City of Sturgis
Verification of Savings of 2014 Energy Optimization Programs
Final Report

City of Sturgis
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E Executive Summary

The Michigan Public Power Agency Energy Efficiency Service Committee (MPPA EE Service Committee) is a group of twenty-one Michigan municipal electric utilities that was formed to mutually verify the savings of similar 2014 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 MPPA EE Service Committee 2014 EO programs was conducted in fourth quarter of 2014 and the first quarter of 2014. 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 City of Sturgis. Table 1 recapitulates the verification findings, including the EO savings goals with the claimed (i.e., deemed savings), the verified gross savings and the verified net savings for the City of Sturgis.

Table 1 City of Sturgis Energy Optimization Goal, Actual and Verified Savings (kWh)

Program	Goal	Claimed	Verified-Gross
Residential			
Efficient Lighting	236,378	355,424	246,108
Appliance Turn-In	48,856	29,556	29,556
High-Efficiency Appliances	4,077	5,431	5,431
Commercial and Industrial	150,000	67,086	65,744
Incentive Program	1,024,817	1,751,676	1,719,971
Direct Install Program	130,836	132,332	122,460
Total	1,594,964	2,341,505	2,189,270

1 Introduction

The Michigan Public Power Agency Energy Efficiency Service Committee (MPPA EE Service Committee) is a group of 18 Michigan municipal electric utilities (For a list of participating utilities, see Appendix A) that was formed to mutually verify the savings of similar 2014 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 MPPA EE Service Committee members EO programs. The 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 City of Sturgis (City of Sturgis). Following this introductory section, the next section presents a recapitulation of the estimates of savings for programs implemented by City of Sturgis . The appendices provide supporting documentation, analytical approaches as well as generic descriptions of programs that MPPA EE Service Committee members may have implemented. The appendices provide supporting documentation, analytical approaches as well as generic descriptions of programs that the MPPA EE Service Committee members may have implemented.

2 Verification of Savings Estimates

Residential

The City of Sturgis reported that the deemed savings estimate for the Efficient Lighting Program was 355,424 kWh. Based on the analysis of the program the verified gross savings estimate is

246,108 kWh. Using the variance of the estimate yields a confidence interval of ±28,492 kWh (±11.6%).

The City of Sturgis reported that the deemed savings estimate for the Appliance Recycle Program was 29,556 kWh. Based on the analysis of the program the verified gross savings estimate is 29,556 kWh. The variance associated with this estimate was zero.

The City of Sturgis reported that the deemed savings estimate for the High-Efficiency Appliances/High-Efficiency HVAC Program was 5,431 kWh. Based on the analysis of the program the verified gross savings estimate is 5,431 kWh. The variance associated with this estimate was zero.

The City of Sturgis reported that the deemed savings estimate for the Residential Multifamily Program was 67,086 kWh. Based on the analysis of the program the verified gross savings estimate is 65,744 kWh. Using the variance of the estimate yields a confidence interval of ±6,771 kWh (±10.3%).

Commercial and Industrial

The City of Sturgis reported that the deemed savings estimate for the C&I Incentive Program was 1,751,676 kWh. Based on the analysis of the program the verified gross savings estimate is 1,719,971 kWh. Using the variance of the estimate yields a confidence interval of ±27,692 kWh (±1.6%).

The City of Sturgis reported that the deemed savings estimate for the Small Business Direct Install Program was 132,332 kWh. Based on the analysis of the program the verified gross savings estimate is 122,460 kWh. Using the variance of the estimate yields a confidence interval of ±8,364 kWh (±6.8%).

Appendix A The MPPA Energy Efficiency Service Committee Utilities

The 18 municipal utilities with EO programs to be evaluated include the following:

- Bay City Electric Light & Power
- Charlevoix Electric System
- Chelsea Electric Department
- City of Eaton Rapids
- City of Petoskey
- City of St. Louis
- City of Sturgis
- Croswell Light & Power Department
- Grand Haven Board of Light & Power
- Hart Hydro-Electric
- Holland Board of Public Works
- Lowell Light & Power
- Niles Utility Department
- Portland Light and Power Board
- Village of Paw Paw
- Traverse City Light & Power
- Wyandotte Municipal Services
- Zeeland Board of Public Works

Appendix B Program Descriptions

The 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.

Appliance 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 Direct Install Program: The Multifamily program installs complimentary energy saving measures to reduce the amount of energy that is consumed not only in each unit but the property as a whole. The measures include CFL light bulbs, aerators, and shower heads. We market to property managers, communities and property development companies by sending literature, holding events, completing energy assessments and social media marketing.

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

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

Small Business Direct Install Program: The small business direct install program is designed to offer free energy efficient products to small businesses with lower annual kWh usage. We offer free installation of CFL's, LED exit sign retrofits, pre-rinse sprayers, and programmable thermostats. We market the program by sending out letters to the utility's customers encouraging them to contact us to schedule an appointment for installation. We also canvas the area going door to door to inform customers of the program and offer on the spot installation.

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..

Appendix C Sample Design

Methodology

For all samples, the verification used model based statistical sampling (MBSS) to guide the sample design. 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.

$$\begin{aligned} y_k &= \beta x_k + \varepsilon_k \\ \sigma_k &= sd(\varepsilon_k) = \sigma_0 x_k^{\gamma} \end{aligned}$$

Equation 1 Primary and Secondary Equations

Equation 1 illustrates the primary and secondary equations of the model that are 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_0 (sigma-naught), and γ (gamma). The coefficient beta is a fixed constant applied 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 σ_k and residual standard deviation σ_k generally vary 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 to the tracking system estimate of savings.

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

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

Where:

D is the desired relative precision, and

z corresponds to the desired confidence level.

Equation 2 The Initial Sample Size Calculation

Using MBSS techniques in sample design minimizes the uncertainty of the results by controlling the variation of the sample. Accordingly, for the verification the initial sample size was determined using Equation 3. Sample size is based on an assumed "error ratio"[1].

