

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)	
regarding the regulatory reviews, revisions,)	
determinations, and/or approvals necessary for)	Case No. U-15876
the VILLAGE OF PAW PAW)	
to fully comply with Public Act 295 of 2008)	
_____)	

SUBMITTAL OF ENERGY OPTIMIZATION PLAN ANNUAL REPORT

In accordance with the Commission’s Order issued March 2, 2010, (Doc. No. 15), the Village of Paw Paw hereby submits its energy optimization plan annual report for 2010. A copy of that annual report, including any and all exhibits, is attached hereto.

Respectfully submitted,

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Dated: May 31, 2011

**Village of Paw Paw
Energy Optimization Annual Report for 2010
MPSC Case No. U-15876**

Introduction

Pursuant to 2008 Public Act 295 (PA 295), the Village of Paw Paw (“Paw Paw”) is filing this annual energy optimization (EO) report with the Michigan Public Service Commission (MPSC). This EO annual report consists of three sections:

- Section 1 will address the requirements under PA 295 Section 97, Subsections 1-3 and Section 71, Subsection 3 (i).
- Section 2 will summarize the EO programs implemented in 2010.
- Section 3 will provide additional information and goals for 2011 programs.

SECTION 1: PA 295 SECTION 97 SUBSECTIONS 1-3 REQUIREMENTS

Section 97 (1) Each provider shall submit to the commission an annual report that provides information relating to the actions taken by the provider to comply with the energy optimization standards.

Paw Paw has taken the following actions to comply with the EO standards:

- Filed a 4-year Energy Optimization plan with the MPSC on March 31, 2009 as required by PA 295.
- This EO plan was approved by the MPSC on July 1, 2009.
- Launched energy optimization programs for all customer classes in July 2009.
- Overall administration of the EO programs was the responsibility of Paw Paw personnel.
- In addition, an implementation contractor, Franklin Energy Inc., was selected to implement the Residential Lighting, Refrigerator/Freezer Turn-in and Recycling program, Business Prescriptive and Business Custom programs.
- Education for both Residential and Business was implemented by Paw Paw in-house personnel.
- Contracted with KEMA, Inc. for obtaining an independent expert evaluation for the verification of incremental energy savings for each energy optimization program.

- Contracted with Michigan Community Action Agency Association to implement the Residential Low Income program.

Section 97 (2) Annual reports under subsection (1) shall include the following: (a) The number of energy optimization credits that the provider generated during the reporting period. (b) Expenditures made in the past year and anticipated future expenditures to comply with this subpart. (c) Any other information that the commission determines necessary.

In the fall of 2009, the MPSC staff approved an interim report format for all the municipal utilities in Michigan. That interim report details the energy optimization credits generated, expenditures and surcharges collected from customers in the past year. The end of year interim report for 2010 can be found in Attachment A. Future expenditures for 2011 are expected to follow the EO Plan filing that was submitted and approved in 2010. Exceptions to that plan filing will be explained in Section 3 of this report.

Section 97 (3) Concurrent with the submission of each report under subsection (1), a municipally-owned electric utility shall submit a summary of the report to its customers in their bills with a bill insert, to its governing body, at its office and on its website.

Paw Paw will submit a summary of this annual report to its City Council and to its customers through a bill insert and make it available on its website no later than the date required by the Commission.

Section 71 (3)(i) Include a process for obtaining an independent expert evaluation of the actual energy optimization programs to verify the incremental energy savings from each energy optimization program for purposes of section 77.

In December Paw Paw, as part of the Michigan Public Power Agency's Energy Efficiency Service Committee, issued a Request for Proposal (RFP) to verify the incremental gross energy savings for each EO program for 2009 and 2010. KEMA, Inc. was chosen as the evaluation contractor for 24 municipal utilities. KEMA started collecting data in the fourth quarter of 2010 and will complete the evaluation for each municipal under the RFP and that evaluation is attached to this report as Attachment B.

SECTION 2: SUMMARY OF EO PROGRAMS IMPLEMENTED IN 2010

Residential Low Income Services

Paw Paw contracted with MCAAA in 2010 to implement its Low Income program. Additionally, Paw Paw made educational efforts to promote the

program to Low Income customers. The unmet energy savings goals and the budget allocations from the 2010 Low Income program are carried forward to 2011.

Low Income Program Summary

	2010 Goal	2010 Actual	Difference
Energy Savings (kWh)	7,769	10,760	2,991
Budget (\$)	5,050	2,060	-2,990

Residential Solutions

The programs below were made available to all Paw Paw residential electric customers.

Efficient Lighting Program

The Village of Paw Paw distributed CFL's to our residential customers. The Village inserted a flyer in customers' monthly bills, placed posters at public buildings (4), and advertised the program in the local weekly paper, the Paw Paw Courier Leader. For 2010, customers were asked to come to Village Hall for their four bulbs per customer. This worked well and we were able to secure the necessary information to document the program. In 2010, we provided those obtaining bulbs about the proper recycling of old incandescent and CFL bulbs. The Village of Paw Paw was unable to establish a partnership to set up CFL recycling opportunities for our residential customers in 2010.

Refrigerator/Freezer Turn-In and Recycling Program

The objective of this program was to produce long-term energy savings in the residential sector by removing operable, inefficient refrigerators and freezers from the power grid and recycling them in an environmentally safe manner. Target market is residential customers who have "second" or back-up units in their garage or basement. All units were required to be operable to participate in this program and each customer received a \$30 incentive for each unit recycled.

Franklin Energy selected JACO Environmental as the recycling subcontractor to provide comprehensive turn-key services. JACO was responsible for qualifying customers, scheduling and tracking unit pick-ups and processing incentive payments. The number of units that were picked up in 2010 was 7.

The goal for this program was 14 units. Although Paw Paw came up short in this program, the other residential programs surpluses made up for the shortfall.

Residential Education Services

One and a half percent of the EO budget was targeted for Residential education programs. These budget expenditures were used to communicate and educate customers on the benefits of energy efficiency, and load management. Budget funds for education are deemed to generate a proportional amount of the required energy savings for each program year in which the money is spent.

Residential Program Summary

Overall the 2010 residential programs were successful. The tables below summarize the energy savings achieved and budget expenditures from the 2010 residential programs compared to the 2010 EO Plan goals. The Residential Program energy savings goals were bundled together, as described above, to achieve the overall 2010 goals. Any net shortages or excess kilowatt hour savings and budget expenditures from the 2010 programs will be carried over into the 2010 program goals.

Residential Energy Savings

Program	2010 kWh Goals	kWh Installed	Difference
Efficient Lighting	33,255	17,640	-15,615
Refrigerator/Freezer Recycling	22,930	11,583	-11,347
Efficient Appliances & HVAC	1,967	84	-1,883
Education Services	2,899	3,714	815
Total	61,051	33,021	-28,030

Residential Budget Summary

Program	2010 Budget	2010 Expenditures	Difference
Efficient Lighting	2,184	2,184	0
Refrigerator/Freezer Recycling	3,213	3,216	3
Efficient Appliances & HVAC	1,015	515	-500
Education Services	480	615	135
Total	6,892	6,530	362

Business Solutions

The programs below were made available to all City of Paw Paw commercial and industrial customers.

Commercial and Industrial Prescriptive Incentive Program

The Prescriptive Incentive program provides incentives when replacing inefficient equipment with high-efficiency electric technologies on a one-for-one basis. These incentives address the first-cost barrier for customers by providing financial incentives averaging 20% to 40% of the incremental cost of purchasing qualifying technologies. The program was marketed through trade allies, presentations at various organizations, local events and the Paw Paw website. The majority of the incentive payments were for lighting upgrades. The number of customers who participated (completed applications) in the Prescriptive program was 3 for 2010.

Commercial and Industrial Custom Incentive Program

The objective of the Custom Incentive Program is to affect the installation of site-specific and unique energy efficiency technologies and process improvements (that do not fit the parameters of the Prescriptive Program) by business customers that would not have done so in the absence of the program. This program was marketed through the same channels as the Prescriptive Program. The number of completed applications for the Custom program was 0 in 2010.

Business Education Services

One and a half percent of the EO budget was used on Business education programs. These budget expenditures communicated and educated customers on the benefits of energy efficiency, conservation and load management. Budget funds for education are deemed to generate a proportional amount of the required energy savings for each program year in which the money is spent.

The Village of Paw Paw Business Education program was implemented by in-house personnel in 2010 and with direct contact by representatives from Franklin Energy. Education and outreach included: posting information on the Village website; direct mail to commercial and industrial customers; a flyer inserted in customer bills; discussion at our public Council meetings; providing information to the local Chamber of Commerce, the Greater Paw Paw Business Network, and the local Downtown Development Authority; and advertisements in the local weekly paper, the Paw Paw Courier Leader.

Business Program Summary

The business programs were well received by our customers. There was initially much interest. Representatives from Franklin Energy met with businesses and encouraged applications. The business programs often required a significant investment from the customer and due to the economic conditions in Michigan many business customers were unable to fund major projects. It is anticipated that the 2011 programs will be more successful.

Any net shortages or excess energy goals or budget expenditures from the 2009 programs will be carried over into the 2010 program goals.

The tables below details the energy savings and the budget expenditures for the 2010 business programs compared to the 2010 EO Plan goals. Any net shortages or excess energy goals or budget expenditures from the 2010 programs will be carried over into the 2010 program goals.

Business Energy Savings Summary

Program	kWh Goals	kWh Installed	Difference
Prescriptive Incentive	83,245	69,731	-13,514
Custom Incentive	45,753	0	-45,753
Business Education	2,899	1,691	-1,208
Totals	131,897	71,422	-60,475

Business Budget Summary

Program	2010 Budget	2010 Expenditures	Difference
Prescriptive Incentive	14,994	5,339	-9,655
Custom Incentive	6,588	2,640	-3,948
Education Services	480	280	-200
Total	22,062	8,259	-13,803

SECTION 3: ADDITIONAL INFORMATION AND 2010 EO PROGRAMS

This section provides additional information to 2010 programs and a summary of the 2010 Energy Optimization programs.

Recovery of Costs from Customers

Paw Paw started levying surcharges for the Energy Optimization programs in July 2009. Those surcharges are shown in the table below:

Levelized Surcharges		2010-2012
Residential	Per kWh	\$0.001199
Secondary	Per meter	\$46.07
Primary	Per meter	\$46.07

Paw Paw had no self-directed customers in 2010 from whom to recover low income program costs.

Coordination of Energy Optimization Programs;

Paw Paw has and will continue to meet with other utilities and agencies regarding the coordination of programs. In addition, Paw Paw has participated in the EO Collaborative meetings hosted by MPSC through our membership in Michigan Municipal Electric Association (MMEA).

New Energy Optimization Programs for 2011

Paw Paw has no new programs that it will be kicking off in 2011. However, Paw Paw intends to have its original plan updated that may include a different portfolio of programs for 2012.

Summary of Energy Optimization Programs for 2011

The table below shows: a) applicable revisions/adjustments from the 2010 programs; b) 2011 Plan Filing goals and c) the revised energy savings and expenditure goals for 2011 programs.

2011 Energy Optimization Program Portfolio

Program Portfolio	2010 Revisions		2011 Plan Filing Goals		2011 Revised Goals	
	kWh Savings Revisions	Budget Revisions	Gross kWh Savings	Program Budget	Gross kWh Savings	Program Budget
Low Income Services	2,991	(\$2,990)	7,538	\$4,900	5,025	\$7,890
Efficient Lighting	(28,030)	(\$362)	39,373	\$3,994	67,403	\$4,356
Refrigerator/Freezer Recycling			28,359	\$4,462	28,359	\$4,462
Efficient Appliances & HVAC			2,460	\$1,370	2,460	\$1,370
Electric Water Heater Savings Kits						
Educational Services			4,299	\$735	4,299	\$735
Pilot/Emerging Technology						
Subtotal - Residential Solutions	(28,030)	(\$362)	74,491	\$10,561	102,521	\$10,923
Multi-Family Common-Area						
Prescriptive Incentive Program	(60,475)	(\$13,803)	143,192	\$20,039	203,667	\$33,842
Custom Incentive Program			57,191	\$8,235	57,191	\$8,235
Educational Services			4,299	\$735	4,299	\$735
Pilot/Emerging Technology						
Subtotal - Business Solutions	(60,475)	(\$13,803)	204,682	\$29,009	265,157	\$42,812
Total Program Portfolio			286,711	\$44,470	372,703	\$61,625
Program Administration				\$2,450		\$2,450
Evaluation (EM&V)				\$1,960		\$1,960
Subtotal - Admin/Evaluation				\$4,410		\$4,410

ATTACHMENT A

Village of Paw Paw - U15876
Semi-Annual Energy Optimization Report
December, 2010

<u>Revenue</u>	Current Period	Year to Date
Net Revenue	32,930	65,580
 <u>Expenditures</u>		
All Programs (excluding Low Income)	9,193	17,615
Low Income Programs	1,030	2,060
Total Expenditures	10,223	19,675
 Over(Under) Collection	 22,707	 45,905

Energy Optimization Credits Generated

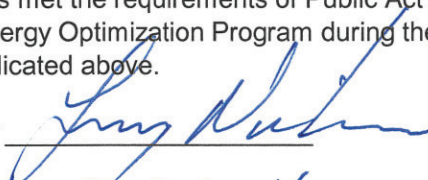
All Programs (excluding low income)	104,443	104,443
Low Income Programs	10,760	10,760
Total Energy Optimization Credits	115,203	115,203

Surcharge Billed

Residential	0.001199	Per kWh
Secondary	46.07	Per Meter
Primary	46.07	Per Meter
Self Directed	-	-

To the best of our knowledge Village of Paw Paw - U15876 has met the requirements of Public Act 295 regarding the Energy Optimization Program during the reporting period indicated above.

