Programs Impact Evaluation were used for the determination of Wisconsin Public Service Business Programs gross and net impacts. Refer to the body of this report and its appendices for detailed discussions on methodology and sampling.

The Wisconsin Public Service evaluation funds were used to support a sample of Wisconsin Public Service projects larger than would have been selected if these projects were simply considered as part of the general Focus activity. The WPS sample consisted of roughly double the number of Wisconsin Public Service projects than would have been included in the statewide analysis. The goal of this oversample was to produce the best possible Wisconsin Public Service estimates at the portfolio level. However, the samples and accuracy are in part constrained by the total size of the participating populations, and the response rates to the impact field surveys.

For more information on the sampling design refer to section 4.1.3 "Sampling" and Appendix D "Detailed Sampling Tables."

[44] *Wisconsin Public Service: Evaluation of the Wisconsin Public Service 10 MW Programs, Detailed Evaluation Plans*, Final: July 27, 2007.

B.3 ADJUSTMENT FACTORS

This section presents energy impact evaluation results for Wisconsin Public Service customers. These customers are also used in the determination of the statewide results.

Table B-1 shows the 18MCP gross savings adjustment factors for the overall Wisconsin Public Service program. The gross savings adjustment factors for the Wisconsin Public Service program are 96 percent and 95 percent for kWh and kW, respectively. These are strong results and higher overall gross savings results than the statewide Focus on Energy Program (93 percent and 93 percent for kWh and kW, respectively).

Table B-1. Gross Savings Adjustment Factors for WPS
Based on Samples from Participants Who Installed a Measure during 18MCP

Energy Unit	min n	Gross Savings Adjustment Factor	90% Confidence Interval			
			Relative Error (%)	+/-	Lower Bound	Upper Bound
kWh	140	96%	7.1%	6.8%	89.6%	103.3%
kW	139	95%	6.2%	5.8%	88.9%	100.5%

Table B-2 shows the 18MCP attribution factors for the overall Wisconsin Public Service program. The attribution results are for Wisconsin Public Service and are similar to the statewide results of 60 percent and 58 percent, respectively.

Table B-2. Attribution Factors for WPS
Based on Samples from Participants Who Installed a Measure during 18MCP

Energy Unit	n	Attribution Adjustment Factor	90% Confidence Interval			
			Relative Error (%)	+/-	Lower Bound	Upper Bound
kWh	139	62%	13.7%	8.5%	53.5%	70.5%
kW	138	59%	16.2%	9.5%	49.4%	68.5%

Table B-3 shows the 18MCP realization rates for the overall Wisconsin Public Service program. The realization rate combines the gross savings adjustment and the attribution adjustment factors. Therefore, the Wisconsin Public Service realization rates are similar to the statewide rates, 59 percent and 54 percent for kWh and kW, respectively.

Table B-3. Realization Rates for WPS
Based on Samples from Participants Who Installed a Measure during 18MCP

Energy Unit	min n	Realization Rate	90% Confidence Interval			
			Relative Error (%)	+/-	Lower Bound	Upper Bound
kWh	139	60%	15.4%	9.2%	50.6%	69.0%
kW	138	56%	17.3%	9.7%	46.2%	65.5%

[a] The standard errors shown are conservative; they are calculated using an approximation that overstates the standard error.

B.3.1 Other adjustment factors

Tables B-4 and B-5 show the installation rates and engineering verification factors for the WPS Business Programs. The combined effect of these two factors is reported above as the gross savings adjustment factor.

Table B-4. Installation Rates for WPS
Based on Samples from Participants Who Installed a Measure during 18MCP

Energy Unit	n	Installation Rate	90% Confidence Interval			
			Relative Error (%)	+/-	Lower Bound	Upper Bound
kWh	141	100%	0.1%	0.1%	99.8%	100.0%
kW	140	100%	0.2%	0.2%	99.7%	100.0%

Table B-5. Engineering Verification Factors for WPS
Based on Samples from Participants Who Installed a Measure during 18MCP

Energy Unit	n	Engineering Verification Factor	90% Confidence Interval			
			Relative Error (%)	+/-	Lower Bound	Upper Bound
kWh	140	97%	7.1%	6.8%	89.7%	103.4%
kW	139	95%	6.2%	5.8%	89.0%	100.6%

B.4 EVALUATED TRACKED ENERGY IMPACTS

For the first five quarters of 18MCP (July 1, 2007, through September 30, 2007), Table B-6 gives tracking and verified gross savings and net savings by sector and for Wisconsin Public Service Business Programs overall.

The estimates of the adjustment factors for Wisconsin Public Service overall reported above are used to calculate kWh and kW verified gross savings and net savings for this time period. The Commercial therm adjustment factors for the statewide program are used to calculate therm verified gross savings and net savings for this time period. Therm adjustment factors for WPS only were not used due to low precision as a result of small sample sizes. Multiplying tracking gross savings by the gross savings adjustment factor (which is the product of the installation rate and the engineering verification factor) yields verified gross savings. Multiplying verified gross savings, in turn, by the attribution factor yields net savings. (Net savings may also be obtained by multiplying tracking gross savings by the realization rate.)

Table B-6. WPS Business Programs: Tracked Energy Impacts
18MCP (July 1, 2007–September 30, 2008)

Segment	Sector/Program	kWh			kW			Therms		
		Tracking Gross[a]	Verified Gross[b]	Net[b]	Tracking Gross[a]	Verified Gross[b]	Net[b]	Tracking Gross[a]	Verified Gross[c]	Net[c]
Agriculture	Agriculture	1,674,937	1,615,315	1,000,962	612	579	342	0	0	0
Commercial	Commercial	3,604,439	3,476,136	2,154,055	993	940	555	13,702	14,181	4,699
Industrial	Industrial	5,255,780	5,068,694	3,140,915	955	904	533	0	0	0
S&G	Schools & Government	2,931,078	2,826,743	1,751,647	291	276	163	0	0	0
	Total 18MCP Rounds 1&2, WPS (July 1, 2007 to Sep. 30, 2008)	**13,466,234**	**12,986,889**	**8,047,578**	**2,851**	**2,700**	**1,593**	**13,702**	**14,181**	**4,699**

[a] Tracking gross savings for measures installed during 18MCP are from two versions of the WATTS database and three versions of the WISeerts database. The two versions of the WATTS database used are: (1) WATTS database as synchronized on May 12, 2008: measures installed in the first nine months of the 18MCP included in the sampling frame; and (2) WATTS database as synchronized on November 17, 2008: a small number of WPS measures installed in the second six months of 18MCP included in the sampling frame and measures installed in the 18MCP not included in the sampling frame. The three versions of the WISeerts database used are: (1) WISeerts database as synchronized on April 29, 2008: measures installed in 18MCP included in the sampling frame; and (2) WISeerts database as synchronized on November 7, 2008: measures installed in the second six months of the 18MCP included in the sampling frame; (3) WISeerts database as synchronized on February 27, 2009: measures installed in 18MCP not included in the sampling frame.

[b] Adjustment factors for kWh and kW are taken from 2007 WPS sector-specific data.

[c] Because of the small number of therm projects administered by WPS and the limited accuracy allowed by a small sample, therms adjustment factors are taken sector-specific data for the overall 2007 Focus on Energy program.

APPENDIX C: SURVEY RESPONSES

During this contract year a working group of Focus on Energy evaluation team members completed a review of self-report program attribution batteries used to determine net program impacts. According to the July 2, 2008, *Framework for Self-Report Net-To-Gross (Attribution) Questions*[45] white paper submitted to the Wisconsin Public Service Commission, the key objective of this review was to develop a framework to guide the revision of existing survey instruments used for determining attribution. The Business Program's survey instruments were revised for this round of evaluation based in the guidelines laid out in the framework.

The first priority for survey instrument revisions was the engineering survey instrument. The engineering survey received many changes, including slight wording changes, alterations to the order of questions, the addition of set-up and confirmation questions, additional questions for lifetime savings/acceleration questions, and more significant changes to the direct attribution sequence. The direct attribution questions are those used in the algorithm to calculate program attribution.

The second priority for survey instrument review was the CATI survey instrument. The direct attribution questions were changed to match those in the engineering survey but the rest of the instrument was not changed. The supplier survey did not receive any adjustments for this round of evaluation. The CATI and supplier surveys did not receive the full adjustments because the timing of the impact evaluation analysis and the distribution of the framework paper did not allow for it. Additional changes based on the framework white paper and lessons learned from this round of impact evaluation will be a top priority in future impact evaluations.

The framework paper also called for improved consistency across Focus program areas and improved transparency for the approaches used. This appendix attempts to provide greater transparency in reporting attribution results while maintaining respondent confidentiality. This section discusses the survey responses and the attribution resulting from certain response sequences. Please see Appendix E for a detailed discussion of the attribution calculation methodology.

C.1 OVERVIEW

This section provides a brief overview of attribution sequence responses. First we address the differences between the engineering and CATI survey responses, then we compare the confirmation question answers to the attribution question answers. The third section addresses the attribution received from each sequence of survey responses, and the fourth section addresses supplier surveys and how they affected the results. The final section contains some of the open-ended question responses gathered during the engineering survey.

[45] Rick Winch and Tom Talerico, Glacier Consulting Group; Bobbi Tannenbaum, KEMA, Inc.; Pam Rathbun, PA Consulting Group; Ralph Prahl, Ralph Prahl & Associates. Wisconsin Public Service Commission, *Focus on Energy Evaluation: Framework for Self-Report Net-to-Gross (Attribution) Questions.* July 3, 2008.

The direct attribution sequence is the sequence of questions that are used in the calculation of attribution. The direct attribution sequence is comprised of three sections of questions that determine how the Focus program affected the timing, efficiency, and quantity of the measures that were installed.[46]

Engineering sample participants[47] are asked the direct attribution sequence questions for each measure installed, while CATI sample respondents are asked the direct attribution sequence questions at the end-use level. For example a participant installed the following four measures:

1. 4 lamp 4 foot high performance T8 lights
2. 2 lamp 4 foot high performance T8 lights
3. Occupancy sensors
4. Energy recovery ventilation.

If that participant is in the engineering sample, then a completed survey will include four attribution sequences; one for each of the three lighting measures and one for the HVAC measure. If that participant is in the CATI sample, then the measures that were installed by that participant during the evaluation period are first classified into six end-use categories (building shell, lighting, HVAC, manufacturing process, CFLs, and other)[48]. The attribution questions are asked for each end-use group instead of for each measure. That is, the CATI participant would be asked two attribution sequences, one for lighting, and one for HVAC.

Table C-1 shows the attribution questions from the survey. The questions shown here are paraphrased; for the exact wording, please refer to the survey document in Appendix I and Appendix J. The first question in each section is a screening question to indicate whether or not Focus had an effect on timing, efficiency, or quantity of the measure[49]. The follow-up questions are used to determine the portion of the timing, efficiency, or quantity that is attributable to Focus. The attribution for each section is a function of the combination of the responses to all of the questions. The three section attributions are combined to determine

[46] See Appendix E for a detailed discussion of attribution methodology.

[47] In general, the engineering sample includes all participants with large measures, all participants with medium-sized custom measures, and some participants with small-sized custom measures. The CATI sample generally includes participants with only non-large deemed measures or participants with small custom projects. If a customer is selected for a sample then all of the measures implemented by that customer are included as part of the analysis. See section 4.1.3 “Sampling” for more details.

[48] The CATI sample has a separate designation for CFLs because the CFL participants are asked a separate sequence of questions that is used to determine the actual quantity of CFLs installed. However, the CFL participants are not asked the attribution sequence because CFL attribution is determined using a separate market-based evaluation.

[49] For the rest of this section, we will refer to an attribution response sequence as representing “a measure”. This is true for the engineering survey but, as mentioned above, each CATI attribution sequence actually refers to an end use category that may include more than one measure.

the overall attribution for the measure. Please see Appendix E for a detailed discussion of the attribution calculation methodology.

Table C-1. Attribution Question Sequence

Number	Question
Timing	
DAT1	Without Focus, how likely is it that you would have installed the same type of equipment at this time?
DAT1a	Without Focus, how different would the timing have been?
DAT1b	Approximately how many months later?
Efficiency	
DAT2	Without Focus, how likely is it that you would have installed the same level of efficiency?
DAT2a	Without Focus, would you have installed the same, greater, or lesser efficiency?
DAT2b	Without Focus, what efficiency would you have installed?
Quantity	
DAT3	Without Focus, how different would the quantity/size have been?
DAT3a	By what percentage did you increase the quantity/size because of Focus?

C.1.1 Timing

Respondents are asked a sequence of questions that addresses the timing of the equipment installation. First, respondents are asked how likely it is that they would have installed the same type of equipment at the same time without Focus (DAT1a). Then respondents are asked how different the timing would have been (DAT1b).

- A response of "Same Time" means that the customer would have installed the measure(s) at that time regardless of Focus involvement.
- A response of "Later" indicates that they would have waited to install them if Focus had not been there and therefore Focus accelerated the installation of the measure. Respondents who answered "Later" are asked a follow up question (DAT1b) about how much later they would have installed the equipment without Focus.

Table C-2 shows the responses to the DAT1a question for the engineering and CATI samples. The table entries are un-weighted; therefore, each counted response reflects either one measure for the engineering sample or one end-use for the CATI sample. The table does not reflect survey weights or the relative savings of one measure compared to another; it simply reflects the answer to each individual survey sequence. The last row in the table indicates the total number of responses included in the table.

Table C-2. Responses to the DAT1a Question on Timing

DAT1a	Without Focus, how different would the timing have been?	
Response	**Engineering Responses**	**CATI Responses**
Same Time	56%	50%
Earlier	0%	3%
Later	33%	37%
Never	6%	10%
Don't Know	5%	1%
Refused	0%	0%
Total	**100%**	**100%**
Responses	**795**	**273**

The table shows that 56 percent of the engineering survey responses and 50 percent CATI respondents answered that they would have installed the equipment at the same time without the Focus services and incentives. Approximately 44 percent of engineering responses and 48 percent of CATI responses will receive at least partial timing attribution for acceleration.

To provide a more direct link to the attribution adjustment factor results, KEMA calculated the percent of verified gross energy savings that the "Same Time" responses account for. The percentages were determined using the appropriate sample weights. The "Same Time" responses represent 35 percent of verified gross kWh savings, 45 percent of verified kW savings, and 29 percent of verified therm savings overall. That is, according to respondents, the Focus program did not affect the timing of measures that account for 35 percent, 45 percent, and 29 percent of kWh, kW, and therm savings, respectively.

C.1.2 Efficiency

Respondents are asked a sequence of questions that addresses the efficiency of the equipment installation. First, respondents are asked how likely it is that they would have installed the same, lesser, or greater efficiency without Focus (DAT2a). Then respondents are asked how different the efficiency would have been (DAT2b).

- A response of "Same" means that the customer would have installed the same level of efficiency regardless of Focus involvement.
- A response of "Lesser" indicates that they would have installed a less efficient piece of equipment if Focus had not been there. Respondents who answered "Less" are asked a follow up question (DAT2b) about what efficiency of equipment they would have installed without Focus.

Table C-3. Responses to the DAT2a Question on Efficiency

DAT2a	Without Focus, would you have installed the same, greater, or lesser efficiency?			
Response	Engineering Responses		CATI Responses	
	With N/A	W/o N/A	With N/A	W/o N/A
Same	30%	56%	64%	68%
Lesser	17%	31%	20%	21%
Greater	0%	0%	8%	9%
Don't Know	7%	13%	2%	2%
Refused	0%	0%	0%	0%
Not applicable	46%	NA	5%	NA
Total	**100%**	**54%**	**100%**	**95%**
Responses	**795**	**430**	**270**	**256**

The table shows that 30 percent of all engineering survey responses and 64 percent of all CATI responses indicate that the participant would have installed the same equipment efficiency without Focus services and incentives. However, those percentages include the "Not Applicable" measures, or those measures that do not have a variable efficiency component to them or where the variation in efficiency is not a consideration when installing the measure. Variable frequency drives (VFDs) are an example: a VFD has an efficiency associated with it and, in theory, there are some VFDs that are more efficient

than others. However, the savings for a VFD measure are not driven by the efficiency of the VFD but rather by whether the VFD is installed or not. Heat recovery is another example of a Not Applicable measure. When the Not Applicable measures are excluded, 56 percent of engineering and 68 percent of CATI sample responses indicate that the same efficiency would have been installed without Focus.

The "Same Efficiency" responses represent 32 percent of verified gross kWh savings, 38 percent of verified kW savings, and 32 percent of verified therm savings overall. That is, according to respondents, the Focus program did not affect the timing of measures that account for 32 percent, 38 percent, and 32 percent of kWh, kW, and therm savings, respectively.

C.1.3 Quantity

Respondents are asked a sequence of questions that addresses the quantity of the equipment installed. First, respondents are asked how likely it is that they would have installed the same quantity of equipment without Focus (DAT3). Then respondents are asked how much they increased the quantity (DAT3a).

- A response of "Same amount" means that the customer would have installed the same size or quantity regardless of Focus involvement.
- A response of "Less" indicates that they would have installed fewer units if Focus had not been there. Respondents who answered "Less" are asked a follow up question (DAT3a) about quantity of equipment they would have installed without Focus.

It should be noted that the response of "None" was introduced for Round 2. This indicates that the customer would not have installed anything without Focus. In Round 1, to receive the same attribution the customer would have to have answered "less" and then followed up by saying they would not have installed anything in DAT3a.

Table C-4. Responses to the DAT3 Question on Quantity

DAT3	Without Focus, how different would the quantity/size have been?			
Response	Engineering Responses		CATI Responses	
	With N/A	W/o N/A	With N/A	W/o N/A
Same amount	61%	70%	66%	66%
Less	21%	24%	30%	30%
More	0%	0%	3%	3%
None	2%	3%	0%	0%
Don't Know	3%	4%	1%	1%
Refused	0%	0%	0%	0%
Not applicable	13%	NA	0%	0%
Total	**100%**	**87%**	**100%**	**100%**
Responses	**795**	**692**	**270**	**270**

The table shows that 61 percent of all engineering survey responses and 66 percent of all CATI responses indicate that the participant would have installed the same quantity of equipment without Focus services and incentives. Those percentages include the measures where quantity is "Not Applicable." The quantity questions are really trying to

determine what portion of the size of the project is attributable to Focus. Measures where quantity is "Not Applicable" would include single pieces of equipment that are not really variable in size, such as injection molding machines.

When the Not Applicable measures are excluded, 70 percent of the engineering responses and 66 percent of the CATI responses indicate that the same quantity/size of equipment would have been installed in the absence of the program. The "Same Quantity" responses represent 42 percent of verified gross kWh savings, 51 percent of verified kW savings, and 40 percent of verified therm savings overall. Focus efforts did not alter the quantity or size of measures that represent just under half of the energy savings in the sample. The remarkable similarity in results between engineering and CATI indicates that this result applies program-wide and not just to large and custom or small and deemed projects.

C.2 RESULTS BY SECTOR

This section reports the distribution of answers for the three screening questions reported at the sector level. Table C-5 shows the distribution of responses to the DAT1a timing question by sector and evaluation sample.

Table C-5. Responses to the DAT1a Timing Question by Sector

DAT1a	Without Focus, how different would the timing have been?									
Response	Engineering Responses					CATI Responses				
	Ag.	Com.	Ind.	S&G	Total	Ag.	Com.	Ind.	S&G	Total
Same Time	82%	65%	42%	49%	56%	74%	36%	41%	39%	50%
Earlier			0%		0%	1%	5%	3%	3%	3%
Later	17%	30%	35%	43%	33%	20%	45%	43%	46%	37%
Never		4%	9%	6%	6%	5%	10%	14%	12%	10%
Don't Know	1%	1%	14%	2%	5%		5%			1%
Refused					0%					0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Responses	84	289	234	188	795	88	42	74	69	273

The table shows that participants in the Agriculture sector were most likely to respond that they would have installed the measure at the same time at 82 percent of the engineering responses and 74 percent of the CATI responses. The "Same Time" responses represent 65 percent of verified gross kWh savings, 67 percent of verified kW savings, and 91 percent of verified therm savings for the Agriculture sector. The Industrial sector had the lowest proportion of "Same Time" responses in the engineering sample and Commercial had the lowest proportion in the CATI sample. The Industrial "Same Time" responses represent 31 percent of verified gross kWh savings, 41 percent of verified kW savings, and 15 percent of verified therm savings in both samples, while the Commercial responses represent 35 percent of verified gross kWh savings, 44 percent of verified kW savings, and 43 percent of verified therm savings. The Schools and Government sector had the highest proportion of responses to answer "Later" in both the engineering and CATI samples. In general, the timing attribution responses were fairly consistent across the engineering and CATI samples even at the sector level.

Table C-6 shows the distribution of responses to the DAT2a efficiency question by sector and evaluation sample.

Table C-6. Responses to the DAT2a Efficiency Question by Sector

DAT2a	Without Focus, would you have installed the same, greater, or lesser efficiency?									
Response	Engineering Responses					CATI Responses				
	Ag.	Com.	Ind.	S&G	Total	Ag.	Com.	Ind.	S&G	Total
Same	64%	72%	41%	55%	56%	69%	59%	63%	77%	68%
Lesser	30%	21%	32%	40%	31%	22%	23%	22%	19%	21%
Greater					0%	7%	13%	12%	5%	9%
Don't Know	6%	7%	28%	6%	13%	1%	5%	3%		2%
Refused					0%					0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Participants	69	107	133	121	430	85	39	68	64	256

As mentioned in the previous section, the efficiency attribution is the only area that shows a strong difference between the engineering and CATI responses. The sector-level data in Table C-6 shows that the Agriculture sector does not follow this trend, but the rest of the sectors do. Sixty-three percent of the Industrial responses in the CATI sample indicate that the same equipment efficiency would have been installed without the program compared to only 41 percent in the engineering survey.

Overall, the Industrial "Same Time" responses represent 24 percent of Industrial kWh savings, 26 percent of Industrial kW savings, and 20 percent of Industrial therm savings. The "Same Time" Industrial engineering responses represent 9 percent of verified engineering gross kWh savings, 7 percent of engineering verified kW savings, and 21 percent of engineering verified therm savings while the CATI responses represent seventy-seven percent of the installed CATI kWh savings, seventy-five percent of the installed CATI kW savings, and nine percent of the installed CATI therm savings. This suggests that the Industrial sector is doing a better job of improving equipment efficiency for larger custom projects and is less effective for smaller or deemed projects.

40 percent of the Schools and Government sector responses in the engineering sample indicate that they would have installed a less efficient piece of equipment without Focus compared to only 19 percent in the CATI sample. Again, the implication is that the Schools and Government sector is effective in improving the efficiency of large, custom projects and less effective with the smaller or deemed projects.

The efficiency attribution responses include a higher percentage of "Don't Know" responses than the other attribution sections. This may indicate that many respondents are unable to speak knowledgeably about the range of efficiencies available for the project that was installed. It may also indicate that they did not seriously consider other efficiency options when planning their measure and therefore are unable to say what they would have installed without the program's assistance.

Table C-7. Responses to the DAT3 Quantity Question by Sector

DAT3	Without Focus, how different would the quantity/size have been?									
Response	Engineering Responses					CATI Responses				
	Ag.	Com.	Ind.	S&G	Total	Ag.	Com.	Ind.	S&G	Total
Same amount	88%	73%	66%	60%	70%	77%	60%	67%	54%	66%
Less	10%	24%	31%	22%	24%	20%	28%	30%	43%	30%
More	3%				0%	1%	10%	3%		3%
None		2%		7%	3%					0%
Don't Know		1%	3%	11%	4%	1%	3%		1%	1%
Refused					0%				1%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Participants	73	280	170	169	692	88	40	73	69	270

On an overall program level, the quantity attribution responses were consistent between the CATI and engineering samples. Aside from the Industrial sector, the trend is not as consistent at the sector level. For example, 43 percent of the Schools and Government CATI sample responses indicate that the participants would have installed a smaller project without the influence of Focus compared to only 24 percent in the engineering survey. This indicates that the financial and other assistance allowed small or deemed project sizes to increase more often than the larger and custom measures.

C.2.1 Comparison questions

The evaluation framework requires formalized confirmation questions that are used to confirm the responses to the attribution analysis questions. The previous survey also had confirmation questions included but the response to the confirmation questions were not formally included in the response analysis. Our current instrument has two formal confirmation questions, one for timing and one for efficiency.

This section reports the responses to the confirmation questions and formally compares them to the attribution question responses. Table C-8 shows the responses to the DAT1 and DAT1a questions on timing.

Table C-8. DAT1 Comparison Questions

DAT1	Without Focus, how likely is it that you would have installed the same type of equipment at this time?		
DAT1a	Without Focus, how different would the timing have been?		
DAT1 Response	DAT1a Response	Engineering Responses	CATI Responses
Very Likely	Same Time	56%	29%
	Earlier	0%	1%
	Later	4%	4%
	Never	0%	0%
	Don't Know	1%	0%
Somewhat Likely	Same Time	0%	16%
	Earlier	0%	1%
	Later	14%	16%
	Never	0%	0%
	Don't Know	1%	0%
Not Very Likely	Same Time	0%	2%
	Earlier	0%	0%
	Later	11%	11%
	Never	4%	4%
	Don't Know	0%	0%
Not at All Likely	Same Time	0%	2%
	Later	3%	4%
	Never	2%	5%
	Don't Know	2%	0%
Don't Know	Same Time	0%	1%
	Later	1%	1%
	Don't Know	2%	0%
Total		**100%**	**98%**
Responses		**0**	**273**

As expected, the majority of the respondents who indicated they would be very likely to install the project at the same time confirmed that response in DAT1a. However, four percent of the engineering and four percent of the CATI responses who said they would be very likely to install at the same time indicated that the project would actually have been installed later in DAT1a. Some of the CATI responses who indicated in DAT1a that they would have installed at the Same Time answered DAT1 that they were somewhat likely, not very likely, or even not at all likely to have installed at the same time without Focus.

Table C-9 shows the responses to the DAT2 and DAT2a questions on efficiency.

Table C-9. DAT2 Comparison Questions

DAT2	Without Focus, how likely is it that you would have installed the same level of efficiency?				
DAT2a	Without Focus, would you have installed the same, greater, or lesser				
DAT2 Response	DAT2a Response	Engineering Responses		CATI Responses	
		With N/A	W/o N/A	With N/A	W/o N/A
Very Likely	Same	26%	48%	40%	41%
	Lesser	0%	1%	2%	2%
	Greater	0%	0%	3%	3%
	N/A	0%	0%	0%	0%
Somewhat Likely	Same	4%	8%	17%	17%
	Lesser	4%	8%	5%	6%
	Greater	0%	0%	3%	3%
	N/A	0%	0%	0%	0%
	Don't Know	0%	1%	1%	2%
Not Very Likely	Same	0%	0%	5%	6%
	Lesser	9%	17%	9%	10%
	Greater	0%	0%	0%	0%
	N/A	0%	0%	2%	2%
	Don't Know	1%	2%	0%	0%
Not at All Likely	Same	0%	0%	1%	2%
	Lesser	3%	5%	4%	4%
	Greater	0%	0%	1%	1%
	N/A	0%	0%	2%	2%
	Don't Know	0%	0%	0%	0%
Don't Know	Don't Know	5%	10%	0%	0%
Not Applicable	N/A	46%	85%	1%	1%
Total		100%	54%	97%	96%
Responses		795	430	273	263

Again as expected, the majority of the respondents who indicated they would be very likely to install the level of efficiency confirmed that response in DAT2a. However, one percent of the engineering and two percent of the CATI responses who said they would be very likely to install the same efficiency also indicated that a lesser efficiency would have been installed in DAT2a.

The consistency in the engineering responses may reflect the work that the expert surveyors did to resolve inconsistencies while delivering the survey. However, the confirmation comparisons in Tables C-8 and C-9 do not tell the whole story. Both the engineering and CATI surveys were vetted after completion to verify that the answers given for the attribution questions were consistent with the answers to other questions, including the answers to the non-confirmation questions.

C.3 DETERMINING ATTRIBUTION

Appendix E explains, in great detail, how the attribution components are determined. In this section we review the survey responses that are used to calculate attribution and show the frequency of responses that would produce a given attribution answer.

C.3.1 Overall

Table C-10 shows the distribution of responses across the timing attribution sequence (DAT1a and DAT1b). The table includes a column to indicate the timing attribution that would result from each response combination. This table combines the responses from the engineering and CATI samples by simply summing the number of responses. There was no attempt to account for the fact that the engineering responses represent one measure while the CATI responses represent one end use and possibly multiple measures.

Table C-10. Determining Timing Attribution

DAT1a	Without Focus, how different would the timing have been?		
DAT1b	Approximately how many months later?		
DAT1a Response	DAT1b Response	Response Percentages	Timing Attribution
Same Time	N/A	55%	0
Earlier	N/A	1%	0
Later	Value < 4 years	28%	Value/48
	Value > 4 years	1%	100%
	Don't Know	5%	Average of DAT1b
Never	N/A	7%	100%
Don't Know	N/A	4%	Average of DAT1a
Total		100%	N/A

Over half of the responses, 55 percent, indicate that Focus had no impact on the timing of their equipment installation. Of the remaining responses, 28 percent said that the measure would have been installed within four years. Only eight percent of the responses would result in full (100 percent) program attribution.

Table C-11 shows the distribution of responses across the efficiency attribution sequence (DAT2a and DAT2b).

Table C-11. Determining Efficiency Attribution

DAT2a	Without Focus, would you have installed the same, greater, or lesser			
DAT2b	Without Focus, what efficiency would you have installed?			
DAT2a Response	DAT2b Response	Response Percentages		Efficiency Attribution
		With N/A	W/o N/A	
Same	N/A	39%	60%	0
Lesser	Standard Efficiency	11%	16%	100%
	Slightly > Standard	3%	5%	70%
	Between Std. and High	2%	2%	50%
	Slightly < High	2%	3%	30%
	Don't Know	1%	1%	Average of DAT2b
Greater	N/A	2%	3%	0
Don't Know	N/A	6%	9%	Average of DAT2a
Not Applicable	N/A	36%	-	-
Total		100%	64%	N/A

Efficiency was not applicable for 36 percent of the responses. As mentioned in the previous section, efficiency attribution does not apply to all measures. The “Not Applicable”

measures are most likely variable frequency drive or heat recovery projects. If the "Not Applicable" measures are disregarded, then 60 percent of the responses indicate that Focus did not influence the efficiency of the equipment that was installed. 36 percent of the responses would result in any efficiency attribution for the program, and 16 percent would result in full (100 percent) program attribution.

Table C-12 shows the distribution of responses across the quantity attribution sequence (DAT3 and DAT3a).

Table C-12. Determining Quantity Attribution

DAT3	Without Focus, how different would the quantity/size have been?			
DAT3a	By what percentage did you increase the quantity/size because of Focus?			
DAT3 Response	DAT3a Response	Response Percentages		Quantity Attribution
		With N/A	W/o N/A	
Same Amount	N/A	62%	69%	0
Less	Value <= 100%	13%	14%	Value <= 50%
	Value > 100%	1%	1%	Value > 50%
	Don't Know	3%	4%	Average of DAT3a
More	N/A	1%	1%	0
None	N/A	7%	8%	100%
Don't Know	N/A	3%	3%	Average of DAT3
Refused	N/A	0%	0%	Average of DAT3
Not Applicable	N/A	10%	-	-
Total		100%	90%	N/A

Quantity was not applicable for 10 percent of the responses. As mentioned in the previous section, quantity attribution does not apply to all measures. If the "Not Applicable" measures are disregarded, then 69 percent of the responses indicate that Focus did not influence the quantity of the equipment that was installed. 23 percent of responses indicate that Focus did have some effect with 8 percent of responses resulting in full (100 percent) program attribution and 30 percent (including Don't Knows) receiving some attribution. For 13 percent of responses, the increase in equipment installed was less than 100 percent (meaning that more equipment was installed because of Focus, but it was less than twice as much). This would produce quantity attributions of less than 50 percent.

Table C-13 shows the effect of all three attribution components together. In the table, a "1" represents responses that received **some** (not necessarily full) attribution while a "0" represents responses that did not receive any attribution. A "na" attribution indicates the responses that were dropped from the attribution analysis. Refer to Appendix E for more information on why measures are dropped.

Table C-13. Simplistic Representation of Overall Attribution

Attribution			Engineering		CATI	
Timing	Efficiency	Quantity	Quantity	Percent	Quantity	Percent
0	0	0	129	16%	108	40%
0	0	1	25	3%	18	7%
0	1	0	263	33%	15	5%
0	1	1	37	5%	3	1%
1	0	0	39	5%	50	18%
1	0	1	54	7%	23	8%
1	1	0	58	7%	15	5%
1	1	1	186	23%	41	15%
na	na	na	10	1%	0	0%
Total			801	100%	273	100%

The table shows that 16 percent of engineering and 40 percent of CATI responses did not indicate any program attribution. 23 percent of the engineering and 15 percent of the CATI responses resulted in some attribution in all three sections. The most common attribution in the engineering survey was for efficiency alone, where the most common in the CATI was no attribution.

C.3.2 By sector

Table C-14 shows the distribution of responses across the timing attribution sequence (DAT1a and DAT1b) by sector.

Table C-14. Timing Attribution by Sector

DAT1a	Without Focus, how different would the timing have been?						
DAT1b	Approximately how many months later?						
DAT1a Response	DAT1b Response	Response Percentages					Engineering Responses
		Ag.	Com.	Ind.	S&G	Total	
Same Time	N/A	78%	61%	42%	46%	55%	0
Earlier	N/A	1%	1%	1%	1%	1%	0
Later	Value <= 4 years	13%	31%	26%	35%	28%	Value/48
	Value > 4 years	2%	0%	2%	0%	1%	100%
	Don't Know	3%	1%	9%	9%	5%	Average of DAT1b
Never	N/A	2%	5%	10%	8%	7%	100%
Don't Know	N/A	1%	1%	10%	2%	4%	Average of DAT1a
	Total	100%	100%	100%	100%	100%	N/A

The Agriculture sector had, by far, the highest percentage of responses that indicate that the measures would have been installed at the same time without Focus. The Industrial sector had the highest percentage of full (100 percent) attribution responses at 10 percent,

as well as the highest percentage of respondents that did not know what would have happened in the absence of the program at 10 percent.

Table C-15 shows the distribution of responses across the efficiency attribution sequence (DAT2a and DAT2b) by sector. Table C-15 does not include the responses that were not applicable.

Table C-15. Efficiency Attribution by Sector

DAT2a	Without Focus, would you have installed the same, greater, or lesser						
DAT2b	Without Focus, what efficiency would you have installed?						
DAT2a Response	DAT2b Response	Response Percentages					Efficiency Attribution
		Ag.	Com.	Ind.	S&G	Total	
Same	N/A	67%	68%	48%	65%	61%	0
Lesser	Standard Efficiency	14%	12%	12%	28%	17%	100%
	Slightly > Standard	1%	2%	13%	1%	5%	70%
	Between Std. and High	5%	4%	0%	2%	3%	50%
	Slightly < High	6%	0%	1%	3%	3%	30%
	Don't Know	0%	3%	1%	0%	1%	Average of DAT2b
Greater	N/A	4%	3%	4%	2%	3%	0
Don't Know	N/A	3%	6%	19%	0%	8%	Average of DAT2a
	Total	100%	100%	100%	100%	100%	N/A

The table shows that the Industrial sector has the lowest percentage of responses (48 percent) that indicate that the same level of efficiency would have been installed in the absence of the program while the Commercial sector has the highest at 68 percent. The Schools and Government sector has the highest percentage of responses that would result in full (100 percent) attribution at 28 percent, while the Industrial sector has the highest percentage of responses that would receive at least partial attribution at 46 percent.

Table C-16 shows the distribution of responses across the efficiency attribution sequence (DAT3 and DAT3a) by sector. Table C-16 does not include the responses that were not applicable.

Table C-16. Quantity Attribution by Sector

DAT3	Without Focus, how different would the quantity/size have been?						
DAT3a	By what percentage did you increase the quantity/size because of Focus?						
DAT3 Response	DAT3a Response	Response Percentages					Quantity Attribution
		Ag.	Com.	Ind.	S&G	Total	
Same Amount	N/A	82%	71%	66%	58%	69%	0
Less	Value <= 100%	7%	18%	10%	18%	14%	Value <= 50%
	Value > 100%	1%	2%	2%	1%	1%	Value > 50%
	Don't Know	3%	1%	9%	3%	4%	Average of DAT3a
More	N/A	2%	1%	1%	0%	1%	0
None	N/A	4%	6%	10%	12%	8%	100%
Don't Know	N/A	1%	1%	2%	8%	3%	Average of DAT3
Refused	N/A	0%	0%	0%	0%	0%	Average of DAT3
	Total	100%	100%	100%	100%	100%	N/A

The Agriculture sector has the highest percentage of responses (82 percent) that indicate that the project would have been installed in the same quantity in the absence of the

program. The Schools & Government sector has the highest percentage of responses that would result in full (100 percent) attribution at 12 percent, as well as the highest percentage of responses that would result in at least some attribution at 42 percent.

Table C-17 shows the effect of all three attribution components together by sector. In the table, a "1" represents responses that received **some** (not necessarily full) attribution while a "0" represents responses that did not receive any attribution. A "na" attribution indicates the responses that were dropped from the attribution analysis. Refer to Appendix E for more information on why measures are dropped.

Table C-17. Simplistic Representation of Overall Attribution by Sector

Attribution			Percentages				
Timing	Efficiency	Quantity	Ag	Com	Ind	S&G	Total
0	0	0	48%	7%	20%	26%	22%
0	0	1	8%	3%	4%	3%	4%
0	1	0	18%	52%	13%	13%	26%
0	1	1	5%	0%	6%	4%	4%
1	0	0	7%	8%	8%	10%	8%
1	0	1	1%	14%	4%	6%	7%
1	1	0	5%	4%	13%	4%	7%
1	1	1	8%	11%	31%	31%	21%
na	na	na	0%	1%	1%	2%	1%
Total			100%	100%	100%	100%	100%

As shown in Table C-17, 48 percent of Agriculture sector responses indicated that the program had no effect on their decision to install the energy efficiency measures. The Industrial and Schools & Government sectors had the highest percentage of responses that indicate attribution in all three areas at 31 percent each, followed by Commercial (11 percent), and Agriculture (8 percent).

C.4 SUPPLIER SURVEY EFFECTS

The supplier surveys are conducted to identify projects where the program influences the supplier and the supplier influences the participant as opposed to projects where the program influences the participant directly. KEMA currently has two methods for determining when a supplier survey is necessary to supplement the participant survey. They are:

- **Program attribution assignment:** at the beginning of each Impact Evaluation, we send the Focus on Energy sectors two spreadsheets; one listing each participant in our CATI sample and one listing each participant in the engineering sample. We ask them to identify the program delivery mechanism that most closely matches the interaction they had with each participant. If a certain program delivery mechanism is chosen then we complete a survey with both the supplier and participant for those particular measures.
- **Post-participant engineering survey analysis:** each survey completed with a participant in our engineering sample is reviewed to determine the effect the supplier had on the participant's decision to install a given measure relative to the program's effect. If a participant indicates that the program did not have an effect

on their decision to install high efficiency equipment but the supplier had substantial influence then we will also complete a survey with the supplier.

There were 21 supplier surveys completed in this round of evaluation. Ten of the surveys were conducted as a result of the program attribution assignment while 11 were conducted as a result of the responses received during the post-participation survey.

The supplier surveys are conducted using the previous survey instrument but the analysis method is nearly identical. To determine attribution for measures with supplier surveys, the attribution received from the participant survey is compared to the attribution received from the supplier survey. The higher of the two values is chosen as the overall attribution for that participant.

Four of the supplier surveys had the same attribution as the participant surveys and therefore had no effect on the overall attribution. Nine of the supplier surveys had a higher attribution than the participant survey and the remaining seven surveys had a higher participant attribution. For one the attribution was the same. Therefore, 11 of the 20 supplier surveys did not change the overall attribution and 9 of the 20 resulted in an increase in the overall attribution.

C.5 OPEN-ENDED SURVEY RESPONSES

The last question in the attribution sequence is DAT4, which asks participants to "summarize the program's influence on the timing, efficiency, and amount of [equipment type]" that the participant installed. Table C-18 shows some of the responses to DAT4 from the engineering survey.

The DAT4 answer is collected at the measure level but many participants provide an answer and indicate that it applies to all of the measures they installed during the previous evaluation period. In developing this table, we eliminated duplicate responses from the same participant; therefore, the table does not have one answer for every measure evaluated. Some participants do provide different answers for different measures; therefore, the table does not have only one answer for every participant evaluated. The purpose of this table is to communicate some of the information that the evaluation team receives in the course of conducting the engineering survey.

The answers in the table were "cleaned" to protect client confidentiality. We removed company names, contact names, energy advisor names, and information that may allow someone to identify the project from the response. In most cases we replaced the cleaned word or phrase with a more anonymous word to make sure the comment remained somewhat readable. The new word or phrase was italicized for identification. The responses are provided in alphabetic order.

Table C-18. Open-ended Responses to DAT4

Able to do sooner and do more.
After got tune up got the repairs done. It has been functioning well. There was no impact from the program
Again, I think they were an extremely important part of the whole solution. FOE affected the timing - it would have taken me a year to change a few things around. Once I was shown the cost savings on the investment, it was clear it needed to be brought forward. I wouldn't have recognized the problem without them. Analyzing electrical data and strategizing isn't a part of my daily job.
Allow us to do the tune-ups earlier. In the past, we shared the duties. The mechanical contractor would do more of the *equipment* testing and maintenance staff would do everything else. However, the problem with the old approach is that the mechanical contractor couldn't do the *equipment* test until after the maintenance staff did the cleaning. Couldn't do until entering *busy season*, which is not an ideal time. Because of the incentive, we do it differently. We were able to rethink it so that the contractor could do things that the staff were slow to do, which allowed us to do it earlier. And, they know the work is done correctly because the contractor is more experience and does one thing where the staff are multi-faceted.
Allowed project to move forward when it did
Allowed to install when they did. Encouraged the project to move forward and decide to implement.
amount just dependent on what he needed to bring the lumen ups for that requirement; as far as the timing--just a scheduling nature; efficiency--way more efficient with new than old
At the time, without the incentive, we would not have been able to meet IRR
Audit helped get lighting installed at that time instead of over a years period. Probably would have only installed 1 in 5 without focus. Focus helped educate about efficiency options.
Calculated savings.
CFLs would maybe have been used as replacement lights down the road. About half of current replacements would have been made.
change in incentive allowed this project to be completed
Compressor was determined with help from Focus incentives.
Critical that they can make payback realistic
Decided to do tune-up anyhow.
Decision was not affected by Focus.
Did all rooms no matter what. Would have done at same time.
Do not know. Was not involved in decision making.
Done well. Received *praise for project*. Well thought out plan for the future. Without them would not have start plan. Reduced gas usage by 35%.
Don't know timing.
Drove the project forward.
Efficiency program exists because Focus exists
Efficiency was higher, timing did not change same amount of equipment.
Encouraged me to make upgrade, which I did because he convinced me
Energy Advisor was willing to come onsite. Probably not much changed (all)
Energy recovery was also determined due to incentives from Focus.
Focus critical to decision to get high efficiency chiller
Focus got us originally thinking about it. Allowed us to do project now. We would install the new motor and VFD eventually but probably not for 5 years.
Focus had a timing influence in making this happen (worked w/ contractor savings calcs, rebate) but probably would have happened anyhow, 18 or so months later
Focus had influence on decision to encourage them to go more efficient, may have pushed him over the edge.