The true error ratios are not yet known. However, based on last year's evaluation the error ratios can be estimated. From last year's evaluation, the sample could be based on the "gross" savings estimates, or the "net" savings estimates. The net savings results were more variable.

[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 another kind of coefficient of variation

However, the gross savings is what is required to be reported. Accordingly, it was decided to use the net savings estimates as a guide to the sample design, as long as the ultimate design would result in acceptable precision for the gross estimates.

Sample Designs

Table 1 presents a recap of the sample design, and expected confidence intervals.

Parameter	Beta β	Error Ratio ER	Assumed Populati N	Sample Size 90/10 n	Study Sample Size and Confidence Interval	
					n	Gross CI
Program						
Residential						
Lighting	0.68	0.20	6,308	11	50	4.6%
Appliance Pick Up	0.95	0.35	782	32	40	9.2%
High Efficiency Appliances	0.90	0.20	843	11	21	7.0%
Low Income	0.77	0.25	499	15	45	8.4%
Multifamily	NA	NA	NA	NA	1	NA
C&I						
Prescriptive/Custom	0.90	0.20	436	15	21	6.3%
Direct Install	0.95	0.20	208	11	15	7.5%

Table 1 Sample Design Parameters, Sample Sizes and Expected Confidence Intervals

Table 1 shows that to achieve a ±10% confidence interval at the 90% confidence level the sample sizes range from 11 to 43. The sample sizes for the Lighting and Low Income Appliance Pick Up, High Efficiency Appliances and Low Income were increased to obtain a sample size from specific utilities[2]. Due to the uncertainty of the assumption, other sample sizes were increased slightly to assure adequate coverage. The increase in sample size manifests

[2] For Lighting, an additional 10 sample points were chosen from Bay City, Holland and Traverse City. For the Load Income Program, an additional 30 sample points were chosen from Bay City.

itself in lower expected confidence intervals for each sample. The expected confidence intervals range from ±5% to ±9%

The next step in the sample design was 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 $\sigma_i = \sigma_o x^y$. 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. For the sample design for all programs, the value of gamma was assumed to be 0.8

The final sample designs can be found in Table 2.

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			kWh Savings	
Strata	**N**	**n**	**Max**	**Total**
Residential				
Lighting				
1	463	10	74	28,715
2	55	10	148	8,162
Bay City	2750	10	9,999	610,428
Holland	243	10	9,999	81,305
Traverse City	1220	10	9,999	139,679
Total	4731	50		868,289
Recycling Program				
1	704	20	1,261	764,351
2	78	20	5,044	177,667
Total	782	40		942,018
Appliances/HVAC				
1	416	7	730	126,317
2	103	7	773	77,447
3	113	7	3,448	119,066
Total	632	21		322,830
Multifamily				
1	4	1	NA	NA
Total	4	1		-
Low Income				
1	50	15	297	10,991
2	42	15	2,809	71,138
Bay City	274	30	9,999	103,003
Total	366	60		185,132
Commercial and Industrial				
Custom/Perscriptive				
1	266	7	50,960	3,556,261
2	48	7	218,400	5,071,218
3	12	7	1,171,157	5,756,566
4	1	1	1,798,209	1,798,209
Total	327	22		16,182,254
SBDI				
1	106	5	6,450	251,933
2	34	5	12,783	316,987
3	16	5	100,172	410,482
Total	156	15		979,402

Table 2 Sample Designs

Appendix D Analysis Methodology

Model Based Statistical Sampling and analysis was the basis of the analysis. For each of the programs, an appropriate evaluation approach was developed. This section describes the methodologies used for each program's analysis approach.

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.

Error! Reference source not found. illustrates the primary and secondary equations of the odel 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

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 3. Sample size is based on an assumed "error ratio"[3].

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^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.

[3] 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

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

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

Where:

D is the desired relative precision, and

z corresponds to the desired confidence level.

Equation 3 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 4 Combined Ratio Estimation

1. Calculate the residuals $e_i = y_i - \hat{B}_0\ x_i$
2. Calculate $se\left(\hat{B}_0\right) = \left(\frac{1}{\hat{X}_0}\right)\sqrt{\sum_{I=1}^{n_0} w_i \left(w_i - 1\right) e_i^2}$

   with $\hat{X}_0 = \sum_{i=1}^{n_0} w_i\ x_i$
3. Then $se\left(\bar{y}_0\right) = se\left(\hat{B}_0\right)\mu_{x0}$ and $se\left(\hat{Y}_0\right) = se\left(\hat{B}_0\right) X_0$

Equation 5 Calculating the Statistical Precision

Residential Efficient Lighting Program, Appliance Turn-In Program, High-Efficiency Appliances/ High-Efficiency HVAC Program, and the Low Income Program

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.

The participants were asked:

- To verify they did participate in the program
- How many measures they received
- Are they using all of the measures

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

Equation 4 was used to determine the verified savings, and Equation 5 was used to estimate the statistical precision of the estimate.

Residential Multifamily Program

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

Equation 4 was used to determine the verified savings, and Equation 5 was used to estimate the statistical precision of the estimate.

Commercial and Industrial Prescriptive and Custom Programs

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 E .

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 4 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 5 presents the three steps necessary to calculate the statistical precision associated with our combined stratified ratio estimator.

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.

Appendix E Surveys

Efficient Lighting Program

MPPA - Residential Energy Efficient Lighting CATI Survey
Revised – 11/21/2012

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.**

Programming Notes

Code multiple response questions as a series of variables that have a 0 or 1 value. One variable for each answer option. For example, R5_1 = 1 if the respondent answers "internet" to R5. R5_1 = 0 if the respondent does not answer "internet. Make separate 0/1 variables for the [Don't know] and [Refused] options as well.

Database variables

Variable	**Definition** (Unless otherwise noted, the database can contain more than one of each variable per respondent)
cont1, cont2, ... cont*x*	Contact name(s).
Utility	Name of the contact's utility. One per customer.
Address	Address where equipment was installed

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 PARTCIPATE]	Intro2
2	[DOES NOT AGREE TO PARTCIPATE]	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 receiving these bulbs?