By



Date

5-26-11

Village of Paw Paw - U15876
Semi-Annual Energy Optimization Report
December, 2010

	<u>Commercial and Industrial</u>					EO Credits Generated (kWh)
	Residential	Secondary	Primary	Self Directed	Total	
Revenue						
Billed Revenue	5,055	18,763	9,112	-	32,930	
Less Revenue Tax	-	-	-	-	-	
Net Revenue	5,055	18,763	9,112	-	32,930	
Expenses						
<u>Residential</u>						
Efficient Lighting	1,092				1,092	17,640
Refrigerator/Freezer Turn-In & Recycling	1,608				1,608	11,583
Efficient Appliances & HVAC	11				11	84
Educational Services	210				210	3,714
Total Residential Programs	2,921	-	-	-	2,921	33,021
<u>Commercial and Industrial</u>						
Prescriptive Incentive Program		3,056	171		3,227	69,731
Custom Incentive Program		1,250	70		1,320	-
Educational Services		137	8		145	1,691
Total C&I Programs	-	4,444	248	-	4,692	71,422
Administration	71	216	12	-	300	
Evaluation	305	924	52	-	1,280	
Low Income Programs	245	743	42	-	1,030	10,760
Total Expense/EO Credits	3,542	6,327	353	-	10,223	115,203
Over(Under) Collection	1,513	12,435	8,759	-	22,707	

Village of Paw Paw - U15876
 Budget to Actual Comparison, EO Program Expenditures
 December, 2010

	Actual Year-to-Date	Budget	Budget to Actual	Percentage of Budget
<u>Residential</u>				
Efficient Lighting	2,184	2,184	-	100.00%
Refrigerator/Freezer Turn-In & Recycling	3,216	3,213	(3)	100.09%
Efficient Appliances & HVAC	515	1,015	500	50.74%
Educational Services	615	480	(135)	128.13%
Total Residential	6,530	6,892	362	94.75%
<u>Commercial and Industrial</u>				
Prescriptive Incentive Program	5,339	14,994	9,655	35.61%
Custom Incentive Program	2,640	6,588	3,948	40.07%
Educational Services	280	480	200	58.33%
Total Commercial and Industrial	8,259	22,062	13,803	37.44%
Administration	1,546	1,600	54	96.63%
Evaluation	1,280	1,280	-	100.00%
Low Income	2,060	5,050	2,990	40.79%
Total Program Expenditures	19,675	36,884	17,209	53.34%

Village of Paw Paw - U15876
 Budget to Actual Comparison, EO Credits (kWh)
 December, 2010

	Actual Year-to-Date	Budget	Budget to Actual	Percentage of Budget
<u>Residential</u>				
Efficient Lighting	17,640	33,255	15,615	53.04%
Refrigerator/Freezer Turn-In & Recycling	11,583	22,930	11,347	50.51%
Efficient Appliances & HVAC	84	1,967	1,883	4.27%
Educational Services	3,714	2,899	(815)	128.13%
Total Residential	33,021	61,051	28,030	54.09%
<u>Commercial and Industrial</u>				
Prescriptive Incentive Program	69,731	83,245	13,514	83.77%
Custom Incentive Program	-	45,753	45,753	0.00%
Educational Services	1,691	2,899	1,208	58.33%
Total Commercial and Industrial	71,422	131,897	60,475	54.15%
Low Income	10,760	7,769	(2,991)	138.50%
Total EO credits	115,203	200,717	85,514	57.40%

ATTACHMENT B



Village of Paw Paw

Verification of Savings of 2010

Energy Optimization Programs

Final Report



Village of Paw Paw

Prepared by KEMA Inc.

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Clarklake, Michigan, March 28, 2011



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E Executive Summary

The Lansing Board of Water & Light and the Michigan Public Power Agency Energy Efficiency Service Committee (BWL and MPPA EE Service Committee) is a group of twenty-four Michigan municipal electric utilities that was formed to mutually verify the savings of similar 2009 Energy Optimization (EO) programs as required by the State of Michigan's 2008 Public Act 295 (PA 295) SEC. 71. (3)(i).

The evaluation of BWL and MPPA EE Service Committee 2010 EO programs was conducted in fourth quarter of 2010. The evaluation estimated verification rates (i.e., the measures that were installed and operating as planned) using statistical sampling of participants across participating municipal utilities. These estimates were then applied to the participation parameters of specific member utilities.

This report presents the verification of energy savings for the EO programs implemented by Village of Paw Paw. Table 1 recapitulates the verification findings, including the EO savings goals with the claimed (i.e., deemed savings), and the verified gross savings for Village of Paw Paw.

Table 1 Village of Paw Paw Energy Optimization Goal, Actual and Verified Savings (kWh)

Program	Goal	Claimed	Verified-Gross
Residential			
Efficient Lighting	33,255	17,640	13,353
Refrigerator/Freezer Turn-In	22,930	11,583	11,492
High-Eff. Appliances/ HVAC	1,967	84	84
Low Income	DNR	DNR	NA
Residential Education Services	DNR	DNR	NA
Commercial and Industrial			
Custom Incentive	45,753	-	-
Prescriptive Incentive	83,245	69,731	76,583
C&I Education Services	DNR	DNR	NA
Total	187,150	99,038	101,512

DNR-Did Not Report

NA-Not Applicable

1 Introduction

The Lansing Board of Water & Light and the Michigan Public Power Agency Energy Efficiency Service Committee (BWL and MPPA EE Service Committee) is a group of twenty-four Michigan municipal electric utilities (For a list of participating utilities, see Appendix A) that was formed to mutually verify the savings of similar 2010 Energy Optimization (EO) programs as required by the State of Michigan’s 2008 Public Act 295 (PA 295) SEC. 71. (3)(i).

The ultimate goal of the evaluation was specified as the verification of incremental energy (kWh) savings for the BWL and MPPA EE Service Committee members EO programs. The BWL and MPPA EE Service Committee have chosen to accept the savings estimates from the Michigan Energy Measures Database (MEMD). The MEMD contain values that were current at the time the associated energy optimization plans were approved by the Michigan Public Service Commission (MPSC or the Commission), or engineering estimates current at the time the energy optimization plans were approved by the MPSC for measures not included in the MEMD as the source for gross energy savings.

Accordingly, the objectives of the evaluation are to verify that measures are installed and operating as planned and to deliver a final annual report that provides the energy savings for each utility.

This report presents the verification results for the Village of Paw Paw (Village of Paw Paw). Following this introductory section, the next section presents a recapitulation of the estimates of savings for programs implemented by Village of Paw Paw. The appendices provide supporting documentation, analytical approaches as well as generic descriptions of programs that the BWL and MPPA EE Service Committee members may have implemented. The appendices provide supporting documentation, analytical approaches as well as generic descriptions of programs that the BWL and MPPA EE Service Committee members may have implemented.

2 Verification of Savings Estimates

Residential

The Village of Paw Paw reported that the deemed savings estimate for the Efficient Lighting Program was 17,640 kWh. Based on the analysis of the program the verified gross savings estimate is 13,353 kWh. Using the variance of the estimate yields a confidence interval of $\pm 1,544$ kWh ($\pm 11.6\%$).

The Village of Paw Paw reported that the deemed savings estimate for the Refrigerator/Freezer Turn-In Program was 11,583 kWh. Based on the analysis of the program the verified gross savings estimate is 11,492 kWh. Using the variance of the estimate yields a confidence interval of ± 125 kWh ($\pm 1.1\%$).

The Village of Paw Paw reported that the deemed savings estimate for the High-Efficiency Appliances/ High-Efficiency HVAC Program was 84 kWh. Based on the analysis of the program the verified gross savings estimate is 84 kWh. The variance associated with this estimate was zero.

The Village of Paw Paw did not report any savings associated with the Low Income Program. Accordingly, the verified savings are zero.

For the Residential Education Program the placed newspaper ads, sent bill stuffer, and hung posters in offices, police department, fire department, and village hall. Notices with energy

efficiency information were sent out with the electric bills. Independent verification of Education Programs is not required.

Commercial and Industrial

The Village of Paw Paw reported that the deemed savings estimate for the C&I Custom Incentive Program was 0 kWh. Based on the analysis of the program the verified gross savings estimate is 0 kWh.

The Village of Paw Paw reported that the deemed savings estimate for the C&I Prescriptive Incentive Program was 69,731 kWh. Based on the analysis of the program the verified gross savings estimate is 76,583 kWh. Using the variance of the estimate yields a confidence interval of $\pm 11,232$ kWh ($\pm 14.7\%$).

For the Business Education Program the Village of Paw Paw sent Individual letters to all commercial customers introducing and reminding them about the prescriptive and custom programs that are available. Through representatives such as MPPA, the Village of Paw Paw made direct calls and established personal contact with many businesses. Emails, letters and tri-folds with contact information was sent to all businesses with the Downtown Development Authority district. These savings are not required to be independently verified.

Appendix A The BWL and MPPA Energy Efficiency Service Committee Utilities

The 24 municipal utilities with EO programs to be evaluated include the following:

- Lansing Board of Water & Light
- Lowell Light & Power
- Village of Paw Paw
- Niles Utility Department
- City of Charlevoix
- City of Paw Paw
- Chelsea Dept. of Electric & Water
- City of Petoskey
- Croswell Light & Power
- City of Portland
- Detroit Public Lighting Department
- City of Sebewaing
- City of Dowagiac
- City of South Haven
- City of Eaton Rapids
- City of St Louis
- Grand Haven Board of Light & Power
- City of Sturgis
- City of Harbor Springs
- Traverse City Light & Power
- City of Hart Hydro
- Wyandotte Dept. of Municipal Service
- Holland Board of Public Works
- Zeeland Board of Public Works

Appendix B Program Descriptions

The BWL and MPPA EE Service Committee municipal utility members offered a variety of residential, commercial and industrial EO programs. This appendix briefly and generically describes the programs that may have been offered by the individual utilities. The individual utilities determined which of the specific programs were offered to their customers, as well the appropriate implementation approach.

Residential Programs

Efficient Lighting Program: This program promotes the installation of ENERGY STAR fixtures, compact fluorescent light bulbs (CFLs), ceiling fan lights, and LED holiday lighting. The measures were distributed to participants in various methods, according to the utilities preference. The distribution methods included: in-store promotion; special sales; internet orders; coupons; over the counter at the utility offices; or at events (i.e. home shows) The Efficient Lighting Program was marketed in various ways such as through the utility website and through return cards that were mailed out to customers. The Efficient Lighting Program also provides opportunities for recycling CFLs.

Refrigerator/Freezer Turn-In Program: This program encourages customers to dispose of “second” refrigerators and encourages the accelerated retirement of older, inefficient “primary” refrigerators and freezers. The program offers turnkey pick up and recycling services.

High-Efficiency Appliances/ High-Efficiency HVAC: This program provides incentives to customers to encourage them to replace their older, inefficient dehumidifiers and room air-conditioners with high-efficiency ENERGY STAR qualified units. This program also promotes heating and cooling technologies that can reduce electric energy use. The program focuses on the promotion of high-efficiency central air-conditioning and premium efficiency furnaces that have high-efficiency motors (electrically commutated motors – ECMs). ECM motors save electric energy during the heating and cooling seasons.

Low Income Services Program: This program provides funding to upgrade the energy efficiency of customers living on limited incomes by subsidizing the installation of cost effective electric measures. The delivery of the program is coordinated with local weatherization or Low Income Assistance agencies.

Multifamily In-Unit/ Commercial Services for Multi-Family Property Owners Programs: In 2010 these programs were combined. The Multi-Family In-Unit Efficiency Program provides a turn-key service for helping customers reduce their electric energy use in multi-family buildings. Participants are provided CFL's, along with several low-flow water-saving devices. The service is provided to property owners and occupants at no cost. Services for Multi-Family Property Owners were integrated with the Multi-Family In-Unit Efficiency program, delivering benefits to both property owners and tenants. An Energy Advisor visited targeted properties to offer a free on-site analysis of the building's energy use for common area lighting and appliances and will provide recommendations to the property owner, including estimated costs and payback, lists of qualified products and vendors, and applications for financial incentives.

Education Services: This program provides informative and actionable educational materials to residential customers that communicate to and educate customers on the benefits of energy efficiency and conservation. Such materials include brochures, fact sheets, workshops, web sites and online energy audits.

Pilot/Emerging Technology Program: Residential pilot programs pursue the new initiatives, such as Residential-sized HVAC equipment optimization, advanced residential water heating technology or promotion of LED lighting technology in residential applications

:

Commercial and Industrial Programs

Prescriptive Incentive Program: This program affects the purchase and installation of high-efficiency electric technologies in the commercial and industrial sectors through a combination of market push and pull strategies that stimulate market demand while simultaneously increasing market provider investment in stocking and promoting high-efficiency products. Business customers can apply for incentives averaging 20% to 40% of the incremental cost of purchasing qualifying technologies. The program engages market provider support through a targeted outreach effort.

Custom Incentive Program: This program helps customers and market providers identify more complex energy savings projects, analyze the economics of each project and complete a customized incentive application.

Business Education Services Program: This program provides informative materials and training opportunities to educate business customers on the benefits of energy efficiency and

conservation. Such materials may include brochures, fact sheets, case studies, web sites, and training *seminars*.

Pilot/Emerging Technology Program: C&I pilot programs pursue the new initiatives, such as day lighting, promotion of LED lighting technology in commercial applications, retro-commissioning, etc..