Focus had no effect on timing, efficiency, or amount.
Focus helped make the project easier to approve financially. Combined with their help facilitating with vendors, we were able to get approval & confidence more quickly
Focus helped move things along. Difficult to say influence. Don't know.
focus helped *owner* w/ identifying the project options and guided him to the high efficiency option. Otherwise he might not have installed for another 12 months if at all. He installed the only applicable capacity for the project
Focus helped speed up timing, number increased 50%. Same efficiency would be used.
Focus incentives increased likelihood and pushed time up
Focus made us aware of what could be saved, without it would have never realized benefits.
Focus may have influenced if we did it or not but not sure.
Focus on Energy helped overall with the program to change to LEDs. However, we probably would have installed the same number at the same time period and the same type of bulbs. But Focus on Energy made it easier
Focus on Energy is instrumental in: 1. verification of any contractor's stated efficiencies and reduction in utilities. Focus on Energy can say whether something could actually be realized given the equipment in, equipment out, and hours. 2. Education: ability to give staff and even to the kids who are learning from the projects. 3. Timing: this project had a compacted timeline and Focus on Energy jumped right in.
Focus on Energy made money available. Lowered the cost of the service.
Focus provided a payback period and incentive. We would have installed anyways, but probably at least a year later.
Focus' rebate was the primary driver in convincing *owner* to replace bulbs instead of just doing a pilot project. Efficiency was set by bulb replace.
Focus was solely responsible for getting this project to happen. Otherwise, no retrofits would have occurred.
FOE brought to the forefront more options than we had considered. For example we had *a certain number of* individual *pieces of equipment* in each *area*. FOE helped find ones that were approved *by the committee* (or something like that). Without FOEs assistance we would have bought off the shelf units which are lower efficiency. They helped show the benefits of higher efficiency and they were cognizant of the maintenance equipment needed. They were instrumental in finding the lowest *energy use* we could afford.
FOE did not directly cause these projects to happen although their assistance was helpful in getting board approval.
FOE had no impact on this work. The work needed to be done to meet quality targets.
FOE helped make us do it more rapidly. We would have procrastinated one to two yars. They brought it to our attention. It was a 2 for 1 deal. We could have done with three *pieces of equipment*; not as early. We would have struggled until we had the budget to do the others.
FOE helped us with the rebate.
FOE helped us with the rebate.
FOE influenced a lot of the decisions based on financial help and allowed us to install the most efficient system for the application
FOE never helped. I knew it had to be done. The contractor did the engineering before FOE was involved. At the tail end. FOE came in. Nothing FOE did helped me with it
FOE opened eyes to energy savings. Incentives heavily influenced the timing as well.
Gave him savings calcs, which gave him confidence on savings, but he would've done it anyhow.
Gave them the opportunity to do the project when they wanted to
grant made project go through approval process
Had no effect on timing.
Helped him decide on a slightly larger *piece of equipment*.
Helped make the purchases, helped make them more affordable. Focus drew our attention to the technology, don't know how to value that.

helped save $, had no effect on decisions
Helped the project move along and get it approved
Helped us do more fixtures (not these fixtures that were added were not part of this incentive)
Helped with incentive application. Focus also worked directly with vendor
I am sure that Focus helped. The compressor was old and maybe would have had to replace it sometime
I believe that FOE has a mission and they follow thru. Very helpful and congenial. Went out of their way to come to meetings at night. The projects were a great success
I don't know still would have worked on it.
I don't know what the hell to tell you. Frankly *evaluator*, the questions... FOE were involved in picking it. They gave us money. I don't know what you're looking for. The questions are asinine. It's like asking me how many times are the sky blue. I say I like them and they helped us.
Identified savings opportunity. Calculated savings.
If it wasn't for the grant from FOE, none of these would have gone forward. Now that we have done this, we will probably do more.
I'm not sure I can. How did FOE involvement affect the timing? I don't think there was any impact. The process of getting to the point to go with *equipment*-the decision would have made with or without FOE. And by time the decision was made to go ahead, it was going to go ahead regardless of FOE. Getting the incentive after the fact was a nice benefit. But it would not have made or broken the project.
In a time where electricity was becoming expensive and needed to find efficiency gains. Needed to improve *system* and reduce breaks in the system. Run more efficiently and operate more effectively.
In our case, the timing and quantity wouldn't have changed. May have gone to a less efficient boiler in absence of FOE.
Incentive brought timing forward, otherwise everything else same.
Incentive helped
incentive helped out, without it, probably wouldn't have happened
incentive helped out, without it, probably wouldn't have happened
incentive helped, but still might have done it
Incentives are a very small % of the entire project; shows me that someone else calculated the energy savings.
Increased overall efficiency by about 50% by helping with the engineering decisions
Influenced him no doubt.
instrumental in convincing them to make the decision to go forward
It's tough to answer because I already did it. I would say that the timing would have been the same, the amount less, and the efficiency, less.
Kept bugging them about it may have made it done sooner made them look a little harder
Knowing that Focus was out there made them think more about it, though for particular pieces of equipment less so.
Made cutoff for efficiency of *equipment* to look at.
Made it a no-brainer
Made it easier for management to swallow the idea of spending money
Made it easier to do job properly
Made the numbers work, which they would not have without vendor/Focus help
Made them go more efficient.
Made these projects feasible
Maintenance Person was set to update lighting fixtures anyhow and CFLs were the only efficient options. He probably would have done at some time.
May have been done in a year or two when we realized the potential savings.
May have sped up decision, encouraged him to go bigger
Might have bought more lights than otherwise

Migrate to high efficiency prior to rebates. These were an added incentive to keep on track. We probably purchased more new motors than reconditioned.
Most likely would not have replaced measure until energy costs were even higher, would not have known about efficient products either. Would have done same quantity no matter what.
Moved this project up the food chain and made us do a more through job
Much influence on payback.
N/A for efficiency and quantity. Timing-probably would have still went ahead
Necessity for small area and grew to cover a larger area due to incentives.
Needed additional units. Would have done anyway. Trying to create/maintain awareness of efficiency throughout.
Needed to put in at the same time frame but focus helped to understand what is available
No effect
No effect
No effect - would have done it anyhow.
No effect on timing or efficiency. The timing and efficiency levels were controlled by *owner* requirements.
No effect.
No effect. The project was going to be done regardless.
No effect-helped him to decide on heat recovery
No impact
No impact. We were not focusing on the FOE program.
No influence
No influence
None
none
None
None but made it an easier decision
None really
none, we do this anyways
none.
Not changed except for quantity since we were able to find more leaks.
Not much impact. Timing impact. WE had to pursue the projects regardless. We're very aware of what's available in 2006 and we will continue to pursue kWh savings projects.
not sure about specifics
Not tied to incentive. Tied to need of addind new or replacing. ROI advantages of incentive sometimes make it easier though
Only did one door to start with, and added to it
Owner knew about the rebate, which made this project a better ROI. Would have happened w/ same time, efficiency, quantity most likely, but ROI w/ rebate was easier sell.
Owner would have installed same amount, at same time, of same efficiency with or without Focus.
Owner would not have installed at the same time, but possible a year later without the ally/incentive. The quantity, however, would have remained the same, as they modified all *existing equipment*.
Program increased the quantity and pushed up the schedule
Project had to be done at same time no matter what. Amount does not apply, as whole system had to be included. Would have liked more efficient system, but couldn't fit in budget.
Projects might have been installed 12 months later in the same quantity (all).
provide incentive, almost paid for whole thing.
Provided incentive was helpful.
Provided rebate helped projects payback
Pushed the timing up to make sure we got the rebate

Put in higher efficiency equipment because of grants.
Put in higher efficiency equipment because of grants.
Replacements would have been done at some later time or not at all likely would not have installed H.E. bulbs. All bulbs possible were done, so no lesser quantities applicable.
Same amount, would have gone less efficient, probably would have installed sooner.
Since *employee* has been at the *location*, they had definitely decided to replace the one *equipment* with a high-efficiency model. This would have happened anyhow.
Speed up process
The energy savings were there and would have installed eventually.
The *equipment* replacement made sense to get the *equipment* closer to the equipment that it served. Without focus help, we would not have done this work right now and would have lost more energy.
the funds helped.
The identical project would have gone forward at the same timing, efficiency, and quantity regardless of Focus.
The incentive was not a significant factor. The BTU savings was the primary driver although the incentive was effective for PR
The incentives helped prevent the project from being deferred. The owner's needs are dynamic and change month to month. The quantity was not affected since we replaced the *equipment* on the older part of the building.
The incentives made the lighting replacement make sense and allowed us to save more energy.
The lighting all had to be replaced for better efficiency anyhow, but the incentive made it a better case financially, starting the project about two months earlier. The same efficiency would have been chosen.
The main thing is you've got do it so that it's all done properly. It helped it fall into place with what they had us do. I don't know if we would have done it without FOE, but I guess that we would have eventually. It would have been a lot more difficult to do without them. They helped in the beginning with information. They helped with the savings estimates.
The measure was implemented during new construction. the efficiency at the time was not discussed except that it exceeded baseline values. The entire *building* was done, as was necessary for the incentive.
The program had no impact on the project
The program made me think about doing a leak survey, but I probably would have done it anyway.
The project probably wouldn't have happened for two years and would have been less efficient when installed. Now the system is more efficient and has better control.
The project would probably have been installed 3-5 years later when more money was available. All *equipment* would have been replaced, no matter what. Efficiency is N/A.
The reason we are actively engaged in this type of project is the Focus on Energy incentives. Without the incentives it is unlikely we would do any of these projects.
The system was adopted partially because of the incentive. The system might have been installed a year later otherwise. All *equipment* capacity was modified w/the control system so no other options were available
The system would probably have been tried a year later without focus. Being an add on to entire *system* there was no effect on efficiency/quantity
The timing was part of the project. We went with recommendations from the mechanical engineers. FOE probably had no effect other than knowing that we wanted something efficient and new.
The timing worked out well. We knew we were wasting energy and the *location* facility was a good choice. Wanted controls to reduce peak. Original plan was to *install standard system type*. Saw what was possible through tours of other facilities.
The timing, quantity, and efficiency were not affected by focus. However, the focus rep was very helpful in sorting through the possible bogus systems.
These projects were regular maintenance that would have been done even without the program.
They had a large impact on project by helping w/confidence in cals and approval based on incentives

They improved the ROI + helped us see it as viable and save ideas
They kept him informed, made him aware of the options
they worked with contractor directly. Not sure what specifically they did
Think they would have used the same efficiency. However, they may not have been able to have the high efficiency *equipment.* Focus on Energy had quite a bit of influence. They sped up the process. They knew they need to replace a *equipment,* but the extra dollars and energy savings helped pushed it along faster and brought it to the *decision maker's* attention.
Those boilers are old, especially some of them, they needed to be serviced, so may have still went ahead with tuning.
Timing efficiency and quantity likely would not have changed because some changes were required by *company policy*
Timing was accelerated and we were able to accomplish more. We would have had to pick only one of the three projects (MGs). It has improved efficiency greatly. The incentives also allowed us to increase the quantity of lights that we replaced.
Timing was delayed, waiting for check. Went with more efficient unit because of Focus.
Timing worked since these went in at the front end of the project. Efficiency would have probably been less since first costs would have been higher.
Timing would have been much later but probably would have done the work eventually. Energy costs continue to rise which would have made the paybacks work.
Timing would have been same, lighting efficiency might have been slightly less, number of bulbs would be same.
Timing would not have changed, nor would amount. Probably would not have installed such high efficiency without Focus.
Timing, efficiency and quantity would not have changed. Costs more but better energy.
Timing, would have been delayed, efficiency is inherence to *product*, incentive made the payback work.
Timing. More projects sooner. The influence was in helping to get things done. I didn't have to hammer as much.
Told me about product so I bought it.
Vendor had influence on him.
Vendor/Contractor had most influence (vendor + contractor for lighting).
Very little effect.
Very little effect.
Was gonna do it-rebate was a bonus
We had several meetings with FOE. We had discussed energy consumption problems and lack of efficiency of the systems we had. They highly recommend that we go and get several different estimates and contractors to look at their particular units that they were trying to recommend. FOE really did us a good number on taking care of us.
We had to change the boilers anyway; FOE gave us a *small (5%)* grant on a *large* bill. We would have installed the new ones even without them.
We knew there were certain targets that they had to achieve to make it work. The FOE steered us in that direction. We knew there were certain efficiencies we wanted to achieve in the building. FOE helped us with that. Timing was critical--they were good about waiting for *us to get facility approval*. The energy bills were out of control; one area hot and another cold. The FOE assistance was a huge bonus.
We needed extra capacity and would've installed a new *equipment* regardless of focus incentives. The choice to install a *high efficiency equipment* was easier due to the incentives.
We probably would have done it later. Otherwise, there was no impact.
We probably would have done this work at some point down the road if FOE had not helped now.
We would have done this work anyway as good practice, but the incentives made it more visible to management.
We're cooling *many* tons less because of FOE. Otherwise we would have put in the same HVAC. It would have been inappropriately sized. It's 16-20% less energy now.

when I first found out about the lighting incentive, I found myself leaning toward the fluorescent system. The timing and quantity was not affected, though.
With the incentives, it allows us to do regularly scheduled full system tuneups without budget constraints
With the program, it is the deciding factor whether a marginal project is a go or no go. Effects timing and efficiency due to go/no go.
With their good rebates we were able to do the projects, and budget within a couple of years to get all the lighting up to a high efficiency, low-cost lighting here, if the incentives weren't there, we probably wouldn't have completed it all at this point. It wouldn't have been as rapid, but we would have used the same T8 systems.
Without Focus no *equipment* would have been installed.
Without Focus, project might have happened 2 years later, maybe never. Efficiency is N/A. Capacity of *equipment* would not have changed.
Without focus, project would have been delayed and maybe less equipment
Without Focus, the project most likely would not have been completed. If it had, perhaps only half of the lighting would have been installed, though most likely at the same efficiency.
Without FOE assistance, the *owner* would have done the projects in stages *and so they* would have taken much longer. FOE helped us save *a significant amount*. This allows us to *fund other things.* Without FOE many of these projects would not have happened for some time.
Without FOE we would not have done this work. It just wasn't worth it.
Without the audit the measure would not have been installed until natural replacement
would have done lighting anyway (prob. Maintenance), but increased efficiency beyond standard T8
Would have installed 1 month later without program but would have installed same equipment.
Would have tried to do the next round until we got a good amount of money

APPENDIX D: DETAILED SAMPLING TABLES

Table D-1. Sample Disposition by Strata[a,b]

Territory	Sector	Survey Type	Custom/ Prescriptive/ Large	Therms/ No Therms	Evaluation Cost	Stratum	# Participants			Strata Status
							Population	Target	Complete	
Very Small										
Non-WPS	Agriculture	BOTH	Custom	No Therms	Mid	1	530	15	24	Available
Non-WPS	Agriculture	BOTH	Custom	No Therms	High	2	19	3	4	Available
Non-WPS	Agriculture	BOTH	Custom	Therms	Mid	3	50	8	12	Available
Non-WPS	Agriculture	CATI	Custom	Therms	High	4	4	1	1	Available
Non-WPS	Agriculture	CATI	Prescriptive	No Therms	Low	29	6,645	65	38	Available
Non-WPS	Agriculture	CATI	Prescriptive	Therms	Low	30	5	1	1	Exhausted
Non-WPS	Commercial	BOTH	Custom	No Therms	Mid	9	451	10	16	Available
Non-WPS	Commercial	BOTH	Custom	Therms	Mid	10	233	5	7	Available
Non-WPS	Commercial	BOTH	Custom	No Therms	High	101	11	0	0	N/A
Non-WPS	Commercial	BOTH	Custom	Therms	High	102	3	0	0	N/A
Non-WPS	Commercial	CATI	Prescriptive	No Therms	Low	34	8,469	105	61	Available
Non-WPS	Commercial	CATI	Prescriptive	Therms	Low	35	122	4	2	Available
Non-WPS	Industrial	BOTH	Custom	No Therms	Mid	15	345	6	12	Available
Non-WPS	Industrial	BOTH	Custom	No Therms	High	16	12	1	1	Available
Non-WPS	Industrial	BOTH	Custom	Therms	Mid	17	59	2	3	Available
Non-WPS	Industrial	CATI	Prescriptive	No Therms	Low	40	404	19	23	Available
Non-WPS	Industrial	CATI	Prescriptive	Therms	Low	41	20	1	1	Available
Non-WPS	Schools & Government	BOTH	Custom	No Therms	Mid	21	183	8	12	Available
Non-WPS	Schools & Government	CATI	Custom	No Therms	High	22	8	1	0	Available
Non-WPS	Schools & Government	BOTH	Custom	Therms	Mid	23	204	13	27	Available
Non-WPS	Schools & Government	BOTH	Custom	Therms	High	24	25	2	5	Available
Non-WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	46	162	11	19	Available
Non-WPS	Schools & Government	CATI	Prescriptive	Therms	Low	47	28	5	6	Available
WPS	Agriculture	BOTH	Custom	No Therms	Mid	5	213	20	31	Available
WPS	Agriculture	CATI	Custom	No Therms	High	6	8	2	3	Available
WPS	Agriculture	CATI	Custom	Therms	Mid	7	6	2	1	Available
WPS	Agriculture	ENG	Custom	Therms	High	8	1	1	0	Exhausted
WPS	Agriculture	CATI	Prescriptive	No Therms	Low	31	74	8	5	Available
WPS	Commercial	BOTH	Custom	No Therms	Mid	11	272	7	10	Available
WPS	Commercial	BOTH	Custom	No Therms	High	12	9	1	2	Available
WPS	Commercial	BOTH	Custom	Therms	Mid	13	55	2	3	Available
WPS	Commercial	ENG	Custom	Therms	High	14	4	1	2	Available
WPS	Commercial	CATI	Prescriptive	No Therms	Low	36	274	24	15	Available
WPS	Commercial	CATI	Prescriptive	Therms	Low	37	4	1	1	Available
WPS	Industrial	BOTH	Custom	No Therms	Mid	18	124	5	9	Available
WPS	Industrial	ENG	Custom	No Therms	High	19	7	1	1	Exhausted
WPS	Industrial	ENG	Custom	Therms	Mid	20	8	1	1	Exhausted
WPS	Industrial	BOTH	Custom	Therms	High	109	1	0	0	N/A
WPS	Industrial	CATI	Prescriptive	No Therms	Low	43	89	12	17	Available
WPS	Schools & Government	CATI	Custom	No Therms	Mid	25	24	2	3	Available
WPS	Schools & Government	ENG	Custom	No Therms	High	26	1	1	1	Exhausted
WPS	Schools & Government	CATI	Custom	Therms	Mid	27	9	1	1	Available
WPS	Schools & Government	BOTH	Custom	Therms	High	28	5	1	0	Exhausted
WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	49	28	4	4	Available
						Total Very Small	**19,208**	**383**	**385**	
Not Very Small										
Non-WPS	Agriculture	ENG	Custom	No Therms	High	50	4	1	2	Exhausted
Non-WPS	Agriculture	ENG	Custom	Therms	Mid	51	6	4	4	Available
Non-WPS	Agriculture	ENG	Custom	Therms	High	52	2	2	2	Exhausted
Non-WPS	Agriculture	ENG	Large	Therms	Mid	53	4	4	4	Exhausted
Non-WPS	Commercial	CATI	Prescriptive	No Therms	Low	32	24	8	6	Available
Non-WPS	Commercial	CATI	Prescriptive	Therms	Low	33	3	1	2	Exhausted
Non-WPS	Commercial	ENG	Custom	No Therms	Mid	56	21	7	6	Available
Non-WPS	Commercial	ENG	Custom	No Therms	High	57	4	1	1	Exhausted
Non-WPS	Commercial	ENG	Custom	Therms	Mid	58	20	6	6	Available
Non-WPS	Commercial	ENG	Custom	Therms	High	59	4	2	1	Available
Non-WPS	Industrial	CATI	Prescriptive	No Therms	Low	38	18	5	5	Exhausted
Non-WPS	Industrial	CATI	Prescriptive	Therms	Low	39	2	1	1	Exhausted
Non-WPS	Industrial	ENG	Custom	No Therms	Mid	62	86	18	26	Available
Non-WPS	Industrial	ENG	Custom	No Therms	High	63	11	2	2	Available
Non-WPS	Industrial	ENG	Custom	Therms	Mid	64	46	23	22	Available
Non-WPS	Industrial	ENG	Custom	Therms	High	65	6	1	2	Exhausted
Non-WPS	Industrial	ENG	Large	Therms	High	108	2	0	1	Exhausted
Non-WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	44	8	2	1	Available
Non-WPS	Schools & Government	CATI	Prescriptive	Therms	Low	45	9	2	0	Exhausted
Non-WPS	Schools & Government	ENG	Custom	No Therms	Mid	71	15	4	5	Exhausted
Non-WPS	Schools & Government	ENG	Custom	Therms	Mid	72	37	14	14	Exhausted
Non-WPS	Schools & Government	ENG	Custom	Therms	High	73	19	5	5	Exhausted
Non-WPS	Schools & Government	ENG	Large	No Therms	Mid	74	1	1	1	Exhausted
Non-WPS	Schools & Government	ENG	Custom	No Therms	High	111	2	0	0	N/A
Non-WPS	Schools & Government	ENG	Large	No Therms	High	112	1	0	1	Exhausted
Non-WPS	Schools & Government	ENG	Large	Therms	Low	113	1	0	1	Exhausted
Non-WPS	Schools & Government	ENG	Large	Therms	High	114	1	0	1	Exhausted
WPS	Agriculture	CATI	Prescriptive	No Therms	Low	100	1	0	0	N/A
WPS	Agriculture	ENG	Custom	No Therms	Mid	54	3	2	2	Exhausted
WPS	Agriculture	ENG	Custom	No Therms	High	55	4	1	2	Exhausted
WPS	Commercial	CATI	Prescriptive	No Therms	Low	107	1	0	0	N/A
WPS	Commercial	ENG	Custom	No Therms	Mid	60	10	3	2	Available
WPS	Commercial	ENG	Custom	Therms	Mid	61	7	2	2	Available
WPS	Commercial	ENG	Custom	No Therms	High	103	4	0	0	N/A
WPS	Commercial	ENG	Custom	Therms	High	104	1	0	0	N/A
WPS	Commercial	ENG	Large	No Therms	Low	105	1	0	1	Exhausted
WPS	Commercial	ENG	Large	No Therms	High	106	1	0	1	Exhausted
WPS	Industrial	CATI	Prescriptive	No Therms	Low	42	2	2	1	Exhausted
WPS	Industrial	ENG	Custom	No Therms	Mid	66	24	5	7	Available
WPS	Industrial	ENG	Custom	No Therms	High	67	9	1	2	Available
WPS	Industrial	ENG	Custom	Therms	Mid	68	6	1	4	Exhausted
WPS	Industrial	ENG	Custom	Therms	High	69	4	1	1	Exhausted
WPS	Industrial	ENG	Large	Therms	High	70	1	1	1	Exhausted
WPS	Industrial	ENG	Large	Therms	Mid	110	1	0	1	Exhausted
WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	48	2	2	0	Available
WPS	Schools & Government	ENG	Custom	Therms	Mid	75	4	1	1	Exhausted
WPS	Schools & Government	ENG	Custom	Therms	High	76	7	3	4	Exhausted
WPS	Schools & Government	ENG	Custom	No Therms	Mid	115	4	0	0	N/A
WPS	Schools & Government	ENG	Custom	No Therms	High	116	1	0	0	N/A
						Total Not Very Small	**455**	**139**	**154**	
						18 MCP Total	**19,663**	**522**	**539**	

[a] Strata 33 includes one engineering complete from the abbreviated round though it is assigned to a CATI strata.

[b] Targets are zero for stratum whose population is 100 percent from the abbreviated round because stratum were not used to set targets for the second round of analysis.

Table D-2. Fraction of Frame Savings in Sample by Strata

Territory	Sector	Survey Type	Custom/ Prescriptive/ Large	Therms/ No Therms	Evaluation Cost	Stratum	Fraction of Frame Total Reported Gross Savings					
							Frame			Sample		
							kWh	kW	Therms	kWh	kW	Therms
Very Small												
Non-WPS	Agriculture	BOTH	Custom	No Therms	Mid	1	2.6%	3.2%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Agriculture	BOTH	Custom	No Therms	High	2	0.4%	0.4%	0.0%	0.0%	0.1%	0.0%
Non-WPS	Agriculture	BOTH	Custom	Therms	Mid	3	0.1%	0.1%	1.5%	0.0%	0.0%	0.5%
Non-WPS	Agriculture	CATI	Custom	Therms	High	4	0.2%	0.2%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Agriculture	CATI	Prescriptive	No Therms	Low	29	2.9%	3.4%	0.0%	0.0%	0.0%	0.0%
Non-WPS	Agriculture	CATI	Prescriptive	Therms	Low	30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Non-WPS	Commercial	BOTH	Custom	No Therms	Mid	9	4.5%	3.2%	0.0%	0.2%	0.2%	0.0%
Non-WPS	Commercial	BOTH	Custom	Therms	Mid	10	0.4%	0.3%	2.5%	0.0%	0.0%	0.0%
Non-WPS	Commercial	BOTH	Custom	No Therms	High	101	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%
Non-WPS	Commercial	BOTH	Custom	Therms	High	102	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
Non-WPS	Commercial	CATI	Prescriptive	No Therms	Low	34	12.1%	15.5%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Commercial	CATI	Prescriptive	Therms	Low	35	0.1%	0.2%	0.5%	0.0%	0.0%	0.0%
Non-WPS	Industrial	BOTH	Custom	No Therms	Mid	15	5.1%	4.6%	0.0%	0.2%	0.2%	0.0%
Non-WPS	Industrial	BOTH	Custom	No Therms	High	16	0.2%	0.2%	0.0%	0.0%	0.1%	0.0%
Non-WPS	Industrial	BOTH	Custom	Therms	Mid	17	0.3%	0.2%	2.2%	0.0%	0.0%	0.1%
Non-WPS	Industrial	CATI	Prescriptive	No Therms	Low	40	4.5%	4.1%	0.0%	0.3%	0.3%	0.0%
Non-WPS	Industrial	CATI	Prescriptive	Therms	Low	41	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%
Non-WPS	Schools & Government	BOTH	Custom	No Therms	Mid	21	1.9%	3.5%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Schools & Government	CATI	Custom	No Therms	High	22	0.2%	0.3%	0.0%	0.0%	0.0%	0.0%
Non-WPS	Schools & Government	BOTH	Custom	Therms	Mid	23	0.4%	0.4%	5.8%	0.0%	0.1%	0.7%
Non-WPS	Schools & Government	BOTH	Custom	Therms	High	24	0.2%	0.1%	1.2%	0.1%	0.0%	0.2%
Non-WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	46	0.9%	0.9%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Schools & Government	CATI	Prescriptive	Therms	Low	47	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%
WPS	Agriculture	BOTH	Custom	No Therms	Mid	5	1.7%	2.6%	0.0%	0.2%	0.3%	0.0%
WPS	Agriculture	CATI	Custom	No Therms	High	6	0.2%	0.3%	0.0%	0.1%	0.2%	0.0%
WPS	Agriculture	CATI	Custom	Therms	Mid	7	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
WPS	Agriculture	ENG	Custom	Therms	High	8	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
WPS	Agriculture	CATI	Prescriptive	No Therms	Low	31	0.2%	0.3%	0.0%	0.0%	0.0%	0.0%
WPS	Commercial	BOTH	Custom	No Therms	Mid	11	1.5%	1.8%	0.0%	0.1%	0.1%	0.0%
WPS	Commercial	BOTH	Custom	No Therms	High	12	0.2%	0.3%	0.0%	0.0%	0.0%	0.0%
WPS	Commercial	BOTH	Custom	Therms	Mid	13	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
WPS	Commercial	ENG	Custom	Therms	High	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WPS	Commercial	CATI	Prescriptive	No Therms	Low	36	1.8%	2.5%	0.0%	0.1%	0.1%	0.0%
WPS	Commercial	CATI	Prescriptive	Therms	Low	37	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WPS	Industrial	BOTH	Custom	No Therms	Mid	18	2.3%	2.2%	0.0%	0.2%	0.2%	0.0%
WPS	Industrial	ENG	Custom	No Therms	High	19	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
WPS	Industrial	ENG	Custom	Therms	Mid	20	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%
WPS	Industrial	BOTH	Custom	Therms	High	109	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
WPS	Industrial	CATI	Prescriptive	No Therms	Low	43	1.3%	1.2%	0.0%	0.1%	0.1%	0.0%
WPS	Schools & Government	CATI	Custom	No Therms	Mid	25	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%
WPS	Schools & Government	ENG	Custom	No Therms	High	26	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%
WPS	Schools & Government	CATI	Custom	Therms	Mid	27	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
WPS	Schools & Government	BOTH	Custom	Therms	High	28	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	49	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%
						Total Very Small	**47.5%**	**53.7%**	**15.6%**	**2.2%**	**2.6%**	**1.7%**
Not Very Small												
Non-WPS	Agriculture	ENG	Custom	No Therms	High	50	0.4%	0.3%	0.0%	0.3%	0.2%	0.0%
Non-WPS	Agriculture	ENG	Custom	Therms	Mid	51	0.0%	0.0%	1.2%	0.0%	0.0%	0.9%
Non-WPS	Agriculture	ENG	Custom	Therms	High	52	0.4%	0.2%	0.0%	0.4%	0.2%	0.0%
Non-WPS	Agriculture	ENG	Large	Therms	Mid	53	0.1%	0.0%	3.1%	0.1%	0.0%	3.1%
Non-WPS	Commercial	CATI	Prescriptive	No Therms	Low	32	2.3%	2.8%	0.0%	0.6%	0.8%	0.0%
Non-WPS	Commercial	CATI	Prescriptive	Therms	Low	33	0.0%	0.0%	1.2%	0.0%	0.0%	0.8%
Non-WPS	Commercial	ENG	Custom	No Therms	Mid	56	2.6%	2.8%	0.0%	1.1%	1.0%	0.0%
Non-WPS	Commercial	ENG	Custom	No Therms	High	57	0.6%	0.7%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Commercial	ENG	Custom	Therms	Mid	58	0.9%	0.7%	5.3%	0.3%	0.3%	2.0%
Non-WPS	Commercial	ENG	Custom	Therms	High	59	0.6%	0.7%	0.4%	0.0%	0.0%	0.1%
Non-WPS	Industrial	CATI	Prescriptive	No Therms	Low	38	3.0%	2.4%	0.0%	1.2%	0.8%	0.0%
Non-WPS	Industrial	CATI	Prescriptive	Therms	Low	39	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%
Non-WPS	Industrial	ENG	Custom	No Therms	Mid	62	16.9%	10.4%	0.0%	7.2%	3.6%	0.0%
Non-WPS	Industrial	ENG	Custom	No Therms	High	63	2.6%	2.1%	0.0%	0.8%	0.4%	0.0%
Non-WPS	Industrial	ENG	Custom	Therms	Mid	64	0.5%	0.2%	27.6%	0.1%	-0.1%	13.4%
Non-WPS	Industrial	ENG	Custom	Therms	High	65	1.0%	0.4%	4.2%	0.8%	0.2%	2.4%
Non-WPS	Industrial	ENG	Large	Therms	High	108	1.3%	0.8%	7.3%	-0.1%	-0.1%	7.2%
Non-WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	44	0.8%	0.8%	0.0%	0.1%	0.1%	0.0%
Non-WPS	Schools & Government	CATI	Prescriptive	Therms	Low	45	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%
Non-WPS	Schools & Government	ENG	Custom	No Therms	Mid	71	1.4%	2.5%	0.0%	0.4%	1.3%	0.0%
Non-WPS	Schools & Government	ENG	Custom	Therms	Mid	72	1.1%	1.2%	7.6%	0.6%	0.7%	2.0%
Non-WPS	Schools & Government	ENG	Custom	Therms	High	73	0.8%	1.0%	3.6%	0.2%	0.3%	1.0%
Non-WPS	Schools & Government	ENG	Large	No Therms	Mid	74	0.7%	0.4%	0.0%	0.7%	0.4%	0.0%
Non-WPS	Schools & Government	ENG	Custom	No Therms	High	111	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%
Non-WPS	Schools & Government	ENG	Large	No Therms	High	112	0.6%	0.5%	0.0%	0.6%	0.5%	0.0%
Non-WPS	Schools & Government	ENG	Large	Therms	Low	113	0.0%	0.0%	1.3%	0.0%	0.0%	1.3%
Non-WPS	Schools & Government	ENG	Large	Therms	High	114	0.2%	0.3%	0.7%	0.2%	0.3%	0.7%
WPS	Agriculture	CATI	Prescriptive	No Therms	Low	100	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
WPS	Agriculture	ENG	Custom	No Therms	Mid	54	0.2%	0.3%	0.0%	0.2%	0.2%	0.0%
WPS	Agriculture	ENG	Custom	No Therms	High	55	0.3%	0.5%	0.0%	0.2%	0.4%	0.0%
WPS	Commercial	CATI	Prescriptive	No Therms	Low	107	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
WPS	Commercial	ENG	Custom	No Therms	Mid	60	1.4%	1.9%	0.0%	0.6%	0.5%	0.0%
WPS	Commercial	ENG	Custom	Therms	Mid	61	0.3%	0.5%	0.8%	0.1%	0.1%	0.2%
WPS	Commercial	ENG	Custom	No Therms	High	103	0.7%	0.8%	0.0%	0.0%	0.0%	0.0%
WPS	Commercial	ENG	Custom	Therms	High	104	0.1%	0.1%	0.4%	0.0%	0.0%	0.0%
WPS	Commercial	ENG	Large	No Therms	Low	105	0.9%	1.1%	0.0%	0.9%	1.1%	0.0%
WPS	Commercial	ENG	Large	No Therms	High	106	1.3%	0.7%	0.0%	1.3%	0.7%	0.0%
WPS	Industrial	CATI	Prescriptive	No Therms	Low	42	0.3%	0.2%	0.0%	0.1%	0.1%	0.0%
WPS	Industrial	ENG	Custom	No Therms	Mid	66	4.3%	3.3%	0.0%	1.3%	1.0%	0.0%
WPS	Industrial	ENG	Custom	No Therms	High	67	1.9%	1.3%	0.0%	0.6%	0.4%	0.0%
WPS	Industrial	ENG	Custom	Therms	Mid	68	0.2%	0.2%	1.0%	0.1%	0.1%	0.6%
WPS	Industrial	ENG	Custom	Therms	High	69	1.0%	0.8%	2.2%	0.5%	0.4%	0.1%
WPS	Industrial	ENG	Large	Therms	High	70	-0.9%	0.1%	8.4%	-0.9%	0.1%	8.4%
WPS	Industrial	ENG	Large	Therms	Mid	110	0.4%	0.3%	2.3%	0.4%	0.3%	2.3%
WPS	Schools & Government	CATI	Prescriptive	No Therms	Low	48	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%
WPS	Schools & Government	ENG	Custom	Therms	Mid	75	0.1%	0.1%	0.8%	0.1%	0.1%	0.3%
WPS	Schools & Government	ENG	Custom	Therms	High	76	0.5%	1.0%	2.1%	0.3%	0.8%	1.1%
WPS	Schools & Government	ENG	Custom	No Therms	Mid	115	0.4%	0.8%	0.0%	0.0%	0.0%	0.0%
WPS	Schools & Government	ENG	Custom	No Therms	High	116	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
						Total Not Very Small	**52.5%**	**46.3%**	**84.4%**	**21.4%**	**17.5%**	**48.0%**
						18 MCP Total	**100.0%**	**100.0%**	**100.0%**	**23.6%**	**20.1%**	**49.7%**

APPENDIX E: ATTRIBUTION ANALYSIS METHODOLOGY

This appendix provides a detailed explanation of the program attribution methodology used in this impact evaluation.[50]

E.1 OVERVIEW OF APPROACH

The attribution analysis uses data collected from the engineering review, on-site visits, participant surveys, and supplier surveys. These data are used to calculate the following adjustment factors:

- **Installation rate:** This factor corresponds to the fraction of measures that were installed. Each measure is assigned a binary factor that identifies whether it was installed or not installed. Adjustments to the number of units installed for a particular measure are included in the engineering verification factor, not in the installation rate.
- **Engineering verification factor:** This is the ratio of the verified gross savings to the tracking estimate of gross savings for installed measures. The engineering verification factor includes corrections to the numbers of units installed, changes in operating hours, changes in operating levels, etc. This correction is applied only for measures installed by participants that were part of the engineering sample. This correction is applied only to measures that were installed by participants in the engineering sample, both custom and deemed. Participants in the CATI sample that installed CFLs receive the deemed sector-level CFL energy savings adjustment. Participants in the CATI sample that installed non-CFL measures do not receive an engineering verification adjustment. KEMA assumed the engineering estimates for CATI non-CFL measures were equal to verified installed savings. That is, no engineering adjustment was made to these measures (engineering verification factor assumed to be 100 percent).
- **Attribution factors:** These factors are used to determine the proportion of the verified gross savings attributable to the Focus on Energy Business Programs. For non-CFL measures[51], the attribution factors are determined from the participant's responses to a battery of survey questions designed to determine how influential Focus on Energy Business Programs was in the decision to install a particular measure. For CFL measures, the final attribution is assigned based on market research done to measure the balance between attribution and spillover in the entire state and across sectors.

The three attribution factors that affect the final net savings are timing, efficiency, and quantity attribution. All three attribution factors are based on responses to the attribution questions in the impact evaluation survey. The following is a brief description of each factor:

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[50] KEMA has developed an alternative attribution analysis methodology (life cycle net savings, or LCNS) that uses the same survey instruments. We will release a memo that describes the LCNS method and provides attribution results based on the data collected during the 18MCP. The results using the LCNS method will be provided for comparison only.

[51] For purposes of this discussion, "CFLs" includes small CFLs only; for example, measures described in the program tracking databases as "CFL <= 30W". The standard evaluation attribution battery is used for larger CFL installations (> 30W).

- **Timing attribution, A_T**: This measures the effect the program had on *when* the equipment was installed. The timing attribution is a linear function of the **Acceleration Period, m_a**, which corresponds to the number of months between when the equipment was actually installed and when it would have been installed in the absence of the program. For respondents who say they would have installed at the same time or earlier without the program, $m_a = 0$. For those who say they would have installed later, m_a is the number of months later they say they would have installed, up to a maximum of 48.
- **Efficiency attribution, A_E:** This measures the effect the program had on the efficiency of the equipment installed. The efficiency attribution measures the proportion of savings attributable to the program for increasing the efficiency of the equipment above what would have been installed otherwise.
- **Quantity attribution, A_Q:** This measures the effect the program had on the quantity of the equipment installed. The quantity attribution measures the proportion of savings attributable to the program for increasing the quantity of equipment above what would have been installed otherwise.

The compliment of attribution is free-ridership. Attribution measures the portion of the savings that result because of the actions of the program. Free-ridership measures the portion of the savings that would have happened in the absence of the program. The free-ridership equivalents of the attribution factors are used to determine program net savings. They are:

- **Timing free-ridership, f_T:** The timing free-ridership is also a linear function of the Acceleration Period, m_a, defined under Timing Attribution above.
- **Efficiency free-ridership, f_E:** This is the fraction of verified gross installed (VGI) savings per unit that would have occurred without the program (free rider efficiency increment). This value is also equivalent to the factor E used in previous attribution analysis reports.
- **Quantity free-ridership, f_Q:** This is the fraction of installed units that would have been installed without the program (free rider quantity factor). This value is also equivalent to the factor Q used in previous attribution analysis reports.

The free-ridership values are easily calculated from the attribution factors.

- $f_T = 1 - A_T$
- $f_E = 1 - A_E$
- $f_Q = 1 - A_Q$

E.2 ATTRIBUTION ANALYSIS

The impact evaluation starts with the program-reported gross savings for a measure. This is the savings value reported by the program in the program tracking database. The verified gross savings are determined by multiplying the tracking savings by the installation rate and the engineering verification factor. The combined installation rate and engineering verification factor has also been called the gross savings adjustment factor. These equations are illustrated in Figures E-1 and E-2.

Figure E-1. Gross Savings Adjustment Factor Calculation

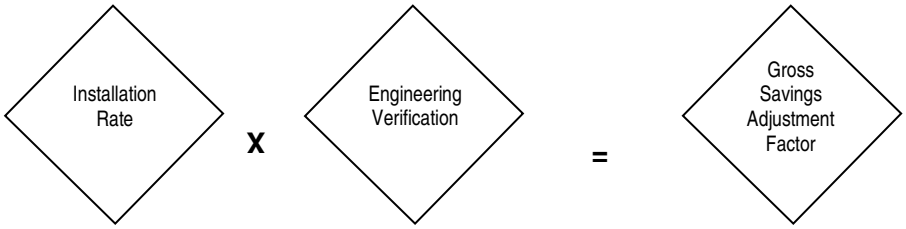
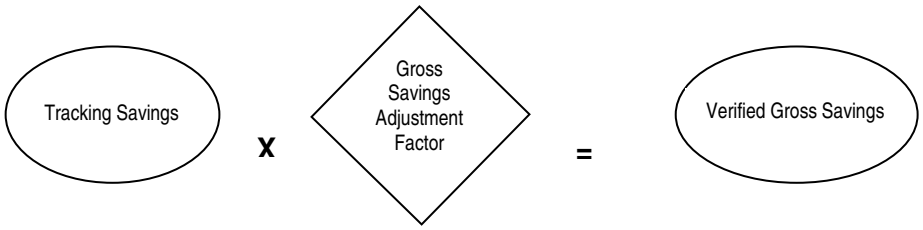
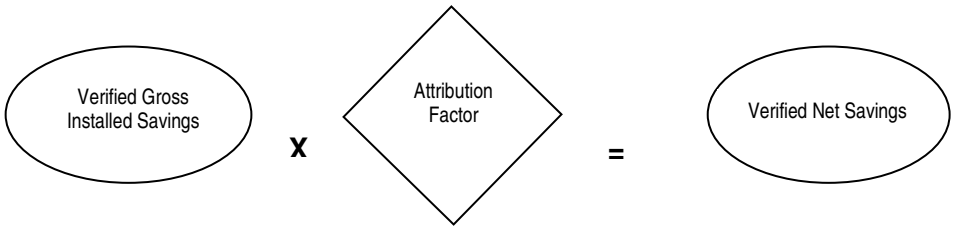


Figure E-2. Verified Gross Savings Calculation



As shown in Figure E-3, the verified net savings for each measure are equal to the VGI savings multiplied by the overall **Attribution Factor, A**.

Figure E-3. Verified Net Savings Calculation



The overall attribution factor is a function of the Simple Program Attribution (SPA) and the timing free-ridership. The SPA is the fraction of VGI savings that are attributable to the program and is a function of the efficiency free-ridership and the quantity free-ridership.