	[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 a package of one or more compact fluorescent light bulbs (CFL) from your utility this year?

1	Yes	V2
2	No	V1a
-97	[Don't know]	Intro3
-98	[Refused]	

V1a. Just to confirm, you did not receive any packages of compact fluorescent light bulbs from your utility last year?

1	Yes, we received CFLs	V1b
2	No, we did NOT receive any CFLs	Thank and Terminate
-97	[Don't know]	
-98	[Refused]	

V1b. How many light bulbs did you receive?

	[Enter quantity]	V2
-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]	

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

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

V5. Can you tell me what rooms have these free CFL installed in a light socket? [Accept multiples]

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

V6. On average, how many hours per day are the CFLs you installed turned on during the winter? (Interviewer Note: average hours for a typical bulb, not summed for all of them)

	[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? (Interviewer Note: average hours for a typical bulb, not summed for all of them)

	[RECORD Hours (max = 24)]	N1
-97	[Don't know]	
-98	[Refused]	

DEMOGRAPHICS

D0. I have just a few more questions to make sure we are getting a representative sample.

D1. Do you or someone else in your household own your home, or do you rent?

1	[Own]	D2
2	[Rent]	
3	[Don't own or pay rent]	
-98	[Refused]	
-99	[Don't Know]	

D2. Which of the following best describes the home you live in?

1	Mobile home	D3
2	Detached single family home	
3	Attached single family home building – 2 apartments	
4	A building with 3 to 4 apartments	
5	A building with 5 or more apartments	
77	Other – [SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

D3. Your age falls into which of the following groups? Would you say… [READ LIST.]

1	Less than 18 years old,	D4
2	18 to 24,	
3	25 to 34,	
4	35 to 44,	
5	45 to 54,	
6	55 to 64, or	
7	65 or older?	
-98	[Refused]	
-99	[Don't know]	

D4. What is the highest level of education you have completed? [DO NOT READ LIST. PROMPT IF NECESSARY.]

1	[No schooling]	
2	[Less than high school]	
3	[Some high school]	
4	[High school graduate or equivalent (e.g., GED)]	
5	[Trade or technical school]	
6	[Some college]	D5
7	[College degree]	
8	[Some graduate school]	
9	[Graduate degree]	
-98	[Refused]	
-99	[Don't know]	

D5. What was your annual household income from all sources in 2014, before taxes? Please stop me when I reach the category that best describes your household's income. Would you say…
[READ LIST]
[IF NECESSARY: "This information is confidential and will only be used for the purpose of characterizing study respondents."]

1	Less than $20,000 per year,	
2	20 to less than $40,000,	
3	40 to less than $60,000,	
4	60 to less than $80,000,	
5	80 to less than $100,000,	D6
6	100 to less than $150,000, or	
7	$150,000 or more?	
-98	Refused	
-99	Don't know	

D6. How would you describe your race?
[DO NOT READ LIST. PROMPT IF NECESSARY. ACCEPT MULTIPLE RESPONSES.]

1	[White]	
2	[Black or African American]	
3	[American Indian or Alaska Native]	
4	[Asian]	
5	[Chinese]	
6	[Japanese]	
7	[Korean]	
8	[Vietnamese]	
9	[Filipino]	END_1
10	[Native Hawaiian]	
11	[Guamanian or Chamorro]	
12	[Samoan]	
13	[Pacific Islander]	
14	[Hispanic or Latino]	
-97	[Other – SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

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

MPPA - Appliance Recycling Rebate Program
Residential CATI Survey
Revised – Jan/2015

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 an appliance(s) you recently recycled.

[IF NEEDED]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 PARTCIPATE]	Intro2
2	[DOES NOT AGREE TO PARTCIPATE]	TERMINATE

Intro2. Our records show that you received a rebate for equipment you recently recycled. Are you familiar with having equipment picked up last 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 appliance you recycled.

[IF <ref_qty> = 0, GOTO VG3]

VG1. Our records show you had <ref_qty> refrigerator (s) recycled. Is that correct?

1	[Yes]	<<NUM REF>> = <ref_qty> GOTO VG2
2	[No]	VG1a
-97	[Don't know]	<<NUM_REF>> = -1 GOTO VG2
-98	[Refused]	

VG1a. How many refrigerators were picked up?

	[RECORD VERBATIM]	<<NUM_REF>> = answer GOTO VG1b
-97	[Don't know]	<<NUM_REF>> = -1 GOTO VG1b
-98	[Refused]	

[IF <<NUM_REF>> = <ref_qty>, GOTO VG2c]

VG2b. Why were a different number of refrigerators recycled?

	[RECORD VERBATIM]	VG2
-97	[Don't know]	
-98	[Refused]	

VG2. Our records show that the refrigerators were picked up from <address>. Is that correct?

1	[Yes]	GOTO VG2c
2	[No]	VG2a
3	Unit was dropped off at another location for recycling	VG2c
-97	[Don't know]	VG2c
-98	[Refused]	

VG2a. What address were they picked up from?

	[RECORD VERBATIM]	IF ANSWER DIFFERENT THAN <ADDRESS> GOTO VG2b ELSE VG2c
-97	[Don't know]	VG2c
-98	[Refused]	VG2c

VG2b. Why were they picked up from a different address?

	[RECORD VERBATIM]	VG2c
-97	[Don't know]	
-98	[Refused]	

VG2c. Were all of the refrigerators recycled in working condition?

1	[Yes]	VG3
2	[No]	VG3
77	Not all of t hem (SPECIFY NUMBER WORKING)	RECORD Number
-97	[Don't know]	VG3
-98	[Refused]	

[IF <frz_qty> = 0, GOTO**VG5**]

VG3. Our records show you had <frz_qty> freezer(s) recycled. Is that correct?