Self-Directed Customers

Certain customers that meet specific criteria can opt out of utility sponsored Energy Optimization Programs, and the attendant rate surcharges. To be eligible to become "self-direct" a customer must have an annual peak demand in the preceding year of at least two megawatts at each site or an aggregate of ten megawatts for all of its sites, and notify its electric provider of its intent to implement a self-directed energy optimization program. The customer was then required to file a self-directed energy optimization plan with their electric provider by January, 2009. For administrative efficiency, customers were required to file their self-directed plans using a Commission-designed standardized template. This template includes projected energy savings estimates. Once a customer began to implement the self-directed plan at a site covered by the plan, the site was exempt from the surcharge and not eligible for the provider's energy optimization activities. A self-directed energy optimization plan was considered complete, and the customer exempt from the provider's surcharge after the start date of the first action item of the customer's self-directed energy optimization plan.

Appendix C Sample Design and Analysis Equations

$$n_0 = \frac{z^2 pq}{d^2}$$

$$n_1 = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where,

n_0 = the required sample size before adjusting for the size of the population,

z = a constant based on the desired level of confidence, e.g., 1.645 for the 90% level of confidence,

p = the proportion of participants with the attribute.

q = 1-p

d = the desired confidence interval,

n_1 = the required sample size after adjusting for the size of the population using the finite population correction factor,

N = the population size, i.e., the number of participants with a particular measure.

Equation 1 Sample Size for a Proportion

Estimate: $\hat{p} = n_o / n$

Standard error: $se(\hat{p}) = \begin{cases} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} & \text{When N is large} \\ \sqrt{1 - \frac{n}{N}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} \end{cases}$

Confidence interval: $\hat{p} \pm z se(\hat{p})$

Equation 2 Estimation of a Population Proportion

$$S_v = \hat{p}^* S_t$$

Where:

s_v =Verified Savings

S_t =Reported total savings based on the deemed savings

Equation 3 Estimation of Verified Savings

Model Based Statistical Sampling and Analysis

This technique used a statistical model and its parameters to represent prior information about the population to be sampled. The model describes the nature of the variation in the relationship between a key target variable y of the study (called the dependent variable), in this case the actual amount of program energy savings and an explanatory variable x , in our case the tracking system estimate of savings. The model is used to help choose the sample size n and to help formulate a sample design with near-optimal stratification for stratified ratio estimation. The model describes the trend and the variation around the trend, i.e., the conditional mean and standard deviation of y given x .

The model is used as a guide to the sample design, but the results of the study itself are not strongly dependent on the accuracy of the model. Once the sample design is selected, the subsequent analysis of the data is usually based only on the sample design and not on the model used to develop the sample design. In particular, conventional stratified-sampling techniques can be used to analyze the sample data collected from an MBSS sample design. The resulting estimates will be almost unbiased in repeated sampling and the confidence intervals will also be valid, provided that the sample design is followed.

Equation 4 illustrates the primary and secondary equations of the model that is used in the sample design. Here $x_k > 0$ is the tracking system estimate of energy savings, and is known for each participant, k , in the population. The residuals are considered to be N independent random variables with zero expected value and standard deviations following the secondary equation. There are three parameters in the model: β (beta), σ_o (sigma-naught), and γ (gamma). The coefficient beta is a fixed constant apply to the known tracking estimate x_k to predict the actual savings y_k . σ_k is the residual standard deviation of each unit k . Both the expected value μ_k and residual standard deviation σ_k generally varies from one unit to another depending on x_k ,

following the primary and secondary equations of the model. In statistical jargon, the ratio model is a (usually) heteroscedastic regression model with zero intercept. Gamma describes how the standard deviation varies in relationship

$$y_i = \beta x_i + \varepsilon_i$$
$$\sigma_i = sd(\varepsilon_i) = \sigma_0 x_i^\gamma$$

Equation 4 Primary and Secondary Equations

Using MBSS techniques in sample design minimizes the uncertainty of the results by controlling the variation of the sample. Accordingly, for the verifications the initial sample size was determined using Equation 5. Sample size is based on an assumed “error ratio”¹.

The true error ratios were not known. However, based on past experience, a high level of compliance should be expected.

The next step in the sample design is to choose the number of strata. Typically, in evaluations such as these three strata are chosen (small medium and large). Next, stratum boundaries are determined so there is approximately equal amount of variance in each stratum. To do this the tracking estimates of savings are sorted. The participant savings are raised to the assumed (x^y) gamma. This is a proxy for $\sigma_i = \sigma_0 x^y$. The relative cumulative sum of the x^y is then calculated. The strata cut points identified as the multiples of the cumulative sum divided by the number of strata.

$$n_0 \approx \left(\frac{z \text{ er}}{D} \right)^2$$

$$n = \frac{n_0}{1 + n_0/N}$$

Where:

¹ The error ratio is defined as the ratio between (a) the sum or average of the residual standard deviations of all customers in the model, and (b) the sum or average of the expected values of y. The error ratio is similar to the coefficient of variation

D is the desired relative precision, and
z corresponds to the desired confidence level.

Equation 5 The Initial Sample Size Calculation

Ratio Estimate	Mean	Total
$\hat{B}_0 = \frac{\sum_{i=1}^{n_0} w_i y_i}{\sum_{i=1}^{n_0} w_i x_i}$	$\bar{y}_0 = \hat{B}_0 \mu_{x0}$	$\hat{Y}_0 = \hat{B}_0 X_0$
	where	$w_i = N_h / n_h$

Equation 6 Combined Ratio Estimation

1. Calculate the residuals $e_i = y_i - \hat{B}_0 x_i$
2. Calculate $se(\hat{B}_0) = \left(\frac{1}{\hat{X}_0} \right) \sqrt{\sum_{i=1}^{n_0} w_i (w_i - 1) e_i^2}$
with $\hat{X}_0 = \sum_{i=1}^{n_0} w_i x_i$
3. Then $se(\bar{y}_0) = se(\hat{B}_0) \mu_{x0}$ and $se(\hat{Y}_0) = se(\hat{B}_0) X_0$

Equation 7 Calculating the Statistical Precision

Appendix D Analysis Methodology

For each of the programs, an appropriate evaluation approach was developed. This section describes the methodologies used for each program, including the sampling methodology, the sample selection process and the analysis approach

Residential Efficient Lighting Program

Sampling Methodology

The sample design for the verification of the Residential Efficient Lighting Program is predicted on the assumption that the verification estimate is a proportion of the measures that were installed and operating as intended.

The equations to determine required sample size based for a proportion, at a certain level of confidence and specified confidence interval are shown in Equation 1. For these programs, the sample was designed to estimate the verification percentage with a $\pm 10\%$ relative confidence level at the 90% confidence level.

For the Efficient Lighting program, the expected verification percentage (p) was guided by the 2009 verification results. For the 2010, it was assumed that the installed and operating as intended percentage of bulbs would be 73%, the same as 2009. Based on this expected percentage, the sample size was calculated to be 53.

Sample Selection

The tracking information for the Residential Efficient Lighting Program presented challenges to the sample selection. For the verification, it was assumed the rate that the bulbs were installed and operating as intended was consistent across all municipalities.

The survey was implemented during the fourth quarter of 2010.

Verification Methodology

Customer verification data were collected for the Residential Efficient Lighting and the Refrigerator/Freezer Turn-In Programs through the use of a telephone survey. A random sample was selected from all known and available participating efficient lighting and refrigerator turn-in customers. The responses from the sampled customers determined the compliance rate (i.e., the percentage of measures that are installed and operating as planned) for each programs.

Lighting participants were asked:

- To verify they did participate in the program
- How many CFLs they received
- Are they using all of the CFLs
- Where these lamps were installed (kitchen, bathroom, bedroom, etc.)
- Typical hours per day the CFLs were used, by season
- How satisfied were they with the CFLs (on a 1 to 10 ranking)
- Information to determine the net to gross ratio (free ridership, spillover, etc.)
- Program satisfaction,
- Perspectives on Program design, administration and implementation,
- Solicited ideas on future programs

From the returned surveys, proportions of the measures that were installed and operating as intended were estimated, net to gross estimates and process information.

In Equation 1 n_0 represents the number of measures installed and operating as expected, n is the total number of bulbs. The verified savings were estimated using Equation 3.

Residential Refrigerator/Freezer Turn-In Program

Sampling Methodology

The Residential Refrigerator/Freezer Turn-In Program verification uses model based statistical sampling (MBSS) to guide the sample design. The 2009 verification of the program was used to guide the analysis. Although the 2009 verification rate was 100%, for the sample design, the expected verification rate was assumed to be 92%. This yields a sample size of 20. Stratifying the sample into three strata, yielded a final sample size of 21. Table 2 presents the sample design.

Strata	Population				Sampe	
	N	Min	Max	Mean	n	Mean
1	158	1,551	1,551	1,551	7	1,551
2	631	1,672	1,672	1,672	7	1,672
3	65	3,102	3,344	3,277	7	3,258
Total	854			1771.773	854	1,770

Table 2 Residential Refrigerator Freezer Turn-In Program Sample Design

Verification Methodology

Customer verification data were collected for the Refrigerator/Freezer Turn-In Program through the use of a telephone survey. The replies from the sampled customers determined the verification rate (i.e., the percentage of measures that are installed and operating as planned), the net to gross ratio, and process information. The survey can be found in Appendix F .

Refrigerator Turn-In Participants were asked:

- To verify they did participate in the program
- How many refrigerators/freezers they still own and use

-
- Reason for participating; either a) no need for an extra one or b) looking to replace with a new one
 - If a new refrigerator was purchased, was it Energy STAR rated
 - How satisfied were they with the program (on a 1 to 10 ranking)
 - Information to determine the net to gross ratio (free ridership, spillover, etc.)
 - Program satisfaction,
 - Perspectives on Program design, administration and implementation,
 - Solicited ideas on future programs

From the returned surveys, proportions of the measures that were installed and operating as intended were estimated.

In Equation 5 n_0 represents the number of measures installed and operating as expected, n is the total number of bulbs. The verified savings were estimated using combined ratio estimation, and shown in Equation 6.

Residential High-Efficiency Appliances/ High-Efficiency HVAC Program

Sampling Methodology

The High-Efficiency Appliances/ High-Efficiency HVAC Program sample was designed to verification uses model based statistical sampling (MBSS) to guide the sample design. This was a new program in 2010. The program featured multiple measures, and participants may have more than one measure. The assumed verification rate for the sample design was 90%. This yields a sample size of 24. However, to assure that there was adequate coverage of the various measures offered, the sample size was increased and the population was stratified into four strata of with a sample size of 7 each. Table 3 presents the sample design. The sample design had adequate coverage of all the measures.

Strata	Population				Sampe	
	N	Min	Max	Mean	n	Mean
1	91	44	525	194	7	160
2	103	730	1,460	737	7	730
3	99	814	1,120	1,117	7	1,120
4	15	1,222	1,262	1,243	7	1,236
Total	308			723	308	712

Table 3 High-Efficiency Appliances/ High-Efficiency HVAC Program Sample Design

Verification Methodology

Customer verification data were collected for the High-Efficiency Appliances/ High-Efficiency HVAC Program through the use of a telephone survey. The replies from the sampled customers determined the verification rate (i.e., the percentage of measures that are installed and operating as planned), the net to gross ratio, and process information. The survey can be found in Appendix F .

Refrigerator Turn-In Participants were asked:

- To verify they did participate in the program
- How many of each measures were installed and still in use
- Reason for participating;
- How satisfied were they with the program (on a 1 to 10 ranking)
- Information to determine the net to gross ratio (free ridership, spillover, etc.)
- Perspectives on Program design, administration and implementation,
- Solicited ideas on future programs

From the returned surveys, proportions of the measures that were installed and operating as intended were estimated.

In Equation 5 n_0 represents the number of measures installed and operating as expected, n is the total number of bulbs. The verified savings were estimated using combined ratio estimation, and shown in Equation 6.

Residential Multifamily Program

Sampling Methodology

The Multifamily Program sample was designed to verification uses model based statistical sampling (MBSS) to guide the sample design. This was a new program in 2010. The assumed verification rate for the sample design was 95%. This yields a sample size of 9. To assure that there was adequate coverage of the various measured offered, the sample was stratified into three strata of with a sample size of 3 each. Table 3 presents the sample design.

Strata	Population				Sampe	
	N	Min	Max	Mean	n	Mean
1	18	4,763	56,080	27,552	3	29,450
2	6	62,181	165,742	109,675	3	99,127
3	3	204,339	456,593	301,396	3	301,396
Total	27			76,229	9	75,150

Table 4 Multifamily Program Sample Design

Verification Methodology

Customer verification data were collected for the Multifamily Program through the use of on-site surveys. The on-site engineer verified measures in common areas and in a sample of units. While on site the engineer interviewed the property management. From the on-site inspection and interview, compliance rate (i.e., the percentage of measures that are installed and operating as planned) was determined.

Multifamily participants were asked:

- To verify they did participate in the program
- Verify the measures installed
- Net to gross questions,
- Program satisfaction
- Questions regarding program design
- Questions regarding future program offerings.

In Equation 1 n_0 represents the number of measures installed and operating as expected, n is the total number of bulbs. The verified savings were estimated using Equation 3.

Residential Low Income Program

Sampling Methodology

Each utility implemented their own Low Income Program. Sixteen of the utilities contracted the Michigan Community Action Association to implement the low income program. However, the verification was challenged by a late implementation and no coherent tracking of participants. Each utility was asked to provide participants. A list of participants was constructed. The bulk of participants were in Lansing and Holland. Accordingly, the sample was stratified into three strata: Lansing; Holland and all others. A total sample size of 21 was chosen. Seven sample points were allocated to each stratum.

Verification Methodology

Customer verification data were collected for the Residential Low Income Program through the use of a telephone survey. The responses from the sampled customers determined the compliance rate (i.e., the percentage of measures that are installed and operating as planned) for each programs.