The fraction of VGI savings that would have occurred *without* the program is the product of the fraction of units that would have been installed without the program, f_Q, and the fractional unit savings that these units would have had without the program, f_E.

$$f_{QE} = f_Q f_E$$

For example, if two-thirds as many units would have been installed without the program (f_Q = 2/3), and the savings per unit would have been only half as much (f_E = 1/2), the portion of the savings that would have occurred without the program would be

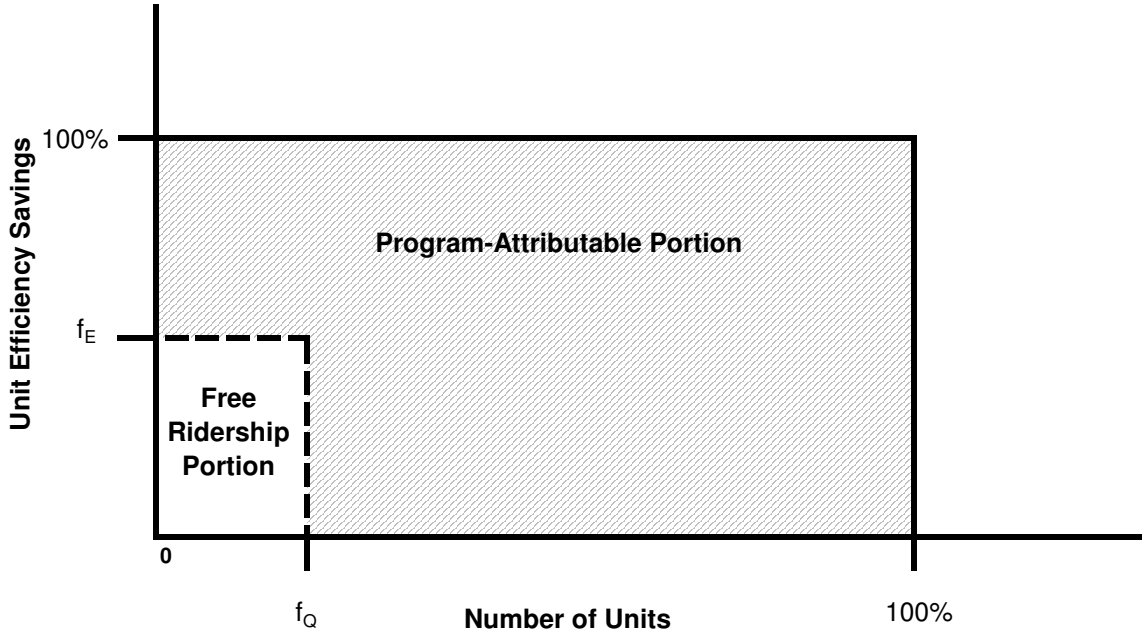
$$f_{QE} = (2/3) \times (1/2) = 1/3.$$

The SPA is the complement of this free rider portion.

$$SPA = 1\text{-}f_{QE} = 1\text{-}\ f_Q\ f_E$$

The relationship is illustrated in Figure E-4.

Figure E-4. Graphical Derivation of the SPA Equation



The timing free-ridership is calculated from the acceleration period using

$$f_T = 1 - m_a/48.$$

The overall attribution factor is

$$A = 1 - f_Q f_E f_T$$

Thus, if the measure was accelerated by more than 48 months, the no-program timing factor f_T is 0 and the attribution is 1, regardless of f_Q and f_E. If the measure was not accelerated at all, f_T = 1, and the simple attribution is the final attribution, A = SPA.

The net savings can be calculated

$$\text{First-year net savings} = \text{VGI Savings} * A_{historic}$$

E.3 DETERMINING ATTRIBUTION PARAMETERS

The attribution factors defined in the previous section are determined from the participant responses gathered during the survey. This section provides an overview of the survey data and how it is used to determine each attribution factor. It also includes more detailed sections for each factor that show exactly how all survey responses are handled.

E.3.1 General procedure

This section provides an overview of the attribution factors and how they are determined.

- **Timing attribution, A_T:** The timing attribution is determined directly from the acceleration period, m_a, which is in turn provided directly by the respondent. The timing attribution is equal to $A_T = m_a/48$ for values of m_a less than or equal to 48. There is no timing attribution effect for values of m_a greater than 48; in those instances we assume that the measure would never have been installed without the influence of the program.
- **Efficiency attribution, A_E:** The efficiency attribution is based on the answers to questions DAT2a and DAT2b as shown in Table 1. Respondents who indicate that they would have installed a lesser-efficient piece of equipment in the absence of the program are asked what efficiency they would have installed instead. An efficiency attribution value is assigned based on the response.

Table E-1. Efficiency Attribution Assignments

Efficiency That Would Have Been Installed without Focus		
Coarse Cut (DAT2a)	**Finer Cut (DAT2b)**	**Efficiency Attribution, E**
Same	*NA*	0%
Lesser	Standard efficiency or according to code	100%
	Slightly higher than standard efficiency	70%
	Between standard efficiency and the efficiency that was installed	50%
	Slightly lower than the high efficiency that was installed	30%
	Don't Know/Refused	Avg of above cases for sector
Greater	*NA*	0%
Don't Know/Refused	*NA*	Avg of all respondents for sector

- **Quantity attribution, A_Q:** The quantity attribution is based on the percent increase in quantity caused by the program, **Inc**, which is in turn provided directly by the respondent. The quantity attribution is equal to A_Q = Inc / (Inc + 100%).

The next few sections deal with determining the timing, efficiency, and quantity attributions on a more detailed level.

E.3.2 Detailed assignments

This section gives a detailed accounting of how the attribution factors are determined from the survey responses.

The survey instrument was changed slightly between Round 1 and Round 2. Improvements were added based on our experiences in Round 1. Both survey instruments are included in the appendices for reference. Any additional changes made for Round 2 are included below

a. TIMING

The timing attribution, A_T, is determined from the first set of attribution survey questions. These questions are used to determine whether or not Focus accelerated implementation of a measure or caused it to be implemented before it would have been without the program. The two relevant questions are DAT1a and DAT1b.

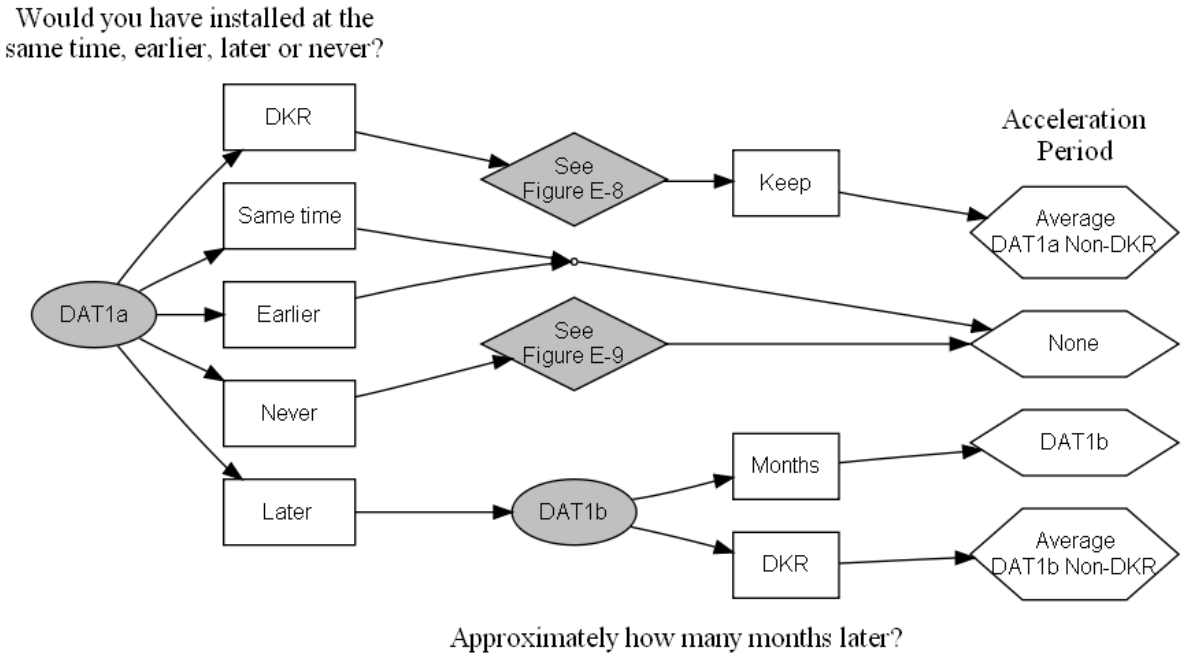
> DAT1a: "Without Focus incentives and other Focus assistance, how different would the timing have been? Would you say you would have installed [equipment type] at the same time, earlier, later, or never?"
>
> DAT1b: "Approximately how many months later?" (DAT1b is only asked if DAT1a is "Later.")

Note that these questions ask about the timing of installing equipment, not installation of efficient equipment in particular. For example, if the measure was replacement of a high-efficiency boiler, the question asks when the boiler would have been replaced without Focus. Engineers conducting the interviews are trained to ensure clarity for these questions. Future refinements of the questionnaire will explore further improvements to the accuracy of the timing reports.

b. DETERMINATION OF THE ACCELERATION PERIOD

Figure E-5 shows a decision tree for DAT1a and DAT1b. In the decision tree, "DKR" refers to "Don't Know" and "Refused."

Figure E-5. Decision Tree for the Acceleration Period



The measure is considered accelerated if the respondent indicates that the measure would have been installed less than 4 years later without the influence of Focus. The acceleration period is determined based on the answer to DAT1b. If the respondent is unable to answer DAT1b, the measure is assigned the average acceleration period across all accelerated measures in the same sector.

If the respondent answers DAT1a with Earlier or Same Time then there is no acceleration period. If the respondent answers DAT1a with Never and the Quantity and Efficiency sections apply to the measure then the survey skips to the next section and there is no acceleration period. If the respondent answers DAT1a with Don't Know or Refused but does provide answers to inform the Quantity and Efficiency Attributions then the measure is assigned the average Acceleration Attribution for all measures in the same sector.

c. EFFICIENCY

Efficiency Attribution, A_E, gives the program credit for increasing the efficiency of a measure above what would have been installed in the absence of the program. The two relevant questions are DAT2a and DAT2b.

> DAT2a: "Without the Focus on Energy Program's financial incentives and other Focus assistance, would you say you would have installed [equipment type] of the same efficiency, lesser efficiency, or greater efficiency?"
>
> DAT2b: "Without Focus on Energy incentives and other Focus assistance, would you have installed [equipment type] that was "standard efficiency on the market at that time," "slightly higher than standard efficiency," "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?" (DAT2b is only asked if DAT2a is "Lesser.")

The program receives nonzero Efficiency Attribution if the respondent indicates that they would have installed a less efficient measure without the influence of Focus. The magnitude of the Efficiency Attribution is determined based on the answer to DAT2b, as shown in Table E-2. Figure E-6 shows the corresponding decision tree for DAT2a and DAT2b.

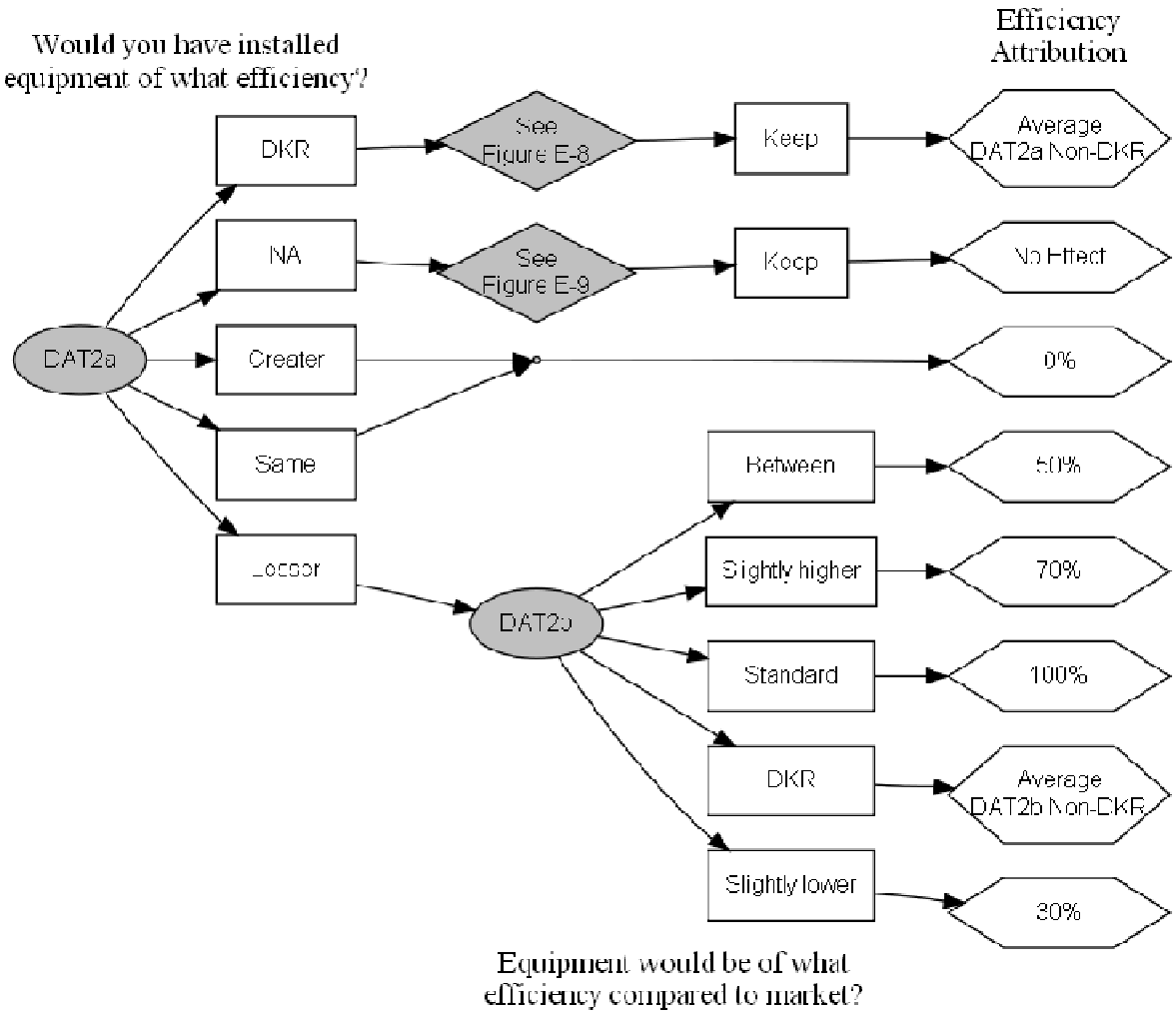
Table E-2. Efficiency Attribution Assignments

Efficiency That Would Have Been Installed without Focus		
Coarse Cut (DAT2a)	**Finer Cut (DAT2b)**	**Efficiency Attribution, E**
Same	*NA*	0%
Lesser	Standard efficiency or according to code	100%
	Slightly higher than standard efficiency	70%
	Between standard efficiency and the efficiency that was installed	50%
	Slightly lower than the high efficiency that was installed	30%
	Don't Know/Refused	Avg of above cases for sector
Greater	*NA*	0%
Don't Know/Refused	*NA*	Avg of all respondents for sector

If the respondent answers DAT2a with Greater or Same then the survey skips to the next section and there is zero Efficiency Attribution. If efficiency is not applicable to this measure but quantity is applicable and the measure would have been installed anyway then the survey skips to the next section and the Efficiency Attribution will not affect the Simple Program Attribution. If the respondent answers DAT2a with Don't Know or Refused but does provide answers to inform

the Quantity Attribution and Acceleration Period then the measure is assigned the average Efficiency Attribution for all measures in the same sector.

Figure E-6. Decision Tree for Efficiency Attribution



d. QUANTITY

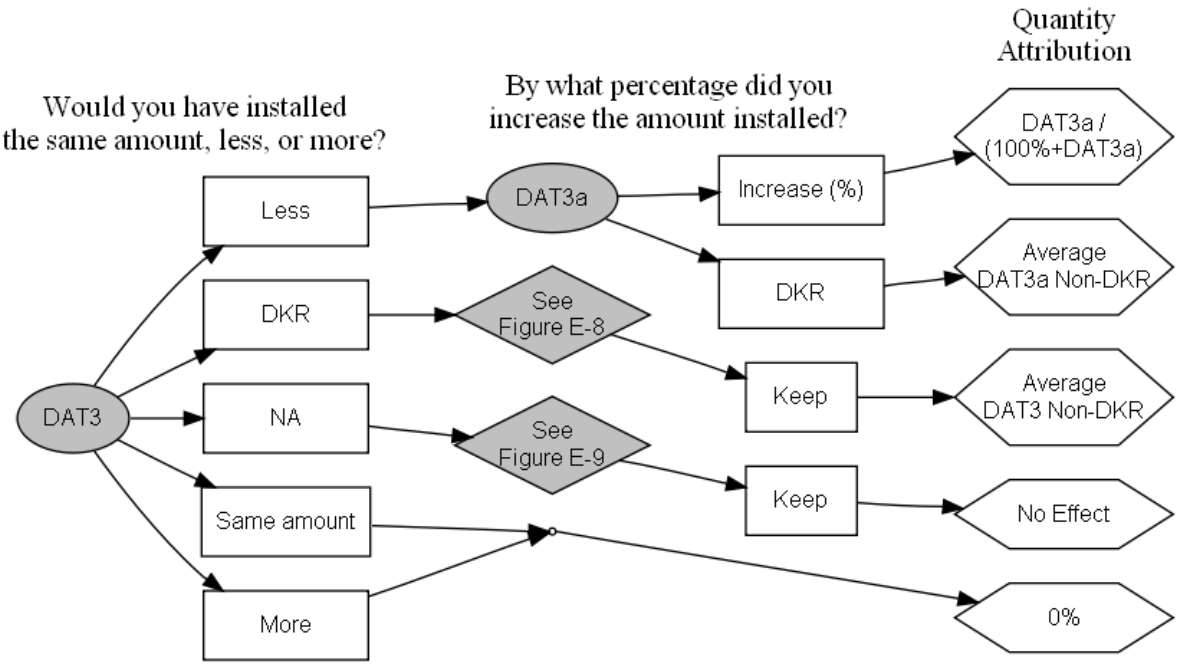
Quantity Attribution, A_Q, gives the program credit for increasing the quantity of a measure above what would have been installed in the absence of the program. The two relevant questions are DAT3 and DAT3a. For round 2, question DAT 3 was changed to allow the customer to respond that they would not have installed anything without Focus. The questions below are from the round 1 survey.

> DAT3: "Without Focus on Energy, how different would the [number/size] of [equipment type] installed have been? Would you say you would have installed the same amount, less, or more?"

DAT3a: "By what percentage did you increase the amount of [equipment type] installed because of the Focus on Energy Program?" (DAT3a is only asked if DAT3 is "Less.")

Figure E-7 shows a decision tree for DAT3 and DAT3a.

Figure E-7. Decision Tree for Quantity Attribution



The program receives Quantity Attribution if the respondent indicates that they would have installed a smaller measure without the influence of Focus. Quantity Attribution is

A_Q = Inc / (Inc + 100%)

where

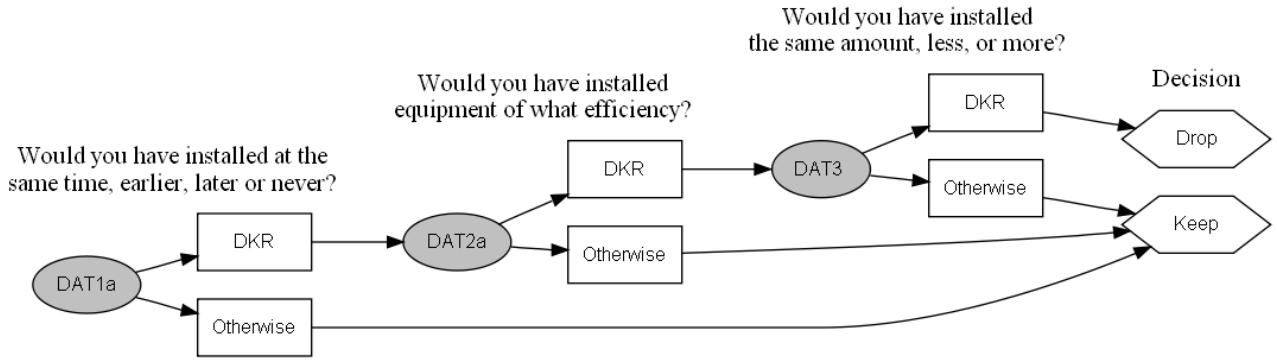
Inc = percent increase in quantity because of Focus.

If the respondent answers DAT3 with Same Amount or More then the survey skips to the next section and there is zero Quantity Attribution. If quantity is not applicable to this measure but efficiency is applicable and the measure would have been installed anyway then the survey skips to the next section and the Quantity Attribution will not affect the Simple Program Attribution. If the respondent answers DAT3 or DAT3a with Don't Know or Refused but does provide answers to inform the Efficiency Attribution and Acceleration Period then the measure is assigned the average Quantity Effect for all measures in the same sector.

e. WHAT IF THEY DON'T KNOW OR REFUSE?

Some respondents are unable or unwilling to answer the relevant questions in the survey attribution sequence. If a participant is unable or unwilling to answer any of the attribution questions then the participant is dropped from the attribution analysis. However, the respondent information will still be included as part of the installation rate (for CATI and engineering respondents) and the VGI (for engineering respondents). Figure E-8 shows a decision tree that indicates the relationship between the question responses and how they affect the attribution. If a measure goes to the "Keep" decision then the ultimate resolution of each effect is shown in Figures E-5, E-6, and E-7.

Figure E-8. NTG Case Retention Decision Tree for Don't Know/Refused

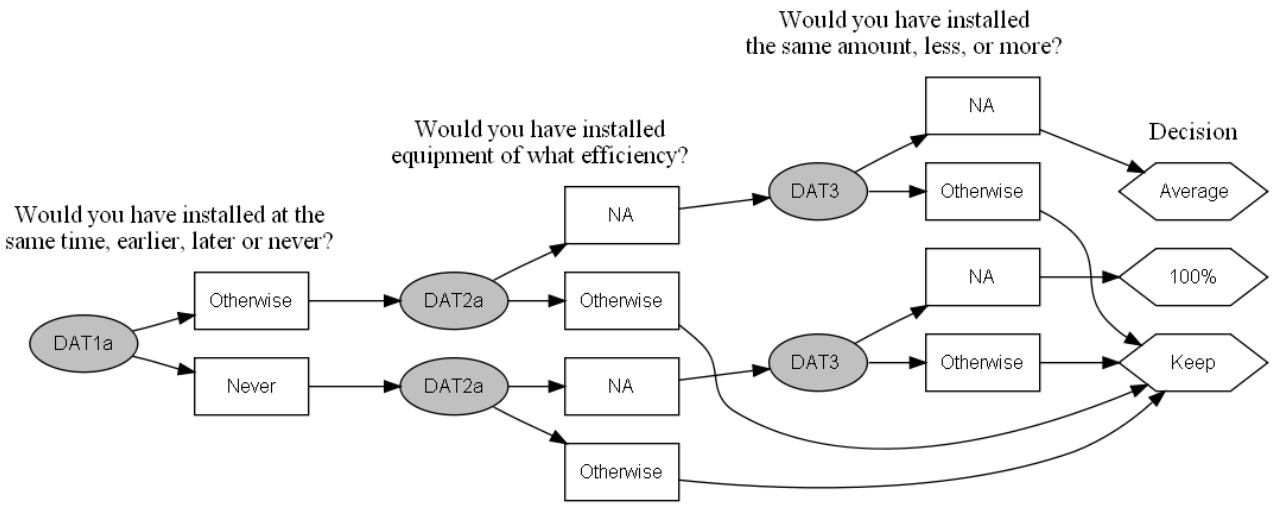


f. WHEN EFFICIENCY AND QUANTITY DON'T APPLY

Quantity and efficiency questions do not apply to all measures. Efficiency questions do not apply if the equipment type is inherently an efficiency improvement; that is, the "standard efficiency" baseline would be not to install anything. Variable frequency drives (VFDs) or heat recovery systems are examples. Quantity questions do not apply when only one unit of the measure is installed through the program. Typical examples are boiler or chiller replacements.

Figure shows a decision tree that indicates the relationship between the question responses and how they affect attribution. If a respondent indicates that a measure would never have been installed without the program and the DAT2a and DAT3 questions do not apply then the attribution is 100%. If the respondent would have installed the project at the same time, earlier, or later and the DAT2a and DAT3 questions do not apply then the measure is assigned the average savings-weighted attribution across all measures in that sector.

Figure E-9. Decision Tree for Not Applicable



E.4 INCORPORATING SUPPLIER EFFECT

KEMA currently has two methods for determining when a supplier survey is necessary to supplement the participant survey. They are:

- **Program attribution assignment:** At the beginning of each Impact Evaluation, we send the Focus on Energy sectors two spreadsheets; one listing each participant in our CATI sample and one listing each participant in the engineering sample. We ask them to identify the program delivery mechanism that most closely matches the interaction they had with each participant. If a certain program delivery mechanism is chosen then we complete a survey with both the supplier and participant for those particular measures.
- **Post-participant engineering survey analysis:** Each survey completed with a participant in our engineering sample is reviewed to determine the effect the supplier had on the participant's decision to install a given measure relative to the program's effect. If a participant indicates that the program did not have an effect on their decision to install high efficiency equipment but the supplier had substantial influence then we will also complete a survey with the supplier.

The current supplier survey follows the same sequence of attribution questions that have been used for participant surveys in the past. In other words, the supplier attribution sequence was not updated to match the engineering survey and CATI surveys for this round of evaluation. We have made this a priority for improvement for the next round of evaluation. However, we can repeat the analysis described above given the answers to select questions in the current supplier survey.

For measures with both participant surveys and supplier surveys the analysis will produce two separate attribution values. The first reflects the influence that Focus on Energy had on the participant's decision to install the measure. The second reflects the influence that Focus on Energy had on the vendor's business practices and therefore their ability to sell the measure.

We choose the higher of the two values as the final program attribution for that measure. That is, if either the supplier or the customer indicates that Focus influenced the decision to install the measure, we conclude that Focus influenced the decision.

There are some options for dealing with measures that require both effects as part of the analysis but where we have been able to complete only the participant survey or the supplier survey and not both. As part of our review for the next round of evaluation, we will examine those options further and develop a more comprehensive approach to dealing with those particular measures. For this round of evaluation the measures will be dropped from the attribution analysis. If the participant survey is completed then the measure will be included in the installation rate and VGI Savings analysis if applicable.

APPENDIX F: SPILLOVER AND UNTRACKED SAVINGS EFFECTS

Since FY06, the impact results have included participant spillover effects for non-CFLs in the attribution estimates. The *Participant Spillover Savings Study*[52] provides a basis for calculating the non-CFL spillover rate. We calculate this rate as the new savings in the current year per unit of tracked savings in a prior year. This rate represents first-year savings implemented in the current year due to all prior program years. This rate is:

0.08% for kWh

0.11% for kW

0.002% for therms.

Starting in 18MCP, the impact results will also include Untracked Attributable Savings (UAS) in the total net savings for the program. UAS are defined as savings motivated by the program but not included in program tracking data. The *Impact Evaluation of the Education and Training Program*[53] provides the basis for calculating the untracked attributable savings.

The evaluation counted energy savings in the year in which the project was implemented ("first-year savings"). For the one-time projects we counted the first-year savings in that program year because we knew what year the project was completed. To be considered attributable, one-time projects must have been completed in the first four years after the training course.

We assumed that the operation and maintenance (O&M) projects were implemented first in the year after the training because we did not know what year they were first implemented[54]. The E&T impact evaluation made no assumptions about measure life for either the one-time or the O&M projects because we were only measuring first-year savings.

The analysis methodology reported UAS resulting in year X as the result of cumulative influences of E&T Program training in prior years. For example, new project implementation in 2008 due to E&T Program training was the sum of 2004 training influence on adoption four years out, 2005 training influence on adoption three years, 2006 training influence on adoption two years out, and 2007 training influence on adoption one year. This savings estimation approach is analogous to counting tracked energy savings implemented in the current year that were the result of multiple years of the program working with the customer on a project.

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[52] *Business Programs: Participant Spillover Savings Study*, State of Wisconsin, Department of Administration, December 22, 2005.

[53] *Impact Evaluation of Education and Training Program*" Wisconsin Public Service Commission, Draft Report October 15, 2008.

[54] An alternative approach would have been to assume that the O&M projects were initiated at lags varying from 1 to 4 years after training. Using this approach, we would have the same total (first-year) O&M savings as the adopted approach, but it would simply be spread out over four years.

Table F-1 shows Untracked Attributable Savings (UAS) for year 2008 by project type (one-time vs. O&M projects) and savings type.

Table F-1. Untracked Attributable Savings (UAS)[55] for 2008 by Project Type and Savings Type

Project Type	Savings Type	2008
One-Time	kWh	6,149,181
One-Time	kW	751
One-Time	therms	3,268,883
O&M	kWh	2,799,165
O&M	kW	1,695
O&M	therms	549,388
All	**kWh**	**8,948,346**
All	**kW**	**2,447**
All	**therms**	**3,818,271**

[55] The UAS are from a draft report and therefore are subject to change. The final E&T UAS will be included in the final impact evaluation report.

APPENDIX G: RATIO EXPANSION—SAMPLE TO POPULATION RESULTS

This appendix provides the ratio estimation computation KEMA employed to develop estimates of evaluation verified gross and net impacts; followed by an example of this technique in action.

G.1 RATIO ESTIMATION

KEMA used the statistical procedure of ratio estimation to develop estimates of evaluation verified gross and net impacts. There are two basic steps in the process. The first step is to verify energy savings in a sample of participating customers. KEMA accomplished this first step via engineering reviews, customer interviews, supplier interviews, and on-site visits. The second step is to expand the sample results to the population of customers. This is accomplished by calculating the ratios of verified-to-reported and attributable-to-verified for the sample[56]. The ratios are also referred to in this analysis as adjustment factors. The adjustment factors estimated from the data collection and analysis include:

- **Gross savings adjustment factor:** This factor combines the installation rate and the engineering verification factor. It corresponds to the ratio of the verified gross savings to the tracking estimate of savings.
- **Attribution factors:** This factor adjusts verified gross savings for program attribution. It is the estimated proportion of verified gross savings attributable to the Focus Business Programs. It corresponds to the ratio of net savings to verified gross savings.
- **Realization rate:** This factor combines the gross savings adjustment factor and the attribution factor. It corresponds to the ratio of the net savings to the tracking estimate of savings.

G.1.1 Expansion of sample results to the population via ratio analysis

The calculation of the adjustment factors for tracking system gross and net savings uses appropriate weights corresponding to the sampling rate. The three primary adjustment factors are the installation rate, the engineering verification factor, and the attribution factor. Each of these is calculated as a ratio estimator over the sample of interest (Cochran, 1977, p.165). The formulas for these factors are given below.

Notation: The following terms are used in calculating the adjustment factors:

G_{Tj} = tracking estimate of gross savings for project *j*

G_{Ij} = tracking estimate of gross savings for project *j*, adjusted for non-installation

G_{Vj} = verified gross savings for project *j* based on engineering review

[56] The results of the *Participant Spillover Savings Study* (December 22, 2005) are added to the ratios prior to application to the population. Untracked attributable savings resulting from the Impact Evaluation of the Education and Training Program are then added to the population net savings. Unlike the added spillover savings, the untracked attributable savings resulting from the Impact Evaluation of the Education and Training Program are not included in the adjustment factors.

N_{Cj} = net savings determined from the CATI survey.

N_{Vj} = net savings determined from the engineering survey.

w_{Ej} = weighting factor for project *j* used to expand the engineering sample to the full population

w_{Aj} = weighting factor for project j used to expand the combined engineering and CATI sample to the full population

E denotes the engineering sample

C denotes the CATI sample

A denotes the combined engineering and CATI samples.

G.1.2 Installation rate

The installation rate R_I is calculated using the combined engineering and CATI samples as

$$R_I = \frac{\sum_{j \varepsilon A} G_{Ij} w_{Aj}}{\sum_{j \varepsilon A} G_{Tj} w_{Aj}}.$$

G.1.3 Engineering verification factor

The engineering verification factor R_V is calculated from the engineering sample only as

$$R_v = \frac{\sum_{j \varepsilon E} G_{Vj} w_{Ej}}{\sum_{j \varepsilon E} G_{Ij} w_{Ej}}.$$

G.1.4 Attribution factor

The attribution factor R_{FR} uses data from both the engineering and CATI samples:

$$R_{FR} = \frac{\sum_{j \varepsilon E} N_{Vj} w_{Aj} + \sum_{j \varepsilon C} N_{Cj} w_{Aj}}{\sum_{j \varepsilon E} G_{Vj} w_{Aj} + \sum_{j \varepsilon C} G_{Cj} w_{Aj}}.$$

G.1.5 Standard errors

The ratio estimator is calculated using a SAS® macro provided by SAS for ratio estimation by domains. The procedure also returns the standard error of the estimate. The standard error is calculated using two methods.

The first method recognizes the sample as drawn from a finite population: the projects completed within the analysis period with associated energy impacts in the program-tracking database. This calculation uses the Finite Population Correction (FPC) factor. This factor is a reduction to the calculated variance that accounts for the fact that a relatively large fraction of

the population of interest has been observed directly and is not subject to uncertainty. It is appropriate to apply precision statistics, such as confidence intervals, based on the standard error calculated in this manner when quantifying the results of the program during the study period only.

The second calculation treats the population of interest as essentially infinite. Thus, the projects completed to date and the sample selected from them is regarded as random instances of a virtually infinite number of projects that could have been completed under the program. In this case, the FPC is not included. It is appropriate to apply standard errors calculated in this manner when applying the verification factors developed from this study to tracked savings from other years to estimate verified savings in those years.

G.1.6 Gross verification factor and overall realization rate

The gross verification factor is the ratio of verified gross to tracking estimate of gross savings. This factor is calculated by chaining together the installation rate, based on the combined Engineering and CATI samples, and the engineering verification factor, which uses only the Engineering sample:

$$R_G = R_I R_V = \left[\frac{\sum_{j\epsilon A} G_{Ij} w_{Aj}}{\sum_{j\epsilon A} G_{Tj} w_A}\right]\left[\frac{\sum_{j\epsilon E} G_{Vj} w_{Ej}}{\sum_{j\epsilon E} G_{Ij} w_{Ej}}\right].$$

This is an example of a chained ratio estimator using a nested sample. The standard error for the chained ratio is approximated by the formula

$$\mathrm{SE(AB)} \simeq \mathrm{AB}\sqrt{\left[\left(\frac{\mathrm{SE(A)}}{\mathrm{A}}\right)^2 + \left(\frac{\mathrm{SE(B)}}{\mathrm{B}}\right)^2\right]}.$$

(This formula overstates the standard error, because it ignores the correlation between the numerator of R_I and the denominator of R_V, which reduces the variance of the product.)

Likewise, the overall realization rate is calculated by chaining together the gross verification factor with the attribution factor. The same approximation formula allows (an over-estimate of) the standard error of the realization rate to be calculated from the two separate standard errors.

G.2 Example

This section provides an example of the ratio estimation procedure. The results in this section do not represent actual measures but are for explanatory purposes only.

The installed savings, verified gross savings, and attributable savings are each calculated at the measure level and then summed to the customer level for each customer in the sample that completed a survey. The sample weights are applied to the customer level savings because “customer” is the unit of analysis, defined as a unique Company ID. Table G-1 shows the reported, installed, and verified savings for the four measures reported in the program tracking database for Example Customer A, an engineering sample participant

Table G-1. Example Customer A in Engineering Sample

Measures	Reported kWh	Reported kW	Reported Therms	Installed kWh	Installed kW	Installed Therms	Verified Gross kWh	Verified Gross kW	Verified Gross Therms
HID to T8	25,498	15.8	0	25,498	15.8	0	37,894	17.2	0
Radiant tube inserts	0	0	2,548	0	0	2,548	0	0	1,568
Occupancy Sensors	15,789	0	0	15,789	0	0	10,598	5.6	0
Heat Recovery	0	0	14,895	0	0	14,895	0	0	14,895
Total	**41,287**	**16**	**17,443**	**41,287**	**16**	**17,443**	**48,492**	**23**	**16,463**

In this example, KEMA engineers confirmed that this customer installed all of the measures that were reported by the program. Therefore, installed savings are equal to the reported savings. If a measure was initially reported as not installed, a second KEMA engineer would contact the customer to verify this result. The engineering review produced adjustments to the installed savings for the first three of Customer A's reported measures, resulting in differences between the installed savings and the verified gross savings for those measures.

The attribution rate is calculated for each measure using the customer and supplier survey, if applicable, for Example Customer A using the methods outlined in Appendix E. The measure level attribution rates are then applied to the measure level verified gross savings to estimate measure level net savings. Example Customer A received 75 percent attribution for the two lighting measures, 25 percent attribution for the radiant tube inserts, and 100 percent attribution for the heat recovery measure. Table G-2 shows the verified gross and net savings for Example Customer A.

Table G-2. Example Customer A Net Savings

Measures	Verified Gross kWh	Verified Gross kW	Verified Gross Therms	Net kWh	Net kW	Net Therms
HID to T8	37,894	17.2	0	28,421	12.9	0
Radiant tube inserts	0	0	1,568	0	0	392
Occupancy Sensors	10,598	5.6	0	7,949	4.2	0
Heat Recovery	0	0	14,895	0	0	14,895
Total	**48,492**	**23**	**16,463**	**36,369**	**17**	**15,287**

The reported, installed, verified gross, and net savings for Example Customer A measures are summed to produce the total customer level savings for Example Customer A. Similar estimates are created for each customer in the sample. For this example we assume Example Customer A, C, X, M, and L comprise the Commercial Sector sample. Table G-3 shows the unweighted customer and commercial sector savings results.

Table G-3. Example Commercial Sector Customer-Level Sample

Customer	Reported kWh	Reported kW	Reported Therms	Installed kWh	Installed kW	Installed Therms	Verified Gross kWh	Verified Gross kW	Verified Gross Therms	Net kWh	Net kW	Net Therms
Example Customer A	41,287	15.8	17,443	41,287	15.8	17,443	48,492	22.8	16,463	36,369	17.1	15,287
Example Customer C	489,253	158.2	0	489,253	158.2	0	489,253	158.2	0	489,253	158.2	0
Example Customer X	26,746	1.5	0	26,746	1.5	0	10,254	0.5	0	7,691	0.4	0
Example Customer M	0	0.0	899,721	0	0.0	899,721	0	0.0	758,249	0	0.0	492,862
Example Customer L	125,789	10.7	50,897	125,789	10.7	50,897	105,489	8.2	50,897	15,823	1.2	7,635
Total	**683,075**	**186.2**	**968,061**	**683,075**	**186.2**	**968,061**	**653,488**	**189.7**	**825,609**	**549,136**	**176.9**	**515,783**

Each customer in the sample frame is assigned to a sampling stratum. The classification to sampling stratum is discussed in Section 4.1.3 Sampling. Each customer in the sample is assigned a sampling weight based on the sample design and the number of completed sample points in each stratum. Using our Commercial Sector sample in Table G-3, assume that Example Customers M and L are both in stratum 2 and stratum 2 has 51 customers the sample frame. The sampling weight for Customers M and L is equal to the number of stratum 2 customers in the sample frame divided by the number of stratum 2 customers in the sample, or 51/2 = 25.5. The weighted savings for each customer is equal to the weight times the savings value. Table G-4 shows the weighted savings for each customer in the Example Commercial Sector if we assume the customer weights shown.

Table G-4. Example Commercial Sector Customer-Level Weighted Savings

Customer	Weight	Reported kWh	Reported kW	Reported Therms	Installed kWh	Installed kW	Installed Therms	Verified Gross kWh	Verified Gross kW	Verified Gross Therms	Net kWh	Net kW	Net Therms
Example Customer A	11	454,157	173.8	191,873	454,157	173.8	191,873	533,412	250.8	181,093	400,059	188.1	168,157
Example Customer C	1	489,253	158.2	0	489,253	158.2	0	489,253	158.2	0	489,253	158.2	0
Example Customer X	25.5	682,023	38.3	0	682,023	38.3	0	261,477	12.8	0	196,108	9.6	0
Example Customer M	1	0	0.0	899,721	0	0.0	899,721	0	0.0	758,249	0	0.0	492,862
Example Customer L	11	1,383,679	117.7	559,867	1,383,679	117.7	559,867	1,160,379	90.2	559,867	174,057	13.5	83,980
Total		**3,009,112**	**488.0**	**1,651,461**	**3,009,112**	**488.0**	**1,651,461**	**2,444,521**	**512.0**	**1,499,209**	**1,259,477**	**369.4**	**744,999**

The next step is to determine sector level and program overall adjustment factors. For kWh the Commercial Sector the installation rate, engineering verification factor, and attribution adjustment factor are:

- 3,009,112 installed kWh/3,009,112 reported kWh = 100% installation rate
- 2,444,521 verified gross kWh/3,009,112 installed kWh = 81.2% eng. verification factor
- 1,259,477 net kWh/2,444,521 verified gross kWh = 51.5 % attribution adjustment.

The verified gross savings adjustment factor is the product of the installation rate and the engineering verification factor, or 100 percent times 81.2 percent = 81.2 percent for this example. The realization rate is the product of the verified gross savings adjustment factor and the attribution adjustment, or 81.2 percent times 51.5 percent = 41.8 percent for this example.

The same principle can be applied to each energy unit to get the total Commercial Sector adjustment factors. The same process is also applied to the customers in the other sectors and at the total program level for the overall adjustment factors.

APPENDIX H: FOCUS ON ENERGY DEEMED SAVINGS

The following tables show Focus on Energy deemed savings for all sectors combined and for each of the four Business Program sectors (Industrial, Commercial, Schools and Government, and Agriculture).

It should be noted that Table H-1 and Table H–2 were used for the 18MCP Round 1 evaluation and 18MCP Round 2 measures that were installed before May 1. For 18MCP Round 2 measures installed on or after May 1, see Table H-2 and Table H-3.