1	[Yes]	<<NUM_FRZ>> = <frz_qty> GOTO VG4
2	[No]	VG3a
-97	[Don't know]	<<NUM_FRZ>> = -1 GOTO VG4
-98	[Refused]	

VG3a. How many freezers were recycled?

	[RECORD VERBATIM]	<<NUM_FRZ>> = answer VG3b
-97	[Don't know]	<<NUM_FRZ>> = -1 VG3b
-98	[Refused]	

VG3b. Why were a different number of freezers picked up?

	[RECORD VERBATIM]	VG4c
-97	[Don't know]	
-98	[Refused]	

VG4. Our records show that the freezers were picked up from <address>. Is that correct?

1	[Yes]	GOTO VG4c
2	[No]	VG4a
3	Unit was dropped off at another location for recycling	VG5
-97	[Don't know]	VG4c
-98	[Refused]	

VG4a. What address were they picked up from?

	[RECORD VERBATIM]	IF ANSWER DIFFERENT THAN <ADDRESS> GOTO VG4b ELSE VG4c
-97	[Don't know]	VG4c
-98	[Refused]	VG4c

VG4b. Why were they picked up from a different address?

	[RECORD VERBATIM]	VG4c
-97	[Don't know]	
-98	[Refused]	

VG4c. Were all of the freezers recycled in working condition?

1	[Yes]	VG5
2	[No]	VG5
77	Not all of t hem (SPECIFY NUMBER WORKING)	RECORD NUMBER
-97	[Don't know]	VG5
-98	[Refused]	

[IF <other_qty> = 0, GOTO R1]

VG5. Our records show you had <equipment_text> recycled. Is that correct?

1	[Yes]	<<NUM_other>> = <other_qty> GOTO VG6
2	[No]	VG5a
-97	[Don't know]	<<NUM_other>> = -1 GOTO VG6
-98	[Refused]	

VG5a. How many items were recycled?

	[RECORD VERBATIM]	<<NUM_other>> = answer VG5b
-97	[Don't know]	<<NUM_other>> = -1 VG5b
-98	[Refused]	

[IF <<NUM_other>> = <other_qty>, GOTO VG5c]

VG5b. Why were a different number of items picked up?

	[RECORD VERBATIM]	VG6
-97	[Don't know]	
-98	[Refused]	

VG6. Our records show that the <equipment_text> were picked up from <address>. Is that correct?

1	[Yes]	GOTO VG6c
2	[No]	VG6a
3	Unit was dropped off at another location for recycling	VG6c
-97	[Don't know]	VG6c
-98	[Refused]	

VG6a. What address were they picked up from?

	[RECORD VERBATIM]	IF ANSWER DIFFERENT THAN <ADDRESS> GOTO VG6b ELSE VG6c
-97	[Don't know]	VG6c
-98	[Refused]	VG6c

VG6b. Why were they picked up from a different address?

	[RECORD VERBATIM]	VG6c
-97	[Don't know]	
-98	[Refused]	

VG4c. Were all of the <equipment_text> recycled in working condition?

1	[Yes]	C1
2	[No]	C1
77	Not all of t hem (SPECIFY NUMBER WORKING)	RECORD NUMBER
-97	[Don't know]	C1
-98	[Refused]	

ATTRIBUTION

C1. What is the main reason you chose this service to dispose of your appliance(s)?
[ALLOW ONLY ONE RESPONSE]

1	Getting the program rebate	C2
2	Convenient disposal option	
3	Had no use for it	
4	Other reasons [RECORD VERBATIM]	
-97	[Don't know]	
-98	[Refused]	

C2. Are there any other reasons? If yes: what were they?
[ALLOW MULTIPLE RESPONSES]

1	Getting the program rebate	C3
2	Convenient disposal option	
3	Had no use for it	
4	Other reasons [RECORD VERBATIM]	
-97	[Don't know]	
-98	[Refused]	

C3. Have you disposed of a refrigerator or freezer in the past, before using the recycling program? How did you get rid of that unit?

[PROMPT FOR RESPONSE – READ OPTIONS IF NEEDED]

1	[No / (if applicable) This is the first unit I've disposed of]	
2	[Threw away / Took to Landfill]	
3	[Took to recycling center]	
4	[Donated to charity]	
5	[Taken by installer of new one]	
6	[Sold to used appliance dealer]	
7	[Sold to private individual]	I1
8	[Gave to friend/relative/private individual]	
9	[Set it out on the curb for someone to take]	
10	[Recycled it through utility program]	
77	[Other (specify)]	
-97	[Don't know]	
-98	[Refused]	

I1. Did you receive any rebate or incentive from the program after they picked up your appliance?

1	Yes	I2
2	No, did not receive incentive	I1a
-97	[Don't know]	
-98	[Refused]	

I1a. When did you apply for the rebate?

	[RECORD RESPONSE_____]	I2.

I2. Approximately how long did it take to receive your rebate?

[DO NOT READ BRACKETED OPTIONS]

1	[1 week or less]	
2	[2-3 weeks]	
3	[4-5 weeks]	
4	[6-8 weeks]	I3
5	[More than 8 weeks]	
6	[Got it at time of pickup]	
-97	[Don't know]	
-98	[Refused]	

I3. Did you know about the incentive prior to scheduling the pick-up?

1	[Yes]	I4
2	[No]	
-97	[Don't know]	
-98	[Refused]	

I4. Would you have still used this service if there was no rebate but only free pick up?

1	[Yes]	I5
2	[No]	
-97	[Don't know]	
-98	[Refused]	

I5. Would you have still used this service if there was a small charge for the service?

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

DEMOGRAPHICS

D0. I have just a few more questions to make sure we are getting a representative.

D7. Do you or someone else in your household own your home, or do you rent?

1	[Own]	D2
2	[Rent]	
3	[Don't own or pay rent]	
-98	[Refused]	
-99	[Don't Know]	

D8. Which of the following best describes the home you live in?