Lighting participants were asked:

- To verify they did participate in the program
- How many measures they received
- If the measures were still installed
- How satisfied were they with the program
- Information to determine the net to gross ratio (free ridership, spillover, etc.)
- Program satisfaction,
- Perspectives on Program design, administration and implementation,
- Solicited ideas on future programs

From the returned surveys, proportions of the measures that were installed and operating as intended were estimated, net to gross estimates and process information.

The verified savings were estimated using Equation 3.

Commercial and Industrial Prescriptive and Custom Programs

Sampling Methodology

The C&I verification uses model based statistical sampling (MBSS) to guide the sample design. The true error ratios were not known. However, based on 2009 verification past experience, a high level of compliance should be expected. Using 2009 as a guide, the error ratio for the prescriptive program was assumed to be 0.3, and for the custom program the error ratio was assumed to be 0.20. It was assumed that there would be a there will be a 90% compliance rate, yields preliminary sample sizes of approximately 24 for the Prescriptive Program and 15 for the Custom Program².

The next step in the sample design is to choose the number of strata. Typically, in evaluations such as these three strata are chosen (small medium and large). Next, stratum boundaries are determined so there is approximately equal amount of variance in each stratum. To do this the tracking estimates of savings are sorted. The participant savings are raised to the assumed (x^{γ}) gamma. This is a proxy for $\sigma_i = \sigma_o x^{\gamma}$. The relative cumulative sum of the x^{γ} is then calculated. The strata cut points identified as the multiples of the cumulative sum divided by the number of strata. For the sample design for both C&I program verification, the value of gamma was assumed to be 0.8.

Strata	Population				Sampe	
	N	Min	Max	Mean	n	Mean
1	74	-	53,802	17,321	8	16,306
2	20	53,814	142,222	88,106	8	97,981
3	9	142,837	540,355	235,455	8	247,033
Total	103			50,126	24	52,326

Table 5 C&I Prescriptive Program Sample Design

² With an assumed desired confidence interval of $\pm 10\%$ and at the 90% confidence level.

Strata	Population				Sampe	
	N	Min	Max	Mean	n	Mean
1	39	580	44,839	16,826	5	8,686
2	11	45,241	109,950	71,646	5	68,941
3	5	185,747	321,812	232,452	5	232,452
Total	55			47,392	15	41,079

Table 6 C&I Custom Program Sample Design

Verification Methodology

For the verification, an energy engineer conducted a quality control inspection of commercial and industrial participants of the C&I Prescriptive Program and C&I Custom Program. The engineer physically inspected all measures and commented on both the quality and the appropriateness for the participant. The inspector noted any problems with measure installation and recorded any customer comments expressing either satisfaction or dissatisfaction with the program, measures, and contractor services. The engineer inspected all of the measures or activities recorded in the participant's program file. A copy of the on-site inspection form can be found in Appendix F .

The information gathered on site was used to verify the savings of the measures that were installed and operating as intended. The verified estimate of savings and the tracking system estimate of savings were used to develop a stratified ratio estimate of program savings.

Equation 6 shows the ratio estimator. In this equation y denotes the onsite verified estimate of savings, x denotes the tracking system estimate of savings, and w denotes the case weights.

In addition to the estimate of the mean demand and the population total of demand, the statistical precision associated with each variable estimate was also estimated. Equation 7 presents the three steps necessary to calculate the statistical precision associated with our combined stratified ratio estimator.

Residential Education Services Programs and Commercial and Industrial Education Services Program

Verification Methodology

The municipal utilities may have self implemented the Residential Low Income Services and Education Services Programs and the Business Education Services Program. Accordingly, the verification of these programs was accomplished by conducting a survey and follow up interviews with the municipal utilities. The survey was designed to identify the actions that were taken by the municipal utility, how the programs were implemented, participation levels, and costs associated with each of these programs. A copy of the interview guide can be found in Appendix H .

The verification was conducted through a brief 15 to 20 minute interview with the municipal utility officer responsible for these programs. A contact list of 24 municipal utilities and corresponding staffs was provided to KEMA. The MPPA initially contacted representatives from each municipal utility to inform them that KEMA would be contacting them to perform this interview. Immediately following, KEMA called a representative from each municipality to arrange a convenient day and time to conduct the interview and the appropriate utility manager or public official to be interviewed. Each official was also given the option of receiving the interview questions ahead of time. Interview questions posed to each official explored the funding of the various programs in 2010 and what the plans would be for each these programs in 2011. These interviews were conducted by KEMA staff in the fourth quarter of 2010.

Self-Directed Customers

Self-directed customers were asked to submit a report to the municipal utility regarding their EO activities. A qualified independent energy engineer reviewed the submitted documentation and developed a short summation that recapitulates the activities, savings methodology, and savings estimates. The reports included a conclusion as to the veracity of the savings, e.g., the methods use to determine the savings estimates are commonly accepted, and that the savings estimates were reasonable.

Pilot Programs

Utilities that implemented Pilot Programs were asked to submit a documentation that described the program and the expected savings. A qualified independent energy engineer reviewed the submitted documentation and developed a short summation that recapitulates the activities, savings methodology, and savings estimates. The reports included a conclusion as to the veracity of the savings, e.g., the methods use to determine the savings estimates are commonly accepted, and that the savings estimates were reasonable.

Appendix E Verification of Savings Estimates

Residential Efficient Lighting Program Survey

Survey Results

A total of 55 participants were surveyed. The tables below show the results of the survey responses. The tabulations per each question are different from the total survey count where a survey question was accidentally skipped by a respondent, wrongly answered (i.e. checking off both a “yes” and a “no”), or had a non-specific reply (ex. a customer wrote an answer below the question in the form of a comment, but did not check off any boxes).

1. **Verification of participation.** All respondents confirmed they received one or more CFLs from their municipal utility.
- 2.
3. **Number of compact fluorescents received.**

No. of CFLs	Percent
1 to 3	40%
4 to 5	33%
Over 5	27%

4. Table 7 below shows the percentage of responses for the number of CFLs respondents said they received.

No. of CFLs	Percent
1 to 3	40%
4 to 5	33%
Over 5	27%

Table 7: Number of CFLs Received

5. **Installations.** Customers were asked if the bulbs that they received were installed and being used 76% said that the bulbs were installed and operating as intended.

Response	%
YES	63%
NO	37%

Table 8: All CFLs Installed

6. **Room placements.** Customers were asked what room(s) these CFLs were installed (Table 9, below).

Room	Pct of Bulbs
Kitchen	17%
Dining	7%
Living	19%
Family/Den	6%
Bedrooms	20%
Bathroom	11%
Laundry/Utility	3%
Closet	1%
Garage	2%
Hall/Entry	3%
Other	11%

Table 9: Where CFLs are Installed

7. **Typical hours.** Table 10 below shows the typical hours per day customers reported these CFLs were kept on during one day. The average number of hours respondents reported leaving the CFLs turned on was 3 hours.

Hours	Winter	Summer
zero	13%	13%
>0-3	24%	56%
3-6	38%	24%
>6	24%	7%

Table 10: Number of Hours CFLs Operated, Per Day

8. **Satisfaction rating.** 93% of the respondents said that they were satisfied with the CFL bulbs. 93% also responded that they were satisfied with the program.

Savings Estimates

The average participant received 4.7 bulbs. The average participant installed 3.58 bulbs. Accordingly, the gross estimate of bulbs installed and operating as intended percentage of bulbs is 75.65% with $\pm 8\%$ confidence interval.

The MEMD assumes that the bulbs are used 840 hours annually. Based on the responses in Table 10, the participants indicated that the average annual operating hours of the bulbs was 3 hours per day or 1,095 hours ± 169 hours annually.

A net to gross adjustment (see **Error! Reference source not found.**) to savings was calculated based on the surveys net to gross questions. The net to gross recognizes the effect of purchase intent, timing, quantities, and spillover issues. In addition, for lighting the net to gross ratio also recognizes the hours of use adjustment. For the program the net to gross adjustment was 0.93. The net savings estimate is 0.706 ± 0.28 of claimed savings.

Residential High-Efficiency Appliances/ High-Efficiency HVAC Program

Savings Estimates

All of the respondents participated and the equipment is installed and operating as intended. Accordingly the gross verified savings to claimed savings was 100% with no variability associated with this estimate

A net to gross adjustment (see **Error! Reference source not found.**) to savings was calculated based on the surveys net to gross questions. The net to gross recognizes the effect of purchase intent, timing, quantities, and spillover issues. For the program the net to gross adjustment was 0.19. The net savings estimate is 0.191 ± 0.96 of claimed savings.

The High-Efficiency Appliances/ High-Efficiency HVAC Program featured a menu of measures. The sample was design to gather information from each of the measure. Table 6 shows the gross and the net average savings by measure.

Equipment	n	Claimed	Gross	Net	Net to Gross
Energy Star Dehumidifier	4	74	74	15	20%
Energy Star Furnace	17	730	730	158	22%
Energy Star Room Air Conditioner	1	44	44	-	0%
SEER 14 Air Conditioner	3	651	651	122	19%
SEER 15 Air Conditioner	3	730	730	137	19%
SEER 16 Air Conditioner	7	681	681	109	16%

Table 11 High-Efficiency Appliances/ High-Efficiency HVAC Program Average Participant Savings Estimates, by Measure

Refrigerator/Freezer Turn-In Program

Survey results

Twenty one participants were telephoned survey. All respondents confirmed that they participated. One participant said that they turned in a freezer, rather than the tracking listed refrigerator. 38% of the equipment was the main equipment still in use. The average age of the turned in equipment was 21 years old. 70% of the recycled refrigerators were replaced with another refrigerator.

Savings Estimates

All of the respondents participated, though one had a freezer removed rather than a refrigerator. Accordingly the verified savings to claimed savings was 99% with $\pm 1\%$ confidence interval.

A net to gross adjustment (see **Error! Reference source not found.**) to savings was calculated based on the surveys net to gross questions. The net to gross recognizes the effect of purchase intent, timing, quantities, and spillover issues. For the program the net to gross adjustment was 0.93. The net savings estimate is 0.648 ± 0.17 of claimed savings.

Low Income Program

Twenty one participants were telephoned survey. The verification yielded distinctly different verification rates in each of the three strata.

Table 12 Low Income Verification Rates

Stratum	Gross	Net
Holland	67%	45%
Lansing	100%	100%
Other cities	25%	13%
Aggregate	51%	38%

For Holland and Lansing, the verification was based on the sample from their service territories. For the remaining utilities the verification was based on the aggregate sample. In aggregate, the gross savings was estimated at 51% with a $\pm 16\%$ confidence interval. The net savings was 38% with a $\pm 14\%$ confidence interval. The installed and operating as intended rate was impacted by many of the participants storing, not receiving or giving away the measures.

Multifamily Program

The Multifamily program savings were verified through participant on-site inspections. These inspections were performed during the fourth quarter of 2010. A total of 10 site visits across the aggregate of the BWL and MPPA EE Service Committee service territories were performed. The site visits examined the measures installed in the common areas, and a sampling of the measures installed in the units.

For the Multifamily Program, the gross verification rate was estimated to be 90%, with a 90% confidence interval of $\pm 6\%$. The net verification rate was estimated to be 85%, with a 90% confidence interval of $\pm 6\%$.

Commercial/Industrial Prescriptive Incentive Program and the Commercial/Industrial Custom Incentive Program

The C&I Prescriptive Incentive and C&I Custom Incentive program savings were verified through participant on-site inspections. These inspections were performed during the fourth quarter of 2010. A total of 44 site visits across the aggregate of the BWL and MPPA EE Service Committee service territories were performed.

The site visits inspected 88 different types of measures. These measures can be found in Appendix J

Verification rates for each program were estimated using combined ratio estimation techniques. For the C&I Prescriptive Program, the gross verification rate was estimated to be 110%, with a 90% confidence interval of $\pm 16\%$. The net verification rate was estimated to be 60%, with a 90% confidence interval of $\pm 13\%$. For the C&I Custom Program, the gross verification rate was estimated to be 99%, with a 90% confidence interval of $\pm 0.4\%$. The net verification rate was estimated to be 91%, with a 90% confidence interval of $\pm 11\%$.

Appendix F Surveys

Efficient Lighting Program

Residential Energy Efficient Lighting CATI Survey Revised – 10/19/2010

Survey house instructions

1. Text in **bold** should be read.
2. Text in brackets [] are instructions for interviewer, minor programming such as skips, or answer choices and should NOT be read.
3. Text in carrots < > are database variables that should be filled in on a case-by-case basis.
4. Text in gray boxes is major programming instruction.
5. Unless specifically noted, do NOT read answer choices. [Don't know] and [Refused] should NEVER be read.



INTRODUCTION

Intro1. Hello, my name is _____, and I'm calling on behalf of the Efficient Lighting program offered through <utility>. I'm calling to talk to you about some CFL light bulbs you recently received from your utility. I'm not selling anything; I'd just like to ask your opinions. Your responses will be kept confidential and your individual responses will not be revealed to anyone.

1	[AGREES TO PARTICIPATE]	Intro2
2	[DOES NOT AGREE TO PARTICIPATE]	TERMINATE

Intro2. Our records show that you received some compact fluorescent light bulbs from the program. Are you familiar with these bulbs?

1	[Yes]	Intro6
2	[No]	Intro3
-97	[Don't know]	
-98	[Refused]	

Intro3. Who could I speak to that would be familiar with that process?

	[RECORD FIRST and LAST NAME]	Intro4
-98	[Refused]	
-97	[Don't know]	

Intro4. Could I speak with <Intro3> now?

1	[Yes]	Intro1
2	[No]	Intro5
-97	[Don't know]	
-98	[Refused]	

Intro5. When is a good time I could call back to reach <Intro3>?