Table H-1. Focus on Energy Deemed Savings, All Sectors
Revised October 24, 2007 (Non-Lighting)

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
1.2801.040	1.2801	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 75.0 - 82.5 MBh	0	0	257
1.2802.040	1.2802	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 82.6 - 90.8 MBh	0	0	283
1.2803.040	1.2803	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 90.9 - 99.8 MBh	0	0	311
1.2804.040	1.2804	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 99.9 - 109.8 MBh	0	0	343
1.2805.040	1.2805	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 109.9 - 120.7 MBh	0	0	377
1.2806.040	1.2806	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 120.8 - 132.8 MBh	0	0	414
1.2807.040	1.2807	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 132.9 - 146.1 MBh	0	0	456
1.2808.040	1.2808	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 146.2 - 160.7 MBh	0	0	501
1.2809.040	1.2809	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 160.8 - 176.8 MBh	0	0	551
1.2810.040	1.2810	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 176.9 - 194.5 MBh	0	0	606
1.2811.040	1.2811	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 194.6 -213.9 MBh	0	0	667
1.2812.040	1.2812	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 214.0 - 235.3 MBh	0	0	734
1.2813.040	1.2813	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 235.4 - 258.9 MBh	0	0	807
1.2814.040	1.2814	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 259.0 - 284.8 MBh	0	0	888
1.2815.040	1.2815	Boilers & Burners	Boiler	High Efficiency Modulating Hot Water Boiler (effic> = 90.0%) 284.9 - 300.0 MBh	0	0	955

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
4.1	4.1000	Boilers & Burners	Steam Trap	Steam Trap repair and replacement - Schools and Government only	0	0	299
4.3530.365	4.3530	HVAC	Rooftop Unit/Split System AC	A/C Split System < 65 MBh SEER 14	0.481	255	0
4.3540.365	4.3540	HVAC	Rooftop Unit/Split System AC	A/C Split System < 65 MBh SEER 15	0.709	387	0
4.3550.365	4.3550	HVAC	Rooftop Unit/Split System AC	A/C Split System < 65 MBh SEER 16 or greater	0.909	502	0
4.3600.365	4.3600	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.0	0.288/ton	166/ton	0
4.3601.365	4.3601	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.1	0.298/ton	172/ton	0
4.3602.365	4.3602	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.2	0.308/ton	178/ton	0
4.3603.365	4.3603	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.3	0.317/ton	183/ton	0
4.3604.365	4.3604	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.4	0.327/ton	188/ton	0
4.3605.365	4.3605	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.5	0.336/ton	194/ton	0
4.3606.365	4.3606	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.6	0.345/ton	199/ton	0
4.3607.365	4.3607	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.7	0.354/ton	204/ton	0
4.3608.365	4.3608	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.8	0.362/ton	209/ton	0
4.3609.365	4.3609	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 11.9	0.371/ton	214/ton	0
4.3610.365	4.3610	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.0	0.379/ton	219/ton	0
4.3611.365	4.3611	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.1	0.388/ton	224/ton	0
4.3612.365	4.3612	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.2	0.396/ton	228/ton	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
4.3613.365	4.3613	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.3	0.404/ton	233/ton	0
4.3614.365	4.3614	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.4	0.412/ton	237/ton	0
4.3615.365	4.3615	HVAC	Rooftop Unit/Split System AC	A/C, ≥65 and <135 MBh, EER = 12.5	0.419/ton	242/ton	0
4.3700.365	4.3700	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 10.8	0.335/ton	193/ton	0
4.3701.365	4.3701	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 10.9	0.345/ton	199/ton	0
4.3702.365	4.3702	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.0	0.355/ton	205/ton	0
4.3703.365	4.3703	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.1	0.365/ton	210/ton	0
4.3704.365	4.3704	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.2	0.374/ton	216/ton	0
4.3705.365	4.3705	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.3	0.384/ton	221/ton	0
4.3706.365	4.3706	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.4	0.393/ton	227/ton	0
4.3707.365	4.3707	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.5	0.402/ton	232/ton	0
4.3708.365	4.3708	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.6	0.411/ton	237/ton	0
4.3709.365	4.3709	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.7	0.420/ton	242/ton	0
4.3710.365	4.3710	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.8	0.429/ton	247/ton	0
4.3711.365	4.3711	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 11.9	0.437/ton	252/ton	0
4.3712.365	4.3712	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 12.0	0.446/ton	257/ton	0
4.3713.365	4.3713	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 12.1	0.454/ton	262/ton	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
4.3714.365	4.3714	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 12.2	0.462/ton	267/ton	0
4.3715.365	4.3715	HVAC	Rooftop Unit/Split System AC	A/C, ≥135 and <240 MBh, EER = 12.3	0.470/ton	271/ton	0
4.3750.365	4.3750	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.0	0.246/ton	142/ton	0
4.3751.365	4.3751	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.1	0.258/ton	149/ton	0
4.3752.365	4.3752	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.2	0.269/ton	155/ton	0
4.3753.365	4.3753	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.3	0.281/ton	162/ton	0
4.3754.365	4.3754	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.4	0.292/ton	168/ton	0
4.3755.365	4.3755	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.5	0.303/ton	175/ton	0
4.3756.365	4.3756	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.6	0.314/ton	181/ton	0
4.3757.365	4.3757	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.7	0.324/ton	187/ton	0
4.3758.365	4.3758	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.8	0.335/ton	193/ton	0
4.3759.365	4.3759	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 10.9	0.345/ton	199/ton	0
4.3760.365	4.3760	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.0	0.355/ton	205/ton	0
4.3761.365	4.3761	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.1	0.365/ton	210/ton	0
4.3762.365	4.3762	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.2	0.374/ton	216/ton	0
4.3763.365	4.3763	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.3	0.384/ton	221/ton	0
4.3764.365	4.3764	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.4	0.393/ton	227/ton	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
4.3765.365	4.3765	HVAC	Rooftop Unit/Split System AC	A/C, ≥240 and ≤300 MBh, EER = 11.5	0.402/ton	232/ton	0
4.3800.295	4.3800	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, SEER >= 13.0 or EER >= 11.3	0.12	31	0
4.5000.085	4.5000	HVAC	Controls	Guest Room Energy Management Controls - Electric heat PTAC systems only	0.1	1507	0
6.1001.315	6.1001	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Natural Gas, commercial application	0	0	42
6.1002.315	6.1002	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Electric, commercial application	0.218	957	0
n/a	8.0700	Plug Loads	Controls	Install VendingMiser® controller on beverage vending machines to reduce run times during unoccupied periods	0	1525	0
14.1100.180	14.1100	Food Service	Fryer	Fryer, Electric, ENERGY STAR	0.2	983	0
14.1200.180	14.1200	Food Service	Fryer	Fryer, Gas, ENERGY STAR	0	0	396
14.1301.180	14.1301	Food Service	Fryer	Fryer, Large Vat, Electric, High Efficiency	0.4	1789	0
14.1302.180	14.1302	Food Service	Fryer	Fryer, Large Vat, Gas, High Efficiency	0	0	577
14.2103.395	14.2103	Food Service	Steamer	Steamer, Electric, 3 pan - ENERGY STAR	2.5	11188	0
14.2104.395	14.2104	Food Service	Steamer	Steamer, Electric, 4 pan - ENERGY STAR	2.5	12459	0
14.2105.395	14.2105	Food Service	Steamer	Steamer, Electric, 5 pan - ENERGY STAR	2.5	13831	0
14.2106.395	14.2106	Food Service	Steamer	Steamer, Electric, 6 pan - ENERGY STAR	2.5	15170	0
14.2206.395	14.2206	Food Service	Steamer	Steamer, Gas, 6 pan - ENERGY STAR	0	0	2084
14.3000.225	14.3000	Food Service	Hot Holding Cabinet	Hot Food Holding Cabinet - ENERGY STAR	0.6375	4654	0
14.3101.290	14.3101	Food Service	Oven	Oven, Convection, Electric, High Efficiency	0.2	2262	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
14.3102.290	14.3102	Food Service	Oven	Oven, Convection, Gas, High Efficiency	0	0	323
14.3112.290	14.3112	Food Service	Oven	Oven, Rack Type, Gas, Single Compartment, High Efficiency	0	0	1034
14.3122.290	14.3122	Food Service	Oven	Oven, Rack Type, Gas, Double Compartment, High Efficiency	0	0	2113
14.3131.290	14.3131	Food Service	Oven	Oven, Combination Type, Electric, High Efficiency	4.2	18432	0
14.3132.290	14.3132	Food Service	Oven	Oven, Combination Type, Gas, High Efficiency	0	0	403
14.3501.210	14.3501	Food Service	Griddle	Griddle, Electric, High Efficiency	0.4	1637	0
14.3502.210	14.3502	Food Service	Griddle	Griddle, Gas, High Efficiency	0	0	88
14.4110.340	14.4110	Food Service	Refrigerator/Freezer, Commercial	Refrigerator, < 20 cu ft, ENERGY STAR	0.017	101	0
14.4120.340	14.4120	Food Service	Refrigerator/Freezer, Commercial	Refrigerator, 20-48 cu ft, ENERGY STAR	0.017	101	0
14.4130.340	14.4130	Food Service	Refrigerator/Freezer, Commercial	Refrigerator, > 48 cu ft, ENERGY STAR	0.005/cu ft	31/cu ft	0
14.4210.340	14.4210	Food Service	Refrigerator/Freezer, Commercial	Freezer, < 20 cu ft, ENERGY STAR	0.024	146	0
14.4220.340	14.4220	Food Service	Refrigerator/Freezer, Commercial	Freezer, 20-48 cu ft, ENERGY STAR	0.024	146	0
14.4230.340	14.4230	Food Service	Refrigerator/Freezer, Commercial	Freezer, > 48 cu ft, ENERGY STAR	0.005 /cu ft	31 /cu ft	0
14.5100.235	14.5100	Food Service	Ice Machine	Ice Machines, < 500 lbs, High Efficiency	0.32	1200	0
14.5200.235	14.5200	Food Service	Ice Machine	Ice Machines, 500-1000 lbs, High Efficiency	0.48	1750	0
14.5300.235	14.5300	Food Service	Ice Machine	Ice Machines, > 1000 lbs, High Efficiency	1.28	4870	0
17.0500.465	8.0500	Plug Loads	Vending Machine	Vending Machine, Cold Beverage - ENERGY STAR	0.36	2161.53	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
17.0520.085	8.0520	Plug Loads	Controls	Snack Machine - Install VendingMiser® Controller	0	343	0
		Motors	Motor	Motor NEMA premium efficiency 1 hp, 1200 RPM, ODP & TEFC	0.01752 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 1.5 hp, 1200 RPM, ODP & TEFC	0.01414 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 2 hp, 1200 RPM, ODP & TEFC	0.01222 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 3 hp, 1200 RPM, ODP & TEFC	0.01195 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 5 hp, 1200 RPM, ODP & TEFC	0.01181 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 7.5 hp, 1200 RPM, ODP & TEFC	0.00918 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 10 hp, 1200 RPM, ODP & TEFC	0.00845 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 15 hp, 1200 RPM, ODP & TEFC	0.00839 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 20 hp, 1200 RPM, ODP & TEFC	0.00804 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 25 hp, 1200 RPM, ODP & TEFC	0.00705 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 30 hp, 1200 RPM, ODP & TEFC	0.00673 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 40 hp, 1200 RPM, ODP & TEFC	0.00581 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 50 hp, 1200 RPM, ODP & TEFC	0.00581 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 60 hp, 1200 RPM, ODP & TEFC	0.00471 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 75 hp, 1200 RPM, ODP & TEFC	0.00471 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 100 hp, 1200 RPM, ODP & TEFC	0.00466 kW/hp	kW x hr/year	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
		Motors	Motor	Motor NEMA premium efficiency 125 hp, 1200 RPM, ODP & TEFC	0.00466 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 150 hp, 1200 RPM, ODP & TEFC	0.00434 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 200 hp, 1200 RPM, ODP & TEFC	0.00434 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 1 hp, 1800 RPM, ODP & TEFC	0.01967 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 1.5 hp, 1800 RPM, ODP & TEFC	0.01591 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 2 hp, 1800 RPM, ODP & TEFC	0.01591 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 3 hp, 1800 RPM, ODP & TEFC	0.01487 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 5 hp, 1800 RPM, ODP & TEFC	0.01181 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 7.5 hp, 1800 RPM, ODP & TEFC	0.01338 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 10 hp, 1800 RPM, ODP & TEFC	0.01240 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 15 hp, 1800 RPM, ODP & TEFC	0.00932 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 20 hp, 1800 RPM, ODP & TEFC	0.01093 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 25 hp, 1800 RPM, ODP & TEFC	0.00833 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 30 hp, 1800 RPM, ODP & TEFC	0.00773 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 40 hp, 1800 RPM, ODP & TEFC	0.00581 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 50 hp, 1800 RPM, ODP & TEFC	0.00789 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 60 hp, 1800 RPM, ODP & TEFC	0.00728 kW/hp	kW x hr/year	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
		Motors	Motor	Motor NEMA premium efficiency 75 hp, 1800 RPM, ODP & TEFC	0.00568 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 100 hp, 1800 RPM, ODP & TEFC	0.00566 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 125 hp, 1800 RPM, ODP & TEFC	0.00462 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 150 hp, 1800 RPM, ODP & TEFC	0.00407 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 200 hp, 1800 RPM, ODP & TEFC	0.00507 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 1 hp, 3600 RPM, ODP & TEFC	0.00597 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 1.5 hp, 3600 RPM, ODP & TEFC	0.01001 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 2 hp, 3600 RPM, ODP & TEFC	0.00966 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 3 hp, 3600 RPM, ODP & TEFC	0.00796 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 5 hp, 3600 RPM, ODP & TEFC	0.00611 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 7.5 hp, 3600 RPM, ODP & TEFC	0.00591 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 10 hp, 3600 RPM, ODP & TEFC	0.00492 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 15 hp, 3600 RPM, ODP & TEFC	0.00426 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 20 hp, 3600 RPM, ODP & TEFC	0.00451 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 25 hp, 3600 RPM, ODP & TEFC	0.00388 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 30 hp, 3600 RPM, ODP & TEFC	0.00388 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 40 hp, 3600 RPM, ODP & TEFC	0.00382 kW/hp	kW x hr/year	0

					All Sectors		
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed Therms**
		Motors	Motor	Motor NEMA premium efficiency 50 hp, 3600 RPM, ODP & TEFC	0.00323 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 60 hp, 3600 RPM, ODP & TEFC	0.00319 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 75 hp, 3600 RPM, ODP & TEFC	0.00319 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 100 hp, 3600 RPM, ODP & TEFC	0.00291 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 125 hp, 3600 RPM, ODP & TEFC	0.00260 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 150 hp, 3600 RPM, ODP & TEFC	0.00260 kW/hp	kW x hr/year	0
		Motors	Motor	Motor NEMA premium efficiency 200 hp, 3600 RPM, ODP & TEFC	0.00231 kW/hp	kW x hr/year	0

Table H-2. Focus on Energy Demand Savings by Business Program Sector
Revised October 24, 2007 (Lighting)

					Industrial		Commercial		Schools & Gov't		Agriculture	
WISeerts Tech Code	WATTS Tech Code	Group Description	Category Description	Measure Description	Deemed kW	Deemed kWh	Deemed kW	Deemed kWh	Deemed kW	Deemed kWh	Deemed kW	Deemed kWh
2.0200.260	2.0200	Lighting	Light Emitting Diode (LED)	LED Exit Lighting - for specially targeted early replacement only	0.0341	298	0.0341	298	0.0341	298	0.0341	298
2.0300.165	2.0300	Lighting	Fluorescent, Compact (CFL)	CFL <= 30 Watts, replacing incandescent	0.048	323	0.050	175	0.0380	161	0.051	199
2.0301.165	2.0301	Lighting	Fluorescent, Compact (CFL)	CFL High Wattage 31-115 Watts, replacing incandescent	0.1215	618	0.1215	497	0.0959	432	0.1215	590
2.0302.165	2.0302	Lighting	Fluorescent, Compact (CFL)	CFL High Wattage 116-149 Watts, replacing metal halide	0.090	458	0.090	368	0.071	320	0.090	437
2.0303.165	2.0303	Lighting	Fluorescent, Compact (CFL)	CFL High Wattage 150-199 Watts, replacing metal halide	0.131	664	0.131	534	0.103	464	0.131	633
2.0305.060	2.0305	Lighting	Cold Cathode	CFL Cold Cathode Screw-In, replacing incandescent	0.019	96	0.019	77	0.015	67	0.019	92
2.0310.165	2.0310	Lighting	Fluorescent, Compact (CFL)	CFL Direct Install, replacing incandescent, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
n/a	2.0320	Lighting	Fluorescent, Compact (CFL)	Replace incandescent lamps with 14 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199

					Industrial		Commercial		Schools & Gov't		Agriculture	
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**
n/a	2.0330	Lighting	Fluorescent, Compact (CFL)	Replace incandescent lamps with 20 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
n/a	2.0340	Lighting	Fluorescent, Compact (CFL)	Replace incandescent lamps with 14 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
n/a	2.0350	Lighting	Fluorescent, Compact (CFL)	Replace incandescent lamps with 20 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
n/a	2.0360	Lighting	Fluorescent, Compact (CFL)	Replace incandescent lamps with 23 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
n/a	2.0370	Lighting	Fluorescent, Compact (CFL)	Replace incandescent spotlight lamps with 16 Watt spotlight compact fluorescent lamps, WPS Hometown Checkup	0.0480	323	0.0500	175	0.0380	161	0.0510	199
2.0400.165	2.0400	Lighting	Fluorescent, Compact (CFL)	CFL Fixture, replacing incandescent fixture	0.072	488	0.050	175	0.038	161	0.051	199
2.0505.085	2.0505	Lighting	Controls	Occupancy Sensors - Wall Mount <= 200 Watts	0.000	281	0.000	226	0.000	197	0.000	269

					Industrial		Commercial		Schools & Gov't		Agriculture	
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**
2.0506.085	2.0506	Lighting	Controls	Occupancy Sensors - Wall Mount >= 201 Watts	0.000	657	0.000	528	0.000	459	0.000	627
2.0507.085	2.0507	Lighting	Controls	Occupancy Sensors - Ceiling Mount <= 500 Watts	0.000	657	0.000	528	0.000	459	0.000	627
2.0508.085	2.0508	Lighting	Controls	Occupancy Sensors - Ceiling Mount 501-1000 Watts	0.000	1407	0.000	1132	0.000	984	0.000	1343
2.0509.085	2.0509	Lighting	Controls	Occupancy Sensors - Ceiling Mount >= 1001 Watts	0.000	2251	0.000	1811	0.000	1574	0.000	2149
2.0811.170	2.0811	Lighting	Fluorescent, Linear	T8 4L-4ft High Performance Replacing T12HO/VHO 2L-8 ft	0.1008	513	0.101	412	0.080	358	0.101	489
2.0821.170	2.0821	Lighting	Fluorescent, Linear	T8 1L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0144	73	0.014	59	0.011	51	0.014	70
2.0822.170	2.0822	Lighting	Fluorescent, Linear	T8 2L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0236	120	0.024	96	0.019	84	0.024	114
2.0823.170	2.0823	Lighting	Fluorescent, Linear	T8 3L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0405	206	0.040	165	0.032	144	0.040	196
2.0824.170	2.0824	Lighting	Fluorescent, Linear	T8 4L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0485	247	0.049	198	0.038	172	0.049	235
2.0831.170	2.0831	Lighting	Fluorescent, Linear	T8 1L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0132	67	0.013	54	0.010	47	0.013	64
2.0832.170	2.0832	Lighting	Fluorescent, Linear	T8 2L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0182	93	0.018	74	0.014	65	0.018	88
2.0833.170	2.0833	Lighting	Fluorescent, Linear	T8 3L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0327	166	0.033	134	0.026	116	0.033	159

					Industrial		Commercial		Schools & Gov't		Agriculture	
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**
2.0834.170	2.0834	Lighting	Fluorescent, Linear	T8 4L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0376	191	0.038	154	0.030	134	0.038	183
2.0841.170	2.0841	Lighting	Fluorescent, Linear	T8 1L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0107	54	0.011	44	0.008	38	0.011	52
2.0842.170	2.0842	Lighting	Fluorescent, Linear	T8 2L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0172	87	0.017	70	0.014	61	0.017	83
2.0843.170	2.0843	Lighting	Fluorescent, Linear	T8 3L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0308	156	0.031	126	0.024	109	0.031	149
2.0844.170	2.0844	Lighting	Fluorescent, Linear	T8 4L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0358	182	0.036	146	0.028	127	0.036	174
2.0851.170	2.0851	Lighting	Fluorescent, Linear	T8 Low Watt Relamp - 25 Watts	0.0079	40	0.008	32	0.006	28	0.008	38
2.0852.170	2.0852	Lighting	Fluorescent, Linear	T8 Low Watt Relamp - 28 Watts	0.0059	30	0.006	24	0.005	21	0.006	29
2.0853.170	2.0853	Lighting	Fluorescent, Linear	T8 Low Watt Relamp - 30 Watts	0.0042	22	0.004	17	0.003	15	0.004	21
2.0856.170	2.0856	Lighting	Fluorescent, Linear	T8 Low Watt Relamp 8 ft - 54 Watts	0.005	23	0.005	18	0.004	16	0.005	22
2.0860.170	2.0860	Lighting	Fluorescent, Linear	T8 1L-4 ft Hi Lumen Lamp with Low BF	0.0090	46	0.0090	37	0.0071	32	0.0090	44
2.0870.170	2.0870	Lighting	Fluorescent, Linear	T8 2L-4 ft Hi Lumen Lamp with Low BF	0.0146	74	0.0146	60	0.0115	52	0.0146	71
2.0880.170	2.0880	Lighting	Fluorescent, Linear	T8 3L-4 ft Hi Lumen Lamp with Low BF	0.0272	138	0.0272	111	0.0214	97	0.0272	132
2.0890.170	2.0890	Lighting	Fluorescent, Linear	T8 4L-4 ft Hi Lumen Lamp with Low BF	0.0328	167	0.0328	134	0.0258	116	0.0328	159
2.0895.170	2.0895	Lighting	Fluorescent, Linear	T8 1L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0036	18	0.0036	15	0.0028	13	0.0036	17

					Industrial		Commercial		Schools & Gov't		Agriculture	
WISeerts Tech Code	**WATTS Tech Code**	**Group Description**	**Category Description**	**Measure Description**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**	**Deemed kW**	**Deemed kWh**
2.0896.170	2.0896	Lighting	Fluorescent, Linear	T8 2L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0081	41	0.0081	33	0.0064	29	0.0081	39
2.0897.170	2.0897	Lighting	Fluorescent, Linear	T8 3L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0153	78	0.0153	63	0.0121	54	0.0153	74
2.0898.170	2.0898	Lighting	Fluorescent, Linear	T8 4L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0198	101	0.0198	81	0.0156	70	0.0198	96
2.2110.220	2.2110	Lighting	High Intensity Discharge (HID)	Metal Halide (MH) Ceramic 20-100 Watts - Replaces Incandescent	0.118	597	0.118	480	0.093	418	0.118	570
2.2115.220	2.2115	Lighting	High Intensity Discharge (HID)	Metal Halide (MH) Ceramic 25 Watts - Replaces 75-90 Watts Incandescent	0.052	263	0.052	212	0.041	184	0.052	251
2.2150.220	2.2150	Lighting	High Intensity Discharge (HID)	Metal Halide (MH), Pulse Start, 320W replacing 400W HID	0.085	430	0.085	346	0.067	301	0.085	411
2.3100.260	2.3100	Lighting	Light Emitting Diode (LED)	LED Reach-In Refrigerated Case Lighting replaces T12 or T8	0.038	337	0.038	337	0.038	337	0.038	337
2.5170.170	2.5170	Lighting	Fluorescent, Linear	T8 4 lamp or T5HO 2 lamp Replacing 250-399 W HID	0.134	684	0.134	550	0.106	478	0.134	653
2.5180.170	2.5180	Lighting	Fluorescent, Linear	T8 6 lamp or T5HO 4 lamp Replacing 400-999 W HID	0.212	1078	0.212	867	0.167	754	0.212	1029
2.5182.170	2.5182	Lighting	Fluorescent, Linear	T8 8 lamp or T5HO 6 lamp Replacing 400-999 W HID	0.144	731	0.144	587	0.113	511	0.144	697
2.5185.170	2.5185	Lighting	Fluorescent, Linear	T8/T5HO <= 500 Watts Replacing >=1000 W HID	0.559	2842	0.559	2285	0.441	1987	0.559	2713

Table H-2. Focus on Energy Demand Savings by Business Program Sector
Revised May 28, 2008 (Non-Lighting)

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
1.1300.430	Boilers & Burners	Boiler	Boiler Tune-up - service buy down	0.0000	0	= 0.679 * MBh
1.1412.390	Boilers & Burners	Steam Trap	Repair leaking steam trap, <50 psig steam (Industrial Only)	0.0000	0	196
1.1414.390	Boilers & Burners	Steam Trap	Repair leaking steam trap, 50-125 psig steam (Industrial Only)	0.0000	0	756
1.1416.390	Boilers & Burners	Steam Trap	Repair leaking steam trap, 126-225 psig steam (Industrial Only)	0.0000	0	1084
1.1418.390	Boilers & Burners	Steam Trap	Repair leaking steam trap, >225 psig steam (Industrial Only)	0.0000	0	2075
1.2790.040	Boilers & Burners	Boiler	Boiler, hot water, high efficiency modulating, for space heating (AFUE >= 90%)(<175 MBh)	0.0000	0	= 3.108 * MBh
1.2791.040	Boilers & Burners	Boiler	Boiler, hot water, high efficiency modulating, for space heating (AFUE >= 90%)(175 - 300 MBh)	0.0000	0	= 3.108 * MBh
3.1197.085	Refrigeration	Controls	Anti-sweat heater controls, on freezer case with low-heat door	0.0220	1431	0
3.1198.085	Refrigeration	Controls	Anti-sweat heater controls, on freezer case with no-heat door	0.0090	575	0
3.1199.085	Refrigeration	Controls	Anti-sweat heater controls, on freezer case with standard door	0.0310	2060	0
3.1200.085	Refrigeration	Controls	Anti-sweat heater controls, on refrigerated case with standard door	0.0360	1339	0
3.1201.085	Refrigeration	Controls	Anti-sweat heater controls, on refrigerated case with low-heat or no-heat doors	0.0200	740	0
3.1220.510	Refrigeration	Refrigerated Case Door	Case door, freezer, low heat	0.0870	762	0
3.1221.510	Refrigeration	Refrigerated Case Door	Case door, freezer, no heat	0.2060	1800	0
3.1225.510	Refrigeration	Refrigerated Case Door	Case door, refrigerated, no heat	0.0140	121	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
3.1410.270	Refrigeration	Motor	ECM (electronically commutated) motor replacing shaded-pole motor in refrig/freezer case	0.1030	904	0
3.1420.270	Refrigeration	Motor	PSC (permanent split capacitor) motor replacing shaded-pole motor in refrig/freezer case	0.0820	715	0
4.0736.150	HVAC	Fan	Ventilation Fans, High Efficiency - 36"	0.3221	1094	0
4.0742.150	HVAC	Fan	Ventilation Fans, High Efficiency - 42"	0.3961	1483	0
4.0748.150	HVAC	Fan	Ventilation Fans, High Efficiency - 48"	0.4701	1872	0
4.0750.150	HVAC	Fan	Ventilation Fans, High Efficiency - 50"	0.6638	2553	0
4.0751.150	HVAC	Fan	Ventilation Fans, High Efficiency - 51"	0.6638	2553	0
4.0752.150	HVAC	Fan	Ventilation Fans, High Efficiency - 52"	0.6638	2553	0
4.0754.150	HVAC	Fan	Ventilation Fans, High Efficiency - 54"	0.6638	2553	0
4.0755.150	HVAC	Fan	Ventilation Fans, High Efficiency - 55"	0.6638	2553	0
4.0760.150	HVAC	Fan	Ventilation Fans, High Efficiency - 60"	0.6638	2553	0
4.1000.390	HVAC	Steam Trap	Repair leaking steam trap, building space conditioning system	0.0000	0	718
4.1697.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 54.675 - 60.749 MBh	0.0000	592	182
4.1698.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 60.750 - 67.499 MBh	0.0000	658	203

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.1699.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 67.5 - 74.9 MBh	0.0000	731	225
4.1701.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 75.0 - 82.5 MBh	0.0000	808	249
4.1702.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 82.5 - 90.75 MBh	0.0000	889	274
4.1703.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 90.76 - 99.82 MBh	0.0000	978	301
4.1704.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 99.83 - 109.8 MBh	0.0000	1076	331
4.1705.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 109.9 - 120.7 MBh	0.0000	1184	364
4.1706.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 120.8 - 132.9 MBh	0.0000	1302	401
4.1707.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 133.0 - 146.1 MBh	0.0000	1432	441
4.1708.190	HVAC	Furnace	Furnace, with ECM fan motor, for space heating (AFUE >= 90%), 146.2 - 160.8 MBh	0.0000	1575	485
4.3530.365	HVAC	Rooftop Unit / Split System AC	A/C Split System < 65 MBh SEER 14	0.4810	255	0
4.3540.365	HVAC	Rooftop Unit / Split System AC	A/C Split System < 65 MBh SEER 15	0.7090	387	0
4.3550.365	HVAC	Rooftop Unit / Split System AC	A/C Split System < 65 MBh SEER 16 or greater	0.9090	502	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.3805.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, <8000 Btuh, ≥12.1 EER, Retrofit Application	0.1188	105	0
4.3806.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, <8000 Btuh, ≥12.1 EER, New Construction	0.0478	42	0
4.3810.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, 8000 - 9999 Btuh, ≥11.5 EER, Retrofit Application	0.1052	93	0
4.3811.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, 8000 - 9999 Btuh, ≥11.5 EER, New Construction	0.0549	49	0
4.3815.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, 10000-12999 Btuh, ≥10.9 EER, Retrofit Application	0.2083	185	0
4.3816.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, 10000-12999 Btuh, ≥10.9 EER, New Construction	0.0719	64	0
4.3820.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, ≥13000 Btuh, ≥9.8 EER, Retrofit Application	0.2770	246	0
4.3821.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTAC, ≥13000 Btuh, ≥9.8 EER, New Construction	0.0657	58	0
4.3822.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, <8000 Btuh, ≥12.1 EER, Retrofit Application	0.0710	1652	0
4.3823.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, <8000 Btuh, ≥12.1 EER, New Construction	0.0641	1646	0
4.3824.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, 8000 - 9999 Btuh, ≥11.5 EER, Retrofit Application	0.1307	2098	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.3825.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, 8000 - 9999 Btuh, ≥11.5 EER, New Construction	0.0582	2033	0
4.3826.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, 10000-12999 Btuh, ≥10.9 EER, Retrofit Application	0.2408	2847	0
4.3827.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, 10000-12999 Btuh, ≥10.9 EER, New Construction	0.0989	2722	0
4.3830.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, ≥13000 Btuh, ≥9.8 EER, Retrofit Application	0.2853	3471	0
4.3831.295	HVAC	Packaged Terminal Unit (PTAC, PTHP)	PTHP, ≥13000 Btuh, ≥9.8 EER, New Construction	0.0863	3294	0
4.5000.085	HVAC	Controls	Guest Room Energy Management Controls - Electric heat PTAC systems only	0.1000	1507	0
4.5110.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 11.6	= 0.0220 * Ton	= 16 * Ton	0
4.5111.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 11.7	= 0.029 * Ton	= 21 * Ton	0
4.5112.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 11.8	= 0.036 * Ton	= 26 * Ton	0
4.5113.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 11.9	= 0.0423 * Ton	= 31 * Ton	0
4.5114.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.0	= 0.0496 * Ton	= 36 * Ton	0
4.5115.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.1	= 0.0562 * Ton	= 41 * Ton	0
4.5116.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.2	= 0.0627 * Ton	= 45 * Ton	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.5117.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.3	= 0.0691 * Ton	= 50 * Ton	0
4.5118.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.4	= 0.07534 * Ton	= 54 * Ton	0
4.5119.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.5	= 0.0816 * Ton	= 59 * Ton	0
4.5120.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.6	= 0.0877 * Ton	= 63 * Ton	0
4.5121.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.7	= 0.0937 * Ton	= 68 * Ton	0
4.5122.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.8	= 0.0996 * Ton	= 72 * Ton	0
4.5123.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 12.9	= 0.1054 * Ton	= 76 * Ton	0
4.5124.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 13.0	= 0.1111 * Ton	= 80 * Ton	0
4.5125.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, <65 MBh, EER = 13.1	= 0.1167 * Ton	= 84 * Ton	0
4.5126.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 11.5	= 0.0973 * Ton	= 70 * Ton	0
4.5127.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 11.6	= 0.1045 * Ton	= 75 * Ton	0
4.5128.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 11.7	= 0.1115 * Ton	= 80 * Ton	0
4.5129.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 11.8	= 0.1185 * Ton	= 85 * Ton	0
4.5130.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 11.9	= 0.1253 * Ton	= 90 * Ton	0
4.5131.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.0	= 0.132 * Ton	= 95 * Ton	0
4.5132.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.1	= 0.1387 * Ton	= 100 * Ton	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.5133.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.2	= 0.1452 * Ton	= 105 * Ton	0
4.5134.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.3	= 0.1516 * Ton	= 109 * Ton	0
4.5135.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.4	= 0.1578 * Ton	= 114 * Ton	0
4.5136.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.5	= 0.164 * Ton	= 118 * Ton	0
4.5137.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.6	= 0.1701 * Ton	= 123 * Ton	0
4.5138.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.7	= 0.1761 * Ton	= 127 * Ton	0
4.5139.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.8	= 0.182 * Ton	= 131 * Ton	0
4.5140.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 12.9	= 0.1879 * Ton	= 135 * Ton	0
4.5141.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 13.0	= 0.1936 * Ton	= 140 * Ton	0
4.5142.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 13.1	= 0.1992 * Ton	= 144 * Ton	0
4.5143.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 65 to 134 MBh, EER = 13.2	= 0.2048 * Ton	= 148 * Ton	0
4.5144.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 11.5	= 0.1549 * Ton	= 112 * Ton	0
4.5145.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 11.6	= 0.1621 * Ton	= 117 * Ton	0
4.5146.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 11.7	= 0.1692 * Ton	= 122 * Ton	0
4.5147.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 11.8	= 0.1761 * Ton	= 127 * Ton	0
4.5148.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 11.9	= 0.183 * Ton	= 132 * Ton	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.5149.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.0	= 0.1897 * Ton	= 137 * Ton	0
4.5150.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.1	= 0.1963 * Ton	= 142 * Ton	0
4.5151.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.2	= 0.2028 * Ton	= 146 * Ton	0
4.5152.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.3	= 0.2092 * Ton	= 151 * Ton	0
4.5153.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.4	= 0.2155 * Ton	= 155 * Ton	0
4.5154.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.5	= 0.2217 * Ton	= 160 * Ton	0
4.5155.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.6	= 0.2278 * Ton	= 164 * Ton	0
4.5156.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.7	= 0.2338 * Ton	= 169 * Ton	0
4.5157.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.8	= 0.2397 * Ton	= 173 * Ton	0
4.5158.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 12.9	= 0.2455 * Ton	= 177 * Ton	0
4.5159.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 135 to 239 MBh, EER = 13.0	= 0.2512 * Ton	= 181 * Ton	0
4.5160.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 10.5	= 0.0962 * Ton	= 69 * Ton	0
4.5161.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 10.6	= 0.1049 * Ton	= 76 * Ton	0
4.5162.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 10.7	= 0.1133 * Ton	= 82 * Ton	0
4.5163.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 10.8	= 0.1216 * Ton	= 88 * Ton	0
4.5164.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 10.9	= 0.1298 * Ton	= 94 * Ton	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
4.5165.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.0	= 0.1378 * Ton	= 99 * Ton	0
4.5166.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.1	= 0.1457 * Ton	= 105 * Ton	0
4.5167.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.2	= 0.1534 * Ton	= 111 * Ton	0
4.5168.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.3	= 0.161 * Ton	= 116 * Ton	0
4.5169.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.4	= 0.1684 * Ton	= 121 * Ton	0
4.5170.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.5	= 0.1757 * Ton	= 127 * Ton	0
4.5171.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.6	= 0.1829 * Ton	= 132 * Ton	0
4.5172.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.7	= 0.19 * Ton	= 137 * Ton	0
4.5173.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.8	= 0.197 * Ton	= 142 * Ton	0
4.5174.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 11.9	= 0.2038 * Ton	= 147 * Ton	0
4.5175.365	HVAC	Rooftop Unit / Split System AC	Rooftop A/C, 240 to 759 MBh, EER = 12.0	= 0.2105 * Ton	= 152 * Ton	0
5.2010.360	Process	Specialty Pulp & Paper	Extraction plate for repulper rotor	0.0000	0	0
6.1001.315	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Natural Gas, commercial application	0.0000	0	42
6.1002.315	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Electric, commercial application	0.2180	957	0
6.1007.315	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Natural Gas - direct install	0.0000	0	42
6.1008.315	Domestic Hot Water	Pre-Rinse Sprayer	Pre-Rinse Sprayer, Low Flow, Electric - direct install	0.2180	957	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
14.1100.180	Food Service	Fryer	Fryer, Electric, ENERGY STAR	0.2000	983	0
14.1200.180	Food Service	Fryer	Fryer, Gas, ENERGY STAR	0.0000	0	396
14.1301.180	Food Service	Fryer	Fryer, Large Vat, Electric, High Efficiency	0.4000	1789	0
14.1302.180	Food Service	Fryer	Fryer, Large Vat, Gas, High Efficiency	0.0000	0	577
14.2103.395	Food Service	Steamer	Steamer, Electric, 3 pan - ENERGY STAR	2.5000	11188	0
14.2104.395	Food Service	Steamer	Steamer, Electric, 4 pan - ENERGY STAR	2.5000	12459	0
14.2105.395	Food Service	Steamer	Steamer, Electric, 5 pan - ENERGY STAR	2.5000	13831	0
14.2106.395	Food Service	Steamer	Steamer, Electric, 6 pan - ENERGY STAR	2.5000	15170	0
14.2107.395	Food Service	Steamer	Steamer, Gas, 5 pan - ENERGY STAR	0.0000	0	1900
14.2206.395	Food Service	Steamer	Steamer, Gas, 6 pan - ENERGY STAR	0.0000	0	2084
14.3000.225	Food Service	Hot Holding Cabinet	Hot Food Holding Cabinet - ENERGY STAR	0.6375	4654	0
14.3101.290	Food Service	Oven	Oven, Convection, Electric, High Efficiency	0.2000	2262	0
14.3102.290	Food Service	Oven	Oven, Convection, Gas, High Efficiency	0.0000	0	323
14.3112.290	Food Service	Oven	Oven, Rack Type, Gas, Single Compartment, High Efficiency	0.0000	0	1034
14.3122.290	Food Service	Oven	Oven, Rack Type, Gas, Double Compartment, High Efficiency	0.0000	0	2113
14.3131.290	Food Service	Oven	Oven, Combination Type, Electric, High Efficiency	4.2000	18432	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
14.3132.290	Food Service	Oven	Oven, Combination Type, Gas, High Efficiency	0.0000	0	403
14.3501.210	Food Service	Griddle	Griddle, Electric, High Efficiency	0.4000	1637	0
14.3502.210	Food Service	Griddle	Griddle, Gas, High Efficiency	0.0000	0	88
14.4110.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, < 20 cu ft, ENERGY STAR	0.0430	372	0
14.4120.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, 20-48 cu ft, ENERGY STAR	0.0610	537	0
14.4130.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, > 48 cu ft, ENERGY STAR	0.0960	838	0
14.4135.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, Commercial, CEE Tier 2 efficiency, < 20 cu ft	0.0970	847	0
14.4136.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, Commercial, CEE Tier 2 efficiency, 20-48 cu ft	0.1450	1274	0
14.4137.340	Food Service	Refrigerator / Freezer, Commercial	Refrigerator, Commercial, CEE Tier 2 efficiency, >48 cu ft	0.2350	2057	0
14.4210.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, < 20 cu ft, ENERGY STAR	0.0370	320	0
14.4220.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, 20-48 cu ft, ENERGY STAR	0.0350	307	0
14.4230.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, > 48 cu ft, ENERGY STAR	0.0320	283	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
14.4235.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, Commercial, CEE Tier 2 efficiency, <20 cu ft	0.1140	995	0
14.4236.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, Commercial, CEE Tier 2 efficiency, 20-48 cu ft	0.2020	1770	0
14.4237.340	Food Service	Refrigerator / Freezer, Commercial	Freezer, Commercial, CEE Tier 2 efficiency, >48 cu ft	0.3640	3192	0
14.5100.235	Food Service	Ice Machine	Ice Machines, < 500 lbs, High Efficiency	0.3200	1200	0
14.5200.235	Food Service	Ice Machine	Ice Machines, 500-1000 lbs, High Efficiency	0.4800	1750	0
14.5300.235	Food Service	Ice Machine	Ice Machines, > 1000 lbs, High Efficiency	1.2800	4870	0
14.5400.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Electric Heat, Electric Booster, Door Type	1.5450	13530	0
14.5401.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Electric Heat, Electric Booster, Multi Tank Conveyor	3.7270	32650	0
14.5402.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Electric Heat, Electric Booster, Single Tank Conveyor	2.0320	17800	0
14.5403.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Electric Heat, Electric Booster, Under Counter	0.8150	7140	0
14.5404.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Electric Booster, Door Type	0.5750	5040	334
14.5405.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Electric Booster, Multi Tank Conveyor	1.3550	11870	818

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
14.5406.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Electric Booster, Single Tank Conveyor	0.8170	7160	419
14.5407.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Electric Booster, Under Counter	0.2970	2600	179
14.5408.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Gas Booster, Door Type	0.0220	190	525
14.5409.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Gas Booster, Multi Tank Conveyor	0.0000	0	1285
14.5410.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Gas Booster, Single Tank Conveyor	0.1230	1080	658
14.5411.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, High Temp, Gas Heat, Gas Booster, Under Counter	0.0000	0	281
14.5413.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Electric Heat, Door Type	1.3240	11600	0
14.5414.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Electric Heat, Multi Tank Conveyor	1.9060	16700	0
14.5416.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Electric Heat, Single Tank Conveyor	1.2420	10880	0
14.5417.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Electric Heat, Under Counter	0.1320	1160	0
14.5419.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Gas Heat, Door Type	0.0000	0	457

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
14.5420.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Gas Heat, Multi Tank Conveyor	0.0000	0	657
14.5422.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Gas Heat, Single Tank Conveyor	0.0000	0	428
14.5423.120	Food Service	Dishwasher, Commercial	Dishwasher, ENERGY STAR, Low Temp, Gas Heat, Under Counter	0.0000	0	46
17.0500.465	Plug Loads	Vending Machine	Vending Machine, ENERGY STAR, Cold Beverage, Not Software Activated	0.0000	1754	0
17.0501.465	Plug Loads	Vending Machine	Vending Machine, ENERGY STAR, Cold Beverage, Software Activated	0.0000	2231	0
17.0510.085	Plug Loads	Controls	Vending Machine Controls, on cold beverage machine	0.0000	1525	0
17.0520.085	Plug Loads	Controls	Vending Machine Controls, on snack machine	0.0000	343	0
61.0111.270	Motors	Motor	Motor NEMA premium efficiency 1.0 hp	0.0200	= kw * hr/yr	0
61.0112.270	Motors	Motor	Motor NEMA premium efficiency 1.5 hp	0.0200	= kw * hr/yr	0
61.0113.270	Motors	Motor	Motor NEMA premium efficiency 2.0 hp	0.0300	= kw * hr/yr	0
61.0114.270	Motors	Motor	Motor NEMA premium efficiency 3.0 hp	0.0400	= kw * hr/yr	0
61.0115.270	Motors	Motor	Motor NEMA premium efficiency 5.0 hp	0.0600	= kw * hr/yr	0
61.0116.270	Motors	Motor	Motor NEMA premium efficiency 7.5 hp	0.0900	= kw * hr/yr	0
61.0117.270	Motors	Motor	Motor NEMA premium efficiency 10 hp	0.1100	= kw * hr/yr	0
61.0118.270	Motors	Motor	Motor NEMA premium efficiency 15 hp	0.1200	= kw * hr/yr	0