1	Mobile home	D3
2	Detached single family home	
3	Attached single family home building – 2 apartments	
4	A building with 3 to 4 apartments	
5	A building with 5 or more apartments	
77	Other – [SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

D9. Your age falls into which of the following groups? Would you say… [READ LIST.]

1	Less than 18 years old,	D4
2	18 to 24,	
3	25 to 34,	
4	35 to 44,	
5	45 to 54,	
6	55 to 64, or	
7	65 or older?	
-98	[Refused]	
-99	[Don't know]	

D10. What is the highest level of education you have completed? [DO NOT READ LIST. PROMPT IF NECESSARY.]

1	[No schooling]	
2	[Less than high school]	
3	[Some high school]	
4	[High school graduate or equivalent (e.g., GED)]	
5	[Trade or technical school]	
6	[Some college]	D5
7	[College degree]	
8	[Some graduate school]	
9	[Graduate degree]	
-98	[Refused]	
-99	[Don't know]	

D11. What was your annual household income from all sources in 2014, before taxes? Please stop me when I reach the category that best describes your household's income. Would you say…
[READ LIST]
[IF NECESSARY: "This information is confidential and will only be used for the purpose of characterizing study respondents."]

1	Less than $20,000 per year,	
2	20 to less than $40,000,	
3	40 to less than $60,000,	
4	60 to less than $80,000,	
5	80 to less than $100,000,	D6
6	100 to less than $150,000, or	
7	$150,000 or more?	
-98	Refused	
-99	Don't know	

D12. How would you describe your race?
[DO NOT READ LIST. PROMPT IF NECESSARY. ACCEPT MULTIPLE RESPONSES.]

1	[White]	
2	[Black or African American]	
3	[American Indian or Alaska Native]	
4	[Asian]	
5	[Chinese]	
6	[Japanese]	
7	[Korean]	
8	[Vietnamese]	
9	[Filipino]	END_1
10	[Native Hawaiian]	
11	[Guamanian or Chamorro]	
12	[Samoan]	
13	[Pacific Islander]	
14	[Hispanic or Latino]	
-97	[Other – SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

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

MPPA - Residential Energy Efficient HVAC CATI Survey
Revised – 10 Jan 13

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 PARTCIPATE]	Intro2
2	[DOES NOT AGREE TO PARTCIPATE]	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, … Equipment*x*)

Verification

V1 . Just to Verify, did you install a/an <equipment> 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]	

END EQUIPMENT BLOCK

DEMOGRAPHICS

D0. I have just a few more questions to make sure we are getting a representative sample.

D13. Do you or someone else in your household own your home, or do you rent?

1	[Own]	D2
2	[Rent]	
3	[Don't own or pay rent]	
-98	[Refused]	
-99	[Don't Know]	

D14. Which of the following best describes the home you live in?

1	Mobile home	D3
2	Detached single family home	
3	Attached single family home building – 2 apartments	
4	A building with 3 to 4 apartments	
5	A building with 5 or more apartments	
77	Other – [SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

D15. Your age falls into which of the following groups? Would you say… [READ LIST.]

1	Less than 18 years old,	D4
2	18 to 24,	
3	25 to 34,	
4	35 to 44,	
5	45 to 54,	
6	55 to 64, or	
7	65 or older?	
-98	[Refused]	
-99	[Don't know]	

D16. What is the highest level of education you have completed?
[DO NOT READ LIST. PROMPT IF NECESSARY.]

1	[No schooling]	D5
2	[Less than high school]	
3	[Some high school]	
4	[High school graduate or equivalent (e.g., GED)]	
5	[Trade or technical school]	
6	[Some college]	
7	[College degree]	
8	[Some graduate school]	
9	[Graduate degree]	
-98	[Refused]	
-99	[Don't know]	

D17. What was your annual household income from all sources in 2014, before taxes? Please stop me when I reach the category that best describes your household's income. Would you say…
[READ LIST]
[IF NECESSARY: "This information is confidential and will only be used for the purpose of characterizing study respondents."]

1	Less than $20,000 per year,	
2	20 to less than $40,000,	
3	40 to less than $60,000,	
4	60 to less than $80,000,	
5	80 to less than $100,000,	D6
6	100 to less than $150,000, or	
7	$150,000 or more?	
-98	Refused	
-99	Don't know	

D18. How would you describe your race?
[DO NOT READ LIST. PROMPT IF NECESSARY. ACCEPT MULTIPLE RESPONSES.]

1	[White]	
2	[Black or African American]	
3	[American Indian or Alaska Native]	
4	[Asian]	
5	[Chinese]	
6	[Japanese]	
7	[Korean]	
8	[Vietnamese]	
9	[Filipino]	END_1
10	[Native Hawaiian]	
11	[Guamanian or Chamorro]	
12	[Samoan]	
13	[Pacific Islander]	
14	[Hispanic or Latino]	
-97	[Other – SPECIFY]	
-98	[Refused]	
-99	[Don't know]	

THANK & TERMINATE

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

Small Business Direct Install Program

MPPA- Small Business Direct Install Program Survey
Revised January 30, 2013

INTRODUCTION

Intro1. Hello, my name is _____, and I'm calling on behalf of the Small Business Direct Install program offered through <utility>. According to our records your business recently received some free energy saving equipment including <Measures >. The purpose of the call is to learn about your experience and satisfaction with the program. I'm not selling anything; I'd just like to ask your opinions.

[IF NEEDED: "YOUR RESPONSES WILL BE KEPT CONFIDENTIAL AND YOUR INDIVIDUAL RESPONSES WILL NOT BE REVEALED TO ANYONE."]

[IF NEEDED: "THIS SURVEY WILL TAKE ABOUT 15 MINUTES"]]

Intro1.

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

Intro2. Are you familiar with the program and equipment I'm referring to?

IF NEEDED: The program is marketed most often through door-to-door solicitations or through letters indicating that a business is eligible to receive this free equipment. We have on record that <MeasureText> was/were installed. Now do you recall participating in the program?

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

Intro3. Is there someone else at this location who may recall participating in this program?

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

Intro4. Could I speak with <Intro3> now?