	[RECORD DAY and TIME]	Call back later
-98	[Refused]	
-97	[Don't know]	

[If <intro3> ≠ <cont1>, else skip to V1]

Intro6. What is your name?

	[RECORD FIRST and LAST NAME]	V1
-98	[Refused]	
-97	[Don't know]	

Verification

V1 . Just to Verify, did you get one or more compact fluorescent light bulbs (CFL) from your utility this year?

1	Yes	V2
2	No	
-97	[Don't know]	
-98	[Refused]	

V2 . Are you using these CFL light bulbs at <address>?

1	Yes	V3
2	No	
-97	[Don't know]	
-98	[Refused]	

V3. How many light bulbs did you receive?

	[Enter quantity]	V4
-97	[Don't know]	
-98	[Refused]	

V4. How many are currently installed in a socket and being used (as opposed to being in storage)?

	[Enter quantity]	V5
-97	[Don't know]	
-98	[Refused]	

V5. Can you tell me how many of these CFLs are installed in the following room?

	[ROOM_TYPE]		
1	Kitchen	RECORD # INSTALLED	V6
2	Dining room	RECORD # INSTALLED	
3	Living room	RECORD # INSTALLED	
4	Family room/den	RECORD # INSTALLED	
5	Bedroom	RECORD # INSTALLED	
6	Bathroom (full bath)	RECORD # INSTALLED	
7	Bathroom (half bath)	RECORD # INSTALLED	
8	Laundry or utility room	RECORD # INSTALLED	
9	Closet	RECORD # INSTALLED	
10	Garage	RECORD # INSTALLED	
11	Hallway or entryway	RECORD # INSTALLED	
-77	Other room (specify)	RECORD # INSTALLED	
-97	[Don't know]		
-98	[Refused]		

V6. On average, how many hours per day are the CFLs you installed turned on during the winter?

	[RECORD Hours (max = 24)]	V7
-97	[Don't know]	V7
-98	[Refused]	V7

V7. On average, how many hours per day are the CFLs you installed turned on during the summer?

	[RECORD Hours (max = 24)]	V8
-97	[Don't know]	V8
-98	[Refused]	V8

V8. Had you purchased CFL bulbs before receiving these free bulbs?

1	[Yes]	V9
2	[No]	V9
-97	[Don't know]	V9
-98	[Refused]	V9

NET TO GROSS

DAT0. Next, I have some questions about the effect of the program on your decision to purchase CFLs.

If the program had not given you free CFL bulbs, how likely would you have been to purchase CFLs at the store? Would you say... READ UNBRACKETED OPTIONS]

1	Very likely	DAT1a
2	Somewhat likely	
3	Not very likely	
4	Or very unlikely	
-97	[Don't know]	
-98	[Refused]	

TIMING

DAT1a.

If the program had not given you any free CFLs and you were going to purchase some, would you have purchased them...[READ UNBRACKETED OPTIONS]

1	at the Same time	DAT2
2	Earlier	
3	Later	DAT1b
4	or never	
97	[Don't know]	DAT2
98	[Refused]	

IF DAT1a = 3, ask DAT1b, Else SKIP TO DAT2

DAT1b. Approximately how many months later?

	[RECORD # months]	DAT2
-97	[Don't know]	
-98	[Refused]	

QUANTITY

DAT2. You said you received <V3> CFLs. If you'd had to purchase them, how many of these bulbs would you have purchased at the store? [If necessary: For \$3 or \$4 each]

	[RECORD QUANTITY]	SO0
-97	[Don't know]	SO0
-98	[Refused]	SO0

SPILLOVER

SO0. Now I'd like to you think of the time since you received the free CFL bulbs.

SO1. Since you received your free CFL bulbs, have you purchased any other CFL light bulbs on your own?

1	Yes	SO1b
2	No	S0
-97	[Don't know]	
-98	[Refused]	

SO1b. How many have you purchased on your own?

	[Record quantity]	S0
-97	[Don't know]	
-98	[Refused]	

SATISFACTION

S0. Next I have a series of questions about how satisfied you are with different aspects of the CFL program.

S1. Are you satisfied or dissatisfied with the CFL bulbs?

1	Satisfied	S2
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S2. How satisfied or dissatisfied were you with the program as a whole?

1	Satisfied	P1
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

PROGRAM DESIGN, ADMINISTRATION AND IMPLEMENTATION

P1. Why did you decide to participate in the CFL program?

	[Record Response verbatim]	P2
-97	[Don't know]	
-98	[Refused]	

P2. What did you like best about the program?

	[Record Response verbatim]	P3
-97	[Don't know]	
-98	[Refused]	

P3. What did you like least?

	[Record Response verbatim]	FE1
-97	[Don't know]	
-98	[Refused]	

FUTURE EVALUATION

FE1a. Can you suggest any lighting products or technologies (other than CFLs) which should have rebates?

1	Yes	FE1b
2	No	FE2
-97	[Don't know]	
-98	[Refused]	

FE1b. Which ones?

	[Record Response verbatim]	FE2
-97	[Don't know]	
-98	[Refused]	

FE2. Lastly, do you have any comments or suggestions about the CFL light bulb program?

	[Record Response verbatim]	END_1
-97	[Don't know]	
-98	[Refused]	

THANK & TERMINATE

END_1. Those are all of the questions I have for you today. Thank you for your time.



Refrigerator/Freezer Turn-In Program

Appliance Recycling Rebate Program
Residential CATI Survey
Revised – 10/25/2010

Survey house instructions

1. Text in bold should be read.
2. Text in brackets [] are instructions for interviewer, minor programming such as skips, or answer choices and should NOT be read.
3. Text in carrots < > are database variables that should be filled in on a case-by-case basis.
4. Text in double-carrots << >> are larger blocks of text that will change on a case-by-case basis depending on database variables.
5. Text in gray boxes is major programming instruction.
6. Unless specifically noted, do NOT read answer choices. [Don't know] and [Refused] should NEVER be read.
- 7.

INTRODUCTION

Intro1. May I speak with <cont1>? Hello, my name is _____, and I'm calling on behalf of the Appliance Recycling program offered through <utility>. I'm calling to talk to you about some appliances you recently recycled . I'm not selling anything; I'd just like to ask your opinions. Your responses will be kept confidential and your individual responses will not be revealed to anyone.

1	[AGREES TO PARTICIPATE]	Intro2
2	[DOES NOT AGREE TO PARTICIPATE]	TERMINATE

Intro2. Our records show that you received rebates for <equipment_Text> you recently recycled. Are you familiar with having a refrigerator or freezer picked up earlier this year?

1	[Yes]	VG0
2	[No]	Intro3
-97	[Don't know]	Intro3
-98	[Refused]	Intro3

Intro3. Who could I speak to that would be familiar with that process?

	[RECORD FIRST and LAST NAME]	Intro4
-98	[Refused]	Intro4
-97	[Don't know]	Intro4

Intro4. Could I speak with <Intro3> now?

1	[Yes]	Intro1
2	[No]	Intro5
-97	[Don't know]	Intro5
-98	[Refused]	Intro5

Intro5. When is a good time I could call back to reach <Intro3>?

	[RECORD DAY and TIME]	Call back later
-98	[Refused]	Call back later
-97	[Don't know]	Call back later

Intro6. What is your name?

	[RECORD FIRST and LAST NAME]	VG0
-98	[Refused]	VG0
-97	[Don't know]	VG0

VERIFY GROSS INSTALLATION

VG0. Next, I have some questions about the equipment you recycled.

VG1. Our records show <equipment_text> was picked up from <address>. Is that correct?

1	[Yes]	Next section
2	[No]	VG2
-97	[Don't know]	Thank and
-98	[Refused]	Terminate

VG2. If not, what is the correct information?

	[RECORD VERBATIM]	VG3
-97	[Don't know]	
-98	[Refused]	

VG3. How many refrigerators do you still own and use?

	[RECORD Quantity]	VG4
-97	[Don't know]	
-98	[Refused]	

VG3. How many freezers do you still own and use?

	[RECORD Quantity]	Next section
-97	[Don't know]	
-98	[Refused]	

Start REFRIGERATORS [Ask if <Ref> = 1]

R1. Of the refrigerators that were picked up, how many were being used as a main refrigerator?

	[RECORD QUANTITY]	R2
-97	[Don't know]	
-98	[Refused]	

**R2. How many were being used as a spare refrigerator?
IF NEEDED: Units in storage would be considered spare refrigerators.**

	[RECORD QUANTITY]	R2a
-97	[Don't know]	
-98	[Refused]	

[Spare Refrigerator questions: Ask if R2 > 0, else go to R3]

R2a. How long had you used the first [next] refrigerator as a spare?

	[Record Years]	R2b
	[Record Months]	
-97	[Don't know]	
-98	[Refused]	

R2b. How many months in the past year was it plugged in and running?

	[Record Months]	R3
-97	[Don't know]	
-98	[Refused]	

[Repeat questions R2a and R2b <<numRepeats>> times]

[End Spare Refrigerator questions block]

R3. Did you replace this recycled refrigerator with another refrigerator?

1	[Yes]	R3a
2	[No]	R4
-97	[Don't know]	
-98	[Refused]	

R3a. Is the replacement refrigerator brand new or used?

1	[Brand new refrigerator]	R3b
2	[Used refrigerator]	R4
-97	[Don't know]	
-98	[Refused]	

R3b. Is the replacement refrigerator an EnergyStar model?

1	[Yes]	R4
2	[No]	
-97	[Don't know]	
-98	[Refused]	

R4. Thinking about your recycled refrigerator, before hearing about this recycling program, had you already considered discarding this refrigerator? IF NEEDED: By discard, we mean selling the unit, giving it away, having someone pick it up or taking it to the dump or a recycling center.

1	[Yes]	R5
2	[No]	
-97	[Don't know]	
-98	[Refused]	

R5. If the recycling program had not picked up the refrigerator when it did, would you have still gotten rid of it, or would you have kept it?

1	[Gotten rid of it]	R6
2	[Kept it]	R7
-97	[Don't know]	End Ref.
-98	[Refused]	Section

R6. How would you have gotten rid of it?

	[Record verbatim]	R6a
-97	[Don't know]	
-98	[Refused]	

F6a. Getting rid of a refrigerator can be a bit of a hassle, when do you think you would have gotten rid of the refrigerator if the program had not picked it up when it did?

1	At the same time	End Ref. section
2	Within 3-4 months	
3	Within 6 months to a year	
4	More than a year later	
5	Actually might have kept it instead	R7
-97	[Don't know]	End Ref.
-98	[Refused]	section

R7. Would it have been stored unplugged, or used as a spare (DO NOT READ)

1	[Stored unplugged]	End Ref. Section
2	[Used as a spare]	
3	[Both – store it and use it some]	
4	[No – Would not have kept it]	
-97	[Don't know]	
-98	[Refused]	

End REFRIGERATORS

Start FREEZERS

[Ask if <Frz> = 1]

F1. I'd like to talk about the freezer that was removed. During the time just before deciding to have it removed, was the freezer plugged in and running?

1	[Yes]	F2
2	[No]	
-97	[Don't know]	
-98	[Refused]	

F2. How long had you had the freezer? [PROBE FOR NUMERIC AGE/TIME RESPONSE. USE MONTHS FOR PARTIAL YEARS]

	[Record Years]	F3
	[Record Months]	
-97	[Don't know]	
-98	[Refused]	

F3. How many months in the past year was it plugged in and running?

	[Record Months]	F4
-97	[Don't know]	
-98	[Refused]	

F4. Did you replace this recycled freezer with another freezer?

1	[Yes]	F4a
2	[No]	F5
-97	[Don't know]	
-98	[Refused]	

F4a. Was the replacement freezer brand new or used?

1	[Brand new freezer]	F5
2	[Used freezer]	
-97	[Don't know]	
-98	[Refused]	

F5. Thinking about your recycled freezer, before hearing about this recycling program, had you already considered discarding this freezer? IF NEEDED: By discard, we mean selling the unit, giving it away, having someone pick it up or taking it to the dump or a recycling center.

1	[Yes]	F6
2	[No]	
-97	[Don't know]	
-98	[Refused]	

F6. If the recycling program had not picked up the freezer when it did, would you have still gotten rid of it, or would you have kept it? (DO NOT READ)

1	[Gotten rid of it]	F7
2	[Kept it]	F8
-97	[Don't know]	End freezer Section
-98	[Refused]	

F7. How would you have gotten rid of it?

	[Record verbatim]	F7a
-97	[Don't know]	
-98	[Refused]	

F7a. Getting rid of a freezer can be a bit of a hassle, when do you think you would have gotten rid of the freezer if the program had not picked it up when it did?

1	At the same time	End freezer section
2	Within 3-4 months	
3	Within 6 months to a year	
4	More than a year later	
5	Actually might have kept it instead	F8
-97	[Don't know]	End freezer section
-98	[Refused]	

F8. Would it have been stored unplugged, plugged in and running or both? (DO NOT READ)

1	[Stored unplugged]	End freezer section
2	[Plugged in and running]	
3	[Both – store it and use it some]	
4	[No – Would not have kept it]	
-97	[Don't know]	
-98	[Refused]	

End FREEZERS

ATTRIBUTION

A1. What is the main reason you chose this service to dispose of your appliance(s)?

	[RECORD VERBATIM]	A2
-97	[Don't know]	
-98	[Refused]	

A2. Are there any other reasons? If yes: what were they?

	[RECORD VERBATIM]	A3
-97	[Don't know]	
-98	[Refused]	

A3. Did you receive any incentive?

1	Yes	A3a
2	No, did not receive incentive	A4
-97	[Don't know]	
-98	[Refused]	

A3a. Approximately how long did it take to receive your incentive? (DO NOT READ)

1	[1 week or less]	A4
2	[2-3 weeks]	
3	[More than 3 weeks]	
4	[Got it at time of pickup]	
-97	[Don't know]	
-98	[Refused]	

A4. Did you know about the incentive prior to scheduling the pick-up?

1	[Yes]	A5
2	[No]	
-97	[Don't know]	
-98	[Refused]	

A5. If the incentive had not been offered would you have still used this service?

1	[Yes]	Next Section
2	[No]	
-97	[Don't know]	
-98	[Refused]	

SATISFACTION

S0. Next I have a series of questions about how satisfied you are with different aspects of the Appliance Recycling program.

S1. Are you satisfied or dissatisfied with the pick up process?

1	Satisfied	S2
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S2. How about the dollar amount of the rebate?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S3. How satisfied or dissatisfied were you with the timeliness of the rebate payment?

1	Satisfied	S4
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S4. How about the rebate application forms and other paperwork?

1	Satisfied	S5
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S5. How satisfied or dissatisfied were you with the program as a whole?

1	Satisfied	P1
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

PROGRAM DESIGN, ADMINISTRATION AND IMPLEMENTATION

P1. What did you like best about the program?

	[Record Response verbatim]	P2
-97	[Don't know]	
-98	[Refused]	

P2. What did you like least?

	[Record Response verbatim]	FE1
-97	[Don't know]	
-98	[Refused]	

FUTURE EVALUATION

FE1a. Should there be incentives for any other appliances or technologies?

1	Yes	FE1b
2	No	FE2
-97	[Don't know]	
-98	[Refused]	

FE1b. Which ones?

	[Record Response verbatim]	FE2
-97	[Don't know]	
-98	[Refused]	

FE2. Lastly, do you have any comments or suggestions about the <program> program?

	[Record Response verbatim]	END_1
-97	[Don't know]	
-98	[Refused]	

THANK & TERMINATE

END_2. Those are all of the questions I have for you today. Thank you for your time.



Residential High-Efficiency Appliances/ High-Efficiency HVAC

Residential Energy Efficient HVAC CATI Survey Revised – 10/20/2010

Survey house instructions

1. Text in bold should be read.
2. Text in brackets [] are instructions for interviewer, minor programming such as skips, or answer choices and should NOT be read.
3. Text in carrots < > are database variables that should be filled in on a case-by-case basis.
4. Text in gray boxes is major programming instruction.
5. Unless specifically noted, do NOT read answer choices. [Don't know] and [Refused] should NEVER be read.
- 6.

INTRODUCTION

Intro1. May I speak with <cont1>? Hello, my name is _____, and I'm calling on behalf of the <program> program offered through <utility>. I'm calling to talk to you about some appliances you recently received a rebate for. I'm not selling anything; I'd just like to ask your opinions. Your responses will be kept confidential and your individual responses will not be revealed to anyone.

1	[AGREES TO PARTICIPATE]	Intro2
2	[DOES NOT AGREE TO PARTICIPATE]	END_1

Intro2. Our records show that you received rebates for a/an <Equipment> you recently purchased. Are you familiar with the decision to purchase this equipment?

1	[Yes]	Intro6
2	[No]	Intro3
-97	[Don't know]	
-98	[Refused]	

Intro3. Who could I speak to that would be familiar with that process?

	[RECORD FIRST and LAST NAME]	Intro4
-98	[Refused]	
-97	[Don't know]	

Intro4. Could I speak with <Intro3> now?

1	[Yes]	Intro1
2	[No]	Intro5
-97	[Don't know]	
-98	[Refused]	

Intro5. When is a good time I could call back to reach <Intro3>?

	[RECORD DAY and TIME]	Call back later
-98	[Refused]	
-97	[Don't know]	

[If <intro3> ≠ <cont1>, else skip to V1]

Intro6. What is your name?

	[RECORD FIRST and LAST NAME]	V1
-98	[Refused]	
-97	[Don't know]	

START EQUIPMENT BLOCK: Repeat V1 to DAT3 for each measure that was installed (Equipment1, Equipment2, ... Equipmentx)

Verification

V1 . Just to Verify, did you install a/an <equipment> around <month> of this year?

1	Yes	V2
2	No	
-97	[Don't know]	
-98	[Refused]	

V2 . Our records show that it was installed at <address>, is this correct?

1	Yes	V3
2	No	
-97	[Don't know]	
-98	[Refused]	

V3. Is this unit (Are these units) still operational? [IF NEEDED; ARE COOLING UNITS OPERATIONAL DURING WARM WEATHER]

1	Yes	V4
2	No	
-97	[Don't know]	
-98	[Refused]	

V4. Did you get a rebate for this unit?

1	Yes	DAT0
2	No	V4a
-97	[Don't know]	DAT0
-98	[Refused]	

V4a. How long ago did you apply for this rebate?

	[Record verbatim]	DAT0
-97	[Don't know]	
-98	[Refused]	

NET TO GROSS

DAT0. Next, I have some questions about the influence of the <program> program had on your decision to purchase the <Equipment>.

Without the <program>, would you say the likelihood of purchasing the <equipment> was... [READ UNBRACKETED OPTIONS]

1	Very likely	DAT1a
2	Somewhat likely	
3	Not very likely	
4	Or very unlikely	
-97	[Don't know]	
-98	[Refused]	

TIMING

DAT1a. I'd like to know about the effect, if any, that program incentives had on your decision to purchase the <equipment> when you did. I'm referring to your decision to purchase any <equipment>, not just a high-efficiency one. Would you have purchased the <equipment> ...[READ UNBRACKETED OPTIONS]

1	at the Same time	DAT2a
2	Earlier	DAT1b
3	Later	
4	or never	DAT2a
97	[Don't know]	
98	[Refused]	

IF DAT1a = 3, ask DAT1b, Else SKIP TO DAT2a

DAT1b. Approximately how many months later?

	[RECORD # months]	DAT2a
-97	[Don't know]	
-98	[Refused]	

EFFICIENCY

DAT2a. Next, I'd like to know about the effect, if any, that program incentives had on your decision to purchase a *high efficiency* <equipment>.

Without <program> would you have purchased a/an <equipment> of the ... [READ UNBRACKETED OPTIONS]

1	Same efficiency	DAT3
2	Lesser efficiency	DAT2b
3	Greater efficiency	DAT3
-97	[Don't know]	
-98	[Refused]	

IF DAT2a = 2 (Lesser efficiency), ask DAT2b, else SKIP to DAT3

DAT2b. Without the program, would you have purchased a/an <equipment> that was... [READ UNBRACKETED OPTIONS]

1	Standard efficiency on the market at time	DAT3
2	Slightly higher than standard efficiency	
3	Between standard efficiency and what purchased	
4	Slightly lower than the high efficiency purchased	
-97	[Don't know]	
-98	[Refused]	

QUANTITY

DAT3. Finally, I'd like to know about the effect, if any, that program incentives and services had on the number of <equipment> that you purchased. Without the program would you have purchased this <equipment>?

1	[Yes]	IF last equipment, S0, ELSE go to V1
2	[No]	
4	[None at all]	
-97	[Don't know]	
-98	[Refused]	

END EQUIPMENT BLOCK

SATISFACTION

S0. Next I have a series of questions about how satisfied you are with different aspects of the <program>.

S1. Are you satisfied or dissatisfied with the rebated equipment?

1	Satisfied	S2
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S2. How about the dollar amount of the rebate?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S3. How satisfied or dissatisfied were you with the timeliness of the rebate payment?

1	Satisfied	S4
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S4. How about the rebate application forms and other paperwork?

1	Satisfied	S5
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S5. How satisfied or dissatisfied were you with the program as a whole?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

SPILOVER

SO0. Now I'd like to you think of the time since you participated in the <program> program in the past year.

SO1. Since you participated in the <program> program, have you purchased any other energy efficient equipment or installed any additional energy efficient measures without a rebate?

1	Yes	SO1b
2	No	P1
-97	[Don't know]	
-98	[Refused]	

SO1b. What were those measures?

	[Record Response verbatim]	SO1c
-97	[Don't know]	
-98	[Refused]	

SO1c. Have you applied for a rebate for those measures?

1	Yes	P1
2	No	
-97	[Don't know]	
-98	[Refused]	

PROGRAM DESIGN, ADMINISTRATION AND IMPLEMENTATION

P1. Why did you decide to participate in the [program]?

	[Record Response verbatim]	P2
-97	[Don't know]	
-98	[Refused]	

P2. What did you like best about the program?

	[Record Response verbatim]	P3
-97	[Don't know]	
-98	[Refused]	

P3. What did you like least?

	[Record Response verbatim]	FE1
-97	[Don't know]	
-98	[Refused]	

FUTURE EVALUATION

FE1a. Should there be incentives for any other appliances or technologies?

1	Yes	FE1b
2	No	FE2
-97	[Don't know]	
-98	[Refused]	

FE1b. Which ones?

	[Record Response verbatim]	FE2
-97	[Don't know]	
-98	[Refused]	

FE2. Lastly, do you have any comments or suggestions about the <program> program?

	[Record Response verbatim]	END_1
-97	[Don't know]	
-98	[Refused]	

THANK & TERMINATE

END_3. Those are all of the questions I have for you today. Thank you for your time.



Multifamily Program

Multi-Family Onsite Survey Form 2010 MPPA Energy Optimization Program

Contact:

Auditor:

Appt Day/ Time:

Phone:

Utility:

Company:

Address:

City:

Appointment Notes:

Verification

1 st Apartment Verified:		Units to Verify (extract from site documentation for Apt. # above.)					
13 Watt Lamp	13 Watt Fixture	20 Watt Lamp	20 Watt Fixture	HH Showerheads	Showerheads	Bath Aerator	Kitchen Aerator

Units Verified during Site Visit

--	--	--	--	--	--	--	--

Units Operational during Site Visit

--	--	--	--	--	--	--	--

Comments

--



2nd Apartment
Verified:

Units to Verify

(extract from site documentation for Apt. # above.)

13 Watt Lamp	13 Watt Fixture	20 Watt Lamp	20 Watt Fixture	HH Showerheads	HH Showerheads	Bath Aerator	Kitchen Aerator

Units Verified during Site Visit

--	--	--	--	--	--	--	--

Units Operational during Site Visit

--	--	--	--	--	--	--	--

Comments

3rd Apartment
Verified:

Units to Verify

(extract from site documentation for Apt. # above.)

13 Watt Lamp	13 Watt Fixture	20 Watt Lamp	20 Watt Fixture	HH Showerheads	HH Showerheads	Bath Aerator	Kitchen Aerator



--	--	--	--	--	--	--

Units Verified during Site Visit

--	--	--	--	--	--	--	--

Units Operational during Site Visit

--	--	--	--	--	--	--	--

Comments

NOTE: These questions should be asked of the building manager, not tenants. If the following NTG questions are asked on the telephone as part of scheduling the onsite visit, they need not be included in the onsite form. If they were NOT asked/answered on the phone, then they should be included and the auditor instructed to ask them while on-site.

NET TO GROSS

DAT0. Next, I have some questions about the effect the program had on your decision to install the equipment.

Without the MultiFamily Install program, would you say the likelihood of purchasing and installing the equipment on your own was... [READ UNBRACKETED OPTIONS]

1	Very likely	DAT1a
2	Somewhat likely	
3	Not very likely	
4	Or very unlikely	
-97	[Don't know]	
-98	[Refused]	

TIMING

DAT1a. I'd like to know about the effect, if any, that the program had on your decision to install the lighting fixtures (and faucet aerators (if applicable)) when you did. I'm referring to your decision to install any equipment, not just a high-efficiency one. Without the MultiFamily Install program installing this equipment free of charge to you, would you have purchased and installed this equipment ...[READ UNBRACKETED OPTIONS]

1	at the Same time	DAT2a
2	Earlier	
3	Later	DAT1b
4	or never	DAT2a
97	[Don't know]	
98	[Refused]	

IF DAT1a = 3, ask DAT1b, Else SKIP TO DAT2a

DAT1b. Approximately how many months later?

	[RECORD # months]	DAT2a
-97	[Don't know]	
-98	[Refused]	

EFFICIENCY

DAT2a. Next, I'd like to know about the effect, if any, that the program had on your decision to install *high efficiency* <equipment>.

Without the MultiFamily Install program installing this equipment free of charge to you, would you have purchased and installed lighting fixtures and/or flow restriction devices of the ... [READ UNBRACKETED OPTIONS]

1	Same efficiency	DAT3
2	Lesser efficiency	DAT2b
3	Greater efficiency	DAT3
-97	[Don't know]	
-98	[Refused]	

IF DAT2a = 2 (Lesser efficiency), ask DAT2b, else SKIP to DAT3

DAT2b. Without the program, would you have purchased and installed equipment that was... [READ UNBRACKETED OPTIONS]

1	Standard efficiency on the market at time	DAT3
2	Slightly higher than standard efficiency	
3	Between standard efficiency and what purchased	
4	Slightly lower than the high efficiency purchased	

-97	[Don't know]	
-98	[Refused]	

QUANTITY

DAT3. Finally, I'd like to know about the effect, if any, that the program had on the number of lighting fixtures and water saving equipment that was installed. Without the program would you have purchased and installed the same number of fixtures and flow retriCTION devices?

1	[Yes]	IF last equipment, S0, ELSE go to V1
2	[No]	
4	[None at all]	
-97	[Don't know]	
-98	[Refused]	

END EQUIPMENT BLOCK

SATISFACTION

S0. Next I have a series of questions about how satisfied you are with different aspects of the <program>.

S1. Are you satisfied or dissatisfied with the installed equipment?

1	Satisfied	S2
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S4. How about any application forms and other paperwork?

1	Satisfied	S5
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S5. How satisfied or dissatisfied were you with the program as a whole?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

SPILOVER

SO0. Now I'd like to you think of the time since you participated in the <program> program in the past year.

SO1. Since you participated in the <program> program, have you purchased any other energy efficient equipment or installed any additional energy efficient measures without a rebate?

1	Yes	SO1b
2	No	P1
-97	[Don't know]	
-98	[Refused]	

SO1b. What were those measures?

	[Record Response verbatim]	P1
-97	[Don't know]	
-98	[Refused]	

PROGRAM DESIGN, ADMINISTRATION AND IMPLEMENTATION

P1. Why did you decide to participate in the [program]?

	[Record Response verbatim]	P2
-97	[Don't know]	
-98	[Refused]	

P2. What did you like best about the program?

	[Record Response verbatim]	P3
-97	[Don't know]	
-98	[Refused]	

P3. What did you like least?

	[Record Response verbatim]	FE1
-97	[Don't know]	
-98	[Refused]	

FUTURE EVALUATION

FE1a. Should there be incentives for any other appliances or technologies?

1	Yes	FE1b
2	No	FE2
-97	[Don't know]	
-98	[Refused]	

FE1b. Which ones?

	[Record Response verbatim]	FE2
-97	[Don't know]	
-98	[Refused]	

FE2. Lastly, do you have any comments or suggestions about the <program> program?

	[Record Response verbatim]	END_1
-97	[Don't know]	
-98	[Refused]	

END_4. Those are all of the questions I have for you today. Thank you for your time.

Auditor Signature:
Site Comments:

Date:



Appendix G On Site Verification Form

Commercial & Industrial Onsite Survey Form 2010 MPPA Energy Optimization Program

Auditor: _____ Contact: _____

Appt Day/ Time: _____ Phone: _____

Utility: _____

Company: _____

Address: _____

City: _____

Appointment Notes: _____

Verification

(this block should be repeated for each measure to be verified)

Qty Measure Measure: (put the Measure Name here)

(qty to find) (put all the detailed info we have about the measure here)

Qty Verified _____

Qty Operational _____

Measure Verified: YES NO (comment on difference in Notes)

Notes:

File name: (list of files containing the documentation for this measure (pdf files, jpg images, etc.))

NOTE: if the following NTG questions are asked on the telephone as part of scheduling the onsite visit, they need not be included in the onsite form. If they were NOT asked/answered on the phone, then they should be included and the auditor instructed to ask them while on-site.

NET TO GROSS

DAT0. Next, I have some questions about the effect the rebates from the <program> program had on your decision to purchase the <Equipment>.

Without the <program>, would you say the likelihood of purchasing the <equipment> was... [READ UNBRACKETED OPTIONS]

1	Very likely	DAT1a
2	Somewhat likely	
3	Not very likely	
4	Or very unlikely	
-97	[Don't know]	
-98	[Refused]	

TIMING

DAT1a. I'd like to know about the effect, if any, that program incentives had on your decision to purchase the <equipment> when you did. I'm referring to your decision to purchase any <equipment>, not just a high-efficiency one. Would you have purchased the <equipment> ...[READ UNBRACKETED OPTIONS]

1	at the Same time	DAT2a
2	Earlier	DAT1b
3	Later	
4	or never	DAT2a
97	[Don't know]	
98	[Refused]	

IF DAT1a = 3, ask DAT1b, Else SKIP TO DAT2a

DAT1b. Approximately how many months later?

	[RECORD # months]	DAT2a
-97	[Don't know]	
-98	[Refused]	

EFFICIENCY

DAT2a. Next, I'd like to know about the effect, if any, that program incentives had on your decision to purchase a *high efficiency* <equipment>.

Without <program> would you have purchased a/an <equipment> of the ... [READ UNBRACKETED OPTIONS]

1	Same efficiency	DAT3
2	Lesser efficiency	DAT2b
3	Greater efficiency	DAT3
-97	[Don't know]	
-98	[Refused]	

IF DAT2a = 2 (Lesser efficiency), ask DAT2b, else SKIP to DAT3

DAT2b. Without the program, would you have purchased a/an <equipment> that was... [READ UNBRACKETED OPTIONS]

1	Standard efficiency on the market at time	DAT3
2	Slightly higher than standard efficiency	
3	Between standard efficiency and what purchased	
4	Slightly lower than the high efficiency purchased	
-97	[Don't know]	
-98	[Refused]	

QUANTITY

DAT3. Finally, I'd like to know about the effect, if any, that program incentives and services had on the number of <equipment> that you purchased. Without the program would you have purchased this <equipment>?

1	[Yes]	IF last equipment, S0, ELSE go to V1
2	[No]	
4	[None at all]	
-97	[Don't know]	
-98	[Refused]	

END EQUIPMENT BLOCK

SATISFACTION

S0. Next I have a series of questions about how satisfied you are with different aspects of the <program>.

S1. Are you satisfied or dissatisfied with the rebated equipment?

1	Satisfied	S2
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S2. How about the dollar amount of the rebate?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S3. How satisfied or dissatisfied were you with the timeliness of the rebate payment?

1	Satisfied	S4
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S4. How about the rebate application forms and other paperwork?

1	Satisfied	S5
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

S5. How satisfied or dissatisfied were you with the program as a whole?

1	Satisfied	S3
2	Dissatisfied	
-97	[Don't know]	
-98	[Refused]	

SPILLOVER

SO0. Now I'd like to you think of the time since you participated in the <program> program in the past year.

SO1. Since you participated in the <program> program, have you purchased any other energy efficient equipment or installed any additional energy efficient measures without a rebate?

1	Yes	SO1b
2	No	P1
-97	[Don't know]	
-98	[Refused]	

SO1b. What were those measures?

	[Record Response verbatim]	P1
-97	[Don't know]	
-98	[Refused]	

PROGRAM DESIGN, ADMINISTRATION AND IMPLEMENTATION

P1. Why did you decide to participate in the [program]?

	[Record Response verbatim]	P2
-97	[Don't know]	
-98	[Refused]	

P2. What did you like best about the program?

	[Record Response verbatim]	P3
-97	[Don't know]	
-98	[Refused]	

P3. What did you like least?

	[Record Response verbatim]	FE1
-97	[Don't know]	
-98	[Refused]	

FUTURE EVALUATION

FE1a. Should there be incentives for any other appliances or technologies?

1	Yes	FE1b
2	No	FE2
-97	[Don't know]	
-98	[Refused]	

FE1b. Which ones?

	[Record Response verbatim]	FE2
-97	[Don't know]	
-98	[Refused]	

FE2. Lastly, do you have any comments or suggestions about the <program> program?

	[Record Response verbatim]	END_1
-97	[Don't know]	
-98	[Refused]	

END_5. Those are all of the questions I have for you today. Thank you for your time.

Auditor Signature:
Site Comments:

Date:

Appendix H Utility Manager Interview Guides

MUNICIPAL UTILITY NAME
Evaluation of Energy Optimization Programs
Municipal Interview Guide



Thank you for agreeing to participate in this interview, which is being performed by KEMA on behalf of the **MUNI NAME**. KEMA has been selected by **MUNI NAME** to perform an evaluation of the Energy Optimization Programs for Low Income Services, Residential Education Services and Business Education Services Programs. Our goal is to gain a better understanding of the actions taken by municipal utilities to implement these programs, as well as the program participation levels and costs.

The following questions will be asked during your scheduled interview. Your answers will help us gather information and insights on the program savings, the steps taken while implementing the programs, and program recommendations.

Please feel free to contact us prior to your scheduled interview if you have further questions. We appreciate your time and participation in the Energy Optimization program and this evaluation.

Sincerely,

KEMA, Inc.

Program Descriptions:

If needed - below are descriptions of the programs that are covered in the interviews.

Low Income Services: This program provides funding to upgrade the energy efficiency of customers living on limited incomes by subsidizing the installation of cost effective electric measures. The delivery of the program is coordinated with local weatherization agencies.

Residential Education Services: This program provides informative and actionable educational materials that communicate to and educate customers on the benefits of energy efficiency and conservation. Such materials include brochures, fact sheets, workshops, web sites, and online energy audits.

Business Education Services: This program provides informative materials and training opportunities to educate business customers on the benefits of energy efficiency and conservation. Such materials may include brochures, fact sheets, case studies, web sites, and training seminars.

Pilot Program: The Municipals are permitted to implement pilot programs to determine the applicability and feasibility of measures in their service territory. Residential pilot programs could pursue the following types of new initiatives: residential-sized HVAC equipment optimized for performance in cold-climate (may include new developments in heat-pump technology), advanced residential water heating technology (including heat pumps and solar water heating), coordinated development of integrated design for net zero-energy new home construction, promotion of LED lighting technology in residential applications, participation in statewide initiatives to reward manufacturers for highest efficiency appliance design, among other examples

Background

1) Just for background, can you please give me a brief description of your professional position:

- a. name of municipal utility -
- b. position title -

2) What was your role with these programs in 2010?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

Program Implementation

3) Please briefly describe the overall program design, management and delivery. Were there any materials developed or applications used? For example, did you develop/distribute any of the following: bill stuffers; "goodie bags" (i.e. giveaway bags at events that might hold a CFL, brochure, tchotkes, etc.); brochures; giveaways (tchotkes, info wheels, etc.); EE information packets; CFLs (bought and distributed APART from the residential lighting program), posters, additional or new web site content? **[FOR LOW-INCOME: Who did you partner with, please provide contact info]**

Low Income Services:

- a.
- b. Who did you partner with?

c. Please provide contact info (Company, Name, Telephone, Email)

Residential Education:

Business Education:

Pilot Program:

Program Participation

4) From what you know, what has been the actual or estimated number of program participants since its start:

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

Program Costs

-
- 5) What were the final costs per each program? Please include any labor and cost of materials if that information is available for the Low Income Services, Residential and Business Education programs, and pilot program.

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

Program Recommendations

- 6) Is there anything you would do different or change for each of these programs?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

- 7) What are you planning to do for these programs in 2011?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

Program Design, Administration and Implementation

8) According to you, what are the strengths for each program?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

9) According to you, did the program have any weaknesses? If so, what where they?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

10) Could you identify areas where the program could be improved?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

11) Can you identify areas where the program/processes can be improved to enhance third party implementer and customer engagement?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

Future Evaluation

12) How did the incentive levels impact program participation?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

13) Should there be incentives for any other measures offered through these programs? If so, what measures?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:

14) Which market channels did you find to be most successful for these programs?

Low Income Services:

Residential Education:

Business Education:

Pilot Program:



Appendix I Third Party Implementers Survey

C&I Contractors

Process Evaluation of Commercial and Industrial Programs Market Actor Interviews – C/I Contractors

Interview Tracking Information

Interviewer		Interview Length (min.)	
Completion Date			

Contact Information

Respondent Name	
Company Name	
City, State, Zip	
Phone	
Alt info (email, cell)	

Call Tracking

Date/Time	Notes/result/actions: (result; when to call back, etc.)

Note to Interviewers: This interview guide is intended as a flexible approach to elicit details regarding several key topic areas. If a particular response necessitates additional clarification or follow up questioning, please pursue even though the follow up questions are not explicitly in the interview guide.

My name is _____ and I am with KEMA, an energy service provider, on behalf of Michigan Public Power Agency (MPPA) and <<utility >>. KEMA has been hired to do an evaluation of the Commercial and Industrial energy efficiency programs offered by <<utility>>.

- The interviews are to examine your experience as a partner in the Company's energy efficiency programs.
- To learn whether and where potential improvements might be found.
- Your answers are completely confidential.

-
- The report will not include the names of individuals we interviewed.

The interview should take around 15-20 minutes, depending on your responses.

I. Introductions

I'd like to start by asking you a few questions about your job.

1. What is your job title?
2. Please summarize briefly your major responsibilities.
3. How long have you been in this role?

II. Firmographics

Next, I have some questions about your company.

4. How many full-time employees does your firm have in Michigan?
5. To help us get a rough sense of your company's volume of business, would you estimate that annual revenues are:
 - Under \$500,000 /year
 - \$500,000 to \$2 million/year
 - \$2 million to \$5 million/year or
 - Over \$5 million per year?
6. I'm going to read you a list of possible commercial/industrial energy efficiency services. Please tell me which ones your company offers:
 - The manufacture of energy efficiency equipment
 - The sale and distribution of energy efficiency equipment
 - The design and specification of energy efficiency systems
 - The installation of energy efficiency systems/ equipment
 - The design or installation of energy efficiency control systems such as energy management systems or building automation systems
7. To which customer segments do you primarily target your services?
commercial and/or industrial segments, any particular business type (e.g. restaurant/factories, etc.)?
8. I'm going to read a list of different categories of energy efficiency equipment. For each, please say if your company installs or distributes this for the commercial

and industrial market:

- Lighting
- Refrigeration
- HVAC
- (other, please specify)

9. Approximately what percentage of your firm's projects in MI would be categorized as:
- New construction _____ %
 - Major renovation/remodeling projects _____ %
 - Routine maintenance/replacement (e.g. T-12 to T-8s) _____ %
 - Non-commercial or industrial work _____ %

III. Awareness and Marketing

Next I have a few questions about your sources of information on energy efficiency.

10. In your business capacity, how do you generally get information about energy efficiency opportunities?
11. Of all the possible information sources available, which ones do you trust the most?
12. Are you aware of the energy efficiency programs offered by MPPA and the <<utility>>?
IF NO, SKIP TO SECTION V.
13. Have you seen any advertising for the energy efficiency programs offered by MPPA and the <<utility>>?
IF NO, SKIP TO SECTION IV.
14. What do you recall about the advertising you have seen for MPPA and the <<utility>> energy efficiency programs?
Anything informative, helpful or otherwise memorable?

IV. Participation in Residential Heating Rebate Program

15. Approximately when did your business start participating in this program?
YEAR IS FINE; MONTH/YEAR IS BEST.
16. Why did your company decide to participate in this program?
Please summarize the major reasons/ factors in your decision.

17. I'm going to list a number of ways that a firm like yours could support the Commercial and Industrial program offered by MPPA and the <<utility>>. Please say whether your company does any of these things:
 - Tell your retail customers about the rebates
 - Tell your installation customers about the rebates
 - Mention the rebates in your advertising
 - Run special sales/campaigns featuring the rebates
 - Host outreach events that features this program?
 - Anything else you might do to support this program?

18. What changes, if any, would you suggest MPPA and <utility>> consider to broaden participation by contractors and equipment suppliers in the Commercial and Industrial Program?

V. Customers

In this last section, I'd like to learn more about your commercial/industrial customers.

19. Earlier you said that [x% from Q9] of your company's sales come from commercial/industrial work. What percentage of your projects each year are/ are in:
 - New custom-designed facilities..... _____%
 - New pre-designed facilities _____%
 - Large renovation projects _____%
 - Smaller remodeling projects/routine replacement..... _____%

20. In your observation, what fraction of your commercial/industrial customers are motivated to save energy?

21. I'm going to list characteristics about commercial/industrial equipment that customers might consider when selecting equipment. For each one, please rate how important this factor is for your residential customers. Please use a scale from 1 to 10 where 10 is "very important" and 1 is "not at all important"
 - Initial cost of the equipment..... _____
 - Costs of operation..... _____
 - Total life cycle costs _____
 - Ease of maintenance..... _____
 - Employee/customer comfort issues..... _____
 - Anything else that's important?

22. If MPPA and <<utility>> wanted to expand the fraction of your customers that considered energy efficiency in their buying decisions, what should they do?

23. Again in your observation, how do most commercialindustrial customers learn about the program rebates offered by <<utility>>?
 - Probe: Do you tell your customers about the rebates? Why/ why not?

-
24. **We've talked about how the company might help increase customer awareness of the rebates -- does your staff help customers fill out the application form to apply for these rebates?**
 25. **Do you ever get calls from customers about the rebate process? If so, what is the nature of those calls?**
 26. **Overall, what is your sense of how long it takes for a customer to receive their rebates? Roughly, how many weeks?**
 27. **In your experience, how do customers view this processing time? Please use a scale of 1 to 5, where 1 is "it took way too long to receive that rebate" and 5 is "that rebate came impressively quickly".**

V. Future Evaluation

28. **How did the incentive levels impact program participation? (Prompt: Would customers have purchased without the program)?**
29. **Should there be incentives for any other measures? If so, which measures?**
30. **How well did you find that the implementation contractor managed the program?**
31. **Are you familiar with any emerging technologies that should be offered or incentivized through the program?**

VI. Conclusion

As we conclude this analysis of MPPA and <<utility>> C&I program, I have just a few last questions.

32. **What would you say are the main strengths of this program?**
Why are these strengths? [Record all offered; ask "anything else?" until the answer is N]
33. **What would you say are the primary weaknesses or shortcomings of this program, if any?** [Record all; ask "anything else?" until the answer is N]
34. **Finally, I'd like to invite you to think 'outside the box' on this last question. If you could advise MPPA and <<utility>> on changes to the rebate program to improve participation by firms like yours, what advice would you give?**



HVAC Contractors

Process Evaluation of Residential HVAC Programs Market Actor Interviews – HVAC Contractors

Interview Tracking Information

Interviewer		Interview Length (min.)	
Completion Date			

Contact Information

Respondent Name	
Company Name	
City, State, Zip	
Phone	
Alt info (email, cell)	

Call Tracking

Date/Time	Notes/result/actions: (result; when to call back, etc.)

Note to Interviewers: This interview guide is intended as a flexible approach to elicit details regarding several key topic areas. If a particular response necessitates additional clarification or follow up questioning, please pursue even though the follow up questions are not explicitly in the interview guide.

My name is _____ and I am with KEMA, an energy service provider, on behalf of Michigan Public Power Agency (MPPA) and <<utility>>. KEMA has been hired to do an evaluation of the residential energy efficiency programs offered by <<utility>>.

- The interviews are to examine your experience as a partner in the Company's energy efficiency programs.
- To learn whether and where potential improvements might be found.
- Your answers are completely confidential.
- The report will not include the names of individuals we interviewed.

The interview should take around 15-20 minutes, depending on your responses.

I. Introductions

I'd like to start by asking you a few questions about your job.

35. **What is your job title?**
36. **Please summarize briefly your major responsibilities.**
37. **How long have you been in this role?**

II. Firmographics

Next, I have some questions about your company.

38. **How many full-time employees does your firm have in Michigan?**
39. **To help us get a rough sense of your company's volume of business, would you estimate that annual revenues are:**
 - **Under \$500,000 /year**
 - **\$500,000 to \$2 million/year**
 - **\$2 million to \$5 million/year or**
 - **Over \$5 million per year?**
40. **I'm going to read you a list of possible HVAC services. Please tell me which ones your company offers:**
 - **The manufacture of HVAC equipment**
 - **The sale and distribution of HVAC equipment**
 - **The design and specification of HVAC systems**
 - **The installation of HVAC systems/ equipment**
 - **The design or installation of HVAC control systems such as energy management systems or building automation systems**
41. **To which customer segments do you primarily target your services?**
Residential, commercial and/or industrial segments.
42. **I'm going to read a list of different categories of HVAC equipment. For each, please say if your company installs or distributes this for the residential market:**
 - **Natural gas furnaces and/or boilers**
 - **Furnaces for other fuels – propane, fuel oil**
 - **Rooftop air conditioning units (unitary or packaged)**
 - **Rooftop A/C units (split systems)**
 - **Packaged A/C or Heat Pump units.**
 - **Control systems**

- (other)

43. Approximately what percentage of your firm's HVAC projects in MI would be categorized as:

- New residential construction %
- Major residential renovation/remodeling projects %
- Non-residential work..... %

III. Awareness and Marketing

Next I have a few questions about your sources of information on energy efficiency.

44. In your business capacity, how do you generally get information about energy efficiency opportunities?

45. Of all the possible information sources available, which ones do you trust the most?

46. Are you aware of the energy efficiency programs offered by MPPA, LBWL and the <<utility>>?

IF NO, SKIP TO SECTION V.

47. Have you seen any advertising for the energy efficiency programs offered by MPPA, LBWL and the <<utility>>?

IF NO, SKIP TO SECTION IV.

48. What do you recall about the advertising you have seen for MPPA, LBWL and the <<utility>> energy efficiency programs?

Anything informative, helpful or otherwise memorable?

IV. Participation in Residential Heating Rebate Program

49. Approximately when did your business start participating in this program?
YEAR IS FINE; MONTH/YEAR IS BEST.

50. Why did your company decide to participate in this program?

Please summarize the major reasons/ factors in your decision.

51. I'm going to list a number of ways that a firm like yours could support the Residential HVAC program offered by MPPA, LBWL and the <<utility>>. Please say whether your company does any of these things:

- Tell your retail customers about the rebates
- Tell your installation customers about the rebates
- Mention the rebates in your advertising
- Run special sales/campaigns featuring the rebates

- Host outreach events that features this program?
- Anything else you might do to support this program?

52. What changes, if any, would you suggest MPPA, LBWL, and <utility>> consider to broaden participation by contractors and equipment suppliers in the Residential HVAC Program?

V. Customers

In this last section, I'd like to learn more about your residential customers.

53. Earlier you said that [x% from Q9] of your company's sales come from residential work. What percentage of your residential projects each year are/ are in:

- New custom-designed homes..... _____%
- New pre-designed homes _____%
- Large renovation projects _____%
- Smaller remodeling projects _____%

54. In your observation, what fraction of your residential customers are motivated to save energy?

55. I'm going to list characteristics about HVAC equipment that customers might consider when selecting equipment. For each one, please rate how important this factor is for your residential customers. Please use a scale from 1 to 10 where 10 is "very important" and 1 is "not at all important"

- Initial cost of the equipment..... _____
- Costs of operation..... _____
- Total life cycle costs _____
- Ease of maintenance..... _____
- Employee/customer comfort issues..... _____
- Anything else that's important? _____

56. If MPPA, LBWL, and <<utility>> wanted to expand the fraction of your customers that considered energy efficiency in their buying decisions, what should they do?

57. Again in your observation, how do most residential customers learn about the program rebates offered by <<utility>>?

- Probe: Do you tell your customers about the rebates? Why/ why not?

58. We've talked about how the company might help increase customer awareness of the rebates -- does your staff help customers fill out the application form to apply for these Rebates?

59. Do you ever get calls from customers about the rebate process? If so, what is the nature of those calls?

-
- 60. **Overall, what is your sense of how long it takes for a customer to receive their rebates? Roughly, how many weeks?**
 - 61. **In your experience, how do customers view this processing time? Please use a scale of 1 to 5, where 1 is “it took way too long to receive that rebate” and 5 is “that rebate came impressively quickly”.**

V. Future Evaluation

- 62. **How did the incentive levels impact program participation? (Prompt: Would customers have purchased without the program)?**
- 63. **Should there be incentives for any other measures? If so, which measures?**
- 64. **How well did you find that the implementation contractor managed the program?**
- 65. **Are you familiar with any emerging technologies that should be offered or incentivized through the program?**

VI. Conclusion

As we conclude this analysis of MPPA, LBWL, and <<utility>> HVAC program, I have just a few last questions.

- 66. **What would you say are the main strengths of this program?**
Why are these strengths? [Record all offered; ask “anything else?” until the answer is N]
- 67. **What would you say are the primary weaknesses or shortcomings of this program, if any?** [Record all; ask “anything else?” until the answer is N]
- 68. **Finally, I’d like to invite you to think ‘outside the box’ on this last question. If you could advise MPPA, LBWL, and <<utility>> on changes to the rebate program to improve participation by firms like yours, what advice would you give?**

Appendix J C&I Verified Measures

These measures were observed during the on-site inspections. These savings were verified on behalf of all municipal utilities in the report.

<i>Measure</i>	<i>Measure</i>	<i>Measure</i>
10 lamps (5 4'2L HP T8) from T12	4'2L T8 (26 4L fixtures)	HP 4'4L T8
10 watt CFL bulbs	4'4L HP T8 retrofit of 8' 2L fixture	HP t8 4' 2L
10 watt LED track lighting	4'4L T8 HP	HP T8 Tandum Fixture from HO T12 8' 2L 32W
104 watt HB LED	4L 25W T8	LED door and multi deck cases
13 Watt CFL bulbs	4L4T8	LED Exit Signs
142 watt HB 4' 4L T8	50 W Inductive Flood (Light poles)	LED Exit Signs
150 watt Induction	6 Lamp T8 fixtures	LED Strip Lighting 24' & 26' & 48' Strips
21 anti sweat controls for 95 doors (rebate is per door controlled)	7 watt LED Recessed Lamps	LW 4'2L T8 retrofit from T12
220 watt 6' HB T8	7 watt LED vanity lights	LW 4'4L T8 retrofit from T12
	CFL Bulbs Greenlight 18w & 23w; 627 are 18w; 506 are 23w [Common Area = 145 @18w and 30 @23w] + [Guest Rooms 482@ 18w and 476 @ 23w]	
220 watt HB 6L T8		LW HP 4' 1L T8 lamp replacement
222 watt High Bay 6 Lamp T8	delamping HPT8, lamp retrofit	LW HP 4' 2L T8 lamp replacement
224 watt HB 6L T8	ECM motors	LW HP T8 4' (178 4L fix) from T12
231 watt 4' 6 Lamp T8	HB 4' 2 Lamp T8	LW HP T8 4' (178 4L fix, 11 2L fix)
246watt 4'4L T5	HB 4' 4L T8	Occupancy Sensors
25 doors equipped with Anti-Sweat Controls	HB 4' 6 Lamp T8	Occupancy Sensors <500W
25 watt Inductive flood (back lot)	HB 4'4L T8	Removed lamp & ballast
28 lamps (7 4'4L HP T8) from T12	HB 6L T8	replace or retrofit T12 8 ft 2 lamp
		Replacement or Retrofit of T12 HO 8ft, 2 lamp: HBT84L High Bay 4' 4 LT8 (rafters 12'); Sunpark Ballasts #U-4/32ISE-HBF (qty 4) and .#U-4/32ISE-LBF (qty 1) & Prolume Lamps.
2L 2'T8	HB 6L T8	
2L 3' T8	HB T5 HO; High Bay 12 Lamp T5; estimated 730W; 54W each; Manuf. TCP calls it a 2-6L T5 HO	Retrofit T12 to T8 - per lamp
2L T8 Lo Bay	HB T8 4L	Specialty CFL spot lamp 26 watt
	HB6T8; High Bay 6 Lamp T8; Philips Lamps; Alluma Light Fixture	
2L U bulb T8		T12 4' 4L => HP T8 4' 4L
355 watt HB 10 Lamp T5	HB6T8; High Bay T8 6 Lamp T8 32W	T8 1L 32W
3L4'T8	High Bay 4' 4L T8	T8 2L 32W
4' 2L T8 (delamped from 4 Lamps to 2)	High Performance T8 4' 4L	T8 3 L 32w
4' 4L T8	HP 4' 1L T8	T8 3L 32W
40 watt Induction	HP 4' 2L T8	T8 4' 2L 25w
40 watt Inductive wallpack	HP 4' 2L T8	T8 4L 32w
42 watt CFL triple pin	HP 4' 2L T8 (delamped from 4 Lamp to 2 Lamp)	Ultralux 4 lamp T5
4'2L HP T8	HP 4' 3L T8	
4'2L T8	HP 4' 4L T8	