WISeerts Tech Code	Group Description	Category Description	Measure Description	kW	kWh	Therms
61.0119.270	Motors	Motor	Motor NEMA premium efficiency 20 hp	0.1900	= kw * hr/yr	0
61.0120.270	Motors	Motor	Motor NEMA premium efficiency 25 hp	0.1800	= kw * hr/yr	0
61.0121.270	Motors	Motor	Motor NEMA premium efficiency 30 hp	0.2000	= kw * hr/yr	0
61.0122.270	Motors	Motor	Motor NEMA premium efficiency 40 hp	0.2200	= kw * hr/yr	0
61.0123.270	Motors	Motor	Motor NEMA premium efficiency 50 hp	0.3500	= kw * hr/yr	0
61.0124.270	Motors	Motor	Motor NEMA premium efficiency 60 hp	0.3800	= kw * hr/yr	0
61.0125.270	Motors	Motor	Motor NEMA premium efficiency 75 hp	0.4100	= kw * hr/yr	0
61.0126.270	Motors	Motor	Motor NEMA premium efficiency 100 hp	0.4900	= kw * hr/yr	0
61.0127.270	Motors	Motor	Motor NEMA premium efficiency 125 hp	0.5400	= kw * hr/yr	0
61.0128.270	Motors	Motor	Motor NEMA premium efficiency 150 hp	0.5800	= kw * hr/yr	0
61.0129.270	Motors	Motor	Motor NEMA premium efficiency 200 hp	0.9500	= kw * hr/yr	0

Table H-3. Focus on Energy Demand Savings by Business Program Sector
Revised May 28, 2008 (Lighting)

		Commercial		Industrial		Schools / Gov't		Agriculture	
WISeerts Tech Code	Measure Description	kW	kWh	kW	kWh	kW	kWh	kW	kWh
2.0200.260	LED Exit Lighting - for specially targeted early replacement only	0.0341	298	0.0341	298	0.0341	298	0.0341	298
2.0300.165	CFL <= 30 Watts, replacing incandescent	0.0500	175	0.0480	323	0.0380	161	0.0510	199
2.0301.165	CFL High Wattage 31-115 Watts, replacing incandescent	0.1215	497	0.1215	618	0.0959	432	0.1215	590
2.0302.165	CFL High Wattage 116-149 Watts, replacing metal halide	0.0900	368	0.0900	458	0.0710	320	0.0900	437
2.0303.165	CFL High Wattage 150-199 Watts, replacing metal halide	0.1305	534	0.1305	664	0.1030	464	0.1305	633
2.0305.060	CFL Cold Cathode Screw-In, replacing incandescent	0.0189	77	0.0189	96	0.0149	67	0.0189	92
2.0307.165	CFL reflector flood lamps replacing incandescent reflector flood lamps	0.0495	172	0.0495	336	0.0391	178	0.0495	192
2.0310.165	CFL Direct Install, replacing incandescent, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
2.0400.165	CFL Fixture, replacing incandescent fixture	0.0500	175	0.0720	488	0.0380	161	0.0510	199
2.0505.085	Occupancy Sensors - Wall Mount <= 200 Watts	0.0000	226	0.0000	281	0.0000	197	0.0000	269
2.0506.085	Occupancy Sensors - Wall Mount >= 201 Watts	0.0000	528	0.0000	657	0.0000	459	0.0000	627
2.0507.085	Occupancy Sensors - Ceiling Mount <= 500 Watts	0.0000	528	0.0000	657	0.0000	459	0.0000	627
2.0508.085	Occupancy Sensors - Ceiling Mount 501-1000 Watts	0.0000	1132	0.0000	1407	0.0000	984	0.0000	1343
2.0509.085	Occupancy Sensors - Ceiling Mount >= 1001 Watts	0.0000	1811	0.0000	2251	0.0000	1574	0.0000	2149
2.0515.085	High / low control for 320W PSMH	0.0000	406	0.0000	505	0.0000	253	0.0000	482
2.0810.170	T8 4L-4-4ft High Performance Replacing T12 2L-8 ft	0.0234	96	0.0234	119	0.0185	83	0.0234	114
2.0811.170	T8 4L-4ft High Performance Replacing T12HO/VHO 2L-8 ft	0.1008	412	0.1008	513	0.0795	358	0.1008	489
2.0821.170	T8 1L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0126	52	0.0126	64	0.0099	45	0.0126	61
2.0822.170	T8 2L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0214	88	0.0214	109	0.0169	76	0.0214	104
2.0823.170	T8 3L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0365	149	0.0365	186	0.0288	130	0.0365	177
2.0824.170	T8 4L-4 ft Low Watt with CEE Ballast - 25 Watts	0.0442	181	0.0442	225	0.0349	157	0.0442	214

		Commercial		Industrial		Schools / Gov't		Agriculture	
WISeerts Tech Code	**Measure Description**	**kW**	**kWh**	**kW**	**kWh**	**kW**	**kWh**	**kW**	**kWh**
2.0831.170	T8 1L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0114	47	0.0114	58	0.0090	41	0.0114	55
2.0832.170	T8 2L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0161	66	0.0161	82	0.0127	57	0.0161	78
2.0833.170	T8 3L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0287	117	0.0287	146	0.0227	102	0.0287	139
2.0834.170	T8 4L-4 ft Low Watt with CEE Ballast - 28 Watts	0.0333	136	0.0333	169	0.0263	118	0.0333	162
2.0841.170	T8 1L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0089	36	0.0089	45	0.0070	32	0.0089	43
2.0842.170	T8 2L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0150	61	0.0150	76	0.0118	53	0.0150	73
2.0843.170	T8 3L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0268	110	0.0268	136	0.0212	95	0.0268	130
2.0844.170	T8 4L-4 ft Low Watt with CEE Ballast - 30 Watts	0.0314	129	0.0314	160	0.0248	112	0.0314	153
2.0851.170	T8 Low Watt Relamp - 25 Watts	0.0079	32	0.0079	40	0.0062	28	0.0079	38
2.0852.170	T8 Low Watt Relamp - 28 Watts	0.0059	24	0.0059	30	0.0047	21	0.0059	29
2.0853.170	T8 Low Watt Relamp - 30 Watts	0.0042	17	0.0042	22	0.0033	15	0.0042	21
2.0856.170	T8 Low Watt Relamp 8 ft - 54 Watts	0.0045	18	0.0045	23	0.0036	16	0.0045	22
2.0860.170	T8 1L-4 ft Hi Lumen Lamp with Low BF	0.0072	29	0.0072	37	0.0057	26	0.0072	35
2.0870.170	T8 2L-4 ft Hi Lumen Lamp with Low BF	0.0124	51	0.0124	63	0.0098	44	0.0124	60
2.0880.170	T8 3L-4 ft Hi Lumen Lamp with Low BF	0.0232	95	0.0232	118	0.0183	83	0.0232	113
2.0890.170	T8 4L-4 ft Hi Lumen Lamp with Low BF	0.0284	116	0.0284	145	0.0224	101	0.0284	138
2.0895.170	T8 1L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0036	15	0.0036	18	0.0028	13	0.0036	17
2.0896.170	T8 2L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0081	33	0.0081	41	0.0064	29	0.0081	39
2.0897.170	T8 3L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0153	63	0.0153	78	0.0121	54	0.0153	74
2.0898.170	T8 4L-4 ft Hi Lumen Lamp with Low BF (New Construction)	0.0198	81	0.0198	101	0.0156	70	0.0198	96
2.0900.170	T5 2L - F28T5 Fixture, Recessed Indirect 2x4, replacing 3LT8 or 4LT12	0.0270	110	0.0270	137	0.0213	96	0.0270	131
2.2110.220	Metal Halide (MH) Ceramic 20-100 Watts - Replaces Incandescent	0.1175	480	0.1175	597	0.0927	418	0.1175	570
2.2115.220	Metal Halide (MH) Ceramic 25 Watts - Replaces 75-90 Watts Incandescent	0.0518	212	0.0518	263	0.0408	184	0.0518	251
2.2150.220	Metal Halide (MH), Pulse Start, 320W replacing 400W	0.0846	346	0.0846	430	0.0667	301	0.0846	411

		Commercial		Industrial		Schools / Gov't		Agriculture	
WISeerts Tech Code	**Measure Description**	**kW**	**kWh**	**kW**	**kWh**	**kW**	**kWh**	**kW**	**kWh**
	HID								
2.2155.220	Metal Halide (MH), Pulse Start - 750W replacing 1000W MH	0.2565	1049	0.2565	1304	0.2024	912	0.2565	1245
2.2170.220	Metal Halide (MH), Electronic Ballast Pulse Start - 250W replacing 400W HID	0.1629	666	0.1629	828	0.1285	579	0.1629	791
2.2171.220	Metal Halide (MH), Electronic Ballast Pulse Start - 320W replacing 400W HID	0.1026	420	0.1026	522	0.0809	365	0.1026	498
2.3100.260	LED Reach-In Refrigerated Case Lighting replaces T12 or T8	0.0380	337	0.0380	337	0.0380	337	0.0380	337
2.5170.170	T8 4 lamp or T5HO 2 lamp Replacing 250-399 W HID	0.1345	550	0.1345	684	0.1061	478	0.1345	653
2.5180.170	T8 6 lamp or T5HO 4 lamp Replacing 400-999 W HID	0.2120	867	0.2120	1078	0.1672	754	0.2120	1029
2.5182.170	T8 8 lamp or T5HO 6 lamp Replacing 400-999 W HID	0.1437	587	0.1437	731	0.1133	511	0.1437	697
2.5185.170	T8/T5HO <= 500 Watts Replacing >=1000 W HID	0.5589	2285	0.5590	2842	0.4409	1987	0.5589	2713
n/a	Replace incandescent lamps with 14 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
n/a	Replace incandescent lamps with 20 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
n/a	Replace incandescent lamps with 14 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
n/a	Replace incandescent lamps with 20 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
n/a	Replace incandescent lamps with 23 Watt compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199
n/a	Replace incandescent spotlight lamps with 16 Watt spotlight compact fluorescent lamps, WPS Hometown Checkup	0.0500	175	0.0480	323	0.0380	161	0.0510	199

APPENDIX I: ENGINEERING SURVEY—18MCP ROUND 1

Business Programs
Detailed Implementing Partner Short-term Follow-up Questionnaire – qemar08

This survey was given to engineering survey respondents during the first round of the 18MCP Evaluation.

GENERAL INTERVIEWER INSTRUCTIONS

- IF THE INTERVIEW INSTRUCTIONS ARE UNCLEAR, ASK!!! (OF COURSE, WE THINK THEY ARE CLEAR AND UNAMBIGUOUS). IF YOU DON'T ASK AND SOMETHING APPEARS AMISS, WE WILL ASK.
- RECORD ANSWERS TO ALL QUESTIONS, EVEN IF THE QUESTION SEEMS TO BE A REPEAT OF AN EARLIER QUESTION. (IF YOU THINK WE'RE MISTAKENLY ASKING THE SAME QUESTION AGAIN, LET US KNOW AND WE'LL CHECK INTO IT).
- WE WELCOME SURVEY IMPROVEMENTS. PLEASE LET US KNOW HOW WE MAY IMPROVE THE SURVEY.

DO NOT READ THE LIST OF RESPONSES UNLESS INSTRUCTED TO DO SO. JUST TO BE CLEAR, WHEN READING LISTS, NEVER READ "DON'T KNOW" OR "REFUSED."

MOST QUESTIONS REQUIRE THAT YOU **CIRCLE** A RESPONSE NUMBER. USE CIRCLES, NOT Xs OR CROSSOUTS.

SOME QUESTIONS REQUIRE YOU TO RECORD VERBAL RESPONSES. THESE RESPONSES NEED NOT BE VERBATIM. SUMMARIZE WHERE POSSIBLE. **WRITE LEGIBLY**.

IF NECESSARY TO RECORD NOTES IN MARGINS, INDICATE CLEARLY TO WHAT QUESTION THEY APPLY, WRITE LEGIBLY AND **BE SPECIFIC**.

MANY QUESTIONS HAVE SKIP PATTERNS INDICATED NEXT TO THE RESPONSES. QUESTIONS THAT MIGHT BE SKIPPED ARE EASILY IDENTIFIED AS THEY ARE INDENTED FROM THE LEFT MARGIN. **FOLLOW SKIP PATTERNS PROPERLY**.

CERTAIN QUESTIONS **REQUIRE** RESPONSES TO BE CIRCLED OR RECORDED SPECIFICALLY BY Measure ID OR Measure Group. THESE QUESTIONS EITHER HAVE RESPONSES IN TABLES WITH COLUMNS FOR INDIVIDUAL Measure IDs OR Measure Groups, OR ASK YOU TO DIFFERENTIATE RESPONSES BY Measure ID.

IF RESPONSES ARE **NOT** IN TABLES AND YOU ARE NOT ASKED TO DIFFERENTIATE RESPONSE BY Measure ID OR Measure Group, IT IS NOT CRITICAL TO DO SO.

IT MAY BE NECESSARY TO INTERVIEW MORE THAN ONE PERSON AS ONE PERSON MAY NOT BE ABLE TO ANSWER ALL QUESTIONS. FOR THAT REASON CONTACT INFORMATION, INCLUDING DATES CALLED AND TO BE CALLED, SHOULD BE MAINTAINED BY THE INTERVIEWER IN THE CONTACT LOG.

TRY TO COMPLETE THE ENTIRE INTERVIEW. DISCONTINUE IF INTERVIEWEE BECOMES ANNOYED, BUT FIRST TRY TO SCHEDULE A TIME AT WHICH IT CAN BE COMPLETED.

BEFORE THE INTERVIEW, THE FOLLOWING **MUST BE PREPARED**:

1. INTERVIEWER NAME:
2. FROM THE FINAL ENGINEERING SPREADSHEET
   - STRATA:
   - PROGRAM/S [LIST ALL PROGRAMS THE COMPANY IS ASSOCIATED WITH]:
   - COMPANY ID:
   - COMPANY NAME:
3. SEE THE START OF EACH SECTION OF THE SURVEY FOR ADDITIONAL PRE-SURVEY PREP INSTRUCTIONS.

GENERAL INTERVIEWER PRE-SURVEY PREPARATION:

1. Review all paperwork associated with the project. This includes:
   - WISeerts data (downloaded electronic files)
   - Impact Statement (IS) if provided. Copy information from the IS to the gray areas in Section 5 of the survey after reviewing the IS and before conducting the survey.
   - Notes and calculations in project files.
2. Assign Measure IDs (M_IDs) a number in Section 3.
   - M_IDs in the tracking database are specific to a measure. M_ID# is assigned by interviewer for consistency and tracking within survey and analysis.

Example of assignment of M_ID# for a specific project

M_ID	Description	M_ID# (assigned in survey)
WATTS_32004	High bay fluorescent control	1
WATTS_32095	Custom HVAC Measure	2
WATTS_26879	LED Exit Lighting	3
WATTS_32182	Radiant Tube inserts	4

3. Define measure groups in Section 5.

Example of assignment of MG# for a specific project

Group #	M_ID's	Description	Category ID
MG1	1, 3	Lighting	2
MG2	2,4	HVAC	4
MG3			
MG4			

4. Identify Energy Advisor in Section 5.
5. Enter the reward amounts from the Final Engineering spreadsheet, Column AB. Enter the amount by M_ID in the table in Section 3. Enter the total amount (sum of all M_IDs) at the beginning of Section 4.
6. IF THE CUSTOMER DID NOT RECEIVE AN INCENTIVE THEN DO NOT ASK ABOUT FINANCIAL ASSISTANCE FROM FOCUS in the questions in Section 4, 5, and 6.

INFORMED RESPONDENT (INF)

Inf1. Hello, may I please speak with [contact name]?

Contact available ..... [Skip to Inf2] 1
Contact currently unavailable..... [Arrange call back] 2
No contact 3

Inf1b. I'd like to speak with the person responsible for facility management such as energy-efficiency or productivity improvements or the purchase of energy-using equipment.

[Record Name] _____
Person responsible for facility management available 1
Person responsible for facility management currently unavailable .....
..... [Arrange call back] 2
No person responsible for facility management ..... [Skip to Inf5] 3
Don't know..... [Skip to Inf5] -97
Refused..... [Skip to Inf5] -98

Inf2. **Hello, my name is _____ and I'm calling from KEMA on behalf of the Wisconsin Public Service Commission for the Focus on Energy Program.**

I would like to ask you a few questions regarding some energy efficiency improvements your organization recently made. This is not a sales or marketing call. We're calling to help the Focus on Energy Program, which either helped your organization with these energy efficiency improvements or the company that supplied the improvements.

Focus on Energy is required by the state of Wisconsin to conduct this type of research. Your responses will be kept entirely confidential.

According to Focus on Energy records, sometime between July 1, 2007 and March 31, 2008, your organization made the following energy efficiency improvements:

At <ADDRESS> **in** <CITY>, **Wisconsin**: [List all improvements made at this address based on measure description.]

At <ADDRESS> **in** <CITY>, **Wisconsin**: [List all improvements made at this address based on measure description.]

Are you familiar with your organization's decision to make these energy efficiency improvements?

Yes (all or some) .....[Record name below then skip to Section 3] 1
Respondent Name _____
No.....1
Don't know.....–97
Refused.....–98

Inf3. **Do you know who is likely to be familiar with your organization's decision to make these energy efficiency improvements?**

Yes ..... [Record name below then start over again with Inf1] 1
Additional Contacts:
_____

No.....2
Don't know.....-97
Refused.....-98

Inf4. [Check to make sure all contacts have been tried.]

Not all contacts have been tried.....[Start over again with Inf1] 1
All contacts have been tried.....2

Inf5. **Thank you very much for your time today. Those are all the questions I have.**

No one familiar with decision ..... [End Interview] 1

ENGINEERING REVIEW (ER)

Pre-Survey Prep

ER1. [For each installed M_ID for which documentation was provided for the energy savings estimates in the program tracking system, specify the "baseline" ***the program*** used to calculate energy savings.

Circle one response for each M_ID. If "Other" (3) is circled then provide details in ER1o regarding program baseline.]

Program "baseline" for inst_kwh, inst_kw, inst_thms	**M_ID #1 (ER1_1)**	**M_ID #2 (ER1_2)**	**M_ID #3 (ER1_3)**	**M_ID #4 (ER1_4)**
Replaced equipment efficiency	1	1	1	1
Standard efficiency or according to code	2	2	2	2
Other [**specify below**]	3	3	3	3
No documentation provided for inst_kwh, inst_kw, inst_thms	4	4	4	4

ER1o. Other baseline:

M_ID #1 from (ER1o_1):_____

M_ID #2 from (ER1o_2): _____

M_ID #3 from (ER1o_3): _____

M_ID #4 from (ER1o_4): _____

Post-Survey Complete [Answer this question after survey is complete.]
ER2. [For each installed measure, if applicable determine

B1 – standard efficiency or code. This is the value that will be used to estimate savings when the program increased efficiency and did not affect quantity or timing.

B1 is not applicable if the program is using deemed savings or if the measure does not have an efficiency related to it. Example where efficiency does not apply are lighting controls, air economizer, and VFDs.

B2 – existing equipment efficiency. This is the value that will be used to estimate savings when the program accelerated timing of installation.

B2 is not applicable if there is no acceleration in the timing of installation. A project is accelerated if the answer to DAT1a is "Later."]

B3 – deemed measures.

Describe/Define baselines

		M_ID #1 (ER2_1)	**M_ID #2 (ER2_2)**	**M_ID #3 (ER2_3)**	**M_ID #4 ER2_4)**
	KEMA Baseline	Provide description or indicate NA			
B1	Standard efficiency or code – predetermined based on M_ID for most measures.				
B2	Replaced equipment efficiency				
B3	Deemed				
B2_O	Notes on replaced equipment efficiency (B2) (e.g. based on age of equipment, respondent reported efficiency, respondent provided description of equipment and KEMA estimated efficiency based on that.)				
	Other [specify below]				

ER2o. Other baseline:

M_ID #1 (ER2o_1): _____

M_ID #2 (ER2o_2): _____

M_ID #3 (ER2o_3): _____

M_ID #4 (ER2o_4): _____

ENGINEERING REVIEW DOCUMENT

[Prepare questions to ask based on the review of the documentation in order to verify savings.

a. Quantities (confirm amounts and installation)
b. Equipment Efficiencies – existing and new equipment
c. Operating Hours
d. Other assumptions as needed to confirm savings calculation.

Complete the survey with current respondent and contact additional respondents as needed to complete engineering review questions.

After the survey is completed, calculate the appropriate savings streams (kWh, kW, therm) for each applicable M_ID#. Enter the values on the Verified Gross Savings sheet and the Final Engineering sheet as indicated in the engineering instruction memo.

VGI_B1 = annual kWh and kW, or therms based on B1 (standard efficiency or code)

VGI_B2 = annual kWh and kW, or terms, based on B2 (efficiency of replaced equipment)]

VERIFY MEASURE INSTALLATION (V)

M_ID Table

V1. I'd like to ask you about the equipment at " <ADDRESS>, <CITY>**,Wisconsin. Was the following** <MEASUREKIND> **or something similar to that installed at this location? Our records show that you received this incentive from Focus on Energy to install this measure.**

[If yes, ask engineering questions. If no, go to V2.]

				V1a_#	**V1b_#**	
"At" <ADDRESS>	**<CITY >,Wisconsin**	**Description based on <MEASUREKIND>,**	**<Reward Amount>**		**<M_ID>**	**M_ID#**
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		1
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		2
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		3

				V1a_#	**V1b_#**	
"At" <ADDRESS>	**<CITY >,Wisconsin**	**Description based on <MEASUREKIND>,**	**<Reward Amount>**		**<M_ID>**	**M_ID#**
				Yes……1 No……..2 Don't know…-97 Refused……..-98		4

V2. (# refers to M_ID#)

V2a_#	**V2b_#**	**V2c_#**	**V2d_#**	**V2e_#**
M_ID#	**Why wasn't this equipment installed?** [record response]	**Do you plan to install this equipment?**	**When?** [month/year]	**Why not?** [record response]
		Yes……1 No……..2 Don't know…-97 Refused……..-98		
		Yes……1 No……..2 Don't know…-97 Refused……..-98		
		Yes……1 No……..2 Don't know…-97 Refused……..-98		

V2a_#	**V2b_#**	**V2c_#**	**V2d_#**	**V2e_#**
M_ID#	**Why wasn't this equipment installed?** [record response]	**Do you plan to install this equipment?**	**When?** [month/year]	**Why not?** [record response]
		Yes……1 No……..2 Don't know…-97 Refused……..-98		

[Ask engineering review questions only for those M_IDs that were implemented. If no M_IDs were implemented, skip to next section 4 General Questions (G).

If the current respondent cannot answer some of the engineering review questions, find out who can.

Contact information for additional engineering review respondents.]

Name _____

Title _____

Telephone _____

Other _____

GENERAL QUESTIONS (G)

[The following questions are about the respondent, their role in the decision, and how the organization made decisions about selecting the equipment and approving the expenditures. This section also gets at prior experience with Focus. The interviewer should record the responses to each question.

These questions are designed for the interviewer to understand the:

- Respondent's role in the purchase and selection process (and identify if they have independent discretion or if interviewer needs to talk to additional people at this organization)
- Organization's policies regarding equipment purchases
- Respondent's role in this particular purchase
- Organization's process for obtaining approval for this specific project
- The organization's familiarity with Focus on Energy]

Based on our records, your organization received [sum of Reward Amount for all M_IDs**] of incentives from Focus on Energy during the period we are discussing.**

G41. What is your job title and what are your general responsibilities? [probes: how long worked at this organization, had these responsibilities, etc.]

_____

G42. What is your role in making decisions regarding the purchase of energy using equipment? [probes: primary decision maker, one of the primary decision makers, recommends only, etc.]

_____

G43. What, if any, policies does your organization have regarding equipment purchases? [probe: rate of return or payback requirements, specific efficiency requirements, annual limits on equipment replacement, schedules for replacements]

_____

G43b. What role, if any, did these policies have in the decisions regarding the equipment purchases we're discussing?

_____

G44. What was your role and involvement in the purchase of the equipment we are discussing? [probes: when got involved, interaction with people within and outside the organization - who and interactions regarding what.]

_____

G45. Who and how many other people were involved in making the final decision regarding the purchase of this equipment? [probes: number of people, process, board approval required, etc., understand roles regarding selecting equipment and roles regarding approval of expenditures]

_____

G46. Had your organization participated in the Focus on Energy Program before the project(s) we're discussing? If yes, what services or incentives did you receive from Focus on Energy? [probes: incentives for measures at this or other locations, information, feasibility studies, etc.]

_____

MEASURE GROUP QUESTIONS (M)

[Group the measures into the categories below to ask the following series of questions related to the measure types installed. The sequence is to ask all questions in this section by measure group – work through the first measure group they installed, then the next, continuing until all of the questions have been answered for all of the installed measure groups.]

Group Description	Category ID
Boilers & Burners	1
Lighting	2
Refrigeration	3
HVAC	4
Process	5
Domestic Hot Water	6
Building Shell	7
Laundry	8
Compressed Air, Vacuum Pumps	9
Agriculture	10
Waste Water Treatment	11
Industrial Ovens & Furnaces	12
Pools	13
Food Service	14
Information Technology	16
Plug Loads	17
Motors	61
Other	70

[Create Measure Groups which describe or correspond to measures taken by respondent.]

Group Number	M_IDs in Group	Description from above	Category ID from above
MG1			
MG2			
MG3			
MG4			

M51. Has your organization installed [measure group**] at the same energy efficiency level at this or another location?** [Circle one answer.]

RESPONSE	M51_MG1	M51_MG2	M51_MG3	M51_MG4
This location	1	1	1	1
Another	2	2	2	2
This location and at other location(s)	3	3	3	3
This is the first time → Skip to M52	4	4	4	4
[Don't know] → Skip to M52	-97	-97	-97	-97
[Refused] → Skip to M52	-98	-98	-98	-98

[Ask M51a. only if the organization participated in Focus on Energy prior to July 1, 2007 based on the answer to G46. Else skip to M51b.]

M51a. Did your organization receive incentives from Focus on Energy for installing energy efficient [measure group**] for any projects completed before the project we're discussing?**

RESPONSE	M51a_MG1	M51a_MG2	M51a_MG3	M51a_MG4
Yes (Specify:_____)	1	1	1	1
No	2	2	2	2
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

M51b. Did your organization receive incentives from any other program for installing energy efficient [measure group**] for any projects completed before the projects we're discussing?**

RESPONSE	M51b_MG1	M51b_MG2	M51b_MG3	M51b_MG4
Yes	1	1	1	1
No	2	2	2	2
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

I'd like to understand how your organization made the decision to install this particular equipment at this time.

M52. When did your organization start thinking about purchasing this equipment?

	Month/Year
M52_MG1	
M52_MG2	
M52_MG3	
M52_MG4	

M53. Why did you decide to install this equipment?
[record response and probe: any other reasons]

	Reasons why decided to install
M53_MG1	
M53_MG2	
M53_MG3	
M53_MG4	

M53a. [Probe for any answers below that were not discussed above. Circle all responses that apply, whether provided in open-ended response or as a result of probe.]

Response	M53a_MG1	M53a_MG2	M53a_MG3	M53a_MG4
New construction or major addition	1	1	1	1
Renovation or planned upgrade	2	2	2	2
Replace failing or broken equipment	3	3	3	3
To improve equipment efficiency	4	4	4	4
To improve operational efficiency	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

[Ask M54. only if answers not provided in M53. and M53a. above.]

M54. **And why were you [**installing, replacing, renovating**] the equipment at this time?** [record response, probe: Why now? OR Why now and not later or earlier? Any other reasons]

M54_MG1:_____

M54_MG2:_____

M54_MG3:_____

M54_MG4:_____

M55. With whom did you discuss different efficiency options for this equipment? [Probe: anyone else? Probe for Energy Advisor by name and others listed below by type]

[Energy Advisor(s) **-** Put in energy advisor name(s) from IS or other paperwork]

[Circle all that apply]

Type	**M55_MG1**	**M55_MG2**	**M55_MG3**	**M55_MG4**
People internal to organization	1	1	1	1
Focus on Energy Advisor/representative	2	2	2	2
Supplier/Vendor/Contractor	3	3	3	3
Utility Representative	4	4	4	4
Extension Agent	5	5	5	5
[Other] (specify)_____	6	6	6	6

[For each person indicated above, ask the following.]

Options: **What efficiency options were discussed? Did you consider equipment that was not eligible for Focus financial incentives?**

Inform: **What role did the person(s) have in informing you about different options?**

Influence: **What influence did the person(s) have on your decision? What did the person(s) influence? How strong was the influence?**

M55a_type. Who? (circle type) 1 2 3 4 5 6

M55a_MG. Which MGs? (circle) MG1 MG2 MG3 MG4

M55a_options. Options discussed?_____

M55a_inform. Role in informing? _____

M55a_influence. Influence on decision? _____

M55b_type. Who? (circle type) 1 2 3 4 5 6

M55b_MG. Which MGs? (circle) MG1 MG2 MG3 MG4

M55b_options. Options discussed?_____

M55b_inform. Role in informing? _____

M55b_influence. Influence on decision? _____

M55c_type. Who? (circle type) 1 2 3 4 5 6

M55c_MG. Which MGs? (circle) MG1 MG2 MG3 MG4

M55c_options. Options discussed?_____

M55c_inform. Role in informing? _____

M55c_influence. Influence on decision? _____

M56. What role, if any, did your contractor play in helping you select [measure group**] equipment?** [probe: timing in process, provided bids only, recommended specific equipment, identified equipment eligible for rebates, informed of Focus on Energy, etc.]

M56_MG1: _____

M56_MG2: _____

M56_MG3: _____

M56_MG4: _____

M57. Did you become aware of Focus on Energy incentives and services. . . ?
[Read entire list before accepting a response and circle one response]

Response	M57_MG1	M57_MG2	M57_MG3	M57_MG4
Before starting the project	1	1	1	1
As soon as began exploring equipment options	2	2	2	2
While exploring equipment options, but before making equipment decision	3	3	3	3
After making equipment decision	4	4	4	4
After installing equipment	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

Summarize from Impact Statement response to following question and use for probing. 1. Briefly explain how you (Energy Advisor) got involved with the customer and project.

M58. From whom did you hear about Focus on Energy?
[Circle all that apply.]

Response	M58
Already knew before started project	1
From contractor/vendor/supplier	2
From Focus on Energy Representative	3
From utility	4
From extension agent	5
From colleague within my organization	6
From colleague or someone else outside my organization	7
From the internet	8
Other (specify:_____)	9
[Don't know]	-97
[Refused]	-98

M59. What did you hear about the Focus on Energy program regarding [measure group]**?**
[probes: incentives, services, what types]

M59_MG1: _____

M59_MG2: _____

M59_MG3: _____

M59_MG4: _____

M510. What role, if any, did Focus on Energy play in helping your organization select and install the equipment at this location? [probe based on Energy Advisor write-up: incentives, provided information, prepared materials for internal sale, helped estimate savings, ROI or payback, feasibility study, other.]

M510_MG1: _____

M510_MG2: _____

M510_MG3: _____

M510_MG4: _____

Check items that are checked or discussed on the Impact Statement: 2. Briefly explain your understanding of the largest customer barriers preventing the project's implementation.
_____ Payback _____ Confidence in realizing estimated savings _____ Unknown technology or process _____ Lack of time/unwilling to make time to understand what efficiency options make sense for facility/research and select a vendor to implement equipment _____ Lack of credibility/legitimacy. Customer needs a third party reference _____ Permit barriers _____ Internal bureaucracy/inability to gain decision maker's attention _____ Lack of access to financing _____ Competition for funding with other internal projects _____ Other _____

M511. What challenges, if any, did you encounter with getting this project approved and completed? [probe: for items in table above if not mentioned by respondent, for new construction, probe specifically about problems with maintaining the high efficiency of the equipment, anything else?]

M511_MG1: _____

M511_MG2: _____

M511_MG3: _____

M511_MG4: _____

Summarize from IS responses to following two questions and use for probing.

3. Briefly explain what type of assistance you provided to the customer with regards to this project.

4. Briefly describe how this assistance overcame the customer's barriers.

M512. What did you or others do to overcome these challenges? [probe: who helped you overcome these challenges? In what way?]

M512_MG1: _____

M512_MG2: _____

M512_MG3: _____

M512_MG4: _____

[Ask if not addressed above:]

M513. What assistance, if any, did Focus on Energy provide to help you overcome these challenges? [probes: incentives, feasibility study, Focus representative, program information, other]

M513_MG1: _____

M513_MG2: _____

M513_MG3: _____

M513_MG4: _____

DIRECT ATTRIBUTION (DAT)

[The engineer needs to group the measures (and if possible, projects) in a way that will work for the attribution. In other words, the likelihood needs to be very high that the efficiency, timing and quantity responses will be the same for the group. You can ask questions for each grouping but need to record responses individually by M_ID.

Responses are recorded by M_ID# so that savings calculations and attribution can be determined at the measure level.]

Now I'm going to ask you a series of questions to understand the effect, if any, that Focus on Energy had on your decisions regarding the purchase of [equipment type**]. When I ask about Focus on Energy I'm asking about the effect of financial incentives, as well as the effect of other assistance that Focus provided such as [**summarize assistance discussed in Section 5**].**

TIMING

DAT1. First, I'd like to know about the effect, if any, that Focus on Energy incentives and other Focus assistance had on your decision to install [equipment type**] *at this time*.**

Without Focus on Energy incentives and other Focus assistance would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**] at this time?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT1_O. Why do you say that?

DAT1_O_MID1:_____
DAT1_O_MID2:_____
DAT1_O_MID3:_____
DAT1_O_MID4: _____

DAT1a. Without Focus incentives and other Focus assistance, how different would the timing have been? Would you say you would have installed [equipment type**] at the same time, earlier, later or never?**

Response	DAT1a_MID1	DAT1a_MID2	DAT1a_MID3	DAT1a_MID4
Same time → Skip to DAT2	1	1	1	1
Earlier → Skip to DAT2	2	2	2	2
Later	3	3	3	3
Never → Skip to DAT2	4	4	4	4
[Don't know] → Skip to DAT2	-97	-97	-97	-97
[Refused] → Skip to DAT2	-98	-98	-98	-98

[Make sure response is consistent with DAT1. If not, attempt to resolve.
If DAT1 = -97 and DAT1a = -97, attempt to resolve.
If DAT1 = -98 and DAT1a = -98, skip to DAT2.]

DAT1b. Approximately how many months later?
[Try to get a number. Try bracketing if necessary by beginning with more or less than four years later.]

	DAT1b_MID1	DAT1b_MID2	DAT1b_MID3	DAT1b_MID4
[RECORD # OF MONTHS]	_____	_____	_____	_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

EFFICIENCY

[Skip these questions if efficiency is not applicable because the item is either installed or not installed. For example, lighting controls, VSDs, replacing steam traps, etc. Circle "5" not applicable for the measure in the table below and skip to DAT3.]

DAT2. **I'd like to know about the effect, if any, that Focus on Energy incentives and other Focus assistance had on your decision to install *high efficiency* [**equipment type**].**

Without Focus on Energy incentives and other Focus assistance would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have installed [equipment type**] of the same *efficiency* as what you did install?**

Response	DAT2_MID1	DAT2_MID2	DAT2_MID3	DAT2_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Not applicable] → Skip to DAT3	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2_O. Why do you say that?

DAT2_O_MID1: _____

DAT2_O_MID2: _____

DAT2_O_MID3: _____

DAT2_O_MID4: _____

DAT2a. Without the Focus on Energy Program's financial incentives and other Focus assistance, would you say you would have installed [equipment type**] of the same efficiency, lesser efficiency, or greater efficiency?**

Response	DAT2a_MID1	DAT2a_MID2	DAT2a_MID3	DAT2a_MID4
Same → Skip to DAT3	1	1	1	1
Lesser	2	2	2	2
Greater → Skip to DAT3	3	3	3	3
[Not applicable] → Skip to DAT3	4	4	4	4
[Don't know] → Skip to DAT3	-97	-97	-97	-97
[Refused] → Skip to DAT3	-98	-98	-98	-98

[Make sure response is consistent with DAT2. If not, attempt to resolve.
If DAT2 = -97 and DAT2a = -97, attempt to resolve.
If DAT2 = -98 and DAT2a = -98, skip to DAT3.]

DAT2b. Without Focus on Energy incentives and other Focus assistance, would you have installed [equipment type**] that was "standard efficiency on the market at that time," "slightly higher than standard efficiency", "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?"**

Response	DAT2b_MID1	DAT2b_MID2	DAT2b_MID3	DAT2b_MID4
Standard efficiency or according to code	1	1	1	1
Slightly higher than standard efficiency	2	2	2	2
Between standard efficiency and the efficiency that was installed	3	3	3	3
Slightly lower than the high efficiency that was installed	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2c. Without Focus on Energy incentives and other Focus assistance what efficiency level would you have installed? [Enter efficiency number and unit (e.g. SEER)]

	DAT2c_MID1	DAT2c_MID2	DAT2c_MID3	DAT2c_MID4
Efficiency level				
Unable to provide	-97	-97	-97	-97

DAT2c_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

QUANTITY

Finally, I'd like to know about the effect, if any, that Focus on Energy incentives and other assistance had on how much [equipment type**] you installed.**

[Skip this question if quantity or size/capacity is not applicable. Circle "4" not applicable for the measure in the table below and skip to DAT4.]

DAT3. Without Focus on Energy, how different would the [number/size**] of [**equipment type**] installed have been? Would you say you would have installed the same amount, less, or more?**

Response	DAT3_MID1	DAT3_MID2	DAT3_MID3	DAT3_MID4
Same amount	1	1	1	1
Less	2	2	2	2
More	3	3	3	3
[Not Applicable] → Skip to DAT4	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused] → Skip to DAT4	-98	-98	-98	-98

DAT3_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

DAT3a. By what percentage did you *increase* the amount of [equipment type**] installed because of the Focus on Energy Program?**

[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.
- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]

	DAT3a_MID1	DAT3a_MID2	DAT3a_MID3	DAT3a_MID4
[RECORD %]	_____%	_____%	_____%	_____%
Don't know	-97	-97	-97	-97
Refused	-98	-98	-98	-98

DAT4. We've just discussed the different effects that Focus on Energy had on your organization's decisions regarding the [equipment type**] that you installed. I'd like you to summarize the program's influence on the timing, efficiency and amount of [**equipment type**] that you installed.**

[If response is inconsistent with previous responses attempt to resolve. Please note any final inconsistencies.]

DAT4_MID1: _____

DAT4_MID2: _____

DAT4_MID3: _____

DAT4_MID4: _____

DAT5. Do you have any additional comments about these projects or the Focus on Energy program? [record]

_____

DAT7. [To be filled out by interviewer: Vendor surveys are required if the respondent indicates that the program did not have an effect on efficiency (DAT2a = 1 or 3) AND the respondent indicates that the vendor had substantial influence on the efficiency of the installed equipment.

Is a vendor survey required?]

Yes 1

No.....2

DAT8. [To be filled out by interviewer: Note any unresolved inconsistencies.]

None.....1

Some (enter below) 2

DAT9. [To be filled out by interviewer: Summarize the project and impact that the program had on the purchase. If you have noted unresolved inconsistencies in DAT8, summarize what you know at this point. Be sure to cover timing, quantity, and efficiency and why.]

INCREMENTAL COST (C)

[Use the Measure Groups defined in Section 5 during this sequence.]

C1. Was your organization awarded financial assistance from a source other than Focus on Energy for the [measure group**] improvements made?**

RESPONSE	C1_MG1	C1_MG2	C1_MG2	C1_MG2
Yes	1	1	1	1
No → Skip to C2	2	2	2	2
[Don't know] → Skip to C2	-97	-97	-97	-97
[Refused] → Skip to C2	-98	-98	-98	-98

C1a. About how much was that <u>other</u> financial assistance?

RESPONSE	C1a_MG1	C1a_MG2	C1a_MG3	C1a_MG4
[RECORD OTHER FINANCIAL ASSISTANCE TO NEAREST TEN DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C2. What was the approximate total cost of the [measure group**] improvements made?**
[total cost is the cost of the project before the financial assistance]
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C2_MG1	C2_MG2	C2_MG3	C2_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C2a. About how much of this total cost was equipment costs?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C2a_MG1	C2a_MG2	C2a_MG3	C2a_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3. [Ask this question for natural replacement projects only (i.e. if M53. is "replace failed or broken equipment."). If not natural replacement, skip to Section 8.] **Earlier you said that you were making changes to the [**measure group**] equipment. I want to understand what impact, if any, the energy efficiency improvements had on these costs. Did they increase, decrease, or have no impact on the total cost of the changes?**

RESPONSE	C3_MG1	C3_MG2	C3_MG3	C3_MG4
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to Section 8	3	3	3	3
[Don't know] → Skip to Section 8	-97	-97	-97	-97
[Refused] → Skip to Section 8	-98	-98	-98	-98

C3a. By how much did they [increase/decrease] the total cost?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C2a_MG1	C2a_MG2	C2a_MG3	C2a_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3b. Did the changes increase, decrease, or have no impact on the equipment costs?

RESPONSE	C3a_MG1	C3a_MG2	C3a_MG3	C3a_MG4
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to C3d	3	3	3	3
[Don't know] → Skip to C3d	-97	-97	-97	-97
[Refused] → Skip to C3d	-98	-98	-98	-98

C3c. About how much [more/less] were the total equipment costs?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3b_MG1	C3b_MG2	C3b_MG3	C3b_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3d. Did the changes increase, decrease, or have no impact on the labor costs?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3d_MG1	C3d_MG2	C3d_MG3	C3d_MG4
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to Section 8	3	3	3	3
[Don't know] → Skip to Section 8	-97	-97	-97	-97
[Refused] → Skip to Section 8	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3e. About how much [more/less] were the total labor costs?

[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3e_MG1	C3e_MG2	C3e_MG3	C3e_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

DEMOGRAPHICS (D)

[Do not ask these questions if no measures were installed.]
The next questions I have for you are about the facility at which your organization made the energy efficiency improvements we discussed earlier.

D1. What is the principal activity of your organization at this location?

- Agricultural: e.g., production crops, livestock, agricultural services ..... [SKIP TO d3] 1
- Water or wastewater treatment facility ..... [SKIP TO d3] 2
- Industrial: manufacturing/industrial process 3
- Warehouse nonrefrigerated ..... [SKIP TO d3] 4
- Warehouse refrigerated ..... [SKIP TO d3] 5
- Education: including preschool, daycare ..... [SKIP TO d3] 6
- Food service: e.g., restaurant, bar, fast food, cafeteria ..... [SKIP TO d3] 7
- Food sales: e.g., grocery store ..... [SKIP TO d3] 8
- Enclosed mall ..... [SKIP TO d3] 9
- Strip mall ..... [SKIP TO d3] 10
- Retail excluding enclosed or strip mall: e.g., auto dealership, showroom, store ..... [SKIP TO d3] 11
- Public order and safety: including courthouse, probation office, jail ..... [SKIP TO d3] 12
- Nursing home/Assisted living (Skilled nursing) ..... [SKIP TO d3] 13
- Lodging: e.g., hotel/motel/inn/resort, dormitory/fraternity/sorority ..... [SKIP TO d3] 14
- Lodging: residential ..... [SKIP TO d3] 15
- Health care inpatient: e.g., hospital ..... [SKIP TO d3] 16
- Health care outpatient: e.g., doctor/dentist office, clinic ..... [SKIP TO d3] 17
- Laboratory ..... [SKIP TO d3] 18
- Religious worship ..... [SKIP TO d3] 19
- Public assembly: incl. theater, nightclub, library, museum, gym, bowling alley ..... [SKIP TO d3] 20
- Service: e.g., auto service/repair, dry cleaner/laundromat, repair shop, post office ..... [SKIP TO d3] 21
- Office/Professional: including bank, government ..... [SKIP TO d3] 22
- Other [SPECIFY d3_o]_____ [SKIP TO d3] 23
- [Don't know] ..... [SKIP TO d3] -97
- [Refused] ..... [SKIP TO d3] -98

D2. Briefly describe what is done at this location. [Accept multiple responses]

- Textile manufacturing 1
- Wood manufacturing 2
- Plastics manufacturing 3
- Food manufacturing 4
- Metal manufacturing 5
- Goods manufacturing 6
- Assembly 7
- Other [Specify_____] 96
- [Don't know] ..... -97
- [Refused] ..... -98

D3. How many full-time employees work for your organization at this location?