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

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

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

Verification – Address

V0. Our records show that the Direct Install program installed equipment at <address>. Is this correct?

01	Yes	Start Equipment Blocks
02	No	V1
98	[Don't know]	Intro3
98	[Refused]	

V1. What is the correct address?

	[RECORD address]	Start Equipment Blocks
98	[Don't know]	Intro3
99	[Refused]	

START CFL BLOCK

IF CFL="Y"

Else IF CFL="N", skip to LED block

Verification – CFL measures

C1 . Our records show that <CFLtext> CFL light bulbs were installed by the program; does this sound correct to you? [DO NOT READ]

01	[Yes]	C3
02	[No, we did not receive any CFLs]	C1a
03	[We received a different number of bulbs]	C2
98	[Don't know]	Intro3
99	[Refused]	

C1a. Just to confirm, you did not receive <CFLtext> CFL light bulbs? [DO NOT READ]

01	[We did receive CFLs or received a different quantity]	C2
02	[We did NOT receive any CFLs]	END CFL Block
98	[Don't know]	
99	[Refused]	

C2. How many and what kind of CFL light bulbs did you receive?

	[Record number and type of bulbs (e.g. received two 20W and three 23W)]	C3
98	[Don't know]	
99	[Refused]	

C3 . Are all these CFL light bulbs still installed and operational?

01	Yes	END BLOCK
02	No	C4
98	[Don't know]	
99	[Refused]	

C4. How many have been removed?

01	[Record quantity]	C5
02	All of them	
03	None of them	
98	[Don't know]	
99	[Refused]	

C5. Why were these CFL bulbs removed?

01	[Malfunctioned / Burnt out]	END BLOCK
02	[Aesthetics – Didn't like them]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

END CFL BLOCK

START LED BLOCK

IF LED ="Y"

Else IF LED ="N", skip to LED Exit sign block

VERIFICATION – LED LIGHT BULBS

L1 . Our records show that <LEDtext> LED light bulbs were installed by the program; does this sound correct to you? [DO NOT READ]

01	[Yes]	L3
02	[No, we did not receive any LEDS]	L1a
03	[We received a different number of LEDS]	L2
98	[Don't know]	L1a
99	[Refused]	

L1a. Just to confirm, you did not receive <LEDtext> LED light bulbs?

01	[We did receive LEDs or received a different quantity]	L2
02	[We did NOT receive any LEDs]	END LED Block
98	[Don't know]	
99	[Refused]	

L2. How many and what kind of LED light bulbs did you receive?

	[Record number and type of bulbs	L3
98	[Don't know]	
99	[Refused]	

L3 . Are all these LED light bulbs still installed and operational?

01	Yes	END BLOCK
02	No	L4
98	[Don't know]	
99	[Refused]	

L4. How many have been removed?

	[Record quantity or a description (e.g. 'half of them')]	L5
98	[Don't know]	
99	[Refused]	

L5. Why were these LED bulbs removed?

01	[Malfunctioned / Burnt out]	END BLOCK
02	[Aesthetics – Didn't like them]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

END LED BLOCK

START Exit Sign BLOCK

IF EXIT ="Y"

Else IF EXIT ="N", skip to programmable thermostat block

VERIFICATION – LED EXIT SIGNS

E1 . Our records show that <EXITtext> LED Exit Signs were installed by the program; does this sound correct to you? [DO NOT READ]

01	[Yes]	E3
02	[No, we did not receive any LED Exit Signs]	E1a
03	[We received a different number of Exit Signs]	E2
98	[Don't know]	E1a
99	[Refused]	

E1a. Just to confirm, you did not receive < EXITtext > LED Exit Signs? [DO NOT READ]

01	[We did receive LED Exit signs or received a different quantity]	E2
02	[We did NOT receive any LED Exit signs]	END LED EXIT SIGN Block
98	[Don't know]	
99	[Refused]	

E2. How many and what kind of Exit signs did you receive?

	[Record number and description]	E3
98	[Don't know]	
99	[Refused]	

E3 . Are all these LED Exit signs still installed and operational?

01	Yes	END BLOCK
02	No	E4
98	[Don't know]	
99	[Refused]	

E4. How many have been removed?

	[Record quantity]	E5
98	[Don't know]	
99	[Refused]	

E5. Why were these Exit Signs removed?

01	[Malfunctioned / Burnt out]	END EXIT SIGN BLOCK
02	[Aesthetics – Didn't like them]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

END Exit sign BLOCK

START Programmable thermostat BLOCK

IF TST =”Y”

Else IF TST =”N”, skip to vending machine block

VERIFICATION - PROGRAMMABLE THERMOSTAT

T1 . Our records show that <TSTtext> Programmable Thermostats were installed by the program; does this sound correct to you? [DO NOT READ]

01	[Yes]	T3
02	[No, we did not receive any programmable thermostats]	T1a
03	[We received a different number of programmable thermostats]	T2
98	[Don’t know]	T1a
99	[Refused]	

T1a. Just to confirm, you did not receive < TSTtext> Programmable Thermostats? [DO NOT READ]

01	[We did receive programmable thermostats or received a different quantity]	T2
02	[We did NOT receive any programmable thermostats]	END Block
98	[Don’t know]	
99	[Refused]	

T2. How many Programmable Thermostats did you receive?

	[Record number]	T3
98	[Don’t know]	
99	[Refused]	

T3 . Are all these Programmable Thermostats still installed?

01	Yes	T6
02	No	T4
98	[Don’t know]	
99	[Refused]	

T4. How many have been removed?

	[Record quantity]	T5
98	[Don't know]	
99	[Refused]	

T6. Are the program provided THERMOSTAT(S) operating using an energy saving program or setting ? T5. Why were these thermostats removed?