[Record number of employees] _____
[Don't know] ..... -97
[Refused] ..... -98

D4. How many part-time employees work for your organization at this location?

[Record number of employees] _____
[Don't know] ..... -97
[Refused] ..... -98

D5. What is the total enclosed square footage of the space your organization occupies at this location? Your best estimate is fine.

[RECORD # SQ FT] _____
[Don't know] ..... -97
[Refused] ..... -98

D6. At this location, does your organization [read list]

Own all of the space it occupies? 1
Lease all of the space it occupies? 2
Or own some and lease some of the space it occupies? 3
[Don't know] ..... -97
[Refused] ..... -98

D7. Does your organization operate at a single location, at multiple locations, or is it a franchise organization?

Single location ..... [SKIP TO D9] 1
Multiple locations—not including franchise organization 2
Franchise organization 3
[Don't know] ..... -97
[Refused] ..... -98

D8. Is your organization headquartered in Wisconsin?

Yes 1
No 2
[Don't know] ..... -97
[Refused] ..... -98

D9. Thank you for taking the time to talk with me today. Would it be okay if I called you back to clarify my notes, if necessary?

Yes 1
No 2
[Don't know] ..... –97
[Refused] ..... –98

Special Net-to-Gross Sequence for Program Ally Delivered Services

[Use this program attribution sequence if program selected:
Program Ally delivered a variety of services as a result of the services the ally received directly from Focus

> [The engineer needs to group the measures (and if possible, projects) in a way that will work for the attribution. In other words, the likelihood needs to be very high that the efficiency, timing, and quantity responses will be the same for the group. You can ask questions for each grouping but need to record responses individually by M_ID.

Responses are recorded by M_ID# so that savings calculations and attribution can be determined at the measure level.]

Now I'm going to ask you a series of questions to understand the effect, if any, that your vendor had on your decisions regarding the purchase of [equipment type**]. When I ask about your vendor I'm asking about the effect of financial incentives, as well as the effect of other assistance that your vendor provided such as [**summarize assistance discussed in Section 5**].**

TIMING

DAT1. **First, I'd like to know about the effect, if any, that the incentives and vendor assistance had on your decision to install [**equipment type**] *at this time*.**

Without the incentives and vendor assistance would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**] at this time?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT1_O. Why do you say that?

DAT1_O_MID1: _____

DAT1_O_MID2: _____

DAT1_O_MID3: _____

DAT1_O_MID4: _____

DAT1a. Without the incentives and vendor assistance, how different would the timing have been? Would you say you would have installed [equipment type**] at the same time, earlier, later or never?**

Response	DAT1a_MID1	DAT1a_MID2	DAT1a_MID3	DAT1a_MID4
Same time → Skip to DAT2	1	1	1	1
Earlier → Skip to DAT2	2	2	2	2
Later	3	3	3	3
Never → Skip to DAT2	4	4	4	4
[Don't know] → Skip to DAT2	-97	-97	-97	-97
[Refused] → Skip to DAT2	-98	-98	-98	-98

[Make sure response is consistent with DAT1. If not, attempt to resolve.
If DAT1 = -97 and DAT1a = -97, attempt to resolve.
If DAT1 = -98 and DAT1a = -98, skip to DAT2.]

DAT1b. Approximately how many months later?
[Try to get a number. Try bracketing if necessary by beginning with more or less than four years later.]

Response	DAT1b_MID1	DAT1b_MID2	DAT1b_MID3	DAT1b_MID4
[RECORD # OF MONTHS]	_____	_____	_____	_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

EFFICIENCY

[Skip these questions if efficiency is not applicable because the item is either installed or not installed. For example, lighting controls, VSDs, replacing steam traps, etc. Circle "5" not applicable for the measure in the table below and skip to DAT3.]

DAT2. **I'd like to know about the effect, if any, that the incentives and vendor assistance had on your decision to install *high efficiency* [**equipment type**].**

Without the incentives and vendor assistance would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have installed [equipment type**] of the same *efficiency* as what you did install?**

Response	DAT2_MID1	DAT2_MID2	DAT2_MID3	DAT2_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Not applicable] → Skip to DAT3	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2_O. Why do you say that?

DAT2_O_MID1: _____

DAT2_O_MID2: _____

DAT2_O_MID3: _____

DAT2_O_MID4: _____

DAT2a. Without the financial incentives and vendor assistance, would you say you would have installed [equipment type] of the same efficiency, lesser efficiency, or greater efficiency?

Response	DAT2a_MID1	DAT2a_MID2	DAT2a_MID3	DAT2a_MID4
Same → Skip to DAT3	1	1	1	1
Lesser	2	2	2	2
Greater → Skip to DAT3	3	3	3	3
[Not applicable] → Skip to DAT3	4	4	4	4
[Don't know] → Skip to DAT3	-97	-97	-97	-97
[Refused] → Skip to DAT3	-98	-98	-98	-98

[Make sure response is consistent with DAT2. If not, attempt to resolve.
If DAT2 = -97 and DAT2a = -97, attempt to resolve.
If DAT2 = -98 and DAT2a = -98, skip to DAT3.]

DAT2b. Without the incentives and vendor assistance, would you have installed [equipment type**] that was "standard efficiency on the market at that time," "slightly higher than standard efficiency", "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?"**

Response	DAT2b_MID1	DAT2b_MID2	DAT2b_MID3	DAT2b_MID4
Standard efficiency or according to code	1	1	1	1
Slightly higher than standard efficiency	2	2	2	2
Between standard efficiency and the efficiency that was installed	3	3	3	3
Slightly lower than the high efficiency that was installed	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2c. Without the incentives and vendor assistance what efficiency level would you have installed? [Enter efficiency number and unit (e.g. SEER)]

	DAT2c_MID1	DAT2c_MID2	DAT2c_MID3	DAT2c_MID4
Efficiency level				
Unable to provide	-97	-97	-97	-97

DAT2c_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

QUANTITY

Finally, I'd like to know about the effect, if any, that the incentives and vendor assistance had on how much [equipment type**] you installed.**

[Skip this question if quantity or size/capacity is not applicable. Circle "4" not applicable for the measure in the table below and skip to DAT4.]

DAT3. Without the vendor, how different would the [number/size**] of [**equipment type**] installed have been? Would you say you would have installed the same amount, less, or more?**

Response	DAT3_MID1	DAT3_MID2	DAT3_MID3	DAT3_MID4
Same amount	1	1	1	1
Less	2	2	2	2
More	3	3	3	3
[Not Applicable] → Skip to DAT4	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused] → Skip to DAT4	-98	-98	-98	-98

DAT3_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

DAT3a. **By what percentage did you *increase* the amount of [equipment type] installed because of the vendor?**
[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.
- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]

	DAT3a_MID1	DAT3a_MID2	DAT3a_MID3	DAT3a_MID4
[RECORD %]	_____%	_____%	_____%	_____%
Don't know	-97	-97	-97	-97
Refused	-98	-98	-98	-98

DAT4. **We've just discussed the different effects that the vendor had on your organization's decisions regarding the [**equipment type**] that you installed. I'd like you to summarize the vendor's influence on the timing, efficiency and amount of [**equipment type**] that you installed.**

[If response is inconsistent with previous responses attempt to resolve. Please note any final inconsistencies.]

DAT4_MID1: _____

DAT4_MID2: _____

DAT4_MID3: _____

DAT4_MID4: _____

DAT5. **Do you have any additional comments about these projects or the vendor?**
[record]

DAT7. [To be filled out by interviewer: Vendor surveys are required if the respondent indicates that the program did not have an effect on efficiency (DAT2a = 1 or 3) AND the respondent indicates that the vendor had substantial influence on the efficiency of the installed equipment.Is a vendor survey required?]

Yes 1
No.....2

DAT8. [To be filled out by interviewer: Note any unresolved inconsistencies.]

None 1
Some (enter below) 2

DAT9. [To be filled out by interviewer: Summarize the project and impact that the program had on the purchase. If you have noted unresolved inconsistencies in DAT8, summarize what you know at this point. Be sure to cover timing, quantity, and efficiency and why.]

Special Net-to-Gross Sequence for Instant Incentives and Program Ally ONLY Financial Assistance

[Use this program attribution sequence if program selected:

- Received only Instant Incentives
- Program Ally delivered ONLY Focus Financial Assistance (Financial assistance mechanisms analogous to Instant Incentives)]

I.1 DIRECT ATTRIBUTION (DAT)

[The engineer needs to group the measures (and if possible, projects) in a way that will work for the attribution. In other words, the likelihood needs to be very high that the efficiency, timing, and quantity responses will be the same for the group. You can ask questions for each grouping but need to record responses individually by M_ID.

Responses are recorded by M_ID# so that savings calculations and attribution can be determined at the measure level.]

Now I'm going to ask you a series of questions to understand the effect, if any, that the discount had on your decisions regarding the purchase of [equipment type**].**

TIMING

DAT1. **First, I'd like to know about the effect, if any, that the discount had on your decision to install [**equipment type**] *at this time*.**

Without the discount would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**] at this time?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT1_O. Why do you say that?

DAT1_O_MID1: _____

DAT1_O_MID2: _____

DAT1_O_MID3: _____

DAT1_O_MID4: _____

DAT1a. Without the discount, how different would the timing have been? Would you say you would have installed [equipment type**] at the same time, earlier, later or never?**

Response	DAT1a_MID1	DAT1a_MID2	DAT1a_MID3	DAT1a_MID4
Same time → Skip to DAT2	1	1	1	1
Earlier → Skip to DAT2	2	2	2	2
Later	3	3	3	3
Never → Skip to DAT2	4	4	4	4
[Don't know] → Skip to DAT2	-97	-97	-97	-97
[Refused] → Skip to DAT2	-98	-98	-98	-98

[Make sure response is consistent with DAT1. If not, attempt to resolve.
If DAT1 = -97 and DAT1a = -97, attempt to resolve.
If DAT1 = -98 and DAT1a = -98, skip to DAT2.]

DAT1b. Approximately how many months later?
[Try to get a number. Try bracketing if necessary by beginning with more or less than four years later.]

	DAT1b_MID1	DAT1b_MID2	DAT1b_MID3	DAT1b_MID4
[RECORD # OF MONTHS]	_____	_____	_____	_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

EFFICIENCY

[Skip these questions if efficiency is not applicable because the item is either installed or not installed. For example, lighting controls, VSDs, replacing steam traps, etc. Circle "5" not applicable for the measure in the table below and skip to DAT3.]

DAT2. **I'd like to know about the effect, if any, that the discount had on your decision to install *high efficiency* [**equipment type**].**

Without the discount would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have installed [equipment type**] of the same *efficiency* as what you did install?**

Response	DAT2_MID1	DAT2_MID2	DAT2_MID3	DAT2_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Not applicable] → Skip to DAT3	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2_O. Why do you say that?

DAT2_O_MID1: _____

DAT2_O_MID2: _____

DAT2_O_MID3: _____

DAT2_O_MID4: _____

DAT2a. **Without the discount would you say you would have installed [**equipment type**] of the same efficiency, lesser efficiency, or greater efficiency?**

Response	DAT2a_MID1	DAT2a_MID2	DAT2a_MID3	DAT2a_MID4
Same → Skip to DAT3	1	1	1	1
Lesser	2	2	2	2
Greater → Skip to DAT3	3	3	3	3
[Not applicable] → Skip to DAT3	4	4	4	4
[Don't know] → Skip to DAT3	-97	-97	-97	-97
[Refused] → Skip to DAT3	-98	-98	-98	-98

[Make sure response is consistent with DAT2. If not, attempt to resolve.
If DAT2 = -97 and DAT2a = -97, attempt to resolve.
If DAT2 = -98 and DAT2a = -98, skip to DAT3.]

DAT2b. Without the discount, would you have installed [equipment type] **that was "standard efficiency on the market at that time," "slightly higher than standard efficiency", "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?"**

Response	DAT2b_MID1	DAT2b_MID2	DAT2b_MID3	DAT2b_MID4
Standard efficiency or according to code	1	1	1	1
Slightly higher than standard efficiency	2	2	2	2
Between standard efficiency and the efficiency that was installed	3	3	3	3
Slightly lower than the high efficiency that was installed	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2c. Without the discount what efficiency level would you have installed? [Enter efficiency number and unit (e.g. SEER)]

	DAT2c_MID1	DAT2c_MID2	DAT2c_MID3	DAT2c_MID4
Efficiency level				
Unable to provide	-97	-97	-97	-97

DAT2c_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

QUANTITY

Finally, I'd like to know about the effect, if any, that the discount had on how much [equipment type**] you installed.**

[Skip this question if quantity or size/capacity is not applicable. Circle "4" not applicable for the measure in the table below and skip to DAT4.]

DAT3. Without the discount, how different would the [number/size**] of [**equipment type**] installed have been? Would you say you would have installed the same amount, less, or more?**

Response	DAT3_MID1	DAT3_MID2	DAT3_MID3	DAT3_MID4
Same amount	1	1	1	1
Less	2	2	2	2
More	3	3	3	3
[Not Applicable] → Skip to DAT4	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused] → Skip to DAT4	-98	-98	-98	-98

DAT3_O. Why do you say that?

DAT2c_O_MID1: _____

DAT2c_O_MID2: _____

DAT2c_O_MID3: _____

DAT2c_O_MID4: _____

DAT3a. By what percentage did you *increase* the amount of [equipment type**] installed because of the discount?**

[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.
- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]

	DAT3a_MID1	**DAT3a_MID2**	**DAT3a_MID3**	**DAT3a_MID4**
[RECORD %]	_____%	_____%	_____%	_____%
Don't know	-97	-97	-97	-97
Refused	-98	-98	-98	-98

DAT4. We've just discussed the different effects that the discount had on your organization's decisions regarding the [equipment type**] that you installed. I'd like you to summarize the program's influence on the timing, efficiency and amount of [**equipment type**] that you installed.**

[If response is inconsistent with previous responses attempt to resolve. Please note any final inconsistencies.]

DAT4_MID1: _____

DAT4_MID2: _____

DAT4_MID3: _____

DAT4_MID4: _____

DAT5. Do you have any additional comments about these projects or the discount? [record]

_____

DAT7. [To be filled out by interviewer: Vendor surveys are required if the respondent indicates that the program did not have an effect on efficiency (DAT2a = 1 or 3) AND the respondent indicates that the vendor had substantial influence on the efficiency of the installed equipment.

Is a vendor survey required?]

Yes 1
No.....2

DAT8. [To be filled out by interviewer: Note any unresolved inconsistencies.]

None 1
Some (enter below) 2

DAT9. [To be filled out by interviewer: Summarize the project and impact that the program had on the purchase. If you have noted unresolved inconsistencies in DAT8, summarize what you know at this point. Be sure to cover timing, quantity, and efficiency and why.]

Business Programs
Detailed Implementing Partner Short-term Follow-up Questionnaire – qesep08

This survey was given to engineering survey respondents during the second round of the 18MCP Evaluation.

Focus on Energy
Business Programs
Engineer Impact Evaluation Survey
Revised - January 7, 2009

GENERAL INTERVIEWER INSTRUCTIONS

- IF THE INTERVIEW INSTRUCTIONS ARE UNCLEAR, ASK!!! (OF COURSE, WE THINK THEY ARE CLEAR AND UNAMBIGUOUS). IF YOU DON'T ASK AND SOMETHING APPEARS AMISS, WE WILL ASK.
- RECORD ANSWERS TO ALL QUESTIONS, EVEN IF THE QUESTION SEEMS TO BE A REPEAT OF AN EARLIER QUESTION. (IF YOU THINK WE'RE MISTAKENLY ASKING THE SAME QUESTION AGAIN, LET US KNOW AND WE'LL CHECK INTO IT).
- WE WELCOME SURVEY IMPROVEMENTS. PLEASE LET US KNOW HOW WE MAY IMPROVE THE SURVEY.

DO NOT READ THE LIST OF RESPONSES UNLESS INSTRUCTED TO DO SO. JUST TO BE CLEAR, WHEN READING LISTS, NEVER READ "DON'T KNOW" OR "REFUSED."

MOST QUESTIONS REQUIRE THAT YOU **CIRCLE** A RESPONSE NUMBER. USE CIRCLES, NOT Xs OR CROSSOUTS.

SOME QUESTIONS REQUIRE YOU TO RECORD VERBAL RESPONSES. THESE RESPONSES NEED NOT BE VERBATIM. SUMMARIZE WHERE POSSIBLE. **WRITE LEGIBLY**.

IF NECESSARY TO RECORD NOTES IN MARGINS, INDICATE CLEARLY TO WHAT QUESTION THEY APPLY, WRITE LEGIBLY AND **BE SPECIFIC**.

MANY QUESTIONS HAVE SKIP PATTERNS INDICATED NEXT TO THE RESPONSES. QUESTIONS THAT MIGHT BE SKIPPED ARE EASILY IDENTIFIED AS THEY ARE INDENTED FROM THE LEFT MARGIN. **FOLLOW SKIP PATTERNS PROPERLY**.

CERTAIN QUESTIONS **REQUIRE** RESPONSES TO BE CIRCLED OR RECORDED SPECIFICALLY BY Measure ID OR Measure Group. THESE QUESTIONS EITHER HAVE RESPONSES IN TABLES WITH COLUMNS FOR INDIVIDUAL Measure IDs OR Measure Groups, OR ASK YOU TO DIFFERENTIATE RESPONSES BY Measure ID.

IF RESPONSES ARE **NOT** IN TABLES AND YOU ARE NOT ASKED TO DIFFERENTIATE RESPONSE BY Measure ID OR Measure Group, IT IS NOT CRITICAL TO DO SO.

IT MAY BE NECESSARY TO INTERVIEW MORE THAN ONE PERSON AS ONE PERSON MAY NOT BE ABLE TO ANSWER ALL QUESTIONS. FOR THAT REASON CONTACT INFORMATION, INCLUDING DATES CALLED AND TO BE CALLED, SHOULD BE MAINTAINED BY THE INTERVIEWER IN THE CONTACT LOG.

TRY TO COMPLETE THE ENTIRE INTERVIEW. DISCONTINUE IF INTERVIEWEE BECOMES ANNOYED, BUT FIRST TRY TO SCHEDULE A TIME AT WHICH IT CAN BE COMPLETED.

BEFORE THE INTERVIEW, THE FOLLOWING **MUST BE PREPARED**:

1. INTERVIEWER NAME: _____
2. FROM THE FINAL ENGINEERING SPREADSHEET
   - STRATA: _____
   - PROGRAM/S [LIST ALL PROGRAMS THE COMPANY IS ASSOCIATED WITH]:
   - COMPANY ID: _____
   - COMPANY NAME:_____
3. SEE THE START OF EACH SECTION OF THE SURVEY FOR ADDITIONAL PRE-SURVEY PREP INSTRUCTIONS.

GENERAL INTERVIEWER PRE-SURVEY PREPARATION:

1. Review all paperwork associated with the project. This includes:
   - WISeerts data (downloaded electronic files)
   - Impact Statement (IS) if provided. Copy information from the IS to the gray areas in Section 5 of the survey after reviewing the IS and before conducting the survey.
   - Notes and calculations in project files.
2. Assign Measure IDs (M_IDs) a number in Section 3.
   - M_IDs in the tracking database are specific to a measure. M_ID# is assigned by interviewer for consistency and tracking within survey and analysis.

Example of assignment of M_ID# for a specific project

M_ID	Description	M_ID# (assigned in survey)
WATTS_32004	High bay fluorescent control	1

WATTS_32095	Custom HVAC Measure	2
WATTS_26879	LED Exit Lighting	3
WATTS_32182	Radiant Tube inserts	4

3. Define measure groups in Section 5.

Example of assignment of MG# for a specific project

Group #	M_ID's	Description	Category ID
MG1	1, 3	Lighting	2
MG2	2,4	HVAC	4
MG3			
MG4			

4. Identify Energy Advisor in Section 5.
5. Enter the reward amounts from the Final Engineering spreadsheet, Column AB. Enter the amount by M_ID in the table in Section 3. Enter the total amount (sum of all M_IDs) at the beginning of Section 4.
6. Enter the equipment and total costs in Section 7 from the invoice.
7. IF THE CUSTOMER DID NOT RECEIVE AN INCENTIVE THEN DO NOT ASK ABOUT FINANCIAL ASSISTANCE FROM FOCUS in the questions in Section 4, 5, and 6.

Informed Respondent (Inf)

Inf1. Hello, may I please speak with [contact name]?

Contact available..... [Skip to Inf2] 1
Contact currently unavailable .....[Arrange call back] 2
No contact 3

Inf1b. I'd like to speak with the person responsible for facility management such as energy-efficiency or productivity improvements or the purchase of energy-using equipment.

[Record Name] _____
Person responsible for facility management available 1
Person responsible for facility management currently unavailable.....
.....[Arrange call back] 2
No person responsible for facility management ..... [Skip to Inf5] 3
Don't know ..... [Skip to Inf5] -97
Refused..... [Skip to Inf5] -98

Inf2. Hello, my name is _____ and I'm calling from KEMA on behalf of the Wisconsin Public Service Commission for the Focus on Energy Program.
I would like to ask you a few questions regarding some energy efficiency improvements your organization recently made. This is not a sales or marketing call. We're calling to help the Focus on Energy Program, which either helped your organization with these energy efficiency improvements or the company that supplied the improvements.
Focus on Energy is required by the state of Wisconsin to conduct this type of research. Your responses will be kept entirely confidential.
According to Focus on Energy records, sometime between July 1, 2007 and March 31, 2008, your organization made the following energy efficiency improvements:

At <ADDRESS> **in** <CITY>, **Wisconsin**: [List all improvements made at this address based on measure description.]

At <ADDRESS> **in** <CITY>, **Wisconsin**: [List all improvements made at this address based on measure description.]

Are you familiar with your organization's decision to make these energy efficiency improvements?

Yes (all or some)[Record name below then skip to Section 3] 1
Respondent Name
_____

No	2
Don't know	–97
Refused	–98

Inf3. Do you know who is likely to be familiar with your organization's decision to make these energy efficiency improvements?

Yes [Record name below then start over again with Inf1] 1
Additional Contacts:
_____

No	2
Don't know	-97
Refused	-98

Inf4. [Check to make sure all contacts have been tried.]

Not all contacts have been tried [Start over again with Inf1] 1

All contacts have been tried 2

Inf5.Thank you very much for your time today. Those are all the questions I have.

No one familiar with decision[End Interview] 1

Engineering Review (ER)

Pre- Survey Prep

ER1. [For each installed M_ID for which documentation was provided for the energy savings estimates in the program tracking system, specify the "baseline" ***the program*** used to calculate energy savings.
Circle one response for each M_ID. If "Other" (3) is circled then provide details in ER1o regarding program baseline.]

Program "baseline" for inst_kwh, inst_kw, inst_thms	**M_ID #1 (ER1_1)**	**M_ID #2 (ER1_2)**	**M_ID #3 (ER1_3)**	**M_ID #4 (ER1_4)**
Replaced equipment efficiency	1	1	1	1
Standard efficiency or according to code	2	2	2	2
Other [**specify below**]	3	3	3	3
No documentation provided for inst_kwh, inst_kw, inst_thms	4	4	4	4

ER1o. Other baseline:

M_ID #1 from (ER1o_1): _____

M_ID #2 from (ER1o_2): _____

M_ID #3 from (ER1o_3): _____

M_ID #4 from (ER1o_4): _____

Post- Survey Complete [Answer this question after survey is complete.]

ER2. [For each installed measure, if applicable determine

B1 – standard efficiency or code. This is the value that will be used to estimate savings when the program increased efficiency and did not affect quantity or timing.
B1 is not applicable if the program is using deemed savings or if the measure does not have an efficiency related to it. Example where efficiency does not apply are lighting controls, air economizer, and VFDs.

B2 – existing equipment efficiency. This is the value that will be used to estimate savings when the program accelerated timing of installation.
B2 is not applicable if there is no acceleration in the timing of installation. A project is accelerated if the answer to DAT1a is "Later."]

B3 – deemed measures.

Describe/Define baselines

		M_ID #1 (ER2_1)	**M_ID #2 (ER2_2)**	**M_ID #3 (ER2_3)**	**M_ID #4 ER2_4)**
	KEMA Baseline	Provide description or indicate NA			
B1	Standard efficiency or code – predetermined based on M_ID for most measures.				
B2	Replaced equipment efficiency				
B3	Deemed				
B2_O	Notes on replaced equipment efficiency (B2) (e.g. based on age of equipment, respondent reported efficiency, respondent provided description of equipment and KEMA estimated efficiency based on that.)				
	Other [specify below]				

ER2o. Other baseline:

M_ID #1 (ER2o_1): _____

M_ID #2 (ER2o_2): _____

M_ID #3 (ER2o_3): _____

M_ID #4 (ER2o_4): _____

Engineering Review Document

[Prepare questions to ask based on the review of the documentation in order to verify savings.

a. Quantities (confirm amounts and installation)
b. Equipment Efficiencies – existing and new equipment
c. Operating Hours
d. Other assumptions as needed to confirm savings calculation.

Complete the survey with current respondent and contact additional respondents as needed to complete engineering review questions.

After the survey is completed, calculate the appropriate savings streams (kWh, kW, therm) for each applicable M_ID#. Enter the values on the Verified Gross Savings sheet and the Final Engineering sheet as indicated in the engineering instruction memo.

VGI_B1 = annual kWh and kW, or therms based on B1 (standard efficiency or code)
VGI_B2 = annual kWh and kW, or terms, based on B2 (efficiency of replaced equipment)]

Verify Measure Installation (V)

M_ID Table

V1. I'd like to ask you about the equipment at " <ADDRESS>, <CITY>,Wisconsin**.**
Was the following <MEASUREKIND> **or something similar to that installed at this location? Our records show that you received this incentive from Focus on Energy to install this measure.**
[If yes, ask engineering questions. If no, go to V2.]

				V1a_#	V1b_#	
"At" <ADDRESS>	<CITY >,Wisconsin	Description based on <MEASUREKIND>,	<Reward Amount>		<M_ID>	M_ID#
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		1
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		2
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		3
				Yes…….1 No……..2 Don't know…-97 Refused……..-98		4

V2. (# refers to M_ID#)

V2a_#	**V2b_#**	**V2c_#**	**V2d_#**	**V2e_#**
M_ID#	**Why wasn't this equipment installed?** [record response]	**Do you plan to install this equipment?**	**When?** [month/year]	**Why not?** [record response]
		Yes……..1 No……..2 Don't know…-97 Refused……..-98		
		Yes……..1 No……..2 Don't know…-97 Refused……..-98		
		Yes……..1 No……..2 Don't know…-97 Refused……..-98		
		Yes……..1 No……..2 Don't know…-97 Refused……..-98		

[Ask engineering review questions only for those M_IDs that were implemented. If no M_IDs were implemented, skip to next section 4 General Questions (G).

If the current respondent cannot answer some of the engineering review questions, find out who can.

Contact information for additional engineering review respondents.]

Name _____
Title _____
Telephone _____
Other _____

General Questions (G)

[The following questions are about the respondent, their role in the decision, and how the organization made decisions about selecting the equipment and approving the expenditures. This section also gets at prior experience with Focus. The interviewer should record the responses to each question.

These questions are designed for the interviewer to understand the:

- Respondent's role in the purchase and selection process (and identify if they have independent discretion or if interviewer needs to talk to additional people at this organization)
- Organization's policies regarding equipment purchases
- Respondent's role in this particular purchase
- Organization's process for obtaining approval for this specific project
- The organization's familiarity with Focus on Energy]

Based on our records, your organization received [sum of Reward Amount for all M_IDs**] of incentives from Focus on Energy during the period we are discussing.**

G41. What is your job title and what are your general responsibilities? [probes: how long worked at this organization, had these responsibilities, etc.]

G42. What is your role in making decisions regarding the purchase of energy using equipment? [probes: primary decision maker, one of the primary decision makers, recommends only, etc.]

G43. What, if any, policies does your organization have regarding equipment purchases? [probe: rate of return or payback requirements, specific efficiency requirements, annual limits on equipment replacement, schedules for replacements]

G43b. Did these policies apply to this (these) project(s)?

G44. What was your role and involvement in the purchase of the equipment we are discussing? [probes: when got involved, interaction with people within and outside the organization - who and interactions regarding what.]

G45. Who else was involved in making the final decision regarding the purchase of this equipment? [probes: number of people, process, board approval required, etc., understand roles regarding selecting equipment and roles regarding approval of expenditures]

G46. Had your organization participated in the Focus on Energy Program before the project(s) we're discussing? If yes, what services or incentives did you receive from Focus on Energy? [probes: incentives for measures at this or other locations, information, feasibility studies, etc.]

Measure Group Questions (M)

[Group the measures into the categories below to ask the following series of questions related to the measure types installed. All applicable questions must be asked for all measure groups. The interviewer may choose to either ask all questions in order for a single measure group and then start again for the next measure group, or to ask each question for all measure groups and then move on to the next question.

Section M questions should be very conversational. Fill in what the customer tells you and then probe if there are unanswered questions. If a customer has already answered a question, you may simply verify the answer and fill it in as previously stated.]

Group Description	Category ID
Boilers & Burners	1
Lighting	2
Refrigeration	3
HVAC	4
Process	5
Domestic Hot Water	6
Building Shell	7
Laundry	8
Compressed Air, Vacuum Pumps	9
Agriculture	10
Waste Water Treatment	11
Industrial Ovens & Furnaces	12
Pools	13
Food Service	14
Information Technology	16
Plug Loads	17
Motors	61
Other	70

[Create Measure Groups which describe or correspond to measures taken by respondent.]

Group Number	M_IDs in Group	Description from above	Category ID from above
MG1			
MG2			
MG3			
MG4			

M51. Has your organization installed [measure group**] at the same energy efficiency level at this or another location?** [Circle one answer.]

RESPONSE	M51_MG1	M51_MG2	M51_MG3	M51_MG4
This location	1	1	1	1
Another	2	2	2	2
This location and at other location(s)	3	3	3	3
This is the first time → Skip to M52	4	4	4	4
[Don't know] → Skip to M52	-97	-97	-97	-97
[Refused] → Skip to M52	-98	-98	-98	-98

[Ask M51a. only if the organization participated in Focus on Energy prior to July 1, 2007 based on the answer to G46. Else skip to M51b.]

M51a. Did your organization receive incentives from Focus on Energy for installing energy efficient [measure group**] for any projects completed before the project we're discussing?**

RESPONSE	M51a_MG1	M51a_MG2	M51a_MG3	M51a_MG4
Yes (Specify:_____)	1	1	1	1
No	2	2	2	2
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

M51b. Did your organization receive incentives from any other program for installing energy efficient [measure group**] for any projects completed before the projects we're discussing?**

RESPONSE	M51b_MG1	M51b_MG2	M51b_MG3	M51b_MG4
Yes	1	1	1	1
No	2	2	2	2
[Don't know]	-97	-97	-97	-97
[Refused]	-98	Ted	-98	-98

I'd like to understand how your organization made the decision to install this particular equipment at this time.

M52. When did your organization start thinking about purchasing this equipment?

	Month/Year
M52_MG1	
M52_MG2	
M52_MG3	
M52_MG4	

M53. Why did you decide to install this equipment?
[record response and probe: any other reasons]

	Reasons why decided to install
M53_MG1	
M53_MG2	
M53_MG3	
M53_MG4	

M53a. [Probe for any answers below that were not discussed above. Circle all responses that apply, whether provided in open-ended response or as a result of probe.]

Response	M53a_MG1	M53a_MG2	M53a_MG3	M53a_MG4
New construction or major addition	1	1	1	1
Renovation or planned upgrade	2	2	2	2
Replace failing or broken equipment	3	3	3	3
To improve equipment efficiency	4	4	4	4
To improve operational efficiency	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

[Ask M54. only if answers not provided in M53. and M53a. above.]

M54. And why were you [installing, replacing, renovating**] the equipment at this time?** [record response, probe: Why now? OR Why now and not later or earlier?, any other reasons]

M54_MG1: _____

M54_MG2: _____

M54_MG3: _____

M54_MG4: _____

M55. With whom did you discuss different efficiency options for this equipment? [Probe: anyone else? Probe for Energy Advisor by name and others listed below by type]

[Energy Advisor(s) **-** Put in energy advisor name(s) from IS or other paperwork]

[Circle all that apply]

Type	**M55_MG1**	**M55_MG2**	**M55_MG3**	**M55_MG4**
People internal to organization	1	1	1	1
Focus on Energy Advisor/representative	2	2	2	2
Supplier/Vendor/Contractor	3	3	3	3
Utility Representative	4	4	4	4
Extension Agent	5	5	5	5
[Other] (specify)_____	6	6	6	6

[For each person indicated above, ask the following.]

What did they tell you?
[Probes:
Options: What efficiency options were discussed? Did you consider equipment that was not eligible for Focus financial incentives?
Inform: What role did the person(s) have in informing you about different options?
Influence: What influence did the person(s) have on your decision? What did the person(s) influence? How strong was the influence?]

M55a_type. Who? (circle type) 1 2 3 4 5 6
M55a_MG. WhichMGs? (circle) MG1 MG2 MG3 MG4
M55a_options. Options discussed? _____
M55a_inform. Role in informing? _____
M55a_influence. Influence on decision? _____

M55b_type. Who? (circle type) 1 2 3 4 5 6
M55b_MG. WhichMGs? (circle) MG1 MG2 MG3 MG4
M55b_options. Options discussed? _____
M55b_inform. Role in informing? _____
M55b_influence. Influence on decision? _____

M55c_type. Who? (circle type) 1 2 3 4 5 6
M55c_MG. WhichMGs? (circle) MG1 MG2 MG3 MG4
M55c_options. Options discussed? _____
M55c_inform. Role in informing? _____
M55c_influence. Influence on decision? _____

[M56 below is an important question. Please ask if not clearly answered by M55.]

M56. What role, if any, did your contractor play in helping you select [measure group**] equipment?** [probe: timing in process, provided bids only, recommended specific equipment, identified equipment eligible for rebates, informed of Focus on Energy, etc.]

M56_MG1: _____

M56_MG2: _____

M56_MG3: _____

M56_MG4: _____

M57. From whom did you hear about Focus on Energy?
[Circle all that apply. If G46="yes," circle "1" and skip this question.]

Response	M58
Already knew before started project	1
From contractor/vendor/supplier	2
From Focus on Energy Representative	3
From utility	4
From extension agent	5
From colleague within my organization	6
From colleague or someone else outside my organization	7
From the internet	8
Other (specify:_____)	9
[Don't know]	-97
[Refused]	-98

M58. Did you become aware of Focus on Energy incentives and services. . . ?
[Read entire list before accepting a response and circle one response. If M51a="yes" for a measure group, circle "1" for that measure group.]

Response	M57_MG1	M57_MG2	M57_MG3	M57_MG4
Before starting the project	1	1	1	1
As soon as began exploring equipment options	2	2	2	2
While exploring equipment options, but before making equipment decision	3	3	3	3
After making equipment decision	4	4	4	4
After installing equipment	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

Summarize from Impact Statement response to following question and use for probing. 1. Briefly explain how you (Energy Advisor) got involved with the customer and project.

M59. At the time that you purchased your equipment, what services were you aware that Focus offered regarding [measure group**]?**
[probes: incentives, services, what types]

M59_MG1: _____

M59_MG2: _____

M59_MG3: _____

M59_MG4: _____

M510. What role, if any, did Focus on Energy play in helping your organization select and install the equipment at this location? [probe based on Energy Advisor write-up: incentives, provided information, prepared materials for internal sale, helped estimate savings, ROI or payback, feasibility study, other.]

M510 MG1: _____

M510 MG2: _____

M510 MG3: _____

M510 MG4: _____

Check items that are checked or discussed on the Impact Statement:
2. Briefly explain your understanding of the largest customer barriers preventing the project's implementation.

____ Payback
____ Confidence in realizing estimated savings
____ Unknown technology or process
____ Lack of time/unwilling to make time to understand what efficiency options make sense for facility/research and select a vendor to implement equipment
____ Lack of credibility/legitimacy. Customer needs a third party reference
____ Permit barriers
____ Internal bureaucracy/inability to gain decision maker's attention
____ Lack of access to financing
____ Competition for funding with other internal projects
____ Other _____

M511. What were the main obstacles that you encountered with getting this project approved and completed? [probe: for items in table above if not mentioned by respondent, for new construction, probe specifically about problems with maintaining the high efficiency of the equipment, anything else?]

M511 MG1: _____

M511 MG2: _____

M511 MG3: _____

M511 MG4: _____

Summarize from IS responses to following two questions and use for probing.
3. Briefly explain what type of assistance you provided to the customer with regards to this project.

4. Briefly describe how this assistance overcame the customer's barriers.

M512. What did you or others do to overcome these obstacles? [probe: who helped you overcome these challenges? In what way?]

M512_MG1: _____

M512_MG2: _____

M512_MG3: _____

M512_MG4: _____

[Ask if not addressed above:]

M513. What assistance, if any, did Focus on Energy provide to help you overcome these obstacles? [probes: incentives, feasibility study, Focus representative, program information, other]

M513_MG1: _____

M513_MG2: _____

M513_MG3: _____

M513_MG4: _____

Direct Attribution (DAT)

[The engineer needs to group the measures (and if possible, projects) in a way that will work for the attribution. In other words, the likelihood needs to be very high that the efficiency, timing and quantity responses will be the same for the group. You can ask questions for each grouping but need to record responses individually by M_ID. In giving the introduction to this section, be sure to emphasize that you are discussing advice, analysis, documentation, etc… that Focus gave them, not just money.

Responses are recorded by M_ID# so that savings calculations and attribution can be determined at the measure level.]

Now I'm going to ask you a series of questions to understand the effect, if any, that Focus on Energy had on your decisions regarding the purchase of [equipment type**]. When I ask about Focus on Energy I'm asking about the effect of financial incentives, as well as the effect of other assistance that Focus provided such as [**summarize assistance discussed in Section 5**].**

OVERALL INFLUENCE

DAT0. **First, I'd like to know about the effect, if any, that Focus on Energy incentives and other Focus assistance had on your decision to install [**equipment type**].**

If Focus on Energy didn't exist, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**]?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT0_O. Why do you say that?

DAT0_O_MID1: _____
DAT0_O_MID2: _____
DAT0_O_MID3: _____
DAT0_O_MID4: _____

TIMING

DAT1. **I'd like to know about the effect, if any, that Focus on Energy incentives and other Focus assistance had on your decision to install [**equipment type**] *at this time*.**

If Focus on Energy didn't exist, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**] at this time?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT1_O. Why do you say that?

DAT1_O_MID1: _____
DAT1_O_MID2: _____
DAT1_O_MID3: _____
DAT1_O_MID4: _____

DAT1a. **If Focus on Energy didn't exist, how different would the timing have been? Would you say you would have installed [**equipment type**] at the same time, earlier, later or never?**

Response	DAT1a_MID1	DAT1a_MID2	DAT1a_MID3	DAT1a_MID4
Same time → Skip to DAT2	1	1	1	1
Earlier → Skip to DAT2	2	2	2	2
Later	3	3	3	3
Never → Skip to DAT2	4	4	4	4
[Don't know] → Skip to DAT2	-97	-97	-97	-97
[Refused] → Skip to DAT2	-98	-98	-98	-98

[Make sure response is consistent with DAT1. If not, attempt to resolve.
If DAT1 = -97 and DAT1a = -97, attempt to resolve.
If DAT1 = -98 and DAT1a = -98, skip to DAT2.]

DAT1b. Approximately how many months later?
[Try to get a number. Try bracketing if necessary by beginning with more or less than four years later.]

	DAT1b_MID1	DAT1b_MID2	DAT1b_MID3	DAT1b_MID4
[RECORD # OF MONTHS	_____	_____	_____	_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

Efficiency

[This section applies for any measure where there is a standard efficiency option. For example, variable frequency drives do not have a "standard efficiency" option, but installing a VFD will result in energy savings. Heat recovery, lighting controls, and steam trap replacement also fall into this category. Circle "5" not applicable for the measure in the table below and skip to DAT3.]

DAT2. **I'd like to know about the effect, if any, that Focus on Energy incentives and other Focus assistance had on your decision to install *high efficiency* [**equipment type**].**

If Focus on Energy didn't exist, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have installed [equipment type**] of the same *efficiency* as what you did install?**

Response	DAT2_MID1	DAT2_MID2	DAT2_MID3	DAT2_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Not applicable] → Skip to DAT3	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2_O. Why do you say that?

DAT2_O_MID1: _____

DAT2_O_MID2: _____

DAT2_O_MID3: _____

DAT2_O_MID4: _____

DAT2a. **If Focus on Energy didn't exist, would you say you would have installed [**equipment type**] of the same efficiency, lesser efficiency, or greater efficiency?**

Response	DAT2a_MID1	DAT2a_MID2	DAT2a_MID3	DAT2a_MID4
Same → Skip to DAT3	1	1	1	1
Lesser	2	2	2	2
Greater → Skip to DAT3	3	3	3	3
[Not applicable] → Skip to DAT3	4	4	4	4
[Don't know] → Skip to DAT3	-97	-97	-97	-97
[Refused] → Skip to DAT3	-98	-98	-98	-98

[Make sure response is consistent with DAT2. If not, attempt to resolve.
If DAT2 = -97 and DAT2a = -97, attempt to resolve.
If DAT2 = -98 and DAT2a = -98, skip to DAT3.]

DAT2b. If Focus on Energy didn't exist, would you have installed [equipment type**] that was "standard efficiency on the market at that time," "slightly higher than standard efficiency", "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?"**

Response	DAT2b_MID1	DAT2b_MID2	DAT2b_MID3	DAT2b_MID4
Standard efficiency or according to code	1	1	1	1
Slightly higher than standard efficiency	2	2	2	2
Between standard efficiency and the efficiency that was installed	3	3	3	3
Slightly lower than the high efficiency that was installed	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2b_O. Why do you say that?

DAT2c_O_MID1: _____
DAT2c_O_MID2: _____
DAT2c_O_MID3: _____
DAT2c_O_MID4: _____

QUANTITY

Finally, I'd like to know about the effect, if any, that Focus on Energy incentives and other assistance had on how much [equipment type**] you installed.**

DAT3. If Focus on Energy didn't exist, how different would the [number/size**] of [**equipment type**] installed have been? Would you say you would have installed the same amount, less, more, or would you not have installed anything?**

Response	DAT3_MID1	DAT3_MID2	DAT3_MID3	DAT3_MID4
Same amount	1	1	1	1
Less	2	2	2	2
More	3	3	3	3
Would not have installed any. → Skip to DAT4	4	4	4	4
[Not Applicable] → Skip to DAT4	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused] → Skip to DAT4	-98	-98	-98	-98

DAT3_O. Why do you say that?

DAT2c_O_MID1: _____
DAT2c_O_MID2: _____
DAT2c_O_MID3: _____
DAT2c_O_MID4: _____

DAT3a. By what percentage did you *increase* the amount of [equipment type**] installed because of the Focus on Energy Program?**

[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.
- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]

	DAT3a_MID1	DAT3a_MID2	DAT3a_MID3	DAT3a_MID4
[RECORD %]	_____%	_____%	_____%	_____%
Don't know	-97	-97	-97	-97
Refused	-98	-98	-98	-98

DAT4. **We've just discussed the different effects that Focus on Energy had on your organization's decisions regarding the [**equipment type**] that you installed. I'd like you to summarize the program's influence on the timing, efficiency and amount of [**equipment type**] that you installed.**

[If response is inconsistent with previous responses attempt to resolve. Please note any final inconsistencies.]

DAT4_MID1: _____

_____

DAT4_MID2: _____

_____

DAT4_MID3: _____

_____

DAT4_MID4: _____

_____

DAT5. **Do you have any additional comments about these projects or the Focus on Energy program?** [record]

_____

_____

_____

DAT7. [To be filled out by interviewer: Vendor surveys are required if the respondent indicates that the program did not have an effect on efficiency (DAT2a = 1 or 3) AND the respondent indicates that the vendor had substantial influence on the efficiency of the installed equipment.
Is a vendor survey required?]

Yes	1
No	2

DAT8. [To be filled out by interviewer: Note any unresolved inconsistencies.]

None	1
Some (enter below)	2

_____

_____

DAT9. [To be filled out by interviewer: Summarize the project and impact that the program had on the purchase. If you have noted unresolved inconsistencies in DAT8, summarize what you know at this point. Be sure to cover timing, quantity, and efficiency and why.]

_____

_____

_____

Incremental Cost (C)

[Use the Measure Groups defined in Section 5 during this sequence. Fill in the equipment and total costs from the invoice into the grey areas. If the customer can't answer the question, ask them to verify whether the cost in grey is accurate. If they can't verify it, copy the number in grey to the "Record Costs" row and set Quality=4. Under the "Quality" row, Quality=1 represents an answer like "Oh, I don't know – maybe $10k," where Quality=5 represents the customer reading the number directly from their final invoice.]

C1. Was your organization awarded financial assistance from a source other than Focus on Energy for the [measure group**] improvements made?**

RESPONSE	C1_MG1	C1_MG2	C1_MG2	C1_MG2
Yes	1	1	1	1
No → Skip to C2	2	2	2	2
[Don't know] → Skip to C2	-97	-97	-97	-97
[Refused] → Skip to C2	-98	-98	-98	-98

C1a. About how much was that <u>other</u> financial assistance?

RESPONSE	C1a_MG1	C1a_MG2	C1a_MG3	C1a_MG4
[RECORD OTHER FINANCIAL ASSISTANCE TO NEAREST TEN DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C2. What was the approximate equipment cost of the [measure group**] improvements made?** [total cost is the cost of the project before the financial assistance]
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

Copy from Invoice:				
RESPONSE	**C2_MG1**	**C2_MG2**	**C2_MG3**	**C2_MG4**
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C2a. What was the total cost, including labor?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

Copy from Invoice:				
RESPONSE	**C2a_MG1**	**C2a_MG2**	**C2a_MG3**	**C2a_MG4**
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3. [Ask this question for natural replacement projects only (i.e. if M53. is "replace failed or broken equipment."). If not natural replacement, skip to Section 8.] **Earlier you said that you were making changes to the [**measure group**] equipment. I want to understand what impact, if any, the energy efficiency improvements had on these costs. Did they increase, decrease, or have no impact on the total cost of the changes?**

RESPONSE	**C3_MG1**	**C3_MG2**	**C3_MG3**	**C3_MG4**
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to Section 8	3	3	3	3
[Don't know] → Skip to Section 8	-97	-97	-97	-97
[Refused] → Skip to Section 8	-98	-98	-98	-98

C3a. By how much did they [increase/decrease] the total cost?
[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	**C3a_MG1**	**C3a_MG2**	**C3a_MG3**	**C3a_MG4**
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3b. Did the changes increase, decrease, or have no impact on the equipment costs?

RESPONSE	C3b_MG1	C3b_MG2	C3b_MG3	C3b_MG4
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to C3d	3	3	3	3
[Don't know] → Skip to C3d	-97	-97	-97	-97
[Refused] → Skip to C3d	-98	-98	-98	-98

C3c. About how much [more/less] were the total equipment costs?

[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3c_MG1	C3c_MG2	C3c_MG3	C3c_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3d. Did the changes increase, decrease, or have no impact on the labor costs?

[Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3d_MG1	C3d_MG2	C3d_MG3	C3d_MG4
Increase	1	1	1	1
Decrease	2	2	2	2
Have no impact → Skip to Section 8	3	3	3	3
[Don't know] → Skip to Section 8	-97	-97	-97	-97
[Refused] → Skip to Section 8	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

C3e. About how much [more/less] were the total labor costs? [Interviewer: ask the customer what they are basing their estimate on (source) and record that answer in the last row. Try to probe to get accurate information to approximately the nearest $100. Use your best judgment to indicate the quality of the cost data received here and enter it on a scale from 1 to 5 with 5 being the best quality.]

RESPONSE	C3e_MG1	C3e_MG2	C3e_MG3	C3e_MG4
[RECORD COSTS TO NEAREST HUNDRED DOLLARS]	$_____	$_____	$_____	$_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98
Quality (1-5, 5 is high)	_____	_____	_____	_____
Source	_____	_____	_____	_____

Demographics (D)

[Do not ask these questions if no measures were installed.]
The next questions I have for you are about the facility at which your organization made the energy efficiency improvements we discussed earlier.

D1. What is the principal activity of your organization at this location?

Agricultural: e.g., production crops, livestock, agricultural services ..... [SKIP TO d3] 1
Water or wastewater treatment facility ..... [SKIP TO d3] 2
Industrial: manufacturing/industrial process 3
Warehouse nonrefrigerated ..... [SKIP TO d3] 4
Warehouse refrigerated ..... [SKIP TO d3] 5
Education: including preschool, daycare ..... [SKIP TO d3] 6
Food service: e.g., restaurant, bar, fast food, cafeteria ..... [SKIP TO d3] 7
Food sales: e.g., grocery store ..... [SKIP TO d3] 8
Enclosed mall ..... [SKIP TO d3] 9
Strip mall ..... [SKIP TO d3] 10
Retail excluding enclosed or strip mall: e.g., auto dealership, showroom, store ..... [SKIP TO d3] 11
Public order and safety: including courthouse, probation office, jail ..... [SKIP TO d3] 12
Nursing home/Assisted living (Skilled nursing) ..... [SKIP TO d3] 13
Lodging: e.g., hotel/motel/inn/resort, dormitory/fraternity/sorority ..... [SKIP TO d3] 14
Lodging: residential ..... [SKIP TO d3] 15
Health care inpatient: e.g., hospital ..... [SKIP TO d3] 16
Health care outpatient: e.g., doctor/dentist office, clinic ..... [SKIP TO d3] 17
Laboratory ..... [SKIP TO d3] 18
Religious worship ..... [SKIP TO d3] 19
Public assembly: incl. theater, nightclub, library, museum, gym, bowling alley ..... [SKIP TO d3] 20
Service: e.g., auto service/repair, dry cleaner/laundromat, repair shop, post office ..... [SKIP TO d3] 21
Office/Professional: including bank, government ..... [SKIP TO d3] 22
Other [SPECIFY d3_o]

_____
_____ [SKIP TO d3] 23
[Don't know] ..... [SKIP TO d3] -97
[Refused] ..... [SKIP TO d3] -98

D2. Briefly describe what is done at this location. [Accept multiple responses]

Textile manufacturing 1
Wood manufacturing 2
Plastics manufacturing 3
Food manufacturing 4
Metal manufacturing 5
Goods manufacturing 6
Assembly 7
Other [Specify_____] 96
[Don't know] ..... -97
[Refused] ..... -98

D3. How many full-time employees work for your organization at this location?
[Record number of employees]_____
[Don't know]..... -97
[Refused]..... -98

D4. How many part-time employees work for your organization at this location?
[Record number of employees]_____
[Don't know]..... -97
[Refused]..... -98

D5. What is the total enclosed square footage of the space your organization occupies at this location? Your best estimate is fine.
[RECORD # SQ FT] ..... _____
[Don't know]..... -97
[Refused]..... -98

D6. At this location, does your organization [read list]
Own all of the space it occupies? 1
Lease all of the space it occupies? 2
Or own some and lease some of the space it occupies? 3
[Don't know]..... -97
[Refused]..... -98

D7. Does your organization operate at a single location, at multiple locations, or is it a franchise organization?

Single location	[SKIP TO D9] 1
Multiple locations—not including franchise organization	2
Franchise organization	3
Don't know	-97
Refused	-98

D8. Is your organization headquartered in Wisconsin?

Yes	1
No	2
Don't know	-97
Refused	-98

D9. Thank you for taking the time to talk with me today. Would it be okay if I called you back to clarify my notes, if necessary?

Yes	1
No	2
Don't know	–97
Refused	–98

Special Net-to-Gross Sequence for Instant Incentives and Program Ally ONLY Financial Assistance

[Use this program attribution sequence if program selected:

- Received only Instant Incentives
- Program Ally delivered ONLY Focus Financial Assistance (Financial assistance mechanisms analogous to Instant Incentives)]

Direct Attribution (DAT)

[The engineer needs to group the measures (and if possible, projects) in a way that will work for the attribution. In other words, the likelihood needs to be very high that the efficiency, timing and quantity responses will be the same for the group. You can ask questions for each grouping but need to record responses individually by M_ID. Responses are recorded by M_ID# so that savings calculations and attribution can be determined at the measure level.

In giving the introduction to this section, be sure to emphasize that you are discussing advice, analysis, documentation, etc… that Focus gave them, not just money.]

Now I'm going to ask you a series of questions to understand the effect, if any, that Focus on Energy had on your decisions regarding the purchase of [equipment type**]. When I ask about Focus on Energy I'm asking about the effect of financial incentives, as well as the effect of other assistance that Focus provided such as [**summarize assistance discussed in Section 5**].**

OVERALL INFLUENCE

DAT0. **First, I'd like to know about the effect, if any, that Focus on Energy discounts had on your decision to install [**equipment type**].**

If you hadn't received a discount, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**]?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT0_O. Why do you say that?

DAT0_O_MID1: _____
DAT0_O_MID2: _____
DAT0_O_MID3: _____
DAT0_O_MID4: _____

TIMING

DAT1. I'd like to know about the effect, if any, that Focus on Energy discounts had on your decision to install [equipment type**] *at this time*.**

If you hadn't received a discount, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have installed [equipment type**] at this time?**

RESPONSE	DAT1_MID1	DAT1_MID2	DAT1_MID3	DAT1_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT1_O. Why do you say that?

DAT1_O_MID1: _____
DAT1_O_MID2: _____
DAT1_O_MID3: _____
DAT1_O_MID4: _____

DAT1a. If you hadn't received a discount, how different would the timing have been? Would you say you would have installed [equipment type**] at the same time, earlier, later or never?**

Response	DAT1a_MID1	DAT1a_MID2	DAT1a_MID3	DAT1a_MID4
Same time → Skip to DAT2	1	1	1	1
Earlier → Skip to DAT2	2	2	2	2
Later	3	3	3	3
Never → Skip to DAT2	4	4	4	4
[Don't know] → Skip to DAT2	-97	-97	-97	-97
[Refused] → Skip to DAT2	-98	-98	-98	-98

[Make sure response is consistent with DAT1. If not, attempt to resolve.
If DAT1 = -97 and DAT1a = -97, attempt to resolve.
If DAT1 = -98 and DAT1a = -98, skip to DAT2.]

DAT1b. Approximately how many months later?
[Try to get a number. Try bracketing if necessary by beginning with more or less than four years later.]

	DAT1b_MID1	DAT1b_MID2	DAT1b_MID3	DAT1b_MID4
[RECORD # OF MONTHS	_____	_____	_____	_____
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

Efficiency

[This section applies for any measure where there is a standard efficiency option. For example, variable frequency drives do not have a "standard efficiency" option, but installing a VFD will result in energy savings. Heat recovery, lighting controls, and steam trap replacement also fall into this category. Circle "5" not applicable for the measure in the table below and skip to DAT3.]

DAT2. I'd like to know about the effect, if any, that Focus on Energy discounts had on your decision to install *high efficiency* [equipment type**].**

If you hadn't received a discount, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have installed [equipment type**] of the same *efficiency* as what you did install?**

Response	DAT2_MID1	DAT2_MID2	DAT2_MID3	DAT2_MID4
Very likely	1	1	1	1
Somewhat likely	2	2	2	2
Not very likely	3	3	3	3
Not at all likely	4	4	4	4
[Not applicable] → Skip to DAT3	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2_O. Why do you say that?

DAT2_O_MID1: _____
DAT2_O_MID2: _____
DAT2_O_MID3: _____
DAT2_O_MID4: _____

DAT2a. **If you hadn't received a discount, would you say you would have installed [**equipment type**] of the same efficiency, lesser efficiency, or greater efficiency?**

Response	DAT2a_MID1	DAT2a_MID2	DAT2a_MID3	DAT2a_MID4
Same → Skip to DAT3	1	1	1	1
Lesser	2	2	2	2
Greater → Skip to DAT3	3	3	3	3
[Not applicable] → Skip to DAT3	4	4	4	4
[Don't know] → Skip to DAT3	-97	-97	-97	-97
[Refused] → Skip to DAT3	-98	-98	-98	-98

[Make sure response is consistent with DAT2. If not, attempt to resolve.
If DAT2 = -97 and DAT2a = -97, attempt to resolve.
If DAT2 = -98 and DAT2a = -98, skip to DAT3.]

DAT2b. If you hadn't received a discount, would you have installed [equipment type**] that was "standard efficiency on the market at that time," "slightly higher than standard efficiency", "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was installed?"**

Response	DAT2b_MID1	DAT2b_MID2	DAT2b_MID3	DAT2b_MID4
Standard efficiency or according to code	1	1	1	1
Slightly higher than standard efficiency	2	2	2	2
Between standard efficiency and the efficiency that was installed	3	3	3	3
Slightly lower than the high efficiency that was installed	4	4	4	4
[Don't know]	-97	-97	-97	-97
[Refused]	-98	-98	-98	-98

DAT2b_O. Why do you say that?

DAT2c_O_MID1: _____
DAT2c_O_MID2: _____
DAT2c_O_MID3: _____
DAT2c_O_MID4: _____

QUANTITY

Finally, I'd like to know about the effect, if any, that Focus on Energy discounts had on how much [equipment type**] you installed.**

DAT3. If you hadn't received a discount, how different would the [number/size**] of [**equipment type**] installed have been? Would you say you would have installed the same amount, less, more, or would you not have installed anything?**

Response	DAT3_MID1	DAT3_MID2	DAT3_MID3	DAT3_MID4
Same amount	1	1	1	1
Less	2	2	2	2
More	3	3	3	3
Would not have installed any. → Skip to DAT4	4	4	4	4
[Not Applicable] → Skip to DAT4	5	5	5	5
[Don't know]	-97	-97	-97	-97
[Refused] → Skip to DAT4	-98	-98	-98	-98

DAT3_O. Why do you say that?

DAT2c_O_MID1: _____
DAT2c_O_MID2: _____
DAT2c_O_MID3: _____
DAT2c_O_MID4: _____

DAT3a. By what percentage did you *increase* the amount of [equipment type**] installed because of the discount?**

[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.
- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]

	DAT3a_MID1	DAT3a_MID2	DAT3a_MID3	DAT3a_MID4
[RECORD %]	_____%	_____%	_____%	_____%
Don't know	-97	-97	-97	-97
Refused	-98	-98	-98	-98

DAT4. **We've just discussed the different effects that the Focus on Energy discount program had on your organization's decisions regarding the [**equipment type**] that you installed. I'd like you to summarize the program's influence on the timing, efficiency and amount of [**equipment type**] that you installed.**

[If response is inconsistent with previous responses attempt to resolve. Please note any final inconsistencies.]

DAT4_MID1: _____

_____

DAT4_MID2: _____

_____

DAT4_MID3: _____

_____

DAT4_MID4: _____

_____

DAT5. **Do you have any additional comments about these projects or the Focus on Energy program?** [record]

_____

_____

_____

DAT7. [To be filled out by interviewer: Vendor surveys are required if the respondent indicates that the program did not have an effect on efficiency (DAT2a = 1 or 3) AND the respondent indicates that the vendor had substantial influence on the efficiency of the installed equipment.
Is a vendor survey required?]

Yes	1
No	2

DAT8. [To be filled out by interviewer: Note any unresolved inconsistencies.]

None	1
Some (enter below)	2

DAT9. [To be filled out by interviewer: Summarize the project and impact that the program had on the purchase. If you have noted unresolved inconsistencies in DAT8, summarize what you know at this point. Be sure to cover timing, quantity, and efficiency and why.]

APPENDIX K: CATI SURVEY

Implementing Partners Short-term Follow-up Simple Net-to-Gross Survey

Survey house instructions:

- When programming the survey, it is critical the question numbers remain the same. (We are also "manually" delivering a similar version of this survey to some program participants and we will combine the data from both surveys to produce a single set of results.)
- Please provide us all the data, not only the completes, as we're interested in some of the disposition codes (in particular, initial refusal and mid-interview terminate).
- Do not read the list of responses unless instructed to do so ([READ LIST]). And just to be clear, when reading lists, never read "don't know' or "refused."
- Do not read text inside brackets [ ].

INFORMED RESPONDENT

I1. Hello, may I please speak with [WORK THROUGH CONTACT NAMES IN SAMPLE DATA (<cont1>, <cont2>, <cont3>) AND SUBSEQUENTLY OBTAINED]**?**

Contact available ..... [SKIP TO I2] 1
Contact currently unavailable..... [ARRANGE CALL BACK] 2
No contact 3

I1b. I'd like to speak with the person responsible for facility management such as energy-efficiency or productivity improvements or the purchase of energy-using equipment.

Person responsible for facility management available [RECORD NAME.] 1
Person responsible for facility management currently unavailable [RECORD NAME AND ARRANGE CALL BACK].....2
No person responsible for facility management ..... [SKIP TO I7] 3
Don't know..... [SKIP TO I7] -97
Refused..... [SKIP TO I7] -98

I2. Hello, my name is _____ and I'm calling from _____ on behalf of the Wisconsin Public Service Commission for the Focus on Energy Program.

I would like to ask you a few questions regarding <I2txta>. This is not a sales or marketing call. We're calling to help the Focus on Energy Program, which <I2txtb>. Focus on Energy is required by the state of Wisconsin to conduct this type of research. Your response will be kept entirely confidential.

//

(1) sample data: <I2txta>

if <xunit>=WPS: <I2txta>= the free compact fluorescent light bulbs you received from Focus on Energy and Wisconsin Public Service

if <cflqty> equals 1, i.e., from cfl database: <I2txta>=the compact fluorescent light bulb or CFL your organization recently purchased and for which it received a rebate of up to $2

else if <cflqty> is greater than 1: <I2txta>=the [cflqty] compact fluorescent light bulbs or CFLs your organization recently purchased and for which it received a rebate of up to $2 on each bulb

else: <I2txta>=[ansome] energy efficiency improvement[s] your organization recently made

(2) sample data: <I2txtb>

If <xunit>=WPS: <12txtb>=was responsible for distributing these bulbs, improve its services and help organizations in the state of Wisconsin—like yours—save energy

if <cflqty> is greater than or =1: <l2txtb>=paid for the rebate, improve its services and help organizations in the state of Wisconsin—like yours—save energy
else: <l2txtb>= either helped your organization with <these> energy efficiency improvement<s> or the company that supplied the improvement<s>
//

l4. [IF cf=1 SKIP TO l4cf] According to Focus on Energy records, sometime between July 1, 2007 and March 31, 2008, your organization made the following energy efficiency improvement<s>:

<lc1cnall> [List of energy efficiency improvements by location]
<lc2cnall>
<lc3cnall>
<lc4cnall>
<lc5cnall>
<lc6cnall>
<lc7cnall>
<lc8cnall>

Are you familiar with your organization's decision to make <these> energy efficiency improvement<s>?

Yes (all or some) ..... [SKIP TO y0] 1
No[SKIP TO l6] 2
Don't know[SKIP TO l6] ..... –97
Refused[SKIP TO l6] .....–98

l4cf. According to Focus on Energy records, sometime between July 1, 2007 and March 31, 2008, your organization <l4txt>

Yes (all or some) ..... [SKIP TO y0] 1
No.....2
Don't know.....–97
Refused.....–98

//Sample data: <l4txt>

IF <xunit>=WPS: <l4txt>= **received** [cflqty] **free compact fluorescent light bulbs from Focus on Energy and Wisconsin Public Service. Do you remember your organization receiving these compact fluorescent light bulbs?**

ELSE if cflqty =1: <l4txt>= **purchased a compact fluorescent light bulb at [**store**] and received a [**instmail**] rebate of up to $2. Are you familiar with your organization's decision to purchase this CFL?**

if cflqty> 1: <l4txt>= **purchased [**cflqty**] compact fluorescent light bulbs at [**store**] and received a [**instmail**] rebate of up to $2 on each bulb. Are you familiar with your organization's decision to purchase these CFLs?**//

I6. Do you know who is likely to <I6txt>**?**

Yes[.....RECORD NAME AND START OVER AGAIN WITH I1] 1
No.....2
Don't know.....-97
Refused.....-98

//Sample data: <I6txt>

if <xunit>=WPS: <I6txt>= **remember receiving these CFLs**

if <cflqty> equals =1: <I6txt>= **be familiar with your organization's decision to purchase this CFL**

if <cflqty> is greater than 1: <I6txt>= **be familiar with your organization's decision to purchase these CFLs**

else <I6txt>= **be familiar with your organization's decision to make** <thiese> **energy efficiency improvement<s>**//

I6b. [CHECK TO MAKE SURE ALL CONTACTS HAVE BEEN TRIED.]
Not all contacts have been tried.....[START OVER AGAIN WITH I1] 1
All contacts have been tried.....2

I7. Thank you very much for your time today. Those are all the questions I have.

No one familiar with decision .....[END INTERVIEW] 1

VERIFY MEASURE INSTALLATION

//

Notes:

- All respondents answer these questions
- All respondents come to this section y0 from the previous section (1 Informed Respondent)
- FYI, during previous versions of this survey roughly 90 percent of respondents were asked about only one energy efficiency improvement.

//

y0. "First, I want to confirm the <y0txt>."

//Sample data: <y0txt>

if <cflqty> equals =1: <y0txt>= **compact fluorescent light bulb or CFL I just referred to has been installed**

if <cflqty> is greater than 1: <y0txt>= **compact fluorescent light bulbs or CFLs I just referred to have been installed**

else <y0txt>= **energy efficiency improvement[/S] I just named [WAS/WERE] made**//

//

Survey house instructions:

The example shown is for 1 hvac energy efficiency improvement.

For hvac, this series (hcy1c_x-hcy1dm_x) must be repeated # times. [KEMA TO PROVIDE SURVEY FIRM WITH NUMBER OF TIMES THE SEQUENCE NEEDS TO BE REPEATED BY END-USE CATEGORY]

Where changes need to be made are highlighted.

//

hcy1c_1. //This skip is only necessary for the first energy efficiency improvement in an end use series// [IF <hc>=(equals)1, ELSE SKIP TO lty1c_1] [INTERVIEWER: IF THIS SCREEN IS BLANK, CHOOSE "BLANK SCREEN" BELOW]
<hcloccn1> [**At _____, has the following HVAC energy efficiency improvement or something similar to it been made: _____]?**
Yes .....[SKIP TO hcy1q_1] 1
//hcy1c_2: Change SKIP TO from "hcy1c_2" to "lty1c_1"//
No.....[SKIP TO hcy1n1_1] 2
Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] –98
BLANK SCREEN.....[SKIP TO lty1c_1] 00

hcy1n1_1 Why wasn't this equipment installed?

_____

Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] –98

hcy1n2_1 Do you plan to install this equipment?
Yes 1
No [SKIP TO hcy1n4_1] 2
Don't know [SKIP TO hcy1c_2] .....-97
Refused [SKIP TO hcy1c_2] .....–98

hcy1n4_1 Why not?
_____ .....[SKIP TO hcy1c_2]
Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] -98

hcy1q_1 Our records show that you installed <hcqy1> **of these energy efficiency improvements. Is this correct?**
Yes .....[SKIP TO hcy1e_1] 1
No.....2
Don't know.....-97
Refused.....–98

hcy1qr_1 How many of these energy efficiency improvements did you install? [RECORD # INSTALLED, PROBE FOR BEST ESTIMATE]

_____

Don't know.....-97
Refused.....–98
[IF measure is prescriptive {pcfinal = P} THEN ASK hcy1e_1; ELSE SKIP TO hcy1c_2]

hcy1e_1 You installed high efficiency equipment with the help of Focus. Without the services you received from Focus, including the financial assistance, what type of equipment would you *most likely* have installed… [READ ALL BEFORE ACCEPTING ANSWER]

As high efficiency as you did install..... 1
Standard efficiency 2
Less efficient than standard 3
Between standard and the high efficiency you did install 4
Would not have done anything 5
Don't know.....-97
Refused .....–98

//

KEMA TO PROVIDE SURVEY FIRM WITH NUMBER OF TIMES THE SEQUENCE NEEDS TO BE REPEATED BY END-USE CATEGORY

Survey house instructions:

Essentially identical series' to that described above for hvac must be created for each of the remaining end uses:

- lighting: lt, # times
- manufacturing process: mp, # times
- building shell: bs, # time
- other: or, # time

Where changes need to be made based on the end use are highlighted below.

//

//

Notes:

- Either the end uses listed above (hc, lt, mp, bs, or) OR cf, which follows, is relevant for a respondent

//

hcy1c_1. //This skip is only necessary for the first energy efficiency improvement in an end use series// [IF <hc>=(equals)1, ELSE SKIP TO lty1c_1] <hcloccn1> **[At _____, has the following HVAC energy efficiency improvement or something similar to it been made:_____]?**

Yes[SKIP TO hcy1q_1] 1
//hcy1c_2 (i.e., the number of times the series is repeated): Change SKIP TO from "hcy1c_2" to "lty1c_1." In the case of other, change SKIP TO for the last series from "ory1c_2" to z0.//
No .....[SKIP TO hcy1n1_1] 2
Don't know .....[SKIP TO hcy1c_2] -97
Refused .....[SKIP TO hcy1c_2] –98
BLANK SCREEN .....[SKIP TO lty1c_1] 00

hcy1n1_1 Why wasn't this equipment installed?

_____

Don't know .....[SKIP TO hcy1c_2] -97
Refused .....[SKIP TO hcy1c_2]–98

hcy1n2_1 Do you plan to install this equipment?

Yes 1
No.....[SKIP TO hcy1n4_1] 2
Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] –98

hcy1n3_1 When do you plan to install this equipment?

_____ .....[SKIP TO hcy1c_2]
Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] –98

hcy1n4_1 Why not?

_____ .....[SKIP TO hcy1c_2]
Don't know.....[SKIP TO hcy1c_2] -97
Refused.....[SKIP TO hcy1c_2] –98

hcy1q_1 Our records show that you installed <hcqy1> of these energy efficiency improvements. Is this correct?

Yes .....[SKIP TO hcy1e_1] 1
No.....2
Don't know.....-97
Refused.....–98

hcy1qr_1 How many of these energy efficiency measures did you install? [RECORD # INSTALLED, PROBE FOR BEST ESTIMATE]

_____

Don't know.....-97
Refused.....–98

[IF measure is prescriptive {pcfinal = P} THEN ASK hcy1e_1; ELSE SKIP TO hcy1c_2]

hcy1e_1 You installed high efficiency equipment with the help of Focus. Without the services you received from Focus, including the financial assistance, what type of equipment would you *most likely* have installed…. [READ ALL BEFORE ACCEPTING ANSWER]

As high efficiency as you did install..... 1
Standard efficiency 2
Less efficient than standard 3
Between standard and the high efficiency you did install 4
Would not have done anything 5
Don't know.....-97
Refused.....–98

//

Notes:

- this y sequence (started with first y sequence above) is new for CFL database

//

cfy1c_1. [IF <cf>^=1 SKIP TO z0] <cfloccn1>?
Yes 1
No ..... [SKIP TO cf1] 2
Don't know ..... [SKIP TO cf0a] -97
Refused ..... [SKIP TO cf0a] –98

//Sample data: <cfloccn1>

if <xunit>WPS: <cfloccn1> = **Are any of the** <cflqty> **CFLs your organization received sometime between July 1, 2007 and March 31, 2008 from Focus on Energy and Wisconsin Public Service, currently installed?**

ELSE if cflqty = 1: <cfloccn1> = **Is the CFL your organization purchased sometime between July 1, 2007 and March 31, 2008 at** [store] **and for which it received a [instmail] rebate of up to $2, currently installed?**

ELSE if cflqty > 1: <cfloccn1> = **Are any of the** <cflqty> **CFLs your organization purchased sometime between July 1, 2007 and March 31, 2008 at** [store] **and for which it received a** [instmail] **rebate of up to $2, currently installed?**//

ENGINEERING REVIEW: CFL DATABASE ONLY

//

Notes:

Only CFL database (cf=1) that have at least one of the rebated CFLs currently installed answer these questions

- These respondents come to this section er1 from the previous section cfy1c_1
- cfy1c_1 or if other end use in the previous section (2 Verify Measure Installation) handles this skip for all other respondents

//

er1. [IF cflqty=1 SKIP TO er2soa] **About how many of these compact fluorescent light bulbs or CFLs are currently installed?**
[RECORD NUMBER OF CFLS <= cflqty]
Don't know ..... [SKIP TO cf0a] -97
Refused ..... [SKIP TO cf0a] –98

er2oa. [IF <er1>=1 SKIP TO er2soa] **When you installed these CFLs, did you most often remove a CFL or a light bulb that was not a CFL?**

CFL ..... [SKIP TO cf1] 1
Light bulb that was not a CFL 2
Don't know ..... -97
Refused ..... -98

er2ob. On average, was the wattage of the light bulbs you replaced with these CFLs [READ LIST]…

About 75 watts ..... [SKIP TO er3ia] 1
Less than 75 watts 2
Or more than 75 watts 3
Don't know ..... [SKIP TO er3ia] -97
Refused ..... [SKIP TO er3ia] -98

er2oc. On average, what was the wattage of the light bulbs you replaced with these CFLs?

[RECORD WATTAGE]
Don't know ..... -97
Refused ..... -98

er3ia. On average, is the wattage of the <er1> **CFLs you installed** [READ LIST]**…**

About 20 watts ..... [SKIP TO er4] 1
Less than 20 watts 2
Or more than 20 watts 3
Don't know ..... [SKIP TO er3ic] -97
Refused ..... [SKIP TO er4] -98

er3ib. On average, what is the wattage of the <er1> **CFLs you installed?**

[RECORD WATTAGE] ..... [SKIP TO er4]
Don't know ..... -97
Refused ..... [SKIP TO er4] -98

er3ic. Do you recall from the CFL packaging, the wattage of the light bulbs most of the <er1> CFLs you installed were designed to replace?

[RECORD NUMBER OF WATTS]
Don't know ..... -97
Refused ..... -98

er4. My next few questions are about the fixtures in which you installed the <er1> **CFLs. Specifically, the number of hours these fixtures are on. When answering these questions, please keep in mind the number of hours a fixture is on is not necessarily the same as the number of hours the facility is open.**

For most of these fixtures, is the number of hours the fixture is on during a week about the same all year round?

Yes 1
No ..... [SKIP TO er6ha] 2
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5ha. On average, these fixtures are on during a typical week [READ LIST]**…**

About 70 hours, which would be about 10 hours a day including weekend days ..... [SKIP TO cf1] 1
Less than 70 hours a week 2
Or more than 70 hours a week 3
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5hb. On average, how many hours are these fixtures on during a typical weekDAY?

[RECORD NUMBER OF HOURS 1-24]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5hc. On average, how many hours are these fixtures on during a typical weekend—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48] ..... [SKIP TO cf1]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er6ha. For the majority of months, on average, these fixtures are on during a typical week [READ LIST]**…**

About 70 hours, which would be about 10 hours a day including weekend days ..... [SKIP TO er7] 1
Less than 70 hours a week 2
Or more than 70 hours a week 3
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er6hb. For the majority of months, on average, how many hours are these fixtures on during a typical weekDAY?

[RECORD NUMBER OF HOURS 1-24]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er6hc. For the majority of months, on average, how many hours are these fixtures on during a typical weekEND—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er7. How many months remain—that is, are not included in this majority?

[RECORD NUMBER OF MONTHS, 1-6]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er8ha. For these remaining months, on average, these fixtures are on during a typical week [READ LIST]**…**

About 70 hours, which would be about 10 hours a day including weekend days ..... [SKIP TO cf1] 1
Less than 70 hours a week 2
Or more than 70 hours a week 3
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er8hb. For the remaining months, on average, how many hours are these fixtures on during a typical weekDAY?

[RECORD NUMBER OF HOURS 1-24]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] –98

er8hc. For the remaining months, on average, how many hours are these fixtures on during a typical weekEND—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48] ..... [SKIP TO cf1]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1]-98

er2soa. When you installed this CFL, did you remove a CFL or a light bulb that was not a CFL?

CFL ..... [SKIP TO cf1] 1
Light bulb that was not a CFL 2
Don't know ..... -97
Refused ..... -98

er2sob. Was the wattage of the light bulb you replaced with this CFL [READ LIST]**…**

About 75 watts ..... [SKIP TO er3sia] 1
Less than 75 watts 2
Or more than 75 watts 3
Don't know ..... [SKIP TO er3sia] -97
Refused ..... [SKIP TO er3sia] -98

er2soc. What was the wattage of the light bulb you replaced with this CFL?
[RECORD WATTAGE]
Don't know ..... -97
Refused ..... -98

er3sia. Is the wattage of the CFL you installed [READ LIST]**…**
About 20 watts ..... [SKIP TO er4s] 1
Less than 20 watts 2
Or more than 20 watts 3
Don't know ..... [SKIP TO er3sic] -97
Refused ..... [SKIP TO er4s] -98

er3sib. What is the wattage of the CFL you installed?
[RECORD WATTAGE] ..... [SKIP TO er4s]
Don't know ..... -97
Refused ..... [SKIP TO er4s] -98

er3sic. Do you recall from the CFL packaging, the wattage of the light bulb the CFL you installed was designed to replace?
[RECORD NUMBER OF WATTS]
Don't know ..... -97
Refused ..... -98

er4s. My next few questions are about the fixture in which you installed the CFL. Specifically, the number of hours this fixture is on. When answering these questions, please keep in mind the number of hours a fixture is on is not necessarily the same as the number of hours the facility is open.

Is the number of hours the fixture is on during a week about the same all year round?
Yes 1
No ..... [SKIP TO er6sha] 2
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5sha. This fixture is on during a typical week [READ LIST]**…**
About 70 hours, which would be about 10 hours a day including weekend days ..... [SKIP TO cf1] 1
Less than 70 hours a week 2
Or more than 70 hours a week 3
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5shb. How many hours is this fixture on during a typical weekDAY?
[RECORD NUMBER OF HOURS 1-24]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

er5shc. How many hours is this fixture on during a typical weekend—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48] ..... [SKIP TO cf1]
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er6sha. For the majority of months, this fixture is on during a typical week [READ LIST]**…**

About 70 hours, which would be about 10 hours a day including weekend days..... [SKIP TO er7s] 1
Less than 70 hours a week.....2
Or more than 70 hours a week.....3
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er6shb. For the majority of months, how many hours is this fixture on during a typical weekDAY?

[RECORD NUMBER OF HOURS 1-24]
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er6shc. For the majority of months, how many hours is this fixture on during a typical weekEND—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48]
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er7s. How many months remain—that is, are not included in this majority?

[RECORD NUMBER OF MONTHS, 1-6]
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er8sha. For these remaining months, on average, this fixture is on during a typical week [READ LIST]**…**

About 70 hours, which would be about 10 hours a day including weekend days..... [SKIP TO cf1] 1
Less than 70 hours a week.....2
Or more than 70 hours a week.....3
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] -98

er8shb. For the remaining months, how many hours is this fixture on during a typical weekDAY?

[RECORD NUMBER OF HOURS 1-24].....
Don't know..... [SKIP TO cf1] -97
Refused..... [SKIP TO cf1] –98

er8shc. For the remaining months, how many hours is this fixture on during a typical weekEND—that is, Saturday and Sunday combined?

[RECORD NUMBER OF HOURS 1-48] ..... [SKIP TO cf1]
Don't know ..... [SKIP TO cf1] -97
Refused ..... [SKIP TO cf1] -98

CFL DATABASE ONLY

//

Notes:

Only CFL database (cf=1) that do not have all their rebated CFLs currently installed (including unknown # installed) answer these questions

- These respondents as well as respondents that have all currently installed come to this section (cf0a or cf1) from either cfy1c_1 (2 Verify Measure Installation) or the previous section (3 Engineering Review: CFL Database Only)

  From cf1, respondents that have all currently installed are skipped over this section
- cfy1c_1 or if not other end use (2 Verify Measure Installation) handles this skip for all other respondents (not CFL database)

//

[Create:

- if cfy1c_1=2 then er1not=cflqty
  else er1not=cflqty-er1]

cf0a. <cf0atxt>

Yes 1
No ..... [SKIP TO cf3b] 2
Don't know ..... [SKIP TO z0] -97
Refused ..... [SKIP TO z0] –98

//Sample data: <cf0atxt>

if cflqty=1 AND <xunit>WPS: <cfloccn1> = **Do you intend to install this CFL in one of your fixtures?**

ELSE if cflqty=1: <cf0atxt> = **Did you purchase this CFL for your use—that is, to be installed in one of your fixtures?**

if cflqty>1: <cf0atxt>= **Were most of the** <cflqty> **CFLs purchased for your use—that is, to be installed in your fixtures?**

ELSE if cflqty>1 AND <xunit>WPS: <cfloccn1> = **Do you intend to install these CFLs in one of your fixtures?**

//

cf0b. Can you tell me anything at all about the status of <thiese> **CFL<s>?**
[RECORD RESPONSE] ..... [SKIP TO z0]

//Sample data:

- if cflqty=1
  - <thiese>=this
  - <s>=
- if cflqty>1
  - <thiese>= these
  - <s>= s

cf1. [IF er1not=0 SKIP TO z0. IF er1not=1 SKIP TO cf1s] **My next questions are about the** <er1not> **compact fluorescent light bulbs or CFLs that are not currently installed. How many of these CFLs were installed in your fixtures, but have since been removed?**
[RECORD NUMBER OF CFLs <= er1not]
Don't know.....-97
Refused.....–98

[Create:

- cf1lft=er1not-cf1
- if cf1>0, cf2txt=the remaining <cf1lft> CFLs

else cf2txt=them]

Notes:

- Handling cf1lft=0 in the skip]

cf2. [IF cf1lft=1 SKIP TO cf2s. IF cf1lft=0 SKIP TO z0] **How many of** <cf2txt> **will be installed at some future date in your fixtures?**
[RECORD NUMBER OF CFLs <=cf1lft]
Don't know.....-97
Refused.....–98

[Create:

- cf2lft=cf1lft-cf2
- if cf2>0 or cf1>0 then cf3atxt= remaining]

cf3a. [If cf2lft=0 SKIP TO z0] **So, the** <cf3atxt> < cf2lft> **[CFLS WERE/CFL WAS] not purchased for your use.**

cf3b. [IF cflqty=1 OR cf2lft=1 SKIP TO cfs3b] **For what purpose were they purchased?** [MULTIPLE RESPONSE]

Resale ..... [SKIP TO z0] 1
Give away ..... [SKIP TO z0] 2
Other [SPECIFY] ..... [SKIP TO z0] 3
Don't know ..... [SKIP TO z0] -97
Refused ..... [SKIP TO z0] –98

//Start of cf questions for er1not=1//

cf1s. My next questions are about the compact fluorescent light bulb or CFL that is not currently installed. Was this CFL installed in one of your fixtures, but has since been removed?

Yes ..... [SKIP TO z0] 1
No 2
Don't know ..... -97
Refused ..... –98

cf2s. Will this CFL be installed at some future date in one of your fixtures?

Yes ..... [SKIP TO z0] 1
No 2
Don't know ..... [SKIP TO z0] -97
Refused ..... [SKIP TO z0] –98

cf3sa. So, this CFL was not purchased for your use.

cf3sb. For what purpose was it purchased? [MULTIPLE RESPONSE]

Resale 1
Give away 2
Other [SPECIFY] 3
Don't know ..... -97
Refused ..... –98

DETERMINE PROGRAM IMPACT ON DECISION TO INSTALL (NET-TO-GROSS)

//Notes:

- Respondents who have installed a measure answer these questions

  All respondents come to this section z0 from either cy1c_1 or other end use (2 Verify Measure Installation; not CFL database) or the previous section (4 CFL Database Only)

  From z0, respondents who have not installed a measure are skipped over this section

  CFL only customers are no longer asked the NTG sequence. Residential Program's market based methods are now used for Business Programs. NonCFL rebates database customers are still asked this sequence.

- The net-to-gross questions are slightly different for:
  - Received only Instant Incentives
  - Received "only free pre-rinse sprayer" or other free equipment
  - Received variety of services from Program ally (these customers should also receive General Supplier Survey/or Ag Dealer Survey).

  Solution:
  - srprez1a-z8: All, differences handled via skips and sample data both provided and created on the fly
  - prez9-orz20a: All but cfl database. Received only Instant Incentives or "only free pre-rinse sprayer" differences handled via sample data provided

/FYI: Sample data

If attrib=1 (received only instant incentives or program ally delivered only Focus financial incentives)

ntg5=a discount from the Focus on Energy Program
ntg6=a discount from the Focus on Energy Program
eeia= made the recent energy efficiency improvement
ntg7=a discount like that from the program
ntg9=learning a discount was available
ntg10=learn a discount was available
ntg11=learning a discount was available
ntg12=discount

IF hcfin>0 THEN ntg13_20=a discount of [hcfin];

ELSE ntg13_20=a discount

ntgDAT1_3_1=financial incentives

IF hcfin>0 THEN ntg13_DAT =received a discount of [hcfin] from Focus on Energy for [end use] equipment;

ELSE ntg13_DAT=received a discount from Focus on Energy for [end use]

ntg14pls=the discount from the Focus on Energy Program

If attrib=2 (cfl-rebates database)
ntg5=a rebate
ntg6=a rebate
ntg7=a rebate like that from the program
ntg9=learning a rebate was available
ntg10=learn a rebate was available
ntg11=learning a rebate was available
ntg12= rebate
IF hcfin>0 THEN ntg13_20=a rebate of [hcfin];
ELSE ntg13_20=a rebate
ntg14pls=the rebate from the Focus on Energy Program

If attrib=0 (aware of Focus)
ntg5=services from the Focus on Energy Program
ntg6=assistance from the Focus on Energy Program
eeia= made the recent energy efficiency improvement
ntg7=services like those from the program
ntg9=receiving help from the program
ntg10=begin receiving help from the Focus on Energy Program
ntg11=receiving help from the program
ntg12=financial assistance
IF hcfin>0 THEN ntg13_20=help and financial assistance of [hcfin];
ELSE ntg13_20=help
ntg14pls=the Focus on Energy Program's help

If attrib=3 (received "only free pre-rinse sprayer," could be used for other free equipment)
ntg5=the equipment free from the Focus on Energy Program
ntg6=receiving the equipment free from the Focus on Energy Program
eeia=made the recent energy efficiency improvement
ntg7=the equipment free
ntg9=learning it could get the equipment for free from the program
ntg10=learn it could get the equipment for free from the Focus on Energy Program
ntg11=learning it could get the equipment for free from the program
ntg12={i.e., blank, this question (orz12) is skipped. To skip this question, set orfin=0. orfin is only used in this question.}
ntg13_20=the equipment for free
ntg13_DAT=received free [end use] from Focus on Energy.
ntg14pls=receiving the equipment for free from the Focus on Energy Program

If attrib=4 (Received variety of services from Program ally)
ntg5=the services from [the contractor] and the financial assistance from the Focus on Energy Program
ntg6=services from [the contractor] and financial assistance from the Focus on Energy Program
eeia= made the recent energy efficiency improvement
ntg7=services like those from [the contractor] and financial assistance from the Focus on Energy Program
ntg9= receiving services from [the contractor] and financial assistance from the Focus on Energy Program
ntg10=begin receiving services from [the contractor] and financial assistance from the Focus on Energy Program
ntg11= receiving services from [the contractor] and financial assistance from the Focus on Energy Program
ntg12=financial assistance
IF hcfin>0 THEN ntg13_20= services from [the contractor] and financial assistance of [hcfin];
ELSE ntg13_20=services from [the contractor] and financial assistance
ntg14pls= services from your contractor and financial assistance from the Focus on Energy Program

//

[# is the number of times the Verify Measure Installation sequence is repeated for each end-use.