01	[Malfunctioned / Burnt out]	T6
02	[Aesthetics – Didn't like them]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

[IF NEEDED, Have the thermostats been previously programmed?]
[INTERVIEWER NOTE: if they said all the thermostats were removed, select option 3 (don't use programming)]

01	[Yes, it is / they are programmed]	T7
02	[Never programmed]	
03	[Don't use /disabled programming features]	
98	[Don't know]	
99	[Refused]	

T7. If you need to change the program, is there someone who understands how to re-program the thermostat?
[INTERVIEWER NOTE: if they said all the thermostats were removed, select option 3 (don't use programming)]

01	[Yes]	END BLOCK
02	[No]	
03	[Don't use /disabled programming features]	
98	[Don't know]	
99	[Refused]	

END thermostat BLOCK

START vending machine BLOCK

IF VMC =”Y”

Else IF VMC =”N”, skip to pre-rinse spray valves block

VERIFICATION - VENDING MACHING CONTROLS (VENDING MISERS)

VM1 . Our records show that <VMCtext> vending machine controls were installed by the program; does this sound correct to you? [DO NOT READ]

[IF NEEDED, vending machine controls are installed on your vending machine to reduce the lighting and/or cooling energy use of vending machines.]

01	[Yes]	VM3
02	[No, we did not receive any vending machine controls]	VM1a
03	[We received a different number of vending machine controls]	VM2
98	[Don’t know]	VM1a
99	[Refused]	

VM1a. Just to confirm, you did not receive <VMCtext> vending machine controls? [DO NOT READ]

01	[We did receive vending machine controls or received a different quantity]	VM2
02	[We did NOT receive any vending machine controls]	END Block
98	[Don’t know]	
99	[Refused]	

VM2. How many vending machine controls did you receive?

	[Record number]	VM3
98	[Don’t know]	
99	[Refused]	

VM3 . Are all these vending machine controls still installed?

01	Yes	VM6
02	No	VM4
98	[Don't know]	
99	[Refused]	

VM4. How many have been removed?

	[Record quantity]	VM5
98	[Don't know]	
99	[Refused]	

VM5. Why were these vending machine controls removed?

01	[Malfunctioned / Burnt out]	VM6
02	[Aesthetics – Didn't like them]	
03	[Unsatisfied with performance / light / temperature / etc.]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

VM6. Prior to the installation of the controls was/were the vending machines plugged into a wall outlet year around? [DO NOT READ]

01	[Yes]	VM7
02	[No]	
03	[Have not owned it for an entire year]	
98	[Don't know]	
99	[Refused]	

VM7. Are the machines in a high, medium or low traffic area of the building?

[IF NEEDED, A high traffic area is one in which people walk through or linger in the same areas occupied by the vending machine multiple times throughout the work shift, a medium traffic area would be defined as people walking by occasionally throughout the work shift and a low traffic area is defined as an out of the way area that people rarely walk by over the course of the shift]

01	High	
02	Medium	

03	Low	
98	[Don't know]	END BLOCK
99	[Refused]	

END vending machine BLOCK

START pre-rinse spray valves BLOCK

IF SPRAY ="Y"

Else IF SPRAY ="N", skip to Program delivery block

VERIFICATION - PRE-RINSE SPRAY VALVE

P1 . Our records show that <SPRAYtext> pre-rinse spray valves were installed by the program; does this sound correct to you? [DO NOT READ]

[IF NEEDED: Pre-Rinse Spray Valves are typically installed on the rinse area of commercial dishwashers and help reduce the amount of water used]

01	[Yes]	P3
02	[No, we did not receive any pre-rinse spray valves]	P1a
03	[We received a different number of pre-rinse spray valves]	P2
98	[Don't know]	P1a
99	[Refused]	

P1a. Just to confirm, you did not receive <SPRAYtext> pre-rinse spray valves? [DO NOT READ]

01	[We did receive pre-rinse spray valves or received a different quantity]	P2
02	[We did NOT receive pre-rinse spray valves]	END Block
98	[Don't know]	
99	[Refused]	

P2. How many pre-rinse spray valves did you receive?

	[Record number]	P3
98	[Don't know]	
99	[Refused]	

P3 . Are all the pre-rinse spray valves still installed and operational?

01	[Yes]	END Block
02	[No]	P4
98	[Don't know]	
99	[Refused]	

P4. How many have been removed?

	[Record quantity]	P5
98	[Don't know]	
99	[Refused]	

P5. Why were these pre-rinse spray valves removed?

01	[Malfunctioned / Burnt out]	END Block
02	[Water pressure wasn't strong enough]	
77	[OTHER - Record reason]	
98	[Don't know]	
99	[Refused]	

END pre-rinse spray valves BLOCK

END_1 THANK & TERMINATE Those are all of the questions I have for you today. Unless you have any questions for me we're finished. Thank you for your time and input in this verification study.

Low Income Program

MPPA - Income Qualified Program CATI Survey
January 2015

INTRODUCTION

Intro1. I'm trying to reach (<contact> at <address>)
Hello, my name is _____, and I'm calling on behalf of the income qualified program run by your utility. I'm calling to talk to you about some energy efficient equipment that was either given to you or installed at your home last year.

1	[Yes, name and address correct]	Intro2
2	[No, name incorrect, address correct]	Intro2
3	[No, name correct, address incorrect]	Intro2
4	[Never participated in income qualified program]	Terminate
5	[Neither name nor address correct	Terminate

[IF NEEDED] 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.

ntro2. Are you familiar with the equipment installed by the program? [PROMPT IF NEEDED: You may have received things like CFL's, LED light bulbs, LED night lights, smart power strips, etc.]

1	[Yes]	Intro6
2	[No]	Intro3
97	[Don't know]	
98	[Refused]	
3	[Never participated in income qualified program]	Terminate

I

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

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

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
97	[Don't know]	
98	[Refused]	

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

Intro6. What is your name?

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

START EQUIPMENT BLOCK:

IF Other="Y" then Repeat V1 to V5 for each measure that was installed (M1, M2, … Mx)

IF Other="N" then skip to CFL Block (C1)

NOTE to Programmer the maximum number of items for a participant is 6

Verification – Non-CFL measures

V1. Just to verify, did your utility install or give you a/an <M1, M2, … Mx> last year or this year?