Create

- hcyes = number of hcy1c_1-#=1
- ltyes = number of lty1c_1-#=1
- mpyes = number of mpy1c_1-#=1
- bsyes = 1 if bsy1c_#=1
- oryes = number of ory1c_1-#=1
- y1cyes=hcyes+ltyes+mpyes+bsyes+oryes
- if y1cyes>1 then
  - eeiz0= energy efficiency improvements you just confirmed your organization recently made
  - alth=these
  - als=s
- if y1cyes= 1 then
  - eeiz0= energy efficiency improvement you just confirmed your organization recently made
  - alth=this
  - als=

- if hcyes>1 then
  - hcany=any of
  - hcs=s
  - hcwmst=most of
  - hcth=these
  - hcfor=for most of these improvements
  - hcav=On average, about
  - hcavhw=On average, how
  - hcy=ies

  if hcyes=1 then
  - hcany=
  - hcs=
  - hcwmst=
  - hcth=this
  - hcfor=
  - hcav=About
  - hcavhw=How
  - hcy=y
- if hcyes>=1 then hcfinlst=<hcfintxt>

  Create a similar set of variables using ltyes, mpyes, bsyes, and oryes.
- notoryes=hcyes+ltyes+mpyes+bsyes
- if notoryes>=1 then ortxt = remaining

z0. [IF (cf^=1 AND y1cyes<1) SKIP TO d0a. IF cf=1 SKIP TO ucfprec] **Now, I have a few questions about your satisfaction with the** <eeiz0>**.**

srprez1a. [IF attrib=0 OR attrib=2 OR attrib=3 SKIP TO z1] **Is your organization aware that it received a discount on the cost of** <alth> **energy efficiency improvement**<als>?

Yes 1
No 2
Don't know .....-97
Refused .....-98

srprez1b. According to Focus on Energy Program records,

<hcfinlst>
[AND] <ltfinlst>
[AND] <mpfinlst>
[AND] <bsfinlst>
[AND] <orfinlst>

z1. Is your organization satisfied with the performance of <alth> **energy efficiency improvement**<als>**?**

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

[IF attrib=4 ASK z2 and z3; ELSE SKIP TO z4]

z2. Had the contractor that installed your energy efficient improvements provided energy efficiency improvements to your company before your organization <eeia> <als>?

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

z3. How would you describe the services this contractor offers?

[RECORD DESCRIPTION] _____
Don't know ..... -97

z4. Will your organization consider making similar energy efficiency improvements in the future at the same or another facility?

Yes 1
No ..... [SKIP TO z7] 2
Don't know ..... [SKIP TO z7] -97
Refused ..... [SKIP TO z7] –98

z6. Will your organization consider making similar improvements in the future without <ntg6>**?**

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

z7. Before your organization <eeia> <als> **that we've been discussing, had your organization made similar improvements at the same or another facility without receiving** <ntg7>**?**

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

z8. [IF attrib =1 OR 2 SKIP TO prez9] **Did the Focus on Energy Program provide your organization with any new information on the energy efficiency improvement**<als>**?**

Yes 1
No.....2
Don't know.....-97
Refused .....-98

prez9. My next questions are about your organization's decision to go forward with the energy efficiency improvement<als> you confirmed earlier that it made.

//

Survey house instructions:

The series of questions hcz9- hcDAT3_2 below must essentially be repeated for each of the remaining end-uses (example shown is hvac):

- lighting, lt
- manufacturing process, mp
- building shell, bs
- <ortxt> (other), or

  In the case of other, change (ELSE) SKIP TO "ltz9" to u0

Where changes need to be made based on the end-use is highlighted below.

//

hcz9. [IF hcyes=0 SKIP TO ltz9, IF hcyes>=1 AND srprez1a = 2, -97, OR –98 SKIP TO hcz12] **Had your organization considered making <hcany> the hvac energy efficiency improvement**<hcs> **before** <ntg9>**?**

Yes 1
No.....[SKIP TO hcz12] 2
Don't know..... [SKIP TO hcz12] -97
Refused ..... [SKIP TO hcz12] -98

hcz10. At what point in the planning for making <hcwmst> <hcth> **improvement**<hcs> **did your organization** <ntg10>**? Would you say** <hcfor>[READ LIST]**…**

Before the start of planning.....1
About the same time as the start of planning 2
Just after planning started.....3
Or long after planning started 4
Don't know.....-97
Refused .....-98

hcz11. Had your organization researched the cost<hcs> **of making** <hcwmst> <hcth> **improvement**<hcs> **before** <ntg11>**?**

Yes 1
No 2
Don't know .....-97
Refused .....-98

hcz12. [IF hcfin>0, ELSE SKIP TO hcz13] **About what percentage of the total cost –that is, all financial assistance plus the costs not covered by financial assistance--of making the hvac energy efficiency improvement**<hcs> **did the** <ntg12> **from the Focus on Energy Program cover?**

[RECORD PERCENTAGE 1-100]
Don't know .....-97
Refused .....-98

My records show that you received <ntg13_DAT> <end-use>

//

Sample Data

attrib	Participation characteristics:	"ntg13_DAT" =	"DAT1_3_1"
1	Instant incentives or program ally delivered Focus financial incentives – **amount known**	. . . a discount of [$] for	discounts
1	Instant incentives or program ally delivered Focus financial incentives – **amount *un*known**	. . . a discount for	discounts
0	Assistance from Focus On Energy only	. . . . assistance from Focus on Energy for	assistance
0	Focus financial incentives and other assistance	. . . assistance and financial incentives of ($) from Focus on Energy for	financial incentives and other Focus assistance
3	Free pre-rinse sprayer or other free equipment from Focus	. .. . free	providing equipment for free
4	Variety of services from Program ally	. . . received [$] in financial incentives from Focus on Energy and contractor assistance for	financial incentives and other assistance from Focus and your contractor

<instal1>	<instal2>	<instal3>
install	installed	hvac equipment
install	installed	lighting equipment
Make	made	manufacturing equipment
make,	made	building shell improvements
make	made	other improvements

[instal] is a programmed variable with the possible values install, installed, make, or made to be in agreement with equipment, improvement, or improvements.

//

TIMING

hcDAT1.

First, I'd like to know about the effect, if any, that Focus on Energy <ntgDAT1_3_1 > **had on your decision to** <instal1> <instal3> **at this time.**

Without Focus on Energy <ntgDAT1_3_1>**, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "not at all likely" that you would have** <instal2> <instal3> **at this time?**

Very likely 1
Somewhat likely 2
Not very likely 3
Or very unlikely 4
Don't know ..... -97
Refused ..... -98

hcDAT1_O. (record verbatim)

Why do you say that?_____

hcDAT1a.

Without Focus on Energy <ntgDAT1_3_1>**, how different would the timing have been? Would you say you would have** <instal2> <instal3> **at the same time, earlier, later or never?**

Same time ..... [SKIP TO hcDAT2] 1
Earlier ..... [SKIP TO hcDAT2] 2
Later 3
Don't know ..... [SKIP TO hcDAT2] -97
Refused ..... [SKIP TO hcDAT2] -98

hcDAT1b.

Approximately how many months later?
[Try to get a number. If necessary, try bracketing beginning with more or less than four years later.]

[RECORD NUMBER OF MONTHS]
Don't know ..... -97
Refused ..... -98

EFFICIENCY

[Skip this question if efficiency is not applicable because the item is either installed or not installed. For example, lighting controls, VSDs, replacing steam traps, etc. Circle "5" not applicable for the measure in the table below and skip to hcDAT3.]

hcDAT2.

I'd like to know about the effect, if any, that Focus on Energy <ntgDAT1_3_1> **had on your decision to** <instal1> ***high efficiency*** <instal3>**.**

Without Focus on Energy <ntgDAT1_3_1>**, would you say that it was "*very* likely," "*somewhat* likely," "*not* very likely," or "*not at all* likely" that you would have** <instal2> <instal3**> of the same *efficiency* as what you did?**

Very likely 1
Somewhat likely 2
Not very likely 3
Not at all likely 4
Not applicable 5
Don't know ..... -97
Refused ..... -98

hcDAT2_O. (record verbatim)

Why do you say that? _____

hcDAT2a.

Without the Focus on Energy Program's <ntgDAT1_3_1>**, would you say you would have** <instal2> <instal3> **of the same efficiency, lesser efficiency, or greater efficiency?**

Same ..... [SKIP TO hcDAT3] 1
Lesser 2
Greater ..... [SKIP TO hcDAT3] 3
[Don't know] ..... [SKIP TO hcDAT3] -97
[Refused] ..... [SKIP TO hcDAT3] -98
Not applicable ..... [SKIP TO hcDAT3] 4

hcDAT2b_1

Without Focus on Energy <ntgDAT1_3_1>**, would you have** <instal2> <instal3> **that was (or were) "standard efficiency on the market at that time," "slightly higher than standard efficiency," "between standard efficiency and the efficiency that you installed," or "slightly lower than the high efficiency that was (or were) installed?"**

Standard efficiency (or according to code) 1
Slightly higher than standard efficiency 2
Between standard (code) and the efficiency that was installed 3
Or slightly lower than the high efficiency that was installed 4
[Don't know] ..... -97
[Refused] ..... -98

hcDAT2b_O. (record verbatim)

Why do you say that? _____

QUANTITY

Finally, I'd like to know about the effect, if any, that Focus on Energy <ntgDAT1_3_1> **had on how much** <instal3> **you** <instal2>**.**

hcDAT3_1 quantity

[Ask for equipment installed in varying quantities or size. *e.g.*, lights and motors are quantities, other items are in capacity]

Without Focus on Energy <ntgDAT1_3_1>**, how different would the number or size of** <instal3> <instal2> **have been? Would you say you would have** <instal3> **the same amount, less, or more?**

Same 1
Less 2
More 3
[Don't know] ..... -97
[Refused] ..... -98

hcDAT3_O. (record verbatim)

Why do you say that? _____

hcDAT3_2

By what percentage did you *increase* the amount of <instal3> <instal2> **because of the Focus on Energy Program?**

[The response can be greater or less than 100 percent. Two examples:

- Example 1. Organization installed 8, but would have installed 2 without the program. Increase is 300 percent.

- Example 2. Organization installed 4, would have installed 3 without the program. Increase is 33 percent.]
  [RECORD PERCENTAGE 0-99]
  Don't know.....-97
  Refused.....-98

END-USER COSTS

//

Notes:

Respondents who have installed a measure, with the exception of "only free pre-rinse sprayers," as well as CFL database and not installed answer these questions

- These respondents as well as "only free pre-rinse sprayers" come to this section (u0 or ucfprec) from the previous section (5 Determine Program Impact on Decision to Install (Net-to-gross))

  From u0, "only free pre-rinse sprayer" (ps=1) is skipped over this section

- z0 (5 Determine Program Impact on Decision to Install (Net-to-gross)) handles this skip for the remaining respondents (not CFL database and not installed)

FYI, Sample data

hcfin01 = 1 if awarded financial assistance from Focus for hvac energy efficiency improvements

analogous variables: ltfin01, mpfin01, bsfin01, orfin01

if cflqty=1 then
ucf0txt=compact fluorescent light bulb or CFL
cfqper=
cfqav=About
cfp= the CFL

if cflqty>1 then
ucf0txt=<cflqty> compact fluorescent light bulbs or CFLs
cfqper=per CFL
cfqav=On average, about
cfp=one of these CFLs

//

[no free pre-rinse sprayers this round]

u0. [IF ps=1 THEN SKP TO d0a. IF cf=1 THEN SKIP TO ucfprec.] **Now, I have a few questions about the cost of the energy efficiency improvement**<als> **your organization recently made that we've been discussing.**

//

Survey house instructions:

The series of questions uhcaa-uhcglo below must essentially be repeated for each of the remaining end uses (example shown is hvac).

Changes that need to be made based on the end use are highlighted and shown in the table below.

	hvac	lighting	manufacturing process	building shell	other
question numbers, sample data	hc	lt	mp	bs	or
skip	ultaa	umpaa	ubsaa	uoraa	b1
changes to	to the hvac system	to lighting	to the manufacturing process	to the building shell	
end use	hvac	lighting	manufacturing process	building shell	<ortxt>
uxxaa,uxxe, uxxf, uxxg	uhcaa, uhce, uhcf,uhcg	analogous to uhcaa, uhce, uhcf, uhcg	analogous to uhcaa, uhce, uhcf, uhcg	analogous to uhcaa, uhce, uhcf, uhcg	uoraa, uore, uorf, uorg

//

uhcaa. [IF hcyes>=1, ELSE SKIP TO ultaa] **Did your organization HAVE TO make changes to the hvac system?** [IF THE RESPONDENT IS UNCLEAR RE WHAT IS MEANT BY "HAVE TO," READ THE FOLLOWING EXAMPLE: For example, had to replace failing equipment or needed to increase capacity.]

uoraa. [IF oryes>=1, ELSE SKIP TO d0a] **Did your organization HAVE TO make the** <ortxt> **change** <ors> **to the systems that we've been discussing?** [IF THE RESPONDENT IS UNCLEAR RE WHAT IS MEANT BY "HAVE TO," READ THE FOLLOWING EXAMPLE: For example, had to replace failing equipment or needed to increase capacity.]

Yes 1
No.....2
Don't know.....-97
Refused .....-98

[READ] <hcfintxt>.

uhcprec. Was your organization awarded financial assistance from a source other than Focus on Energy for <hcth> energy efficiency improvement<hcs>?

Yes 1
No ..... [SKIP TO uhcb] 2
Don't know ..... [SKIP TO uhcb] -97
Refused ..... [SKIP TO uhcb] -98

uhcc. About how much was that <u>other</u> financial assistance?

[RECORD OTHER FINANCIAL ASSISTANCE TO THE NEAREST DOLLAR]
Don't know ..... -97
Refused ..... -98

[Create

- if hcfin01=1 OR uhcprec=1 then hctot = --**that is, all financial assistance plus costs not covered by financial assistance**—
- else hctot=

Similarly create lttot, mptot, bstot, and ortot]

uhcb. [IF uhcaa ^=2 SKIP TO uhce] **What was the approximate total cost** <hctot> **of the hvac energy efficiency improvement**<hcs> **recently made that we've been discussing?**

[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know ..... -97
Refused ..... -98

uhcd. About how much of this total cost was equipment costs?

[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know ..... -97
Refused ..... -98

uhce. [IF uhcaa ^=1 SKIP TO ultaa] **So, your organization had to make changes to the hvac system and would have incurred costs as result. I'd like to know what effect, if any, the energy efficiency improvement**<hcs> **to the hvac system that we've been discussing had on these costs. Did these energy efficiency improvement**<hcs> **increase, decrease, or have no impact on the total cost** <hctot> **of the changes made to the hvac system?**

uore. [IF uoraa ^=1 SKIP TO d0a] **So, your organization had to make the** <ortxt> **change**<ors> **and would have incurred costs as a result. I'd like to know what effect, if any, the** <ortxt> **energy efficiency improvement<ors> that we've been discussing had on these costs. Did these energy efficiency improvement<ors> increase, decrease, or have no impact on the total cost** <ortot> **of the** <ortxt> **changes made?**

Increase....1
Decrease....2
No impact .... [SKIP TO ultaa] 3
Don't know.... [SKIP TO ultaa] -97
Refused .... [SKIP TO ultaa] -98

utot. By how much did the energy efficiency improvements [increase/decrease] the total cost?

[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know....-97
Refused....-98

uhcf. Did the energy efficiency improvement<hcs> **to the hvac system increase, decrease, or have no impact on the *equipment* costs of the changes made to the hvac system?**

uorf. Did the <ortxt> **energy efficiency improvement**<ors> **increase, decrease, or leave the same the *equipment* costs of the** <ortxt> **changes made?**

Increase....1
Decrease ....[SKIP TO uhcflo] 2
No impact .... [SKIP TO uhcg] 3
Don't know.... [SKIP TO uhcg] -97
Refused .... [SKIP TO uhcg] -98

uhcfhi. About how much more were equipment costs?

[RECORD COSTS TO THE NEAREST DOLLAR] .... [SKIP TO uhcg]
Don't know.... [SKIP TO uhcg] -97
Refused .... [SKIP TO uhcg] -98

uhcflo. About how much less were equipment costs?

[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know....-97
Refused....-98

uhcg. Did the energy efficiency improvement<hcs> **to the hvac system increase, decrease, or have no impact on the *labor* costs of the changes made to the hvac system?**

uorg. Did the <ortxt> **energy efficiency improvement**<ors> **increase, decrease, or have no impact on the *labor* costs of the** <ortxt> **changes made?**

Increase 1
Decrease..... [SKIP TO uhcglo] 2
Leave the same..... [SKIP TO ultaa] 3
Don't know ..... [SKIP TO ultaa] -97
Refused ..... [SKIP TO ultaa] -98

uhcghi. About how much more were labor costs?
[RECORD COSTS TO THE NEAREST DOLLAR]..... [SKIP TO ultaa]
Don't know ..... [SKIP TO ultaa] -97
Refused ..... [SKIP TO ultaa] -98

uhcglo. About how much less were labor costs?
[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know ..... -97
Refused ..... -98

//cfl data base end-user cost questions.//

ucfprec. [IF cf^=1 SKIP TO d0a] **Now, I have a few questions about the cost of the** <ucf0txt> **your organization recently purchased that we've been discussing. Was your organization awarded financial assistance other than the up to $2 rebate**<cfqper> **for the purchase of** <thiese> **CFL<s>?**
Yes..... 1
No ..... [SKIP TO ucfd] 2
Don't know ..... [SKIP TO ucfd] -97
Refused ..... [SKIP TO ucfd] -98

ucfc. <cfqav> **how much was that <u>other</u> financial assistance**<cfqper>**?**
[RECORD OTHER FINANCIAL ASSISTANCE TO THE NEAREST DOLLAR]
Don't know ..... -97
Refused ..... -98

[Create
- if ucfprec=1 then cftot = **and the other financial assistance**
- else cftot=]

ucfd. <cfqav> **how much did** <cfp> **cost? Include in this cost the up to $2 rebate** <cftot> <cfqper>**.**
[RECORD COSTS TO THE NEAREST DOLLAR]
Don't know..... -97
Refused ..... -98

ESTABLISHMENT DATA

//

Notes:
All respondents answer these questions

//

[Create
- if locont =1 or y1cyes=1 or cflqty=1 or er1=1 then
  - <fies>=
  - loc=<locone>
  - locth=this location
- else <fies>=or facilities]

d0a. [IF (cf^=1 AND y1cyes<1) OR (cf=1 AND cfy1c_1=2, -97, or –98) SKIP TO n12] **The final questions I have for you are about the facility** <fies> **at which your organization** <eeia> <als> **that we've been discussing.**

d0b. [IF locont =1 or y1cyes=1 or cflqty=1 or er1=1, SKIP TO d3] <d0btxt> **your organization make these energy efficiency improvements at more than one location?**

Yes 1
No.....2
Don't know.....-97
Refused .....-98

[Create
- if d0b=1,-97,-98 then
  - loc=these locations
  - locth=these locations
- if d0b=2 then
  - loc=this location
  - locth=this location]
  -

d3. What is the principal activity of your organization at <loc>**?**

Agricultural: e.g., production crops, livestock, agricultural services ..... [SKIP TO d7] 1
Water or wastewater treatment facility ..... [SKIP TO d7] 2
Industrial: manufacturing/industrial process 3
Warehouse nonrefrigerated ..... [SKIP TO d7] 4
Warehouse refrigerated ..... [SKIP TO d7] 5
Education: including preschool, daycare ..... [SKIP TO d7] 6
Food service: e.g., restaurant, bar, fast food, cafeteria ..... [SKIP TO d7] 7
Food sales: e.g., grocery store ..... [SKIP TO d7] 8
Enclosed mall ..... [SKIP TO d7] 9
Strip mall ..... [SKIP TO d7] 10
Retail excluding enclosed or strip mall: e.g., auto dealership, showroom, store ..... [SKIP TO d7] 11
Public order and safety: including courthouse, probation office, jail ..... [SKIP TO d7] 12
Nursing home/Assisted living (Skilled nursing) ..... [SKIP TO d7] 13
Lodging: e.g., hotel/motel/inn/resort, dormitory/fraternity/sorority ..... [SKIP TO d7] 14
Lodging: residential ..... [SKIP TO d7] 15
Health care inpatient: e.g., hospital ..... [SKIP TO d7] 16
Health care outpatient: e.g., doctor/dentist office, clinic ..... [SKIP TO d7] 17
Laboratory ..... [SKIP TO d7] 18
Religious worship ..... [SKIP TO d7] 19
Public assembly: incl. theater, nightclub, library, museum, gym, bowling alley [..... SKIP TO d7] 20
Service: e.g., auto service/repair, dry cleaner/laundromat, repair shop, post office ..... [SKIP TO d7] 21
Office/Professional: including bank, government ..... [SKIP TO d7] 22
Other [SPECIFY d3_o] ..... [SKIP TO d7] 23
Don't know ..... [SKIP TO d7] -97
Refused ..... [SKIP TO d7] -98

d4. Briefly describe what is done at <locth>.[ACCEPT MULTIPLE RESPONSES] //d4_1-d4_7, d4_96-d4_98//

Textile manufacturing 1
Wood manufacturing 2
Plastics manufacturing 3
Food manufacturing 4
Metal manufacturing 5
Goods manufacturing 6
Assembly 7
Other [SPECIFY d4_o] 96
Don't know ..... -97
Refused ..... -98

d7. How many full-time employees work for your organization at <locth>**?**

[RECORD NUMBER OF EMPLOYEES] _____
Don't know ..... -97
Refused ..... -98

d8. **How many part-time employees work for your organization at** <locth>**?**
[RECORD NUMBER OF EMPLOYEES] _____
Don't know ..... -97
Refused ..... -98

d9. **What is the total enclosed square footage of the space your organization occupies at** <locth>**? Your best estimate is fine.**
[RECORD # SQ FT] _____
Don't know ..... -97
Refused ..... -98

d6. **At <locth>, does your organization** [READ LIST]
Own all of the space it occupies? 1
Lease all of the space it occupies? 2
Or own some and lease some of the space? 3
Don't know ..... -97
Refused ..... -98

d16a. [IF locont >1, SKIP TO d16b] **Does your organization operate at a single location, at multiple locations, or is it a franchise organization?**
Single location ..... [SKIP TO n12] 1
Multiple locations—not including franchise organization ..... [SKIP TO d17] 2
Franchise organization ..... [SKIP TO d17] 3
Don't know ..... [SKIP TO d17] -97
Refused ..... [SKIP TO d17] -98

d16b. **Is your organization a franchise organization?**
Yes 1
No 2
Don't know ..... -97
Refused ..... -98

d17. **Is your organization headquartered in Wisconsin?**
Yes 1
No 2
Don't know ..... -97
Refused ..... -98

FINAL SECTION

n12. We may want to call you at a later date to ask you a few additional questions. Would that be OK?

Yes.....1
No 2
Don't know .....-97
Refused.....-98

END "Thank you for your time and cooperation."

APPENDIX L: GENERAL SUPPLIER SURVEY—18MCP ROUND 1

Business Programs
Supplier Survey – qemar08

This survey was given to engineering survey respondents during the first round of the 18MCP Evaluation.

Interviewer Name: _____

Supplier (Company) Name: _____

Contact Name: _____

Contact Phone Number: _____

Contact Log:

Call #	Date	Time	Disposition (i.e.: Complete, Left Message)
1			
2			
3			
4			
5			
6			

Customer-Project Info:

COMBID	Customer (Company) Name	Type of Project

If Energy Advisor Survey was provided, please review prior to contacting supplier.

Hi, my name is _____ and I'm calling from KEMA Inc. on behalf of the Public Service Commission of Wisconsin for the Focus on Energy Program. I'd like to ask you a few questions about your company's involvement with the Focus on Energy Program. According to program records Focus on Energy has helped your company supply energy efficiency improvements to businesses in Wisconsin. This is not a marketing call. Focus on Energy is required by state law to conduct this type of research. Your responses will be kept confidential. The survey should take about 10 minutes.

[SET UP CALL BACK IF CURRENTLY UNAVAILABLE]

Note to interviewer: Only read lists when instructed to do so. Never read "Don't Know" and "Refused." If applicable, review the Energy Advisor Survey for each project prior to administering this survey.]

L.1 INTERACTION WITH FOCUS ON ENERGY

S1. What type of services do you offer your customers?

_____

Don't know.....-97
Refused.....-98

S2. How has your company been involved with Focus on Energy? [Contacts were provided by Focus; however if respondent is unaware of Focus or their company's involvement with Focus then ask to speak with someone familiar with Focus and their company's involvement with Focus.]

Don't know.....-97
Refused.....-98

S3. How long has your company been involved with Focus on Energy?

[RECORD NUMBER OF YEARS] _____
Don't know.....-97
Refused.....-98

S4. Has your company…[READ LIST. ACCEPT MULTIPLE RESPONSES]

Sold products to customers that receive rebates or other financial incentives from Focus to purchase energy-efficient products and services? 1
Received customer leads from Focus? 2
Used Focus marketing materials to help promote energy efficiency products and services? 3
Received technical assistance or training from Focus? 4
Been introduced to new energy-efficient technologies by Focus? 5
Received any other assistance from Focus? [RECORD] 6
Don't know ..... -97
Refused ..... -98

S5a. Aside from information about rebates and other financial incentives, how much has the Focus on Energy program added to or improved the information you provide to your customers about energy-efficient products and services? Would you say that Focus has provided…[READ LIST. ACCEPT ONE RESPONSE]

No new information or improvement? ..... [SKIP TO S6] 1
Little new information or improvement? ..... [SKIP TO S6] 2
Some new information or improvement? 3
Much new information or improvement? 4
Don't know ..... [SKIP TO S6] -97
Refused ..... [SKIP TO S6] -98

S5b. Briefly describe the new or improved information you received from Focus?

_____

Don't know ..... -97
Refused ..... -98

S6. Again excluding financial incentives, how much has Focus on Energy helped you to convince customers to implement energy efficient measures, on a scale of one to five, where one is "not at all helpful" and five is "very helpful"?

Not at all helpful 1
2 2
3 3
4 4
Very helpful 5
Don't know ..... -97
Refused ..... -98

S7. How important has Focus on Energy been in helping to endorse or legitimize the energy-efficient products you sell? Use a scale of one to five, where 5 indicates "very important" and one indicates "not important at all"?

Not important at all.....1
2.....2
3.....3
4.....4
Very important.....5
Don't know.....-97
Refused.....-98

S8. Now thinking ONLY of Focus on Energy customer rebates and other financial incentives, on a scale of one to five where one is "not at all helpful," and five is "very helpful," how helpful have the incentives been at convincing customers to implement energy-efficient measures.

Not at all helpful.....1
2.....2
3.....3
4.....4
Very helpful.....5
Don't know.....-97
Refused.....-98

L.2 WITHOUT FOCUS ON ENERGY

W1a. If the statewide Focus program or something similar had NOT existed since April 2001, would the services (products) you provide customers be different than they are today?

Yes.....1
No.....[SKIP TO P1] 2
Don't know.....[SKIP TO W2a] -97
Refused.....[SKIP TO W2a] -98

W1b. How would the services you provide be different?

_____

Don't know.....-97
Refused.....-98

W2a. If the statewide Focus program or something similar had NOT existed since April 2001, would your company's sales volume of energy efficient equipment be different than they are today?

Yes.....1
No.....[SKIP TO W3] 2
Don't know..... [SKIP TO W3] -97
Refused..... [SKIP TO W3] -98

W2b. How would your company's sales volume be different?

_____

Don't know....-97
Refused....-98

On a scale of one to five, where one means "strongly disagree" and five means "strongly agree," how strongly do you agree with each of the following statements

W3. Without the existence of the statewide Focus program or something similar, the energy efficiency related services I provide customers would be about the same.

Strongly disagree....1
2....2
3....3
4....4
Strongly agree....5
Don't know....-97
Refused....-98

W4. Without the existence of the statewide Focus program or something similar, certain energy efficiency projects I do for customers would not be economically feasible.

Strongly disagree....1
2....2
3....3
4....4
Strongly agree....5
Don't know....-97
Refused....-98

W5. The statewide Focus program helps legitimize energy-efficient products and services.

Strongly disagree....1
2....2
3....3
4....4
Strongly agree....5
Don't know....-97
Refused....-98

L.3 PROJECT SPECIFIC QUESTIONS

Now I'm going to ask you a few questions about one of your customers that received help from the Focus on Energy Program sometime between July 1, 2007 and March 31, 2008.

[Mention name of customer and project information that will help the supplier remember the project. If the supplier does not remember this customer/project then continue with this sequence referring to the type of measures included in this project. If more than one customer/project then indicate when responses are different.]

P1. Prior to this project had your company worked with this customer?

Yes 1
No ..... [SKIP TO P3] 2
Don't know ..... [SKIP TO P3] -97
Refused ..... [SKIP TO P3] -98

P2. Prior to this project had your company installed (sold) energy efficiency improvements to this customer?

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

P3. Was this customer referred to your company by a Focus Energy Advisor?

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

P4. If your company had NOT been involved with Focus, how likely is it that you would have offered the same energy efficiency services and/or technologies to the customer? [READ LIST]

Very likely 1
Somewhat likely 2
Not very likely 3
Very unlikely 4
Don't know ..... -97
Refused ..... -98

P5. If your company had NOT been involved with Focus, how likely do you think the customer would have been to accept these energy efficiency measures (i.e., proceed with the project)?

Very likely 1
Somewhat likely 2
Not very likely 3
Very unlikely ..... [SKIP TO P12] 4
Don't know ..... [SKIP TO P12] -97
Refused ..... [SKIP TO P12] -98

P6. Without the existence of Focus, how would the timing of the project have been affected? Would you say that the project would most likely have been undertaken… [READ LIST]

Same time ..... [SKIP TO P8] 1
Earlier ..... [SKIP TO P8] 2
Later 3
Don't know ..... [SKIP TO P8] -97
Refused ..... [SKIP TO P8] -98

P7. How many months later?

[RECORD NUMBER OF MONTHS]_____
Don't know ..... -97
Refused ..... -98

P8. Without the existence of Focus, how do you believe the level of efficiency achieved by the project would have been affected? Would the equipment efficiency have been… [READ LIST]

Same ..... [SKIP TO P10] 1
Lesser 2
Greater ..... [SKIP TO P10] 3
Don't know ..... [SKIP TO P10] -97
Refused ..... [SKIP TO P10] -98

P9. High efficiency equipment was installed as part of this project. Without the existence of Focus what type of equipment do you believe this customer would most likely installed… [READ LIST]

As high efficiency as they did install 1
Standard efficiency 2
Less efficient than standard 3
Between standard and the high efficiency they did install 4
Would not have done anything 5
Don't know ..... -97
Refused ..... -98

P10. [ASK ONLY IF QUANTITY IS APPLICABLE TO PROJECT (i.e.: lighting projects)]
Without the existence of Focus, would you say that the quantity installed would most likely have been… [READ LIST]

Same.....[SKIP TO P12] 1
Fewer.....2
More.....3
Don't know.....[SKIP TO P12] -97
Refused.....[SKIP TO P12] -98

P11. What percent of the quantity installed would have been installed?

[RECORD PERCENT] _____
IF P10=2 THEN P11 SHOULD BE BETWEEN 0 AND 99.
IF P10=3 THEN P11 SHOULD BE GREATER THAN 100.]
Don't know.....-97
Refused.....-98

P12. [CONFIRMATION QUESTION]
Could you describe in your own words what influence the program had on your decision to offer your customers these specific energy efficiency improvements at the time you did?

_____
_____
_____
_____
Don't know.....-97
Refused.....-98

Those are all the questions I have for you today. Thank you for your time and cooperation.

APPENDIX M: GENERAL SUPPLIER SURVEY—18MCP ROUND 2

Business Programs
Supplier Survey – qesep08

This survey was given to engineering survey respondents during the second round of the 18MCP Evaluation.

Interviewer Name: _____
Supplier (Company) Name: _____
Contact Name: _____
Contact Phone Number: _____
Contact Log:

Call #	Date	Time	Disposition (i.e.: Complete, Left Message)
1			
2			
3			
4			
5			
6			

Customer-Project Info:

COMBID	Customer (Company) Name	Type of Project

If Energy Advisor Survey was provided, please review prior to contacting supplier.

Hi, my name is _____ and I'm calling from KEMA Inc. on behalf of the Public Service Commission of Wisconsin for the Focus on Energy Program. I'd like to ask you a few questions about your company's involvement with the Focus on Energy Program. According to program records Focus on Energy has helped your company supply energy efficiency improvements to businesses in Wisconsin. This is not a marketing call. Focus on Energy is required by state law to conduct this type of research. Your responses will be kept confidential. The survey should take about 10 minutes.
[SET UP CALL BACK IF CURRENTLY UNAVAILABLE

_____
_____
_____

Note to interviewer: Only read lists when instructed to do so. Never read "Don't Know" and "Refused." If applicable, review the Energy Advisor Survey for each project prior to administering this survey.]

Interaction with Focus on Energy

S1. What type of services do you offer your <measure kind> customers?

_____
_____
_____
_____
_____
_____

Don't know ..... -97
Refused ..... -98

S2. How has your company been involved with Focus on Energy? [Contacts were provided by Focus; however if respondent is unaware of Focus or their company's involvement with Focus then ask to speak with someone familiar with Focus and their company's involvement with Focus.]

_____
_____

Don't know ..... -97
Refused ..... -98

S3. How long has your company been involved with Focus on Energy?

_____[RECORD NUMBER OF YEARS]

Don't know ..... -97
Refused ..... -98

S4. Next I'm going to read a list and ask about what ways your company has been involved with Focus. Has your company…[READ LIST. ACCEPT MULTIPLE RESPONSES. If the paperwork shows that an incentive was given for a project under discussion, don't read the first option – just circle "1".]

Sold products or services where customers got Focus rebates or incentives?.....1
Received customer leads from Focus?.....2
Used Focus marketing materials? 3
Received technical assistance or training from Focus? 4
Been introduced to new technologies by Focus?.....5
Received any other assistance from Focus? [RECORD] 6
_____
Don't know ..... -97
Refused..... -98

S8. Thinking ONLY of Focus on Energy customer rebates and financial incentives and disregarding other services they provide, on a scale of one to five where one is "not at all helpful," and five is "very helpful," how helpful have the incentives been at convincing customers to purchase energy efficient products and services.

Not at all helpful.....1
2 2
3 3
4 4
Very helpful 5
Don't know ..... -97
Refused..... -98

The next few questions are regarding the NON-financial services that Focus on Energy offers, such as engineering and product expertise, product recommendations, energy calculation tools, marketing materials, etc… In other words, we're talking about services OTHER than rebates or incentives.

[If this question seems awkward given circumstances, feel free to reword.]

S5a. How much has the Focus on Energy program added to or improved the information you provide to your customers about energy-efficient products and services? Would you say that Focus has provided…[READ LIST. ACCEPT ONE RESPONSE]

No new information?..... [SKIP TO S6] 1
Little new information?..... [SKIP TO S6] 2
Some new information?.....3
Much new information? 4
Don't know ..... [SKIP TO S6] -97
Refused..... [SKIP TO S6] -98

S5b. Briefly describe what type of information you have received from Focus?

_____
_____
Don't know ..... -97
Refused..... -98

S6. Again excluding financial incentives, how much has How helpful has Focus on Energy been in helping you to convince customers to purchase energy efficient products and services, on a scale of one to five, where one is "not at all helpful" and five is "very helpful"?

Not at all helpful.....1
2.....2
3.....3
4.....4
Very helpful.....5
Don't know..... -97
Refused..... -98

S7. How important has Focus on Energy been in helping to endorse or legitimize the energy-efficient products and services you sell? Use a scale of one to five, where 5 indicates "very important" and 1 indicates "not important at all"?

Not important at all 1
2 2
3 3
4 4
Very important 5
Don't know ..... -97
Refused ..... -98

Without Focus on Energy

The next few questions are about what your business would have been like if Focus on Energy had never been formed back in 2001, and had never offered financial incentives, advice, marketing campaigns, or any other services in Wisconsin.

W1a. If the Focus on Energy program had never existed, would the services (products) you provide customers be different than they are today?

Yes 1
No ..... [SKIP TO P1] 2
Don't know ..... [SKIP TO W2a] -97
Refused [SKIP TO W2a] -98

W1b. How would the services you provide be different?

_____
_____
Don't know ..... -97
Refused ..... -98

W2a. If the Focus program had never existed, would your company's sales volume of energy efficient products and services be different than it is today?

Yes 1
No ..... [SKIP TO W3] 2
Don't know ..... [SKIP TO W3] -97
Refused ..... [SKIP TO W3] -98

W2b.How different would it be?

_____
_____
Don't know ..... -97
Refused ..... -98

On a scale of one to five, where one means "strongly disagree" and five means "strongly agree," how strongly do you agree with each of the following statements?

W3. Without the existence of the Focus program, the energy efficiency related products and services I provide customers would be about the same.

Strongly disagree 1
2 2
3 3
4 4
Strongly agree 5
Don't know ..... -97
Refused ..... -98

W4. Without the existence of the Focus program, certain energy efficiency projects my customers do would not be economically feasible.

Strongly disagree 1
2 2
3 3
4 4
Strongly agree 5
Don't know ..... -97
Refused ..... -98

W5. The Focus program helps legitimize energy-efficient products and services.

Strongly disagree 1
2 2
3 3
4 4
Strongly agree 5
Don't know ..... -97
Refused ..... -98

Project Specific Questions

Now I'm going to ask you a few questions about one of your customers that received help from the Focus on Energy Program sometime between July 1, 2007 and March 31, 2008.

[Mention name of customer and project information that will help the supplier remember the project. If the supplier does NOT remember this customer/project, ask if someone else might remember. If no-one remembers, then read the following statement, skip to question P3, and use the questions in italics instead.]

Ok, then I'll ask you some general questions about your <measure kind> business between July 1, 2007 and March 31, 2008.

[If more than one customer/project then indicate when responses are different.]

P1. Prior to this project had your company worked with this customer?

Yes 1
No ..... [SKIP TO P3] 2
Don't know ..... [SKIP TO P3] -97
Refused ..... [SKIP TO P3] -98

P2. Prior to this project had your company sold energy efficient products or services to this customer?

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

[Energy Advisor(s) - Put in energy advisor name(s) from IS or other paperwork]

P3. Was this customer referred to your company by a Focus Energy Advisor? *(Were <measure kind> customers referred to your company by Focus on Energy Advisors?)*

Yes 1
No 2
Don't know ..... -97
Refused ..... -98

P4. If your company had NOT been involved with Focus, how likely is it that you would have recommended the same products and/or services to the customer. *(If your company had NOT been involved with Focus, how likely was it that you would have recommended the same energy efficient products and services to your <measure kind> customers?)* [READ LIST]

Very likely 1
Somewhat likely 2
Not very likely 3
Very unlikely 4
Don't know ..... -97
Refused ..... -98

P5. If your company had NOT been involved with Focus, how likely do you think the customer would have been to proceed with the project? *(If your company had NOT been involved with Focus, how likely was it that most of your customers <measure kind> customers would have proceeded with their projects?)*

Very likely 1
Somewhat likely 2
Not very likely 3
Very unlikely ..... [SKIP TO P12] 4
Don't know ..... [SKIP TO P12] -97
Refused ..... [SKIP TO P12] -98

P6. Without the existence of Focus, how would the timing of the project have been affected? Would you say that the project would most likely have been undertaken… *(Without the existence of Focus, how would the timing of most <measure kind> projects have been affected? Would you say they would have been undertaken…)* [READ LIST]

Same time ..... [SKIP TO P8] 1
Earlier ..... [SKIP TO P8] 2
Later 3
Don't know ..... [SKIP TO P8] -97
Refused ..... [SKIP TO P8] -98

P7. How many months later?

_____[RECORD NUMBER OF MONTHS]
Don't know ..... -97
Refused ..... -98

[For projects where energy efficiency does not apply, skip to question P10. The test to determine if efficiency applies is to ask yourself if there is a standard efficiency level. Items such as VFDs, heat recovery, lighting controls, steam traps, etc… do hot have a standard efficiency.]

P8. Without the existence of Focus, how do you believe the level of efficiency achieved by the project would have been affected? Would the equipment efficiency have been… *(Without the existence of Focus, how would the efficiency level of most of your <measure kind> projects have been affected? Would the equipment efficiency have been…)* [READ LIST]

Same ..... [SKIP TO P10] 1
Lesser 2
Greater ..... [SKIP TO P10] 3
Don't know ..... [SKIP TO P10] -97
Refused ..... [SKIP TO P10] -98

P9. High efficiency equipment was installed as part of this project. Without the existence of Focus what type of equipment do you believe this customer would most likely have installed… *(Considering the equipment that Focus promotes to be high efficiency, without the existence of Focus what type of equipment would most <measure kind> customers have installed?)* [READ LIST]

Standard efficiency or according to code.....1
Slightly higher than standard efficiency 2
Between standard efficiency and the efficiency that was installed.....3
Slightly lower than the high efficiency that was installed.....4
Don't know ..... -97
Refused ..... -98

P10. Without the existence of Focus, would you say that the size or quantity installed would most likely have been… *(Without the existence of Focus, would the <measure kind> size or quantity installed by most customers have been…)*[READ LIST]

Same amount ..... [SKIP TO P12] 1
Less.....2
More 3
Wouldn't have installed any. ..... [SKIP TO P12] -4
Don't know..... [SKIP TO P12] -97
Refused..... [SKIP TO P12] -98

P11. What percent of the size/quantity installed would have been installed?

_____[RECORD PERCENT.
IF P10=2 THEN P11 SHOULD BE BETWEEN 0 AND 99.
IF P10=3 THEN P11 SHOULD BE GREATER THAN 100.]
Don't know ..... -97
Refused ..... -98

P12. [CONFIRMATION QUESTION]
Could you describe in your own words what influence the program had on your decision to offer your customers these specific products or services at the time you did? *(Could you describe in your own words what influence the program had on your decision to offer customers these specific products or services at the time we're discussing?)*

_____
_____
_____
_____
Don't know..... -97
Refused..... -98

Those are all the questions I have for you today. Thank you for your time and cooperation.