1	Yes	V2
2	No	V1a
97	[Don't know]	Intro 3
98	[Refused]	

V1a. Just to confirm, you did not receive a/an <M1, M2, … Mx> from your utility this year?

1	Yes, we received equipment	V2
2	No, we did NOT receive any equipment	END Equipment Block
97	[Don't know]	Intro3
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/are this/these unit(s) still operational? [IF NEEDED; ARE COOLING UNITS OPERATIONAL DURING WARM WEATHER]

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

END Other Block

Repeat Other block for all measures installed (M1, M2, … Mx) – max repeats = 6

START CFL BLOCK

IF CFL="Y"

Else IF CFL="N", skip to Program Awareness (PA)

Next I would like to ask you about the various types of light bulbs you received through the program.

Verification – CFL measures

C1. Just to verify, did you receive one or more compact fluorescent light bulbs (CFL) from your utility this year?

1	Yes	C2
2	No	C1a
97	[Don't know]	C1a
98	[Refused]	

C1a. Just to confirm, you did not receive any compact fluorescent light bulbs from your utility this year?

1	Yes, we received CFLs	C2
2	No, we did NOT receive any CFLs	END CFL Block
97	[Don't know]	
98	[Refused]	

C2. Our records show you received <CFLqty> compact fluorescent light bulbs from your utility this year, does this sound correct?

1	Yes	C3
2	No	C2a
97	[Don't know]	C3
98	[Refused]	

C2a. How many CFL bulbs did you receive?

1	[Record quantity]	C3
2	[Did receive the quantity stated previously]	
97	[Don't know]	
98	[Refused]	

C3. Are you using these CFL light bulbs at <address>?

1	Yes	C4
2	No	
97	[Don't know]	
98	[Refused]	

C4. How many are currently installed in a light socket and being used (as opposed to being in storage)?

	[Enter quantity]	L1
2	[All of them installed]	
3	[None of them installed]	
97	[Don't know]	
98	[Refused]	

START LED BLOCK

IF LED="Y"

Else IF LED="N", skip to Program Awareness

[IF LEDnight > 0, ask L1-L3, else skip to L4]

LED BULBs. Repeat.

Verification – LED LIGHT BULBS

[IF LEDbulb > 0, ask L1-L3, else END LED Block]

L1. Our records show that you received <LEDbulb> LED light bulbs. Is this correct?

1	Yes	L2
2	No	L1a
97	[Don't know]	
98	[Refused]	

L1a. How many LED light bulbs did you receive?

1	[Enter quantity]	L2
2	None	END LED block
3	[Did receive the quantity stated previously]	L2
97	[Don't know]	L2
98	[Refused]	

L2. Are you using these LED light bulbs at <address>?

1	Yes	L3
2	No	
97	[Don't know]	
98	[Refused]	

L3. How many are currently installed in a light socket and being used (as opposed to being in storage)?

	[Enter quantity installed]	END LED block
2	[All of them installed]	
3	[None of them installed]	
97	[Don't know]	
98	[Refused]	

End LED BLOCK

START LED Nightlight BLOCK

[IF LEDnight > 0, ask NL1-NL3, else skip to S1]
LED night. Repeat.

Verification – LED NIGHT LIGHTS

NL1. Our records show that you received <LEDnight> LED night light(s). Is this correct?

1	Yes	NL2
2	No	NL1a
97	[Don't know]	
98	[Refused]	

NL1a. How many LED night lights did you receive?

1	[Enter quantity]	NL2
2	None	End LED Block
3	[Did receive the quantity stated previously]	NL2
97	[Don't know]	NL2
98	[Refused]	

NL2. Are you using these LED nightlights at <address>?

1	Yes	NL3
2	No	
97	[Don't know]	
98	[Refused]	

NL3. How many are currently installed in an outlet and being used as opposed to being in storage?

	[Enter quantity installed]	End NL Block
2	[All of them installed]	
3	[None of them installed]	
-97	[Don't know]	
-98	[Refused]	

END LED NIGHT LIGHT BULB BLOCK

Demographics

We're almost done. I just have a few more questions about the address where the equipment was installed.

D1. Do you own or rent?

1	[Own]	D2
2	[Rent]	
97	[Don't know]	
98	[Refused]	

D2. Is the building best described as a? READ LIST

1	Mobile home	D3
2	Single-family home detached from any other house	
3	Single-family home attached to one or more houses	
4	A building with 2 apartments	
5	A building with 3 or 4 apartments	
6	A building with 5 or more apartments	
77	[Other (specify)]	
97	[Don't know]	
98	[Refused]	

D3. Does your water heater operate on gas or electricity?

1	[Natural Gas]	D4
2	[Bottled Gas/Propane]	
3	[Electricity]	
97	[Don't know]	
98	[Refused]	

D4. What about your space heat source, does it operate on gas, electricity or oil?

1	[Natural Gas]	D5
2	[Bottled Gas /Propane]	
3	[Electricity]	
4	[Oil]	
97	[Refused]	
98	[Don't know]	

D5. Including yourself and children how many people live at this address year around?

	[RECORD #]	
97	[Don't know]	
98	[Refused]	D6

D6. What is *your* age?

	[RECORD #]	
97	[Don't know]	
98	[Refused]	D7

D7. [DO NOT ASK.] RECORD GENDER

1	[Male]	
2	[Female]	
97	[Don't know]	END_1

THANK & TERMINATE

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

Multifamily Program

Multi-Family Onsite Survey Form
2011 MPPA Energy Optimization Program

Contact:

Auditor:

Appt Day/ Time:

Phone:

Utility:

Company:

Address:

City:

Appointment Notes:

Verification

1st 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	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	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.

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

Appendix F On Site Verification Form

Commercial & Industrial Onsite Survey Form
2011 MPPA Energy Optimization Program

Contact:

Auditor:

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.)

Auditor Signature: Date:
Site Comments: