

2012 Energizing Indiana Programs

EM&V Report

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FINAL REPORT

Prepared for
The Indiana Demand Side Management
Coordination Committee

Submitted by

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EXECUTIVE SUMMARY

This report presents the assessment of the ex-ante, audited, verified, ex-post gross, and net energy savings achieved by the Energizing Indiana statewide Core programs during the first year of operations (program year one or PY1). In addition, the report includes process evaluation findings designed to document the operations of the programs and to enhance or improve the programs' operations in future years. This report was completed by the TecMarket Works Indiana Statewide Core Program Evaluation Team consisting of representatives from TecMarket Works (the Evaluation Administrator), The Cadmus Group, Opinion Dynamics, Integral Analytics, and Building Metrics (the Evaluation Team).

Energizing Indiana consists of five Core energy efficiency programs serving low-income customers, residential customers, commercial and industrial customers, and schools. Specifically, these programs include: 1) The Residential Home Energy Audit (HEA) program; 2) Residential Low-Income Weatherization (LIW) program (also referred to the Income-Qualified Weatherization program¹); 3) The Energy Efficient Schools (EES) Education and Building Assessment² programs; 4) The Residential Lighting program; and 5) The Commercial and Industrial (C&I) Prescriptive Rebates program.

The six utility companies taking part in the statewide Core program effort are Duke Energy, Vectren, Indianapolis Power & Light Company (IP&L), Indiana Michigan Power Company (I&M), Northern Indiana Public Service Company (NIPSCO), and the Indiana Municipal Power Agency (IMPA). The programs are administered by a third party, GoodCents (Program Administrator or Third-Party Administrator), who was hired through a competitive bid process in 2011.

The evaluation efforts included in this study are designed to meet among the highest reliability standards in the industry and conform to the definitions and requirements of the Indiana Evaluation Framework³. That Framework requires that the studies be reliable, such that they have a confidence level of 90% with a level of precision that is within plus or minus 10% over the standard three-year program cycle at the utility level and at the program level. This also means that because there are five programs sponsored by six utility companies, this evaluation provides 30 individual program impact assessments (5x6=30) reported across the six utility companies. The results of the utility-specific energy impacts assessments are then rolled up to report program-level energy impacts that achieve a 90% confidence level and $\pm 10\%$ precision interval for each program and the results in total. To be clear, while the savings reported in this PY1 evaluation are reliable at the program level, the highest level of utility-specific reliability will be reported at the end of the program cycle once all three years' worth of program sampling and evaluation analysis efforts have been completed and rolled up into the final program-cycle evaluation report (to be delivered in Spring of 2015). It should also be noted that all language and terminology in this report are written to be consistent with the DSM Impact Steps outlined in the Indiana Evaluation Framework and in the EM&V Methodology Overview section below (see page 35). Reviewers should reference these documents throughout the review of this report as needed.

In total, the programs reported achieving 73% of the planned ex-ante gross goal for kWh in 2012, or 416,666,806 kWh and 88,587 kW. Of this, the Evaluation Team verified accomplishments of

¹ The GoodCents Business Requirements Document (BRD) notes this program as the Low-Income Weatherization program, and the Energizing Indiana website lists it as the Income-Qualified Weatherization program. For this document we will refer to the program as the Low-Income Weatherization (LIW) program.

² The Building Assessment program was also referred to as the Energy Efficient Schools Audit program.

³ The Indiana Evaluation Framework, TecMarket Works, September 25, 2012, as updated with measure-level effective useful lives in February 2012. (Note: The studies also comply with the California Energy Efficiency Evaluation Protocols, TecMarket Works, April 2006).

294,986,472 kWh and 53,576.65 kW for an overall verified program realization rate of 71% for kWh and 60% for kW. The program's ex-post evaluated net savings were found to be 268,404,441 kWh and 69,053.50 kW. The net-to-gross (NTG) ratio for the kWh savings is .79, and for the kW savings is .75. Details on these totals are presented in table form below and are discussed in detail in each of the subsequent sections of this report.

Overall, at a high level, verified savings reported via this evaluation are significantly lower than the ex-ante gross savings reported by the Program Administrator. In several cases, the savings are also lower than the ex-ante gross savings being assumed for specific measures on a per-installation basis. While the ex-post net savings are usually lower than the ex-ante gross, the difference between the ex-ante projected gross and verified savings presented in this report is excessive. Several of the programs simply did not achieve the pre-established level-measure installation rates that were assumed when the programs were planned. The consistently seen discrepancies include:

- The types of homes served—far more gas heated and gas water heated homes were served than were assumed in planning⁴.
- Low installation rate compared to planning assumptions—the number of measures installed via the programs, were installed in lower volumes than the levels assumed by the Program Administrator during the planning phase.
- Lower volumes of participants than planned—several of the programs did not achieve the participation rates assumed during the planning stage.

While we note the significant difference between ex-ante gross projected savings and the ex-ante verified savings, we also are cognizant that this first evaluation report represents the first year of the operations of a new set of programs offered statewide in Indiana. Hiring and training new staff, and designing and launching new start-up energy efficiency program structures are always challenging, and it can typically take several months before savings are achieved. The Energizing Indiana programs were established in a manner that expected the Program Administrator to meet very aggressive energy-savings objectives that required high levels of participation immediately upon launch. In the view of the Evaluation Team, this is significantly challenging and typically not seen in the first year of new programming. This challenge was noted to the DSMCC and the Commission by the Evaluation Administrator during the pre-program planning hearings held at the Commission prior to the finalization of the GoodCents contract for services.

We recognize that planning for and launching a set of five statewide programs would be a challenge for any Program Administrator. Simply put, in the opinion of the Evaluation Team, there was not enough ramp-up time, allowing for the levels of increasing participation needed to meet the first year's savings targets. Based on where the programs are after PY1, and on the outcomes of this evaluation, considerable thought should be given to the balance of the program years' savings targets and whether or not the ex-ante goals for the three-year cycle can be achieved. Success in future years will likely be dependent on a number of variables:

1. Can the Program Administrator continue to ramp-up participation to meet basic unit goals outlined in the contract?

⁴ The Program Administrator assumed that 50% of HEA and LIW homes would have electric water heating and that 23% of LIW homes would have electric heat and central air conditioning. However, based on program data, for LIW 33% of homes had electric water heaters and 13% of homes had electric heat and central air. For HEA, 30.7% of households had electric water heating.

2. Can the Program Administrator change the mix of homes served to achieve the highest amount of electric savings possible, while limiting time and expense spent on gas measures that do not help meet the Core program goals?
3. Will customer recognition and awareness of Energizing Indiana grow enough to increase demand in the market for these programs?
4. Can the Program Administrator make changes to the program implementation approach that serves to maximize the number of measures installed in homes and businesses across the state?
5. Can the utility-run Core and Core Plus programs evolve and collaborate in ways that contribute to the success of each?

If the Program Administrator focuses significant efforts on correcting the conditions that are leading to lower-than-expected ex-ante gross savings, and if they can improve the measure-installation rates for the measures covered by the program, there is a strong probability that two things can occur. The verified savings can be increased, and the Program Administrator can make major progress toward making up the PY1 gap and achieving the contracted ex-ante gross energy savings goals across the three-year cycle.

It is critical to note that the Evaluation Team does not believe that the current approach for projecting ex-ante gross savings should be continued. While each program is different, ex-ante gross savings should be counted at the measure level and only for measures that are installed and being used by participants in ways that produce the expected savings. Currently, programs like the Home Energy Audit (HEA) and Low-Income Weatherization (LIW) use a per-house ex-ante savings approach; that is, the assumption is that the same mix of measures is installed in each home. Because the Program Administrator did not install the number of measures assumed in the planning process in the types of homes they expected, the per-home ex-ante gross savings were higher than the audited and verified savings the Evaluation Team found for the program. Because progress toward utility goals is measured at the verified level, this gap as well as shortfalls in the achieved ex-ante savings will require the programs to make up savings in PY2 and PY3. It will be critically important for the Program Administrator to increase the rates of participation or the level of installations, or both, in order to have the programs perform at the required level needed to reach energy-savings goals.

While the program struggled with meeting the planning targets and ex-ante goals, there were many overall positive outcomes that the Evaluation Team highlights below and throughout this report. Notably, these positives indicate that PY2 and PY3 will be delivered upon a fairly solid base that was built in PY1. These positives outcomes include:

1. Generally, participants indicated high satisfaction with the program and their experience with individual programs.
2. Several programs experienced significant growth in participation rates in the last few months of PY1, which indicates through trending that volume may be increasing to the levels needed to meet program goals in future years, but only if this growth is continued and sustained.
3. A fully ramped-up Program Team is in place; the Program Administrator now has experienced staff in place who can focus on program delivery in the upcoming years.
4. The level and quality of marketing and outreach efforts were regarded as appropriate for most of the programs.
5. Coordination between the Third-Party Administrator and some of the utilities' Core Plus programs shows signs of working well (e.g., Core Plus programs). That is, for some utilities the

Core and Core Plus programs are beginning to help customers know about the offers of these other programs, potentially increasing participation in both or either of the programs. If this leveraged marketing can be increased, thereby increasing total savings, the potential for reaching the overall Core and Core Plus combined goals is increased. This could provide an important basis for the balance of the three-year statewide cycle.

Detailed program-specific energy impact and process evaluation findings are provided in this report. The above findings are important enough to be placed up front in the Executive Summary, but it should be noted that they are more general in nature and apply to multiple programs. Readers are directed to the program-specific evaluation findings for summaries of program-specific evaluation results.

PROGRAM DESCRIPTIONS

Energizing Indiana is described as “a united effort by the Indiana Office of Utility Consumer Counselor (OUCC), participating utilities, and consumer organizations to offer comprehensive energy efficiency programs that bring savings to communities across the state.” The program consists of five Core offerings that are delivered by an independent third-party administrator, GoodCents. The year 2012 represented the first year (PY1) of a three-year program cycle for Energizing Indiana. The Energizing Indiana programs include offerings for homes, schools, businesses, and commercial facilities. Table 1 provides a program-by-program summary of the Energizing Indiana offerings.

Table 1: Program Descriptions

Program	Brief Program Description
Residential Home Energy Audit (HEA)	This program provides a free walk-through energy audit that analyzes participant energy use; assesses the heating, ventilation, and air conditioning (HVAC) systems in a home; recommends weatherization measures or upgrades; and facilitates the direct installation of low-cost energy-saving measures including low-flow showerheads, Compact Fluorescent Lamp (CFL) bulbs, sink aerators, pipe wrap, and water heater tank wrap.
Low-Income Weatherization (LIW)	This program provides a free walk-through audit that includes all HEA offerings, with the addition of full diagnostic testing (blower-door) for the home. Auditors recommend weatherization measures or upgrades that facilitate the direct installation of low-cost energy-saving measures including low-flow showerheads, CFL bulbs, sink aerators, pipe wrap, and water heater tank wraps. In addition, eligible homes may receive the installation of air sealing and attic insulation through the program.

Program	Brief Program Description
Energy Efficient Schools (EES) Education and Building Assessment	<p>This program has two components. The first, the Education program, works with fifth- and sixth-grade students to help them learn about energy efficiency and how they can make an impact at their school and home. Participating schools receive classroom curriculum education and Energizing Indiana take-home efficiency kits.</p> <p>The second, the Building Assessment program, works with schools to assess their HVAC systems to determine if they are operating efficiently. The results of this assessment are used to guide schools to the appropriate upgrades and rebates that may be available through the Commercial and Industrial (C&I) program or other Core Plus programs.</p>
Residential Lighting	<p>This program works with retailers and manufacturers to offer bought-down pricing on CFLs, ENERGY STAR[®]-qualified fixtures, ceiling fans, and Light Emitting Diode lamps (LEDs) at the point of purchase.</p>
Commercial and Industrial (C&I) Prescriptive Rebates	<p>This program provides prescriptive rebates to commercial and industrial facilities based on the installation of energy efficiency equipment and system improvements. Upgrades can include Lighting, Variable Frequency Drives (VFDs), HVAC, and efficient ENERGY STAR commercial kitchen appliances. In addition, the program offered direct-mail CFLs kits starting in the fall of 2012.</p>

BUDGET AND EXPENDITURES

Overall, the Program Administrator spent 57% of the PY1 implementation budget for all programs evaluated in this report in 2012. Spending was fairly consistent across utilities, although spending in the I&M territory, where there was more overall program activity for several of the programs, significantly outpaced spending in the other utility territories. Overall spending by program aligns with the savings achieved on behalf of the utilities by the Program Administrator, suggesting that savings and spending were pacing each other appropriately. Table 2 shows the budgets and reported expenditures by utility at the statewide level⁵.

Table 3 shows the by-program spending, including spending for the branding effort not assessed as part of this evaluation.

⁵ Budget data was provided to the Evaluation Team by GoodCents.

Table 2: Budget to Expenditures by Utility and Statewide⁶

Utility	Available Budget	Reported Expenditures	% of Budget Utilized
Duke	\$28,513,436	\$14,891,021	52%
I&M	\$8,506,750	\$6,328,630	74%
IPL	\$14,685,488	\$8,039,949	55%
IMPA	\$5,127,801	\$2,486,986	49%
NIPSCO	\$11,519,895	\$6,836,475	59%
Vectren	\$6,047,324	\$3,813,826	63%
Statewide	\$74,400,693	\$42,396,888	57%

Table 3: Budget and Expenditures

Program	2012 Budget	Reported Expenditures	% of Budget Utilized
Residential Home Energy Audit	\$17,572,792.45	\$10,149,143.28	58%
Low-Income Weatherization	\$5,875,457.02	\$5,875,818.78	100%
Energy Efficient Schools	\$7,347,906.20	\$7,302,787.83	99%
Residential Lighting	\$6,290,026.70	\$6,200,456.17	99%
C&I	\$37,314,510.80	\$12,868,681.48	34%
Branding	\$689,544.00	\$689,544.00	100%

The Commercial and Industrial (C&I) program came in furthest from the program spending target.

EX-ANTE SAVINGS SUMMARY

Ex-ante savings reflect the reported savings values provided by the Program Administrator. These are the savings reported by the Program Administrator in the program-tracking information aggregated, and reported in the GoodCents Portal.

Across all of the energy efficiency programs, the Program Administrator achieved 73% of its 2012 planned program energy savings goals, and 63% of its planned demand savings. Overall, the DSMCC portfolio fell short of the planning goal by 157,460,794 kWh and 52,127 kW. The Low-Income Weatherization (LIW) program and Energy Efficient Schools (EES) programs came in closest to the planned savings total at 100% and 98% of kWh, respectively. The Commercial and Industrial (C&I) and Home Energy Audit (HEA) programs fell farthest from meeting the planning goal, coming in at 63% and 62% of kWh goal, respectively. Table 4 provides a summary of the Program Administrator's ex-ante⁷ savings compared to the planned savings for 2012. These savings do not present any adjustments (e.g.,

⁶ Budget data was provided to the Evaluation Team by GoodCents.

⁷ Reported or ex-ante sales are based on the GoodCents Portal reports represented by utility results from January 1, 2012, through December 31, 2012. <https://indiana.goodcents.com/>.

they do not reflect any evaluation activity) from the Evaluation Team, and simply show the savings as reported by the Program Administrator for the year 2012.

Table 4: 2012 Statewide Ex-Ante Savings by Program

Program	kWh			kW			Therms
	Goal	Ex-Ante	% of Goal	Goal	Ex-Ante	% of Goal	Ex-Ante
Home Energy Audit	52,357,368	32,293,623	62%	23,325	14,407.00	62%	NA
Low-Income Weatherization	9,877,800	9,877,800	100%	4,265	4,266.00	100%	345,657
Energy Efficient Schools	30,968,505	30,313,815	98%	NA	NA	NA	175,526
Residential Lighting	121,664,925	117,805,969	97%	19,444.20	18,827.45	97%	0
Commercial and Industrial	359,259,002	226,375,599	63%	93,680	51,087	55%	NA
Statewide Total	574,127,600	416,666,806	73%	140,714	88,587	63%	521,183

*Only two of the programs were identified by GoodCents as having therm goals, and only for two of the six utilities.

AUDITED SAVINGS SUMMARY

Audited savings reflect program savings after they have been reviewed by the Evaluation Team. The Team completed the audit of the Energizing Indiana savings by reviewing the programs' tracking databases; comparing results against the ex-ante energy savings numbers reported by the Program Administrator, including adjusting for incidence of measures; and ensuring that program ex-ante savings were applied correctly to a sampling of measures. Based on any findings, the Team made adjustments, as necessary, to correct for any errors or omissions as identified above, then recalculated program savings based on the adjusted audited number of measures. Table 5 provides a comparison of the total audited savings by program for the year 2012 against the ex-ante savings reported by the Program Administrator.

Table 5: 2012 Statewide Audited Savings by Program

Program	kWh Ex-Ante	kWh Audited	kW Ex-Ante	kW Audited	Therms Ex-Ante	Therms Audited
Home Energy Audit	32,293,623	23,607,570	14,407.00	11,581.42	231,379	664,650
Low-Income Weatherization	9,877,800	5,261,427	4,265.50	3,275.41	345,657	676,697
Energy Efficient Schools	30,313,815	30,313,815	NA	NA	175,526	175,502
Residential Lighting	117,805,969	117,701,601	18,827.45	18,793.53	0	0
Commercial and Industrial	226,375,599	217,830,865	51,086.68	47,856.18	NA	NA
Statewide Total	416,666,806	394,715,278	88,586.63	81,506.54	752,562	1,516,849

The audited savings for Residential Lighting program, Commercial and Industrial (C&I) program, and Energy Efficient Schools (EES) program are quite close to the ex-ante savings, coming in at 99%, 96% and 100%. In contrast, the audited savings for the Home Energy Audit (HEA) and Low-Income Weatherization (LIW) programs are significantly lower than reported. This is not because of errors in the count of total homes served, but because the makeup of measures actually installed in the homes and the type of homes served (electric versus gas heat) were significantly different than assumed in the planning

stage. Thus, while the Program Administrator assumed that 50% of all homes served by the HEA program would receive water heater wraps, less than 1% of homes were actually treated with this measure. Additional details on the audited savings for each program can be found in subsequent sections of this report. In addition, the Evaluation Team has provided utility-specific Technical Volumes that have been delivered in tandem with this report. These volumes present the detailed by-utility analyses that were completed to develop the statewide savings numbers presented throughout this report.

VERIFIED SAVINGS SUMMARY

Verified savings are computed after confirming that measures have been installed and were found to be operating, by applying a statewide installation and persistence rate to the audited savings calculated above. Verification typically employs the detailed analysis of a stratified random sample of installations. Typical methods for collecting necessary data include telephone surveys and/or site visits. In this step, adjustments are made to the audited (above) savings to address issues such as measures rebated but never installed; measures not meeting program qualifications; measures installed but later removed; or measures improperly installed.

This step does not alter the per-measure ex-ante deemed saving values being claimed by the Program Administrator. For 2012, the Core programs had a goal of delivering 574,397 MWh and 140,714 kW in verified energy savings. Table 6 and Table 7 compares the ex-ante savings to the verified savings by program in total. Table 8 provides the utility breakouts.

Note that details on the verified savings shown below are provided in each of the program sections in this report.

Table 6: 2012 Statewide Ex-Ante and Verified Savings by Program – Energy

Program	kWh Ex-Ante	Verified kWh	kWh Realization Rate	kW Ex-Ante	Verified kW	kW Realization Rate
Home Energy Audit	32,293,623	17,190,585	53%	14,407.00	7,866.62	55%
Low-Income Weatherization	9,877,800	4,118,006	42%	4,265.50	2,570.39	60%
Energy Efficient Schools	30,313,815	28,718,896	95%	NA	NA	NA
Residential Lighting	117,805,969	92,944,602	79%	18,827.45	14,858.04	79%
Commercial and Industrial	226,375,599	152,014,384	67%	51,086.68	28,282	55%
Statewide Total	416,666,806	294,986,472	71%	88,586.63	53,576.64	60%

Table 7: 2012 Statewide Ex-Ante and Verified Savings by Program – Therms

Program	Therms Ex-Ante	Verified Therms	Therms Realization Rate
Home Energy Audit	231,379	573,383	287% ⁸
Low-Income Weatherization	345,657	659,946	191%
Energy Efficient Schools	175,526	160,125	91%
Residential Lighting	0	0	0%
Commercial and Industrial	NA	NA	NA
Statewide Total	752,562	1,393,454	185%

⁸ The Program Administrator only tracked therms savings information for two participating utilities.

Table 8: Statewide Ex-Ante and Verified Savings by Program by Utility – Energy

Program	2012 kWh Ex-Ante	2012 Verified kWh	kWh Realization Rate	2012 kW Ex-Ante	2012 Verified kW	kW Realization Rate
DUKE						
Home Energy Audit	6,368,469	3,499,648	0.55	2,841.00	1,532.99	0.54
Low-Income Weatherization	3,125,688	1,388,300	0.44	1,350.00	773.54	0.57
Energy Efficient Schools	16,450,650	15,585,122	0.95	N/A	NA	NA
Residential Lighting	43,553,056	34,338,302	0.79	6,960.53	5,511.83	0.79
Commercial and Industrial	92,696,419	64,678,069	0.70	19,088.00	10,718.00	0.56
TOTAL DUKE	162,194,282	119,489,441	0.74	30,239.53	18,536.36	0.61
I&M						
Home Energy Audit	4,238,031	2,343,867	0.55	1,883.86	1,062.80	0.56
Low-Income Weatherization	1,723,888	708,364	0.41	744.30	462.91	0.62
Energy Efficient Schools	2,058,312	1,950,017	0.95	NA	NA	NA
Residential Lighting	20,956,767	16,641,948	0.79	3,349.26	2,660.83	0.79
Commercial and Industrial	38,487,311	25,527,031	0.66	8,795.00	4,921.00	0.56
TOTAL I&M	67,464,309	47,171,227	0.70	14,772.42	9,107.54	0.62
IPL						
Home Energy Audit	10,934,024	5,690,564	0.34	4,875.82	2,567.00	0.53
Low-Income Weatherization	1,051,024	446,148	0.42	454.00	262.47	0.58
Energy Efficient Schools	4,127,466	3,910,305	0.95	NA	NA	NA
Residential Lighting	20,790,327	16,391,731	0.79	3,322.66	2,608.78	0.79
Commercial and Industrial	29,951,735	20,785,007	0.69	6,539.00	3,664.00	0.56
TOTAL IPL	66,854,576	47,223,755	0.71	15,191.48	9,102.25	0.60
IMPA						
Home Energy Audit	1,752,072	932,516	0.53	777.93	420.97	0.54
Low-Income Weatherization	391,200	180,372	0.46	169.00	103.87	0.61
Energy Efficient Schools	1,084,200	1,027,156	0.95	NA	NA	NA
Residential Lighting	5,715,155	4,492,942	0.79	913.38	714.50	0.78
Commercial and Industrial	19,503,585	13,931,261	0.71	4,928.00	2,850.00	0.58
TOTAL IMPA	28,446,212	20,564,247	0.72	6,788.31	4,089.34	0.60
NIPSCO						
Home Energy Audit	5,198,223	2,611,307	0.50	2,352.71	1,304.85	0.55
Low-Income Weatherization	2,268,960	831,650	0.37	980.00	619.54	0.63

Program	2012 kWh Ex-Ante	2012 Verified kWh	kWh Realization Rate	2012 kW Ex-Ante	2012 Verified kW	kW Realization Rate
Energy Efficient Schools	4,808,844	4,555,833	0.95	NA	NA	NA
Residential Lighting	17,586,488	13,787,432	0.78	2,810.63	2,198.16	0.78
Commercial and Industrial	30,162,786	17,035,343	0.56	8,301.00	4,337.00	0.52
TOTAL NIPSCO	60,025,301	38,821,565	0.65	14,444.34	8,459.55	0.59
VECTREN						
Home Energy Audit	3,802,803	2,112,683	0.56	1,675.84	977.40	0.58
Low-Income Weatherization	1,317,040	563,171	0.43	569.00	348.06	0.61
Energy Efficient Schools	1,784,343	1,690,462	0.95	NA	NA	NA
Residential Lighting	9,204,176	7,292,246	0.79	1,470.99	1,163.94	0.79
Commercial and Industrial	15,573,763	10,057,674	0.65	3,436.00	1,792.00	0.52
TOTAL VECTREN	31,682,125	21,716,236	0.69	7,151.83	4,281.40	0.60

Table 9: Statewide Ex-Ante and Verified Savings by Program by Utility – Therms

Program	2012 Therms Ex-Ante*	2012 Verified Therms	Therms Realization Rate
DUKE			
Home Energy Audit	NA	102,624	NA
Low-Income Weatherization	NA	112,355	NA
Energy Efficient Schools	NA	NA	NA
Residential Lighting	NA	NA	NA
Commercial and Industrial	NA	NA	NA
TOTAL DUKE	NA	214,979	NA
I&M			
Home Energy Audit	NA	83,064	NA
Low-Income Weatherization	NA	116,865	NA
Energy Efficient Schools	NA	NA	NA
Residential Lighting	NA	NA	NA
Commercial and Industrial	NA	NA	NA
TOTAL I&M	NA	199,929	NA
IPL			
Home Energy Audit	NA	187,765	NA
Low Income Weatherization	NA	74,829	NA
Energy Efficient Schools	NA	NA	NA
Residential Lighting	NA	NA	NA
Commercial and Industrial	NA	NA	NA
TOTAL IPL	NA	262,594	NA
IMPA			
Home Energy Audit	NA	29,412	NA
Low-Income Weatherization	NA	17,961	NA
Energy Efficient Schools	NA	NA	NA
Residential Lighting	NA	NA	NA
Commercial and Industrial	NA	NA	NA
TOTAL IMPA	NA	47,373	NA
NIPSCO			
Home Energy Audit	132,600	104,655	79%
Low-Income Weatherization	218,970	255,032	116%
Energy Efficient Schools	127,828	116,790	91%
Residential Lighting	0	NA	0
Commercial and Industrial	NA	NA	NA
TOTAL NIPSCO	479,398	476,477	99%

Program	2012 Therms Ex-Ante*	2012 Verified Therms	Therms Realization Rate
VECTREN			
Home Energy Audit	98,779	65,862	67%
Low-Income Weatherization	126,687	82,904	65%
Energy Efficient Schools	65,401	43,335	66%
Residential Lighting	0	NA	0
Commercial and Industrial	NA	NA	NA
TOTAL VECTREN	290,867	192,101	66%

*Ex-ante therm savings provided by GoodCents, programs without therm goals do not have a realization rate (NA).

EX-POST AND NET SAVINGS SUMMARY

Ex-post gross evaluated savings for the Energizing Indiana programs for PY1 are determined through engineering analysis, building-simulation modeling, billing analysis, metering analysis, or other accepted impact-evaluation methods. Adjustments made at this point reflect engineering adjustments made to the ex-ante per-measure savings that were claimed by the program and outlined in the Business Requirement Document⁹, and do not include net adjustments. Adjustments to the verified savings may include changes to the baseline assumption, adjustments for weather, adjustments for occupancy levels, adjustments for decreased or increased production levels, and other adjustments following from the impact analysis approach. The engineering analysis for each measure type included in each program is discussed in the program-specific sections below.

Net savings reflect the ex-post savings with the net-to-gross (NTG) ratio applied to ex-post evaluated gross savings estimates to account for a variety of circumstances, including savings-weighted free rider and spillover effects. Net savings are provided and achieve a 90% confidence and +/-10% precision interval for each program¹⁰.

Table 10 and Table 11 provide the program-level ex-post gross and net savings and the utility-level ex-post gross and net savings.

⁹ From “Demand-Side Management Coordination Committee Independent Third Party Administrator Statement of Work.” January 28, 2013.

¹⁰ PY1 confidence and precision levels are 90/10 at the statewide level. Utility level 90/10 will be achieved at the end of PY3.

Table 10: 2012 Statewide Ex-Post and Net Savings by Program¹¹

Program	kWh			kW			Therms		
	Ex-Post	NTG Ratio	Net	Ex-Post	NTG Ratio	Net	Ex-Post	NTG Ratio	Net
Home Energy Audit	17,939,625	0.89	15,960,939	2,030.00	0.89	1,804.00	1,718,321	1.00	1,720,108
Low-Income Weatherization	6,995,190	1.00	6,995,190	807.01	1.00	807.01	578,463	1.00	578,463
Energy Efficient Schools	40,566,432	1.02	41,414,941	4,600.00	1.09	5,010.99	977,932	1.21	1,147,481
Residential Lighting	91,411,428	0.57	52,104,514	10,867.56	0.57	6,194.51	(1,747,283)	0.57	(995,951)
Commercial and Industrial	182,642,707	0.83	151,928,857	74,342	0.74	55,237	0	NA	0
Statewide Total	339,555,382	0.79	268,404,441	92,646.57	0.75	69,053.51	1,527,433	1.60	2,450,101

Table 11: 2012 Statewide Ex-Post and Net Savings by Program by Utility

Program	kWh			kW			Therms		
	Ex-Post	NTG	Net	Ex-Post	NTG	Net	Ex-Post	NTG	Net
DUKE									
Home Energy Audit	3,664,688	0.89	3,271,487	404.95	0.89	361.06	333,256	1.00	334,184
Low-Income Weatherization	2,211,178	1.00	2,211,178	204.07	1.00	204.07	128,136	1.00	128,136
Energy Efficient Schools	23,470,892	1.03	24,081,247	2,563.30	1.09	2,792.58	435,551	1.19	518,838
Residential Lighting	33,886,113	0.57	19,315,084	4,028.37	0.57	2,296.17	(647,720)	0.57	(369,200)
Commercial and Industrial	58,073,046	0.88	51,269,915	47,154	0.68	31,961	0	NA	0
TOTAL DUKE	121,305,917	0.83	100,148,911	54,355	0.69	37,615	249,223		611,958

¹¹ Note that the NTG ratios provided above represent the total for the program and all its components (e.g. the C&I prescriptive effort has a NTG of .58 and while the bulb drop received a NTG of well over one, when all ex-post and all Net savings are combined the program level blended NTG is .86). NTG for individual components are reported within each program section.

Program	kWh			kW			Therms		
	Ex-Post	NTG	Net	Ex-Post	NTG	Net	Ex-Post	NTG	Net
								2.46	
I&M									
Home Energy Audit	2,456,323	0.89	2,180,481	275.39	0.89	243.87	239,344	1.00	238,605
Low-Income Weatherization	1,315,530	1.00	1,315,530	110.10	1.00	110.10	107,876	1.00	107,876
Energy Efficient Schools	2,770,869	1.02	2,822,012	306.54	1.09	334.38	79,306	1.16	91,804
Residential Lighting	16,337,807	0.57	9,312,550	1,942.27	0.57	1,107.09	(312,288)	0.57	(178,004)
Commercial and Industrial	30,972,533	0.81	25,093,655	6,630.00	0.86	5,730.00	0	NA	0
TOTAL I&M	53,853,062	0.76	40,724,228	9,264	0.81	7,525	114,238	2.28	260,281
IPL									
Home Energy Audit	6,010,373	0.89	5,355,687	681.45	0.89	606.41	562,989	1.00	565,499
Low-Income Weatherization	919,212	1.00	919,212	89.34	1.00	89.34	75,548	1.00	75,548
Energy Efficient Schools	5,738,881	1.02	5,851,412	625.05	1.09	680.16	156,807	1.16	181,568
Residential Lighting	16,091,318	0.57	9,172,051	1,913.50	0.57	1,090.70	(307,566)	0.57	(175,313)
Commercial and Industrial	27,312,033	0.79	21,706,520	5,186	0.88	4,559.00	0	NA	0
TOTAL IPL	56,071,817	0.77	43,004,882	8,495.34	0.83	7,025.61	487,778	1.33	647,302
IMPA									
Home Energy Audit	973,979	0.89	866,122	110.24	0.89	97.87	89,496	1.01	89,982
Low-Income Weatherization	330,926	1.00	330,926	30.01	1.00	30.01	19,175	1.00	19,175
Energy Efficient Schools	1,463,005	1.02	1,491,303	163.12	1.09	177.58	37,299	1.17	43,537

Program	kWh			kW			Therms		
	Ex-Post	NTG	Net	Ex-Post	NTG	Net	Ex-Post	NTG	Net
Residential Lighting	4,408,674	0.57	2,512,944	524.10	0.57	298.74	(84,272)	0.57	(48,035)
Commercial and Industrial	18,187,831	0.86	15,571,787	4,228.00	0.89	3,779.00	0	NA	0
TOTAL IMPA	25,364,415	0.82	20,773,082	5,055.47	0.87	4,383.20	61,698	1.70	104,659
NIPSCO									
Home Energy Audit	2,652,409	0.89	2,357,536	313.21	0.89	278.24	298,167	0.99	295,770
Low-Income Weatherization	1,273,453	1.00	1,273,453	174.79	1.00	174.79	163,783	1.00	163,783
Energy Efficient Schools	4,626,279	1.00	4,637,948	672.85	1.09	733.85	211,890	1.16	246,448
Residential Lighting	13,530,379	0.57	7,712,316	1,608.48	0.57	916.83	(258,630)	0.57	(147,419)
Commercial and Industrial	30,775,928	0.85	26,186,805	7,699	0.87	6,667	0	NA	0
TOTAL NIPSCO	52,858,448	0.80	42,168,058	10,468	0.84	8,771	415,210	1.35	558,582
VECTREN									
Home Energy Audit	2,181,854	0.88	1,929,626	244.97	0.88	216.67	195,069	1.01	196,068
Low-Income Weatherization	944,890	1.00	944,890	198.70	1.00	198.70	83,944	1.00	83,944
Energy Efficient Schools	2,496,506	1.01	2,531,019	268.87	1.09	292.45	57,078	1.14	65,285
Residential Lighting	7,157,136	0.57	4,079,568	850.84	0.57	484.98	(136,806)	0.57	(77,979)
Commercial and Industrial	17,321,336	0.70	12,100,174	3,445	0.74	2,541	0	NA	0
TOTAL VECTREN	30,101,722	0.72	21,585,277	5,008	0.75	3,734	199,285	1.34	267,318

SUMMARY OF IMPACT ADJUSTMENTS

Table 12: Summary of PY1 Planned, Ex-Ante, Audited, Verified, Ex-Post, and Net Statewide kWh Savings

Program	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh First Year	Ex Post kWh Lifetime	Net kWh First Year	Net kWh Lifetime
Home Energy Audit	52,357,368	32,293,623	23,607,570	17,190,585	53%	17,939,625	94,900,617	15,960,939	84,433,367
Low-Income Weatherization	9,877,800	9,877,800	5,261,427	4,118,006	42%	6,995,190	56,952,468	6,995,190	56,952,468
Energy Efficient Schools	30,968,505	30,313,815	30,313,815	28,718,896	95%	40,566,432	248,614,575	41,414,941	257,088,383
Residential Lighting	121,664,925	117,805,969	117,701,601	92,944,602	79%	91,411,138	457,055,690	52,104,514	260,522,570
Commercial and Industrial	359,259,002	226,375,599	217,830,865	152,014,384	67%	182,642,707	1,263,147,435	151,928,857	1,026,404,749
Statewide	574,127,600	416,666,806	394,715,278	294,986,472	71%	339,555,092	2,120,670,785	268,404,441	1,685,401,538

Table 13: Summary of Planned, Ex-Ante, Audited, Verified, Ex-Post, and Net Statewide kW Savings

Program	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW First Year	Ex-Post kW Lifetime	Net kW First Year	Net kW Lifetime
Home Energy Audit	23,325.00	14,407.00	11,581.40	7,866.60	55%	2,030.20	2,030.20	1,804.13	1,804.13
Low-Income Weatherization	4,264.50	4,265.51	3,275.41	2,570.39	60%	807.01	807.01	807.01	807.01
Energy Efficient Schools	NA	NA	NA	NA	NA	4,600.00	4,600.00	5,010.99	5,010.99
Residential Lighting	19,444.17	18,827.45	18,793.53	14,858.04	79%	10,867.56	10,867.56	6,194.51	6,194.51
Commercial and Industrial	93,680.00	51,086.68	47,856.18	28,281.59	55%	74,342.00	74,342.00	55,237.00	55,237.00
Statewide	140,713.67	88,586.64	81,506.52	53,576.62	60%	92,646.77	92,646.77	69,053.64	69,053.64

Table 14: Summary of Planned, Ex-Ante, Audited, Verified, Ex-Post, and Net Statewide Therm Savings

Program	Planned Therms	Ex-Ante Therms	Audited Therms	Verified Therms	Realization Rate	Ex-Post Therms First Year	Ex-Post Therms Lifetime	Net Therms First Year	Net Therms Lifetime
Home Energy Audit	NA	231,379	664,650	573,383	248%	1,718,321	13,024,869	1,720,108	13,038,419
Low-Income Weatherization	NA	345,657	676,697	659,946	191%	578,463	6,570,840	578,463	6,570,840
Energy Efficient Schools	193,229	175,526	175,502	160,125	91%	977,932	6,390,928	1,147,481	7,373,152
Residential Lighting	NA	NA	NA	NA	NA	(1,747,283)	(8,736,414)	(995,951)	(4,979,755)
Commercial and Industrial	NA	NA	NA	NA	NA	0	0	0	0
Statewide	193,229	752,562	1,516,849	1,393,454	185%	1,527,433	17,250,223	2,450,101	22,002,656

CORE PROGRAMS HIGH-LEVEL INSIGHT AND FINDINGS

Below is a summary of the key findings for each of the five Core programs offered through Energizing Indiana. Additional detail on each program is provided in the program sections that follow.

Home Energy Assessment

The Home Energy Assessment (HEA) program offers a walk-through audit and direct installation of energy efficiency measures. In 2012, the program achieved 62% of its energy savings goals and 62% of its demand savings goals while using 58% of its budget. Key evaluation findings include:

HEA participants¹² are satisfied with the program—especially with the professionalism of the auditors. On a scale of 0-10, overall satisfaction with the program was 8.8. Participants were most satisfied with the professionalism of the auditor, which scored a 9.6. The vast majority of participants (74%) could not list anything that could be done to improve the program.

The incidence rates found in the program database are lower than the estimated incidence rates, or the frequency of installation per measure across homes, used in program planning. Fewer measures are being installed in each home than the program planned, and measures meant to capture electric savings are being installed in homes with natural gas water heating. This lowers the amount of total savings achieved in the home. In addition, the participant survey showed that measures left behind might be hurting overall installation rates because participants had not yet installed them on their own at the time of the survey¹³. Finally, participants reported that they did not remove measures once they were installed, which resulted in high near-term persistence rates.

There were a number of issues with the program-tracking database. The program auditors are not consistently entering, or clearly identifying, the measures that are left behind in participants' homes and not installed. The program has some other data challenges. One challenge involves the lack of a data dictionary, which provides a definition for each field in a program database, its purpose, inputs, and data ranges, and is considered a best practice for energy efficiency program databases. Another challenge stems from inconsistent and ill-defined data-entry protocols for program staff/auditors, which lead to different tracking units (for example, BTUs versus tons) in the same fields. Likewise, auto-populate features included in the Optimizer Tool make it difficult to distinguish real from proxy data.

The net-to-gross (NTG) ratio was calculated at the measure level. Tank wrap (100%), pipe wrap (93%), and aerators (93%) had the highest program attribution, while CFLs had the lowest (77%) which is similar to other utility programs nationally.

Low-Income Weatherization

The Low-Income Weatherization (LIW) program provides a walk-through audit and the direct installation of energy efficiency measures, including blower door-guided air sealing. Health and safety checks are also performed, and qualified homes may receive attic insulation. In 2012, the program achieved 100% of its kWh savings goal and 100% of its demand savings goal while using 100% of its budget. Key evaluation findings include:

¹² Note that the participant survey only covered the first 10 months of the year. Significant increases in participation and the number of auditors may have changed overall program satisfaction. Please see the program-specific section for more details on this.

¹³ The program will get eventual credit for CFLs left behind in PY1 but not installed at the time of the survey. 55% will be credited in PY2 and 44% in PY3, with 1% assumed to never be installed per the Indiana TRM.

Survey data shows that 85% of participants are satisfied with the program overall¹⁴, and a majority (55%) could not list anything that could be done to improve the program. The highest areas of satisfaction were the length of the audit and the professionalism of the auditor.

Measure incidence rates, or the frequency of installation per measure across homes, in the program database are lower than planned by the Program Administrator, and measures meant to capture electric savings are being installed in homes with natural gas water heating. Auditors are also leaving several program measures behind with the participant to install later, rather than installing them at the time of the audit. This has resulted in much lower than anticipated installation rates. For example, CFLs have an installation rate of 78.6%¹⁵, while in a neighboring state the installation rate was about 20% higher.

Once program measures are installed, persistence rates are very high¹⁶. Persistence rates for program measures range from 97.2% for low-flow showerheads to 100% for pipe wraps. The program should ensure that auditors are installing as many program measures as possible in a participant's home. If measures are left behind, they should be tracked separately in the program database.

There were several issues with the program-tracking database. The Program Administrator is not separately tracking measures that are left behind with the participant to install later. There are also several other issues related to the program data-tracking which make data analysis challenging, including inconsistent and poorly defined data-entry protocols for program staff/auditors to follow, different tracking units (e.g., BTUs versus tons) being used in the same fields, using the auto-populate function, and the lack of a data dictionary¹⁷.

Energy Efficient Schools

The Energy Efficiency Schools (EES) program offers energy efficiency kits to students and energy assessments of school buildings at no cost. In 2012, the program achieved 98% of its energy savings goals and 91% of its energy savings goals while using 99% of its budget. Key evaluation findings include:

Satisfaction is high among participating teachers and facility staff. Almost all surveyed teachers (91%) reported they would be highly likely to recommend the program to other teachers. Ninety-two percent (92%) of facility staff reported high satisfaction with the overall Building Assessment program.

The Building Assessment program generates significant, untracked savings. Most savings generated in the first year of receiving the assessment are derived from behavioral changes such as setting air temperature controls and adjusting the building operating schedule. Sixty-nine percent (69%) of surveyed facility staff reported implementing at least one of the recommendations in the first year as a result of participating in the program.

A lack of funding is the principal barrier to participating in the Building Assessment program. The most common suggestion for program improvement was to provide financing options to schools implementing recommended improvements.

Program implementers reported that some utilities' participation goals for the Education program are set higher than the number of fifth-grade students in a given territory; therefore goals need to be set at realistic expectations regarding the number of students.

Teachers prefer to receive the kits earlier in the semester to allow time to teach the curriculum.

¹⁴ Note that the participant survey only covered the first 10 months of the year. Significant increases in participation and the number of auditors may have changed overall program satisfaction. Please see the program-specific section for more details on this.

¹⁵ This reflects measures installed by auditors and those later installed by participants.

¹⁶ This represents near-term persistence and may not reflect long-term usage of installed measures.

¹⁷ These inconsistencies could result in under-estimates or over-estimates of program savings, depending on the circumstances and the actual features of the home.

Residential Lighting

The Energizing Indiana Residential Lighting program works with retailers and manufacturers to offer bought-down pricing on CFLs, ENERGY STAR qualified fixtures, ceiling fans, and LEDs at the point of purchase. In 2012, the program achieved 97% of its ex-ante energy savings and demand goals while using 97% of its budget. This program achieved a realization rate of 79% between ex-ante and verified savings, and a net-to-gross (NTG) ratio of .57. Key evaluation findings include:

Reported program savings tracked very closely to the audited savings found in the program database. While total unit counts aligned within .01%, there were some greater variances between individual measure-type counts and reported counts, but this had minimal effects on overall audited to ex-ante counts.

Retailers report high satisfaction with the program overall, with 74% of retailers interviewed rating their satisfaction of the program with an average of 9 out of 10. Field representatives and program marketing generally received positive feedback, with retailers noting that in-store events were useful, increased sales, and provided immediate and more thorough information about the products to customers.

The program appears to have considerable data-tracking issues. While issues do not pertain to the accuracy of total units tracked, there appear to be significant challenges around accuracy and tracking of unit types and SKUs, retailer-unique IDs, retailer price and incentive levels, and field definitions. In addition, there is indication of duplicative data-tracking efforts occurring, and challenges with the timeliness and consistency of retailer/manufacturer data uploads and allocation tracking.

The free-ridership rate for this program is 43%; that is, of the bulbs sold 43% would have been sold in absence of the program, with .57 being the NTG ratio. This is in line with what we see in many other similar programs operating nationally and in the Midwest.

Commercial and Industrial Prescriptive Rebates

The Commercial and Industrial (C&I) Prescriptive Rebates program is designed to achieve long-term, cost-effective savings. This program relies on a prescriptive rebate structure that rewards participants with monetary incentives based on their installation of energy efficiency equipment upgrades. These upgrades include lighting, VFDs, HVAC, and ENERGY STAR kitchen equipment. The program also included a CFL-mailer program, referred to as the Bulb Drop. In 2012 the program achieved a realization rate of 67% for energy savings and 55% for demand savings, using 34% of the program budget. Key evaluation findings include:

Ninety-two percent (92%) of Bulb Drop survey respondents reported being “somewhat” or “very” supportive of the program efforts. For both lighting and non-lighting customers, they ranked the program approximately a 9 out of 10, 10 indicating “very satisfied.”

The realization rate, when ex-ante is compared to the audited savings, was at 100% for energy and 98% for demand savings for participant-engaged rebated measures, without the Bulb Drop. The reduced realization rate, down to 67% for energy and 55% for demand, was primarily due to the low installation rate achieved. Additional savings will be counted toward 2013 and 2014, when these bulbs begin to replace more of the existing stock.

Large equipment, such as HVAC and VFDs, has the potential to achieve significant savings for the program. As the program matures and businesses have additional time to plan capital investments, these measures should be targeted through increased Trade Ally channels.

The net-to-gross (NTG) figure (58%) achieved in the program is in line with what we see for first-year commercial programs. As the program has more time to influence the market and facilitate retrofit planning, this number could change.

COST-EFFECTIVENESS SUMMARY

In general, the energy efficiency program portfolios for each of the individual utilities as well as the aggregation to the State of Indiana were found to be cost-effective for the 2012 program year under the PCT, UCT, and TRC tests. In addition, most of the year-1 programs were also found to be cost-effective with the exception of two programs. The Low Income Weatherization program and Home Energy Audit program did not pass cost-effectiveness for the state wide programs as a whole, or for their individual utility components. At the time this report was being prepared, the DSMCC was working with the TPA on addressing approaches for improving the cost effectiveness of these two programs as well as the portfolio as a whole. The following table provides the results of the benefit cost analysis for each program.

Table 15: Summary Program Cost Effectiveness for the State of Indiana

State of Indiana Program Cost Effectiveness: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	4.81	3.42	0.77	2.80
Low Income Weatherization	NA	0.64	0.39	0.64
Home Energy Audit	NA	0.50	0.33	0.50
School Energy Efficiency Kit	NA	2.24	0.77	2.24
Non-Residential Programs				
School Building Assessments	NA	1.48	0.64	1.48
Commercial & Industrial Incentives	3.51	3.19	0.86	2.19
Total Portfolio	5.23	2.00	0.71	1.71

EM&V METHODOLOGY OVERVIEW

The overall objective of this evaluation is to quantify each program's energy and demand savings as well as understand and help improve the overall performance of Indiana Core programs (Energizing Indiana).

Process Evaluation: The objectives of the process evaluation are to document program efforts and help improve program design and delivery. The key efforts include a review of program materials, in-depth interviews with the Third-Party Administrator program staff and Program Implementer staff, participant surveys, and participant/non-participant contractor in-depth interviews. Our process evaluations seek to answer the following overall questions:

- Is the program, as designed and implemented, meeting its goals?
- Are there improvements that can be made in the program design and implementation processes, including marketing and database-tracking efforts?
- Are there specific customer/contractor insights that could help improve the program and increase satisfaction levels?

Impact Evaluation: The objectives of the impact evaluation are to quantify energy savings and to provide information leading to more accurate energy savings (and demand reduction) estimates in future program years. Data will be gathered from various sources including the tracking database and participant surveys. Data analysis will include conducting an audit of the tracking system, analysis of participant survey data, and statistical and engineering analysis of ex-ante savings. The section below describes the evaluation approach and how it is applied for purposes of the evaluation.

IMPACT ANALYSIS APPROACH

This section describes the typical steps taken in conducting impact evaluations of demand-side management (DSM) for Indiana-based programs, and is consistent with the approaches described in the Indiana Evaluation Framework (September 25, 2012). The Framework¹⁸ guided the Evaluation Team's selection of approaches for this evaluation. Besides outlining the evaluation approaches, this section provides summary descriptions of the steps taken in arriving at the Energizing Indiana overall portfolio as well as program- and utility-specific energy and demand savings. Figure 1 illustrates the steps used in the evaluation approach.

¹⁸ Indiana Evaluation Framework, TecMarket Works. September 25, 2012.

Figure 1: DSM Impact Evaluation Steps

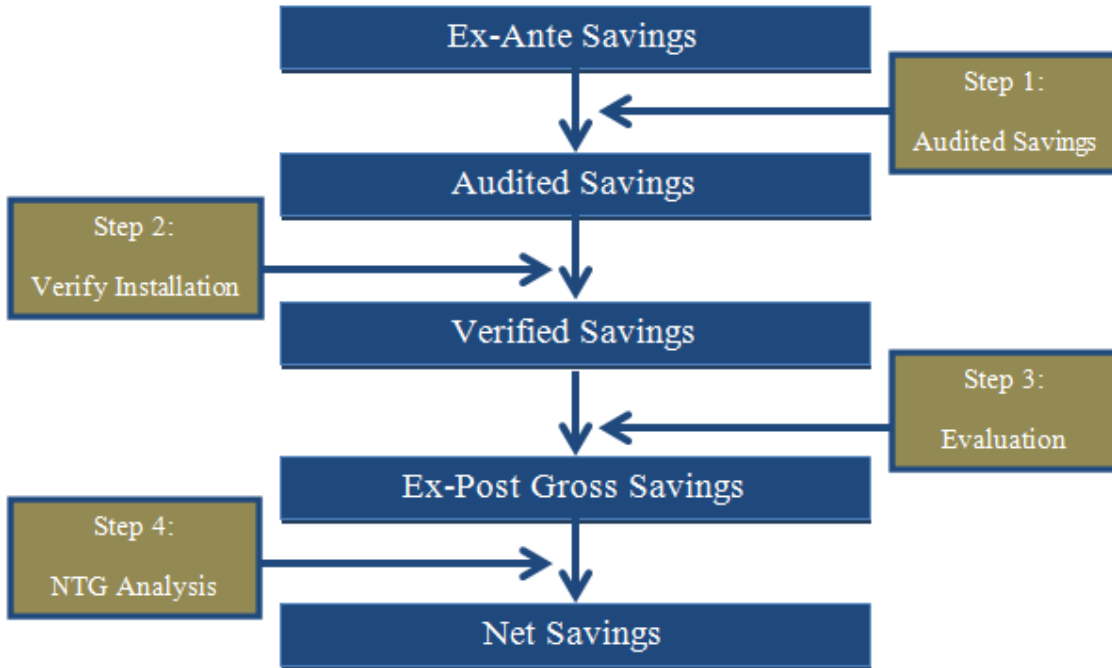


Table 16 provides summary descriptions of the impact analysis steps.

Table 16: EM&V Impact Analysis Steps

Savings Categories	Definition, Sources, and Activities
Ex-Ante Savings	<p>Reported savings values provided by the Program Administrator. These are the savings reported by the Program Administrator in the tracking information aggregated, and reported in the GoodCents Portal.</p>
Audited Savings	<p>Once the following are applied under the general “audit savings” step, audited savings are produced.</p> <p>Reviewing the program-tracking databases.</p> <p>Reviewing hardcopy program applications from a sample to verify consistency with data recorded in program-tracking databases.</p> <p>Check ex-ante savings estimates and calculations to make sure the implementer/utility applied the pre-agreed-upon values appropriately/correctly.</p> <p>Adjust program-tracking data as necessary to correct any errors and/or omissions identified in the steps above.</p> <p>Recalculate program savings based on the adjusted audited number of measures and any found errors in the program-tracking data.</p>
Verified Savings	<p>Verified savings are computed after confirming that measures had been installed and were found to be operating.</p> <p>This step typically employs a stratified random sample of installations selected for detailed analysis. Typical methods for collecting necessary data include telephone surveys and/or site visits.</p> <p>This step may result in adjustments in <i>total</i> savings to address issues such as:</p> <ul style="list-style-type: none"> Measures rebated but never installed Measures not meeting program qualifications Measures installed but later removed Measures improperly installed <p>This step does not alter the per-unit saving values.</p>
Ex-Post Gross Evaluated Savings	<p>Ex-post gross evaluated savings are determined through engineering analysis, building-simulation modeling, billing analysis, metering analysis, or other accepted impact-evaluation methods. Adjustments to the verified savings may include changes to the baseline assumption, adjustments for weather, adjustments for occupancy levels, adjustments for decreased or increased production levels, and other adjustments following from the impact analysis approach.</p>

Savings Categories	Definition, Sources, and Activities
Net Savings	<p>Determined by adjusting the ex-post evaluated gross savings estimates to account for a variety of circumstances, including savings-weighted free rider and spillover effects.</p> <p>The net-to-gross (NTG) ratio for the two types of net savings estimates is based on the following formula:</p> <p>Annual NTG Ratio = (1 – free rider adjustment + participant spillover adjustment)</p> <p><i>Total Net Savings</i> involves the extrapolation of ex-post net savings to the population of Energizing Indiana participants (ex-ante tracking data) using appropriate weights corresponding to the sampling rates for the adjustment factor research activities. It incorporates adjustments for free-ridership, participant spillover, and market effects (to be applied at the end of the current program cycle):</p> <p>NTG Ratio = (1 – free rider adjustment + participant spillover adjustment + market effects adjustment)</p>

Table 17 summarizes the different uses for each of the various savings levels provided by the Evaluation Team for the Core programs in Indiana.

Table 17: Uses of Various Saving Estimates

Savings Estimate	Purpose
Ex-Ante Savings	Goal setting
Audited Savings	Correction of tracking database
Verified Savings	Determine if utilities, portfolio, and programs have achieved their statutory goals. Development of a program realization rate that equals the verified savings divided by the program ex-ante savings.
Ex-Post Gross Evaluated Savings	Use for program planning purposes and future target setting
Net Savings	Program design improvements, planning future programs, cost-effectiveness analysis, and calculations of lost revenues

In addition to the common framework outlined above, there are several other consistencies used across many of the programs in the impact evaluation, including:

- Free-ridership / spillover and net-to-gross (NTG) analysis
- Baseline conditions for CFLs and other technologies
- Weather-dependent measures

- Market effects

Free-ridership / Spillover / NTG Analysis

Free-ridership analysis is handled in one of two ways within each of the program-evaluation efforts. These approaches are strongly coordinated with the way in which baselines for estimating technology-specific energy savings are set. These methods are in compliance with industry best practices and the Indiana Evaluation Framework so that free rider savings are not counted as being program-induced and a part of the net achieved savings.

Spillover impacts are assessed so that only their new net program-induced impacts are counted as new net savings only to the degree that those savings are program-induced.

Free riders: Giving energy savings credits to people who would have gone with the more efficient choice without the program overstates net savings. For technologies in which a minimum normally available efficiency level is used as the energy savings baseline, a portion of those participants are expected to have taken a more energy-efficient action in the absence of the program. When a minimum efficiency technology that is normally available in the market is used as the baseline, the analysis includes a set of participant questions that ask what they would have done in the absence of the program. For the percent of participants that say they would have made a more energy-efficient choice anyway (without the program), the savings are adjusted by the difference in the energy use of the program-provided technology and the efficiency of the technology that they would have installed without the program. This approach adjusts out the savings associated with participants who would have made the energy-efficient choice without the program.

In some cases, there is no need to adjust out free riders in the energy impact analysis because it is possible to select an energy savings baseline that is already net of free riders. If the baseline is not set at the minimum normally available technology, but is instead set at the mean efficiency of the standard market practice for that set of participants, so that the baseline already includes the actions of free riders, then there is no need to adjust for free-ridership savings a second time. These savings approaches produce net savings directly without identifying gross savings.

However, there are cases in which we apply the baseline decision at the participant level so that each participant has a baseline appropriate for their condition. For example, with commercial CFLs, if they use the CFL to replace an incandescent bulb in their business and they have no purchase history of buying and installing CFLs, the baseline is set at the minimum standard efficiency of an incandescent bulb at the wattage of the bulb that was replaced, and no additional free-ridership adjustment is made to that participant. Likewise, if a participant reports replacing a CFL with a program-provided CFL, then the participant's standard market practice for that socket is a CFL and the baseline is set at the level of the CFL for that socket, thus setting the baseline so that no other free-ridership adjustment is needed because the savings for that socket are already net (zero savings in this case). However, for commercial participants that report replacing an incandescent bulb with a CFL, we ask them if they have a purchase history of normally buying CFLs for that use. If they say that they now have a business purchase policy of buying and using CFLs for that socket, then we set the baseline at the level of the CFL, thereby already factoring out free-ridership. If they say that they do not have a policy of buying and using CFLs for that socket, we set the baseline at the incandescent that was removed. Thus, in these conditions there is no need to again net out free-ridership.

The evaluation effort selects the baseline approach at the same time that the free-ridership approach is defined because these two conditions are linked. Each approach that was used in the Energizing Indiana program evaluations is reported in the individual program evaluation chapters.

A different approach is used for residential CFLs that are installed as part of one of the three kit-based programs¹⁹ as described below.

Residential Free-ridership for CFLs Diffusion of Innovation Approach

Because the number of sockets that can use CFLs in a home are limited, and because light bulbs are repetitive-purchase consumables, we use a standard diffusion of innovation Bass-type curve (adoption curve) approach to estimate free-ridership when we have customer survey information that provides insight into how many bulbs a person has installed in their home prior to the program. Basically, this approach follows the standard S curve associated with the market adoption literature about how and why customers buy products. Essentially, the more we know about whether or not a homeowner is a previous user of CFLs and already has them installed in the home, the more likely they are to adopt additional CFLs without the program. In this approach, free-ridership ratios are based on participant²⁰ survey responses in which each response is assigned a free-ridership ratio using a market adoption curve. A response of zero pre-installed CFLs corresponds to a free-ridership level of zero percent because there is no history of CFL adoption and use. Likewise, on the other end of the S curve, a score of 14 or more CFLs corresponds to a free-ridership level of 100 percent because it documents strong consistent use in their home. The remaining responses between zero and 14 are scored as a function of their placement on a standard consumable-product adoption curve.

Using this approach allocates a higher percentage of savings to participants with the lowest pre-existing use of CFLs, and lower savings to those with a history of CFL usage. The approach is based on the theory that the more CFLs a home has, the less likely the addition of new CFLs will have an impact on product adoption and usage behaviors. We use this approach for residential CFLs because it represents a best practice in free rider allocation by recognizing the various stages in the adoption literature and applying a standard S curve that reflects how products are adopted in standard consumable markets. This approach avoids the three major types of biases associated with less reliable post-implementation survey responses.

The Bass type adoption curve in Figure 2 below shows the corresponding free-ridership levels by CFL count presented in Table 18. This approach to estimating free-ridership is consistent with the field of product adoption research and represents a standard approach within the field.

¹⁹ This includes HEA, LIW, and EES. An alternative approach was used for Residential Lighting, which is described in detail in that program's section.

²⁰ For the Indiana programs this is only applied where there is participant survey data available to inform the results. This approach is not used in Residential Lighting because there are not surveyed participants.

Figure 2: Adoption Curve

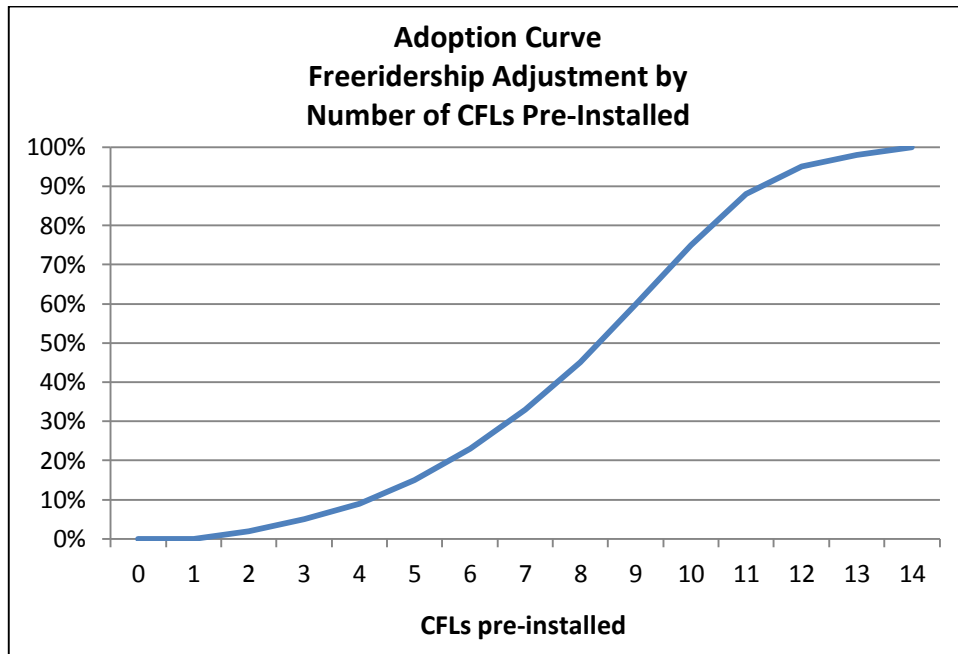


Table 18: CFL Free-ridership Adjustment Determined by S Curve

Number of Pre-Installed CFLs	Free-ridership Pre-Installation Adjustment Factor
0	0%
1	0%
2	2%
3	5%
4	9%
5	15%
6	23%
7	33%
8	45%
9	60%
10	75%
11	88%
12	95%
13	98%
14 or more	100%

CFL Baseline Assumptions and the Impact of EISA

As part of the process for setting the energy savings baseline approach to be used in Indiana for the assessment of the impacts associated with CFL replacements for residential, commercial, and industrial programs, we considered the impact of the federal legislation limiting the sales of incandescent light bulbs. This legislation, known as EISA (Energy Independence and Security Act of 2007), essentially makes the sales of specific wattages of incandescent light bulbs performing below a specific efficiency level not permitted in the United States if those bulbs were manufactured after specific legislated trigger dates. However, the legislation does allow for any supplier or sales outlets to distribute stock and sell non-qualifying bulbs as long as those bulbs come from a supply stream that was in place and operating prior to the trigger dates. This means that the dates in the EISA legislation would not significantly affect Indiana sales as long as there were supply streams in Indiana of bulbs that were manufactured prior to the legislated dates.

The first part of the EISA legislation impacts 100-watt incandescent light bulbs and has a legislated trigger date of January 1, 2012. While some individuals have interpreted this date to mean the date after which 100-watt bulbs will no longer be sold in the market and therefore the date on which energy savings baselines should no longer include considerations for replacing 100-watt bulbs, the date actually had little impact on the sales of 100-watt bulbs. The date only impacts manufacturers that were manufacturing 100-watt bulbs for sales in the United States with the understanding that at some point in the future, sales would be impacted when the supply of 100-watt bulbs began to be limited. Because there are millions of bulbs within the incandescent bulb supply stream, the United States market is capable of operating for a significant period of time selling 100-watt bulbs that were manufactured prior to the EISA trigger dates. As a result, evaluation professionals cannot use the EISA trigger dates to determine when energy savings baselines should no longer consider incandescent bulb baseline calculations to exclude EISA standards. Instead, the baseline adjustment date has to be set at the time in which those bulbs are no longer available in the market. For example, if the market stocks enough bulbs to cover 10 years of sales, then the EISA standards would have little effect on the operations of the market until after that 10-year supply was substantially no longer being sold in the market.

To determine if the Indiana Core program evaluations should adjust the CFL baseline approaches for 2012 energy savings estimates, TecMarket Works conducted a study of the availability of 100-watt incandescent bulbs in Indiana at the close of 2012. That study is included with this report as Appendix C.

As a result of this study, the TecMarket Works Indiana Core Program Evaluation Team concludes that the 2012 CFL impact baseline should not be adjusted to reflect changes in 100-watt incandescent bulb availability in Indiana; however, an adjustment for 2013 may be required should availability of 100-watt bulbs continue to erode during 2013. In summary, the study found widespread availability of 100-watt incandescent bulbs across all of Indiana in January of 2013, the month after the end of the first year (PY1) program cycle. Essentially, about half (45%) of all retail stores studied still stocked and carried 100-watt incandescent light bulbs. About half of the stores that did not carry 100-watt bulbs provided recommendations to shoppers of where they can buy 100-watt bulbs. Moreover, the majority of customers who were looking to purchase 100-watt incandescent bulbs, but were unable to find them in one store, could find them in another store on their own or through referrals from the store that no longer sold them. In addition, TecMarket Works checked the availability of 100-watt incandescent bulbs for purchase from Internet retailers. This test found that 100-watt incandescent bulbs are easily found and remain widely available without quantity restrictions from most all-bulb supply sites. One hundred-watt incandescent light bulbs were easily found and purchased within Indiana during 2012, the first year of the Core programs.

While this study documents the widespread availability of 100-watt bulbs, it also provided indications that this level of availability may not last much longer within brick-and-mortar stores. For example, while about one-third of the retail stores surveyed had more than 20 100-watt bulbs in stock, the stores that had fewer than 20 in stock had on average of just over nine bulbs for sale. While the majority of the stores with less than 20 bulbs in stock indicated that they were ordering more to sell, the study noted that just over half of the retail stores did not have any 100-watt incandescents for sale in January 2013. That is, the supply of 100-watt incandescent bulbs that fail the EISA standards, while still easy to find, are becoming less available within Indiana and may become substantially less available in 2013, requiring an adjustment to the energy savings baseline approach for program-provided CFLs during the second program year (PY2).

At this time, the number of bulbs for which a program-provided CFL replaces a 100-watt bulb is very low, with the vast majority of program-provided CFLs replacing 75-watt or lower incandescent bulbs, both of which are widely available in retail stores. Thus, the widespread availability of 100-watt bulbs in 2012, linked to the incident of CFLs being installed to replace a 100-watt incandescent bulb, indicates that the energy savings baseline estimates for Indiana Core programs should not be adjusted at this time. The energy savings for bulbs replaced by Indiana Core program CFLs are based on the customers' information on what bulbs they have replaced without discounting the incidents of 100-watt replacements as a function of the proportion of the baseline that would not have replaced a 100-watt incandescent if they were no longer available for purchase. Readers who are interested in the full results of the 100-watt incandescent availability study are referred to Appendix C.

Spillover Assessment

Spillover: Spillover savings are added to the program-induced net savings when a participant replicates actions that save energy in their facilities, and they attribute that non-program-incident or -provided action to have been caused by the program. Spillover savings that are included in the Energizing Indiana first-year evaluation report included only short-term participant spillover savings, which represent only a portion of the spillover savings typically achieved by a program. That is, there is typically more spillover savings than what are identified in the evaluation efforts. Spillover savings include short-term spillover, from actions that are taken between the time of the program participation event and the evaluation effort's survey with each participant. There are also longer-term spillover savings that occur in the future, after the evaluation effort has completed their assessment, as a portion of the participation population re-take actions that were caused by the program. There are also spillover actions that are taken by non-participants who have been directly or indirectly influenced by the programs, and who are typically unaware of that influence. The savings from the groups of unaware non-participants who take actions because of a program's influence but do not know that they have been influenced are more traditionally called "market effects savings." The spillover savings included in this report represent only the short-term participant spillover savings that the participant attributes to have been caused by the program. It is not possible to project additional spillover savings beyond those estimated via the evaluation efforts because the level of spillover is a function of how well a program influences equipment purchase and use decisions beyond those impacted by the program's direct participation efforts.

To assess spillover, we ask participants if they have taken additional actions that save energy in their facilities or homes²¹. If they report that they have taken additional actions, we ask them to describe what that action was in enough detail that we can make an estimation of the savings achieved. We then ask an

²¹ Note that for the Home Energy Audit (HEA) program, responses to audit recommendations are not included in spillover and instead are included as a direct program impact. For the Low-Income Weatherization (LIW) program, we capture them as spillover identified as Audit Recommendations.

attribution question concerning whether the action was influenced or caused by the program. If they report the action was influenced by the program, we ask them to rate the level of influence on a 1 to 10 scale in which we attribute the percent of influence based on the score provided. On a 1 to 10 scale, we attribute cause using a direct lineal conversion of their score to a percent (2=20% / 5=50% / 8=80%). Because an attribution score is unlike an adoption curve, we use a direct assignment approach rather than an S curve approach more typical of an adoption approach. Then, to estimate spillover, we estimate the savings of the actions taken using engineering or modeling approaches, and multiply the spillover savings by the degree of influence score. That level of energy savings is then added to the direct program-induced energy savings to estimate the net savings addition from spillover and to set the program's net-to-gross (NTG) ratio.

Weather-Dependent Measures

For weather-dependent measures, we calculated savings differently for each utility within Indiana due to the varying weather conditions.

Table 19 shows the representative city in Indiana that has similar weather conditions for each utility territory. The mapping shown in the table is carried out for all weather-dependent measures, which include water-saving measures, attic insulation, air sealing, and waste-heat factors (WHF) for some lighting measures.

Table 19: Representative Territories for Individual Utilities in Indiana

Representative Area	Utility
South Bend	NIPSCO
Indianapolis	IPL
Indianapolis	Duke
Indianapolis	IMPA
Fort Wayne	I&M
Evansville	Vectren

Market Effects

In addition to the direct program efforts that save energy in the facilities of participants, and the savings that occur as participant spillover effects, there are also the effects that the programs and the portfolio have on how products are stocked and sold in the market. As energy efficiency programs are implemented, over time they have an effect on what kinds of energy-efficient equipment is stocked by suppliers and retailers, what products or models are pushed by sales staff, what contractors buy to meet their customers' wants and needs, and what models and efficiency levels are purchased directly by customers. The studies that examine how energy-efficient equipment is stocked and sold in the market and the influences on those decisions that are caused by a set of programs are called "market effects studies." They assess how a set of programs influence the operations of a market that can capture savings above and beyond those achieved by the program's direct influence on participants. The evaluations of

the Indiana statewide Core programs include a market effects study to determine the extent to which the statewide portfolio is influencing the mix of energy-consuming technologies sold in Indiana.

To assess the changes caused by the Energizing Indiana portfolio, the Evaluation Team conducted a market baseline assessment in 2011 and the very early weeks of 2012 before the portfolio had had a chance to impact the markets. This study assessed the degree to which key program measures are sold in the Energizing Indiana market area and the degree to which customers are adopting the energy-efficient models of those technologies. The study consisted of two parts, including a residential market operations part and a commercial industrial market operations part. We provided the results of these studies to the EM&V Subcommittee in 2012. Together, these studies document the degree to which energy-efficient technologies are selected by residential and commercial industrial customers in the absence of the program. The results of this study set the starting point for the market change assessment (to be completed in 2015) and document the efficiency level of key products that move through the Indiana energy-efficient equipment markets before the programs have time to influence that market.

Then, in early 2015, a similar study will be conducted to assess those same markets after the end of the first three-year statewide program cycle. The difference between the baseline assessment and the 2015 reassessments documents the changes that have occurred relative to a set of technologies covered by the programs in the portfolio. Once the changes in the market have been documented, the assessment then looks at the various reasons that drove those changes. Markets are always in a state of change. Therefore, many of the changes that will be documented in the 2015 market effects assessment will be normal market changes that reflect new makes and models that come into the market, different marketing or sales push efforts that are caused by events other than Energizing Indiana, and the non-program-induced general purchase trends made by consumers. However, some of those changes will be a function of how the Energizing Indiana portfolio has impacted the demand for energy-efficient equipment within that market.

For this assessment, the evaluation will use expert judgment and reason-for-change opinions from the key market actors that are responsible for making changes to the products that they order, stock, sell, install, and purchase. The assessment will include metrics associated with Energizing Indiana, the efforts associated with those programs, and key stakeholder reactions to why they made the stocking and sales changes that are documented in the 2015 study. The Evaluation Team will examine a wide range of change drivers and allocate energy savings to the parts of the change that can be attributed to Energizing Indiana's efforts. The evaluation will then allocate energy savings to the measures covered by the program to reflect their proportional value to the market-induced changes. The results of this effort will be a market effect multiplier to the gross per-measure energy savings that are then applied to the measures moved via the program's direct effects, and counted toward the program-induced net effects estimate. This allocation will be made after the completion of the 2015 market effects study.

PROCESS EVALUATION APPROACH

These are high-level placeholders for the cross-cutting sections and will be modified once the evaluation work is done.

Although the process evaluation efforts are somewhat different for each program, to a certain extent these studies follow a similar theme and approach. The process evaluation consists of program-specific efforts designed to address each program's researchable issues, but, in general, include the following efforts:

- Reviewing program materials and methods of operation
- Conducting interviews with Program Managers and Implementers
- Designing interview and survey instruments

- Conducting interviews with Trade Allies and Partners
- Conducting surveys with participants and/or non-participants
- Analyzing process evaluation data
- Developing process evaluation reports

The process efforts for PY1 focus on identifying the key researchable issues that are most relevant for a program in its first year of implementation, and include exploring such researchable issues as:

- Verification of robust program-tracking databases: Our team ensured that the program-tracking systems are robust and that the correct information is being collected so that savings can be accurately reported at the end of each program cycle.
- Assessment of marketing efforts: Ensuring that marketing is effectively raising awareness of the program among the targeted customers.
- Assessment of participation processes: Assessment of the participation process and sharing of insights on how to streamline program processes, increase customer satisfaction, and increase overall levels of program savings.
- Assessment of market actor interactions/processes: Assessment of the lines of communication between Program Implementers and Trade Allies, as well as training and marketing opportunities for these market actors.
- Analysis of program design: Through both our qualitative and quantitative efforts, explore issues around incentive amounts, outreach approaches, and other key program design issues.
- Verification of program processes: Ensure that quality QA/QC procedures are in place in the first year, including verifying that administrative responsibilities and performance expectations are met (per the Statement of Work [SOW]) and that on-site QA/QC is occurring.

UNCERTAINTY

The objective of program evaluation is to reliably determine energy and demand savings along with some reasonable level of accuracy. Whenever a sample of a population is selected to represent the population itself—whether the sample is of appliances, meters, accounts, individuals, households, premises, or organizations—there will be some amount of sampling error. Sampling error arises because only a portion of the population of actual values is measured (e.g., metering energy consumption over one week, metering 5% of the affected equipment). Different samples will lead to different estimates of energy and demand savings.

If the sample was drawn randomly from the population, the sampling error should be random and provide an unbiased estimate of the true savings. We use precision to characterize sampling error. Precision is the degree to which additional measures would produce the same or similar results. Convenient measures such as confidence intervals and statistical significance tests are available to provide quantitative estimates of the size of uncertainty sampling introduces.

SAMPLING DESIGN

On-site surveys and field Evaluation Measurement and Validation (EM&V) work was done on a sample of participating sites. The Evaluation Team developed a sampling plan for each project that outlined the sampling design, the population, and the sample sizes needed to meet the overall precision requirements

of the evaluation. Sampling detail for each program can be found in the program sections of this report. Samples were generally selected from the participant-tracking data according to the sampling plan.

The sampling design depends on the analysis' data quality objectives, the development of the sample frame, and the potential uses of the data. Designs include:

- Simple random sampling
- Stratified random sampling
- Two-stage or cluster sampling
- Nested sampling (time-of-use meters used within a smaller sample of interval meters)
- Systematic sampling

The overall data quality for the PY1 efforts result in a margin of error of $\pm 10\%$ with 90% confidence at the program or sub-program level (sub-program being a specific effort nested within a program, for example, the C&I CFL Bulb Drop campaign). Several factors affect the size of the required samples, including the number of participants in the population and the variance of the measures.

Table 20: EM&V Activities by Program

Core Program	Process Evaluation Approach	Impact Evaluation Approach	Market Effects Evaluation Approach
Residential Programs			
<p>Residential Lighting</p> <p>Lead: Sara Van de Grift, Opinion Dynamics</p>	<p>Program Manager and Implementer interviews. General population survey to understand attitudes and barriers for CFLs. Retailer interviews.</p>	<p>Top line sales analysis; engineering review of key impact parameters; site visits/logger metering; peak demand savings analysis; upstream supply-side data review.</p>	<p>Review of market-based data (e.g., Indiana sales trends, ENERGY STAR® awareness and/or penetration rates, etc., and planning documents). Interviews with customers. On-sites.</p>
<p>Home Energy Audit</p> <p>Lead: Erinn Monroe, Opinion Dynamics</p>	<p>Program Manager and Implementer interviews. Auditor surveys. Participant survey covering the topics of, at minimum: actions taken as a result of audit, free-ridership, and satisfaction with the audit.</p>	<p>Participant surveys; engineering review; pre-/post-billing analyses as appropriate; peak demand savings analysis.</p>	
<p>Low-Income Weatherization</p> <p>Lead: Allison Carlson, Opinion Dynamics</p>	<p>Program Manager and Implementer interviews. Auditor surveys. Participant survey covering the topics of, at minimum: actions taken as a result of audit, free-ridership, and satisfaction with the audit.</p>	<p>Participant surveys; engineering review, supplemented by simulations as required for measure-specific savings; pre-/post-billing analyses as appropriate; peak demand savings analysis.</p>	
<p>Energy Efficient Schools</p> <p>Lead: Sarah Brooks, Cadmus</p>	<p>Program Manager and Implementer interviews. Surveys with participating teachers and participating and non-participating facility staff to understand value of education-based efforts. Encourage action.</p>	<p>Engineering review, with emphasis on savings values claimed by Education program; survey with parents/guardians to assess attribution impacts (e.g., NTG and spillover); surveys with participating schools to assign savings from recommendations adopted and not rebated.</p>	

Core Program	Process Evaluation Approach	Impact Evaluation Approach	Market Effects Evaluation Approach
Non-Residential Programs			
<p>Commercial and Industrial Prescriptive Rebates</p> <p>Lead: Vanessa Frambes, Cadmus</p>	<p>Program Manager and Implementer interviews. Interviews with C&I participants to understand satisfaction with program processes (e.g., application process), use of equipment, operational changes, free-ridership, and spillover. Market actor interviews as relevant.</p>	<p>Participant surveys; engineering model and energy and demand savings review; peak demand savings analysis.</p>	<p>Review of market-based data (e.g., TRM, penetration rates, and planning documents). Interviews with C&I customers and account reps. Interviews with key market actors for key measure types (e.g., lighting, motors, HVAC, etc.). No on-sites for PY1.</p>

RESIDENTIAL HOME ENERGY AUDIT (HEA) PROGRAM

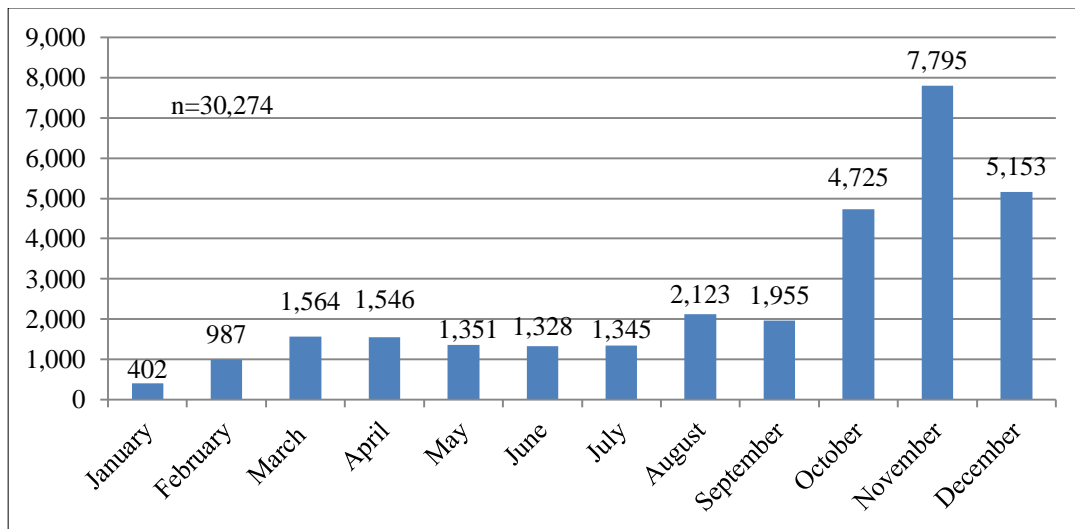
PROGRAM DESIGN AND IMPLEMENTATION

The Home Energy Audit (HEA) program provides single-family homeowners with a no-cost home energy audit that includes the direct installation of energy-saving measures. The home energy audit is performed by a residential energy auditor, and takes between an hour and an hour-and-a-half to complete. The audit includes a walk-through of the customer's home to assess energy efficiency needs and the direct install of the following energy efficiency measures:

- Up to nine compact fluorescent lamps (CFLs): six 13-watt, two 18-watt, and one 23-watt
- Up to two low-flow showerheads
- Up to three faucet aerators
- Hot water pipe wrap
- Water heater tank wrap

The HEA program is similar in nature to the Low-Income Weatherization (LIW) program, also known as the Income-Qualified Weatherization (IQW) program, although it is open to any income and does not include blower-door testing, air-sealing, or attic insulation. To be eligible for the program, households must be customers of participating utilities, have not received a utility-sponsored audit in the past three years, and live in a home that is more than 10 years old. The HEA program is marketed through neighborhood door-to-door canvassers, the program website, direct mail, community organizations, and flyers. The program took some time to ramp-up in 2012, but the Program Administrator increased canvassing and work with community groups toward the end of the year to increase enrollment activity. Figure 3 shows the number of audits completed each month during this inaugural year. The increases in enrollments coincide with the expanded canvassing efforts.

Figure 3: Number of Audits Per Month



In addition to the measures installed during the audit, the Program Administrator also began distributing CFLs during neighborhood canvassing efforts in August 2012, and added seven-plug Smart Strips in November 2012 to help recruit customers and increase enrollments. Smart Strips are used to entice residents to sign up for the audit but are not provided to customers until the time of the audit, while CFLs are handed out door-to-door regardless of whether or not the customer signs up for the audit.

EM&V METHODOLOGY

The evaluation of the HEA program consists of both impact and process elements. Table 21 provides an overview of the tasks used for evaluating this program.

Table 21: Program Evaluation Overall Tasks

Action	Details
Implementer Interviews	Interviewed the Program Administrator’s Implementation Manager for the Home Energy Audit program
Auditor Survey	Conducted an online census of the program auditors
Program Database Review / Verification	Reviewed participant tracking database
Program Material Review	Reviewed materials to assess marketing and outreach efforts
Participant Interviews	Conducted a telephone survey with 153 Home Energy Audit program participants. Sampling was performed to achieve a 90% confidence and 10% precision interval at the program level in the first year, and at the utility level at the end of three years.
Impact Analysis	<ul style="list-style-type: none"> • Reviewed savings estimates and assumptions provided by the Program Implementer • Verified the reported measure installations in the program database • Calculated installation and persistence rates through customer interviews • Conducted an engineering analysis of measure savings and assumptions

Table 22 below shows the final sample disposition for various data-collection activities. The participant survey sample was randomly selected from the pool of current program participants of IMPA, Duke, NIPSCO, IPL, I&M, and Vectren Energy. Ultimately, quotas were set to ensure an adequate mix of participants from each utility.

Table 22: Sample Dispositions

Action	Population*	Targeted	Achieved
Implementer Interviews	NA	2	2
Auditor Interviews	36	10	11
Participant Surveys ²²	12,310	150	153

*All populations listed were the populations available at the time of the survey effort in October 2012.

Supplemental Evaluation Activities

At the close of the program year the Evaluation Team was made aware of two issues regarding both the HEA program and the LIW program. The first was that a large number of customers tracked in the database as having received no measures did indeed receive the energy efficiency kit²³. The second was that the number of home visits conducted in last quarter of 2012 was significantly larger than those conducted in the first three quarters of the year²⁴. Because these two factors could have a significant impact on the savings that should be attributed to the programs, the Evaluation Team undertook additional research activities to a) ensure that program delivery strategy remained consistent despite the huge increase in participation, and b) confirm that participants tracked in the database with no measures installed (referred to as “null participants” in this report) did indeed receive kits and install measures. Activities included a series of interviews with program auditors and participants that took place in March and April 2013. All of these interviews were designed to address both the program delivery question and the null participant question.

The Team identified and contacted program participants who had participated in the HEA and LIW Participant Survey for follow-up interviews. The original survey sample was derived from the program database provided by the implementer. The Team reached out specifically to those who were not flagged in the program database as having received CFLs to ask if they received a kit with CFLs that were not installed during their audit visit. We attempted to contact 33 survey participants of which 11 were LIW participants and 22 were HEA participants. We focused on verifying how many CFLs were received and installed during the audits. Eighteen additional participants were contacted and 14 interviews were completed between 12 HEA and 2 LIW participants. Every participant contacted by the Team reported that they did receive a program kit with CFLs during their audit. The number of bulbs received varied from three to nine CFLs, and only two respondents reported that the auditor also installed some of the bulbs during these visits.

The Team also contacted program participants who were visited in November and December 2012, and who were noted in the database as having received no measures. A random sample of approximately 5%

²² Survey was for HEA and LIW program participants combined with the EM&V team, completing 153 for HEA and 151 for LIW for a total of 304 completed surveys.

²³ The Evaluation Team had previously been told by the Program Administrator that the data represented what the customers received, and twenty-one percent of the participants in the database had no data for the measures received. It was later clarified that because it was a pre-packaged kit, the measures-received field was not always populated by auditors even when a customer received the full kit.

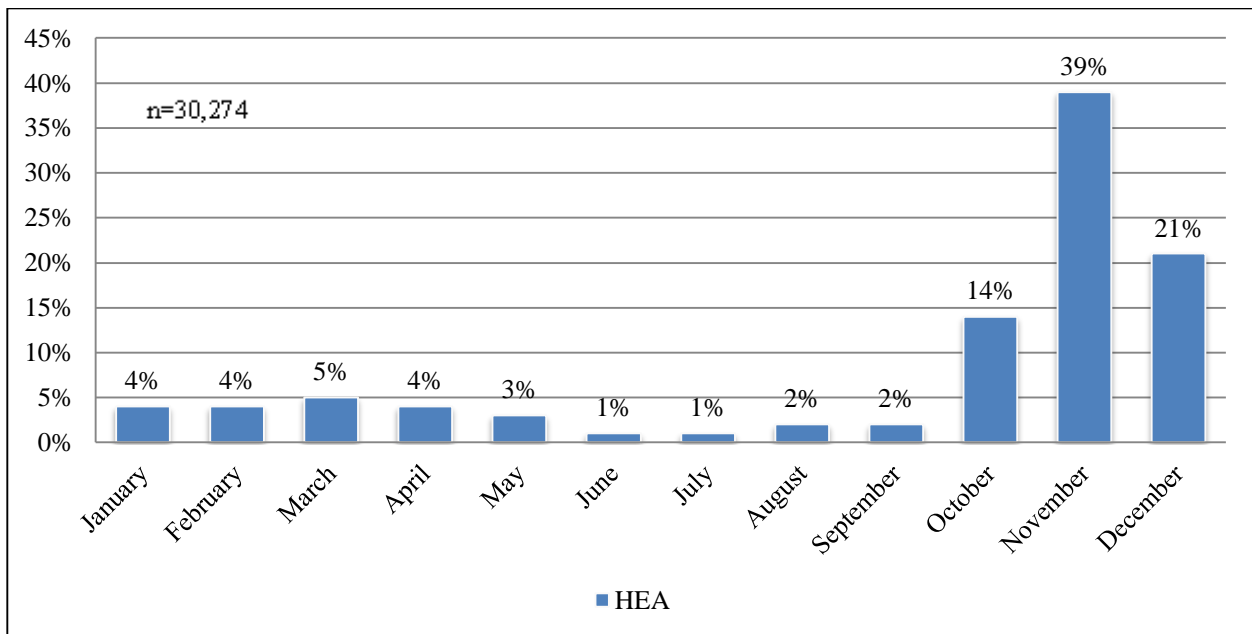
²⁴ Participation more than doubled in the last quarter of the year compared to the previous three quarters combined..

of each utility’s participants was taken, and a census was attempted among this group of 168 participants. These interviews focused on whether, despite the data, participants received a kit during their audit, who installed any of the kit’s measures (the participant or the auditor), and whether these measures are still installed in the home. Thirty interviews were completed and the majority (87%) reported receiving a kit during their audit. Of that group, 96% reported installing some of the kit’s items on their own, while two respondents reported that the auditor installed the kit.

Earlier in the evaluation, the Team conducted online surveys with program auditors. As part of the effort to further investigate the impact of the ramp-up of program visits in the fourth quarter of 2012, and to ensure that auditors were indeed giving kits to null participants, we attempted to conduct interviews with the 18 auditors who agreed to follow-up contact in their original survey. Ten interviews were completed with three HEA auditors and seven LIW auditors. Using a list provided by the implementer, the Evaluation Team also contacted auditors working in the final program months of 2012. Interviews were completed with four HEA auditors, five LIW auditors, and one auditor who reported working on both the HEA and LIW program audits²⁵. Results from these interviews indicate that it was common for measures to be left behind uninstalled in homes due to customer preference (e.g., customer preferred to keep hand-held showerhead) or safety restrictions (e.g., leaving a measure uninstalled to avoid damage during installation). When asked about reporting uninstalled measures, 12 of the 20 total auditors interviewed (60%) said they used the Optimized Tool’s barrier codes to report uninstalled measures, while 7 (35%) said they only recorded what was installed during the visit.

To check whether there was a consistent pattern to when and how often kits were left behind, the Team turned to the program databases to look at the frequency of null values among the key program measures (i.e., CFLs, low-flow showerheads, and faucet aerators) across the program months, which is illustrated in Figure 4.

Figure 4: Percent of Null Values for All Key Measures by Month for HEA Program



²⁵ Notably, the Evaluation Team received a list of 89 HEA auditors, but of that list only 39 had valid telephone numbers, limiting the pool we could reach for interviews.

As Figure 4 demonstrates, the frequency of left-behind measures grew substantially in the final program months of November and December 2012. For HEA in November, 39% of the 7,795 visits completed had null values recorded for the key program measures. Based on this information, the 2012 draft estimates of the number of measures provided to customers were revised to account for the individual participants who had null values recorded for measures that they likely received during their audit visits. These revisions were conducted by measure and followed these guidelines:

1. **For individuals who had values for a kit measure:** For these households, previously collected survey data captured information on measures received and measures installed. Survey questions distinguished between what was “received” and what was “installed,” so that it could be determined how many measures were left behind. For these households, the Team used survey data to estimate measure installation.
2. **For individuals who had null values for a kit measure:** While these households were included in the participant survey, they did not receive the measure-specific questions. For these households, we needed to estimate the number of measures left behind (and those potentially installed by the homeowner, not the auditor). Our method of estimating, by measure, is described as follows:
 - a. For all null participants (zero entered in the database for CFLs, low-flow showerheads, and faucet aerators received), we assigned the average number of measures received (by utility) in the balance of the population as found in the program database.
 - i. After these participants were assigned the average number of measures, we calculated the measure incidence rates for CFLs, low-flow showerheads, and faucet aerators to establish a program level per house incidence of measures.
 - b. For partial null participants (zero entered in the database for at least one key measure, but not all), we will assign savings credit to the program in PY2 and PY3 to account for the eventual installation of these measures. From program data, it is clear that for these participants the auditor installed some measures at the time of the audit, but not all measures at that time. Follow-up calls with program auditors suggest that the uninstalled measures may have been left behind due to customer preference or other issues. For customers with CFL null values, the program will apply the future CFL install rates from the Indiana TRM²⁶. For showerheads and aerators, we will perform additional research in PY2 and PY3 to establish appropriate installation and persistence rates for these measures.

PROGRAM BUDGET AND EXPENDITURES

Table 23 shows the original program budgets and the expenditures reported at the end of 2012. The highest expenditures were for IPL, followed by Duke. The program was under-spent in all utility territories except for I&M, and spent only 58% of the total budget statewide.

²⁶ The program will get credit for 55% of these CFLs in PY2 and 43% in PY3, it is assumed 2% are never installed.

Table 23: Program-Level Budget and Expenditures

Utility	Budget	Reported Expenditures	% of Budget Utilized
Duke	\$4,084,157	\$2,032,427	50%
I&M	\$1,284,427	\$1,308,122	102%
IPL	\$6,443,899	\$3,452,088	54%
IMPA	\$1,025,320	\$554,739	54%
NIPSCO	\$3,342,540	\$1,615,901	48%
Vectren	\$1,391,449	\$1,185,867	85%
Statewide	\$17,572,792	\$10,149,144	58%

PROGRAM PERFORMANCE: HOMES AUDITED

As noted earlier, in late 2012 the HEA program added a neighborhood canvassing effort that included the distribution of CFLs and Smart Strips. Because this effort is not tracked in the same manner as the balance of the program activities, the report is broken-out into two sections. This first section covers the results from the home audits, while the canvassing measures and associated savings are included later on in this section of the report²⁷.

The Program Administrator reported²⁸ performing 30,274 HEA audits in 2012, which was significantly lower than the goal of 50,538 that was established in planning. The program reported savings of 32,293,623 kWh and 14,407 kW, falling short of the electric savings goals of 52,357,368 kWh and 23,325 kW by about 38% in kWh and 38% in kW statewide.

Table 24 shows how the reported or ex-ante program performance compares to the goals established by the Program Administrator in program-planning phase for January 1, 2012, through December 31, 2012. The savings reported below do not reflect adjustments made as a result of the evaluation.

²⁷ Measures distributed during neighborhood canvassing were not added to the program until later in the year, and associated savings values were not incorporated into the ex-ante per-home savings value by the Program Administrator.

²⁸ Reported or ex-ante sales are based on the GoodCents Portal reports represented by utility results from January 1, 2012, through December 31, 2012. [<https://indiana.goodcents.com/>]

Table 24: Ex-Ante Reported Electric Savings by Utility²⁹

Utility	Number of Homes			kWh			kW		
	Goal	Reported	% Achieved	Goal	Reported	% Achieved	Goal	Reported	% Achieved
Duke	12,358	5,951	48.2%	12,802,888	6,165,236	48%	5,704	2,746	48%
I&M	4,019	4,019	100.0%	4,163,684	4,163,684	100%	1,855	1,855	100%
IPL	19,696	10,309	52.3%	20,405,056	10,680,124	52%	9,091	4,758	52%
IMPA	3,126	1,646	52.7%	3,238,536	1,705,256	53%	1,442	759	52%
NIPSCO	7,774	4,784	61.5%	8,053,864	4,956,224	62%	3,588	2,208	61%
Vectren	3,563	3,565	100.0%	3,693,340	3,691,268	100%	1,645	1,645	100%
Statewide	50,538	30,274	59.9%	52,357,368	31,361,792	60%	23,325	13,971	60%

The Program Administrator reported 231,379 therms in gas savings combined for NIPSCO (132,600 therms) and Vectren (98,779) only. These savings are reported in Table 25 below; there were no therm goals set in planning.

²⁹ The savings in this table represent the savings that occurred through the residential home audits only. This does not include canvassing measures. Canvassing measures are addressed in following sections.

Table 25: Ex-Ante Reported Gas Savings by Utility

Utility	Reported Therms*
Duke	NA
I&M	NA
IPL	NA
IMPA	NA
NIPSCO	132,600
Vectren	98,779
Statewide	231,379

*Only NIPSCO and Vectren are participating in the gas program; savings provided by GoodCents.

The Program Administrator determined HEA program savings by applying a “per-home” ex-ante savings value to the number of homes treated through the program. The “per-home” energy savings value is based on an assumed number of homes that will receive a given measure (% of homes treated) and an assumed number of measures to be installed in each treated home. Table 26 and Table 27 show the ex-ante energy and demand savings values as developed by the Program Administrator. This includes the assumed incidence rates of the measures within participant homes. The incidence rates refer to the average number of a given measure that the Program Administrator anticipates installing in each home.

Table 26: Planned Ex-Ante Energy and Demand (kWh and kW) Savings Per Home

Measure	Planned Incidence Rate Per Home	Ex-Ante kWh Per Measure	Ex-Ante kW Per Measure	Total kWh Per Home	Total kW Per Home
CFLs	9.0	60.9	0.046	529.2 ³⁰	0.552
Pipe Wrap	0.5	51.0	0.006	25.5	0.003
Low-Flow Showerhead	0.5	328.0	0.052	163.5	0.026
Faucet Aerators	1.0	158.0	0.025	79	0.025
Tank Wrap	0.3	205.0	0.032	51.3	0.008
Audit Recommendations	.5	375.0	0.000	187.5	0.000
Total				1,036	0.614

Note that the Evaluation Team had some initial confusion regarding the number of bulbs in the kits. The Team was initially provided with written content that referred to both 9 and 12 bulbs, and was also told that the kWh savings per bulb had been reduced from the planning assumption of 60.9 kWh to 44.1 kWh to reflect a lower hours-of-use number. While there was consensus near the end of the evaluation process that there were indeed 9 bulbs in the kit, the per-house savings number being applied to each kit by the TPA still assumed the earlier discussed assumption of 12 bulbs per home, each receiving 44.1 kWh³¹. If the TPA had indeed been assuming 9 bulbs at 60.1 kWh per bulb, the CFL savings would have been 548.1 and the per-house kit number 1,054.9 kWh. Instead they claimed 1036 per kit, which equates to the previously discussed assumption of 12 bulbs at 44.1 kWh each. Because the program counted savings at the per-house level and the ex-ante savings for this program was 1,036, the Evaluation Team has used this number for the assessment of the audited and verified savings.

³¹ In our initial draft of this report we used 12 bulbs and 44.1 kWh as the planned incidence for this reason.

Table 27: Planned Ex-Ante Therm Savings Per Home

Measure	Planned Incidence Rate Per Home	Ex-Ante Therms Per Measure	Total Therms Per Home
Pipe Wrap	.5	15.8	7.9
Low-Flow Showerhead	0.7	9.0	5.9
Faucet Aerators	1.0	1.1	1.1
Audit Recommendations	1.0	12.8	12.8
Total			27.7

IMPACT ANALYSIS

The PY1 impact analysis for the HEA program includes the steps outlined in Section 2 EM&V Methodologies of this report. This includes:

- Audited savings
- Verified savings
- Ex-post gross savings
- Net savings

Details on how each phase was applied to the evaluation of the HEA program are provided below. The main body of the report provides the utility and statewide results in aggregate. Individual utility-level details can be found in the utility-specific Technical Volumes.

AUDITED SAVINGS

The Evaluation Team completed the audit of the HEA program savings by reviewing the program database to confirm the number of homes treated through the program as well as the number of measures installed within each treated home. As mentioned previously, the Program Administrator applies a “per-home” savings value to each home treated through the program, and the calculation of this value is based on assumptions regarding the number of homes treated and the quantities of each measure installed in a home. The Evaluation Team calculated the actual percentage of homes treated and number of measures installed (per treated home) based on information found in the program database. This included an adjustment for participants who were null for all measures in the kits and who appear to have been mis-entered by auditors who, in a number of instances, entered “null” for all measures when all the contents of

the kits were left behind and not installed³². Actual incidence rates for each measure were multiplied by the planned per-measure savings and summed to come up with an audited per-home savings value for each utility. Next, the audited per-home savings value was multiplied by the number of homes in the program database to calculate total audited savings.

The number of homes in the database matched the number of homes reported by the Program Administrator. However, audited per-home savings values by utility were much lower than anticipated. The highest audited per-home electric savings were achieved in I&M territory at 795 kWh and 0.386 kW per home. Audited per-home electric savings values are much lower than ex-ante values because actual measure incidence rates (i.e., the percentage of homes receiving a given measure multiplied by the average number of measures installed within a treated home) were lower than planned. For example, the Program Administrator planned for 25% of homes to receive water heater tank wraps, when in practice less than 1% received this treatment. Audited savings include the ex-ante audit recommendation savings developed by GoodCents (375 kWh * .5 homes).

The highest audited per-home gas savings were accomplished in NIPSCO territory at 26 therms per home. None of the utilities achieved the per-home therm value used by the Program Administrator in planning (27.7 therms).³³ Table 28 provides a summary of the audited savings per home by utility. Note that detailed information on each utility's measure-specific incidence rate can be found in the Technical Volumes at the end of this report.

³² The program design was a kit model in which a pre-packaged kit—including nine bulbs, up to three aerators, and two showerheads—was provided to each home. Review of the data would suggest that some homes received no measures at all; however, conversations with GoodCents and the auditors, as well as additional information provided after the delivery of the Draft EM&V report on March 1, 2013, indicate that for homes with a null or 0 value for all kit measures, the kit was received but none of the measures were installed at the time of the audit. In order to accurately capture these instances, the Evaluation Team applied the program's per-house measures-received average to all homes that were null for all kit content. In order to confirm that the null participants indeed received a kit, the Evaluation Team did a quick follow-up call to a census of a sample of 40 null participants in March 2013, and found quantitatively that those that were previously reported full null (0 for all measures) did receive measures like CFLs in the range of 0 to 9 during the audit. Participants who had values for some measures but null for others were not adjusted because there is no evidence that those inputs were incorrect, and participant surveys, auditor interviews, and feedback from the Program Administrator indicate that for some customers not all measures were installed or even left behind in the home. PY2 evaluation activities will include a deeper review of what happens with measures that were left behind uninstalled.

³³ While GoodCents only reported therm savings for NIPSCO and Vectren, we used their per-home therm savings value and applied it to all participant homes in the state.

Table 28: Audited kWh, kW, and Therm Savings Per Home

		kWh		kW		Therms	
Utility	Number of Homes in Database	Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	5,951	783	4,658,894	0.365	2,171	19.44	115,669
I&M	4,019	795	3,193,282	0.386	1,553	23.88	95,974
IPL	10,309	734	7,562,157	0.357	3,681	20.99	216,348
IMPA	1,646	752	1,238,122	0.368	606	20.65	33,984
NIPSCO	4,784	667	3,192,118	0.363	1,737	26.10	124,885
Vectren	3,563	789	2,811,428	0.39	1,397.57	22	77,790
Statewide	30,272		22,656,001		11,145.16		664,650

VERIFIED SAVINGS

To calculate verified savings, an installation and persistence rate for each measure is applied to the audited savings results. Verification activities typically include telephone surveys and/or site visits designed to adjust total savings for issues such as measures rebated but never installed, not meeting program qualifications, measures installed but removed later, and/or measures improperly installed. For this program, the installation rate was calculated by asking participants surveyed how many of each measure was directly installed in their homes at the time of the audit, or installed by the participant at a later time. The persistence rate was calculated by asking participants if any measures had been removed since installation and, if so, how many. The adjustments made in this phase are applied using a single statewide number, as opposed to utility-specific numbers, because while the surveys are designed to achieve a 90% confidence and 10% precision interval at the utility-level at the end of the program cycle, the PY1 surveys provide a 90% confidence and 10% precision interval at the program-level only³⁴. Table 29 provides a summary of the measure-level installation and persistence rates.

For all customers in the database who were fully null, as addressed above, the Evaluation Team applied the statewide measures installation rate. These participants were not part of the survey, but treating them

³⁴ In October and November 2012, 153 HEA participants were interviewed. The participant survey sample was randomly selected from the pool of Duke, I&M, NIPSCO, IPL, Vectren, and IMPA participants. Ultimately, quotas were set to ensure an adequate mix of participants from each utility to achieve a 90/10 confidence and precision at the utility-level at the end of the three years.

in the same manner as the rest of the program population is the most appropriate approach given the available data for these unique cases³⁵.

Table 29: Statewide Verification Adjustments

Measure Type	Installation Rate	Persistence Rate
CFLs	66.9%	99.8%
Pipe Wrap	87.3%	100.0%
Low-Flow Showerhead	55.4%	92.7%
Faucet Aerators	54.0%	100.0%
Tank Wrap	NA	NA
Audit Recommendations	100.0%	100.0%

The installation rates show that many of the measures provided by the program are not being installed at the time of the audit or by participants at a later time. The highest installation rates are for pipe wrap at 87.3 and CFLs at 66.9%. The lowest installation rate is for faucet aerators at 54%. In contrast, persistence rates are quite high, which indicates that once the measures are installed, customers generally keep them in place.

The lower installation rates are consistent with what auditors reported during the auditor survey. Auditors reported that typical reasons for not installing measures were either customer preference or fear that the installation of the measure could damage the fixture, faucet, or pipes. According to auditors, water heater tank wrap was the most likely measure to go uninstalled, followed by aerators and showerheads. Table 30 provides findings regarding the installation of measures as reported by the program auditors.

³⁵ The Evaluation Team will look at customers who have full kits left behind in PY2, and will determine if they need a different installation rate at that time.

Table 30: Measure Installation as Reported by Auditors³⁶

When performing an audit, do you typically install or leave behind... (n=11)	Typically, I install all of the measures	It depends whether I install or leave behind the measures
CFLs	64%	36%
Faucet Aerators	36%	64%
Low-Flow Showerheads	36%	64%
Water Heater Tank Wrap	18%	82%
Hot Water Pipe Wrap	73%	27%

For the audit recommendations, we are applying an installation rate of 100%. This is because the savings generated by the audit recommendations will be different for each customer, depending on what actions they took as a result of the program. The energy savings resulting from the audit recommendations is adjusted in the ex-post engineering review.

To calculate verified per-home savings, the statewide installation and persistence rates were applied to each utility’s audited incidence rates for each measure, and then multiplied by that measure’s ex-ante per-unit savings value. These verified measure savings values were then summed to establish the verified per-home value. The verified per-home value was then applied to the audited number of homes in each utility territory. Table 31 shows the utility and statewide verified energy savings. Utility-specific data can be found in the Technical Volumes.

³⁶ Auditors were also given the option of selecting “Typically I leave the measures,” however none of the auditors reported doing this.

Table 31: Verified Energy Savings (kWh and kW) by Utility and Statewide

		kWh		kW		Therms	
Utility	Number of Homes in Database	Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	5,951	553	3,293,227	0.24	1,437.88	17	102,624
I&M	4,019	565	2,269,520	0.26	1,033.78	21	83,064
IPL	10,309	527	5,429,263	0.24	2,443.07	18	187,765
IMPA	1,646	538	885,700	0.24	401.93	18	29,412
NIPSCO	4,784	493	2,360,775	0.24	1,157.74	22	104,655
Vectren	3,563	561	2,000,531	0.26	926.84	18	65,862
Statewide	30,272		16,239,016		7,401.24		573,383

I&M had the highest per-home verified kWh savings value at 565 kWh, which is 54.5% of the planned per-home value. NIPSCO had the lowest per-home verified kWh savings value (493 kWh), which was 48% of the planned per-home value.

The verified savings for the HEA program are lower than the Evaluation Team has seen on other jurisdictions across the U.S. running like programs. Recent findings in a neighboring state found that while the installation rates for aerators and showerheads were similar to those found in Indiana, the installation rates for CFLs were up to 30% higher. This difference alone accounts for the significantly lower verified savings seen in the Energizing Indiana effort, when compared to this neighboring state's program offering. Persistence rates are in line with those seen in other like programs, proving that when measures are directly installed they tend to stay installed. This makes it ever more important that when auditors are in the home, they work to ensure that they are installing all of the measures in the kits.

EX-POST SAVINGS

Ex-post gross evaluated savings for the HEA program for PY1 are determined through engineering analysis. Adjustments made at this point reflect engineering adjustments made to the ex-ante measure savings that were claimed by the program. The engineering analyses for each measure included in the HEA program are discussed below, with details included in the utility volumes.

CFLs

The Evaluation Team reviewed the assumptions from various references, including the current program assumptions provided by the implementer, the 2010 Ohio TRM, the Indiana TRM, the Mid-Atlantic TRM, and the ENERGY STAR® Lighting Calculator and Qualified Lighting Spreadsheets.

As part of the Statewide CORE evaluation, the Team is currently conducting an hours-of-use study for CFLs. The current hours-of-use estimates for CFLs may need to be revisited in the future once this study is complete.

Table 32 below lists the baseline incandescent-equivalent wattages for the CFLs distributed as part of the direct install component for the HEA program. These numbers are used in our analysis, and are within lumen ranges that meet EISA³⁷ requirements.

Table 32: Baseline Incandescent Wattages Based on Lumen Output

Measure Type	Average Lumen Output Per Lamp ³⁸	Evaluated Incandescent Baseline Wattage ³⁹
13-watt CFL	850	60
19-watt CFL	1,200	75
23-watt CFL	1,500	100

Note: According to the ENERGY STAR Lighting Calculator, a 23W CFL could replace either a 100W or 75W incandescent. The Evaluation Team chose 100W to be consistent with past Indiana Core Plus evaluation results.

The evaluated savings are calculated for each type of CFL wattage (13W, 19W, 23W) that is distributed through the program. The implementer used the same per-unit savings for each type of CFL that was installed without considering the different wattages associated with each type. The Team used a weighted average of the CFL wattages contained within the kits.⁴⁰ The ex-post evaluated savings applies a gas penalty, by means of the gas waste-heat factor. The heating load is increased because more energy is needed to supplement the heat that was once given off by the incandescent lamps. However, the cooling load is decreased, as less energy is needed to cool the home by removing the additional heat that was once given off by the incandescent lamps. The waste heat factors that were applied are weighted averages for

³⁷ Impact of EISA 2007 on General Service Incandescent Lamps.
http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/general_service_incandescent_factsheet.pdf

³⁸ Based on lumen outputs from the EN^{ERGY STAR} Qualified Bulbs spreadsheet and lighting calculator;
downloads.energystar.gov/bi/qplist/Lamps_Qualified_Product_List.xls

³⁹ Incandescent equivalent wattage based on ENERGY STAR Lighting Calculator
http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/light_bulb_calculator.xlsx

⁴⁰ Email received from Charles Graf on December 20, 2012, stated that each kit contained 9 CFLs: 6 x 13-watt, 2 x 19-watt and 1 x 23-watt. The Team applied a weighted average to all CFLs installed through the program.

different types of heating fuel for different territories within Indiana⁴¹. It is unknown whether waste-heat factors were applied when calculating the ex-ante per-unit savings.

Low-Flow Showerhead

The Evaluation Team reviewed algorithms and assumptions for low-flow showerheads from various references, including the 2009 Ohio TRM, 2010 Ohio TRM, Indiana TRM, Mid-Atlantic TRM, Vectren 2011 EM&V report, Indiana Residential Market Baseline 2012, Domestic Hot Water Event Scheduler Generator developed by the National Renewable Efficiency Laboratory (NREL), and Census data from Ferret Software specifically for Indiana⁴².

Low-Flow Bathroom and Kitchen Faucet Aerators

The Program Administrator stated that they used the Master Measure Database for Indiana to determine the per-unit energy savings for low-flow aerator measures. It is unclear what resources were used to arrive at the assumptions used to calculate these savings.

The evaluated savings for low-flow aerators is consistent across both the HEA and LIW programs. We calculated individual savings for bathroom and kitchen aerators, as the time of use for each differs. Normally, bathroom aerators have a lower gallon-per-minute (gpm) flow rate than what was used in our calculations; however, our evaluation uses the same value for bathroom and kitchen aerators because the implementer applied the same per-unit savings for both bathroom and kitchen faucet aerators, and there was only one type of aerator included in the kit. The type of aerator that was installed in the home was not tracked as a bathroom or kitchen aerator. As a result, we used an average savings number for kitchen and bathroom aerators.

We provided savings for those households with either electric or gas water-heating fuel types. The Program Administrator applied the same per-unit savings value for all utilities within Indiana. We evaluated the per-unit savings for each utility, as the inlet water temperatures vary by territory. These conditions are reflected in our calculations and can be found in the utility-specific volumes.

Hot Water Pipe Insulation

One of the direct-install measures for the program involves installing pipe insulation around the distribution pipes for water heaters. The Program Administrator stated that they used the Master Measure Database for Indiana (June 2010) to determine the per-unit savings. It is unclear what assumptions were used to calculate these savings.

The Program Administrator applied different per-measure ex-ante savings for participants with electric water heaters and for those with gas water heaters. We agree that this method is correct and have done the same for our evaluation. The assumptions that were used to calculate the per-measure ex-ante savings

⁴¹ Applied waste-heat factors for the LIW and HEA programs differ from the waste-heat factors applied for the Residential Lighting program. The HEA, EES, and LIW programs each included multiple measures that had savings affected by region and the magnitude of savings variance between utility territories was significant, given that it was important to have those savings calculated to the region. For Residential Lighting, there were two approaches to take, calculating individual wattage algorithms for each wattage by each of the 6 territories (about 400 algorithms with all wattages and regions) or aligning with the Third-Party Administrator approach of developing a savings based on the weighted average wattage and statewide inputs. We chose the latter more simplified approach because it helped ensure we could balance the resources needed for the EM&V effort against other efforts being undertaken for lighting that will in future program year evaluations have a much bigger effect on the number over time (e.g. the Lighting Logger Study currently in field).

⁴² ACS 3-year public use micro-data from 2008 to 2010 from Ferret Software for Indiana.

used by the implementer are unknown, and were recalculated. The same per-unit value is applied for all utilities, as the change in temperature between the water and ambient air is about the same for all areas.

Water Heater Tank Wrap Insulation

Another direct-install measure for the HEA program involves installing water heater tank wraps around electric water heaters. The Program Administrator stated that they used REMrate modeling software to determine the energy and demand impacts for this measure.

The program did not install water heater tank wraps for participants with gas water heaters because of combustion safety. Savings are calculated for electric water heaters only. The same per-unit value is applied for all utilities, as the savings calculations are based on an increase in efficiency due to the added insulation of the tank wrap. The implementer used a modeling approach to calculate the deemed savings; however, it is unknown what characteristics make up the home that is used as their model. We used the information provided in the Indiana TRM.

Home Audit Recommendations

As a part of the HEA program, participants were provided with a report that includes additional recommended energy efficiency measures for their home. A per-home value was calculated by utility and compared to the per-home value that the Program Administrator used from the Ohio 2010 TRM. Our evaluation included the use of participant survey data for those who indicated installing equipment or changing behavior in their home to offset energy use based on the recommendations in the home energy report.

The HEA participants' recommendations in the home energy report differ from those in the LIW home energy report. The HEA participants are likely to implement building shell and mechanical equipment measures, as they most likely own their property and the return on investment is a benefit to them. Table 33 summarizes the types of measures that were included in the analysis for determining savings per household for HEA participants.

Table 33: Recommended Measures Installed Based on Survey Results

Measures Included in Savings Calculations
Shorter showers (electric or gas water heater)
Turn off lights when not in use
Adjust thermostat program settings (has gas or electric heating)
Unplug appliances when not in use
Replace air filters for HVAC equipment (gas or electric heating)
Adjust water heater temperature (electric or gas water heater)
Seal, weather-strip, caulk to improve infiltration (gas or electric heating)
Install attic insulation
Install new energy-efficient windows
Replace or repair existing gas furnace
Purchase energy-efficient appliances

A total of 153 participants were surveyed, and 88 (58%) of them indicated implementing one or more of the recommendations from the home energy report. Savings were calculated per participant and then

totaled at a statewide level⁴³. The total energy and demand savings were then divided by the total number of participants who were surveyed to get a per-home value. Table 34 shows the ex-ante and ex-post savings for the audit recommendations.

⁴³ 90/10 confidence and precision at the utility level will not be achieved until the end of the three-year evaluation period.

Table 34: Ex-Ante and Ex-Post Audit Recommendation Savings

	Incidence	kW	kWh	Therms
Ex-Ante Per-Home Audit Recommendations	.5	.00	187.5	12.8
Ex-Post Per-Home Audit Recommendations	1	.03	247.20	50.5

Participants who indicated installing more CFLs did not receive additional audit recommendation credit. The reason for this is twofold: 1) the tracked database shows that more than the maximum nine CFLs were installed and/or provided to some homes, and 2) given the large volume of retailers participating in the Residential Lighting program, it is very likely that the savings for those bulbs are being captured through that program. Table 35 provides a comparison of the ex-ante savings per-measure used by the Program Administrator in planning, to the ex-post gross savings range⁴⁴ established by the Evaluation Team.

Table 35: Summary of Ex-Ante Energy, Demand, and Therms Savings Against Ex-Post Savings

Measure Type	Ex-Ante kWh Savings	Ex-Ante kW Values	Ex-Post Gross kWh Savings	Ex-Post Gross kW Savings	Ex-Post Gross Therms
CFL	60.9	.046	50-52	.006	-.97-1.03
Faucet Aerator	158	.006	68.1-97.8	.008-.01	3.09-4.04
Shower Aerator	327	.052	441-516	.03-.035	19.67-22.99
Pipe Wrap	51	.025	72.52-84.36	.002	30.82-36.5
Tank Wrap	205	.032	78.6	.009	NA
Audit Recommendations	187.5	.000	247.2	.03	50.5

Based on these engineering adjustments, we have applied the per-measure ex-post savings to the verified number of measures attributable to the HEA program by utility (audited measure count * ex-post savings * installation & persistence rate) to develop the program’s ex-post energy, demand and therm savings. These totals are outlined in

Table 36 below. Utility-specific data can be found in the Technical Volumes.

On a statewide level, total ex-post kWh savings are significantly higher than verified kWh savings. This increase is due to a combination of factors. For the majority of utilities, ex-post per-unit savings numbers are higher than ex-ante per-unit savings values for CFLs, pipe wraps, and low-flow showerheads. Audit recommendations also accounted for higher kWh ex-post values. Savings from audit recommendations

⁴⁴ Note that ex-post savings in this table reflect the range across all five utilities participating in the program and IMPA; for specific utility savings, please see the Technical Volume.

account for 50% of the ex-post per-home kWh savings, 38% of the ex-post kW savings, and 89% of the ex-post therm savings. Savings decreased for some utilities while increasing slightly for others, depending on factors such as the incidence rates. Utility-specific data can be found in the utility Technical Volumes. As noted previously, there is a negative therm savings associated with the lighting measures, a result of the application of an interactive effect for lighting.

Table 36: Ex-Post Savings Per Utility and Statewide

Utility	Total Number of Homes	Ex-Post kWh Savings		Ex-Post kW Savings		Ex-Post Therm Savings	
		Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	5,951	605	3,598,696	0.07	398.76	56	334,479
I&M	4,019	607	2,439,857	0.07	274.07	60	239,643
IPL	10,309	574	5,921,050	0.07	672.82	55	564,650
IMPA	1,646	585	962,527	0.07	109.27	54	89,705
NIPSCO	4,784	529	2,528,973	0.06	300.02	63	300,609
Vectren	3,563	603	2,147,215	0.07	241.78	55	195,691
Statewide	30,272		17,598,318		1,996.72		1,724,776

NET SAVINGS

The net energy savings refers to the amount of savings that are the direct result of HEA program participation (i.e., they would not have happened without the program). Evaluation activities for calculating net energy savings typically include telephone surveys to adjust total savings for measures that would have been installed regardless of the program (free-ridership), and to capture any additional energy-savings activities that participants may have undertaken as a result of their participation in the program but were not incentivized (spillover). Because this program derives energy savings from audit recommendations, the evaluation captured the energy savings from projects that participants completed outside of the program in the ex-post audit recommendations savings adjustment. The energy savings from those projects are considered program savings and not spillover. As a result, the net-to-gross (NTG) score is based on free-ridership alone.

The NTG score was calculated by asking participants surveyed if they would have installed the measure in absence of the program. If participants indicated they would have, we then asked them if they would

have installed the same quantity at the same time, in order to determine how the program either accelerated or increased the amount of the measures installed. The NTG score is calculated based on the following survey responses:

Full free riders are participants that indicated that they would have bought the same number of a given measure at the same time.

Non-free riders are participants who indicated that they would not have bought any of the measures and are assigned 0% free-ridership.

Partial free riders are participants that would have bought some or all of the measures, either at the same time or in the future.

NTG ratios were calculated at the measure level. A detailed summary of the NTG approach and how it was established by measure can be found in Appendix B. Table 37 shows the NTG scores for the measures installed through the HEA program. The NTG ratios calculated in this phase are applied using a single statewide number, as opposed to utility-specific numbers, because while the surveys are designed to achieve a 90/10 confidence and precision at the utility-level at the end of the program cycle, the PY1 surveys provide 90/10 at the program-level only⁴⁵.

Table 37: Statewide Net-to-Gross Ratios

Measure Type	Net-to-Gross Ratio
CFLs	77%
Pipe Wrap	93%
Low-Flow Showerhead	93%
Faucet Aerators	89%
Tank Wrap	100%
Audit Recommendations	100%

The net energy savings was then calculated by applying the NTG score to the ex-post savings. Table 38 shows the utility-level and statewide net energy savings.

⁴⁵ In October and November 2012, 153 HEA participants were interviewed. The participant survey sample was randomly selected from the pool of Duke, I&M, NIPSCO, IPL, Vectren, and IMPA participants. Ultimately, quotas were set to ensure an adequate mix of participants from each utility to achieve a 90/10 confidence and precision at the utility level at the end of the three years.

Table 38: Net Energy (kWh, kW, and Therms) Savings by Utility and Statewide

Utility	Total Number of Homes	Net kWh Savings		Net kW Savings		Therms	
		Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	5,951	539	3,205,495	0.06	354.87	56	335,407
I&M	4,019	538	2,164,015	0.06	242.56	59	238,904
IPL	10,309	511	5,266,365	0.06	597.78	55	567,159
IMPA	1,646	519	854,671	0.06	96.91	55	90,191
NIPSCO	4,784	467	2,234,100	0.06	265.05	62	298,211
Vectren	3,563	532	1,894,987	0.06	213.48	55	196,691
Statewide	30,272		15,619,632		1,770.65		1,726,564

PROGRAM PERFORMANCE: CANVASSING MEASURES

In August 2012, the Program Administrator decided to provide CFLs to potential HEA participants during canvassing activities to encourage enrollment in the program; in November 2012 they added Smart Strip power strips to the HEA canvassing effort. The late entry of the canvassing measures into the program meant the Evaluation Team was unable to field participant surveys on installation and persistence rates for these measures⁴⁶ in time for this evaluation. Because of this, the Evaluation Team decided to assume an installation and persistence rate of 100% for PY1. These measures will be fully assessed during the PY2 evaluation. It should be noted that the measures represent a very small proportion of total program savings (1.5% of total program). These measures will be incorporated into the participant surveys next year to estimate installation, persistence, and free-ridership for measures distributed while canvassing.

CANVASSING MEASURES – AUDITED THROUGH VERIFIED SAVINGS

The Evaluation Team completed the audit of the savings from canvassing measures by reviewing the program data to confirm the number of measures provided through canvassing. The Program Administrator provided the Evaluation Team with data including the homes by utility that received canvassing measures. The total number of measures for this period was then tallied by utility territory. The Program Administrator claimed an ex-ante savings value of 44.1 kWh and .046 kW per CFL, and 102.8 kWh and .04 kW per Smart Strip. The savings values were multiplied by the number of audited

⁴⁶ The participant survey was fielded in October 2012 prior to the program launching the canvassing effort; these measures will be included in PY2 surveys.

measures to determine audited savings. As noted above, the verified savings will be equal to the audited savings. Table 39 and Table 40 below provide a summary of the reported (or ex-ante), audited, and verified measure quantities and the energy savings for Smart Strips and CFLs, respectively. Note that the Program Administrator did not report Smart Strips at the program level; therefore only audited and verified savings for Smart Strips are presented.

Table 39: Smart Strip Savings (Audited through Verified)

Utility	Audited Number of Smart Strips	Audited through Verified	
		kWh	kW
Duke	1,805	185,554	72.2
I&M	722	74,222	28.9
IPL	2,228	229,038	89.1
IMPA	444	45,643	17.8
NIPSCO	1,756	180,517	70.2
Vectren	996	102,389	39.8
Statewide	7,951	817,363	318.0

Table 40: CFL Savings (Ex-Ante through Verified)

Utility	Reported Number of CFLs	Ex-Ante		Verified Number of CFLs	Audited through Verified	
		kWh	kW		kWh	kW
Duke	498	20,866	22.9	498	20,866	22.9
I&M	3	126	0.1	3	126	0.1
IPL	770	32,263	35.4	770	32,263	35.4
IMPA	28	1,173	1.3	28	1,173	1.3
NIPSCO	1,671	70,015	76.9	1,671	70,015	76.9
Vectren	233	9,763	10.7	233	9,763	10.7
Statewide	3,203	134,206	147.3	3,203	134,206	147.3

CANVASSING MEASURES – EX-POST SAVINGS

The ex-post savings reflect engineering adjustments made to the per-unit ex-ante measure savings that were claimed by the program.

CFLs

The ex-post adjustments for CFLs were based on the adjustments made for the CFLs installed through the direct-install component of the program. The Evaluation Team reviewed the assumptions from various references, including the current program assumptions provided by the implementer, the 2010 Ohio TRM, the Indiana TRM, the Mid-Atlantic TRM, and the ENERGY STAR Lighting Calculator⁷ and Qualified Lighting Spreadsheets⁸.

Table 41 lists the baseline incandescent-equivalent wattages for the CFLs distributed as part of the direct-install component for the HEA program. These numbers are used in our analysis, and are within lumen ranges that meet EISA⁴⁷ requirements.

⁴⁷ Impact of EISA 2007 on General Service Incandescent Lamps.

http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/general_service_incandescent_factsheet.pdf.

Table 41: Baseline Incandescent Wattages Based on Lumen Output

Measure Type	Average Lumen Output Per Lamp ⁴⁸	Evaluated Incandescent Baseline Wattage ⁴⁹
13-watt CFL	850	60
19-watt CFL	1,200	75
23-watt CFL	1,500	100

Note: According to the ENERGY STAR Lighting Calculator, a 23W CFL could replace either a 100W or 75W incandescent. The Evaluation Team chose 100W to be consistent with Past Indiana Core Plus program results.

The evaluated savings are calculated for each type of CFL wattage (13W, 19W, 23W) that is distributed through the program. The implementer used the same per-unit savings for each type of CFL that was installed without considering the different wattages associated with each type. The evaluated savings is a weighted average of the CFL wattages contained within the kits.⁵⁰ The ex-post evaluated savings applies a gas penalty, by means of the gas waste-heat factor. The heating load is increased because more energy is needed to supplement the heat that was once given off by the incandescent lamps. However, the cooling load is decreased, as less energy is needed to cool the home by removing the additional heat that was once given off by the incandescent lamps. The waste-heat factors that were applied are weighted averages for different types of heating fuel for different territories within Indiana. It is unknown whether waste-heat factors were applied when calculating the ex-ante per-unit savings. The CFL per-unit savings are calculated for each utility.

Smart Strips

The Program Implementers applied a deemed value from the 2010 Ohio TRM, as the Indiana TRM was not yet public at the time of program implementation. Now that the Indiana TRM is available, we feel that it represents the most appropriate value for Smart Strips for PY1. Table 42 below shows the deemed value from the 2010 Ohio TRM for Smart Strips, and compares this to the deemed value that is in the Indiana TRM, which is a considerable reduction in energy savings.

Table 42: Ohio 2010 TRM Savings vs. Indiana TRM Savings

Measure	2010 Ohio TRM kWh Savings	2010 Ohio TRM kW Savings	Indiana TRM kWh Savings	Indiana TRM kW Savings
7-plug Smart Strip	102.8	0.012	22.6	0.00178

The implementer applied the deemed savings from the Ohio 2010 TRM to each participant who received a Smart Strip. However, the demand per-unit value that was being used (0.04) was incorrect. For our evaluation, we applied the value that is shown in Table 42 of 0.012 kW/unit. Table 43 shows the ex-post savings from Smart Strips and CFLs distributed through canvassing efforts.

⁴⁸ Based on lumen outputs from the ENERGY STAR Qualified Bulbs spreadsheet and lighting calculator; downloads.energystar.gov/bi/qplist/Lamps_Qualified_Product_List.xls.

⁴⁹ Incandescent equivalent wattage based on ENERGY STAR Lighting Calculator www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/light_bulb_calculator.xlsx

⁵⁰ Email received from Charles Graf on December 20, 2012, stated that each kit contained 9 CFLs: 6 x 13-watt, 2 x 19-watt and 1 x 23-watt. The Team applied a weighted average to all CFLs installed through the program.

Table 43: Ex-Post Energy Savings for Smart Strips and CFLs

Utility	Audited Number of Smart Strips	Ex-Post kWh	Ex-Post kW	Audited Number of CFLs	Ex-Post kWh	Ex-Post kW	Ex-Post Therms
Duke	1,805	40,793	3.25	498	25,199	2.94	-483.06
I&M	722	16,317	1.30	3	148	0.02	-3.09
IPL	2,228	50,353	4.01	770	38,970	4.62	-746.90
IMPA	444	10,034	0.80	28	1,417	0.17	-27.16
NIPSCO	1,756	39,686	3.16	1,671	83,751	10.03	-1,721.13
Vectren	996	22,510	1.79	233	12,130	1.4	-214.36
Statewide	7,951	179,693	14.31	3,203	161,614	19.17	-3,195.7

Table 44 shows the ex-ante through ex-post kWh and kW savings for Smart Strips at the utility and statewide level.

Table 44: Energy Savings for Smart Strips

Utility	Ex-Ante		Audited		Verified		Ex-Post		
	kWh	kW	kWh	kW	kWh	kW	kWh	kW	Therms
Duke	NA	NA	185,554	72.2	185,554	72.2	40,793	3.3	-483
I&M	NA	NA	74,222	28.9	74,222	28.88	16,317	1.3	-3
IPL	NA	NA	229,038	89.1	229,038	89.12	50,353	4.0	-747
IMPA	NA	NA	45,643	17.8	45,643	17.76	10,034	0.8	-27
NIPSCO	NA	NA	180,517	70.2	180,517	70.24	39,686	3.2	-1,721
Vectren	NA	NA	102,389	39.8	102,389	39.84	22,510	1.8	-214
Statewide	NA	NA	817,363	318.0	817,363	318.04	179,693	14.3	-3,196

Note: The Program Administrator did not report Smart Strip savings at the program level.

Table 45 shows the ex-ante through ex-post savings for the CFLs that were distributed through the canvassing efforts, including the therm penalty that was applied after the engineering review.

Table 45: Energy Savings for Canvassing CFLs

Utility	Ex-Ante		Audited		Verified		Ex-Post		
	kWh	kW	kWh	kW	kWh	kW	kWh	kW	Therms
Duke	20,866	22.9	20,866	22.9	20,866	22.9	25,199	2.94	-483
I&M	126	0.1	126	0.1	126	0.1	148	0.02	-3
IPL	32,263	35.4	32,263	35.4	32,263	35.4	38,970	4.62	-747
IMPA	1,173	1.3	1,173	1.3	1,173	1.3	1,417	0.17	-27
NIPSCO	70,015	76.9	70,015	76.9	70,015	76.9	83,751	10.03	-1721
Vectren	9,763	10.7	9,763	10.7	9,763	10.7	12,130	1.4	-214
Statewide	134,206	147.3	134,206	147.3	134,206	147.3	161,614	19.17	-3196

PROGRAM PERFORMANCE: SUMMARY

Table 46, Table 47, and Table 48 incorporate savings from both the audit program and the canvassing program to provide the total kWh, kW, and therm savings for the HEA program through every step of the evaluation process.

Table 46: Program Performance (kWh) Audit and Canvassing Measures Combined

Utility	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh	Lifetime Ex-Post kWh	Net kWh
Duke	12,802,888	6,368,469	4,865,314	3,499,648	0.55	3,664,688	19,386,199	3,271,487
I&M	4,163,684	4,238,031	3,267,630	2,343,867	0.55	2,456,323	12,993,947	2,180,481
IPL	20,405,056	10,934,024	7,823,458	5,690,564	0.52	6,010,373	31,794,871	5,355,687
IMPA	3,238,536	1,752,072	1,284,939	932,516	0.53	973,979	5,152,348	866,122
NIPSCO	8,053,864	5,198,223	3,442,650	2,611,307	0.50	2,652,409	14,031,245	2,357,536
Vectren	3,693,340	3,802,803	2,923,579	2,112,683	0.56	2,181,854	11,542,008	1,929,626
Statewide	52,357,368	32,293,623	23,607,570	17,190,585	0.53	17,939,625	94,900,617	15,960,939

Table 47: Program Performance (kW) Audit and Canvassing Measures Combined

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Lifetime Ex-Post kW	Net kW
Duke	5,704.00	2,841.11	2,266.01	1,532.99	0.54	404.95	404.95	361.06
I&M	1,855.00	1,883.86	1,582.08	1,062.80	0.56	275.39	275.39	243.87
IPL	9,091.00	4,875.82	3,798.35	2,567.61	0.53	681.45	681.45	606.41
IMPA	1,442.00	777.93	624.73	420.97	0.54	110.24	110.24	97.87
NIPSCO	3,588.00	2,352.71	1,881.84	1,304.85	0.55	313.21	313.21	278.24
Vectren	1,645.00	1,675.84	1,428.40	977.40	0.58	244.97	224.97	216.67
Statewide	23,325.00	14,407.26	11,581.42	7,866.62	0.55	2,030.20	2030.20	1,804.13

Table 48: Program Performance (Therms) Audit and Canvassing Measures Combined

Utility	Planned Therms	Ex-Ante Therms	Audited Therms	Verified Therms	Realization Rate	Ex-Post Therms	Lifetime Ex-Post Therms	Net Therms
Duke	NA	NA	115,669	102,624	NA	333,256	2,526,077	334,184
I&M	NA	NA	95,974	83,064	NA	239,344	1,814,224	238,605
IPL	NA	NA	216,348	187,765	NA	562,989	4,267,460	565,499
IMPA	NA	NA	33,984	29,412	NA	89,496	678,380	89,982
NIPSCO	NA	132,600	124,885	104,655	0.79	298,167	2,260,109	295,770
Vectren	NA	98,779	77,790	65,862	0.67	195,069	1,478,619	196,068
Statewide	NA	NA	664,650	573,383	NA	1,718,321	13,024,869	1,720,108

PROCESS ANALYSIS

The PY1 process analysis for the HEA program includes a participant survey, an online survey of program auditors, and interviews with the Program Administrator. The participant surveys asked questions related to how participants heard about the program, awareness of ways to save energy, program satisfaction levels, and the program's participation processes. The auditor interviews explored areas of program training, the audit process, participant perceptions, and health and safety issues. We also interviewed the Program Administrator to discuss the program's purpose, goals, operations, strengths, and challenges.

As previously mentioned, the participant survey was administered in September and October of 2012. However, the program significantly increased its efforts in the last two months of the year, completing almost 58% of audits in the last quarter. Program staff reported that in October they partnered with several other organizations to increase the program's auditor pool temporarily. The total number of auditors went from approximately 60 to 210 across both the HEA and LIW programs, representing a 250% increase. As these new auditors were not included in our original auditor survey, nor were the homes they served in the participant surveys, and considering the number of audits completed in the last two months of the year, the following process results reflect customer satisfaction levels from January through September 2012 only. To capture the effects of mid-cycle program changes in future years, we will conduct participant surveys at two times during the year, in August and in January, immediately after the close of the program year.⁵¹

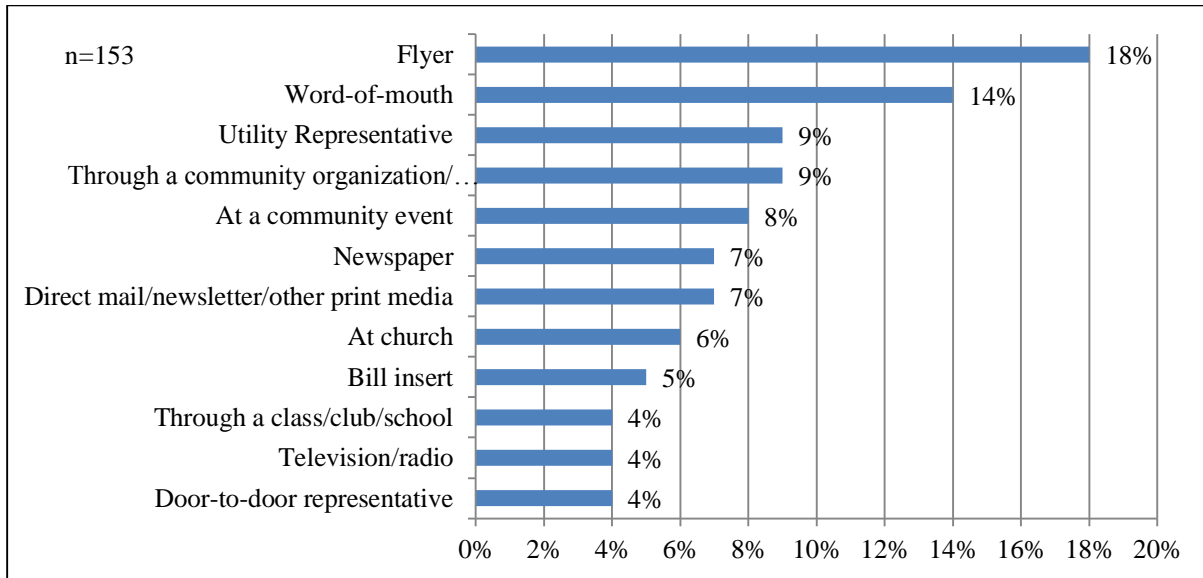
PROGRAM MARKETING

The program-planning numbers indicated that it aimed to target primarily owner-occupied electrically heated homes that have not received a utility-sponsored audit in the past three years; however, all owner-occupied homes 10 years or older in a participating utility territory were eligible. GoodCents employs a number of tactics to draw customers into the program, including Internet, mailings, community action agencies, and neighborhood canvassing. The Program Administrator accelerated door-to-door canvassing and increased outreach through community organizations later in the program year, after the survey had been fielded.

Figure 5 below shows how HEA participants reported learning about the program at the time of the participant survey.

Figure 5: Program Marketing Avenues

⁵¹ Please note that a participant survey in January will only be feasible in future years if the EM&V report due date is pushed back to later in the spring.



The participant survey found that most participants were interested in the program because they wanted to reduce their energy bills (38%), followed by participants wanting to be more efficient (32%). Overall, 41% of customers could not think of a reason why people would not participate. The primary barrier mentioned in the participant survey was that people are too busy or do not have enough time to participate in a program like HEA (20%), followed by lack of awareness (17%) and privacy concerns (13%).

Additionally, the Evaluation Team gathered demographic information during the participant survey. According to the responses regarding household income levels, about 31% of customers that participated in the HEA program reported annual income levels less than \$30,000. These customers may have qualified for additional services offered through the LIW program. Table 49 displays the income levels of HEA participants.

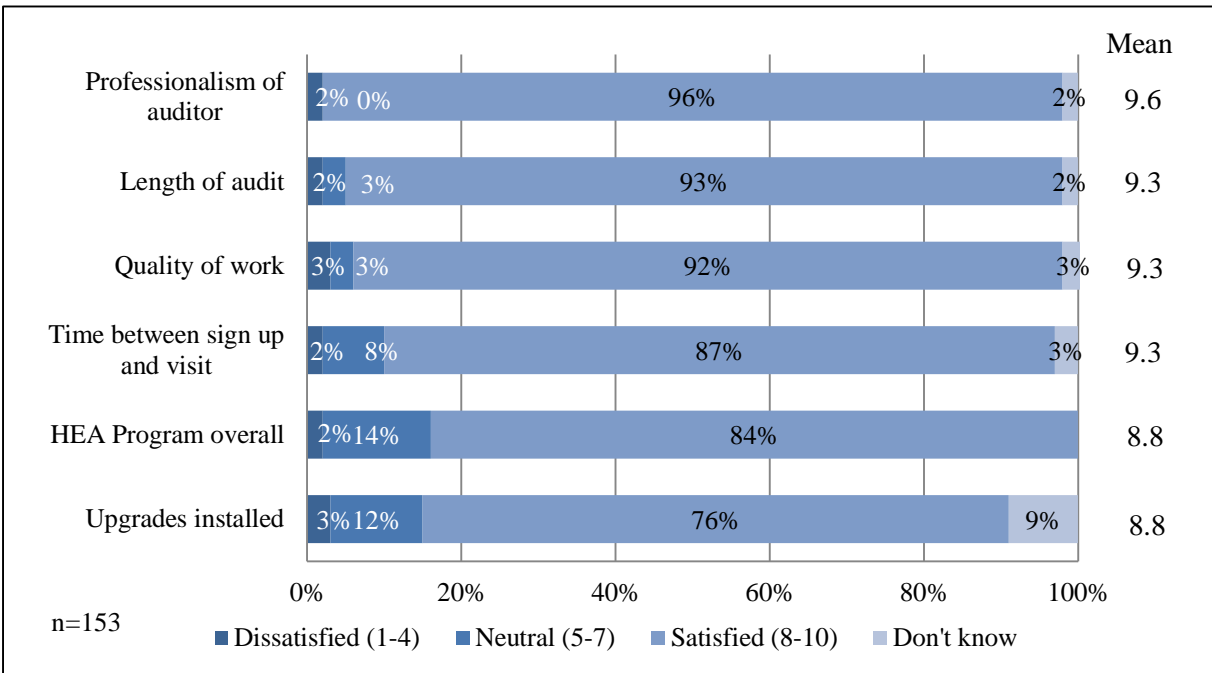
Table 49: HEA Reported Household Income Levels

Income Level	% of Respondents (n=153)
Less than \$15,000	7.3%
\$15,000 - \$29,999	23.8%
\$30,000 - \$49,999	20.6%
\$50,000 - \$74,999	17.2%
\$75,000 - \$99,999	8.4%
\$100,000 and over	14.1%
Don't know	0.5%
Refused	8.1%
Total	100.0%

CUSTOMER SATISFACTION

Figure 6 below shows customer satisfaction with various elements of the program. As illustrated, HEA participants are satisfied with the program—especially with the professionalism of the auditors. In fact, the vast majority of participants (74%) could not list anything that could be done to improve the program. Participants were least satisfied with the upgrades that were installed in their homes as a part of the audit.

Figure 6: Satisfaction with Program



Note: Does not sum to 100% due to rounding.

PROGRAM OPERATIONS

Participants have three enrollment channels to participate in the program: Internet, call center, and business reply cards. Once the participant has enrolled, an appointment is scheduled through the call center for an auditor to visit the participant’s home. While at the home, the auditor conducts a one- to two-hour audit and installs the prescribed measures. The homeowner receives a report including recommendations for additional steps they can take to make their home more efficient.

Participant Perceptions

Prior to entering the HEA program, only about a third (37%) of participants interviewed reported being knowledgeable about energy efficiency. After participating in the program, over half (54%) of those interviewed reported having learned “a lot” and 38% reported learning “some” about energy efficiency from the program representative that visited their home.

Nearly all participants (95%) reported that the auditor discussed their audit findings and recommendations with them, and 93% of participants reported being provided with a written report of findings by their program representative. About 96% felt that the information provided by their auditor was “very” or “somewhat” useful.

Auditor Perceptions

In addition to assessing participant views of the program's operation and influence, we also interviewed 11 of the original⁵² 36 HEA auditors to review training, the audit process, and challenges. Nearly all of the auditors interviewed (91%) felt that the training required to become an auditor was adequate. When asked about additional training opportunities that they would like to have, auditors most often (83%) mentioned the need for more HVAC training.

Of the auditors interviewed, only 9% reported being Building Performance Institute (BPI) certified, and just over half (55%) reported prior experience with residential auditing work. In addition to HEA audits, nearly half (46%) reported completing audits as a part of the LIW program.

DATA AND TRACKING SYSTEMS

The HEA audit is completed using an auditing tool called Optimizer. The auditor enters the audit information along with the measures installed into a handheld device loaded with the Optimizer software. The data from the device is then uploaded to the program-tracking database.

The Evaluation Team completed a thorough review of the program's data and tracking system. Early versions of the data had several fields missing that were necessary to the program evaluation, including the number of measures provided to program participants, phone numbers, and housing characteristics. The Evaluation Team held several meetings with the Program Administrator to identify fields needed for the evaluation and to clarify outstanding questions. Data provided in November 2012, representing program participation through the end of October 2012, included the data necessary to calculate preliminary participation numbers and measure incidence rates. The Program Administrator delivered year-end data on January 18, 2013. In its review, the Evaluation Team found errors in the data and identified new naming conventions for some variables. This required further communication with the Program Administrator, and a final data set with corrected data was delivered on January 25, 2013.

Several issues were identified during the Evaluation Team's review of the program data, as shown below. Currently, there is no data dictionary for the program database⁵³. The database has a number of fields with similar labels, making it difficult to determine the correct and applicable fields for analysis. The database includes a number of variables where the featured data had been auto-populated with "default" data by the Optimizer tool. Often, the auto-populated data was unnecessary and made the data analysis challenging, particularly with regard to assessing what information had been entered by auditors and what information was automatically set by the Optimizer tool.

The database does not distinguish between installed and left-behind measures, making it difficult to assign savings credit to those measures. As noted earlier in the report, many of the measures intended for installation are not being installed in homes for a number of reasons, including customer refusal. This finding was reported consistently by both auditors and participants. Auditors, in fact, indicated that in some cases left-behind measures were not being tracked in the program database. Identifying the number of measures left behind would allow the Evaluation Team in its verification efforts to confirm how many measures were installed later by the participant.

The Optimizer tool does not have data entry parameters, and therefore erroneous data can be entered either by accident or because an auditor is not properly trained. For example, in the field corresponding to the feet of pipe wrap installed in a home, the entries go up to 60 feet, when the program was only to

⁵² Many temporary auditors were brought on in the final months of the program year, after these surveys were completed. The opinions expressed in this initial online survey do not represent the temporary auditors that were added to the program during the last few months.

⁵³ The Program Administrator stated that they are in the process of putting together a data dictionary.

install a maximum of 6 feet. This field could be programmed so that only entries of 6 or less could be entered, greatly improving the reliability of the data.

INSIGHTS & RECOMMENDATIONS

Based on the findings from this evaluation effort, the Evaluation Team suggests the following recommendations for the HEA program.

Install as many measures as possible at the time of the audit. The participant survey data and information captured through auditor interviews indicated that measures are left behind for participants to install later, and this is hurting overall installation rates. To ensure savings credit, it is important for the auditors to install as much equipment as possible. Leaving devices behind subjects the program to lower installation rates, affecting overall savings levels.

Make sure the per-house savings number accurately reflects the per-measure unit count and approved energy savings included in the planning and in the kits. Based on the current per-house savings number for CFLs, it appears that in planning there were to be 12 bulbs installed in each home with each receiving 44.1 kWh. This is in contrast to information in the BRD (which states 9 bulbs at 60.9 kWh) and feedback from the DSMCC members who noted that there were only 9 bulbs per kit. If the numbers of a measure or the types of measures offered change during the course of the program year, the per-house savings value must be updated to reflect this.

If measures are left for the participant to install later, track measures left behind and track them in a distinct manner. The Program Administrator should ensure that they are not only tracking, but also identifying in the data the measures that are left behind in participants' homes and not installed by the auditors. This will allow the EM&V team to ask participants specifically about measures directly installed by auditors, and then specifically about measures the auditors left behind. Knowing how many of each measure fall into each bucket (auditor-installed vs. left behind) will increase the accuracy of information provided to participants and, presumably, the accuracy of their responses. In PY1 some credit was given for participants noted as null for all measures in the database under the expectation⁵⁴ that those were participants who had received a kit where auditors had not installed the items directly. In PY2 and PY3, because this has been a clearly and early identified issue, it is expected that the data will track all left-behind and installed measures.

Consider a lower level of savings for measures left behind. It is clear that measures left behind for participant self-installation are less likely to be installed. Therefore, the program should carefully consider whether this practice (i.e., leaving measures behind) should continue. If it continues, left-behind measures should be tracked in a distinct manner in the program database. In addition, a lower planned savings value might be warranted to address the risk of over-counting savings for measures that are left behind⁵⁵.

Consider reporting savings at the measure level instead of at a per-house level. The current approach used by the Program Administrator to report monthly achievement significantly overestimates the savings being achieved by the program. By moving to a system that tracks savings at the measure level, there is less likely to be such a significant difference between the ex-ante and audited savings for the program. Planning can still be handled at a per-house level, but reporting and tracking at the measure level. Reporting ex-ante savings at the measure level ensures a more accurate measure of program achievement

⁵⁴ This was verified by calling a small handful of participants who were null in the data and verifying that they had received measures. This is not done to achieve a 90/10 level, but simply to confirm if the claim by GoodCents that null participants did get the kit was accurate.

⁵⁵ The Program Administrator has proposed a new lower savings value for left behind kits in PY2. This does not address savings values for specific measures that are left behind and based on a cursory review of the proposed savings by the Evaluation Team. The Program Administrator may still be overestimating the number of left-behind measures that eventually will be installed.

over the course of the program year, and may reduce the risk of utilities overpaying for contracted services on the front-end.

Establish QA/QC protocols so that data uploaded to the GoodCents Portal and the Evaluation FTP site are consistent between each other and month-to-month. Monthly uploads between the two sites were often inconsistent in terms of total units, files included, etc. In addition, uploads within each site often varied by month, with fields changing month-over-month, and variable types in field changing month-over-month (e.g., a field variable in one month was identified as 0 or 1, the next month the same field had a string variable). These inconsistencies suggest there is not a QA/QC effort occurring by the Program Administrator between each month-to-month upload by program or between data pulled for the two portals (GoodCents and Evaluation).

Consider asking HEA participant-screening questions regarding income to see if they qualify for the HEA program. The survey responses to questions regarding income appear to indicate that about 30% of participants in the HEA program may have qualified for additional services offered through the LIW program. Participants could be screened for income during the enrollment process and directed to the LIW program if their self-reported income falls within the qualifying range.

Provide more targeted marketing to electrically heated homes. The program is not reaching the number of electric-only homes that was planned for, resulting in reduced electric savings. More target marketing to electric homes should be employed. The Program Administrator could work with participating utilities to identify high-usage homes that are more likely to have space and electric water heating.

Establish data-tracking protocols. The Program Implementer should work with the makers of the Optimizer tool to find a way to eliminate the unnecessary default data that can interfere with the data collection and analysis. Data-entry parameters should also be employed to prevent the entry of incorrect data. The Program Administrator should ensure that auditors are fully trained on using the Optimizer tool to prevent inconsistent data entry.

Develop a data dictionary. The Program Implementer should develop a data dictionary that clearly outlines all data fields being tracked and the content of those fields. Clearly defined fields will ensure that data is tracked in the appropriate place, and will allow us to ask for only those fields needed for analysis. Clarity around fields will also lessen the back-and-forth between the EM&V team and the Program Administrator, because at the time of the data request the evaluator will know the content of all fields and will know exactly which fields to request. In PY1, several iterations of data were required because there was insufficient clarity on what was being tracked.

Provide additional training for auditors. The Program Administrator should consider providing additional training to HEA auditors to ensure that consistent protocol is used in data entry, and that procedures are followed. Many of the auditors interviewed also indicated that they did not fully understand when and how to apply the barrier codes when they did not install a measure in a home.

LOW-INCOME WEATHERIZATION (LIW) PROGRAM

PROGRAM DESIGN AND IMPLEMENTATION

The Low-Income Weatherization (LIW) program⁵⁶ provides single-family homeowners or renters who have a total household income of up to 200% of the federal poverty level with a no-cost home energy audit that includes the direct installation of energy-saving measures. The home energy audit is performed by a two-person team, and includes a walk-through of the participant's home to assess energy efficiency needs, carbon monoxide and gas leak tests, blower-door guided air sealing, and the direct install of the following energy efficiency measures:

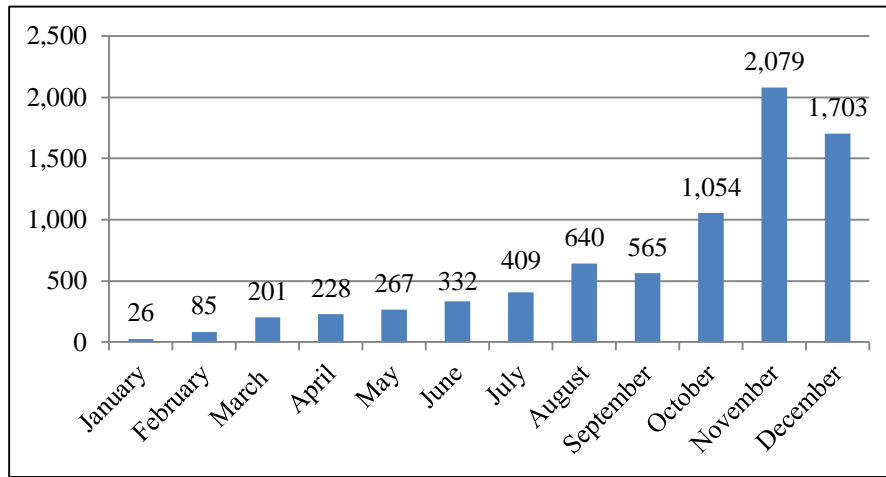
- Up to nine compact fluorescent lamps (CFLs): Six 13-watt, two 18-watt, and one 23-watt
- Up to two low-flow showerheads
- Up to three faucet aerators
- Hot water pipe wrap
- Water heater tank wrap

Attic insulation may also be upgraded to R-48 if the home's existing attic insulation level is R-19 or less. At the end of the audit, the participant receives a report about their home's energy use, including suggestions about further actions to reduce energy consumption.

Households must be electric customers of a participating utility to be eligible for the program. The primary mode of program marketing and enrollment is neighborhood canvassing. During program planning, lower-income neighborhoods were identified using U.S. Census block information and customer data provided by utilities. These neighborhoods were targeted for door-to-door canvassing efforts to enroll participants on-the-spot and provide them with program information. The Program Administrator also partners with a number of other organizations to refer customers to the LIW program. These organizations have programs with the same income requirements as LIW, and include Community Action Agencies, Purdue Extension, United Way, housing authorities, and local agencies on aging. The number of audits peaked in November 2012, as shown in Figure 7 below.

⁵⁶ Note that this program is also known as the Income-Qualified Weatherization (IQW) program for purposes of program delivery.

Figure 7: LIW Audit Activity by Month in 2012



The Program Administrator also offered 7-plug Smart Strips during the last quarter of 2012 in an effort to encourage more program enrollments. If a participant signed up for the program during neighborhood canvassing efforts and scheduled a visit, they would receive a Smart Strip at the time of the audit.

EM&V METHODOLOGY

The evaluation of the LIW program consists of both impact and process elements. Table 50 provides an overview of the tasks used for evaluating this program.

Table 50: Program Evaluation Overall Tasks

Action	Details
Implementer Interviews	Interviewed Implementation Manager
Auditor Survey	Conducted an online census of program auditors
Program Database Review / Verification	Reviewed participant data-tracking database
Program Material Review	Reviewed materials to assess marketing and outreach efforts
Participant Interviews	Conducted a telephone survey with 151 LIW program participants. Sampling was performed to achieve a 90% confidence and 10% precision interval at the program level in the first year, and at the utility level at the end of three years.
Impact Analysis	<ul style="list-style-type: none"> Reviewed savings estimates and assumptions provided by the Program Implementer Verified the reported measure installations in the program database Calculated installation and persistence rates through customer interviews Conducted an engineering analysis of measure savings and assumptions

Table 51 below shows the final sample disposition for various data-collection activities. The participant survey sample was randomly selected from the pool of current program participants of IMPA, Duke, NIPSCO, IPL, I&M, and Vectren Energy. Ultimately, quotas were set to ensure an adequate mix of participants from each utility.

Table 51: Sample Disposition for Various Data-Collection Activity

Action	Population	Targeted	Achieved
Implementer Interviews	NA	2	2
Auditor Interviews	36	10	11
Participant Surveys ⁵⁷	3,806	150	151

Note: All population listed were the populations available at the time of the survey effort.

Supplemental Evaluation Activities

As mentioned above under the Home Energy Audit (HEA) program section, the Evaluation Team was made aware of two discoveries regarding both the LIW and HEA programs that required additional evaluation activity. The first was the large number of participants tracked in the data as having received no measures that did indeed receive the energy efficiency kit. Please see

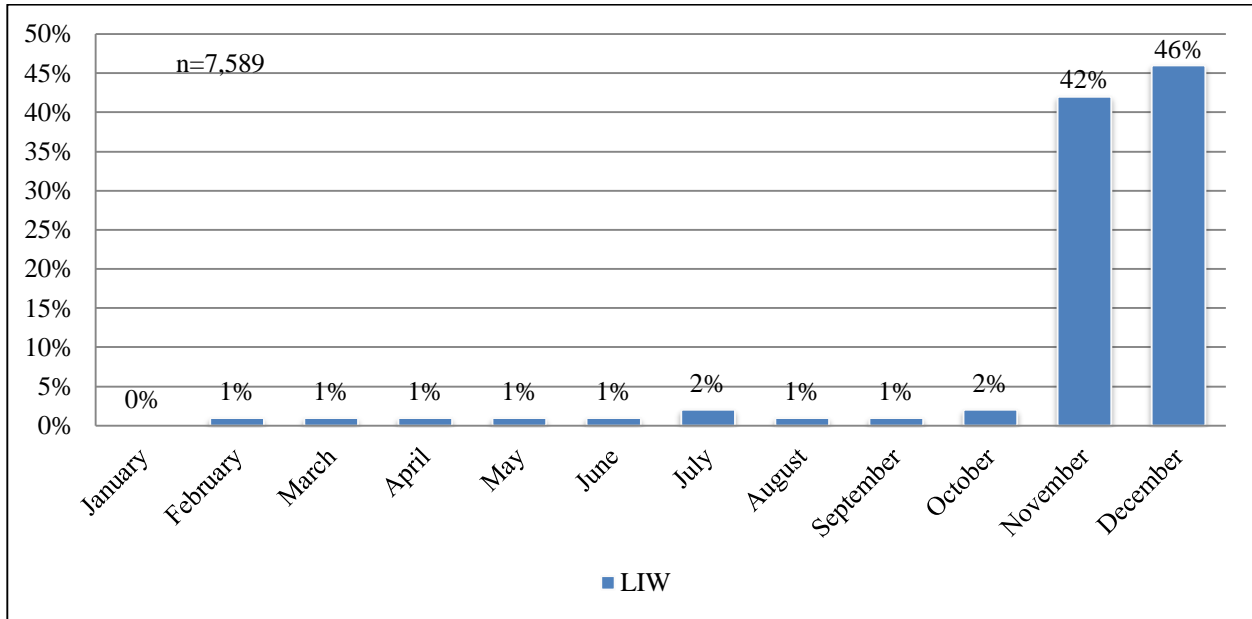
⁵⁷ The survey was completed in concert with the Home Energy Audit (HEA) program survey, with the EM&V team completing 153 for HEA and 151 for LIW for a total of 304 completed surveys.

Figure 8 for the frequency of null values in LIW participants across the program year⁵⁸. The second discovery was that the number of home visits conducted in last quarter of 2012 was significantly larger than those conducted in the first three-quarters of the year⁵⁹. Please refer to the HEA EM&V Methodology section above for details on the additional activities undertaken for this program and the HEA program in response to these issues.

⁵⁸ The Evaluation Team had previously been told by the Program Administrator that the data represented what the participants received. It was later clarified that because it was a pre-packaged kit, the measures-received field was not always populated by auditors even when a customer received the full kit.

⁵⁹ Participation doubled from the previous 3 quarters of the program year and null values increased by over 40%.

Figure 8: LIW Null Values for All Key Measures by Month



PROGRAM BUDGET AND EXPENDITURES

Table 52 shows the original program budgets and the expenditures reported at the end of 2012. The highest expenditures were for Duke, followed by NIPSCO. All utility budgets were 100% utilized.

Table 52: Program-Level Budget and Expenditures

Utility	Budget	Reported Expenditures	% of Budget Utilized
Duke	\$1,873,125	\$1,873,537	100%
NIPSCO	\$1,330,542	\$1,330,518	100%
I&M	\$1,011,298	\$1,011,233	100%
Vectren	\$794,546	\$794,570	100%
IPL	\$630,600	\$630,614	100%
IMPA	\$235,346	\$235,346	100%
Statewide	\$5,875,457	\$5,875,818	100%

PROGRAM PERFORMANCE: HOMES AUDITED

As noted above, the program added a canvassing effort in late 2012. Because this effort is not tracked in the same manner as the balance of the program activities, the report is broken out into two sections. This

first section covers the results from the home audits while the canvassing measures and associated savings are included later on in another section of the report⁶⁰.

The Program Administrator reported⁶¹ performing 7,575 LIW audits in 2012, meeting the electric savings goals of 9,877,800 kWh and 4,265 kW established in program planning.

Table 53 shows how the reported or ex-ante program performance compares to the goals established by the Program Administrator in the program-planning phase for January 1, 2012, through December 31, 2012. The savings reported below do not reflect adjustments made as a result of the evaluation.

Table 53: Ex-Ante Reported Electric Savings by Utility

Utility	Number of Homes			kWh			kW		
	Goal	Reported	% Achieved	Goal	Reported	% Achieved	Goal	Reported	% Achieved
Duke	2,396	2,397	100%	3,125,688	3,125,688	100%	1,349	1,350	100%
I&M	1,322	1,322	100%	1,723,888	1,723,888	100%	744	744	100%
IPL	807	806	100%	1,051,024	1,051,024	100%	454	454	100%
IMPA	300	300	100%	391,200	391,200	100%	169	169	100%
NIPSCO	1,740	1,740	100%	2,268,960	2,268,960	100%	980	980	100%
Vectren	1,010	1,010	100%	1,317,040	1,317,040	100%	569	569	100%
Statewide	7,575	7,575	100%	9,877,800	9,877,800	100%	4,265	4,265	100%

The Program Administrator also reported saving 345,657 therms.⁶² Gas savings were only reported for NIPSCO and Vectren. These savings are reported in the table below.

Table 54: Ex-Ante Reported Gas Savings by Utility

Utility	Reported Therms*
Duke	NA
I&M	NA
IPL	NA
IMPA	NA
NIPSCO	218,970
Vectren	126,687
Statewide	345,657

*Only NIPSCO and Vectren are participating in the gas program.

⁶⁰ Measures distributed during neighborhood canvassing were not added to the program until later in the year, and associated savings values were not incorporated into the ex-ante per-home savings value by the Program Administrator.

⁶¹ Reported or ex-ante savings are based on the GoodCents Portal reports represented by utility results from January 1, 2012, through December 31, 2012. [<https://indiana.goodcents.com/>]

⁶² Email correspondence from Charles Graf, GoodCents, February 11, 2013.

The Program Administrator determined LIW program savings by applying a “per-home” ex-ante savings value to the number of homes treated through the program. The energy savings per-home value is based on an assumed percentage of homes that will receive a given measure, and an assumed number of measures to be installed within each treated home. The product of these two values for a particular measure is the planned incidence rate per home. The following tables show the ex-ante energy and demand savings values as developed by the Program Administrator. This includes the assumed incidence rates of the measures within participant homes.

Table 55: Planned Ex-Ante Energy and Demand (kWh and kW) Savings Per Home

Measure Type	Planned Incidence Rate Per Home	Ex-Ante kWh Per Measure	Ex-Ante kW Per Measure	Total kWh Per Home	Total kW Per Home
CFLs	9.0 ⁶³	60.9	0.046	529.2 ⁶⁴	0.552
Pipe Wrap	0.5	51.0	0.006	25.5	0.003
Low-Flow Showerhead	0.5	281.7	0.045	140.9	0.023
Faucet Aerators	1.0	158.0	0.025	158.0	0.025
Tank Wrap	0.3	205.0	0.032	51.3	0.008
Air Sealing (electric heat with CAC)*	0.1	1,115.1	0.080	78.1	0.006
Air Sealing & Attic Insulation (electric heat with CAC)*	0.2	1,797.0	0.120	287.5	0.019
Air Sealing (gas heat with CAC)*	0.7	45.4	0.080	33.1	0.058
Total				1,303.5	0.694

*In our review of the program database, we also found homes with electric heat but no central air conditioner (CAC) or other cooling types treated with air sealing and/or insulation. As these types of homes are not accounted for in the ex-ante savings estimates, we account for them in the ex-post portion of this section.

⁶³ As discussed in the HEA program section, the Evaluation Team was initially unable to confirm if kits had 9 or 12 bulbs included in them. The Team was initially provided with written content that referred to both 9 and 12 bulbs, and was also told that the kWh savings per bulb had been reduced from the planning assumption of 60.9 kWh to 44.1 kWh to reflect a lower hours-of-use number. While there was consensus near the end of our evaluation process that there were indeed 9 bulbs in the kit, the per-house savings number being applied to each kit by the Program Administrator still assumed the earlier discussed assumption of 12 bulbs per home, each receiving 44.1kWh. If the Program Administrator had indeed been assuming 9 bulbs at 60.1 kWh per bulb, the CFL savings would have been 548.1 and the per-house kit number 1,322.5 kWh. Instead they claimed 1303.5 per kit, which equates to the previously discussed assumption of 12 bulbs at 44.1 kWh each. Because the program counted savings at the per-house level and the ex-ante savings for this program was 1,303.5, the Evaluation Team has used this number for the assessment of the audited and verified savings.

⁶⁴ We acknowledge this does not equal 529.2 kWh, but per the footnote we are showing the Program Administrator’s ex-ante savings in the table above, and the individual-measure ex-ante savings being used by the Program Administrator do not total to their ex-ante per-house savings assumption.

Table 56: Planned Ex-Ante Therm Savings Per Home

Measure Type	Planned Incidence Rate Per Home	Ex-Ante Therms Per Measure	Total Therms Per Home
Pipe Wrap	1.0	15.8	7.9
Low-Flow Showerhead	0.7	9.0	5.9
Faucet Aerators	1.0	1.1	1.1
Audit Recommendations	1.0	12.8	12.8
Air Sealing (gas heat)	0.8	127.0	97.8
Attic Insulation (gas heat)*	NA	124.0	NA
Total			125.5

*The Program Administrator did not assign a per-home incidence rate for attic insulation in gas-heated homes. However, to be consistent with the program design, we include these savings in the per-home values going forward for audited, verified, ex-post, and net savings.

IMPACT ANALYSIS

The PY1 impact analysis for the LIW program includes the steps outlined in Section 0 EM&V Methodology above. This includes:

- Audited savings
- Verified savings
- Ex-post gross savings
- Net savings

Below we detail how each phase was applied to the evaluation of the LIW program. This section of the report provides the utility and statewide results in aggregate. Individual utility-level details can be found in the utility-specific Technical Volumes.

AUDITED SAVINGS

The Evaluation Team completed the audit of the program savings by reviewing the program database to confirm the number of homes treated through the program as well as the number of measures installed within each treated home. As mentioned previously, the Program Administrator applies a “per-home” savings value to each audited home, and the calculation of this value is based on assumptions regarding the percentage of homes treated with a particular measure and the number of measures installed in a treated home. We reviewed the program database to find the actual measure incidence rates realized by the program in each utility territory. Actual incidence rates for each measure were multiplied by the planned per-measure savings and summed to come up with an audited per-home savings value for each utility. This included an adjustment for participants who were null for all measure in the kits and who appear to have been incorrectly tracked by auditors who, in a number of instances, entered “null” for all measures when all kit contents were left behind and not installed⁶⁵. Next, the audited per-home savings value was multiplied by the number of homes in the program database to calculate total audited savings.

⁶⁵ The program model was a kit model where a pre-packaged kit including nine bulbs, up to three aerators, and two showerheads was provided to each home. Review of the data would suggest that some homes received no measures at all; however, conversations with GoodCents and the auditors as well as additional information provided after the delivery of the draft EM&V report on March 1, 2013, indicated that for homes with a null or 0 value for all kit

The audited number of homes in the database was 7,589, slightly higher than the 7,575 homes reported by the Program Administrator. However, audited per-home savings values by utility were much lower than anticipated. The highest audited per-home electric savings were achieved in Duke territory at 744 kWh and 0.41 kW per home, or 57% of the ex-ante per-home electric savings. Audited per-home electric savings values are much lower than ex-ante values because actual measure incidence rates (i.e., the percentage of homes receiving a given measure multiplied by the average number of measures installed within a treated home) were lower than planned. For example, the Program Administrator planned for 50% of homes to have electric heat and receive one low-flow showerhead. However, audited data showed that the percentage of homes with electric water heaters receiving at least one showerhead ranged from 9% in NIPSCO territory to 34% in Duke territory. The average number of low-flow showerheads received in treated homes ranged from 1.0 for NIPSCO to 1.2 for Vectren.

The highest audited per-home gas savings was accomplished in NIPSCO territory at 150 therms per home, or 120% percent of the ex-ante per-home gas savings. Audited per-home savings values for the other utilities are on average about 60% of the ex-ante per-home savings value of 124.5 therms. Similar to electric savings, actual measure incidence from the database for gas-saving measures was lower than planned.

Table 57 provides a summary of the audited savings per home by utility. Note that detailed information on each utility’s measure-specific incidence rate can be found in the utility-specific Technical Volumes.

Table 57: Audited kWh, kW, and Therm Savings Per Home

Utility	Number of Homes in Database	kWh		kW		Therms	
		Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	2,397	744	1,782,671	0.41	992.51	48	115,621
I&M	1,322	691	913,098	0.45	590.54	90	120,015
IPL	806	677	545,323	0.41	330.28	94	76,393
IMPA	314	733	230,054	0.42	132.57	58	18,411
NIPSCO	1,740	609	1,059,224	0.45	783.72	150	261,374
Vectren	1,010	704	710,909	0.44	443.43	84	84,883
Statewide	7,589		5,241,279		3,273.06		676,697

VERIFIED SAVINGS

measures, the kit was received but none of the measures were installed at the time of the audit. In order to accurately capture these instances, the Evaluation Team applied the program per-house measures-received average to all homes that were null for all kit content. In order to confirm that the null participants indeed received a kit, the Evaluation Team did a quick follow-up call to a census of a sample of 40 null participants in March 2013, finding quantitatively that those who were full null (0 for all measures) did receive measures like CFLs in the range of 0 to 9 during the audit. Participants who had values for some measures but null for others were not adjusted because there is no evidence that those inputs were incorrect, and participant surveys, auditor interviews, and feedback from the Program Administrator indicated that for some customers not all measures were installed or even left behind in the home. For customers with partial nulls (zero for at least one key measure, but not all), we will assign savings credit in PY2 and PY3 to account for the eventual installation of these measures.

To calculate verified savings, installation and persistence rates for each measure are applied to the audited savings results. These activities typically include telephone surveys and/or site visits designed to adjust total savings for issues such as measures rebated but never installed, not meeting program qualifications, measures installed but removed later, and/or measures improperly installed. For this program, the installation rate was calculated by asking participants interviewed how many of each measure were directly installed in their homes at the time of the audit, or installed by the participant at a later time. The persistence rate was calculated by asking participants if any measures had been removed since installation and, if so, how many. The adjustments made in this phase were applied using a single statewide number, as opposed to utility-specific numbers, because while the surveys are designed to achieve a 90/10 confidence and precision at the utility level at the end of the program cycle, the PY1 surveys provide 90/10 at the program level only⁶⁶. Table 58 provides a summary of the measure-level installation and persistence.

For all customers in the database who were fully null, as addressed above the Evaluation Team applied the statewide measures-installation rate. These participants were not part of the survey, but treating them in the same manner as rest of the program population is the most appropriate approach given the available data for these unique cases⁶⁷.

Table 58: Statewide Verification Adjustments

Measure Type	Installation Rate	Persistence Rate
CFLs	78.6%	98.1%
Pipe Wrap	92.0%	100.0%
Low-Flow Showerhead	65.9%	97.2%
Faucet Aerators	79.3%	98.6%
Tank Wrap	100.0%	100.0%
Audit Recommendations ⁶⁸	NA	NA

The installation rates show that many of the measures provided by the program are not being installed at the time of the audit or by participants at a later time. The highest installation rates are for tank wrap at 100% and pipe wrap at 92%. The lowest installation rate is for low-flow showerheads at 65.9%. In contrast, persistence rates are quite high, which indicates that once the measures are installed, participants generally keep them in place.

For attic insulation and air-sealing measures, we apply an installation rate of 100%. All participants interviewed who had received attic insulation reported that it was installed. However, it should be noted that a small number of customers stated that they did not receive air sealing or did not know whether they received air sealing. This may indicate that during the audit process, auditors are not adequately describing the services being performed. Persistence rates for air sealing and insulation are assumed to be 100%, as these measures cannot be removed easily.

⁶⁶ In October and November of 2012, 151 LIW participants were interviewed. The participant survey sample was randomly selected from the pool of Duke, I&M, NIPSCO, IPL, Vectren, and IMPA participants. Ultimately, quotas were set to ensure an adequate mix of participants from each utility to achieve a 90/10 confidence and precision at the utility level at the end of the three years.

⁶⁷ The Evaluation Team will look at participants who have full kits left behind in PY2 to determine if they need a different installation rate at that time.

⁶⁸ Installation and persistence rates are not applied to Audit Recommendations, as this is not a measure that has the potential to be directly installed by the program.

Lower installation rates for non-building shell measures are consistent with what auditors reported during the auditor survey. Auditors reported that typical reasons for not installing measures were either participant preference or fear that the installation of the measure could damage the fixture, faucet, or pipes. According to auditors, CFLs were the most likely measure to go uninstalled, followed by water heater tank wraps. If measures were not installed by the auditor, often they were left for the participant to install later.

Table 59: Measure Installation as Reported by Auditors

When performing an audit, do you typically install or leave behind... (n=11)	Typically, I install all of the measures	It depends whether I install or leave behind the measures
CFLs	64%	36%
Faucet Aerators	91%	9%
Low-Flow Showerheads	91%	9%
Water Heater Tank Wrap	73%	27%
Hot Water Pipe Wrap	100%	0%

To calculate verified per-home savings, the statewide installation and persistence rates were applied to each utility’s audited incidence rates for each measure, and then multiplied by that measure’s ex-ante per-unit savings value. These verified measure savings values were then summed to establish the verified per-home value. The verified per-home value was then applied to the audited number of homes in each utility territory. The verified electric per-home value is, on average, about 20% less than the audited per-home value and generally represents about 30% of the planned per-home value. This is primarily driven by lower-than-expected installation rates, especially for CFLs and low-flow showerheads. On the gas side, the verified per-home value is only about 2% less than the audited per-home value, and on average about 70% of the planned per-home gas value. Table 60 shows specific utility per-home values, along with total utility and statewide verified energy savings. Utility-specific data can be found in the Technical Volumes.

Table 60: Verified Energy Savings (kWh and kW) by Utility and Statewide

Utility	Number of Homes in Database	kWh		kW		Therms	
		Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	2,397	578	1,385,113	0.32	773.17	47	112,355
I&M	1,322	536	708,261	0.35	462.90	88	116,865
IPL	806	544	438,746	0.32	261.60	93	74,829
IMPA	314	574	180,064	0.33	103.84	57	17,961
NIPSCO	1,740	473	823,118	0.36	618.54	147	255,032
Vectren	1,010	557	562,554	0.34	347.99	82	82,904
Statewide	7,589		4,097,856		2,568.04		659,946

The verified savings for the LIW program are lower than the Evaluation Team has seen in other jurisdictions running similar programs. Recent findings in a neighboring state found that while the installation rates for aerators and showerheads were similar to those found in Indiana, the installation rates

for CFLs were over 30% higher. Further, in other Midwestern states running more comprehensive low-income programs, it is not unusual to see the direct install of considerably more CFLs (as many as 40 bulbs per home) than are being installed in Energizing Indiana, suggesting that the direct installation of 9 bulbs in LIW homes during the time of the audit is not an unreasonable request. When comparing this program's leave-behind rate to another low-income direct-install program, the Team found Energizing Indiana to be much higher, with over 20% of CFLs apparently left behind or uninstalled, compared to less than 10% in another Midwest jurisdiction.

Persistence rates are in line with those seen in other like programs, proving that when measures are directly installed they tend to stay installed. This makes it ever more important that when auditors are in the home, they work to ensure that they are installing all measures in the kits.

EX-POST SAVINGS

Ex-post gross evaluated savings for the LIW program for PY1 are determined through engineering analysis. Adjustments made at this point reflect engineering adjustments made to the ex-ante measure savings that were claimed by the program. Below we summarize the engineering analysis for each measure type in the LIW program. Because the per-measure ex-post savings vary by utility service territory, the discussion below focuses on the general engineering approach taken by the Evaluation Team. For details on the measure-level ex-post savings and for the in-depth utility-specific engineering discussion, please refer to the utility Technical Volumes that accompanied this report.

CFLs

The Evaluation Team reviewed the assumptions from various references, including the current program assumptions provided by the Program Implementer, the 2010 Ohio TRM, the Indiana TRM, the Mid-Atlantic TRM, and the ENERGY STAR[®] Lighting Calculator and Qualified Lighting Spreadsheets.

As part of the Statewide CORE evaluation, the Team is currently conducting an hours-of-use study for CFLs. The current hours-of-use estimates for CFLs may need to be revisited in the future once this information is available.

Table 61 lists the baseline incandescent-equivalent wattages for those bulbs distributed as part of the direct-install component for the LIW program. These numbers are used in our analysis, and are within lumen ranges that meet EISA⁶⁹ requirements.

Table 61: Baseline Incandescent Wattages Based on Lumen Output

Measure Type	Average Lumen Output Per Lamp ⁷⁰	Evaluated Incandescent Baseline Wattage ⁷¹
13-watt CFL	850	60
19-watt CFL	1,200	75
23-watt CFL	1,500	100

⁶⁹ Impact of EISA 2007 on General Service Incandescent Lamps.

http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/general_service_incandescent_factsheet.pdf.

⁷⁰ Based on lumen outputs from the ENERGY STAR Qualified Bulbs spreadsheet and lighting calculator; downloads.energystar.gov/bi/qplist/Lamps_Qualified_Product_List.xls.

⁷¹ Incandescent equivalent wattage based on ENERGY STAR Lighting Calculator www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/light_bulb_calculator.xlsx

Note: According to the ENERGY STAR Lighting Calculator, a 23W CFL could replace either a 100W or 75W incandescent. The Evaluation Team chose 100W, to be consistent with past Indiana Core Plus EM&V program results.

The evaluated savings are calculated for each type of CFL wattage (13W, 19W, 23W) that is distributed through the program. The implementer used the same per-unit savings for each type of CFL that was installed without considering the different wattages associated with each type. The ex-post evaluated savings applies a gas penalty, by means of the gas waste-heat factor. The heating load is increased as more energy is needed to supplement the heat that was once given off by the incandescent lamps. However, an increase in energy savings is applied by applying the energy waste-heat factor, as the cooling load is decreased as less energy is needed to cool the home by removing the additional heat that was once given off by the incandescent lamps. The waste heat factors that were applied are weighted averages for different types of heating fuel for different territories within Indiana⁷². It is unknown whether waste-heat factors were applied when calculating the ex-ante per-unit savings. The CFL per-unit savings are calculated for each utility by wattage, and the weighted average is taken based on the number of bulbs of each wattage included in the home energy kit.

Low-Flow Showerhead

The Evaluation Team reviewed algorithms and assumptions for low-flow showerheads from various references, including the 2009 Ohio TRM, 2010 Ohio TRM, Indiana TRM, Mid-Atlantic TRM, Vectren 2011 EM&V report, Indiana Residential Market Baseline 2012, Domestic Hot Water Event Scheduler Generator developed by the National Renewable Efficiency Laboratory (NREL), and Census data from Ferret Software specifically for Indiana⁷³.

Savings are provided for those with either electric or gas water-heating fuel types. The Program Implementer applied the same per-unit savings value for all utilities within Indiana. The Team evaluated the per-unit savings for each utility, as the inlet water temperatures vary by territory. These conditions are reflected in the Team's calculations.

The evaluated savings for low-flow showerheads are consistent across both the HEA and LIW programs. There was not enough information to support a difference in household size and reduction in number of showerheads per home to calculate individual energy savings for each program. However, the Program Implementer did make the assumption that LIW participants had fewer bedrooms per household.

Low-Flow Bathroom and Kitchen Faucet Aerators

The evaluated savings for low-flow aerators is consistent across both the HEA and LIW programs. The Team calculated individual savings for bathroom and kitchen aerators, as the time of use for each differs,

⁷² Applied waste-heat factors for the LIW and HEA programs differ from the waste-heat factors applied for the Residential Lighting program. The HEA, EES, and LIW programs each included multiple measures that had savings affected by region and the magnitude of savings variance between utility territories was significant, given that it was important to have those savings calculated to the region. For Residential Lighting, there were two approaches to take, calculating individual wattage algorithms for each wattage by each of the 6 territories (about 400 algorithms with all wattages and regions) or aligning with the Third-Party Administrator approach of developing a savings based on the weighted average wattage and statewide inputs. We chose the latter more simplified approach because it helped ensure we could balance the resources needed for the EM&V effort against other efforts being undertaken for lighting that will in future program year evaluations have a much bigger effect on the number over time (e.g. the Lighting Logger Study currently in field).

⁷³ ACS three-year public use micro-data from 2008 to 2010 from Ferret Software for Indiana.

and provided savings for those with either electric or gas water-heating fuel types. While the Program Implementer applied the same per-unit savings value for all utilities within Indiana, we evaluated the per-unit savings for each utility, as the inlet water temperatures vary by territory.

Hot Water Pipe Insulation

One of the direct-install measures for the program includes installing pipe insulation around the distribution pipes for water heaters. The Program Implementer applied different per-measure ex-ante savings for participants with electric water heaters and for those with gas water heaters. The Team agreed that this method was correct, and did the same for its evaluation. The assumptions that were used to calculate the per-measure ex-ante savings used by the implementer are unknown, and therefore were recalculated (the details on calculation approach are in the utility-level Technical Volumes). The same per-unit value is applied for all utilities, as the change in temperature between the water and ambient air is about the same for all areas.

Water Heater Tank Wrap Insulation

One of the direct-install measures for the LIW program includes installing tank wrap blankets around electric water heaters. The program did not install water heater tank wrap blankets for participants with gas water heaters because of combustion safety. Savings are calculated for electric water heaters only. The same per-unit value is applied for all utilities, as the savings calculations are based on an increase in efficiency due to the added insulation of the tank wrap. The Program Implementer used a modeling approach to calculate the per-measure ex-ante savings; however, it is unknown what characteristics make up the home that is used as their model. The Team felt it was best to use the information provided in the Indiana TRM, and those details are discussed in the utility Technical Volumes.

Air Sealing

The evaluated savings for air-sealing measures are calculated individually for each utility, and are also dependent on the type of HVAC equipment installed in each home. Energy and demand savings totals are calculated for each participant based on the change between the pre- and post-blower-door test results provided in the tracking database.

The Program Implementer applied a deemed per-participant value that assumes a 30% reduction in infiltration from the Michigan Measures Database. The per-unit value used is an average using the age of the home and for homes with a basement. The deemed ex-ante per-unit savings that were provided to the Evaluation Team are for participants who have central air conditioners (CACs) and either electric or gas heating. It is uncertain how savings were applied to participants who have heat pumps, and also for those who have no cooling or cooling only. The Program Implementer applied the same per-unit savings value for all utilities within Indiana.

The Evaluation Team reviewed algorithms and assumptions for air-sealing measures from various references, including the 2009 Ohio TRM, 2010 Ohio TRM, Indiana TRM, and Mid-Atlantic TRM.

The tracking database identified 4,056 participants who received air sealing as part of the LIW program. The evaluated savings are calculated per participant to incorporate the actual data included in the tracked database, and take into consideration all heating and cooling types.

The Program Implementer assumed a 30% reduction in infiltration, and the evaluated analysis agreed with this assumption, showing an average infiltration reduction of 27.3%. The reason for the differences in the per-participant savings between the ex-ante and the evaluated ex-post values is due to differences in the methods applied. The ex-ante per-participant values were applied for each participant regardless of the

utility. The evaluated ex-post per-home values were calculated using a weighted average of the total gross evaluated savings for each heating and cooling type for each utility. Total gross evaluated savings incorporate the different variables for the varying utility territories, and use the actual pre- and post-blower-door results, applying the actual cooling efficiencies per participant. Evaluated per-home savings values varied sometimes significantly from utility to utility, depending on the number of participants receiving treatment for a particular heating and cooling type and the specific characteristics of participants' homes.

Attic Insulation

The evaluated savings for attic-insulation measures are calculated individually for each utility, and are also dependent on the type of HVAC equipment installed in each home. Energy and demand savings totals are calculated for each participant based on the change between the existing R-value (pre-R-value) and the newly installed R-value (post-R-value) of attic insulation provided in the tracking database.

The Program Implementer applied a deemed per-participant value from the Michigan Measures Database. The savings values provided are a combination of air-sealing and attic-insulation measures. The deemed ex-ante per-unit savings that were provided to the Evaluation Team are for participants who have CACs and an electric furnace. It is uncertain how savings were applied to participants who have heat pumps, no cooling, cooling only, and CACs and gas heating. The implementer applied the same per-unit savings value for all utilities within Indiana.

The evaluated ex-post per-home values were calculated using a weighted average of the total gross evaluated savings for each heating and cooling type for each utility. Total gross evaluated savings incorporate the different variables for the varying utility territories, and use the actual pre- and post-R-values and square footage insulated. Similar to ex-post air-sealing values, evaluated per-home savings values for attic insulation sometimes varied significantly from utility to utility, depending on the number of participants receiving treatment for a particular heating and cooling type, and the specific characteristics of participants' homes.

Home Audit Recommendations

A home audit was conducted to provide participants with a home energy report that includes additional energy-efficient measures that may help reduce the energy consumption in their home. A per-home value was calculated by utility and compared to the per-home value that the Program Implementer used from the Ohio 2010 TRM. Our evaluation included the use of participant survey data for those who indicated installing measures or changing behavior in their home to offset energy use based on the recommendations in the home energy report.

As the LIW program targets low-income participants, the recommendations did not include measures that are unlikely to be purchased due to financial constraints. For our evaluation, we included measures that are inexpensive or do not require any money but just a change in behavior to lead to energy savings. In addition, income-qualified participants are more likely to rent property and therefore cannot implement any measures that modify the building shell or mechanics of the building. Table 62 summarizes the types of measures that were included in the overall analysis for determining savings per household for LIW participants.

Table 62: Recommended Measures Installed Based on Survey Results

Measures Included in Savings Calculations
Shorter showers (electric or gas water heater)
Turn off lights when not in use
Adjust thermostat program settings (gas or electric heating)
Unplug appliances when not in use
Replace air filters for HVAC equipment (gas or electric heating)
Adjust water heater temperature (electric or gas water heater)

Of the 151 LIW participants surveyed, 83 (55%) indicated implementing one or more of the recommendations from the home energy report. For example, recommendations included taking shorter showers, turning down the water heater temperature, and setting back the thermostat. Savings were calculated per participant and then totaled at a statewide level⁷⁴. The total energy and demand savings were then divided by the total number of participants who were surveyed to get a per-home value. The per-home evaluated energy and demand savings can be found in the utility Technical Volumes.

It is important to note that the Program Administrator was not claiming electric audit recommendation savings as a part of this program. Based on its review the Evaluation Team recommends an ex-post audit recommendation savings be applied equaling 263.8 kWh, .01 kW, and 36.09 therms.

EX-POST SUMMARY SAVINGS

Based on the engineering adjustments, we have applied the per-measure ex-post savings to the verified number of measures attributable to the program by utility (audited measure count * ex-post savings * installation and persistence rates) to develop the program’s ex-post energy, demand, and therm savings. Table 63 below shows that the program receives a considerable jump in savings after the ex-post analysis. On a statewide level, total ex-post kWh savings are about 60% higher than verified kWh savings. This increase is due to a combination of factors. For the majority of utilities, ex-post per-unit savings numbers are higher than ex-ante per-unit savings values for CFLs, pipe wraps, and low-flow showerheads. To be consistent with the HEA program, estimated savings from participants who said they followed through with making audit recommendations are also accounted for in the ex-post savings. Audit recommendation savings, on average, are about 30% to 40% of the ex-post utility per-home electric savings values.

Ex-post therm savings dropped by about 13% from verified therm savings. Savings decreased for some utilities while increasing slightly for others, depending on factors such as the average linear feet of pipe wrap installed for treated homes and ex-post values for attic insulation and air sealing. Utility-specific data can be found in the utility Technical Volumes. As noted previously, there is a negative therm savings associated with the lighting program, a result of the application of an interactive effect for all lighting measures.

⁷⁴ Ninety-ten (90/10) confidence and precision at the utility level will not be achieved until the end of the three-year evaluation period.

Table 63: Ex-Post Savings Per Utility and Statewide

Utility	Total Number of Homes	Ex-Post kWh Savings		Ex-Post kW Savings		Ex-Post Therm Savings	
		Per Home	Utility Total	Per Home	Utility Total	Per Home	Utility Total
Duke	2,397	922	2,210,477	0.09	204.02	54	128,149
I&M	1,322	995	1,315,508	0.08	110.10	82	107,876
IPL	806	1,138	917,585	0.11	89.21	94	75,578
IMPA	314	1,054	330,859	0.10	30.00	61	19,176
NIPSCO	1,740	731	1,271,577	0.10	174.64	94	163,818
Vectren	1,010	935	944,754	0.20	198.69	83	83,946
Statewide	7,589		6,990,760		806.66		578,543

NET SAVINGS

Evaluations of low-income programs typically assume that very few, if any, energy efficiency improvements would be made in the absence of the program. The theory behind this assumption is that low-income customers generally do not have the discretionary income (and would have a difficult time securing a loan) to install these measures on their own. Therefore, per the evaluation plan developed in December 2011, we assigned a net-to-gross (NTG) ratio of 1.0 to all of the program measures, and did not ask any free-ridership or spillover questions in the participant survey.

Applying an NTG ratio of 1.0 to the measures installed results in net savings equal to ex-post savings.

Table 64: Net Energy (kWh, kW, and Therms) Savings by Utility and Statewide

Utility	Ex-Post Savings			NTG	Net Savings		
	kWh	kW	Therms		kWh	kW	Therms
Duke	2,210,477	204.02	128,149	1.0	2,210,477	204.02	128,149
I&M	1,315,508	110.10	107,876	1.0	1,315,508	110.10	107,876
IPL	917,585	89.21	75,578	1.0	917,585	89.21	75,578
IMPA	330,859	30.00	19,176	1.0	330,859	30.00	19,176
NIPSCO	1,271,577	174.64	163,818	1.0	1,271,577	174.64	163,818
Vectren	944,754	198.69	83,946	1.0	944,754	198.69	83,946
Statewide	6,990,760	806.66	578,543		6,990,760	806.66	578,543

PROGRAM PERFORMANCE: CANVASSING MEASURES

Beginning in October 2012, the Program Administrator decided to pilot an effort to provide Smart Strips to LIW participants in order to encourage enrollment in the program. The late entry of the canvassing measures into the program meant the Evaluation Team was unable to field participant surveys on installation and persistence rates for these measures⁷⁵ in time for this evaluation. Because of this, the Evaluation Team has decided to assume installation and persistence rates of 100% for PY1. These

⁷⁵ The participant survey began fielding in October 2012.

measures will be fully assessed during the PY2 evaluation. It should be noted that the measures represent a very small proportion (less than 1%) of total program savings. Below is a summary of the statewide and utility-level audited, verified, ex-post, and net savings for the canvassing measures⁷⁶. These measures will be incorporated into the participant surveys next year to estimate installation and persistence rates for measures distributed while canvassing.

AUDITED SAVINGS

The Evaluation Team completed the audit of the savings from canvassing measures by reviewing the program data to confirm the number of measures provided through canvassing. The Program Administrator provided the Evaluation Team with data including the homes by utility that received canvassing measures from October to December of 2012. The total number of measures for this period was then tallied by utility territory. The Program Administrator claimed an ex-ante savings value of 102.8 kWh per Smart Strip. These values were multiplied by the number of audited Smart Strips to determine audited savings. As noted above, the verified savings will be equal to the audited savings. Note that the Program Administrator did not report Smart Strip savings at the program level; therefore, the table below only provides a summary of the audited and verified energy savings for Smart Strips.

Table 65: Audited and Verified Energy Savings (kWh and kW) by Utility

Utility	Audited Number of Smart Strips	Audited kWh	Audited kW	Verified kWh	Verified kW
Duke	31	3,187	0.37	3,187	0.37
I&M	1	103	0.01	103	0.01
IPL	72	7,402	0.86	7,402	0.86
IMPA	3	308	0.04	308	0.04
NIPSCO	83	8,532	1.0	8,532	1.0
Vectren	6	617	0.07	617	0.07
Statewide	196	20,149	2.35	20,149	2.35

EX-POST SAVINGS

Smart Strips are provided to customers as part of a canvassing effort targeted to help reduce miscellaneous electric consumption in homes for entertainment centers and home offices. The Program Implementers applied a deemed ex-ante value from the 2010 Ohio TRM, as the Indiana TRM was not yet public at the time of program implementation. However, now that the Indiana TRM is public, we feel that the deemed ex-ante value in the Indiana TRM should be used in applying ex-post values for PY1 savings.

The table below shows the ex-ante value from the 2010 Ohio TRM for Smart Strips, and compares this to the deemed value that is in the Indiana TRM, which is a considerable reduction in energy savings.

⁷⁶ Savings were calculated only at the audited and ex-post level.

Table 66: Ohio 2010 TRM Savings vs. Indiana TRM Savings

Measure	2010 Ohio TRM kWh Savings	2010 Ohio TRM kW Savings	Indiana TRM kWh Savings	Indiana TRM kW Savings	Indiana TRM Therm Savings
7-plug Smart Strip	102.8	0.012	22.6	0.00178	- 0.41

The Program Implementer applied the per-measure ex-ante savings from the Ohio 2010 TRM to each participant who received a Smart Strip. However, the demand per-unit value that was being used (0.04 kW/unit) was incorrect. For its evaluation, the Team applied the value that is shown in Table 66 of 0.012 kW/unit.

Based on these engineering adjustments, we have applied the per-measure ex-post savings to the verified number of measures attributable to the LIW program by utility to develop the program’s ex-post energy and demand savings. These totals are outlined in Table 67 below. Utility-specific data can be found in the utility Technical Volumes. Similar to lighting, there is a negative therm savings associated the use of Smart Strips, accounted for in the table below.

Table 67: Ex-Post Energy Savings (kWh and kW) by Utility

Utility	Number of Smart Strips	Ex-Post kWh	Ex-Post kW	Ex-Post Therms
Duke	31	701	0.06	-12.7
I&M	1	23	0.00	-0.4
IPL	72	1,627	0.13	-29.5
IMPA	3	68	0.01	-1.2
NIPSCO	83	1,876	0.15	-34.0
Vectren	6	136	0.01	-2.5
Statewide	196	4,431	0.36	-80.3

PROGRAM PERFORMANCE: SUMMARY

The tables below incorporate savings from both the audit program and the canvassing program to provide the total savings for the LIW program.

SUMMARY OF IMPACT ADJUSTMENTS

Table 68, Table 69, and Table 70, below, provide a summary of the planned, ex-ante, audited, verified, ex-post, and net savings achieved by the LIW program in 2012.

Table 68: Energy Savings Summary (kWh)

Utility	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh	Ex-Post Lifetime kWh	Net kWh
Duke	3,125,688	3,125,688	1,785,857	1,388,300	44%	2,211,178	18,002,662	2,211,178
I&M	1,723,888	1,723,888	913,201	708,364	41%	1,315,530	10,710,604	1,315,530
IPL	1,051,024	1,051,024	552,725	446,148	42%	919,212	7,483,917	919,212
IMPA	391,200	391,200	230,362	180,372	46%	330,926	2,694,290	330,926
NIPSCO	2,268,960	2,268,960	1,067,756	831,650	37%	1,273,453	10,368,021	1,273,453
Vectren	1,317,040	1,317,040	711,526	563,171	43%	944,890	7,692,974	944,890
Statewide	9,877,800	9,877,800	5,261,427	4,118,006	42%	6,995,190	56,952,468	6,995,190

Table 69: Demand Savings Summary (kW)

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Ex-Post Lifetime kW	Net kW
Duke	1,349.44	1,349.51	992.89	773.54	0.57	204.07	204.07	204.07
I&M	744.25	744.00	590.55	462.91	0.62	110.10	110.10	110.10
IPL	453.75	454.00	331.14	262.47	0.58	89.34	89.34	89.34
IMPA	168.89	169.00	132.61	103.87	0.61	30.01	30.01	30.01
NIPSCO	979.57	980.00	784.72	619.54	0.63	174.79	174.79	174.79
Vectren	568.60	569.00	443.51	348.06	0.61	198.70	198.70	198.70
Statewide	4,264.50	4,265.51	3,275.41	2,570.39	0.60	807.01	807.01	807.01

Table 70 : Therm Savings Summary

Utility	Planned Therms	Ex-Ante Therms	Audited Therms	Verified Therms	Realization Rate	Ex-Post Therms	Ex-Post Lifetime Therms	Net Therms
Duke	NA	NA	115,621	112,355	NA	128,136	1,455,516	128,136
I&M	NA	NA	120,015	116,865	NA	107,876	1,225,379	107,876
IPL	NA	NA	76,393	74,829	NA	75,548	858,165	75,548
IMPA	NA	NA	18,411	17,961	NA	19,175	217,809	19,175
NIPSCO	NA	218,970	261,374	255,032	116%	163,783	1,860,439	163,783
Vectren	NA	126,687	84,883	82,904	65%	83,944	953,531	83,944
Statewide	NA	345,657	676,697	659,946	191%	578,463	6,570,840	578,463

PROCESS ANALYSIS

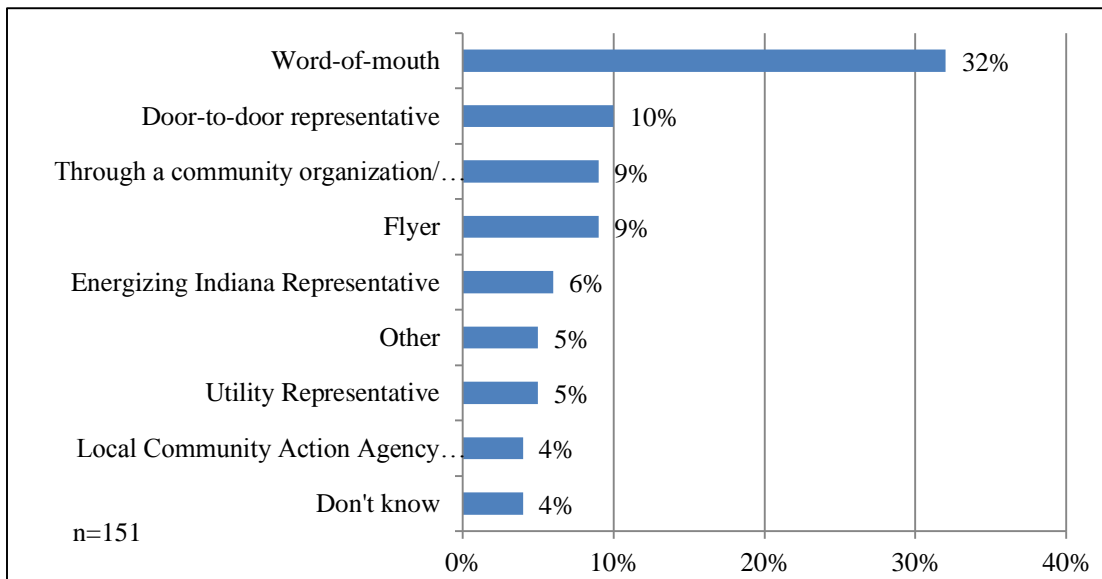
The PY1 process analysis for the LIW program included a participant survey, an online survey of program auditors, and interviews with the Program Administrator. The participant interviews asked questions related to how participants heard about the program, awareness of ways to save energy, program satisfaction levels, and the program process. The auditor interviews explored areas of program training, the audit process, participant perceptions, and health and safety issues. We also interviewed the Program Administrator to discuss the program’s purpose, goals, operations, strengths, and challenges.

As previously mentioned, the participant survey was administered in September 2012. However, the program significantly increased its efforts in the last two months of the year, completing approximately 60% of audits in the last quarter. Program staff reported that in October they partnered with several other organizations to increase the auditor pool temporarily. The total number of auditors went from about 60 to 210 across both HEA and LIW programs, representing a 250% increase. As these new auditors were not included in our original auditor survey—nor were the homes they served in the participant surveys—and considering the number of audits completed in the last two months of the year, the following process results reflect customer satisfaction levels from January through September of 2012 only. To capture the effects of mid-cycle program changes in future years, the Team will conduct participant surveys at two times during the year, in August and in January, immediately after the close of the program year⁷⁷.

PROGRAM MARKETING

The Program Administrator primarily uses door-to-door canvassing to market the LIW program to potential participants. In addition, the program partnered with other organizations to generate referrals. Figure 9 below shows how LIW participants reported learning about the program.

Figure 9: Learning about the Program (Multiple Response)



⁷⁷ Please note that a survey in January will only be feasible in future years if the EM&V report due date is pushed back to later in the spring.

The participant survey found that the main barriers to participation were consistent with other low- and moderate-income programs, and include lack of awareness (11%) and not wanting strangers in their homes (10%). Participants reported that the top three reasons for participating in the program were to save energy (34%), to reduce their utility bills (33%), and having an interest in upgrading their home (11%).

The LIW program targets single-family homeowners and renters whose household income is up to 200% of the federal poverty level. Low-income neighborhoods were identified in program planning by using U.S. Census block information and data from utilities, and these neighborhoods were targeted for door-to-door canvassing. Because there is not a formal income-qualification process for customers to participate in the program, the Evaluation Team decided to verify eligibility against actual participants using data collected in the participant surveys. As part of the survey, participants reported the number of people in their household and household income. From here the Team determined whether the household fell above or below 200% of the federal poverty level.

The survey found that 24% of respondents' households were defined as low income, while the remaining households (76%) were above the 200% of the federal poverty level participation requirement⁷⁸. The table below provides a summary of the participants' income levels. As shown, almost 70% of respondents had household incomes below \$30,000, which means that while the program may not be primarily targeting low-income customers as defined by the federal poverty level, it may still be reaching a large number of households with lower-to-moderate income levels.

⁷⁸ This calculation is based on participant self-reported numbers of occupants in the home and household income levels. While not a perfect science, the results may be indicative of a high percentage of households participating that may be above the program guidelines.

Table 71: LIW Household Income Level

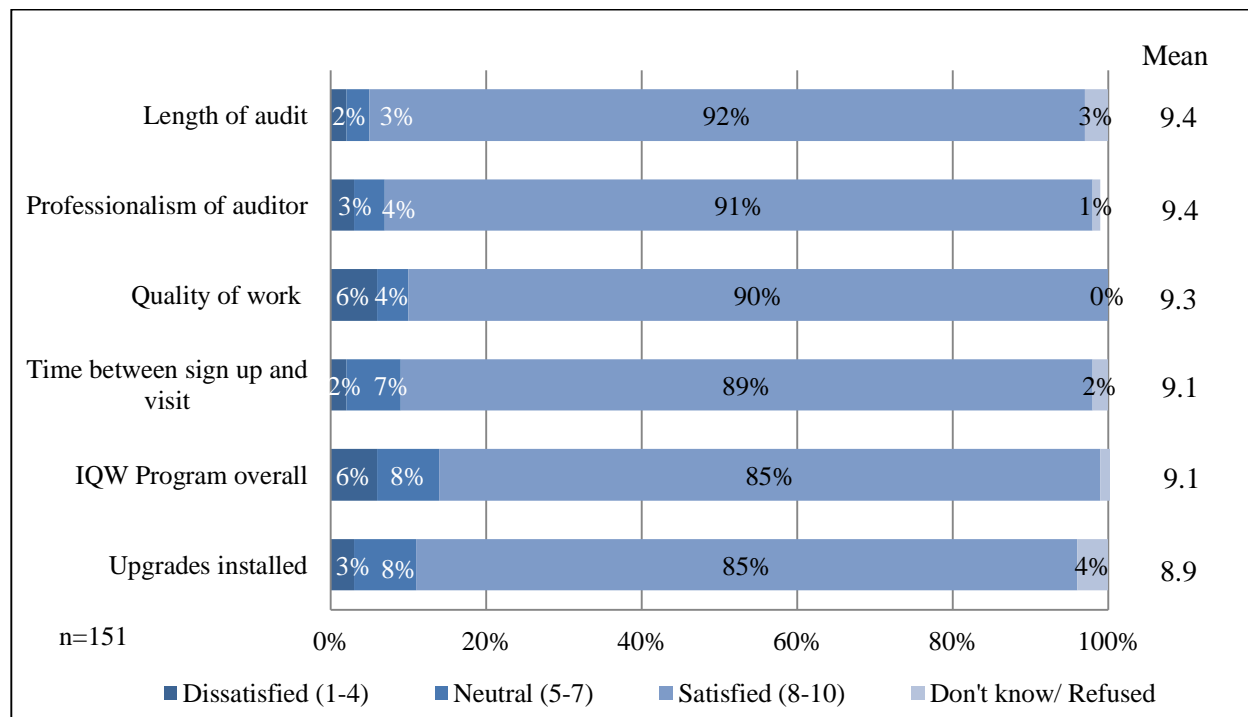
Income Range	% of Respondents* (n=151)
Less than \$15,000	32%
\$15,000 to \$29,999	36%
\$30,000 to \$49,999	16%
\$50,000 to \$74,999	5%
\$75,000 to \$99,999	0%
\$100,000 and over	1%
Don't know	4%
Refused	7%

*May not add up to 100% due to rounding.

CUSTOMER SATISFACTION

LIW participants indicated high satisfaction with the program, as illustrated in Figure 10 below. The highest level of satisfaction was with the length of the audit, closely followed by the professionalism of the auditor. While a majority of participants surveyed (55%) could not list anything that could be done to improve the program, some program participants thought improvements could be made. For example, respondents requested the inclusion of more measures in the program offerings (12%), a higher quality of work (5%), and the opportunity for follow-up appointments (5%).

Figure 10: Satisfaction with Program



Note: Does not sum to 100% due to rounding.

PROGRAM OPERATIONS

Participants are enrolled in the LIW program through neighborhood canvassing efforts or through partnering organizations. Once the participant has enrolled, an appointment is scheduled through the call center for a two-person audit team to come to their home. While at the home, a three- to four-hour audit is conducted, including blower-door guided air sealing, combustion safety checks, and the installation of the prescribed measures. The homeowner receives a report including recommendations for additional steps they can take to make their home more efficient.

Participant Perceptions

Participants reported learning about energy efficiency as a result of the audit process. Of those participants surveyed, less than a third (29%) reported being knowledgeable about energy efficiency prior to participation in the program. However, over half (58%) of those surveyed reported learning a lot about energy efficiency from the auditors that visited their home.

Most participants (87%) reported that the auditors discussed audit findings and recommendations with them, and 82% of participants reported being provided with a written report of findings by the program representatives. Nearly two-thirds (61%) felt that the information provided by their auditors was very useful.

Auditor Perceptions

In addition to assessing participant views of the program's operation and influence, the Evaluation Team also interviewed 11 LIW auditors to review training, audit processes, health and safety issues, and challenges while on the job.

Nearly all of the auditors (82%) interviewed felt that the training required to become an auditor was adequate. However, 73% believed that more training could be provided. When asked about training options, 63% of auditors specified Building Performance Institute (BPI) Certification as a potential training option. Additionally, 25% of auditors noted Combustion Appliance Zone (CAZ) Training as an option they thought should be provided.

Of the auditors interviewed, only 18% reported being BPI-certified, and just under half of the auditors (46%) reported prior experience with residential auditing work. In addition to LIW audits, over half (55%) reported completing audits as a part of the HEA program.

Health and Safety

Auditors often contend with health and safety issues in homes during LIW program audits. Nearly two-thirds (64%) reported having found asbestos in customer homes. To handle the situation, auditors reported taking a variety of approaches, including making the participant aware of the issue (90%), deferring the audit (20%), reversing the blower door test (20%), and referring the participant to an expert (20%). Nearly three-quarters of auditors (73%) reported finding the need for replacement or repair while conducting combustion safety tests in homes with gas appliances. Recommendations for repairs or replacement were most often for the heating system or water heater, but auditors also found a need to repair or replace ventilation and gas kitchen appliances. If a repair or replacement was needed, the auditors reported informing the participant and providing recommendations. In other cases, the audit was deferred or the gas utility was contacted if a gas leak was detected.

Nearly all of the LIW program auditors (91%) reported some other health and safety issue while on the job. These issues included exposure to rodents, insects, mold, sewage, structural issues, and lack of heat,

electricity, and/or running water in a customer's home. To contend with these issues, half of the auditors (50%) reported informing the participant of the issue. Auditors also deferred visits (50%) and used safety equipment to complete the audit (40%).

The Program Administrator reported that during the latter part of PY1 a new gas policy was adopted by the DSMCC, which resulted in decreasing audit deferrals. This policy requires auditors to wear a personal metering device that measures both carbon monoxide and ambient methane levels. If a gas leak is detected but the ambient meter does not alarm, the auditor can continue with the audit.

DATA AND TRACKING SYSTEMS

The LIW program audit is completed using an auditing tool called Optimizer. The auditor enters the audit information along with the measures installed into a handheld device loaded with the Optimizer software. The data from the device is then uploaded to the program-tracking database.

The Evaluation Team completed a thorough review of the program's data and tracking system. Early versions of the data had several fields missing that were necessary to the program evaluation, including the number of measures provided to program participants, phone numbers, and housing characteristics. The Evaluation Team held several meetings with the Program Administrator to identify fields needed for the evaluation and to clarify outstanding questions. Data provided in November 2012, representing program participation through the end of October 2012, included the data necessary to calculate preliminary participation numbers and measure-incidence rates. Year-end data was delivered by the Program Administrator on January 18, 2013. In the Evaluation Team's review, errors in the data were found, and new naming conventions were identified for some variables. This required further communication with the Program Administrator, and a final data set with corrected data was delivered on January 25, 2013.

Several issues were identified during the Evaluation Team's review of the program data, as shown below. Currently, there is no data dictionary for the program database⁷⁹. The database has a number of fields with similar labels, making it difficult to determine the correct and applicable fields for analysis.

The database includes a number of variables where the featured data had been auto-populated with "default" data by the Optimizer tool. Often, the auto-populated data was unnecessary and made the data analysis challenging, particularly with regard to assessing what information had been entered by auditors and what information was automatically set by the Optimizer tool. For example, the air infiltration fields are auto-populated in the LIW database; thus, LIW auditors must remember to override this feature and enter actual readings from the blower door test, if air sealing is performed. Auto-populating the air infiltration fields may result in under- or over-estimating program savings.

The database does not distinguish between installed and left-behind measures, making it difficult to assign savings credit to those measures. As noted earlier in the report, many of the measures intended for installation are not being installed in homes for a number of reasons, including customer refusal. This finding was reported consistently by both auditors and participants. Auditors, in fact, indicated that in some cases left-behind measures were not being tracked in the program database. Identifying the number of measures left behind would allow the Evaluation Team in its verification efforts to confirm how many measures were installed later by participants.

The Optimizer tool does not have data entry parameters, and therefore erroneous data can be entered either by accident or because an auditor is not properly trained. For example, in the field corresponding to

⁷⁹ The Program Administrator stated that they are in the process of putting together a data dictionary.

the feet of pipe wrap installed in a home, the entries go up to 60 feet, when the program was to install a maximum of 6 feet. This field could be programmed so that only entries of 6 or less could be entered, greatly improving the reliability of the data.

INSIGHTS & RECOMMENDATIONS

The Evaluation Team makes the following recommendations for the LIW program.

Install as many measures as possible at the time of the audit. The participant survey data and information captured through auditor interviews indicated that measures are left behind for participants to install later, and this is hurting overall installation rates. To ensure savings credit, it is important for the auditors to install as much equipment as possible. Leaving devices behind subjects the program to lower installation rates, affecting overall savings levels.

Make sure the per-house savings number accurately reflects the per-measure unit count and approved energy savings included in the planning and in the kits. Based on the current per-house savings number for CFLs, it appears that in planning there were to be 12 bulbs installed in each home with each receiving 44.1 kWh. This is in contrast to information in the BRD (which states 9 bulbs at 60.9 kWh) and feedback from the DSMCC members who noted that there were only 9 bulbs per kit. If the numbers of a measure or the types of measures offered changes during the course of the program year, the per-house savings value must be updated to reflect this.

If measures are left for the participant to install later, track measures left behind. The Program Administrator should begin tracking the measures that are left behind in participants' homes and not installed by the auditors. This will allow the Evaluation Team to ask participants specifically about measures directly installed by auditors, and then specifically about measures the auditors left behind. Knowing how many of each measure fall into each bucket (auditor-installed vs. left behind) will increase the accuracy of information provided to participants and, presumably, the accuracy of their responses. In PY1 some credit was given for participants noted as null for all measures in the database under the expectation⁸⁰ that those were participants who had received a kit but where auditors had not installed the items directly. In PY2 and PY3, because this has been a clearly and early identified issue, it is expected that the data will track all left-behind and installed measures.

Consider a lower level of savings for measures left behind. It is clear that measures left behind for participant self-installation are less likely to be installed. Therefore, the program should give careful consideration to whether or not this practice (i.e., leaving measures behind) should continue. If it continues, left-behind measures should be tracked in a distinct manner in the program database. In addition, a lower planned savings value might be warranted to address the risk of over-counting savings for measures that were left behind⁸¹.

Consider reporting savings at the measure level instead of at a per-house level. The current approach used by the Program Administrator to report monthly achievement significantly overestimates the savings being achieved by the LIW program. By moving to a system that tracks savings at the measure level, there is less likely to be such a significant difference between the ex-ante and audited savings for the program. Planning can still be handled at a per-house level, but reporting and tracking would be handled at the measure level. Reporting ex-ante savings at the measure level ensures a more accurate measure of

⁸⁰ This was verified by calling a small handful of customers who were marked as null in the data, and verifying that they had received measures. This is not done to achieve a 90/10 level, but to simply confirm if the claim by GoodCents that null participants did get the kit was accurate.

⁸¹ The Program Administrator has proposed a new lower savings value for left-behind kits in PY2. This change does not address savings values for specific measures that are left behind, and based on a cursory review of the proposed savings by the Evaluation Team, may still be overestimating the number of left-behind measures that will eventually be installed.

program achievement over the course of the program year, and may reduce the risk of utilities overpaying for contracted services on the front end.

Provide more targeted marketing to electrically heated homes. The program is not reaching the number of electric-only homes that were planned for; therefore, more targeted marketing to electric homes should be employed. The Program Administrator could work with participating utilities to identify homes that have space and electric water heating.

Consider more specifically highlighting recommendations in the audit report to participants, and track the recommendations that are made. Survey data suggests that participants are acting on the audit recommendations that are made in the home energy report. To maximize these opportunities for additional savings, the Program Administrator could more clearly highlight these recommendations in the report, and ensure that auditors discuss them with participants. Audit recommendations for each participant should be tracked in the program database so the Evaluation Team can follow-up with participants later to see if the recommendations were followed.

Explore other options for ensuring that the program is reaching eligible low-income customers. The participant survey found that the program appears to be reaching a large percentage of customers with household incomes that are higher than 200% of the federal poverty level. U.S. Census block information can grow outdated, and the Program Administrator could consider working closely with Community Action Agencies and other non-profit organizations that interact with low-income populations to better identify eligible neighborhood blocks and customers. Alternatively, the program could screen participants at the time of enrollment, and based on their self-reported household income the Program Administrator could direct the participant to either the LIW program or the HEA program.

Establish data-tracking protocols. The Program Implementer should work with the makers of the Optimizer tool to find a way to eliminate the unnecessary default data that can interfere with the data collection and analysis. Data-entry parameters should also be employed to prevent the entry of incorrect data. The Program Administrator should ensure that auditors are fully trained on using the Optimizer tool to prevent inconsistent data entry.

Develop a data dictionary. The Program Implementer should develop a data dictionary that clearly outlines all data fields being tracked and the content of those fields. Clearly defined fields will ensure that data is tracked in the appropriate place, and will allow the Evaluation Team to ask for only those fields needed for analysis. Clarity around fields will also lessen the back-and-forth between the EM&V team and the Program Administrator, because at the time of the data request, the evaluator will know the content of all fields and will know exactly which fields to request. In PY1, several iterations of data were required because there was insufficient clarity on what was being tracked.

Establish QA/QC protocols so that data uploaded to the GoodCents Portal and the Evaluation FTP site are consistent between each other and month-to-month. Monthly uploads between the two sites were often inconsistent in terms of total units, fields included, etc. In addition, uploads within each site often varied by month, with fields changing month-over-month, and variable types in fields changing month-over-month (e.g., a field variable in one month was identified as 0 or 1, and the next month the same field had a string variable). These inconsistencies suggest that there is not a QA/QC effort occurring by the Program Administrator between each month-to-month upload by program or between data pulled for the two portals (GoodCents and Evaluation).

Provide additional training for auditors. The Program Administrator should consider providing additional training to LIW program auditors to ensure that consistent protocol is used in deferring jobs and in dealing with health and safety issues. Additionally, many of the auditors interviewed indicated that they did not fully understand when and how to apply the barrier codes when they did not install a measure in a home.

Ensure that auditors are thoroughly discussing the audit process and measures provided with each

participant. For example, during the participant interviews, we found that a number of participants did not recall receiving air sealing, and it may be that they simply did not understand what the air-sealing measure was. As air sealing is a major service provided by the LIW program that can result in significant savings, auditors should be sure to explain to participants what they are doing while in the home.

ENERGY EFFICIENT SCHOOLS (EES) PROGRAM

PROGRAM DESIGN AND IMPLEMENTATION

The Energy Efficient Schools (EES) program launched in January 2012 with the goal of producing cost-effective electricity savings by influencing school staff, students, and their families to focus on conservation and the efficient use of electricity and gas. The program design helps schools and students identify opportunities to manage their energy consumption by providing zero- or low-cost improvements and tips as well as knowledge and support to conduct larger efficiency projects.

The program consists of two subprograms: the Education program, which targets students and their families through distribution of energy-savings kits; and the Building Assessment program, which targets school district facility staff by conducting audits and providing recommendations and rebate options for energy-efficient improvements to schools.

GoodCents manages the implementation (Program Implementer) of both subprograms by tracking overall performance and working with the two subprogram Implementers, Resource Action Programs (RAP) and CLEAResult.

Education Program

The EES Education program goal is to produce cost-effective electric and natural gas savings by influencing students and their families to focus on conservation and the efficient use of electricity. The program encourages students and their families to reduce their energy consumption at home by providing students with energy efficiency kits containing low-cost energy-saving measures paired with a curriculum taught in class at no cost to students or teachers.

The program is available to any teacher with a fifth- or sixth-grade class located in an Energizing Indiana participating utility territory. Teachers sign up for the program and RAP distributes all kits and curriculum materials to the teachers, who give a kit to each student.

The kits include the following items:

- Three 13-watt Compact Fluorescent Lamps (CFLs)
- Three 23-watt CFLs
- Kitchen Faucet Aerator
- Low-Flow Showerhead
- LED Night Light
- FilterTone® Alarm
- Flow Rate Test Bag
- Digital Thermometer
- Reminder Sticker and Magnet Pack
- Parent/Guardian Comment Card

Student materials include:

- Student Workbook
- Student Guide
- Scantron Form

Teacher materials include:

- Teacher Materials Folder, including:
 - Additional Activities
 - Scantron/Letter Postage Paid Return Envelope
 - Wristband Flyer
 - Teacher Incentive Flyer
 - State Education Standards Program Correlation
 - Teacher Program Evaluation Survey
 - Water Poster
 - Energy Poster
 - Natural Gas Poster
 - Teacher Book

Building Assessment Program

The second component of the EES program is the Building Assessment program. The objective of this program is to educate school officials and facility staff about the benefits of energy efficiency and the savings associated with the installation of recommended energy-saving measures and operational improvements to their schools.

The Building Assessment program provides free walk-through energy audits for K-12 schools that are greater than 10 years old. After the implementation contractor performs the walk-through, an energy specialist presents the schools with a detailed assessment report outlining a wide variety of options to increase the school's energy efficiency as well as information about available rebates for financial support. The implementation contractor encourages school officials to take advantage of the Commercial and Industrial (C&I) Prescriptive program or other Core Plus programs for which they may be eligible.

All resulting savings are reported through the schools' participation in other prescriptive programs, and no savings are reported under the Building Assessment program. This program will start to report savings in program year 2013, when the implementation contractor will require participating schools to install a set of direct installations in order to receive the final assessment report.

EM&V METHODOLOGY

The evaluation of the EES program consists of both impact and process elements. Table 72 below provides an overview of the tasks used for evaluating this program.

Table 72: Program Evaluation Overall Tasks

Action	Details	Education Program	Building Assessment Program
Implementer Interviews	Interviewed representatives from GoodCents, CLEARresult, and RAP for program progress, successes, and barriers for 2012 program year	X	X
Auditor Interviews	Interviewed energy specialists and engineers at CLEARresult to gain knowledge on the assessments and the assessment reports		X
Student Participant Surveys	Questionnaire distributed in the kits to help determine what measures families install and how persistent any savings may be	X	
Teacher Surveys	Interviewed a sample of teachers to get their assessment of the program's effectiveness	X	
Parent/Guardian Survey ⁸²	Surveyed a sample of parents of students who received kits to determine the free-ridership and spillover from the kit measures	X	
School Facility Staff Participant Surveys	Surveyed a sample of facility staff who received an assessment to determine the effectiveness of the audit, and the status of any energy efficiency improvements (savings credited for improvements performed outside of rebate programs)		X
School Facility Staff Nonparticipant Surveys	Surveyed a sample of nonparticipants to assess program awareness and reasons for not participating		X
Program Database Review	Ensured that appropriate data are being collected to inform the evaluation	X	X
Ex-Ante Savings Review	Reviewed the assumptions and calculations used in the program ex-ante savings assumptions for the student kits	X	

Sample Design and Data Collection Methods

The Evaluation Team developed samples, seeking to achieve precision of ± 10 percent at the 90 percent confidence level by utility by the end of the three-year evaluation period. Table 73 shows the final sample disposition for various data-collection activities.

⁸² New task included to measure the net-to-gross (NTG) of the Education program.

Table 73: Sample Disposition for Various Data-Collection Activities

Action	Population ⁸³	Targeted	Achieved
Implementer Interviews	NA	3	3
Auditor Interviews	NA	2	2
Student Participant Surveys ⁸⁴	72,695	27,261	36,279
Teacher Surveys	1,181	NA	441
Parent/Guardian Survey ⁸⁵	411	87	87
School Facility Staff Participant Surveys	107	45	36
School Facility Staff Nonparticipant Surveys	19	5	5

The Evaluation Team drew samples for all data collection using either simple or stratified random sampling⁸⁶. Please reference the utility-specific Technical Volumes for the achieved surveys by utility.

PROGRAM BUDGET AND EXPENDITURES

Table 74 and Table 75 show the original subprogram- and program-level budgets as well as the expenditures reported at the conclusion of 2012. GoodCents reported spending 105% of the statewide Education program budget, 84% of the statewide Building Assessment program budget, and 99% of the total EES program budget.

Table 74: Subprogram-Level Budget and Expenditures

Utility	Education Program			Building Assessment Program		
	Budget	Reported Expenditures	% of Budget Utilized	Budget	Reported Expenditures	% of Budget Utilized
Duke	\$3,080,710	\$3,081,207	100%	\$1,134,132	\$873,412	77%
I&M	\$377,093	\$377,700	100%	\$169,468	\$156,432	92%
IPL	\$772,463	\$773,487	100%	\$273,756	\$273,756	100%
IMPA	\$156,188	\$203,288	130%	\$65,180	\$65,180	100%
NIPSCO	\$420,241	\$878,576	209%	\$156,432	\$117,324	75%
Vectren	\$572,776	\$332,958	58%	\$169,468	\$169,468	100%
Statewide	\$5,379,470	\$5,647,216	105%	\$1,968,436	\$1,655,572	84%

⁸³ All populations listed were the populations available at the time of the survey effort.

⁸⁴ Surveys included in the kits, conducted by GoodCents with a survey response goal of 37.5%.

⁸⁵ New task included to measure the NTG of the Education program.

⁸⁶ Simple random samples are drawn from the entire population, whereas stratified random samples are drawn randomly from subpopulations (strata), and then weighted to extrapolate to the greater population.

Table 75: Program-Level Budget and Expenditures

Utility	Energy Efficient Schools Program		
	Budget	Reported Expenditures	% of Budget Utilized
Duke	\$4,214,842	\$3,954,619	94%
I&M	\$546,561	\$534,132	98%
IPL	\$1,046,219	\$1,047,243	100%
IMPA	\$221,368	\$268,468	121%
NIPSCO	\$576,673	\$995,900	173%
Vectren	\$742,244	\$502,426	68%
Statewide	\$7,347,906	\$7,302,788	99%

PROGRAM PERFORMANCE

Overall, the Education program and Building Assessment program achieved 98% and 86% of their program goals respectively, as shown in Table 76. The Education program also achieved 98% of the ex-ante energy savings goals for electricity and 91% for gas, as shown in Table 77. The Building Assessment Program did not report any energy-saving goals for 2012, and its performance was measured solely by the number of assessments completed.

Table 76: 2012 Kits and Assessments Achieved Statewide

Program	Units (Kits and Assessments)		
	Goal	Ex-Ante	% of Goal
Education	74,265	72,695	98%
Building Assessment	147	127	86%

Table 77: 2012 Ex-Ante Savings Statewide

Program	kWh			kW			Therms		
	Goal	Ex-Ante	% of Goal	Goal	Ex-Ante	% of Goal	Goal	Ex-Ante	% of Goal
Education	30,968,505	30,313,815	98%	NA	NA	NA	193,229	175,526	91%
Building Assessment	NA	NA	NA	NA	NA	NA	NA	NA	NA
Statewide	30,968,505	30,313,815	98%	NA	NA	NA	193,229	175,526	91%

Education Program

Table 78 shows how the reported program performance compared to the goals established in program planning at the utility level. The savings reported by the program do not reflect adjustments made as a result of the evaluation.

Table 78: Education Program Ex-Ante Savings by Utility and Statewide⁸⁷

Utility	kWh			kW			Therms		
	Goal	Ex-Ante	% of Goal	Goal	Ex-Ante	% of Goal	Goal	Ex-Ante	% of Goal
Duke	16,448,148	16,450,650	100%	NA	NA	NA	NA	NA	NA
I&M	2,054,976	2,058,312	100%	NA	NA	NA	NA	NA	NA
IPL	4,122,045	4,127,466	100%	NA	NA	NA	NA	NA	NA
IMPA	1,084,200	1,084,200	100%	NA	NA	NA	NA	NA	NA
NIPSCO	4,802,172	4,808,844	100%	NA	NA	NA	127,828	128,028	100%
Vectren	2,456,964	1,784,343	73%	NA	NA	NA	65,401	47,498	73%
Statewide	30,968,505	30,313,815	98%	NA	NA	NA	193,229	175,526	91%

Building Assessment Program

The Building Assessment program’s performance was tracked by the number of complete assessments and closeout meetings performed in each utility’s territory. Table 79 shows how the number of reported assessments compares with the program goals for 2012 for each utility.

Table 79: Building Assessment Program Ex-Ante Results by Utility and Statewide⁸⁸

Utility	Assessments		
	Goal	Reported	% Achieved
Duke	87	67	77%
I&M	12	12	100%
IPL	21	21	100%
IMPA	5	5	100%
NIPSCO	9	9	100%
Vectren	13	13	100%
Statewide	147	127	86%

IMPACT ANALYSIS

The evaluation effort included multiple data-collection efforts and analysis tasks for each subprogram, and given the programs’ different nature of delivery and performance tracking, the Evaluation Team used unique evaluation methods to conduct the impact analysis for each program.

The impact analysis for the Education program included the following:

- Database review of the number of kits distributed
- Engineering analysis of ex-ante energy savings per kit
- Installation rate analysis (student Scantron survey and parent/guardian survey)
- Net-to-gross (NTG) analysis (parent/guardian survey)

⁸⁷ The Education program did not report demand savings.

⁸⁸ The Building Assessment program did not report electric, gas, or demand savings.

The impact analysis for the Building Assessment program included the following:

- Database review of the number of assessments and closeout meetings completed
- Savings attribution analysis (Participant Facility Staff survey and assessment reports)

AUDITED SAVINGS

The first step in the impact evaluation process was to review the program database to confirm the number of kits distributed and assessments conducted through the program, and to verify that the program savings are tracked and reported accurately.

Education Program

The Education program savings were determined by applying a “per-kit” energy savings value to the number of kits distributed through the program. GoodCents, sourcing the Ohio Technical Resource Manual (TRM) and the initial proposal to Energizing Indiana, designated that each kit saves 417 kWh and 11.1 therms annually. No demand savings were reported for the energy-savings kits.

Table 80 outlines the assumptions that dictate the electricity savings for each measure provided in the energy-savings kit. The electricity savings per kit is predicated on assumptions about the predicted installation rate for each kit measure and the saturation of electric- vs. gas-sourced water heaters.

Table 80: Planned Ex-Ante Energy (kWh) Savings Per Kit

Kit Measure	Base Ex-Ante kWh Savings	Installation Rate	Electric Saturation Rate	Measures Per Kit	Total Ex-Ante kWh Saving Per Kit
CFLs (13 Watt)	44	75%	100%	3	99
CFLs (23 Watt)	78	66%	100%	3	154
Low-Flow Showerhead	608	60%	20%	1	73
Faucet Aerator	158	60%	20%	1	19
LED Night Light	39	80%	100%	1	31
Filter Tone Alarm	90	45%	NA	1	41
Total					417

Gas savings were calculated using the ratio of electric savings between the Home Energy Audit (HEA) program and the Education program, and since they were not determined on a per-measure basis, measure-level assumptions are not available.

As Table 81 demonstrates, no adjustments were made to the audited number of kits distributed, as the database matched the reported kits-per-utility exactly. The Evaluation Team also found that the application of the electric savings per kit is tracked correctly and no savings adjustments were made; however, a slight adjustment was made to the gas savings for Vectren and NIPSCO.

Table 81: Audited Education Program Savings (kWh, kW, and Therms) by Utility and Statewide

Utility	Audited Per-Kit kWh Savings	Audited kW Per Kit	Audited Therms Per Kit	Number of Reported Kits	Number of Kits in Database	Total Audited kWh Savings	Total Audited kW savings	Total Audited Therms Savings
Duke	417	NA	NA	39,450	39,450	16,450,650	NA	NA
I&M	417	NA	NA	4,936	4,936	2,058,312	NA	NA
IPL	417	NA	NA	9,898	9,898	4,127,466	NA	NA
IMPA	417	NA	NA	2,600	2,600	1,084,200	NA	NA
NIPSCO	417	NA	11.1	11,532	11,532	4,808,844	NA	128,005
Vectren	417	NA	11.1	4,279	4,279	1,784,343	NA	47,497
Statewide				72,695	72,695	30,313,815	NA	175,502

Building Assessment Program

The Evaluation Team reviewed the tracking database of the Building Assessment program’s participating schools and made no adjustments to the reported program performance. As the program does not report savings, no adjustments were made to program savings; however, the Evaluation Team made significant efforts to designate savings in the ex-post savings step of the evaluation.

Table 82: Audited Building Assessment Program Participation by Utility and Statewide

Utility	Reported Number of Participating Schools	Audited Number of Participating Schools
Duke	67	67
I&M	12	12
IPL	21	21
IMPA	5	5
NIPSCO	9	9
Vectren	13	13
Statewide	127	127

VERIFIED SAVINGS

As well as auditing the database, the Evaluation Team used survey data to generate installation and participation rates to verify the audited savings for both subprograms.

Education Program

The Evaluation Team used survey data from the student Scantrons and the parent/guardian survey to adjust the installation rates of each measure in the kit. The Team used the same methods as the Vectren Core Plus Schools Evaluation, with the addition of the independent data-collection effort with parents and guardians of children receiving kits. Since this extra survey was deployed months after families received the kits, the Evaluation Team was able to survey families who had a significant amount of time to install the kit measures and compare the findings.

The installation rates from the parent/guardian survey are higher than students’ (see Table 83). This finding is likely attributed to two factors: 1) families have had the kits for a longer amount of time and

have been able to install more of the measures; and 2) it is likely that parents in the sample installed more measures than other parents, as they had to make an effort to complete a form from the kit and mail it back to the Program Implementer for the Evaluation Team to have their contact information included in the sample, indicating a “more involved parent” who is more likely to engage in their children’s schoolwork.

As is often the case, and extremely difficult to avoid with survey research, the student data also likely contains biases. Firstly, students complete the Scantron survey shortly after receiving the kit, which does not allow the families sufficient time to install every measure that they would want or plan to, which would likely cause these installation rates to be underreported. There is also some non-response bias involved, as 50.5% of Scantron surveys were returned and it is unknown what the installation rates would be for the other 49.5%. This non-response bias could indicate that the installation rate is over-reported, as it is unknown if the students who did not return surveys installed any of the measures. However, results from the participating teacher survey indicate that 48% of teachers did not send back all of the surveys that they received from their students. For this reason, the Evaluation Team follows the same methodology of treating the student data as the Vectren Core Plus 2011 Evaluation, because it is unknown how many surveys were completed but not sent in.

Since there is no mechanism to measure the severity of the various biases, a straight average of the two survey results was judged the most appropriate method.

Table 83: Education Program Statewide Verification Adjustments

Kit Measure	Student Data Installation Rate	Parent Data Installation Rate	Statewide Installation Rate
CFLs (13-Watt)	57.31%	85.06%	71.19%
CFLs (23-Watt)	47.60%	82.76%	65.18%
Low-Flow Showerhead	46.54%	52.87%	49.71%
Faucet Aerators	48.49%	46.51%	47.50%
LED Night Light	80.35%	96.51%	88.43%
Filter Tone Alarm	34.63%	51.22%	42.92%
Statewide Total			60.95%⁸⁹

The statewide installation rates align with what the Evaluation Team has seen in other similar school education program evaluations in other states. The Cadmus Group evaluated a Midwest utility’s Online Audit program, which offers a similar free energy kit for gas customers. Compared to the Midwest utility program evaluation installation rates, the Education program showerheads and faucet aerators have very similar installation rates, with less than a 1% and 2% difference, respectively.

For a recent study of a Midwest utility’s School Education program, installation rates determined from talking with parents were higher than what was previously reported in the student report card. On average, 48% of students reported installing the kit measures. A follow-up survey with parents several months later showed 64% of kit measures were installed.

⁸⁹ Statewide installation rate is weighted by the number of measures in each kit, the base savings values, and the electric saturation rate.

Another recent evaluation of energy-education kits delivered to students in the Pacific Northwest showed a similar trend. On average, 88% of those students reported installing the CFL. A follow-up survey with parents six months later showed 96% of CFLs were installed.

The adjustments for installation rates and the effect on the audited per-measure savings are shown in Table 84. These adjustments are made at a statewide level as opposed to at the utility level because the sample size of survey participants for each utility is required to be significant at the statewide level for the first year and at the utility level over the course of the three-year evaluation effort. While the data from the student surveys are statistically significant across the utilities, the data from the parent/guardian survey are not.

Table 84: Education Program Statewide Verification Adjustments

Kit Measure	Base Ex-Ante Savings	Evaluated Statewide Installation Rate	Electric Saturation Rate	Measures Per Kit	Total Verified kWh Savings	Total Verified Therms Savings ⁹⁰
CFLs (13-Watt)	44	71%	100%	3	93.97	NA
CFLs (23-Watt)	78	65%	100%	3	152.52	NA
Low-Flow Showerhead	608	50%	20%	1	60.44	NA
Faucet Aerators	158	48%	20%	1	15.01	NA
LED Night Light	39	88%	100%	1	34.49	NA
Filter Tone Alarm	90	43%	100%	1	38.63	NA
Statewide Total				10	395.06	10.13

Table 85 and Table 86 show the utility and statewide verified energy savings for the Education program. Utility-specific data can be found in the utility-specific Technical Volumes.

Table 85: Verified Energy Savings (kWh and kW) by Utility and Statewide

Utility	Ex-Ante kWh Savings Per Kit	Ex-Ante kW Savings Per Kit	Verified kWh Savings Per Kit	Verified kW Savings Per Kit	Total Verified kWh Savings	Total Verified kW Savings	Realization Rate
Duke	417	NA	395.06	NA	15,585,122	NA	95%
I&M	417	NA	395.06	NA	1,950,017	NA	95%
IPL	417	NA	395.06	NA	3,910,305	NA	95%
IMPA	417	NA	395.06	NA	1,027,156	NA	95%
NIPSCO	417	NA	395.06	NA	4,555,833	NA	95%
Vectren	417	NA	395.06	NA	1,690,462	NA	95%
Statewide	417	NA	395.06	NA	28,718,896	NA	95%

⁹⁰ As the ex-ante savings for gas are generated from a program electric savings ratio to HEA, measure-level verified savings are not available.

Table 86: Verified Therm Savings by Utility and Statewide

Utility	Ex-Ante Therm Savings Per Kit	Verified Therm Savings Per Kit	Total Verified Therm Kits	Realization Rate
Duke	NA	NA	NA	NA
I&M	NA	NA	NA	NA
IPL	NA	NA	NA	NA
IMPA	NA	NA	NA	NA
NIPSCO	11.1	10.1	116,790	91%
Vectren	11.1	10.1	43,335	91%
Statewide			160,125	91%

Building Assessment Program

The Evaluation Team performed a participant-rate analysis during the participant facility staff survey to confirm that listed participants actually received the assessment and closeout meeting. All participant facility staff contacted confirmed their participation in the program and no adjustments were made to the verified participation.

Table 87: Building Assessment Program Statewide Participation Adjustments

Building Assessment Program	Participation Rate
Assessments	100%
Statewide Total	100%

EX-POST SAVINGS

The ex-post savings reflect engineering adjustments made to the ex-ante measure savings that were claimed by the EES program. Due to the varying nature of program delivery between the two subprograms, the Evaluation Team conducted the ex-post reviews separately, using methodologies tailored to each subprogram.

Education Program

The Evaluation Team calculated ex-post electric energy, demand, and gas savings for each kit measure through engineering reviews and survey results, and evaluated a statewide per-kit savings value of 486.86 kWh, 0.0633 kW, and 10.89 therms.

Primary sources of data were used whenever possible to evaluate the savings for the measures in the school kit. Primary sources included feedback from student and parent surveys related to the school kits, and provided data such as average household size, wattage of replaced incandescent bulbs, and shower flow rates. When primary sources of data were not available, the Evaluation Team relied on secondary sources such as the Indiana and Ohio TRMs. These secondary sources provided data such as coincidence factor and hot water heater efficiencies. Comprehensive lists of sources are found in the Technical Volume for each utility.

The evaluated ex-post savings shown in Table 88 represent the statewide average savings for each measure across all utilities. This statewide average is determined by weighting the calculated, utility-specific savings of each measure by the total number of school kits distributed. The utility-specific savings per measure and kit are broken out by measure in each utility’s Technical Volume.

Table 88: Summary Table of Statewide Engineering Review Findings by Measure

Kit Measure	Verified Savings Per Measure (kWh)	Ex-Post Savings Per Measure (kWh)	Verified Savings Per Measure (kW)	Ex-Post Savings Per Measure (kW)	Verified Savings Per Measure (Therms)	Ex-Post Savings Per Measure (Therms)
3 CFLs (13-Watt)	93.97	121.03	NA	0.0125	NA	(2.3)
3CFLs (23-Watt)	152.52	113.24	NA	0.0116	NA	(2.2)
Low-Flow Showerhead	60.44	157.17	NA	0.0064	NA	7.2
Faucet Aerator	15.01	60.45	NA	0.0018	NA	2.7
LED Night Light	34.49	15.31	NA	-	NA	-
Filter Tone Alarm	38.63	19.66	NA	0.0310	NA	5.5
Kit Total	395.06	486.86	NA	0.0633	10.13	10.89

Table 89 and Table 90 provide the summary findings for the ex-post savings review by utility. The savings per kit vary by utility because the savings calculations use inputs specific to each utility's territory. One type of input specific to each utility is the geographic-specific inputs, such as surface water temperature and full-load cooling hours (for air conditioning units). Given the input data available, these cities best geographically represent the territory of each utility. This geographic pairing was applied to the following variables: full-load heating hours (used with filter tone alarm), full-load cooling hours (used with filter tone alarm), water main temperature (used with aerator and showerhead), and waste-heat factors (used with CFLs). Other utility-specific inputs are based on survey results from the different utilities, such as average household size and number of showerheads per home⁹¹. These geographic-specific and survey-based inputs account for the variation in unit savings values from utility to utility.

⁹¹ Complete lists of inputs are available in each utility's Technical Volume.

Table 89: Ex-Post Gross Energy (kWh and kW) Savings Per Utility and Statewide

Utility	Verified kWh Savings Per Kit	Total Ex-Post kWh Savings Per Kit	Ex-Post kWh Savings	Verified kW Savings Per Kit	Total Ex-Post kW Savings Per Kit	Ex-Post kW Savings
Duke	395.06	525.76	20,741,265	NA	0.0650	2,563.30
I&M	395.06	462.31	2,281,981	NA	0.0621	306.54
IPL	395.06	493.36	4,883,326	NA	0.0631	625.05
IMPA	395.06	484.35	1,259,302	NA	0.0627	163.12
NIPSCO	395.06	369.37	4,259,613	NA	0.0583	672.85
Vectren	395.06	459.66	1,966,877	NA	0.0628	268.87
Statewide	395.06	486.86	35,392,364	NA	0.0633	4,599.74

Table 90: Ex-Post Gross Therm Savings Per Utility and Statewide

Utility	Verified Therm Savings Per Kit	Total Ex-Post Therm Savings Per Kit	Ex-Post Therm Savings
Duke	NA	8.55	337,339
I&M	NA	12.50	61,715
IPL	NA	12.73	126,024
IMPA	NA	11.53	29,970
NIPSCO	10.13	17.23	198,697
Vectren	10.13	8.89	38,022
Statewide	10.13	10.89	791,769

Building Assessment Program

The Evaluation Team approached the ex-post savings review for the Building Assessment program differently than the kits, as the program does not generate any reported savings or tracking of non-incented measures installed. The program design aims to funnel the schools through other prescriptive programs, which captured the savings for all measures implemented that qualified for rebates. However, many recommendations offered in the assessment reports either do not qualify for a rebate, or are behavioral changes (thermostat set points, for example) that cannot be tracked without verification or follow-up. Considering the potential savings that accrued through these scenarios, the Evaluation Team conducted surveys with participating facility staff to understand which recommendations were adopted in 2012 that did not qualify for a rebate.

The Evaluation Team interviewed 36 representatives from participating schools and found that of the total number of recommendations that were implemented in the first year, 59% did not qualify for a rebate and were not attributed to or tracked by any efficiency program. Therefore, the savings from these implemented recommendations are directly attributable to the Building Assessment program.

The Evaluation Team used the calculated savings values from each school’s assessment report to assign savings to any recommendation that was implemented and did not receive a rebate to calculate a savings per school value (discounting for partial implementation). Table 91 summarizes the average savings per recommendation type per school.

Table 91: Ex-Post Gross Energy (kWh and Therms) Savings by Measure Per School

Recommendation Type	kWh Per School	Therms Per School
Chiller	387.22	-
Computer equipment	144.72	(1.92)
Cooling set point	12,539.19	123.85
Heating set point	2,714.31	921.75
Hot water temp	934.00	131.44
HVAC control system	3,157.83	43.42
Lighting	1,177.94	(13.89)
Occupancy sensors	2,721.14	(18.92)
Operating schedule	14,437.06	(127.78)
Vending machines	469.78	(2.97)
Ventilation	2,057.51	410.86
Total	40,740.70	1,465.85

The Evaluation Team multiplied the per-school values by the number of assessments conducted in each utility territory to arrive at the total ex-post gross savings for the Building Assessment program (see Table 92 and Table 93).

Table 92: Ex-Post Gross Energy (kWh and kW) Savings Per Utility and Statewide

Utility	Verified kWh Savings Per School	Total Ex-Post kWh Savings Per School	Ex-Post kWh Savings	Verified kW Savings Per School	Total Ex-Post kW Savings Per School⁹²	Ex-Post kW Savings
Duke	NA	40,740.70	2,729,627	NA	NA	NA
I&M	NA	40,740.70	488,888	NA	NA	NA
IPL	NA	40,740.70	855,555	NA	NA	NA
IMPA	NA	40,740.70	203,704	NA	NA	NA
NIPSCO	NA	40,740.70	366,666	NA	NA	NA
Vectren	NA	40,740.70	529,629	NA	NA	NA
Statewide	NA	40,740.70	5,174,069	NA	NA	NA

⁹² The School Assessment Reports did not provide demand savings for each recommendation.

Table 93: Ex-Post Therms Savings Per Utility and Statewide

Utility	Verified Therm Savings Per School	Total Ex-Post Therm Savings Per School	Ex-Post Therm Savings
Duke	NA	1,465.85	98,212
I&M	NA	1,465.85	17,590
IPL	NA	1,465.85	30,783
IMPA	NA	1,465.85	7,329
NIPSCO	NA	1,465.85	13,193
Vectren	NA	1,465.85	19,056
Statewide	NA	1,465.85	186,163

Total Program Summary

Table 94 provides the total ex-post gross savings for the Energy-Efficient Schools (EES) program, combining the savings from the Education and Building Assessment programs in 2012.

Table 94: Ex-Post Gross Energy (kWh, kW, and Therm) Savings Per Utility and Statewide

Utility	Ex-Post kWh Savings	Ex-Post kW Savings	Ex-Post Therm Savings
Duke	2,770,869	306.54	79,306
I&M	5,738,881	625.05	156,807
IPL	1,463,005	163.12	37,299
IMPA	4,626,279	672.85	211,890
NIPSCO	2,496,506	268.87	57,078
Vectren	40,566,432	4,599.74	977,932
Statewide	2,770,869	306.54	79,306

NET SAVINGS**Education Program**

Net savings reflect the application of the program net-to-gross (NTG) ratio to the ex-post energy savings. Free-ridership and spillover comprise the two components of the NTG ratio. Free-ridership occurs when participants would have undertaken the same energy-efficient actions in absence of the program. Spillover results when the customer's participation in the program was highly influential in their decisions to take on additional energy-efficient actions. The equation for the NTG ratio is below:

$$NTG = 1 - \text{Free ridership} + \text{Spillover}$$

Table 95 summarizes the free-ridership, spillover, and NTG estimates for each measure included in the energy-efficiency kit. The overall statewide program NTG estimate is calculated by weighting each individual measure-level NTG estimate by the total energy savings of each respective measure. The

weighted statewide NTG estimate for the program is 110% (rounded from 109.93%). Free-ridership and spillover methods and results are outlined in the remaining section.

Table 95: Education Program Free-ridership, Spillover, and NTG Summary

Measure	Free-ridership Percent	Spillover Estimate	NTG Ratio
CFLs (13-Watt)	27.63%	21.5%	93.87%
CFLs (23-Watt)	27.63%	21.5%	93.87%
Low-Flow Showerhead	13.84%	21.5%	107.66%
Faucet Aerators	7.89%	21.5%	113.61%
LED Night Light	10.3%	21.5%	111.16%
Filter Tone Alarm	0.85%	21.5%	120.65%

Applying the measure-level NTG ratios to the utility-level savings per measure resulted in the following net savings for the Education program. A detailed summary of the NTG approach and how it was established by measure can be found in Appendix C.

Table 96: Education Program Net Energy and Demand (kWh and kW) Savings by Utility and Statewide

Utility	Electric (kWh) NTG	Ex-Post kWh Per Kit	Net kWh Savings	Demand (kW) NTG	Ex-Post kW Per Kit	Net kW Savings
Duke	102.94%	525.76	21,351,620	108.94%	0.0650	2,792.58
I&M	102.24%	462.31	2,333,124	109.08%	0.0621	334.38
IPL	102.30%	493.36	4,995,857	108.82%	0.0631	680.16
IMPA	102.25%	484.35	1,287,599	108.86%	0.0627	177.58
NIPSCO	100.27%	369.37	4,271,281	109.07%	0.0583	733.85
Vectren	101.75%	459.66	2,001,390	108.77%	0.0628	292.45
Statewide	102.40%	486.86	36,240,872	108.94%	0.0633	5,010.99

Table 97: Education Program Net Gas (Therm) Savings by Utility and Statewide

Utility	NTG	Ex-Post kWh Per Kit	Net kWh Savings
Duke	124.69%	8.55	420,626
I&M	120.25%	12.50	74,214
IPL	119.65%	12.73	150,786
IMPA	120.81%	11.53	36,208
NIPSCO	117.39%	17.23	233,256
Vectren	121.58%	8.89	46,229
Statewide	121.41%	10.89	961,318

Spillover Analysis

Spillover results when the customer’s participation in the program is influential in their decisions to take on additional energy-efficient actions. The measures listed in Table 98 below encompass the range of measure types that were mentioned by participants and are attributed to program spillover.

Table 98: Spillover Measure Types Attributed to Program

Spillover Measure Type
CFLs
LED Bulbs
LED Nightlights
Energy-Efficient Central ACs
Energy-Efficient Clothes Washers
Energy-Efficient Doors
Energy-Efficient Refrigerators/Freezers
Energy-Efficient Windows
ENERGY STAR® Ceiling Fans
ENERGY STAR® Dishwashers
Energy-Efficient Faucet Aerators
Energy-Efficient Showerheads
Insulation

Survey respondents were asked on a scale of 1-10, where 1 is “not at all influential” and 10 is “highly influential,” how influential was receiving the energy efficiency kit on their decision to install the additional energy-efficient measures. The influence rating the participant responded for each measure was used to decrement the energy savings attributed to the program.

Table 99 below contains the percent decrements used for each influence rating (1-10).

Table 99: Spillover Measure Types Attributed to Program

Influence Rating	Percent Decrements
1 – Not at all influential	0.00%
2	11.11%
3	22.22%
4	33.33%
5	44.44%
6	55.55%
7	66.66%
8	77.77%
9	88.88%
10 – Highly influential	99.99%

Evaluated savings estimates from the Evaluation Team’s engineers were used for the spillover measure’s energy savings. Verified energy efficiency kit savings developed by the Evaluation Team were used for the program energy savings. The kWh and therm savings associated with the measures were converted to British Thermal Units (BTUs) for analysis purposes. The ratio of the total survey sample spillover energy savings to the total survey sample program energy savings equals the spillover percent estimate for the program, which is presented in the equation below.

$$\text{Spillover \% Estimate} = \frac{\text{Sum of Survey Sample Spillover BTUs}}{\text{Sum of Survey Sample Program BTUs}}$$

Table 100 summarizes the variables included in the spillover analysis and how they are used to develop a spillover percent estimate. The overall program spillover percent estimate for the program is 21.5%.

Table 100: Spillover Analysis

Variable	Description	Value	Source
A	# Surveyed	87	Survey Data
B	Program-Verified kWh Savings Per Kit	395.06	Engineering Analysis
C	Program-Verified Therm Savings Per Kit	7.76	Engineering Analysis
D	Total Survey Sample Program kWh Savings	34,370.23	A × B
E	Total Survey Sample Program Therm Savings	675.3	A × C
F	Total Survey Sample Program BTU Savings	175,525,462.05	(D*3142.213) + (E*100,000)
G	Total Survey Sample Spillover BTU Savings	37,741,317.85	Survey Data / Engineering Analysis
H	Overall Program Spillover % Estimate	21.5%	G ÷ F

Building Assessment Program

The Evaluation Team assumed a net-to-gross (NTG) value of 1 for the energy savings attributed to the Building Assessment program. Since commercial building energy audits are highly expensive and schools tend to have limited budgets, the Evaluation Team assumes that the school would not have received an energy audit using their own funds, outside of the program.

Table 101: Building Assessment Program Net Energy (kWh, kW and Therm) Savings by Utility and Statewide

Utility	NTG	Ex-Post kWh Per School	Net kWh Savings	Ex-Post kW Per School	Net kW Savings	Ex-Post Therms Per School	Net Therm Savings
Duke	100%	40,740.70	2,729,627	NA	NA	1,465.85	98,212
I&M	100%	40,740.70	488,888	NA	NA	1,465.85	17,590
IPL	100%	40,740.70	855,555	NA	NA	1,465.85	30,783
IMPA	100%	40,740.70	203,704	NA	NA	1,465.85	7,329
NIPSCO	100%	40,740.70	366,666	NA	NA	1,465.85	13,193
Vectren	100%	40,740.70	529,629	NA	NA	1,465.85	19,056
Statewide	100%	40,740.70	5,174,069	NA	NA	1,465.85	186,163

Total Program Summary

Table 102 summarizes the total net savings for the Education program and the Building Assessment program.

Table 102: Net Energy (kWh, kW, and Therm) Savings by Utility and Statewide

Utility	Net kWh Savings	Net kW Savings	Net Therm Savings
Duke	24,081,247	2,792.58	518,838
I&M	2,822,012	334.38	91,804
IPL	5,851,412	680.16	181,568
IMPA	1,491,303	177.58	43,537
NIPSCO	4,637,948	733.85	246,448
Vectren	2,531,019	292.45	65,285
Statewide	41,414,941	5,010.99	1,147,481

SUMMARY OF IMPACT ADJUSTMENTS

Table 103, Table 104, and Table 105 below show all of the adjustments that were made to the energy savings claimed by the programs.

Table 103: Energy Savings Adjustments (kWh)

Utility	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh PY1	Ex-Post kWh Lifetime	Net kWh PY1
Duke	16,448,148	16,450,650	16,450,650	15,585,122	95%	23,470,892	144,347,425	24,081,247
I&M	2,054,976	2,058,312	2,058,312	1,950,017	95%	2,770,869	17,283,240	2,822,012
IPL	4,122,045	4,127,466	4,127,466	3,910,305	95%	5,738,881	35,145,483	5,851,412
IMPA	1,084,200	1,084,200	1,084,200	1,027,156	95%	1,463,005	8,925,248	1,491,303
NIPSCO	4,802,172	4,808,844	4,808,844	4,555,833	95%	4,626,279	27,522,504	4,637,948
Vectren	2,456,964	1,784,343	1,784,343	1,690,462	95%	2,496,506	15,390,676	2,531,019
Statewide	30,968,505	30,313,815	30,313,815	28,718,896	95%	40,566,432	248,614,575	41,414,941

Table 104: Demand Savings Adjustments (kW)

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Net kW
Duke	NA	NA	NA	NA	NA	2,563	2,793
I&M	NA	NA	NA	NA	NA	307	334
IPL	NA	NA	NA	NA	NA	625	680
IMPA	NA	NA	NA	NA	NA	163	178
NIPSCO	NA	NA	NA	NA	NA	673	734
Vectren	NA	NA	NA	NA	NA	269	292
Statewide	NA	NA	NA	NA	NA	4,600	5,011

Table 105: Gas Savings Adjustments (Therms)

Utility	Planned Therms	Ex-Ante Therms	Audited Therms	Verified Therms	Realization Rate	Ex-Post Therms PY1	Ex-Post Therms Lifetime	Net Therms PY1
Duke	NA	NA	NA	NA	NA	435,551	2,860,895	518,838
I&M	NA	NA	NA	NA	NA	79,306	530,111	91,804
IPL	NA	NA	NA	NA	NA	156,807	1,018,994	181,568
IMPA	NA	NA	NA	NA	NA	37,299	245,381	43,537
NIPSCO	127,828	128,028	128,005	116,790	91%	211,890	1,351,062	246,448
Vectren	65,401	47,498	47,497	43,335	91%	57,078	384,486	65,285
Statewide	193,229	175,526	175,502	160,125	91%	977,932	6,390,928	1,147,481

PROCESS ANALYSIS

The process analysis findings for the Education program and the Building Assessment program detailed in this chapter were derived from the following evaluation activities:

- Program Implementer interviews (n=3)
- GoodCents staff
- CLEARresult staff
- Research Action Programs (RAP) staff
- Auditor interviews (n=2)
- Participant teacher surveys (n=441)
- Facility staff participant surveys (n=36)
- Facility staff nonparticipant surveys (n=5)

PROGRAM OPERATIONS

Education Program

As shown in Table 78 earlier in this report, the Education program achieved 98% of its 2012 participation and electricity-savings goals. Program Implementers reported the Education program was one of the biggest successes of the Indiana Core Portfolio. Implementation staff also noted that the relationship they establish with the teachers and their enthusiasm for the program brings a positive light to the sponsoring utilities. Many surveyed teachers provided positive sentiments about the program, noting it is a great and relevant resource for students and their families.

The EES Program Implementer, CLEARresult, subcontracts with Research Action Programs (RAP) (Implementing Subcontractor) to conduct the day-to-day operations for the Education program.

Using a list of zip codes within each sponsoring utility's service territory, the Implementing Subcontractor generates a potential list of participating teachers for the utilities to approve. Once approved, the Implementing Subcontractor conducts targeted outreach through a combination of email, fax, and phone calls. According to the EES Program Administrator, GoodCents, interested teachers primarily register for the program through the Energizing Indiana Website.

Once a teacher signs up for the EES program, the Implementing Subcontractor sends the teacher their teaching materials and take-home kits for each of their students. The program's curriculum includes several lesson topics (e.g., electricity and water conservation), which can be taught all at once or throughout the semester. Teachers are responsible for distributing the take-home kits to their students. The students are encouraged to install the measures at home with their families. Once the kit measures are installed, the students and their families complete an at-home student survey. Students fill out a Scantron form with their survey answers and return the form to their teacher. Once a participating teacher sends in at least 80% of their classroom's student survey data, he/she receives a \$50 stipend.

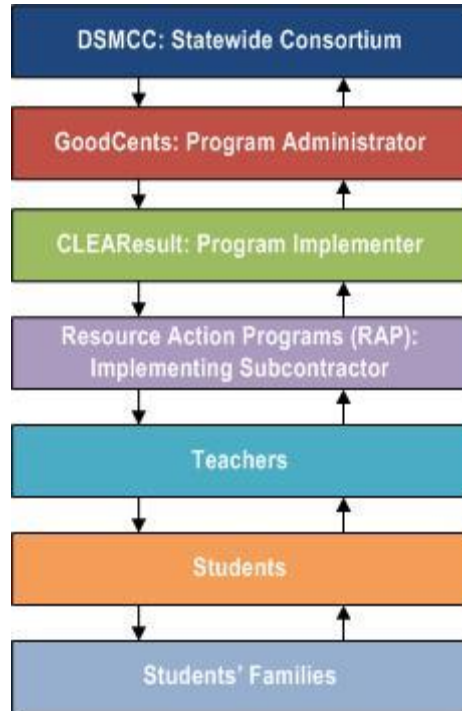
Delivery Challenges

Although Program Implementers were satisfied with the delivery of the program, there were a few challenges they faced, including communication, budget design, and a limited pool of potential student participants. The Program Implementers attributed these challenges to the fact that it was the program's first year of implementation, but noted that these challenges should be addressed as the program matures.

Communication

As shown in Figure 11, there are multiple parties involved with the Education program's operations. Implementation staff reported that because communication flows through various implementing parties, information can get lost in translation, noting that communication would improve if it were more direct. The Implementing Subcontractor specified that proposed resolutions to various program challenges and barriers have been suggested but are then lost at some point up the communication flow, resulting in no solution.

Figure 11: Education Program Communication Flow



Budget Design

The annual program budget is divided and capped on a per-semester basis. For the program's first year, the spring semester's budget was apportioned with the assumption that the program would need time to ramp-up recruitment; however, Program Implementers reported the budget restriction actually stalled enrollment in the spring.

The Implementing Subcontractor reported they would prefer the budget to allow for frontloading teacher enrollment in the spring to ensure that goals are met by the end of the program year.

Limited Participation Pool

When the program launched at the beginning of 2012, Program Implementers could recruit from both fifth- and sixth-grade teachers; however, the program’s eligibility requirements changed mid-year so that only fifth-grade teachers could be recruited. With the current requirements, sixth-grade teachers can only enroll if they reach out to the program themselves.

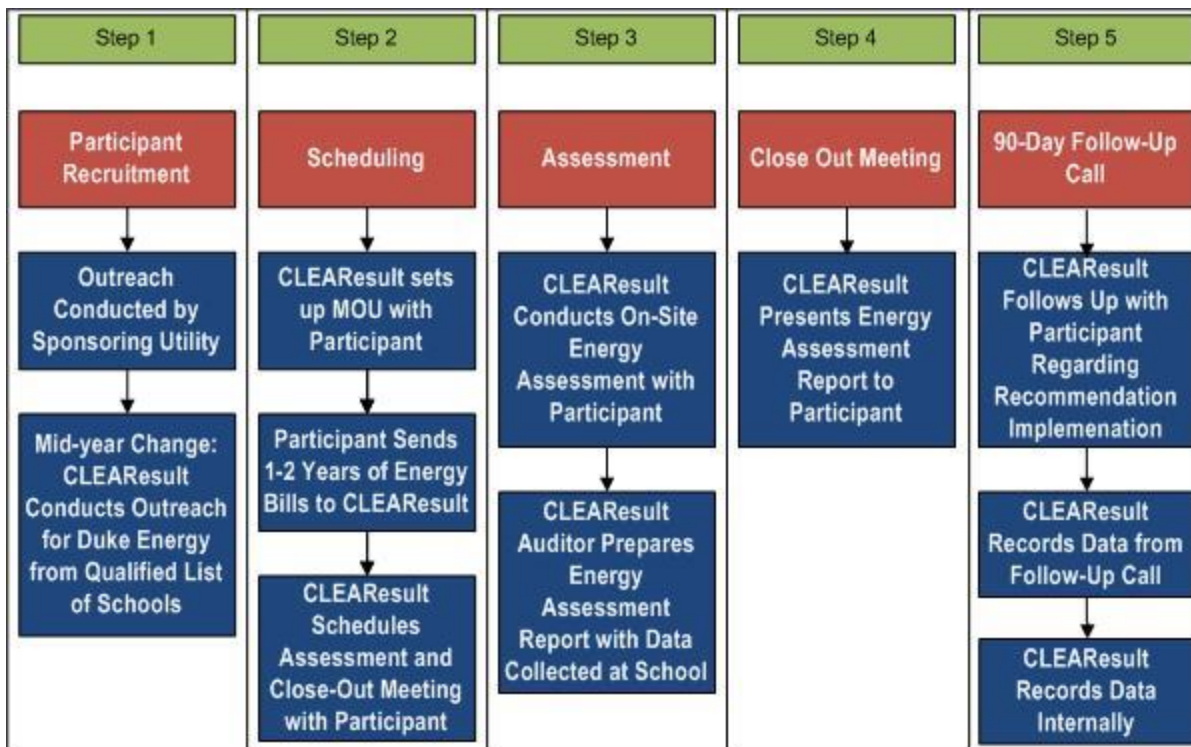
Although the program nearly achieved its program goals in 2012, Program Implementers reported they were concerned that the program’s future participation goals exceed the potential participation pool of students; this was particularly a concern in Vectren’s service territory. The Implementing Subcontractor reported they were unsure whether the program change was necessary because it decreases the participant pool, and they were already making significant efforts to prevent students from participating two years in a row and receiving two kits.

Building Assessment Program

As indicated earlier in this report, the Building Assessment program achieved 86% of its participation goal. According to Program Implementers, program delivery ran smoothly during the 2012 program year.

Figure 12 illustrates the program operations for the Building Assessment program. As the process flow shows, CLEAResult implements the day-to-day operations for the program.

Figure 12: Building Assessment Program Operations Process Flow



Participant Recruitment

At the program onset, each of the sponsoring utilities performed their own program outreach through internal account managers. As a mid-year change, Duke Energy decided to have the Program

Implementer conduct their outreach. Duke Energy provided the Program Implementer with a list of qualifying schools, and implementation staff assumed the responsibility of school recruitment.

Only 21 schools that the program recruited for an assessment declined participation. Of the five nonparticipants interviewed, three reported they chose not to participate in the program because their school had previously had an energy assessment performed. The other two nonparticipants reported their staff did not have enough time to facilitate participation.

Scheduling, Assessment, and Closeout Meeting

Once a school is recruited and submits an application, the Program Implementer is required by contract to conduct an on-site energy assessment within 10 days. During the assessment, one of the Program Implementer's energy auditors conducts a walk-through audit with a facility staff member from the participating school. The energy assessment can take between two and seven hours to complete. After the assessment, the energy auditor uses all the data collected from the audit as well as the school's utility data to prepare the energy assessment report.

The purpose of the closeout meeting is to present the energy assessment report to participating facility staff. The energy assessment report contains information about the school's equipment and energy use, the results of the assessment, and an extensive list of recommended energy-saving building upgrades and behavioral changes. During the closeout meeting, one of the Program Implementer's energy specialists walks the facility staff through the report and discusses all of the school's options for improvements, as well as the various rebates available to offset the cost of the improvements. The closeout meeting must be conducted no more than two weeks after the assessment.

90-Day Follow-Up Call

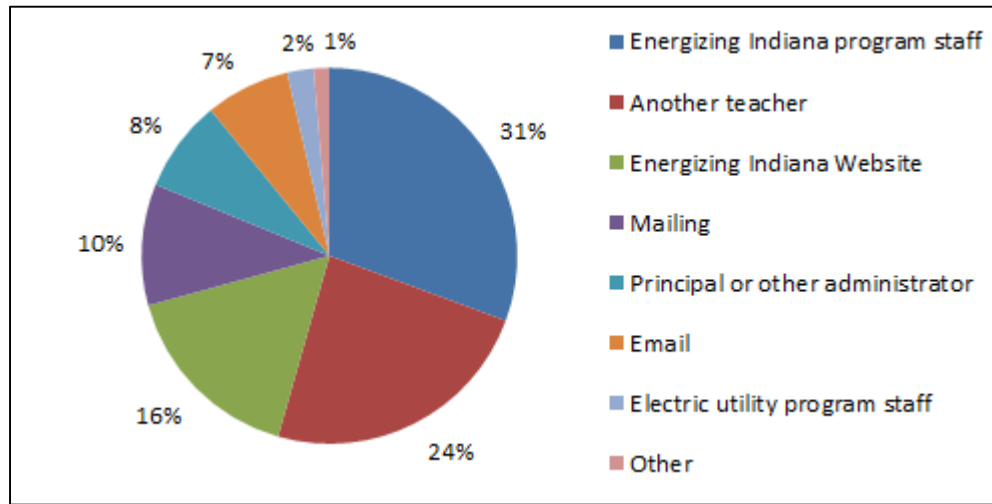
The Program Implementer must conduct the follow-up 90 days after the closeout meeting. The purpose of the follow-up call is to assess whether the energy assessment report had any influence on a school's decision to implement building upgrades, and to provide support with regards to the assessment recommendations. The Program Implementer tracks the data collected during the follow-up call internally. This data is not reported to any other program stakeholders.

PROGRAM MARKETING

Education Program

The Implementing Subcontractor is responsible for managing all program outreach, teacher enrollment, and distribution of program materials for the Education program. As shown in Figure 13, direct outreach is the primary source of program awareness. Other common sources of program awareness include referrals from other teachers (24%) and the Energizing Indiana website (16%).

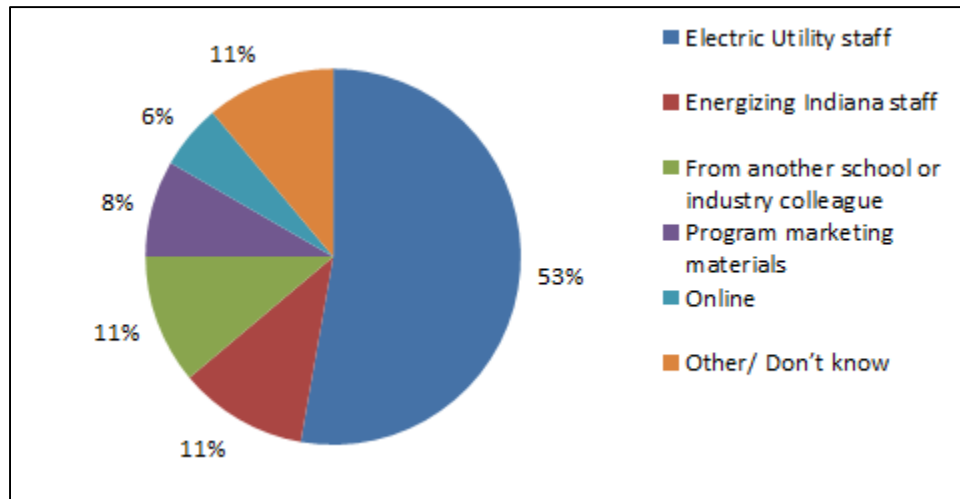
Figure 13: How Did You First Learn about the Energizing Indiana Schools Education Program? (n=441)



Building Assessment Program

For the Building Assessment program, the sponsoring utilities conduct their own direct outreach to schools. Duke Energy is currently the only program sponsor for which the Program Implementer conducts school recruitment. As shown in Figure 14, the majority (53%) of participant facility staff reported hearing about the program from their electric utility, followed by Energizing Indiana staff or implementer staff (11%). Word of mouth (11%) was another common source of program awareness.

Figure 14: How Did You First Learn about the Building Assessment Program? (n=36)



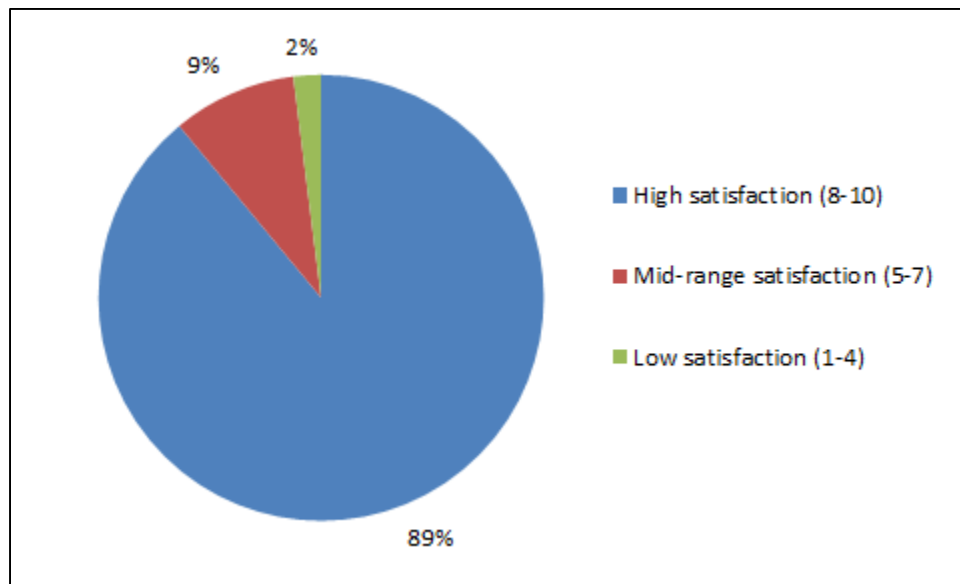
Although a small portion of recruited schools chose not to participate in the program, the five interviewed nonparticipants reported that the program’s marketing efforts were effective in conveying the benefits of participation. All five nonparticipants reported they were aware the energy assessment would be conducted at no cost to the school, and that they would receive a written report containing energy-savings recommendations and tips regarding low-cost improvements. Four of the five nonparticipants reported that it was clear that participating schools would receive information on how to apply for rebates for the energy-efficient improvements recommended through the program.

PARTICIPANT SATISFACTION

Education Program

Participating teachers from all sponsoring utilities reported high levels of satisfaction with the Education program overall (Figure 15).

Figure 15: Overall, On a Scale of 1-10, How Satisfied Are You with the Energizing Indiana Schools Education Program (n=441)



Other indicators of high program satisfaction included:

- More than three-quarters of participants (78%) felt the teaching materials provided were highly effective.
- The majority of teachers (60%) reported the conservation tool kit was the most beneficial aspect of the program.
- Almost all surveyed teachers (91%) reported they would be highly likely to recommend the program to other teachers.
- The Education program's satisfaction results mirror similar sentiments expressed by participants of school-based education programs across the country.

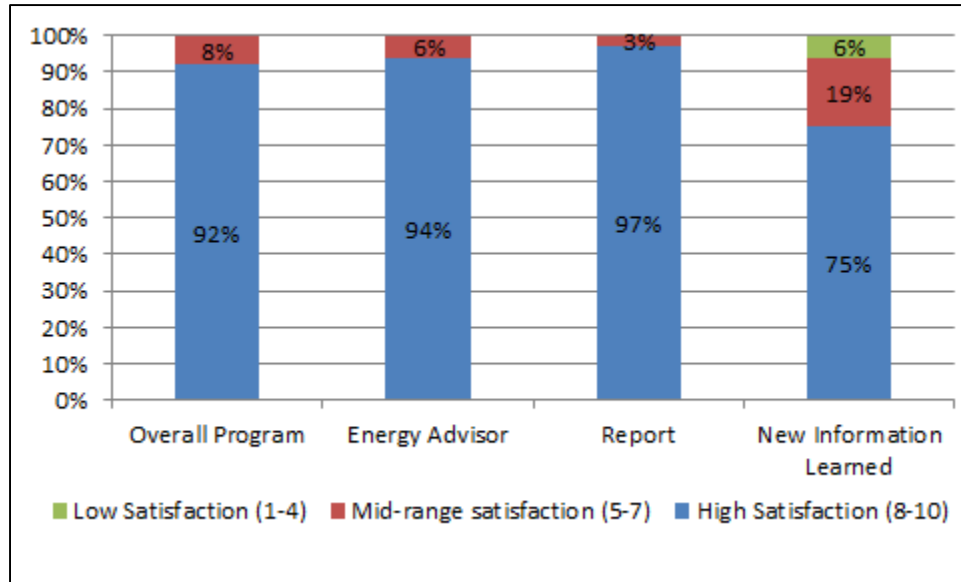
Building Assessment Program

Overall, participants reported high levels of satisfaction with all aspects of the Building Assessment program. The majority (61%) of participant facility staff reported experiencing no challenges with the program.

As indicated in Figure 16, more than 90% of participant facility staff reported high satisfaction with the overall program, their energy advisor's knowledge and professionalism, and their school's energy assessment report. Three-quarters (75%) of participants reported high satisfaction with the amount of new

information learned through participating in the program; however, mid-range satisfaction was higher than in the other satisfaction categories because prior energy efficiency knowledge was common throughout this population.

Figure 16: Using a 1-10 Scale, with 1 Being Extremely Dissatisfied and 10 Being Extremely Satisfied, How Would You Rate Your Satisfaction with the... (n=36)



PROGRAM IMPROVEMENTS

Education Program

Nearly one-third (30%) of surveyed teachers provided suggestions for improving the Education program. The most commonly indicated improvement, noted by 20% of teachers who provided suggestions, was that participants would like to receive their teaching materials earlier in the school year.

Although the majority of teachers (67%) felt the program's lesson plans fit well with Indiana's Curriculum Standards, 16% of teachers suggested improvements including realigning the program to follow the Common Core State Standards instead. Also, several teachers noted the program is currently better suited for fourth-grade standards rather than the standards for the fifth- and sixth-graders it targets.

Other suggested improvements included:

- Revamping the student workbooks to make them more “kid-friendly” (with more color, pictures, etc.).
- Providing videos, experiments, and more hands-on materials for teachers to use in their classrooms.
- Providing online resources for students and their families to access at home to learn more about conservation.

Building Assessment Program

The majority (65%) of interviewed participant facility staff provided suggestions for improving the Building Assessment program. The most common suggestion (mentioned by five facility staff) was to

provide financing options to schools implementing recommended improvements. One of the nonparticipants also suggested providing financing options to schools to help with the cost of making building upgrades.

Three participants suggested better-preparing facility staff for what to expect during the assessment and closeout meeting. Specifically, one participant mentioned that the school staff who meet with the auditor during the assessment should have extensive knowledge of the school building so the assessment can be conducted efficiently. The other two participants noted it would have been beneficial to know what to expect during the closeout meeting, because they would have wanted to include other decision-makers in the meeting (e.g., school board members or business managers). Other suggested improvements included:

- Provide more recommendations with shorter payback periods.
- Provide more information about return on investment and when rebates expire.
- Provide a comparison of other schools' assessment results to benchmark energy usage.

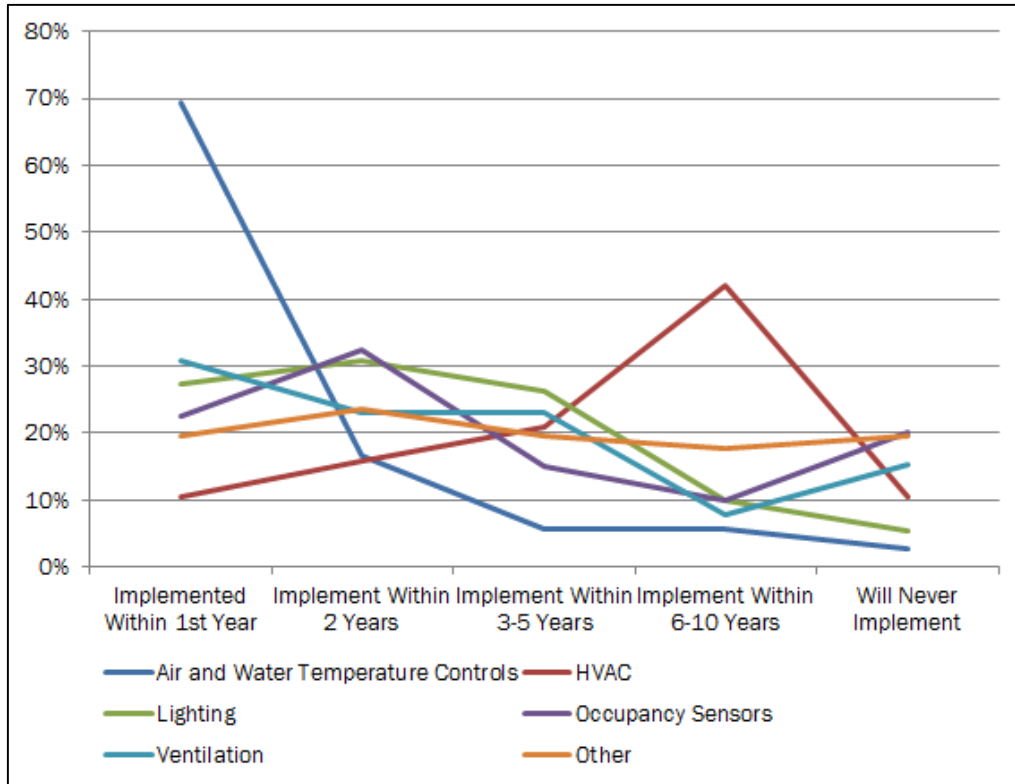
RECOMMENDATION IMPLEMENTATION

Building Assessment Program

The majority of facility staff (69%) reported that their school installed at least one of the recommended measures as a result of participating in the Building Assessment program. Lighting (33%), air temperature controls (27%), and occupancy sensors (12%) were the most commonly reported recommendations installed in the first year.

Figure 17 shows the expected implementation timeline by recommendation type reported by participant facility staff. The surveyed facility staff indicated schools plan to implement over 80% of recommendations within 10 years.

Figure 17: Expected Implementation Timeline



The three nonparticipant schools that received a previous energy assessment each reported installing energy efficiency improvements as a result of the audit; however, none of these nonparticipants could recall whether the school received a rebate for the improvements installed. Nonparticipants reported upgrading lighting, windows, and HVAC systems as a result of the audit.

Barriers to Implementation

Of the participating schools that have not implemented any of the recommendations in the first year, more than half (55%) chose not to implement any recommended equipment due to a lack of funding, and 36% indicated they do not have enough time. Of the recommendations presented to schools, the occupancy sensor (20%), ventilation (15%), and HVAC (11%) upgrades were the most frequently reported as never being implemented by participant facility staff.

Upfront cost is the primary barrier to measure installation. Specifically, a barrier for public schools is that approval to raise funds for capital improvements can depend upon a taxpayer vote. Ultimately, the facility staff that participates in the program is generally not the ultimate decision-maker for approving high-cost improvements.

Table 106 lists the title of the person who participants and nonparticipants identified as the person who decides whether a school will participate in energy efficiency programs and install energy-saving improvements. The facilities or building manager and the superintendent or assistant to the superintendent were the most commonly reported decision-makers, each reported by 12 interviewees.

Table 106: Decision-Makers' Titles

Decision Maker Title	Participants (n=36)*	Nonparticipants (n=5)*
Facilities Manager/ Building Manager	11	1
Superintendent/ Assistant to Superintendent	9	3
Business Manager/ Chief Operating Officer	6	0
Administrator/ Energy Manager	5	0
Principal	4	0
School Board	2	2

*Multiple responses allowed

INSIGHTS & RECOMMENDATIONS

Education Program

Consider allowing the Implementing Subcontractor to frontload enrollment earlier in the program year. The Implementing Subcontractor reported a preference for frontloading to ensure achieving program goals, rather than rushing to enroll teachers late in the program year.

Distribute kits as early in the semester as possible. Teachers specified that they want to receive their materials earlier in the semester to provide more time for lesson planning. If teachers have more time to invest in the program, the lessons will be more likely to register with students and may lead to greater energy conservation at home.

Consider realigning the program materials with the Common Core State Standards. If the program's lesson plans better align with the curriculum teachers are required to teach, they will be able to spend more time on the program topics.

Include a "kWh Savings" and "Therm Savings" column in the tracking database. While it is implied that each kit received 417 kWh in electricity savings and 11.1 therms in gas savings, it is important to track those savings in the database for clarity.

Building Assessment Program

Consider providing financing mechanisms to implement capital projects. Even with rebates and expectations of energy-cost savings over time, up-front capital costs were prohibitive to participants. Providing a financing mechanism or list of available financing options could help schools to find funds to implement recommendations.

Consider tracking recommendation implementation and report savings. This program generates savings that are not captured or reported by any energy efficiency program. Consider using the Program Implementer's follow-up data with schools, tracking which recommendations have been implemented, and credit the program with those savings. Also consider following-up a year later to track recommendations.

Consider focusing recruitment efforts on key decision-makers. To ensure the program is effectively reaching out to facility staff that has the ability to decide whether or not a school will make capital improvements, consider screening facility staff during recruitment to ensure that the program is communicating with the ultimate decision-maker. Although all schools will have different organizational

hierarchies, the majority of both participants and nonparticipants noted their key decision-maker as the facilities or building manager and the superintendent or assistant to the superintendent. Some of the participants noted wishing they had included key decision-makers in the closeout meeting to ease the approval process for implementing recommendations.

RESIDENTIAL LIGHTING

PROGRAM DESIGN AND IMPLEMENTATION

The Energizing Indiana Residential Lighting program works with retailers and manufacturers to offer bought-down pricing on Compact Fluorescent Lamps (CFLs), ENERGY STAR®-qualified fixtures, ceiling fans, and Light Emitting Diode lamps (LEDs) at the point of purchase. Discounted pricing is made available on a variety of bulb types, including standard and specialty items, and a number of wattages. In PY1, the program offered buy-downs in the amount of \$1.50 for CFLs, \$10 for LEDs, \$12 for fixtures, and \$15 for ceiling fans⁹³.

The program was administered by GoodCents (Program Administrator) and implemented by a third party, Ecova (Program Implementer). Ecova solicited retailer and manufacturer partnerships through a request for proposal (RFP) process that resulted in 753 unique storefronts across the state. Table 107 outlines the retailers that participated in the program in 2012, according to the program database.

Table 107: Participating Retailers

Participating Retailers	
Ace Hardware	Meijer
Costco	Menard's
Dollar Tree	Sam's Club
Family Dollar	TecniArt.com
Goodwill	The Home Depot
Kroger	Walgreens
Lowe's	Wal-Mart

In addition to reduced prices at the point of sale, the Residential Lighting program employs a number of marketing and promotional activities designed to engage customers in Indiana with messages about the cost savings and environmental benefits of energy-efficient lighting products. Activities include in-store and other outreach events designed to build program awareness among utility customers, including hard-

⁹³ From "Demand-Side Management Coordination Committee Independent Third Party Administrator Statement of Work," January 28, 2013.

to-reach demographics and rural residents. Events are designed to leverage National ENERGY STAR events as well as National Night Out and Earth Day. Throughout 2012, the Program Administrator hosted as many as 30 of these events per month.

The Program Implementer used seven field coordinators to conduct regular store visits. These visits were designed to increase interactions with customers and answer questions about the program, efficient products, and the correct application of the products. Field representatives also hosted regular ENERGY STAR outreach events during peak program times at participating retail stores throughout Indiana. These outreach events often included a booth or kiosk, educational materials, and hands-on activities.

In-store marketing methods, including Point of Purchase (POP) materials, were also used to promote the program and increase sales. Signage included shelf wobblers around qualifying products, promotional posters, window clings near store entrances, program messaging at checkout stands, displays on the floor in the lighting section, and oversized die-cut aisle violators. Messaging highlighted the bought-down cost of the products, information on selecting the proper type of lighting (including lumen-to-wattage conversions), and differences in color temperature⁹⁴.

EM&V METHODOLOGY

The evaluation of the Residential Lighting program consists of both impact and process elements. In addition, a significant portion of the Residential Lighting program evaluation activity in PY1 was dedicated to the development of the market baseline report, which focused heavily on lighting penetration and saturation levels in Indiana homes and the launch of the lighting hours-of-use (HOU) study⁹⁵. These elements are referenced throughout this report and will continue to be instrumental in the evaluation of the Residential Lighting efforts over the course of the program cycle (2012 through 2014).

Table 108 below provides an overview of the tasks used for evaluating the 2012 Residential Lighting program.

Table 108: Program Evaluation Overall Tasks

Action	Details
Program Implementer and Administrator Interviews	Interviewed implementation manager as well as the GoodCents program manager
Retailer and Manufacturer Interviews	Conducted interviews with participating retailers, with 18 participating stores representing 12 unique retail storefronts participating in the program ⁹⁶
Program Database Review / Verification	Reviewed participant data-tracking database Reviewed the participation agreements with the retailers and manufacturers to assess planning allocations
Program Material Review	Reviewed materials to assess marketing and outreach efforts

⁹⁴ From “Demand-Side Management Coordination Committee Independent Third Party Administrator Statement of Work” January 28, 2013. Note that not all stores used all materials.

⁹⁵ The HOU study is currently in process and involves logging 490 fixtures/switches in 70 Indiana homes. The report for the HOU study will include full details on methodologies and results, and will be delivered in July 2013.

⁹⁶ Phone interviews were conducted with the local stores’ hardware department associates or storefront managers, who are knowledgeable about the program and its offerings, at their consent and discretion.

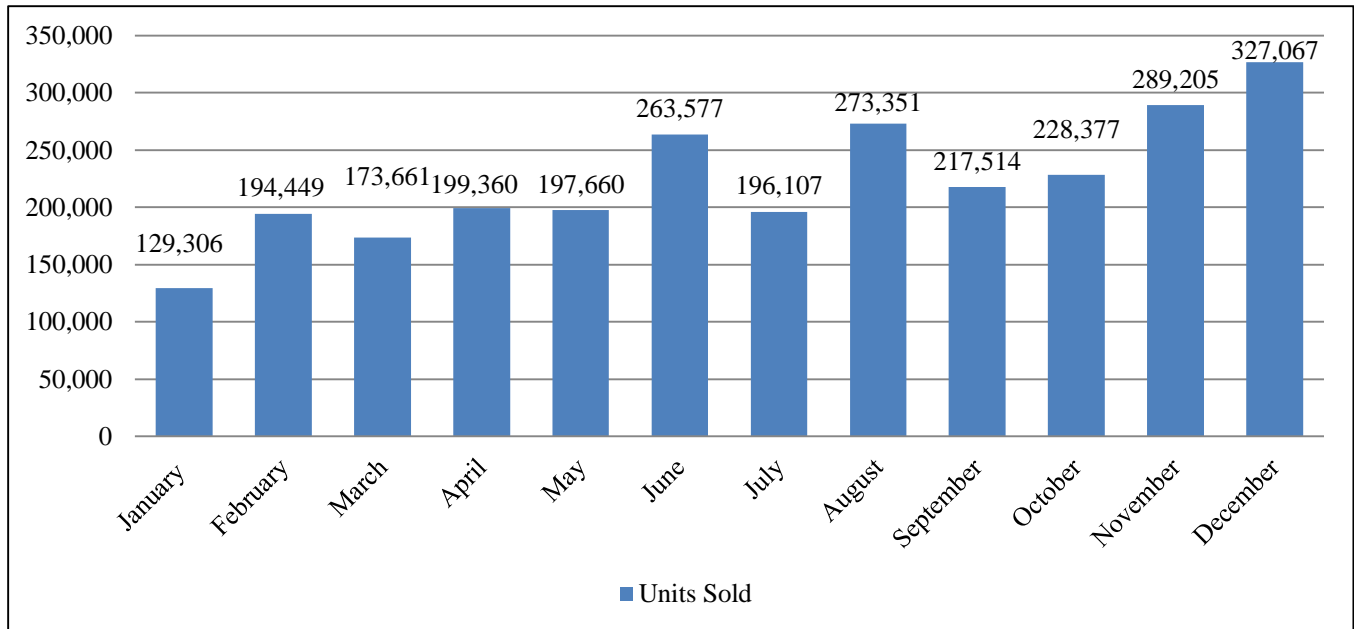
Action	Details
Impact Analysis	<ul style="list-style-type: none"> • Reviewed savings estimates provided by the Program Implementer • Verified the reported sales in the program database • Calculated installation rate through findings from the statewide baseline study using installed-to-storage ratios for CFLs in homes • Estimated net-to-gross (NTG) (free-ridership) based on top-line sales analysis • Spillover will be established in 2015 with the completion of the Market Effects study

PROGRAM PERFORMANCE

Program sales were quite strong in 2012, as the Program Administrator reported⁹⁷ total unit sales of 2,689,634. This was slightly short of the planning goal of 2,777,738 units. Sales picked up quickly and sustained over the course of the program year, with the highest sales reported in November and December.

Figure 18 shows sales of eligible products throughout the program year. The program sold more units in the second half of the year, with the largest monthly sales occurring in December.

Figure 18: Program Sales by Month in 2012



IPL and NIPSCO territories came closest to meeting their ex-ante goals, achieving 98% and 99% of the planned goal, respectively. Vectren was the farthest from the planning goal, achieving 88%. In total, the program reported an ex-ante savings of 117,805,969 kWh or 97% of the planning target, and 18,827.45

⁹⁷ Reported or ex-ante sales are based on the GoodCents Portal reports represented by utility results from January 1, 2012, through December 31, 2012. <https://indiana.goodcents.com/>

kW or 97% percent of the planning target. Table 109 shows how the reported or ex-ante Residential Lighting program performance compares to the goals established by the Program Administrator for January 1, 2012, through December 31, 2012. The savings reported below do not reflect adjustments made as a result of the evaluation.

Table 109: Ex-Ante Results by Utility and Statewide

Utility	Number of Units			kWh			kW		
	Goal	Reported	% Achieved	Goal	Reported	% Achieved	Goal	Reported	% Achieved
Duke	1,020,207	994,362	97%	44,685,067	43,553,056	97%	7,141.45	6,960.53	97%
I&M	497,372	478,465	96%	21,784,894	20,956,767	96%	3,481.6	3,349.26	96%
IPL	482,580	474,665	98%	21,137,004	20,790,327	98%	3,378.06	3,322.66	98%
IMPA	134,224	130,483	97%	5,879,011	5,715,155	97%	939.57	913.38	97%
NIPSCO	405,820	401,518	99%	17,774,916	17,586,488	99%	2,840.74	2,810.63	99%
Vectren	237,535	210,141	88%	10,404,033	9,204,176	88%	1,662.75	1,470.99	88%
Statewide	2,777,738	2,689,634	97%	121,664,925	117,805,969	97%	19,444.17	18,827.45	97%

A majority of standard CFLs sold through the program were low-wattage CFLs designed to replace incandescent bulbs of 60 watts or less (44%). Just under one in five (19%) were 100-watt or higher incandescent-equivalents. While these wattages are the first to be affected by the Energy Independence and Security Act (EISA), a report appended to this document (Appendix C) produced by TecMarket Works⁹⁸ has found that 100-watt incandescent bulbs are readily available in the Indiana market, suggesting that for 2012, a 100-watt incandescent-equivalent is still an appropriate baseline for the program evaluation. Reported sales of LEDs and ceiling fans came in well below planning goals, while the reported sales of fixtures were well above planning goals. Table 110 compares statewide sales goals and actual sales for each item included in the program.

Table 110: Unit Goals to Actual Sales

Product Type	Unit Goal	Actual Sales	% Achieved
CFLs	2,746,429	2,674,918	97%
Ceiling Fans	316	82	26%
Fixtures	10,679	6,427	60%
LEDs	20,039	10,639	53%

Table 111 shows the planned Residential Lighting program budgets and the expenditures reported at the conclusion of the 2012 program year. The program exhausted 99% of the total available budget for 2012 with utility spending ranging from 89% to 100% of budget allocation.

Table 111: Program Level Budget and Expenditures

Utility	Budget	Reported Expenditures	% of Budget Utilized
Duke	\$2,337,025.50	\$2,332,820.38	100%
I&M	\$1,076,179.00	\$1,048,246.75	97%
IPL	\$1,107,578.80	\$1,107,735.78	100%
IMPA	\$306,883.80	\$308,320.78	100%
NIPSCO	\$917,190.00	\$917,777.73	100%
Vectren	\$545,169.60	\$485,554.74	89%
Statewide	\$6,290,026.70	\$6,200,456.17	99%

IMPACT ANALYSIS

The PY1 impact analysis for the Residential Lighting program includes the steps outlined in the EM&V Methodology Overview section of this report above. This includes:

⁹⁸ TecMarket Works, “Current Availability of 100 Watt Standard Fixture Light Bulbs in Indiana.” January 29, 2013.

- Audited savings
- Verified savings
- Ex-post gross savings
- Net savings

Below are details about how each phase was applied to the evaluation of the Residential Lighting program. This section of the report provides the utility and statewide results in aggregate. Individual utility-level detail can be found in the utility-specific Technical Volumes delivered along with this document.

AUDITED SAVINGS

The Evaluation Team completed the audit of the program savings by reviewing the program-tracking database, comparing results against the ex-ante numbers reported by the Program Administrator, and ensuring that program ex-ante savings were applied correctly to a sampling of measures. Based on any findings, adjustments were made as necessary to correct for any errors or omissions as identified above. Program savings were then recalculated based on the adjusted audited number of measures.

Data received from GoodCents and verified by the Evaluation Team found that per-measure ex-ante savings were applied correctly by the Program Administrator. The total audited savings were very close to the program-reported ex-ante totals. The audit of the program database found 3,741 fewer units than reported by the Program Administrator. This represents a variance of less than .01%. Greater variance was found when comparing sales by unit types. For example, the year-end reporting noted sales of 6,427 fixtures, while the program database showed only 2,165 measures identified as fixtures. The Evaluation Team did find that several stock-keeping units (SKUs⁹⁹) totaling 3,282 units in the program database were not clearly identified as a specific measure type; this may account for some of the discrepancy in specific measure type counts.

The audited savings for the Residential Lighting program by utility and statewide are outlined in Table 112 below. Program savings were determined by multiplying the audited number of units (found in the program database) by the program ex-ante savings per measure. Table 113 provides the audited counts by measure type statewide¹⁰⁰.

⁹⁹ SKUs are unique identifiers applied to products at retail by the manufacturer or retailer. This code is used to identify unique products for sale at a given retailer.

¹⁰⁰ Note that there were 3,282 measures with unspecified categorizations, so no SKU, wattage, or measure type was connected to them in the program database. For the sake of the evaluation, these were accounted for under CFLs; note that these units represent less than one-tenth of one percent of total program sales.

Table 112: Audited Energy and Demand Savings by Utility and Statewide

Utility	Number of Units Reported	Number of Units in Database	Audited kWh	Audited kW
Duke	994,362	998,454	43,654,503	6,973.96
I&M	478,465	481,370	21,041,815	3,365.62
IPL	474,665	472,773	20,689,697	3,297.24
IMPA	130,483	129,658	5,672,178	903.40
NIPSCO	401,518	398,458	17,424,800	2,780.80
Vectren	212,060	210,840	9,218,609	1,472.51
Statewide	2,691,553	2,691,553	117,701,602	18,793.53

Table 113: Audited Units by Measure Type Statewide

Measure Type	Audited Units
CFL – Specialty	623,984
CFL – Standard	2,053,220
Ceiling Fan	82
Fixture	2,165
LED	12,102
Total	2,691,553

In summary, the audited savings compare very closely to the Program Administrator’s planned savings, with the overall planned savings being 117,805,969 kWh and 18,827.45 kW and audited savings being 117,701,601 kWh and 18,793.53 kW—nearly identical.

VERIFIED SAVINGS

For the Residential Lighting program, verified savings are computed by applying an installation rate to the audited savings calculated above. Steps in this phase typically include telephone surveys and/or site visits designed to adjust total savings for issues such as measures rebated but never installed, not meeting program qualifications, measures installed but removed later, and/or measures improperly installed. Because the Residential Lighting program uses an upstream buy-down approach, there is no data available on individual participants, making participant-specific data on installation and persistence unavailable¹⁰¹. Instead, we have determined the installation rates as outlined below:

- CFLs – Installation rate of 79% (per the installation rate for CFLs found in the Residential Baseline Study¹⁰²)
- Ceiling Fans – Installation rate of 100% (per the in-service rate for lighting fixtures outlined in the Indiana TRM)

¹⁰¹ In-store customer intercepts will be completed as part of the PY2 evaluation activities and will help further inform installation rates as well as provide feedback on program outreach marketing and net-to-gross.

¹⁰² The Indiana Statewide Core Program Evaluation Team, Opinion Dynamics, “Residential Baseline Report.” November 2, 2012.

- Fixtures – Installation rate of 100% (per the in-service rate for lighting fixtures outlined in the Indiana TRM)
- LEDs – Installation rate of 100% (per the in-service rate for lighting fixtures outlined in the Indiana TRM)¹⁰³

The CFL installation rate for PY1 is based on the 2012 Residential Baseline Study, which found that the average household in Indiana has a total of 13 CFLs with 10.3 installed. The majority of homes surveyed during the baseline study (67%) had light bulbs in storage¹⁰⁴ with more than one-third (35%) of Indiana residents with stored lighting having no CFL bulbs in storage.

This collected data on the total number of CFLs in each home, including CFLs that were in storage and not in use, is used to calculate an in-service rate by dividing the average number of installed CFLs by the average number of total CFLs per household. Based on prior experience, the Evaluation Team recommends using the in-service rate as the first-year installation rate for CFLs. Additional research in PY2, including proposed customer intercepts at the time of purchase, will be used to further refine this number in future program years.

Based on this approach, the resulting CFL installation rate for bulbs sold in PY1 is 79%. Note that if the Team only looked at data from homes with CFLs in storage, the installation rate would be lower; but given the newness of the program, we can comfortably assume that those who already had CFLs in storage are not likely increasing the number stored, and that those without CFLs in storage are likely to align with past behavior in the state.

Prior research indicates that while CFL customers often do not install all of the CFLs they purchase immediately, the vast majority of CFLs sold through upstream programs are ultimately installed within three years of purchase. The PY2 and PY3 evaluations will calculate the number of CFLs sold in PY1 but installed in PY2 and PY3. The Team assumes that 55% of bulbs not immediately installed are installed during the first year after purchase¹⁰⁵, and 43% are installed during the second year after purchase. Overall, based on prior research, outlined in the Indiana TRM, we assume that 97% of purchased CFLs are installed within three years¹⁰⁶.

As noted above, in PY1 the residential baseline effort is being used as the source for installation rates for CFLs. In PY2, evaluation activities will include in-store intercepts that will further explore installation rates as well as other topics like pricing, effectiveness of in-store promotional materials, and barriers with program participants at the time of purchase.

Table 114 applies the established realization rates to the measure-level audited savings, and provides the utility-level and statewide verified energy savings. For details on how each utility's measure-level savings roll into the number below, please see the individual utility Technical Volumes.

¹⁰³ The Indiana Statewide Core Program Evaluation Team, "Indiana Technical Resource Manual," Version 1.0. January 10, 2013.

¹⁰⁴ Taking into account the number of light bulbs in storage is a key step in establishing an in-service rate; also, greater rates of storage indicate stronger market acceptance for the technology, although it is not a standalone indicator.

¹⁰⁵ KEMA, Inc., The Cadmus Group Inc., Itron, Inc., PA Consulting Group, Jai J. Mitchell Analytics, Final Evaluation Report: Upstream Lighting Program. Prepared for the California Public Utilities Commission, Energy Division. February 8, 2010.

¹⁰⁶ The Indiana Statewide Core Program Evaluation Team, "Indiana Technical Resource Manual," Version 1.0. January 10, 2013.

Table 114: Verified Energy and Demand Savings by Utility and Statewide

Utility	Number of Measures in Database	Verified kWh Total	Verified kW Total	kW and kWh Realization Rate
Duke	998,454	34,338,302	5,511.83	0.79
I&M	481,370	16,641,948	2,660.83	0.79
IPL	472,773	16,391,731	2,608.78	0.79
IMPA	129,658	4,492,942	714.50	0.79
NIPSCO	398,458	13,787,432	2,198.16	0.78
Vectren	210,840	7,292,246	1,163.94	0.79
Statewide	2,691,553	92,944,601	14,858.04	0.79

After completing the audit of the ex-ante savings and applying a realization rate to establish the verified savings, the program has a realization rate of 79% at the statewide level, with all but one utility achieving a utility-level realization rate of 79%.

EX-POST SAVINGS

Ex-post gross evaluated savings for the Residential Lighting program for PY1 are determined through engineering analysis. Adjustments made at this point reflect engineering adjustments made to the ex-ante measure savings that were claimed by the program. The detailed engineering analysis for each measure type included in the Residential Lighting program is included in Appendix D.

The savings for CFLs, LEDs, and fixtures are derived by calculating differences between baseline light¹⁰⁷ bulbs and replacement units. Equivalent baseline incandescent bulbs are chosen based on how their lumen output compares to that of the replacement lamps.

To keep its evaluation approach consistent with the per-measure ex-ante savings approach used by the Program Administrator, the Evaluation Team has calculated the statewide average ex-post savings for CFLs that reflect the weighted mean wattage sold through the program. The one difference is that while the program lumps all CFL bulbs into a single savings category, we are breaking out standard bulbs from those defined as specialty bulbs in the program database.

- The statewide mean weighted program average for Standard CFLs is 16.17 watts.
- The statewide mean weighted program average for Specialty CFLs is 15.82 watts.
- The statewide mean weighted program average for Fixtures is 13 watts.
- The statewide mean weighted program average for LEDs is 12.62 watts.¹⁰⁸

Appendix D provides a complete list of the different wattage CFLs, fixtures, and LEDs rebated through the program that were weighted to develop the statewide mean program averages above.

¹⁰⁷ Most often assumed to be incandescent.

¹⁰⁸ The Evaluation Team was informed in March 2013 that the Program Administrator changed to tracking savings by wattage during the PY1 program year. This was not reflected in the final 2012 BRD issued in January 2013, and while it is a program change, it does not change the findings of this evaluation report or the ex-post savings. This approach will be reflected in the 2013 EM&V report.

Ceiling fans represent 82 or .000031% of the 2.6 million measures purchased through the Residential Lighting effort. Because this represents such a small fraction of the total program savings, the Team felt it was appropriate to limit engineering efforts on this measure, and after careful review, has applied the assumptions outlined for ceiling fans in the Indiana TRM, which is outlined below:

- 169 kWh
- .027 kW
- -3 therms

Should ceiling fans become a bigger proportion of the overall program savings in future years, additional engineering resources will be applied to this measure. Overall, this represents an increase in savings being claimed by the program.

A heating penalty is applied, by means of applying a waste-heat factor, as the heating load is increased as more energy is needed to supplement the heat that was once given off by the incandescent lamps. However, an increase in energy savings is applied, by means of applying a waste-heat factor, as the cooling load is decreased as less energy is needed to cool the home by removing the additional heat that was once given off by the incandescent lamps. The waste-heat factor that was applied is the statewide average which assumes equal weights across cities in Indiana for each HVAC system type¹⁰⁹.

Table 115 summarizes the ex-post savings against the ex-ante savings.

Table 115: Summary of Ex-Ante Energy, Demand, and Therms Savings against Ex-Post Savings

Measure Type	Ex-Ante kWh Savings	Ex-Ante kW Values	Evaluated Ex-Post kWh Savings	Evaluated Ex-Post kW Savings	Evaluated Ex-Post Therm Penalty
Standard CFL	43.9	.007	42.9	.0051	(.82)
Specialty CFL	43.9	.007	43.3	.0051	(.83)
Ceiling Fan	43.9	.007	169	.027	(.30)
Fixture	49.5	.003	46.38	.0055	(.89)
LED	49.5	.003	46.38	.0055	(.89)

¹⁰⁹ Applied waste-heat factors for the LIW and HEA programs differ from the waste-heat factors applied for the Residential Lighting program. The HEA, EES, and LIW programs each included multiple measures that had savings affected by region and the magnitude of savings variance between utility territories was significant, given that it was important to have those savings calculated to the region. For Residential Lighting, there were two approaches to take, calculating individual wattage algorithms for each wattage by each of the 6 territories (about 400 algorithms with all wattages and regions) or aligning with the Third-Party Administrator approach of developing a savings based on the weighted average wattage and statewide inputs. We chose the latter more simplified approach because it helped ensure we could balance the resources needed for the EM&V effort against other efforts being undertaken for lighting that will in future program year evaluations have a much bigger effect on the number over time (e.g. the Lighting Logger Study currently in field).

Based on these engineering adjustments, we have applied the per-measure ex-post savings to the verified number of measures attributable to the program by utility (audited measure count * ex-post savings * installation rate) to develop the program’s ex-post energy, demand, and therm savings. These totals are outlined in Table 116 below. Utility-specific data can be found in the Technical Volumes. As noted previously, there is a negative therm savings associated with the Residential Lighting program, a result of the application of an interactive effect for all lighting measures.

Table 116: Ex-Post Energy, Demand (kWh and kW), and Therm Savings per Utility and Statewide

Utility	Number of Measures in Database	Verified kWh Savings	Ex-Post kWh Savings	Verified kW Savings	Total Ex-Post kW Savings	Ex-Post Therm Savings
Duke	998,454	33,886,113	4,028.37	(647,720)	998,454	33,886,113
I&M	481,370	16,337,807	1,942.27	(312,288)	481,370	16,337,807
IPL	472,773	16,091,318	1,913.50	(307,566)	472,773	16,091,318
IMPA	129,658	4,408,674	524.10	(84,272)	129,658	4,408,674
NIPSCO	398,458	13,530,379	1,608.48	(258,630)	398,458	13,530,379
Vectren	210,840	7,157,136	850.84	(136,806)	210,840	7,157,136
Statewide	2,691,553	91,411,427	10,867.56	(1,747,282)	2,691,553	91,411,427

NET SAVINGS

The Revenue-Neutral Sales Model is a method of estimating lighting program free-ridership based on a theory of retailer behavior and decision-making. Using program pricing and sales data, the method provides an estimate of what product sales would have been at regular retail pricing absent the program (in essence what the pre-program baseline sales would have been). Taking this estimate of pre-program sales, we can then back out the numbers of units sold above and beyond the pre-program baseline to estimate program free-ridership.

The Revenue-Neutral Sales Model assumes that retailers will only participate in a utility-sponsored lighting program if their gross revenues do not drop as a result of their participation. A drop in revenue is possible because lighting products are sold at a lower price as a result of the program discount. If retailers do not sell more of the discounted product than they were selling prior to the program, their gross revenue will drop due to the discounts. It is important to understand that gross revenue is based on sales alone. While utilities reimburse retailers for the product discounts, this reimbursement cannot be counted toward a retailer’s gross revenue. Retailers care about gross revenue because it influences investors, and corporate bonuses are often tied to it. Program reimbursements do count toward profits so retailers will not lose money due their participation, but without a sufficient lift in sales to cover the utility discounts, they are at risk of having their gross revenues drop.

To ensure that that their program participation is at a minimum revenue-neutral, retailers will avoid participating in utility lighting programs with incentive levels and sales goals that will not stimulate

enough additional sales for them to at least make up lost gross sales revenue. For example, if a retailer wants to ensure that its gross revenue does not drop as a result of participating in a program that discounts the price of CFLs by 50%, the retailer must at a minimum double its sales of CFLs. Retailers have enough information about product pricing and sales to evaluate program contractual agreements so that they will only agree to contracts whose terms allow them to sell at least¹¹⁰ enough products so the program does not have a negative impact on their gross revenue. We have verified this model of retailer behavior through multiple corporate-level retailer interviews, including interviews with most of the key retailers participating in the Energizing Indiana program.

With this theory of retailer behavior as background, the Evaluation Team was able to estimate what lighting sales would have been at regular retail pricing using the following program data: 1) regular retail product price, 2) program discounted price, 3) number of units the retailer is allowed to sell at program pricing, and 4) number of units actually sold at program pricing.

In the example in Table 117, the retailer establishes an agreement with the program to sell 100,000 bulbs at \$2.00 per bulb, which is a \$3.00 discount. Program revenue will be equal to the program price per unit multiplied by the number of units a retailer is allowed to sell.

Table 117: Revenue-Neutral Sales Model Example: Program Revenue

	Price	Sales	Revenue
Without Program	\$5.00	Unknown	Unknown
With Program	\$2.00	100,000	\$200,000

To remain at least revenue-neutral, retailers will only agree to a program contract if the allocated sales at program pricing are large enough to make up for the revenue lost to the discount. Knowing this, the Team can set revenue without the program equal to revenue with the program (or units sold in absence of the program).

Table 118: Revenue-Neutral Sales Model Example: Revenue without Program

	Price	Sales	Revenue
Without Program	\$5.00	Unknown	\$200,000
With Program	\$2.00	100,000	\$200,000

We estimate the number of products sold at regular retail price by setting regular sales revenue equal to program sales revenue, then dividing this estimated sales revenue by the regular retail price. Table 118, provides an example of how the estimate of pre-program sales and actual program sales can be used to establish the program free-ridership rate.

Table 119: Revenue-Neutral Sales Model Example: Sales without Program

	Price	Sales	Revenue
Without Program	\$5.00	40,000	\$200,000
With Program	\$2.00	100,000	\$200,000

¹¹⁰ This model does not assume retailers only want to sell enough to be revenue neutral; retailers like to see their revenues grow. But when agreeing to participate in an upstream lighting program, retailers have confirmed that they will negotiate a contract that will stimulate enough additional sales so that their revenues will not drop (i.e. they will remain neutral) as a result of the program discounts.

Once we know the number of products that would have been sold at regular retail pricing to equal the program sales revenue, we can estimate program free-ridership. Program free-ridership is the ratio of estimated sales at regular retail price to actual program sales:

$$\text{Free-ridership} = \text{Sales without Program} / \text{Sales with Program}$$

$$0.40 = 40,000 / 100,000$$

For the sake of this example, the program free-ridership would have been 40%, or 40% of the bulbs sold through the program would have sold in absence of the program giving this hypothetical program a NTG of .60.

The results of the analysis for the Energizing Indiana Residential Lighting program, based on 74% of all units sold, show that overall program free-ridership was 0.43, meaning that 43% of discounted program bulbs would have been purchased at full price, without the program discount.

While this rate of free-ridership may seem high, socket saturation for CFLs in Indiana prior to the program was already on the high side¹¹¹, with 18% of sockets containing a CFL. Across the state of Indiana, over 27¹¹² million CFLs were already in use¹¹³. It is likely that approximately 2 million of the CFLs may have been purchased through past utility programs, which leaves nearly 25 million CFL bulbs purchased and installed in Indiana homes without an incentive prior to the start of widespread programs. If we assume that those bulbs were sold at an equal rate over the last five years¹¹⁴, Indiana residents would have purchased an estimated 5 million CFLs per year, without a program discount. Given this rate of sale prior to the program, it is likely that that 1.16 million of the 2.7 million bulbs sold through the program would have been sold without the discount.

Further, this NTG ratio¹¹⁵ is similar to programs in other regions of the country. As a comparison point,

Table 120 below provides a comparison of the NTG ratios for Residential Lighting programs in other jurisdictions.

Table 120: Comparison to Other Jurisdictions¹¹⁶

Program	NTG
Efficiency Maine (2012-2011)	.66
Delaware (2010-2011)	.49
PG&E (2006-2008)	.49

¹¹¹ When compared to other states with newer programs (e.g. South Carolina is at 18% and Delaware is at 13%).

¹¹² The Evaluation Team conducted a baseline study that found an average of 54 sockets per home, of which 18% were filled with CFLs. With 2,800,614 total distinct households in Indiana, this amounts to approximately 27 million CFLs.

¹¹³ The Evaluation Team understands that the utilities ran retail lighting programs that were offering discounted CFLs starting in 2010. Based on review of the data for those programs evaluated by the Team, in 2011, these programs had verified sales of 1,376,496 bulbs, leaving over 25 million CFL purchases outside of utility lighting programs.

¹¹⁴ Five years is the equipment useful life for CFLs, if we assume the 25 million bulbs were sold over the last five years in equal proportions per year that would be 5 million per year.

¹¹⁵ The ratio applied to get the program attribution (e.g., if free-ridership is 43%, the program NTG ratio is .57, that is the ratio applied to savings to get the program attribution rate or net savings).

¹¹⁶ Some of the data in this table is from The Cadmus Group, "Efficiency Maine Trust Residential Lighting Program Evaluation: Final Report." November 1, 2012.

SDG&E (2006-2008)	.48
Massachusetts ENERGY STAR (2009-2010)	.45

*To allow comparison, NTG values in this table have been calculated as $NTG = (1 - \text{free-ridership})$, and do not include spillover.

Program spillover would occur if customers purchased non-discounted CFLs based on what they learned from program marketing or their experience using discounted CFLs. Spillover for this program will be captured in 2015 when the second market baseline/market effects study is completed by the Evaluation Team.

Table 121 below shows the results of applying the NTG ratios to the ex-post gross savings. Note that NTG is applied at the state level for the PY1 evaluation, and details on the per-utility measure mix that feeds into this summary table can be found in the individual utility Technical Volumes.

Table 121: Net Energy and Demand (kWh and kW) Savings by Utility and Statewide

Utility	Ex-Post Savings			NTG	Net Savings		
	kWh	kW	Therms		kWh	kW	Therms
Duke	33,886,113	4,028.37	(647,720)	0.57	19,315,084	2,296.17	(369,200)
I&M	16,337,807	1,942.27	(312,288)	0.57	9,312,550	1,107.09	(178,004)
IPL	16,091,318	1,913.50	(307,566)	0.57	9,172,051	1,090.70	(175,313)
IMPA	4,408,674	524.10	(84,272)	0.57	2,512,944	298.74	(48,035)
NIPSCO	13,530,379	1,608.48	(258,630)	0.57	7,712,316	916.83	(147,419)
Vectren	7,157,136	850.84	(136,806)	0.57	4,079,568	484.98	(77,979)
Statewide					52,104,514	6,194.51	(995,951)

SUMMARY OF IMPACT ADJUSTMENTS

The following three tables below provide a summary of the planned, ex-ante, audited, verified, ex-post, and net savings achieved by the Residential Lighting program in 2012.

Table 122: Energy Savings Summary (kWh)

Utility	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post PY1 kWh	Ex-Post Lifetime kWh	Net kWh
Duke	44,685,067	43,553,056	43,654,503	34,338,302	0.79	33,886,113	169,430,563	19,315,084
I&M	21,784,894	20,956,767	21,041,815	16,641,948	0.79	16,337,807	81,689,036	9,312,550
IPL	21,137,004	20,790,327	20,689,697	16,391,731	0.79	16,091,318	80,456,588	9,172,051
IMPA	5,879,011	5,715,155	5,672,178	4,492,942	0.79	4,408,674	22,043,372	2,512,944
NIPSCO	17,774,916	17,586,488	17,424,800	13,787,432	0.78	13,530,379	67,651,897	7,712,316
Vectren	10,404,033	9,204,176	9,218,609	7,292,246	0.79	7,157,136	35,785,682	4,079,568
Statewide	121,664,925	117,805,969	117,701,601	92,944,602	0.79	91,411,428	457,057,138	52,104,514

Table 123: Demand Savings Summary (kW)

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post PY1 kW	Net kW
Duke	7,141.45	6,960.53	6,973.96	5,511.83	0.79	4,028.37	2,296.17
I&M	3,481.60	3,349.26	3,365.62	2,660.83	0.79	1,942.27	1,107.09
IPL	3,378.06	3,322.66	3,297.24	2,608.78	0.79	1,913.50	1,090.70
IMPA	939.57	913.38	903.40	714.50	0.78	524.10	298.74
NIPSCO	2,840.74	2,810.63	2,780.80	2,198.16	0.78	1,608.48	916.83
Vectren	1,662.75	1,470.99	1,472.51	1,163.94	0.79	850.84	484.98
Statewide	19,444.17	18,827.45	18,793.53	14,858.04	0.79	10,867.56	6,194.51

Table 124: Therm Savings Summary

Utility	Ex-Post PY1 Therms	Ex-Post Lifetime Therms	Net Therms
Duke	(647,720)	(3,238,599)	(369,200.30)
I&M	(312,288)	(1,561,442)	(178,004.39)
IPL	(307,566)	(1,537,832)	(175,312.88)
IMPA	(84,272)	(421,360)	(48,035.09)
NIPSCO	(258,630)	(1,293,150)	(147,419.07)
Vectren	(136,806)	(684,030)	(77,979.45)
Statewide	(1,747,283)	(8,736,414)	(995,951.19)

PROCESS ANALYSIS

The Residential Lighting program met nearly all expectations in terms of sales, with five of the six participating utilities achieving at least 96% of planning goals, and only one coming in below 90% (at 88%). The Program Administrator did undertake additional activities in the lagging territory at year-end to make up some of that deficit, offering some targeted promotions, including a buy-one-get-one-free campaign to boost sales.

PROGRAM MARKETING

The Residential Lighting program was promoted both inside and outside of participating retail locations. Outside marketing included bill inserts, newspaper and radio ads, the Energizing Indiana website, and state and community events (such as farmers markets and sporting events). Inside or in-store marketing included POP materials such as stickers, shelf wobblers, salesperson buttons, and lumen-equivalency charts. Retailer respondents claimed that the program's marketing materials and in-store events hosted by Energizing Indiana field representatives were valuable in terms of highlighting and educating their customers about cost savings and environmental benefits of energy-efficient lighting products, thereby driving their sales. Notably, the majority of retailers still have Energizing Indiana signage and price labels displayed since their store's participation in the program is ongoing. Those retailers will continue to display them until the marketing materials are depleted, discontinued, or required to be rotated by seasonal merchandising policies. Furthermore, the majority of the stores interviewed had taken additional action, either at the corporate or store level, in advertising and pushing the sale of energy-efficient lighting products. They did this by training their staff to assist customers, running additional manager pricing specials or discounts, and placing the bulbs and other products in more prominent areas such as store end-caps, against register counters, and next to store entrances.

A few hardware department associates at home improvement retailers criticized the lack of Energizing Indiana marketing campaigns beyond the store level.

Program field representatives play a critical role in the marketing and delivery of the program as well. Field representatives staff in-store and other special events, explain the benefit of qualified products to customers, train retailers, and ensure that stores are adhering to program participation guidelines. Home improvement retailers indicated that field representatives held in-store events on a monthly basis, with

store managers indicating that the events were useful because they were strategically positioned at the entrance of the store and provided immediate and more thorough information to customers on the products, thereby facilitating sales of bulbs.

Non-home improvement retailers indicated that they had very little communication, if any, with Energizing Indiana's field representatives. As a result, in-store events aimed at promoting Energizing Indiana were more likely to take place at home improvement-type retailers in urban locations.

The Program Manager for the implementation contractor Ecova indicated that the addition of more field representatives would be beneficial. Currently the program has seven field representatives working with over 750 participating store locations across the state.

PARTICIPANT SATISFACTION

Feedback from program staff, consistent with findings in the Residential Baseline study, is that CFLs are far more accepted now than in the past, but there are still barriers the program needs to address. While the baseline data found that 31% of study respondents indicated no primary barrier, many noted negative experiences with prior CFLs. Negative perceptions include fit and other aesthetic issues (40%), price (23%), and environmental concerns (i.e., 9% mentioning mercury and disposal as concerns). Feedback from retailers aligned with these findings, noting cost, health concerns, disposability with new technology (mercury), fixture compatibility for dimmable/specialty CFLs, aesthetic/lighting quality and output, and lack of experience with CFLs (i.e., older customers) as continuing barriers.

The results of the program varied depending on the retailer type, customer demographic, and corporate or store policies, but the program was met with positive feedback from retailers overall. Moreover, in 14 of the 18 retailers interviewed, the program has met the sales and customer awareness expectations, with respondents rating their satisfaction with the program as an average rating of 9 out of 10 (on a 0-10 scale where 0 is "very dissatisfied" and 10 is "very satisfied"). Program-qualified bulbs sold through general store-type retailers had difficulty meeting customer demands, and experienced shortages in less than a week after restocking. Managers pointed out that the program's pricing and bulk packaging make CFLs very competitive compared to standard incandescent bulbs.

Home improvement retailers located in rural areas experienced lackluster demand and sales for energy-efficient lighting products. Store managers and associates at these locations did not believe that the Energizing Indiana program had any impact in terms of raising awareness or improving sales. Respondents commonly cited a large senior customer-base, who are oblivious to program marketing efforts and accustomed to incandescent products, as the primary factor for the poor demand for energy-efficient products. Smaller retailers, such as Goodwill stores, reported a much more labor-intensive participation process, which led to lower satisfaction levels.

PROGRAM OPERATIONS

The Residential Lighting program relies on participation from retailer and manufacturer partners who together respond to a request for proposals put out by the Program Implementer (Ecova). Ecova chooses participation partners based on their proposals and their ability to meet program requirements such as product qualifications and reporting. Based on interviews with program implementation staff, the program was able to select partners that supported a successful launch without any major problems or issues. Program staff indicated that several retailers had to delay their launch to the second half of the program year because the retailer and manufacturer partnership was not as strong as specified in their joint proposals. One partnership did not have qualified products and was removed from the program, while another had limited product supply and Ecova was able to work with them to increase products in stores.

While these issues caused some challenges, they also provided an opportunity to understand who makes the best partners going forward.

Interviews with participating retailers found that store location can have a big impact on program success. Rural stores generally reported having more difficulty selling CFL bulbs due to their more traditional and senior customer base. Non-rural retailers claimed that CFLs sell too fast and that they are having some trouble meeting demand.

Interviews also found that the program model (e.g., the way goals are allocated across utilities and how this affects the funding) can cause problems at specific storefronts, as the program is eliminated once goals are achieved (creating uncertainty for retailers). Some stores are not sure if the program will be available in 2013, and others seem to think that the current lack of rebates means that there will be a lag in turning stores back on for 2013.

Goodwill managers noted that Energizing Indiana signage does not emphasize the 10-bulbs-per-customer limit. This reportedly caused customer service issues when customers attempted to purchase more than 10 bulbs. Goodwill stores also noted having to complete separate inventorying of qualified bulbs sold during checkout, which caused confusion and created inefficiencies. The latter may be a function of the manufacturer Goodwill partnered with, and may not be an issue the program can resolve.

DATA AND TRACKING SYSTEMS

Once the program launches at retail, partners provide point of sale (POS)¹¹⁷ data and shipment invoices; this data is received at varying intervals depending on the retailer/manufacturer (e.g., weekly, bi-monthly, etc.). The Program Implementer uses a proprietary system to track this data, but the Implementation Program Manager also indicated that he directly tracks sales in Excel. Feedback from program staff suggests that varying data quality from retailer and manufacturer partners as well as inconsistent timing for delivery creates some challenges for the program's ability to track sales in a timely manner.

The Program Administrator tracked program progress on a monthly basis via the Energizing Indiana reporting portal. Data between the portal and the year-end upload provided to the Evaluation Team aligned closely in terms of total unit counts, but there were significant discrepancies between the portal and the data in terms of specific unit types (e.g., fixtures, ceiling fans). The year-end data provided to the Evaluation Team did clearly indicate unit type, suggesting there is an issue in how the unit-type data is translated between the Program Implementer and the Program Administrator, and between the raw data and the portal. This has little effect on the total energy savings being reported, but an effort to increase accuracy here should be undertaken in future program years.

The program tracked all data needed for this evaluation although some key bulb characteristics (retailer price, incentive amount, product SKU details) that were not made available in the initial iterations of the data provided to the Evaluation Team. During the early stages of analysis, the Team was provided with two datasets meant to represent the full program year. These datasets did not match each other in terms of data format, total units tracked, included fields, and other factors. It appears, based on conversations with the implementation contractor's data team, that this is not an issue with overall data tracking, but rather the result of different data pulls from a master dataset that brought in different fields. Because the Program Administrator does not have a data dictionary that can be referenced by the Evaluation Team, understanding all the fields available, versus what is in the provided data, is difficult. Having a defined

¹¹⁷ Point of sale (POS) data is data from the retailer designed to document the sale of program measures. This should not be confused with point of purchase (POP) materials, which are used to market the promotion on the store floor. These terms are often used interchangeably but are distinct in meaning throughout this report.

data dictionary in place would ensure that the Team can ask for only those fields specifically needed, and would have expedited the data analysis process.

Retailers are each assigned a unique retailer ID that is used to allocate an individual store's sales to a specific utility by geography. Initial data uploads had retailer IDs that did not align to the Master Retailer ID list provided by the Program Administrator. It took several conversations with the Program Administrator to get a Master Retailer ID list that included retailer IDs that aligned with the program dataset. It is unclear if this issue was simply one of data transfer, or if over the course of the year data/sales may have been miscoded between utilities as a result of mismatched retailer IDs.

Allocation data were recorded in several Excel workbooks identified by the Program Implementer as the Matrix, one each per utility. Individual sheets summarized allocations based on manufacturer, retail outlet, and product type (CFLs, LEDs, fixtures, and ceiling fans). In many cases, these allocations included both an original allocation and subsequent amendments. An issue of key concern is that amendments could either represent additional product added to the initial allocation, or reduced/adjusted totals in lieu of the original allocation. Identifying this key distinction required examination of the summary sheets in search of summed total of products across amendments and original allocations.

Product allocations were correlated with program sales records by use of the manufacturer SKU designation. In a number of cases, SKUs were combined in a manner that made disentangling allocations and sales difficult. Subsequently, developing reliable net-to-gross (NTG) values at the SKU level became problematic.

INSIGHTS & RECOMMENDATIONS

Insights

The market effects study completed over the summer of 2012¹¹⁸ found that households surveyed in this study have a mean number of 54 light bulbs in use¹¹⁹, and about two-thirds (67%) of households have lighting in storage. Every household surveyed had at least one incandescent light bulb in use. A majority of households had at least one CFL (83% penetration rate) or tube fluorescent bulb (75% penetration rate).

Of the total sockets statewide, 62% of all light bulbs are incandescent, accounting for over 90 million sockets statewide¹²⁰ that still house less-efficient options than those available on the market today. The saturation rates of CFLs and tube fluorescent lights are much lower than incandescent bulbs at 18% and 11%, respectively. Halogen bulbs account for 3%, while 1% are LEDs. The baseline survey and in-home study results suggest that there is potential for additional savings from incentives on energy-efficient lighting purchases.

Based on this data, there is still considerable opportunity for additional savings from lighting programs in Indiana.

Data tracking seems to be an area of challenge for the program. The issue does not pertain to the accuracy of total units tracked. Rather, it pertains to the unit types, retailer unique IDs, retailer price and incentive

¹¹⁸ TecMarket Works, "Current Availability of 10 Watt Standard Fixtures in Indiana." January 29, 2013.

¹¹⁹ This count excludes sockets that were empty or where the bulb was burned out but is still in the fixture. This accounted for 4% of all sockets, or a mean of two sockets per household. The mean total sockets-per-household statewide was 56.

¹²⁰ Census number indicates 2,800,614 total distinct households in Indiana * 54 sockets * 64% incandescent.

levels, field definitions, duplicative data-tracking efforts, timeliness, consistency of retailer/manufacturer data uploads, and allocation tracking.

Data were presented to the Evaluation Team in separate sales and allocation workbooks. The division of sales and allocation data made matching all program-incented SKUs overly time-consuming, and could not be fully completed. The Team also noted a number of other data-storage practices that make evaluation challenging. While the Team is aware that products may enter or exit the market and SKUs could reasonably be combined by adding together nearly identical products, the program's use of multiple SKUs per allocation, and then reporting those same SKUs separately in sales data, makes evaluation more complicated and less reliable. The Team recommends a "one-SKU, one-allocation" method of data tracking in the future. Furthermore, there were a number of discrepancies between the sales and allocation data on the manufacturer and models of CFLs sold at various retailers. For example, sales data refers to a number of Greenlight bulbs sold at participating Dollar Tree stores. However, no Greenlight bulbs are found on Dollar Tree worksheets in the allocation data workbooks delivered to the Evaluation Team.

While there is no impact from EISA on program savings today, the affect EISA will have on standard-wattage bulbs should be considered when determining the focus of future lighting programs. EISA's impact on standard bulbs will result in 37% less savings per bulb. When EISA is fully implemented in 2015, programs will need to sell one-third more standard bulbs than specialty bulbs to get credit for the same savings. As discussed above, the most popular wattage of CFLs sold is 60-watt equivalents, with 44% of efficient lighting program sales falling in the 60-watt or lower equivalence category. EISA will impact 60-watt equivalents in 2014. Even with reduced savings, current estimates indicate that incentives on EISA-regulated bulbs will still be a cost-effective program offering given the increased cost of the EISA-compliant halogens relative to standard incandescents¹²¹.

Program NTG ratios should also be considered when selecting the mix of products to incent and the level of support to provide. This evaluation found a free-ridership rate of .43, meaning that 57% of the program sales are attributable to the program.

Recommendations

Recommendations for this program are primarily focused on data and allocation tracking.

Increase Energizing Indiana field staffing and frequency of visits. Retailers are unlikely to have resources to host events aimed at promoting Energizing Indiana or energy-efficient lighting products; increased field staff levels could help ensure more events and outreach. Many participating stores, particularly non-home improvement retailers, have yet to experience tabling events hosted by field staff. Stores that have had visits in the past from program field representatives noticed a gradual decrease in visits and events since program participation.

Track allocations in a database as opposed to disaggregated Excel spreadsheets, and use consistent approaches for noting and tracking amendments to allocations. Data stored across multiple spreadsheets/matrixes should be integrated into the program-tracking databases to increase data reliability. Allocation changes should be consistently tracked within databases in a manner that is consistent across retailers and products. Inconsistent approaches to managing changes in allocations make it difficult to track retailer progress toward goals, and make it difficult to ensure that only program-approved bulbs/units are being reimbursed. Consistent use of the term "amendment" in allocation data would improve the confidence evaluators and implementers have in the "final" total allocation to each retailer.

¹²¹ Tami Buhr, "The Future of CFL Programs After EISA." Paper presented at ACEEE National Conference on Energy Efficiency as a Resource, Denver, Colorado. September 2011.

Develop a unique identifier that connects store (including chain name, address, and utility affiliation) across both the sales and allocation tracking data. Currently there do not appear to be unique identifiers between datasets provided to the Evaluation Team by the Program Administrator. Not having a unique identifier in place means that completing QA/QC between the data provided to the Program Administrator from the Program Implementer would be extremely difficult.

Develop a data dictionary for all tracked program data. The Program Administrator should consider developing a data dictionary that clearly outlines all data fields being tracked and the content of those fields. Clearly defined fields will ensure that data is tracked in the appropriate place, and will allow us to ask for only those fields needed for analysis. Clarity around fields will also lessen the back-and-forth between the Evaluation Team and the Program Administrator, because at the time of the data request the evaluator will know the content of all fields and will know exactly which fields to request. In PY1, several iterations of data were required because there was insufficient clarity on what was being tracked.

Establish QA/QC protocols so that data uploaded to the GoodCents Portal and the Evaluation FTP site are consistent between each other and month-to-month. Monthly uploads between the two sites were often inconsistent in terms of total units, field included, etc. In addition, uploads within each site often varied by month, with fields changing month-over-month and variable types in fields changing month-over-month (e.g., a field variable in one month was identified as 0 or 1, the next month the same field had a string variable). These inconsistencies suggest there is not a QA/QC effort occurring by the Program Administrator between each month-to-month upload by program or between data pulled for the two portals (GoodCents and Evaluation).

Prepare for the effects of full EISA compliance. While the Evaluation Team has not changed the baseline assumptions for 100-watt equivalent bulbs in this 2012 evaluation, that adjustment will take effect in the 2013 efforts. This will be followed by baseline adjustments to the 75-watt and 60-watt equivalencies in subsequent years. Program managers and planners need to prepare for the impacts of EISA.

Maintain a flexible program approach. The current lighting environment is in flux, with new products introduced almost daily and unsettled product pricing. For programs to be cost-effective in this environment they will need to be flexible and have the ability to change product mixes and incentive levels throughout the year if necessary.

Future lighting programs should invest in consumer education. Different lighting technologies, such as LEDs, do not perform equally well in all situations. Programs will need to work with retailers and manufacturers to educate consumers to prevent dissatisfaction with their purchase. Such dissatisfaction could create long-term resistance toward a technology, as happened with some of the early CFLs. Future lighting programs should invest in consumer education to avoid confusion and dissatisfied customers, which could harm the long-term potential of a new product.

Program materials and POP items should be reviewed to ensure that there is clear language included on the 10-bulbs-per-customer limit. Retailers find it uncomfortable to enforce program rules that are not clearly stated on program signage.

Update retailers in a timely manner. The Program Administrator should work with the Program Implementer to ensure that timely information is provided to participating retailers on the program funding cycle, how goal achievement affects timing and duration of the promotion, etc.

Consider developing additional informational materials. Marketing materials should include information pamphlets or brochures aimed at educating and eliminating customers' concerns and fears about health hazards and disposability. In addition, a comparison table or chart detailing the difference between bulb types or defining energy-efficient lighting terminology will help customers purchase the correct application.

COMMERCIAL AND INDUSTRIAL (C&I)

PROGRAM DESIGN AND IMPLEMENTATION

The Commercial and Industrial (C&I) Prescriptive Rebates program is designed to help facility managers and building owners achieve long-term, cost-effective savings in the commercial and industrial market sector. This program primarily relies on a prescriptive rebate structure that rewards participants with monetary incentives based on their installation of energy efficiency equipment upgrades. These upgrades include lighting, motors and pumps, HVAC, and ENERGY STAR[®] kitchen equipment and efficient package refrigeration.

Trade Allies are leveraged to help drive the market in implementing higher-efficiency equipment. The Trade Ally network setup is growing in strength. A series of Trade Ally breakfasts were held throughout the state, allowing an opportunity to train Trade Allies on the program and register them with the Energizing Indiana brand.

Beginning in September 2012, packs of six compact fluorescent lamps (CFLs) were distributed to businesses across Indiana; this additional program was called Bulb Drop. Each pack contained three 13-watt and three 18-watt bulbs. The Program Administrator continued monthly bulb mailings through the remainder of 2012.

EM&V METHODOLOGY

The evaluation of the C&I program consists of both impact and process elements. Table 125 below provides an overview of the tasks conducted for evaluating this program for program year 1 (PY1) in 2012.

Table 125: Program Evaluation Overall Tasks

Action	Details
Implementer Interviews	<ul style="list-style-type: none"> • Interviewed Implementation Manager
Trade Ally Surveys	<ul style="list-style-type: none"> • Interviewed 24 Trade Allies that had engaged with the program to better understand their experience and business practice with regard to energy efficiency
Program Database Review / Verification	<ul style="list-style-type: none"> • Reviewed in detail deemed energy and demand savings • Reviewed representative sample of participant applications to check for key variables such as quantity installed, efficiency of measure, and operating hours
Program Material Review	<ul style="list-style-type: none"> • Assessed information captured in applications and the marketing materials being disseminated through the program
Participant Interviews	<ul style="list-style-type: none"> • Conducted telephone interviews with 23 non-lighting and 87 lighting participants. A random sample of 223 CFL Bulb Drop recipients was also interviewed to better understand the usage and installation of the CFL package. Sampling was performed to ultimately achieve a 10% precision at 90% confidence at the program level in the first year and at the utility level at the end of three years.
Impact Analysis	<ul style="list-style-type: none"> • Reviewed savings estimates and assumptions provided by the Program Implementer • Audited the reported measure installations in the program database • Verified installation of measures through the participant interviews • Calculated in-service rates and net-to-gross (NTG) through customer interviews • Conducted an engineering analysis of measure savings and assumptions

PROGRAM PERFORMANCE

Table 126 shows how the reported program performance (ex-ante) compared to the goals established for 2012 program planning. The savings reported by the program in this table do not reflect adjustments made as a result of the evaluation. While the units reported were a quarter of the initial goals set for 2012, the savings achieved still reached over 50% due to the savings associated with the measures installed.

Table 126: Ex-Ante Results by Utility and Statewide

Utility	Units			kWh			kW		
	Goal	Reported	% Achieved	Goal	Reported	% Achieved	Goal	Reported	% Achieved
Duke	539,988	104,067	19%	153,592,000	92,696,419	60%	40,050	19,088	48%
I&M	157,340	59,127	38%	44,754,001	38,487,311	86%	11,670	8,795	75%
IPL	157,340	51,707	33%	52,172,000	29,951,735	57%	13,604	6,539	48%
IMPA	112,114	28,095	25%	31,890,000	19,503,585	61%	8,317	4,928	59%
NIPSCO	183,423	54,326	30%	52,173,001	30,162,786	58%	13,605	8,301	61%
Vectren	86,756	34,805	40%	24,678,000	15,573,763	63%	6,434	3,436	53%
Statewide	1,236,961	332,127	27%	359,259,002	226,375,599	63%	93,680	51,087	55%

PROGRAM BUDGET AND EXPENDITURES

Table 127 shows the original program budgets and the expenditures reported at the conclusion of the 2012 program year. This information was obtained from the Program Administrator. The budget is in-line with the program uptake, which was slower than anticipated. It is expected that as the program grows in the coming year, the budgets will continue to be used proportionally to participation levels.

Table 127: Program-Level Budget and Expenditures

Utility	2012 Budget	Reported Expenditures	% of Budget Utilized
Duke	\$16,004,286	\$4,697,618	29%
I&M	\$4,587,285	\$2,426,896	53%
IPL	\$5,457,191	\$1,802,268	33%
IMPA	\$3,338,883	\$1,120,114	34%
NIPSCO	\$5,352,950	\$1,976,378	37%
Vectren	\$2,573,915	\$845,408	33%
Statewide	\$37,314,511	\$12,868,681	34%

EX-ANTE ENERGY SAVINGS

The ex-ante savings are those savings tracked and reported by the program. The ex-ante savings for C&I programs were obtained from the Energizing Indiana portal and are presented by utility, throughout the state, in Table 128. The Bulb Drop component of the program is presented separately to provide transparency into the accomplishments of the original prescriptive programs, versus the supplemental mail-out (Bulb Drop) campaign. Since the Bulb Drop began at the end of the 2012 year, leaving limited time to allow for recipients to install the products, the savings are lower for the PY1 year, but will be carried over into the following program year.

Table 128: Effect of Bulb Drop on Ex-Ante Savings

Utility	2012 Ex-Ante kWh No Bulb Drop	2012 Ex-Ante kWh Bulb Drop Only	2012 Ex-Ante Total kWh Savings	2012 Ex-Ante kW No Bulb Drop	2012 Ex-Ante kW Bulb Drop Only	2012 Ex-Ante Total kW Savings
Duke	47,153,021	45,543,398	92,696,419	5,224	13,864	19,088
I&M	18,511,846	19,975,465	38,487,311	2,714	6,081	8,795
IPL	14,327,730	15,624,005	29,951,735	1,782	4,756	6,539
IMPA	7,362,542	12,141,043	19,503,585	1,232	3,696	4,928
NIPSCO	8,627,611	21,535,175	30,162,786	1,745	6,556	8,301
Vectren	8,222,223	7,351,540	15,573,763	1,198	2,238	3,436
Total	104,204,973	122,170,626	226,375,599	13,895	37,191	51,087

An assessment of the accuracy of the reported savings, as well as the validity of assumptions used in calculating these savings, is the purpose of the impact evaluation in the following sections.

IMPACT ANALYSIS

Table 129 summarizes and describes the primary evaluation activities.

Table 129: Primary Impact Evaluation Activities

Evaluation Activity	Description
Database Review	A review of all applications to verify the quantities of each measure installed and recorded in the tracking system
Survey of Participating Customers	A telephone survey to assess the actual use of measures installed through the program, the influence of the program, and measures installed outside of the program
Engineering Analysis	A review of the assumptions used in calculating the savings recorded in the tracking system. Key factors include: <ul style="list-style-type: none"> • Usage patterns (including incidence rates) • Participant installation rates • Weather/climate influence on HVAC • Efficiencies of equipment installed

The results of these analyses are described below.

AUDITED SAVINGS

The first step in the impact evaluation process was to review the program database to confirm the number of applications processed through the program as well as the number of measures installed. Adjustments made in this step of the evaluation are the result of comparing the program applications with the claimed ex-ante savings at the measure level. Table 130 presents the audited participant count by measure category. Measure category counts by utility can be found in the utility-specific Technical Volumes.

Table 130: Number of Installed Measures by Measure Category

Measure Category	Sum of Ex-Ante Database Program Measure Quantity 2012	Sum of Audited Program Unit Measure Quantity 2012
CFL Bulb Drop	177,102	161,226
Indiana C&I ENERGY STAR® Products	79	79
Indiana C&I HVAC & VFD Upgrade	804	788
Indiana C&I Lighting	154,142	155,052

As before, the Bulb Drop component of the program is presented separately in order to provide transparency into the accomplishments of the original prescriptive programs, versus the supplemental mail-out (Bulb Drop) campaign.

Table 131 presents the resulting audited savings from the original prescriptive programs exclusive of the Bulb Drop component. Savings from the Bulb Drop component are presented in Table 132.

Table 131: Audited Energy Savings (kWh) and Demand (kW) by Utility and Statewide – Without Bulb Drop

Utility	Measure Count in Database	Total Audited kWh Savings	Total Audited kW Savings
Duke	37,956	47,176,626	5,218
I&M	30,127	18,542,142	2,720
IPL	29,409	15,214,670	1,851
IMPA	11,603	8,858,947	1,277
NIPSCO	22,684	8,589,697	1,735
Vectren	24,140	8,229,929	1,197
Statewide	155,919	106,612,011	13,998

Table 132: Audited Energy Savings (kWh) and Demand (kW) by Utility and Statewide – Bulb Drop Only

Utility	Measure Count in Database	Total Audited kWh Savings	Total Audited kW Savings
Duke	61,607	42,498,480	12,937
I&M	25,000	17,245,800	5,250
IPL	20,574	14,192,604	4,321
IMPA	17,600	12,141,043	3,696
NIPSCO	29,214	20,152,752	6,135
Vectren	7,231	4,988,175	1,519
Statewide	161,226	111,218,854	33,858

VERIFIED SAVINGS

Through participant surveys, the Evaluation Team was able to assess the numbers of units actually installed, units uninstalled, units placed in storage (and therefore not currently achieving savings), and the usage patterns for installed measures. The findings from these surveys are the basis for calculating several key metrics described in Table 133.

Table 133: Key Metrics from Participant Surveys

Metric	Description
Installation Rate	Units installed/Total program-tracked units
In-Service Rate	Units remaining installed at time of evaluation/Total units installed
Hours of Use	Average number of hours per day a measure is in use

Survey responses to questions informing these metrics are weighted by the savings achieved for each respondent relative to the total savings in the sample. The resulting weighted average rates are the basis for calculating the verified energy savings presented in Table 134.

Bulb Drop recipients were surveyed separately from participants in the original prescriptive program. A random sample of 223 recipients was drawn from the population of participants across all of the shipment weeks¹²². The quantity of bulbs that respondents reported installing was divided by the total number of bulbs they were shipped. Responses were weighted for the number of weeks that each participant had possession of the bulbs, based upon shipment week, in order to obtain the CFL in-service rate for the Bulb Drop participants. The analysis determined that 43% of the distributed bulbs were installed. The final realization rate numbers for the Bulb Drop are approximately 39% due to the reduced number of bulbs distributed coupled with the 43% installation rate.

Table 135 shows the verified energy savings for the Bulb Drop participants, along with realization rates (verified savings divided by ex-ante savings). Utility-specific data can be found in the utility-specific Technical Volumes.

¹²² Bulbs were shipped out to unique populations each month from September 30 through December 30, 2012.

Table 134: Verified Energy Savings (kWh) by Utility and Statewide – Without Bulb Drop

Utility	Ex-Ante kWh	Verified kWh Savings	Realization Rate
Duke	47,153,021	46,403,722	98%
I&M	18,511,846	18,111,337	98%
IPL	14,327,730	14,682,188	102%
IMPA	7,362,542	8,710,612	118%
NIPSCO	8,627,611	8,369,659	97%
Vectren	8,222,223	7,912,759	96%
Statewide	104,204,973	104,190,277	100%

Table 135: Verified Energy Savings (kWh) by Utility and Statewide – Bulb Drop Only

Utility	Ex-Ante kWh	Verified kWh Savings	Realization Rate
Duke	45,543,398	18,274,346	40%
I&M	19,975,465	7,415,694	37%
IPL	15,624,005	6,102,820	39%
IMPA	12,141,043	5,220,649	43%
NIPSCO	21,535,175	8,665,683	40%
Vectren	14,703,079	2,144,915	29%
Statewide	129,522,166	47,824,107	39%

Table 136 and Table 137 show the demand (kW) impacts with and without the Bulb Drop component, respectively.

Table 136: Verified Demand Savings (kW) by Utility and Statewide – Without Bulb Drop

Utility	Ex-Ante kW Savings	Verified kW Savings	Realization Rate
Duke	5,224	5,155	99%
I&M	2,714	2,664	98%
IPL	1,782	1,806	101%
IMPA	1,232	1,260	102%
NIPSCO	1,745	1,699	97%
Vectren	1,198	1,139	95%
Statewide	13,895	13,723	99%

Table 137: Verified Demand Savings (kW) by Utility and Statewide – Bulb Drop Only

Utility	Ex-Ante kW Savings	Verified kW Savings	Realization Rate
Duke	13,864	5,563	40%
I&M	6,081	2,258	37%
IPL	4,756	1,858	39%
IMPA	3,696	1,589	43%
NIPSCO	6,556	2,638	40%
Vectren	4,476	653	15%
Statewide	39,429	14,559	37%

EX-POST SAVINGS

The ex-post savings reflect all adjustments made to the ex-ante measure savings that were claimed by the program. Additional adjustments beyond those discussed above are based upon detailed engineering analyses that leverage actual measurement data and secondary sources deemed to be most appropriate by the Evaluation Team¹²³. The majority of the savings algorithms used in this analysis were obtained from the Indiana Technical Reference Manual (TRM), with the variable inputs relying upon the most recent customer-specific data provided by the TPA. Below we discuss specific approaches used to assess ENERGY STAR appliances, HVAC measures, Variable Frequency Drives (VFDs), and lighting.

Savings associated with ENERGY STAR appliances relied upon calculators developed by the Department of Energy (DOE). Specific inputs for these calculators include:

¹²³ Secondary sources include ENERGY STAR calculators, Illinois TRM data, and Energy Information Administration building data.

- The model number, which was verified from the applications
- The volume “V” of chilled or frozen compartment space in cubic feet, which was obtained from the list of currently qualified products available on the ENERGY STAR website
- The unit type (remote condensing, ice-making head, self-contained unit, etc.), production capacity (lb/day), and energy usage (kWh/100 lb) were verified from manufacturer cut sheets

More detail on the approaches can be found within the utility-specific Technical Volumes.

To assess savings associated with HVAC and VFD upgrades, the Evaluation Team inspected the project files to verify the tonnage, equipment type, and building type. The Team determined the unit and measure energy and demand savings per the protocol defined in the Indiana TRM. Specific inputs for this protocol include:

- The effective full load heating hours (EFLH), or hours of operation, which were based upon the building type when participant-specific data was missing
- The integrated part load value (IPLV) and coefficient of performance (COP) which, for both the baseline unit and the energy-efficient unit, were dependent upon the equipment type and size

Overall, the energy savings are a function of the IPLVs, EFLH, and tonnage. The demand savings are a function of the hours of operation, COP, coincidence factor, and tonnage.

For the lighting measures (non-controls), the Evaluation Team inspected the project files to verify the quantities and hours used. The unit and measure energy and demand savings were determined per the TRM energy and demand savings variable assumptions. For the energy savings, the actual wattage of the baseline equipment was subtracted by the actual wattage of the energy-efficient equipment from the database of measures; this was multiplied by hours and was also impacted by a waste-heat factor¹²⁴. For the demand savings, the difference in actual wattages was multiplied by the coincidence factor and was also impacted by a waste-heat factor.

To assess savings associated with lighting control measures, the Evaluation Team inspected the project files to verify the controls, hours, and connected load of the lights being controlled. The energy savings were a function of the connected load in wattage that is controlled, the actual verified hours, a waste-heat factor, and the energy savings factor, which represents the percent of operating hours reduced to the installation of the controls. The demand savings were a function of the same components as well as a coincidence factor.

While there was a slight drop in the number of eligible participants, due to the database review, it appears that many of the claimed savings were conservative. Higher savings calculated during the engineering assessments are due to:

- Mapping the savings to the territory measures installed, and the resulting ability to use weather-specific calculations attributable to the location
- Using the actual participant-claimed hours of use for installed technologies
- Application of actual sizing and efficiency levels for HVAC and VFD equipment

Further supporting the increased savings identified by the evaluation activity is the disproportionate participation of the largest electric customers. It is not uncommon for large energy users to be among the

¹²⁴ Default assumptions according to building type were pulled from the IN TRM.

first participants when a program is launched. This is because these companies will typically realize greater savings, and shorter paybacks for investments in those savings from the upgrades. Additionally, companies that are able to invest in capital improvements are more frequently the larger organizations with the financial resources to do so. While it was noted that some of the capital improvement measures offered in the program had less traction than lighting, it is still possible that the programs will see greater uptake in the next program years as more businesses have the opportunity to make financial plans, including upgrades leveraging the programs.

Table 138 shows the ex-post energy and demand savings calculated by the Evaluation Team. The measure-level savings attributed to the program can be found in the utility-specific Technical Volumes.

Table 138: Ex-Post Energy (kWh) and Demand (kW) Savings Per Utility and Statewide without Bulb Drop

Utility	Total Ex-Post kWh Savings	Total Ex-Post kW Savings
Duke	22,134,916	37,665
I&M	16,388,910	2,779
IPL	15,310,295	2,017
IMPA	7,920,961	1,517
NIPSCO	13,734,089	3,199
Vectren	13,103,169	2,331
Statewide	88,592,340	49,508

Some of the evaluated savings calculated for the ex-post results are significantly higher than the ex-ante calculated claims. Of particular note are the savings associated with large measures such as HVAC and motors. While the higher savings were identified for PY1, the Evaluation Team is not recommending that the deemed savings values for calculating the ex-ante savings be adjusted at this time. There is significant variability surrounding the unit savings for these measures. This variability is driven by changes in the specific mix of installed measures (sizes, efficiencies, and hours of use) and of the mix of climate zones where measures are installed. As a result, the Evaluation Team believes that the savings projected by the Program Administrator for PY2 are reasonable.

For the Bulb Drop, evaluated savings were calculated as the difference between the energy consumption of CFLs and the consumption of the mix of bulbs installed through standard market practices—including the naturally occurring adoption of CFLs within the Energizing Indiana territory. This approach is discussed in more detail in the Indiana Evaluation Framework. It assumes that the difference between the average consumption from standard market practice and the consumption of program measures provides average per-measure energy savings that is net of free riders. This approach is used when there is a reasonable expectation that participants make decisions similar to those made by non-participants in the absence of the program.

Participant surveys with 223 participants in the Bulb Drop campaign were used to assess the standard market practice. Approximately 30% of recipients were already using CFLs within their place of business. Of the population, 2.8% were replacing their existing CFLs with the CFLs received from the campaign. By using the 2.8% change out rate per year, set against the effective useful life of a CFL of 3.2 years, the Evaluation Team calculated an adjustment factor of 9% for the Indiana market. This calculation is also shown in the utility-specific Technical Volumes. The adjustment factor was applied to the baseline bulb

wattage to derive the average standard market practice bulb wattage. Table 139 provides the results of these calculations.

Table 139: Ex-Post Energy (kWh) and Demand (kW) Savings Per Utility and Statewide – Bulb Drop Only

Utility	Ex-Post kWh Savings	Ex-Post kW Savings
Duke	35,938,130	9,489
I&M	14,583,623	3,851
IPL	12,001,738	3,169
IMPA	10,266,870	2,711
NIPSCO	17,041,838	4,500
Vectren	4,218,167	1,114
Statewide	94,050,367	24,834

As stated above, and shown within Table 139, these results were estimated by using the following algorithm:

$$kWh_{saved} = (W_{base} - W_{eff}) / 1,000 * HOU * (WHF_e)$$

Where:

W_{base} = Two baseline wattages were used to reflect the CFL lumen and wattage equivalence that were distributed, 60 and 75 watts. These wattages were adjusted by the standard market practice figure, discussed above, making them 54.6 and 68.25, respectively.

W_{eff} = 13- and 18-watt CFLs were distributed. Each wattage was assessed individually, set against the applicable baseline to create the most accurate savings assessment.

HOU = Hours of use. This value was calculated from survey responses. The final weighted average value is 2,462 hours. This number was also compared to values from other programs with a similar structure, and determined to be consistent with those programs.

WHF_e = The waste heat factor for energy savings and demand. This was set to 0 because calculations demonstrated that the quantity of CFLs provided by the program was insufficient to impact the thermostat temperature readings, or to create a sizeable enough load reduction for the HVAC equipment to merit additional savings¹²⁵.

The Bulb Drop campaign has the ability to achieve higher savings based on the ex-post calculations. When the deemed savings used in the ex-ante estimates were established, the savings were conservative. This approach was appropriate since the reception of this outreach was not unknown, nor was the market saturation fully understood at that time. Ultimately, the timing of the Bulb Drop campaign worked against

¹²⁵ This is only for CFL bulb drop. All other lighting system are influential enough to impact HVAC systems, therefore necessitate the use of a WHF variable. Additionally, as was determined with the DSMCC, a statewide number for C&I was not appropriate for this application. Future evaluation work will determine more appropriate means of applying this variable.

it, since it was initiated during the end of the year which did not allow significant time for the bulbs to be installed and achieve the desired savings.

Because the standard market practice approach was only applied to the CFL Bulb Drop, it was unique in its application to Indiana, but has been used in other parts of the country. Other jurisdictions in the Pacific Northwest have applied this approach to some of their markets, such as lighting.

As program uptake increases for all the measures offered in the program, evaluation methodologies are expected to change as well. Future assessments are likely to include billing analysis and on-site metering to create more precise savings estimates by measure for the Indiana market.

NET SAVINGS

“Net savings” refers to savings directly attributable to a program net of external influences, including savings-weighted¹²⁶ free rider¹²⁷ effects, spillover¹²⁸ effects, and market¹²⁹ effects. Net savings are calculated by applying the program net-to-gross (NTG) ratio to the ex-post energy savings.

$$\begin{aligned} \text{Annual Net – to – Gross Ratio} \\ = (1 - \text{freerider adjustment} + \text{participant spillover adjustment}) \end{aligned}$$

The NTG ratio was determined by customer responses in the participant surveys, as well as informed by the standard market practice (for the CFL Bulb Drop, as described above). Table 140 provides measure-level NTG estimates.

Three purposes of net savings are:

- To understand the level of net savings achieved by the program and the portfolio to help determine which program to offer in the future
- For use in utility-specific calculations of lost revenues associated with the energy efficiency programs
- As a critical evaluation metric to be used for improving program design and implementation. Combined with process evaluations that assess program administration and operations and

¹²⁶ Free rider, spillover, and market effects adjustments to the NTG ratio are to be weighted to reflect the level of savings associated with those effects compared to the level of savings that are achieved directly from the installed measures. Savings are weighted so that the adjustments to the net savings are based on the level of savings associated with the actions taken; thus, small savings actions result in small adjustments, whereas large savings actions result in larger adjustments, depending on the level of occurrence.

¹²⁷ Free riders are those who would have taken exactly the same action (or made the same behavior change), installing a measure (or changing a behavior) with exactly the same energy efficiency result, at the same time as they took the program-incented action. Partial free riders are those who would have taken exactly the same action, but the program expedited that change; or they would have taken a similar action, but not at the same level of efficiency as the program-incented action; or they would have made the same behavior change, but at a later time than the program-encouraged behavior change.

¹²⁸ Savings produced as a result of the program’s influence on the way participants use energy through technology purchase and use changes, or through behavior changes induced or significantly influenced by the program or the portfolio.

¹²⁹ Savings produced as a result of the program’s or portfolio’s influence on the operations of the energy technology markets, or changes to energy-related behaviors by customers.

uncover processes that are ineffective or not well conceived, the net savings metric assists program implementation toward performance improvements.

Table 140: Net-to-Gross Ratios at Measure Level

Measure	NTG
CFL Bulb Drop	107%
All Other Measures	58%

As shown in Table 140, the NTG for CFL Bulb Drop is significantly higher than for other measures. This is largely reflective of the indiscriminate way in which the Bulb Drop program component distributed the CFLs. In addition to capturing the free-ridership as discussed previously, the standard market approach to calculating NTG results in spillover being captured as free-ridership. Consequently, spillover is calculated separately based upon survey responses. Spillover is backed out of the standard market practice calculation and applied to produce a final NTG ratio, calculated to be 1.07 or 107%. Applying the NTG ratios to the measures installed results in the following net savings.

Table 141 present net kWh impacts without and with the Bulb Drop component, respectively.

Table 143 and Table 144 present the same for kW.

Table 141: Net Energy (kWh) Savings by Utility – Without Bulb Drop

Utility	Ex-Post kWh	NTG	Net kWh Savings
Duke	22,134,916	58%	12,816,116
I&M	16,388,910	58%	9,489,179
IPL	15,310,295	58%	8,864,661
IMPA	7,920,961	58%	4,586,236
NIPSCO	13,734,089	58%	7,952,038
Vectren	13,103,169	58%	7,586,735
Statewide	88,592,340	58%	51,294,965

Table 142: Net Energy (kWh) Savings by Utility – Bulb Drop Only

Utility	Ex-Post kWh	NTG	Net kWh Savings
Duke	35,938,130	107%	38,453,799
I&M	14,583,623	107%	15,604,476
IPL	12,001,738	107%	12,841,860
IMPA	10,266,870	107%	10,985,551
NIPSCO	17,041,838	107%	18,234,767
Vectren	4,218,167	107%	4,513,439
Statewide	94,050,367	107%	100,633,892

Table 143: Net Demand (kW) Savings by Utility – Without Bulb Drop

Utility	Ex-Post kW	NTG	Net kW Savings
Duke	37,665	58%	21,808
I&M	2,779	58%	1,609
IPL	2,017	58%	1,168
IMPA	1,517	58%	878
NIPSCO	3,199	58%	1,853
Vectren	2,331	58%	1,350
Statewide	49,508	58%	28,666

Table 144: Net Demand (kW) Savings by Utility – Bulb Drop Only

Utility	Ex-Post kW	NTG	Net kW Savings
Duke	9,489	107%	10,154
I&M	3,851	107%	4,120
IPL	3,169	107%	3,391
IMPA	2,711	107%	2,901
NIPSCO	4,500	107%	4,815
Vectren	1,114	107%	1,192
Statewide	24,834	107%	26,572

SUMMARY OF IMPACT ADJUSTMENTS

Table 145 through Table 150 below show all of the adjustments that were made to the energy savings claimed by the programs at each step. Separate tables distinguish the program savings with and without the Bulb Drop component, and for kWh and kW.

Table 145: Energy Savings Adjustments (kWh) without Bulb Drop

Utility	Planned kWh	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh	Net kWh
Duke	153,592,000	47,153,021	47,176,626	46,403,722	98%	22,134,916	12,816,116
I&M	44,754,001	18,511,846	18,542,142	18,111,337	98%	16,388,910	9,489,179
IPL	52,172,000	14,327,730	15,214,670	14,682,188	100%	15,310,295	8,864,661
IMPA	31,890,000	7,362,542	8,858,947	8,710,612	118%	7,920,961	4,586,236
NIPSCO	52,173,001	8,627,611	8,589,697	8,369,659	97%	13,734,089	7,952,038
Vectren	24,678,000	8,222,223	8,229,929	7,912,759	95%	13,103,169	7,586,735
Statewide	359,259,002	104,204,973	106,612,011	104,190,277	99%	88,592,340	51,294,965

Table 146: Energy Savings Adjustments (kWh) Bulb Drop Only

Utility	Ex-Ante kWh	Audited kWh	Verified kWh	Realization Rate	Ex-Post kWh	Net kWh
Duke	45,543,398	42,498,480	18,274,346	40%	35,938,130	38,453,799
I&M	19,975,465	17,245,800	7,415,694	37%	14,583,623	15,604,476
IPL	15,624,005	14,192,604	6,102,820	39%	12,001,738	12,841,860
IMPA	12,141,043	12,141,043	5,220,649	43%	10,266,870	10,985,551
NIPSCO	21,535,175	20,152,752	8,665,683	40%	17,041,838	18,234,767
Vectren	7,351,540	4,988,175	2,144,915	29%	4,218,167	4,513,439
Statewide	122,170,627	111,218,854	47,824,107	39%	94,050,367	100,633,892

Table 147: Energy Savings Adjustments (kWh) Bulb Drop Included [Error! Not a valid link.](#)

Table 148: Demand Savings Adjustments (kW) without Bulb Drop

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Net kW
Duke	40,050	5,224	5,218	5,155	99%	37,665	21,808
I&M	11,670	2,714	2,720	2,664	98%	2,779	1,609
IPL	13,604	1,782	1,851	1,806	101%	2,017	1,168
IMPA	8,317	1,232	1,277	1,260	102%	1,517	878
NIPSCO	13,605	1,745	1,735	1,699	97%	3,199	1,853
Vectren	6,434	1,198	1,197	1,139	95%	2,331	1,350
Statewide	93,680	13,895	13,998	13,723	99%	49,508	28,666

Table 149: Demand Savings Adjustments (kW) Bulb Drop Only

Utility	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Net kW
Duke	13,864	12,937	5,563	40%	9,489	10,154
I&M	6,081	5,250	2,258	37%	3,851	4,120
IPL	4,756	4,321	1,858	39%	3,169	3,391
IMPA	3,696	3,696	1,589	43%	2,711	2,901
NIPSCO	6,556	6,135	2,638	40%	4,500	4,815
Vectren	2,238	1,519	653	29%	1,114	1,192
Statewide	37,191	33,857	14,559	39%	24,834	26,572

Table 150: Demand Savings Adjustments (kW) Bulb Drop Included

Utility	Planned kW	Ex-Ante kW	Audited kW	Verified kW	Realization Rate	Ex-Post kW	Net kW
Duke	40,050	19,088	18,156	10,718	56%	47,154	31,962
I&M	11,670	8,795	7,970	4,921	56%	6,630	5,730
IPL	13,604	6,539	6,171	3,664	56%	5,186	4,559
IMPA	8,317	4,928	4,973	2,850	58%	4,228	3,779
NIPSCO	13,605	8,301	7,870	4,337	52%	7,699	6,667
Vectren	6,434	3,436	2,716	1,792	52%	3,445	2,541
Statewide	93,680	51,087	47,856	28,282	55%	74,342	55,238

PROCESS ANALYSIS

In PY1, the Energizing Indiana Commercial and Industrial (C&I) Prescriptive Rebate program offered prescriptive rebates for lighting measures, HVAC systems, VFDs, and ENERGY STAR[®] appliances. The program also included a CFL-mailer program, referred to above as the Bulb Drop component. In August 2012 the Evaluation Team interviewed the Program Implementer as well as Trade Allies (TAs); the Team also surveyed three participating customer groups: those who received the CFL mailer, those who received lighting rebates, and those who received non-lighting rebates. The Team did not conduct a non-participant and non-Trade Ally survey in PY1, but is planning on including it once the program has ramped-up in PY2.

Program Design

The program was initially designed to be implemented exclusively through established Trade Ally networks. While these networks are strong and Trade Allies play a crucial role in the program, the Program Implementer stated that Energizing Indiana cannot achieve its savings goals without also targeting end-use customers directly.

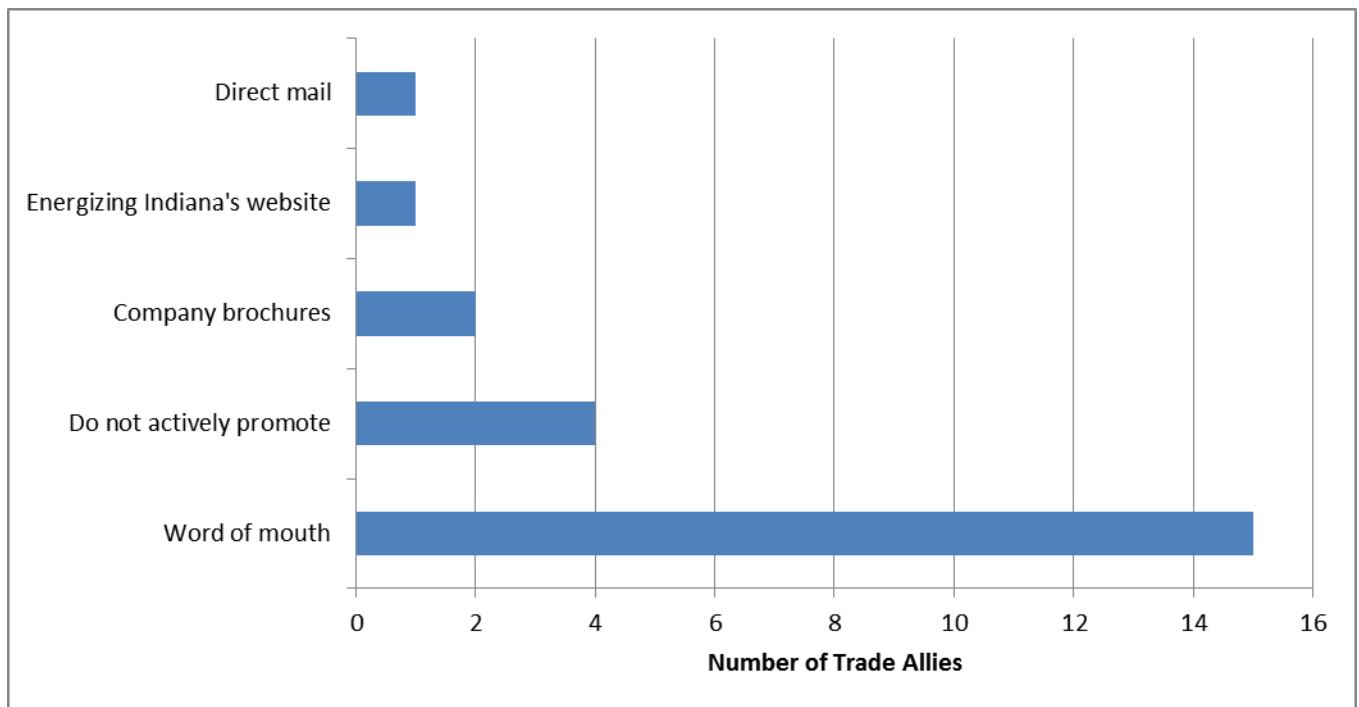
The Program Implementer noted several challenges associated with operating the Energizing Indiana program alongside the non-Core utility programs. For example, some of the Energizing Indiana and non-

Core programs have overlapping goals, so they are pursuing the same customers. The Program Implementer indicated that there are several utilities that offer prescriptive programs in addition to the Energizing Indiana program, as well as multiple custom-incentive programs across Indiana. While the utilities are responsible for meeting their own goals as well as the goals of programs like Energizing Indiana, the customer is left with several choices, leaving programs and utilities to “compete” for their savings. Additionally, some utilities restrict the Program Implementer’s access to program-eligible customers; implementation staff reported they could not reach a large number of eligible customers because of these restrictions.

Program Outreach

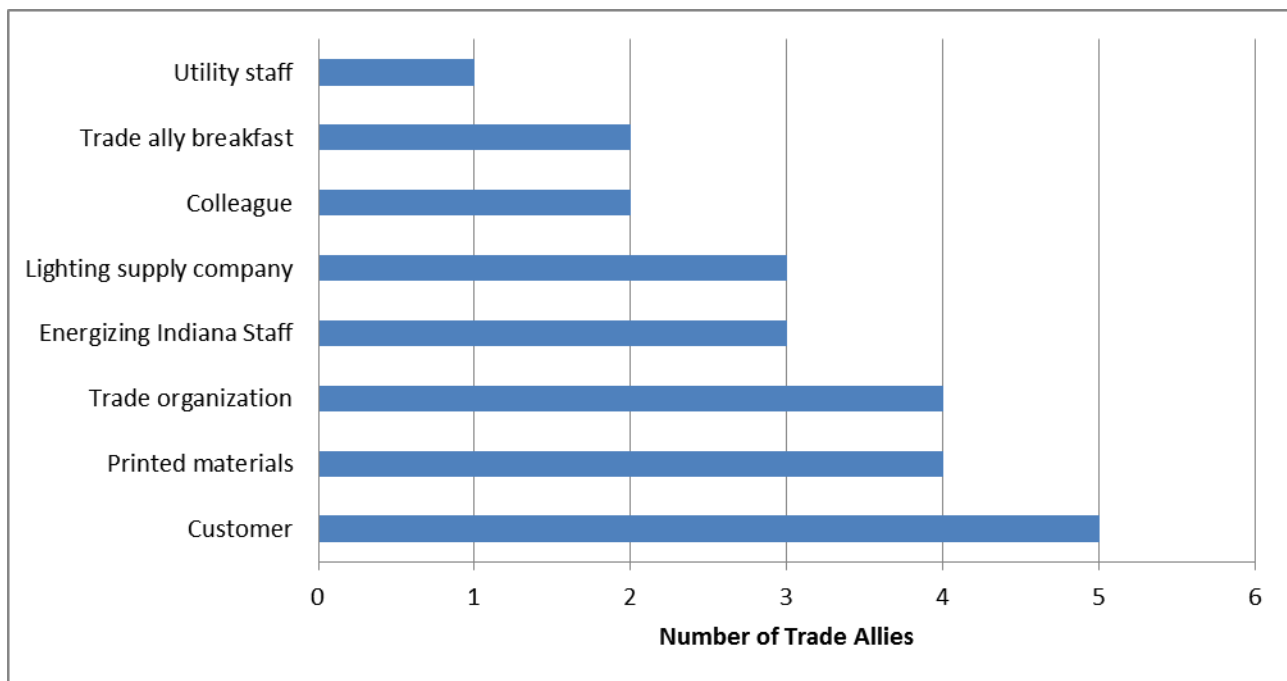
Trade Allies commonly promote the program through word-of-mouth and direct communication (Figure 19). The customer survey confirmed these methods are effective: 68% of lighting participants (59 of 87) and 65% of non-lighting participants (15 of 23) found out about the program through word-of-mouth or direct Trade Ally contact.

Figure 19: In what ways do you promote the program? (n=23)



When asked how they learned about the program, Trade Allies gave several responses (Figure 20). Approximately 42% (10 of 24) of Trade Allies initially encountered the program through a program or utility contact, e.g., Energizing Indiana Staff, utility staff, printed materials, or the Trade Ally breakfast.

Figure 20: How did you first hear about Energizing Indiana's Commercial and Industrial Prescriptive Rebate program? (n=24)



In contrast to Trade Allies, 20% (18 of 92) of lighting customers and 26% (6 of 23) of non-lighting customers found out about the rebate opportunities through an Energizing Indiana program or utility-related channel. Only 42% of the customers who received CFLs by mail were aware of other Energizing Indiana rebate programs, and of that group, only half (57%) were aware of the programs prior to receiving the bulbs. Similar to the prescriptive lighting and non-lighting customers, word-of-mouth was important; 30% (14 of 47) of those who knew about Energizing Indiana heard of the program through word-of-mouth. Another 34% learned about it through bill inserts.

Program Implementation

Both lighting and non-lighting participants said they encountered few issues with program participation. Some customers did have problems navigating the application and rebate process. Some direct participant feedback is listed here:

It seemed you had to jump over all these hoops. It wasn't all that simple. Trying to get some vendors to take care. It seemed like a lot of back and forth between us and our vendors. There was a question about whether some of our bulbs would qualify because of the color rating. It just seemed like too much of a hassle.

The online rebate form wasn't quite right for me. It took a little bit of work to get the account number to match up specific. The account numbers didn't match what the power company had because the addresses were slightly different.

...had to register all units separately, had to get boiler plate data off each VFD and then print in hard copy and had to mail in, it should be a more streamlined application process, and online ideally.

Several CFL Bulb Drop program participants expressed concerns about the CFLs they received. Specifically, they were concerned about the bulbs' potential toxic contents, and their not fitting properly. Several participants said they did not trust the program's goals.

Customer Satisfaction

Both lighting and non-lighting customers are satisfied with the program and its features. Figure 21 and Figure 22 show customers' average rating, on a scale of 1 to 10 where 10 is "very satisfied," across several key indicators.

Figure 21: Satisfaction with Program Features, Lighting-Only Participants

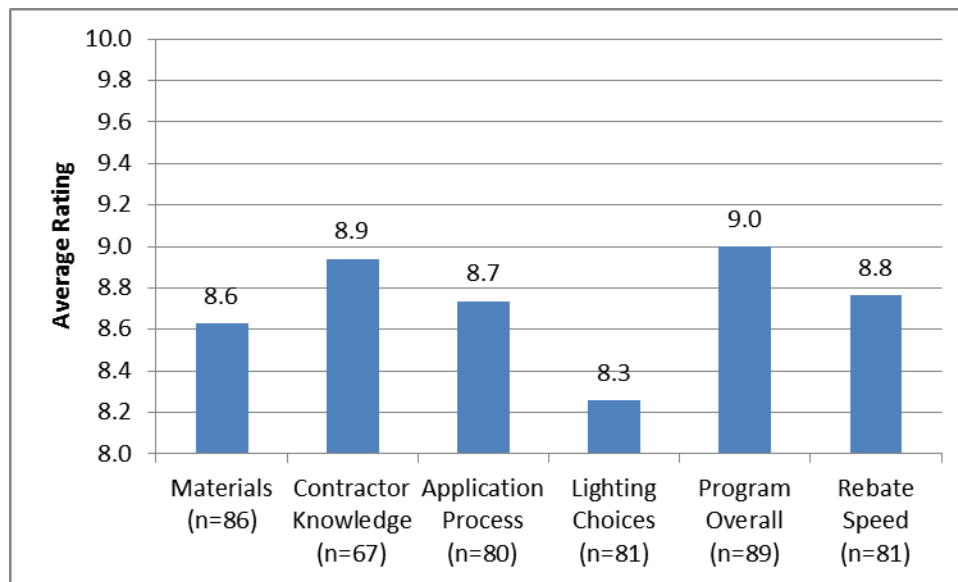
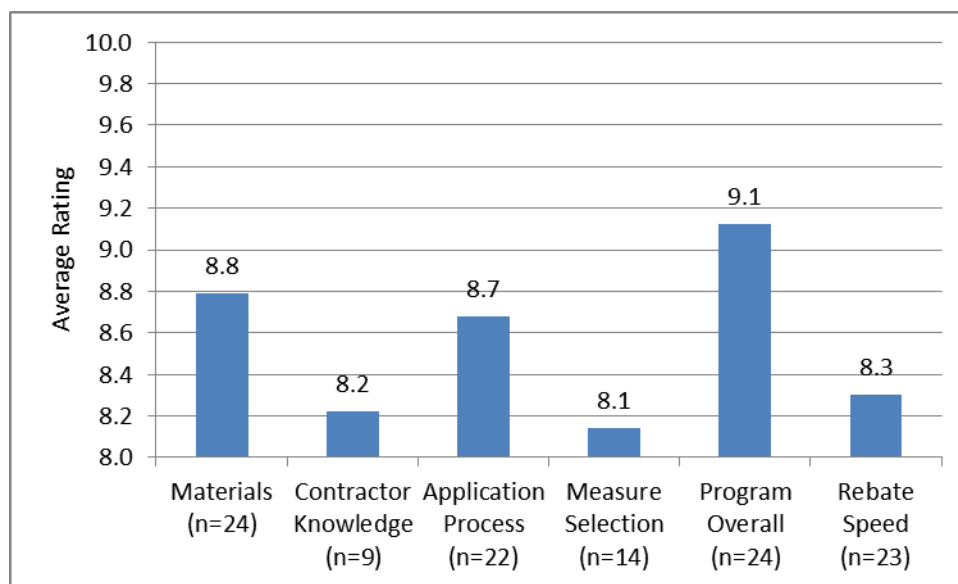


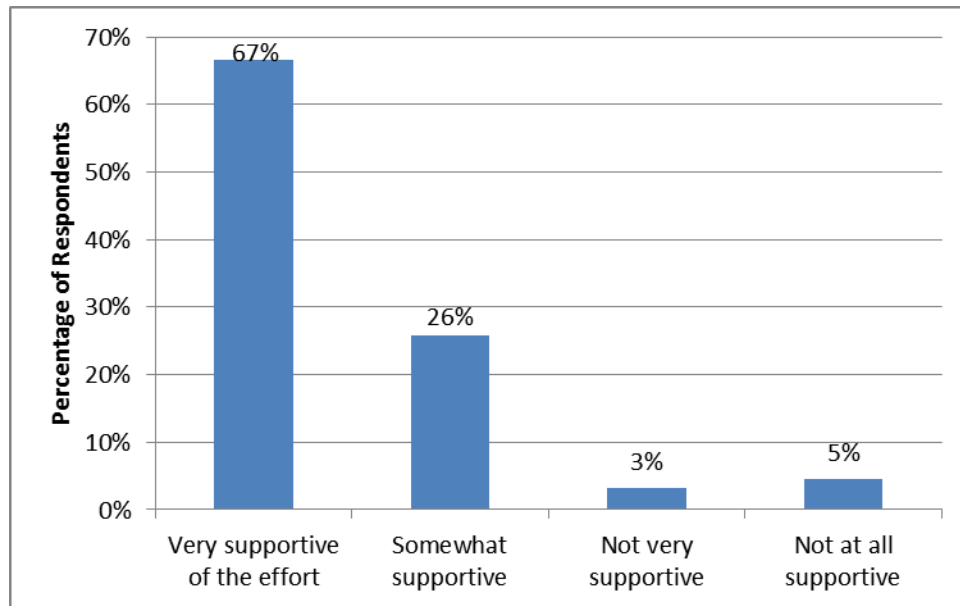
Figure 22: Satisfaction with Program Features, Non-Lighting Participants



Both groups' average program ranking was approximately 9 (out of 10). The selection of measures—whether specific lighting options or other efficient measures—rated the lowest in both survey groups with a rating just above 8, which still indicates strong satisfaction.

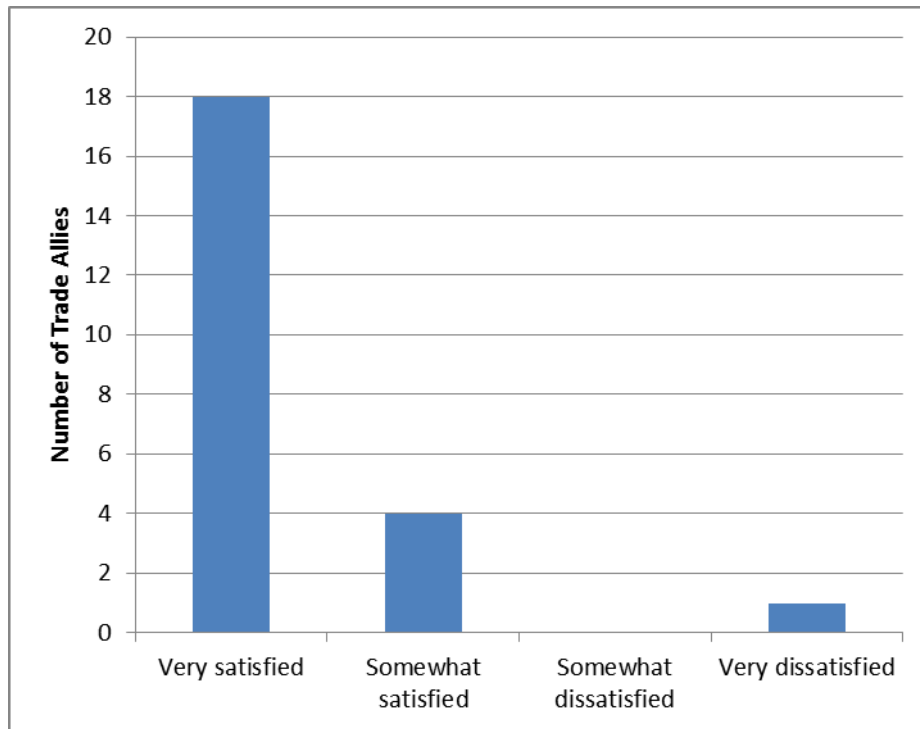
The Evaluation Team asked CFL Bulb Drop customers whether or not they supported the effort. As Figure 23 shows, the majority (92%) reported they were somewhat or very supportive of the program.

Figure 23: How supportive are you of Energizing Indiana's giveaway of CFLs? (n=221)



Trade Allies were also satisfied with the program. Figure 24 shows overall Trade Ally satisfaction.

Figure 24: How satisfied are you with the program overall? (n=24)



Program Materials Review

The Evaluation Team assessed Energizing Indiana’s C&I marketing materials, which included brochures, customer letters, project case studies, and the C&I webpage.

The materials review included the following steps:

- Reviewed Energizing Indiana marketing materials
- Analyzed those materials against marketing best practices (Table 151)

The Conclusions and Recommendations Section provides suggestions for aligning Energizing Indiana’s efforts with industry best practices.

Table 151: Best Practice Focus Areas

Program Marketing Materials	Program details are clear and comprehensible	Program participation benefits are clear and comprehensible	Target audience is identifiable	There is a direct call to action (CTA)	Material provides easy next steps	Material is visually appealing
1. CFL Direct Mail Brochure (NIPSCO)	3	4	4	4	4	4
2. General Overview Brochure	3	4	4	4	4	4
3. Energizing Indiana CI Prescriptive Rebate brochure	4	4	4	4	4	4
4. HVAC Letter	4	4	4	4	4	3
5. T12 Letter	3	4	4	4	4	3
6. AmeriQual Case Study	4	4	4	2	2	4
7. Glenbrook Square Case Study	4	4	4	2	2	4
8. Coastal Partners Case Study	3	4	4	2	2	4

Key: 1 = Very little; 2 = Somewhat; 3 = Mostly; 4 = With certainty

Print Materials

The Team evaluated Energizing Indiana’s print marketing materials by assessing: 1) content comprehensiveness; 2) identifiable audience presence; 3) participation benefits communication; 4) presence of a call to action (CTA); 5) clear information about next steps; and 6) visual appeal.

Most of Energizing Indiana’s print materials fulfill the qualifications listed above. All of the brochures, letters, and case studies include program information that directly communicates participation benefits to a defined audience. These materials provide readers with instructions to visit Energizing Indiana’s website for more program information and application forms. The materials are visually appealing and display consistent text layout, typeface, font size, stylization for program names, and color palettes.

While most materials are excellent overall, several (1, 2, 5, and 8 from Table 151 above) are not as clear as they could be in terms of program details and provision of concrete rebate information. The CFL Direct Mail Brochure, for instance, states that Energizing Indiana will “incentivize the upgrading of an older heating...system,” and that it will “incentivize the purchase of ENERGY STAR appliances.” While the C&I program does provide incentives, a more clear and comprehensible term for marketing purposes may be “rebate,” which is also consistent with the name of the program. Further, materials 1, 2, 5, and 8 do not list any specific rebate dollar value, which makes it difficult for audiences to relate the suggested efficiency improvements to concrete monetary savings.

The project case studies (6, 7, and 8 from Table 151 above) provide specific program details, including savings dollar values, and also are visually appealing. However, they lack a clearly visible CTA and

information about the customer's next steps. All marketing materials should have a direct CTA that instructs the audience to perform a desired act, such as visiting a website for more information. On the case study sheets, the only CTA is at the bottom, where Energizing Indiana's website is mentioned in very small grey text. This text is easy to miss or skim over when reading, and thus is not very effective.

Website

The Energizing Indiana C&I Prescriptive Rebates program webpage is the central source for program participation information. It provides application forms, charts and worksheets to determine rebate amounts, the program policies and procedures manual, a Trade Ally database, links to submit applications online, and a link to submit requests to talk to a representative.

The webpage is useful and actionable because it allows visitors to access information and it directly submits applications. However, the webpage's content is not organized in an intuitive and easily navigable way. The page top has a very short C&I program introduction, which includes program objectives. However, this introduction is segmented by application fields for contact information for those who are interested in speaking with a representative. Breaking up the introduction and program description makes the webpage confusing for readers.

Further, the webpage does not include descriptions of the three rebate categories (Lighting, HVAC/VFD, and ENERGY STAR), but only has links to associated application forms and charts.

Program-Tracking Database

The Evaluation Team encountered numerous difficulties over the course of the evaluation while trying to access and use accurate program-tracking data. The Team learned during its interviews with implementation staff, as well as through regular communication with implementation IT staff, about certain concerns that existed with the database. Chief among these concerns was that the "portal" model that had been in place did not provide information down to the measure-level that the Team required for its analysis. Additionally, extracts were not provided in a timely fashion. The Team was able to work with the Program Implementer to acquire data in "bulk" format, transferred in an encrypted file over a secure FTP; however, the new format presented further concerns, despite its being displayed at the measure level.

The new data format was an improvement from the original information provided through the portal, and the Team was able to get each extract in a timelier manner. However, the Team did still encounter several problems. As seen in

Figure 25, information in the "New Fixture" field is identical to the "Existing Fixture" field.

Figure 25: Example of Data Extract

DF	DG	DH	DI
Existing Fixture	Existing Quantity	Existing Wattage	New Fixture
Switch	11		Switch
400 W HID	247	456	400 W HID
Switch	0		Switch
T12 4ft 4 Lamp	58	164	T12 4ft 4 Lamp
400W MH	54	461	400W MH
T12 8ft 2 Lamp	9	138	T12 8ft 2 Lamp
T12 4ft 4 Lamp	58	164	T12 4ft 4 Lamp
400W MH	54	461	400W MH
T12 8ft 2 Lamp	9	138	T12 8ft 2 Lamp

The Team found that each monthly extract continued to add to problems such as the one displayed above, thus making it increasingly difficult to analyze and process the data. Furthermore, this increased “scrubbing” effort added significant amounts of time to the process.

The Team requested that the final database be delivered by January 18, 2013. The database that was delivered was in an unusable state; thus, the Team requested a better version. While this request was being processed, the Team was told to manually extract and combine data extracts in order to build the full dataset. This would have required 72 (6 programs across 12 months) merges to take place.

The Team did receive a final database on Friday, February 1, 2013. This database, however, was completely different from what had been previously provided. Changes included new participants who had participated in the program but did not appear in earlier extracts; field names that had been expanded and no longer matched old field names; and added measures. The Team began its analysis on the following Monday, February 4, leaving just three weeks to examine, scrub, and analyze the program impacts.

The Team was encouraged, and continues to be encouraged, by the willingness of the implementation staff to work toward clean extracts and a consistent system to be used by both utilities and evaluators. However, concerns still exist about the consistency and reliability of the program data.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion 1. While the Program Implementer would like to target eligible customers directly, most customers still learn about the program through Trade Allies. The utilities will not allow the Program Implementer to directly contact many of their C&I customers, which reduces the program’s potential customer base.

Recommendation 1. Energizing Indiana should work more closely with partner utilities to engage C&I customers. The Program Implementer needs to work more closely with utility key accounts staff to ensure all eligible customers know about the program; the Trade Ally network cannot bring enough customers into the program to meet its goals.

Conclusion 2. Participating customers are highly satisfied and have few program concerns.

Conclusion 3. Energizing Indiana and the Program Implementer could not provide accurate, timely program data to the Evaluation Team. Data extracts lacked consistency and did not include measure-level data. The final data pull was not in the previous formats and contained measure entries not previously shown.

Recommendation 2. Energizing Indiana and the Program Implementer need to develop a comprehensive database that includes measure-level data and is more accessible than the current system.

Conclusion 4. Energizing Indiana's C&I program marketing materials follow best practices overall, but several brochures describe the program vaguely, and the case studies do not include clear CTAs.

Recommendation 3: Revise marketing materials to:

- Explicitly mention rebate offerings for all programs described in brochures
- List dollar values for 2-3 rebates per program as examples of potential savings on brochures
- Make the CTA in case studies clearly visible through a larger, darker font; also mention the website multiple times (i.e., on the top and bottom of the page)

Conclusion 5: The C&I webpage holds useful information and actionable resources, but is not organized in an intuitive and easily navigable way.

Recommendation 4: Energizing Indiana should make the following webpage changes:

- Divide the web content into 1) program introductions, information, and resources, such as application forms and charts; and 2) immediately actionable content, such as links to submit applications and links to request more information
- Provide a more detailed description of the C&I program at the top of the webpage
- Provide descriptions for each sub-program
- Post case study documents beneath the headers of relevant sub-programs

Conclusion 6: The C&I program offers a sweeping array of measures to all business sizes.

Recommendation 5: Dividing the C&I program into targeted sectors will help businesses manage their energy efficiency options. A structure where the building type or sector is listed helps organize the approach for the end user. The business would access its business type and find a list of common system types and efficiency recommendations. The example below shows one way of structuring this approach.

- [Grocery & Convenience](#)
- [Government](#)
- [Healthcare](#)
- [Higher education](#)
- [Non-profit & faith-based organizations](#)
- [Office buildings](#)
- [Retail](#)

If the company is a grocery store, they would click on that link and find another list of measures appropriate to their business type. Such as:

- [Lighting Fixtures & Controls](#)
- [Variable Frequency Motor Drives](#)
- [Chillers](#)
- [HVAC Tune-up](#)
- [Packaged HVAC Units](#)
- [Commercial Water Heating](#)
- [Commercial Refrigeration](#)
- [Specialized Controls](#)

Some utilities go on to list key equipment types and the average savings and payback period. While this is not entirely necessary, it is a suggestion for future consideration.

COST-EFFECTIVENESS

INTRODUCTION

Evaluating the cost-effectiveness of energy efficiency programs involves following the procedures specified in the Indiana Evaluation Framework. The cost-effectiveness approaches in the Framework are based to a large degree on the California Standard Practice Manual (SPM). However, the Indiana Evaluation Framework takes precedence over the SPM when applicable. Adherence to the procedures in the Framework and the SPM may follow a number of paths; but, two approaches are the most prevalent. One involves evaluating the ex-ante cost-effectiveness, i.e., the cost-effectiveness of proposed programs. The second involves evaluating energy efficiency programs on an ex-post basis. The ex-ante approach uses projected measure impacts, while the ex-post approach uses actual results from the evaluation, measurement, and verification process (EM&V). This latter or ex-post approach is utilized for the cost-effectiveness analysis in this report and is consistent with the analysis requirements of the Indiana Evaluation Framework.

This report details the results of the cost-effectiveness analysis for the Energizing Indiana Statewide Core programs for each utility as well as an aggregation benefit cost analysis at the combined program level and the portfolio level for the efforts implemented in 2012. This benefit cost analysis is for the first year of the Third Party Administrator's (TPA) operations. This report includes the costs associated with the development, start-up, rollout, and operational adjustments associated with the first year. Typically, as programs mature, programs become more cost-effective as the start-up costs and operational inefficiencies are combined with the typically more effective efforts in the years following the start-up year. The benefit cost assessment presented in this report includes the costs of the TPA to implement the program, including their administrative, marketing and overhead costs. It does not include the administrative, monitoring and tracking costs of the utilities overseeing the TPA's efforts. From this perspective, the benefit cost assessment is that of the TPA's rather than that of the TPA plus the utility's oversight or management functions.

The benefit cost analysis will be repeated each year of the three year program cycle to reflect the accumulated costs and benefits of the programs as they are implemented. That is, the analysis for year two will include the costs of year one plus year two, and the benefits from year one and year two. The analysis from the third year will include all program cycle costs (3 years) and all benefits achieved over that three-year cycle. The benefit cost assessments are guided by the Indiana Evaluation Framework of September 2012 as up-dated February 2013.

Cost-effectiveness analysis is a form of economic analysis that compares the relative costs and benefits of two or more courses of action. In the Energy Efficiency (EE) industry, it is an indicator of the energy supply relative performance or economic attractiveness of any energy efficiency investment or practice when compared to the costs of energy produced and delivered in the absence of such an investment, but without consideration of the value or costs of non-energy benefits or non-included externalities. The typical cost-effectiveness formula provides an economic comparison of costs and benefits.

The cost-effectiveness analysis of energy efficiency and demand-response programs are conducted by relying on the Indiana Evaluation Framework's benefit cost test results for each program as well as for the portfolio level for each utility and the State of Indiana. These tests are not necessarily used to recover costs but to provide information to improve decisions on which program(s) to adjust or continue to offer within the energy efficiency portfolio. The required inputs and assumptions are outlined below. The

results of this analysis include the Indiana Framework's primary tests at the program and portfolio level. All of the tests are reported based upon the net-present value (NPV) of the benefits and costs. These tests employ the full effective useful life of the measures installed and the utility's cost of capital, as if program funds were acquired via a utility loan from capital supply markets at a rate similar to that which would be borrowed to construct a new generation plant.

COST-EFFECTIVENESS MODEL DESCRIPTION

EM&V and cost-effectiveness modeling are critical to the long-term success of energy efficiency programs. To understand cost-effectiveness, the utility/program administrator should have a model that can evaluate changes to both the individual programs and to the portfolio. This includes but is not limited to the ability to evaluate the impact on cost-effectiveness of changes in numerous factors such as: incentive levels, participant levels, measure savings, measure costs, avoided costs, end-use load shapes, coincident peak factors, net-to-gross factors, administrative costs, and the addition or deletion of measures or programs.

To provide the best and most accurate demand side management (DSM)/demand-response (DR)/energy efficiency portfolio cost-effectiveness modeling, the evaluation team used DSMore. DSMore is considered the leading DSM/energy efficiency benefit cost modeling tool in the country. The DSMore tool, developed by Integral Analytics (IA), is currently being used by utilities in approximately 35 states and by numerous state regulatory commissions. Some of the leading users of the tool in the country include Duke Energy, Xcel, and American Electric Power. DSMore is the only tool in the country that captures hourly price and load volatility across multiple years of weather which is needed to assess the true cost-effectiveness of the programs under expected supply and load conditions, even in extreme weather situations.

In its simplest form, energy efficiency cost-effectiveness is measured by comparing the benefits of an investment with the costs. There are five primary cost-effectiveness tests that may be employed in energy efficiency program evaluation. These five cost-effectiveness tests are the participant cost test (PCT), the utility cost test (UCT) sometimes called the program administrator cost test, the ratepayer impact measure test (RIM), the total resource cost test (TRC), and the societal cost test (SCT). However, for purposes of this EM&V analysis, the societal cost test will not be conducted since estimates of environmental and other non-energy costs and benefits will not be available.

Each of the four remaining tests considers the impacts of energy efficiency programs from different points of view in the energy system. Each test provides a single stakeholder perspective; however, taken together the tests can provide a comprehensive view of the program. The tests are also used to help program planners improve the program design by answering these questions. Is the program cost-effective overall? Are some costs or incentives too high or too low? What will be the impact on customer rates?

Each cost-effectiveness test shares a common structure. Each test compares the total benefits and the total costs in dollars from a certain point of view to determine whether or not the overall benefits exceed the costs. A test passes cost-effectiveness if the benefit-to-cost ratio is greater than one, and fails if it is less than one.

$$\text{Benefit - Cost Ratio} = \frac{\text{Benefits}}{\text{Costs}} = \frac{\text{NPV } \sum \text{benefits } (\$)}{\text{NPV } \sum \text{costs } (\$)}$$

The two tables below provide overview information on the four tests utilized in this report.

Table 152: Cost-effectiveness Test Overview

Cost-effectiveness Test	Objective	Comparison
Participant Cost Test (PCT)	Are there positive benefits to the customer?	Costs and Benefits of customer installing measure
Utility/Program Administrator Cost Test (UCT)	Will utility bills increase?	Program administration cost to achieve supply-side resource costs
Ratepayer Impact Measure Test (RIM)	Will utility rates increase?	Program administration cost and utility bill reductions to achieve supply-side resource costs
Total Resource Cost Test (TRC)	Will the total cost of energy in the utility service territory decrease?	Program administrator and customer costs to achieve utility resource savings

Table 153: Cost-effectiveness Test Overview

Costs and Benefits	PCT	UCT	RIM	TRC
Avoided energy costs (fuel, O&M of power plants and T&D lines)		Benefit	Benefit	Benefit
Avoided capacity costs (constructing power plants, T&D lines, pipelines)		Benefit	Benefit	Benefit
Other benefits (fossil fuel savings, water savings, equipment O&M, etc.)				Benefit
Externalities (environmental benefits like emissions reductions)				
Participants' incremental cost (above baseline) of efficient equipment	Cost			Cost
Program administration costs (staff, marketing, etc.)		Cost	Cost	Cost
Incentives (rebates)	Benefit	Cost	Cost	
Lost utility revenue / lower energy bills (due to lower sales)	Benefit		Cost	

The cost-effectiveness tests examine the measure from different perspectives. The following formulas describe the tests again using the terminology from DSMore.

$$\text{Utility Test} = \frac{\text{Avoided Costs}}{\text{Utility Costs}}$$

$$\text{TRC Test} = \frac{\text{Avoided Costs} + \text{Tax Saved}}{\text{Utility Costs} + \text{Participant Costs Net of Incentives}}$$

$$\text{RIM Test} = \frac{\text{Avoided Costs}}{\text{Utility Costs} + \text{Lost Revenue}}$$

$$\text{RIM (Net Fuel) Test} = \frac{\text{Avoided Costs}}{\text{Utility Costs} + \text{Lost Revenue Net of Fuel}}$$

$$\text{Participant Test} = \frac{\text{Lost Revenue} + \text{Incentives} + \text{Tax Savings}}{\text{Participant Costs}}$$

OVERVIEW OF DSMORE

DSMore is a financial analysis tool designed to evaluate the costs, benefits, and risks of energy efficiency programs and measures. DSMore estimates the value of an energy efficiency measure at an hourly level across distributions of weather and/or energy costs or prices. By examining energy efficiency performance and cost-effectiveness over a wide variety of weather and cost conditions, the evaluator is in a better position to measure the risks and benefits of the energy efficiency measures.

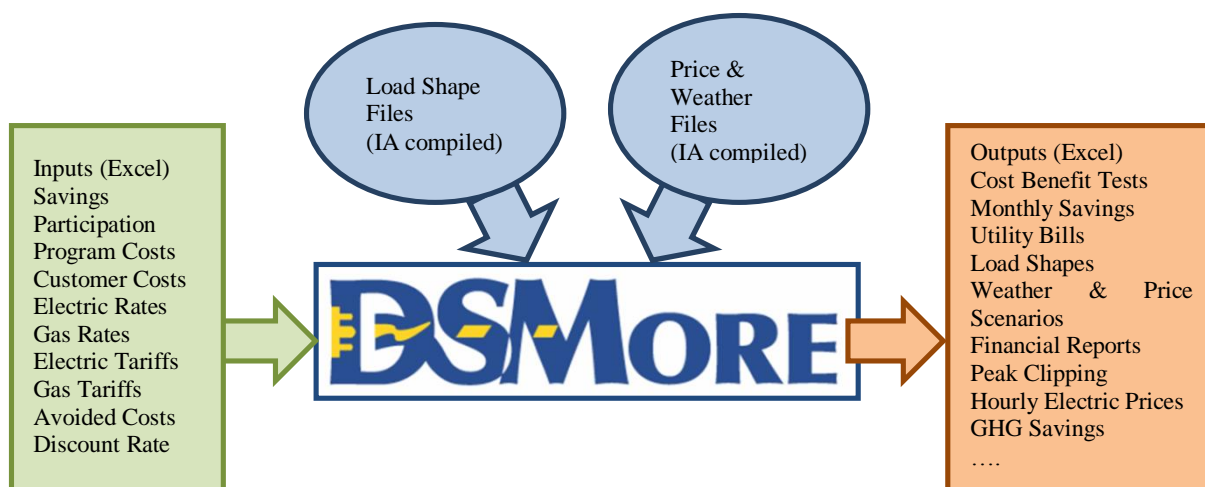
The analysis of energy efficiency cost-effectiveness has traditionally focused primarily on the calculation of specific metrics, often referred to as the California Standard tests: Utility Cost Test (“UCT”), Ratepayer Impact Measure (“RIM”) Test, Total Resource Cost (“TRC”) Test, Participant Cost Test (PCT), and Societal Test (SCT). DSMore provides the results of those tests for any type of energy efficiency program (demand-response and/or energy saving).

The test results are also provided for a range of weather conditions, including normal weather, and under various cost and market price conditions. Since DSMore is designed to be able to analyze extreme conditions, one can obtain a distribution of cost-effectiveness outcomes or expectations. Avoided costs for energy efficiency tend to increase with increasing market prices and/or more extreme weather conditions due to the covariance between load and costs/prices. Understanding the manner in which energy efficiency cost-effectiveness varies under these conditions allows a more precise valuation of energy efficiency programs and demand-response programs. Using valuation or modeling methods which use averages (e.g., annual use, monthly use, weather normal load profiles) instead of actual and forecasted hourly usage and avoided costs, by definition, will under-value energy efficiency and DSM programs which tend to exhibit higher savings during times of higher avoided costs (e.g., heating, ventilation, and air conditioning, typically referred to as HVAC, weatherization, demand-response). For programs which exhibit energy savings around-the-clock, averaging type methods yield valuation results that are equivalent to DSMore results; however, that type of program is not prevalent (exceptions include lighting that is on all hours, refrigeration, etc.). In all other cases, averaging based methods will yield cost-effectiveness test results that are lower than their actual value. DSMore methods and algorithms avoid this potential error through its very granular use of hourly energy savings and hourly avoided costs, linked via the same set of actual, local hourly weather histories.

Generally, the DSMore model requires the user to input specific information regarding the energy efficiency measure or program to be analyzed as well as the cost and rate information of the utility. These inputs enable one to then analyze the cost-effectiveness of the measure or program.

DSMore uses a set of program inputs, entered through the first two tabs (worksheets) of an Excel interface, combined with preconfigured load-shape and price data to calculate the cost-effectiveness tests as well as other program analyses. IA produces a custom set of hourly loads and prices over a 30+ year period for each customer. The load files are specific to the customer class served by the energy efficiency program. The user enters the measure information data into Excel, selects the appropriate load file, selects the appropriate price file and executes DSMore. DSMore uses the measure information data, the load file, and the price file to calculate the cost-effectiveness tests, and then exports the results into the same Excel workbook (i.e., worksheet tabs 3 through 8), but within the same Excel file as the measure inputs. The figure below provides an overview of the DSMore application and how the key inputs are related to the application engine.

Figure 26: DSMore Overview



ANALYTICAL APPROACH

To capture the extreme weather/price scenarios and, therefore, the full value of the DSM/DR/EE measures, DSMore uses hourly loads and prices. Using average loads and pricing misses the value at peak times, but more importantly, it also understates the total measure value. Using the hourly analysis captures both the peak value and the total value of the measure.

Consider two scenarios (See table below): one using the *average* load and average prices and another scenario using *hourly* loads and prices. In both scenarios the average load is the same (2 MW) and the average price is also the same (\$50/MWh) over the time period. However, the total value of the hourly analysis is greater (\$500 versus \$620). The actual value of the program in this example is almost 25% higher when hourly costs are used to estimate benefits compared to the use of average pricing.

Table 154: Average vs. Hourly Valuation

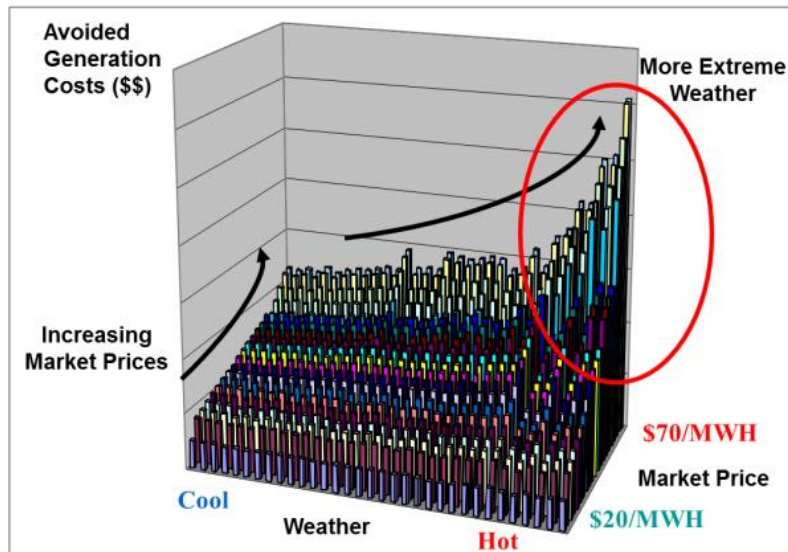
Hour	Average Loads and Prices			Hourly Loads and Prices		
	MW	\$/MWH	Total \$	MW	\$/MWH	Total \$
1	2	\$50	\$100	1	\$20	\$20
2	2	\$50	\$100	1	\$20	\$20
3	2	\$50	\$100	2	\$50	\$100
4	2	\$50	\$100	3	\$80	\$240
5	2	\$50	\$100	3	\$80	\$240
Average	2	\$50		2	\$50	
Total			\$500			\$620

To perform this hourly analysis, DSMore correlates historic loads and prices to actual historic weather. These relationships (along with the covariances) between loads, weather and price, and the probability distributions of these relationships, are used within DSMore to calculate approximately 700 different market/load/price scenarios, each with a unique test result. DSMore reports the endpoints or extremes of this distribution, for convenience, reducing the number of test results reported in the Excel output, to 5 to 9 test results, vs. 700. Of course, the user can simply adhere to one test result, which reflects their preferred set of avoided costs, across weather normal conditions, too.

One of the more versatile functions of DSMore is its ability to simultaneously assess multiple cost-effectiveness assessments over many different avoided cost scenarios. For each of the 30 years of weather scenarios, DSMore assesses 21 different electric market/cost/price scenarios. Typically, DSMore uses 33 years of weather as a default number of weather year scenarios, yielding 693 (33 weather scenarios x 21 market scenarios) cost-effectiveness test results to reflect a full spectrum of possible valuations of a particular program, or about 700 in total.

The figure below shows how the approximately 700 weather/price scenarios capture the extremes, which an averaging type of avoided cost method will ignore.

Figure 27: Weather & Market Scenarios



The average value of these approximately 700 tests represents an average, weather normal expectation across all possible market prices and forward cost scenarios. Selecting one market price scenario (today's value) provides test results for the current market, this year, but across 30+ weather scenarios. Using fewer than 30 years of weather jeopardizes accuracy of the estimation of weather normal and extreme weather effects. DSMore strives to reflect an appropriate range, or distribution of highs to lows, regarding weather. DSMore insures that the appropriately extreme hourly weather patterns are reflected, and valued, given historical observed extreme hourly weather.

With respect to forward market prices, DSMore uses 21 different forward curves. The model develops 21 such that the first set, or column, of avoided costs or prices, reflects traditional cost based avoided costs (i.e., system lambda, avoided production costs), leaving 20 columns for 20 different forward market price curves, ranging from low to high (e.g., \$30/MWH to \$70/MWH, on average over 8,760 hours). The use of 20 insures that approximately every 5th percentile of increase in the forward curves can be observed. We use 5th percentiles because it is generally safe to interpolate test results between, say, the 45th percentile and the 50th percentile, linearly. However, it is not appropriate to linearly interpolate test results between, say, the 25th percentile and the 80th percentile. Energy prices are notoriously non-linear (i.e., peak prices are much more volatile than off-peak prices).

The key benefit to valuing energy efficiency across such a wide range of future cost and weather conditions lies in the ability of this approach to quantify not only short run cost-effectiveness, but long term predictions as well. The Option Test result reported by DSMore provides the long run cost-effectiveness perspective. Essentially, the Option Test result values the programs across 21 future possible sets of avoided costs, and across 30 to 40 years of actual hourly weather patterns. Traditionally, utilities only calculated one test result for the current year avoided costs. But, energy prices tend to "boom" and "bust" over time, reaching high price conditions during times of short supply (e.g., 1999, 2000) and low avoided cost conditions during times of excess supply (e.g., 2003, 2009). By valuing the energy efficiency programs across all possible future avoided cost possibilities, we are better able to determine if the programs will be cost-effective in the face of all these future possibilities, instead of just the current year. Both the short term test results and the long run test results are meaningful. But if a utility observes that the short run, current year test result is, say, .9, and the long run Option Test result is

1.3, then one might consider retaining this program for another couple years versus stopping the program. The reason that the long term test result is called the Option Test is that the energy savings can be viewed as an option (albeit not executable, since, for example, the lighting equipment is already installed and cannot be removed) against having to pay for possible future higher avoided cost conditions.

INPUTS TO COST EFFECTIVENESS ANALYSIS

Best practice cost-effectiveness modeling starts with hourly prices and hourly energy savings from the specific measures/technologies being considered, and then correlates both to weather. Using DSMore, the results look at over 30 years of historic weather variability to get the full weather variances appropriately modeled. In turn, this allows the model to capture the low probability, but high consequence weather events and apply appropriate value to them. Thus, a more accurate view of the value of the efficiency measure can be captured in comparison to other alternative supply options. Additionally, in order to complete the analysis, several inputs are required. These are summarized in the section below.

The foundation of the hourly price analysis used for the study is two years of historic hourly price data, matched with hourly weather to measure the price to weather covariance. The analysis is able to measure the overall variation and that portion attributable to weather, arriving at a weather normal price distribution. Price variation is a result of several uncertain variables, including weather. Using over 30 years of weather data regressed from two years of actual price data allows the analysis to measure the full range of possible outcomes, reflected in the DSMore results as Minimum, Today's (expected) and Maximum test ratios.

PROGRAM RELATED INPUTS

Program inputs into the model include participation rates, incentives paid, load savings of the measure, life of the measure, implementation costs, administrative costs and incremental costs to the participant of the high efficiency measure. These inputs were derived from the EM&V activities and supplied by the EM&V project team to IA for the cost-effectiveness analysis. The measured kWh savings are applied to the appropriate hours for that customer, based on the load curves of that customer group most likely to install the measure. For example, the commercial load curve is used for commercial measures and various commercial load curves may be used depending upon the type of measure installed and its size.

Values of these savings by hour are calculated based on that hour's market value for the life of the measure given the escalation rates assumed. This avoided cost is then present valued to understand the dollar value in today's dollars for those savings. These present values are then used by the model to determine the cost-effectiveness test results.

The EM&V project team also provided the program costs incurred by the third party administrator for each utility by program. The program costs included in the cost-effectiveness analysis presented in this report represents only the costs incurred by the third party administrator and not any additional costs incurred by any of the utilities.¹³⁰ However, cost effectiveness assessments, including additional costs incurred by utilities, was provided separately for those utilities requesting that analysis.

¹³⁰ The cost information employed for each program by utility may be found in the "2012 Energizing Indiana Programs EM&V Report May 3, 2012 Final Report." See the specific tables for the Home Energy Audit program, the Low Income Weatherization program, the School Building Assessments and School Energy Efficiency Kit programs, the Residential Lighting program, and for the Commercial & Industrial Incentives program.

EFFECTIVE USEFUL LIFE

Measures installed via energy efficiency programs shall have the energy savings counted and valued over the full effective useful life (EUL) of the installed measures. In addition, the energy savings will be incorporated into the cost-effectiveness analysis for those technologies with a remaining useful life (RUL). In such situations, the energy savings will reflect a higher impact for the RUL and then step down to a level consistent with that associated with the current baseline for the rest of the EUL.

SPILLOVER AND FREE RIDERS

“Spillover” is the term used in this report to describe the short term energy savings of participants that are caused by the program’s activities, but are not captured in the tracking of the program’s direct energy savings. An example might be a customer who is influenced by a program and who then buys two units of a qualifying piece of efficient equipment, but obtains a rebate for only one of those units. Another example is a participant who does participate in a program, and obtains a rebate in one location, but then replicates the program induced purchase decision in their building next door, but does not apply for a rebate for that purchase that was caused by the program. In these cases the customer is influenced by the programs to the extent that their short term actions induced by a program can “spillover” into other purchases or behaviors that are not rebated or tracked by a program yet were caused by the program and result in improved efficiency (energy savings). The spillover savings identified in this evaluation effort and included in the benefit cost assessment are those short term actions that were taken between the participation period and the time of the evaluation effort that were documented in the evaluation. As a result, the spillover included in this analysis is only a fraction of the total spillover that may be achieved. The longer term spillover that results from actions taken as a result of the program over many years, and the spillover that is associated with how programs change the way markets operate are not included in this assessment. The longer term market effects will be assessed in 2015 and these savings will be added to the assessment at the end of the 3 year program cycle.

“Free Riders” are people who participate in the program but would have installed the energy efficient piece of equipment without the program. All programs have free riders as these are often the “early adopters” of a technology and have many different motivations beyond the program. However, program designs strive to increase the number of non-free riders through several methods. First, incentives may be set at levels high enough to entice those who would not have participated due to financial concerns. Second, some measures are often eliminated that are known to have high free ridership. For example residential ENERGY STAR refrigerators are often eliminated even though they pass the cost benefit analysis because there already is a high adoption rate of these units in the market and other studies have shown high free rider rates. Third, guidelines are established for minimum and maximum paybacks knowing that customers with very short paybacks should be installing the measure anyway due to the cost-effectiveness without the incentives and very long paybacks are being installed for other non-energy reasons. For this report, on the cost-effectiveness ratios, we net the impacts of free drivers and free riders.

UTILITY INPUTS

For utility information, DSMore needs utility rates, escalation rates, discount rates for the utility, society and the participant, and avoided costs. For this report, utilities in the DSMCC supplied the values used for avoided costs, escalation rates, discount rates, loss ratios, and electric rates.

AVOIDED COSTS

The recommended avoided cost framework develops each hour's electricity valuation using a bottom-up approach to quantify an hourly avoided cost as the sum of elements of forward-looking incremental costs for that hour. The resulting hourly electricity avoided costs are location-specific and vary by hour of day, day of week, and time of year. The results are weather dependent requiring a weather normal outcome and a distribution of outcomes corresponding to the weather related variation in outcomes. The location and time variations by cost component are as follows:

1. Generation Costs – variable by hour and location. The annual forecast of generation costs avoided is allocated according to an hourly price shape obtained from historic participant specific data that reflect a workably competitive market environment and expected weather variation. These hourly costs further vary by location, depending on locational capacity constraints and fuel costs. The average annual prices are provided by each utility with Core programs.
2. Capacity Costs – associated with generation or capacity markets reflect the cost of acquiring that additional capacity. These cost estimates are provided by each utility.
3. Transmission and Distribution (T&D) Costs – variable by hour and location. Non-peak hours have zero avoided T&D capacity costs, reflecting that T&D capacity investments are made to serve peak hours. These cost estimates are also provided by each utility.

NET PRESENT VALUE

Cost-effectiveness of an energy efficiency measure will be calculated based on the net present value of the costs and benefits valued in each test discounted over the effective useful life of the measures installed.

PROGRAMS

Each of the Core programs are evaluated for cost-effectiveness as implemented within each utility service area. The following programs are evaluated for cost-effectiveness:

Residential Programs

- Residential Lighting
- Low Income Weatherization
- Home Energy Audit
- School Energy Efficiency Kit

Non-Residential Program

- School Building Assessments
- Commercial & Industrial Incentives

Information was collected through the EM&V process by utility on the costs and impacts associated with each of the programs.

RESULTS

As part of the EM&V process, the use of DSMore provides energy efficiency planners with insights on the actual workings of the energy efficiency programs. The following tables provide the results of the cost-effectiveness analyses for each program for the PCT, UCT, RIM, and TRC tests. Results are reported by utility at the program level as well as for the utility portfolio level and an aggregation of all the programs for the State of Indiana.

DUKE ENERGY INDIANA

For Duke Energy Indiana, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. In addition, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit. All of the programs fail the RIM test.

Note that PCT test results are not available (NA) for the Low Income Weatherization, Home Energy Audit, School Energy Efficiency Kit, and School Building Assessments programs since there are no participant costs involved. This occurs for the results for each utility below as well.

Table 155: Results for Duke Energy Indiana

Cost Effectiveness for Duke Energy Indiana Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	4.10	3.53	0.94	2.94
Low Income Weatherization	NA	0.64	0.44	0.64
Home Energy Audit	NA	0.55	0.39	0.55
School Energy Efficiency Kit	NA	2.43	0.86	2.43
Non-Residential Programs				
School Building Assessments	NA	1.51	0.63	1.51
Commercial & Industrial Incentives	3.28	2.98	0.99	2.09
Total Portfolio	5.05	2.20	0.84	1.89

INDIANA & MICHIGAN POWER

For Indiana & Michigan, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. With regard to the individual programs, the Low Income Weatherization and Home Energy Audit are not cost-effective. All of the other individual programs are cost-effective. However, none of the programs pass the RIM test.

Table 156: Results for Indiana & Michigan

Cost Effectiveness for Indiana & Michigan Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	5.87	3.09	0.58	2.56
Low Income Weatherization	NA	0.58	0.32	0.58
Home Energy Audit	NA	0.48	0.29	0.48
School Energy Efficiency Kit	NA	1.81	0.54	1.81
Non-Residential Programs				
School Building Assessments	NA	1.20	0.51	1.20
Commercial & Industrial Incentives	3.09	2.49	0.70	1.66
Total Portfolio	4.89	1.77	0.57	1.45

INDIANA MUNICIPAL POWER AUTHORITY

For IMPA, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. In addition, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit. The Commercial & Industrial Incentives program slightly passes the RIM test.

Table 157: Results for IMPA

Cost Effectiveness for IMPA Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	5.99	2.99	0.57	2.53
Low Income Weatherization	NA	0.81	0.44	0.81
Home Energy Audit	NA	0.61	0.37	0.61
School Energy Efficiency Kit	NA	2.53	0.70	2.53
Non-Residential Programs				
School Building Assessments	NA	1.55	0.69	1.55
Commercial & Industrial Incentives	3.75	3.65	1.02	2.54
Total Portfolio	5.42	2.43	0.78	2.00

INDIANAPOLIS POWER & LIGHT

For Indianapolis Power & Light, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. In addition, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit.

Table 158: Results for IP&L

Cost Effectiveness for Indianapolis Power & Light Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	2.38	3.09	1.23	2.56
Low Income Weatherization	NA	0.53	0.40	0.53
Home Energy Audit	NA	0.38	0.31	0.38
School Energy Efficiency Kit	NA	1.68	0.86	1.68
Non-Residential Programs				
School Building Assessments	NA	1.22	0.76	1.22
Commercial & Industrial Incentives	1.84	2.65	1.15	1.76
Total Portfolio	2.71	1.41	0.82	1.23

NIPSCO

For NIPSCO, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. In addition, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit. None of the programs pass the RIM test.

Table 159: Results for NIPSCO

Cost Effectiveness for NIPSCO Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	6.13	4.57	0.78	3.70
Low Income Weatherization	NA	0.68	0.41	0.68
Home Energy Audit	NA	0.63	0.38	0.63
School Energy Efficiency Kit	NA	2.24	0.70	2.24
Non-Residential Programs				
School Building Assessments	NA	2.20	0.67	2.20
Commercial & Industrial Incentives	4.37	3.77	0.69	2.68
Total Portfolio	6.40	2.27	0.65	1.98

VECTREN

For Vectren, the portfolio of programs is found to be cost-effective based upon the TRC and UCT tests. In addition, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit. None of the programs pass the RIM test.

Table 160: Results for Vectren

Cost Effectiveness for Vectren Programs: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	8.04	2.49	0.36	1.78
Low Income Weatherization	NA	0.66	0.33	0.66
Home Energy Audit	NA	0.54	0.28	0.54
School Energy Efficiency Kit	NA	2.08	0.47	2.08
Non-Residential Programs				
School Building Assessments	NA	1.47	0.61	1.47
Commercial & Industrial Incentives	7.56	5.50	0.78	3.63
Total Portfolio	10.28	2.05	0.53	1.77

RESULTS FOR THE STATE OF INDIANA

Looking at the Energizing Indiana programs from a State of Indiana perspective, the aggregation of the individual utility portfolios of programs is found to be cost-effective under the PCT, UCT, and TRC Tests. In addition, like with the results for the utilities, all of the individual programs are cost-effective except for Low Income Weatherization and Home Energy Audit.

Table 161: Results for the State of Indiana

State of Indiana Program Cost Effectiveness: 2012				
	PCT	UCT	RIM	TRC
Residential Programs				
Residential Lighting	4.81	3.42	0.77	2.80
Low Income Weatherization	NA	0.64	0.39	0.64
Home Energy Audit	NA	0.50	0.33	0.50
School Energy Efficiency Kit	NA	2.24	0.77	2.24
Non-Residential Programs				
School Building Assessments	NA	1.48	0.64	1.48
Commercial & Industrial Incentives	3.51	3.19	0.86	2.19
Total Portfolio	5.23	2.00	0.71	1.71

CONCLUSIONS

In general, the energy efficiency program portfolios for each of the individual utilities as well as the aggregation to the State of Indiana were found to be cost-effective for the 2012 program year under the PCT, UCT, and TRC tests. Most of the programs were also found to be cost-effective; however, the Low

Income Weatherization and Home Energy Audit programs did not pass cost-effectiveness for any of the program portfolios. At the time this report was being prepared, the DSMCC was working with the TPA on addressing these program design issues.

A. HOME ENERGY AUDIT NET TO GROSS APPROACH

FREE-RIDERSHIP APPROACH FOR INDIANA HOME ENERGY ASSESSMENTS

Free-ridership for measures in the Indiana Core Home Energy Assessment is based on the respondents answers to questions regarding the timing, quantity and prior usage of the measure in question according to the process outlined below. The CFL Free rider battery and scoring matrix is provided below for illustrative purposes.

A gateway question asks survey respondents what their behavior would have been if the measure had not been available. The five available responses are:

- a.) bought the same number of <measure> at the same time
- b.) bought fewer of <measure> at the same time
- c.) bought the same number of <measure> at a later time
- d.) bought fewer of <measure> at a later time
- e.) not bought any <measure>

The free-ridership scores for the answers to this question are as follows:

- a.) bought the same number of <measure> at the same time
 - Participants who indicate that they would have bought the same quantity or efficiency level of <measure> at the same time are assigned 100% free-ridership.
- b.) bought fewer <measure> at the same time
 - Free-ridership for participants who indicate that they would have bought fewer <measure> at the same time is determined by how many <measure> they say they would have purchased in the absence of the program. The number of bulbs that they say they would have purchased in the absence of the program are counted as free rider bulbs.
- c.) bought the same number of <measure> at a later time
 - Free-ridership for participants who indicate that they would have bought the same number of <measure> at a later time is determined by using the number of <measure> that the customer had installed in their homes prior to participating in the program. Free-ridership is assigned to the bulbs such that the longer the time period reported, the lower the level of free-ridership.
- d.) bought fewer of <measure> at a later time
 - Free-ridership for participants that indicate that they would have bought fewer of <measure> at a later time is determined by taking both how many <measure> they say they would have purchased in the absence of the program and the number of <measure> that the customer had installed in their homes prior to participating in the program into consideration.
- e.) not bought any <measure>
 - Participants who indicate that they would not have bought any <measure> are assigned 0% free-ridership.

CFL Free rider Questions

[CFLFR1. Before the home energy assessment, had you already installed any CFLs in your home?

- 1. (Yes)
- 2. (No)

- 98. (Don't know)
- 99. (Refused)

[ASK CFLFR1a IF CFLFR1=1, ELSE SKIP TO CFLFR2]

CFLFR1a. How many CFLs are already installed in your home? [RECORD NUMBER, 98=DK, 99=Refused]

CFLFR2. If you had not received the CFLs that the program gave you during the assessment, would you have...

- a. purchased the same amount of CFLs at the same time
- b. purchased fewer CFLs at the same time
- c. purchased the same amount of CFLs at a later time
- d. purchased fewer CFLs at a later time
- e. not purchased CFLs

[ASK if CFLFR2=b or d]

CFLFR2a. How many would you have purchased on your own? [Record Number]

[ASK if CFLFR2=c or d]

CFLFR2b. When would you have purchased them on your own?

- a. Within a few months
- b. Within a year
- c. More than a year
- 98. Don't know
- 99. Refused

Table 162: Energy Assessment (Audit / Direct Install) Programs Free-ridership Algorithm

Question	Response	Free-ridership Rate
CFLFR2. If you had not received the CFLs that the program gave you during the assessment, would you have...	a.) bought the same number of <measure> at the same time	FR = 100%
	b.) bought fewer <measure> at the same time	FR = CFLFR2a/QR Where QR= Quantity received through the program Expressed as a percent
	c.) bought the same number of <measure> at a later time	FR = (Table 2 multiplier) Expressed as a percent
	d.) bought fewer of <measure> at a later time	FR = [(CFLFR2a/QR) + (Table 2 multiplier)]/2 Where QR = Quantity Received through the program
	e.) not bought any <measure>	FR = 0%

Table 163 S-Curve Relationship Multiplier

CFLR1a. Response	Est. % Free rider score - distribution example A based on S curve relationship
0	0%
1	0%
2	2%
3	5%
4	9%
5	15%
6	23%
7	33%
8	45%
9	60%
10	75%
11	88%
12	95%
13	98%
14	100%
15 or more	100%
Don't know Not Sure	Mean of above at the population level

B. ENERGY EFFICIENT SCHOOLS NET TO GROSS APPROACH

Free-ridership Analysis

Free-ridership was determined using customer responses to a series of questions in the parent/guardian participant survey for the following measures that were provided in the energy efficiency kit:

CFLs (13 Watt and 23 Watt)

Low-Flow Showerhead

Faucet Aerators

LED Night Light

Filter Tone Alarm

The determining questions that provide information on free-ridership were:

1. Is the [KIT MEASURE] currently installed?
2. [IF Q1 = NO] Are you planning on installing the [KIT MEASURE]? (Anyone who did not install or is not planning on installing the kit measure was disqualified from the free-ridership score of that measure.)
3. Did you have any other [KIT MEASURES] installed in your home before receiving the kit?
4. [IF Q3 = YES] How many [KIT MEASURES] were installed at the time of receiving the kit? (Lighting only)
5. Were you planning on purchasing any [KIT MEASURES] before you received the kit?

CFL Free-ridership

Free-ridership ratios based on the survey responses are assigned using a Bass curve based on diffusion of innovation product adoption concepts. Zero pre-installed CFLs corresponds to a free-ridership level of zero percent and 14 or more CFLs corresponds to a free-ridership level of 100 percent (Table 164). Please refer to Section 2: EM&V Methodologies for more detail about the Bass curve and how free-ridership is determined using that curve.

Table 164: CFL Free-ridership Adjustment Determined by S Curve

Number of Pre-Installed CFLs	Free-ridership Pre-installation Adjustment Factor	Number of Customers with Pre-Installed CFLs
0	0%	31
1	2%	3
2	5%	12
3	10%	3
4	20%	8
5	30%	2
6	40%	4
7	50%	2
8	60%	3
9	70%	0

Number of Pre-Installed CFLs	Free-ridership Pre-installation Adjustment Factor	Number of Customers with Pre-Installed CFLs
10	80%	5
11	90%	0
12	95%	2
13	98%	0
14 or more	100%	9

In addition to the pre-installation adjustment factor, the Evaluation Team applied a free-ridership multiplier based on whether or not respondents indicated they had planned to purchase CFLs for their home before they received the energy efficiency kit. Table 165 shows the multipliers used in the analysis.

Table 165: Free-ridership Multiplier Based on Purchasing Plans

Were you planning on buying CFLs for your home before you received the Energy Efficient kit?	Free-ridership Multiplier
Yes	1.25
Maybe	1
Don't Know	1
No	0.25
No, already installed in all possible places	Automatic 100% free-ridership score

* Result cannot exceed 100%

Combining the survey results from Table 165 with 127 produces the free-ridership levels for CFLs in Table 166.

Table 166: Number of Participants Cross-Referenced by Free-ridership Adjustment and Multiplier

Number of Pre-Installed CFLs	Free-ridership Pre-Installation Adjustment Factor	Number of Participants per Free-ridership Model				
		1.25	1	0.25	Automatic 0%	Automatic 100%
0 (N=31)	0%	NA	NA	NA	31	
1 (N=3)	2%	0	2	1		
2 (N=12)	5%	6	1	5		
3 (N=3)	10%	2	0	1		
4 (N=8)	20%	7	1	0		
5 (N=2)	30%	2	0	0		
6 (N=4)	40%	3	0	1		
7 (N=2)	50%	2	0	0		
8 (N=3)	60%	2	0	1		

Number of Pre-Installed CFLs	Free-ridership Pre-Installation Adjustment Factor	Number of Participants per Free-ridership Model				
		1.25	1	0.25	Automatic 0%	Automatic 100%
10 (N=5)	80%	4	1	0		
12 (N=2)	95%	2	0	0		
14 or more (N=9)	100%	8	0	0		1

The Evaluation Team then took the product of the free-ridership adjustment factor and the free-ridership multiplier for each survey respondent. An average of the resulting free-ridership percentages across all 84 respondents produced a free-ridership level of 27.63%.

Low-Flow Showerhead Free-ridership

Twenty three percent of the respondents (13 out of 56) who installed or were planning to install the low-flow showerhead indicated that they already had a low-flow showerhead installed in their home before receiving the energy efficiency kit.

Seven of the 13 respondents who indicated that they already had a low-flow showerhead (but not that low-flow showerheads had been installed in all showers) also indicated that they had not been planning to purchase or use another low-flow showerhead before receiving the energy efficiency kit. These respondents were assigned 25% free-ridership. The other six survey respondents who indicated they had pre-installed low-flow showerheads were assigned 100% free-ridership.

The 43 respondents that indicated that they had not previously installed a low-flow showerhead were assigned a free-ridership of zero.

An average of the resulting free-ridership percentages across all 56 respondents with an installed, kit-provided low-flow showerhead produced a free-ridership level of 13.84%.

Faucet Aerators Free-ridership

Twenty-one percent of the respondents (12 out of 57) who installed the kitchen or bath aerators indicated that they already had an aerator installed in their home before receiving the energy efficiency kit.

Ten of the 12 respondents who indicated that they already had an aerator (but not that the aerators had been installed in all faucets) also indicated that they had not been planning to purchase or use another aerator before receiving the energy efficiency kit. These respondents were assigned 25% free-ridership. The other two survey respondents who indicated they had pre-installed aerators were assigned 100% free-ridership.

The remaining 45 respondents indicated that they had not previously installed a faucet aerator and were assigned a free-ridership of zero.

An average of the resulting free-ridership percentage across all 57 respondents with an installed kit aerator produced a free-ridership level of 7.89%.

LED Night light Free-ridership

Seventeen percent of the respondents (15 out of 87) who installed the LED nightlight indicated that they already had an LED nightlight installed in their home before receiving the energy efficiency kit.

Eight of the 15 respondents who indicated that they already had an LED nightlight also indicated that they had not been planning to purchase or use another LED nightlight before receiving the energy efficiency kit. These respondents were assigned 25% free-ridership. The other seven survey respondents who indicated they had pre-installed LED nightlights were assigned 100% free-ridership.

The remaining 72 respondents indicated that they had not previously installed an LED nightlight and were assigned a free-ridership of zero.

An average of the resulting free-ridership percentage across all 87 respondents with an installed kit LED nightlight produced a free-ridership level of 7.89%.

Filter Tone Alarm Free-ridership

Three percent of the respondents (2 out of 59) who installed the filter tone alarm indicated that they already had a filter tone alarm installed in their home before receiving the energy efficiency kit. Both of the respondents who indicated that they already had a filter tone alarms also indicated that they had not been planning to purchase or use another filter tone alarm before receiving the energy efficiency kit. These respondents were assigned 25% free-ridership.

The remaining 57 respondents indicated that they had not previously installed a filter tone alarm and were assigned a free-ridership of zero.

An average of the resulting free-ridership percentage across all 59 respondents with an installed filter tone alarm produced a free-ridership level of 0.85%.

C. RESULTS FROM THE INDIANA INCANDESCENT BULB SALES STUDY

Appendix C provides results from the rapid evaluation feedback report on the current availability of 100-watt standard fixture light bulbs in Indiana.

Method & Sample

From a list of 108 retailers (six home/hardware stores and six general retailers from each of Indiana's nine congressional districts), 105 calls were completed on January 28 and 29, 2013 and 101 of these stores sold light bulbs. Since the purpose of this study is to determine the availability of incandescent bulbs at retail stores that sell light bulbs, the number of completed valid interviews with stores that sell light bulbs is 101 (stores that do not sell any type of light bulb are not part of the population of retailers being studied).

The sample was chosen to include equal numbers of home and hardware stores (such as Home Depot, Lowe's, Menards, Ace, True Value, and Mister Hardware) and general retailers (such as Wal-Mart, Family Dollar, Meijer, Kroger, Save-A-Lot, Osco, and Walgreens). The completion rate for home and hardware stores surveyed was 88.9% (48 completes from a list of 54), and the rate for general retailers was 98.1% (53 completes from a list of 54).

Results

Nearly half of retailers surveyed (44.6% or 45 out of 101) still have a supply of 100¹³¹-watt incandescent light bulbs in stock, though only about a third (31.7% or 32 out of 101) currently have at least twenty 100-watt incandescent bulbs in stock. The 13 retailers (12.9% of 101) who had fewer than twenty 100-watt incandescent bulbs currently in stock had an average of 9.2 of these bulbs in stock per store.

The general retailers surveyed (52.8% or 28 out of 53) were more likely to have 100-watt bulbs in stock compared to home and hardware stores (35.4% or 17 out of 48, a difference which is significant at $p < .05$ using student's t-test). General retailers were also more likely to have at least twenty 100-watt bulbs in stock (37.7% versus 25.0% of home and hardware stores, a difference which is significant at $p < .10$ using student's t-test).

Table 167: Current Availability of 100-Watt Incandescent Light Bulbs

	Home & Hardware N=48	General Retailers N=53	Total N=101
100-watt incandescent bulbs currently in stock: 20 or more	25.0%	37.7%	31.7%
100-watt incandescent bulbs currently in stock: fewer than 20	10.4%	15.1%	12.9%
100-watt incandescent bulbs currently in stock: any amount	35.4%	52.8%	44.6%
Do not have any 100-watt incandescent bulbs currently in stock	64.6%	47.2%	55.4%

¹³¹ This survey also asked about 95-watt light bulbs, but none of the retailers surveyed had bulbs of that wattage in stock.

Among retailers that do not currently have at least twenty 100-watt incandescent bulbs in stock, just 8.7% said that they expect to have more of these bulbs in stock soon, while 84.1% do not plan to have these bulbs in stock again soon, and 7.2% do not know if they will be restocking them or not. This means that 53.3% have or will shortly have 100-watt incandescent bulbs in stock and for sale in their stores as of the end of January 2013.

Table 168: Plans to Restock 100-Watt Incandescent Light Bulbs

<i>Base: stores that do not currently have at least 20 incandescent 100-watt bulbs in stock</i>	Home & Hardware N=36	General Retailers N=33	Total N=69
Yes, we will have 100-watt incandescent bulbs back in stock soon	5.6%	12.1%	8.7%
No, we will not have 100-watt incandescent bulbs in stock soon	80.6%	87.9%	84.1%
Don't know	13.9%	0.0%	7.2%

Among the 58 retailers surveyed who said they will not be restocking 100-watt incandescent bulbs, just over half (53.4% or 31 out of 58) correctly stated that it was because these bulbs are no longer being manufactured. Another 15.5% (9 out of 58) said that their store was no longer stocking this type of bulb (for unspecified reasons). There was one statistically significant difference between home and hardware stores and general retailers: General retailers were much more likely to blame a “government ban” on incandescent bulbs (34.5% or 10 out of 29) compared to home and hardware stores (10.3% or 3 out of 29; this difference is significant at $p < .05$ using student's t-test).

Table 169: Reasons for Not Restocking 100-Watt Incandescent Light Bulbs

<i>Base: stores that do not plan to restock 100-watt incandescent bulbs</i>	Home & Hardware N=29	General Retailers N=29	Total N=58
They are no longer being made	55.2%	51.7%	53.4%
Cannot get them due to government regulations/banned/outlawed	10.3%	34.5%	22.4%
Our store no longer stocks those	20.7%	10.3%	15.5%
Unique response	10.3%	3.4%	6.9%
Don't know/refused	3.4%	0.0%	1.7%

Four retailers surveyed (6.9% of 58) offered unique responses to the question of plans to restock 100-watt incandescent light bulbs; their verbatim comments are listed below.

Home and hardware stores:

- “Federal law is phasing out the incandescent bulbs. I hope to get more of the 100-watt incandescent bulbs in, but I just don't know if that's possible.”
- “We don't plan on restocking incandescent bulbs but we could place a special order for some if you wish.”
- “You can't get them anymore since they started making the CFLs.”

General retailers:

- “The government has completely changed how light bulbs are made.”

Among surveyed stores that did not have any 100-watt incandescent bulbs in stock, most still have 75-watt and/or 90-watt bulbs in stock (combined 62.5% or 35 out of 56). While none of the general retailers surveyed (0.0% of 25) had 90-watt incandescent bulbs in stock, 16.1% (5 out of 31) of home and hardware stores did have 90-watt bulbs in stock (this difference is statistically significant at $p < .05$ using student's t-test).

Furthermore, 16.1% (5 out of 31) of home and hardware stores and 8.0% (2 out of 25) of general retailers surveyed do not sell standard incandescent fixture bulbs of any wattage (though they sell other kinds of light bulbs).

Table 170: Highest Wattage of Incandescent Light Bulbs with At Least Twenty Currently In Stock

<i>Base: stores that do not currently have any incandescent 100 watt bulbs in stock</i>	Home & Hardware N=31	General Retailers N=25	Total N=56
Do not have incandescent bulbs of any wattage	16.1%	8.0%	12.5%
60 or 65 watt incandescent bulbs	9.7%	20.0%	14.3%
75 watt incandescent bulbs	45.2%	64.0%	53.6%
90 watt incandescent bulbs	16.1%	0.0%	8.9%
Don't know/not specified	12.9%	8.0%	10.7%

Retailers that did not have at least twenty 100-watt incandescent bulbs in stock were asked what type of bulb they would recommend instead. The most frequent suggestion was CFL bulbs (43.5% or 30 out of 69), followed by halogen bulbs (23.2% or 16 out of 69) and alternate wattages of standard incandescent bulbs (combined 21.7% or 15 out of 69).

There were some significant differences between home and hardware stores and general retailers: Home and hardware stores were less likely to give a recommendation (25.0% "don't know/not specified" vs. 9.1% for general retailers) and more likely to recommend 90-watt standard incandescent bulbs (8.3% vs. 0.0% for general retailers; recall that none of the general retailers surveyed had 90-watt bulbs in stock). General retailers were more likely to recommend halogen bulbs (30.3% vs. 16.7% for home and hardware), LED bulbs (9.1% vs. 0.0% for home and hardware) and standard incandescent bulbs of 150 watts or higher (6.1% vs. 0.0% for home and hardware). These differences are all statistically significant at $p < .10$ or better using student's t-test.

Table 171: Recommendation to Replace 100-Watt Incandescent Light Bulbs

<i>Base: stores that do not currently have at least 20 incandescent 100-watt bulbs in stock</i>	Home & Hardware N=36	General Retailers N=33	Total N=69
150-watt or higher standard incandescent	0.0%	6.1%	2.9%
90-watt standard incandescent	8.3%	0.0%	4.3%
75-watt standard incandescent	19.4%	12.1%	15.9%
CFL	41.7%	45.5%	43.5%
Halogen	16.7%	30.3%	23.2%
LED	0.0%	9.1%	4.3%
Unique response	5.6%	12.1%	8.7%
Don't know/not specified	25.0%	9.1%	17.4%

Note: Columns total to more than 100% because respondents could make multiple recommendations

Six retailers surveyed (8.7% of 69) gave unique suggestions for replacing a 100-watt standard incandescent bulb, as listed below.

Home and hardware stores:

- “If not the 75-watt incandescents, then either CFL or the 3-way incandescents.”
- “You might be able to make do with the last of the 100-watt bulbs that we have left and some 75-watt bulbs. You could also get some lamps to better light the home.”

General retailers:

- “GE Reveals¹³² and some halogens might work.”
- “The 100-watt bulbs we do have in stock are standard fixture incandescent bulbs, but built a little tougher - industrial if you will.”
- “There's really not going to be anything that is the same as those 100-watt incandescents.”
- “Try the Energy Saver 100¹³³. Also, you could get CFLs but make sure that the box says daylight or bright light.”

Most retailers that do not have at least twenty 100-watt incandescent bulbs currently in stock are able to recommend a place that might have these bulbs. Home and hardware stores were more likely to be able to make a recommendation (72.2% or 26 out of 36) compared to general retailers (51.5% or 17 out of 33, a difference which is significant at $p < .05$ using student's t-test). Overall, only one in five of these retailers (20.3% or 14 out of 69) stated that they did not believe there were any stores in their area that carry 100-watt standard incandescent bulbs.

Table 172: Recommendations of Where to Find 100-Watt Incandescent Light Bulbs

<i>Base: stores that do not currently have at least 20 incandescent 100-watt bulbs in stock</i>	Home & Hardware N=36	General Retailers N=33	Total N=69
Yes, able to make a recommendation	72.2%	51.5%	62.3%
No, they are no longer available anywhere	16.7%	24.2%	20.3%
Don't know/not specified	11.1%	24.2%	17.4%

Surveyed retailers' verbatim suggestions for where to find 100-watt standard incandescent light bulbs are listed below.

Home and hardware stores' suggestions:

- Wal-Mart (6 respondents)
- Wal-Mart or Dollar Store
- Wal-Mart or a hardware store (2 respondents)
- Ace Hardware (3 respondents)
- Ace Hardware or True Value
- Lowes (4 respondents)
- Menards
- Menards or Home Depot
- Tweedee
- Danner's

¹³² GE Reveal branded bulbs are available in CFL, halogen, and standard incandescent versions (though GE Reveal 100-watt standard incandescent bulbs are no longer being manufactured, some may still be available on store shelves).

¹³³ Philips Energy Saver 100 branded bulbs are available in both CFL and halogen versions.

- *Sullivan Hardware*
- *Try a hardware store.*
- *Try an obscure store, like Family Dollar. Most stores will have been “reset.”*
- *Maybe a smaller store that doesn't sell as many light bulbs might still have some in stock, or Lowes or Home Depot.*
- *Maybe the Kroger at the corner of Tint and Shadeland.*

General retailers' suggestions:

- *Wal-Mart (2 respondents)*
- *Wal-Mart, Menards, or Home Depot*
- *Lowes or Home Depot*
- *Meijer or another big box store or just a hardware store.*
- *Smith Hardware or Shields Hardware*
- *Burriss Electric*
- *Kirby Risk*
- *A big box store may have some.*
- *A big box store might still have some, but call like you're doing now. They're probably pretty hard to find.*
- *Maybe some of the big chain stores have some.*
- *Maybe try calling around to the other big box stores to see if they have any.*
- *You could try some place that doesn't sell a lot of light bulbs like Kroger or Marsh. People don't usually buy bulbs at the grocery store because they're priced bad.*
- *Maybe one of the smaller stores that doesn't sell many light bulbs.*
- *Try some place that doesn't sell many light bulbs because we can't even get the 100 watt ones delivered anymore because the manufacturer don't make them.*
- *Maybe Dollar General but I really don't know if you'll be able to find any anywhere.*
- *Walgreens might still have some but I doubt that they'd have 20 of them.*

D. LIGHTING STUDY MEAN WATT CALCULATION

Table 173 below provides the total units sold through the Energizing Indiana Lighting program by wattage. These totals were weighted based on share of total program sales to develop a program level mean weighted average watt by measure type. This includes standard CFLs, specialty CFLs, fixtures, ceiling fans, and LED bulbs. A summary of the statewide weighted mean averages is provided in Table 174 and the utility level weighted mean averages in Table 174.

Table 173: Total Units by Watt

Wattage	Units	Wattage	Units
7	5755	24	412
8	509	25	425
9	38633	26	215629
9.5	3049	27	209
10	124003	29	1534
11	20721	30	137
12	10236	31	27528
13	991105	32	6119
14	547412	33	45
15	125417	40	2758
16	2564	42	2212
18	96108	55	565
19	87837	120	12
20	104466	Missing	3282
23	270952	Total	2689634

Table 174: Statewide Weighted Mean Watt by Measure

Measure Type	Mean	Total Units
CFL - Specialty	15.81927	623,984
CFL - Standard	16.16905	2,051,301
Ceiling Fan	26	82
Fixture	13	2,165
LED	12.62118	12,102
Total	16.06999	2,689,634

Table 175: Weighted Mean per Utility by Measure

Measure Type by Utility	Mean	Total Units
CFL - Specialty Duke	15.65452	239,344
CFL - Specialty IM	15.80652	129,345
CFL - Specialty IMPA	16.63356	24,876
CFL - Specialty IPL	15.65074	122,235
CFL - Specialty NIPSCO	16.7259	58,203
CFL - Specialty Vectren	15.59758	49,981
CFL - Standard Duke	16.50552	755,306
CFL - Standard IM	16.09047	350,100
CFL - Standard IMPA	16.34253	103,623
CFL - Standard IPL	16.21754	346,106
CFL - Standard NIPSCO	15.66895	338,154
CFL - Standard Vectren	15.58509	158,012
Ceiling Fan IPL	26	82
Fixture IM	13	932
Fixture IMPA	13	107
Fixture IPL	13	1,040

Measure Type by Utility	Mean	Total Units
Fixture Vectren	13	86
LED Duke	12.38696	3,804
LED IM	11.68681	993
LED IMPA	12.25998	1,052
LED IPL	13.30514	3,310
LED NIPSCO	12.68634	2,101
LED Vectren	12.38124	842
Total	16.06999	2,689,634

E. APPENDIX – DATA COLLECTION INSTRUMENTS

Appendix E provides the survey instruments for each program.

HOME ENERGY AUDIT AND LOW INCOME WEATHERIZATION

Indiana Core Low Income Weatherization/Home Energy Assessment Program Evaluation Participant Survey

The Evaluation Team will field this telephone survey with customers who received a home energy assessment through the Energizing Indiana Low Income Weatherization Program or the Home Energy Assessment Program during the first half of 2012. Interviews with participants focus on program processes and satisfaction, behavioral changes made as a result of the audit, verification of measure installation, health and safety benefits of the audit, and spillover.

Hello, my name is _____ with Opinion Dynamics and I'm calling recent participants in the <PROGRAM_PHASE> on behalf of <UTILITY> and Energizing Indiana to learn about their experience and satisfaction with the program. This is not a sales call, and all responses will be kept anonymous. May I please speak with [INSERT NAME] or someone in your household who is familiar with the home energy assessment you recently received? [IF THE PERSON WHO RECEIVED THE AUDIT IS NOT LONGER THERE, THANK AND TERMINATE].

This survey will take about 15 minutes

- C1. Are you currently talking to me on a regular landline phone or a cell phone?
1. Regular landline phone
 2. Cell Phone
 98. (Don't know)
 99. (Refused)

[ASK IF C1 = 2, 98, 99; ELSE GO TO S1]

- C2. Are you currently in a place where you can talk safely and answer my questions?
1. Yes
 2. No [Schedule call back]
 8. (Don't know) [Schedule call back]
 9. (Refused) [Schedule call back]

Screener Questions

S1. Are you, or is anyone in your household, a current or former employee of an electric or gas utility company or a market research firm?

1. (Yes, a utility) [THANK AND TERMINATE]
2. (Yes, a market research firm) [THANK AND TERMINATE]
3. (No)
8. (Don't Know) [THANK AND TERMINATE]
9. (Refused) [THANK AND TERMINATE]

S2. Do you rent or own your home?

1. (Rent)
2. (Own)
00. (Other, Specify: _____)
98. (Don't know) [THANK AND TERMINATE]
99. (Refused) [THANK AND TERMINATE]

S3. Are you or one of the heads of your household retired?

1. Yes
2. No
8. (Don't know)
9. (Refused)

S4. Which of the following best describes your home?

1. Single-family detached building
2. Mobile Home/Manufactured home
3. Condominium
4. Duplex/two-family
5. Multi-family building (3 or more units)
6. Townhouse
00. (Other – Please specify: _____)
8. (Don't know)
9. (Refused)

S5. What type of fuel do you use primarily to heat your home? [IF NEEDED: Read list]

01. (Natural gas)
02. (Bottled, tank or LP gas)
03. (Electric)
04. (Oil, kerosene)
05. (Coal (coke))
06. (Wood)
07. (Solar)
00. (Other, specify)
96. (No fuel)
98. (Don't know)
99. (Refused)

Customer Verification

CV1. Our records indicate that you received a home energy assessment through the <PROGRAM_PHASE> where one or two representatives assessed your home's energy use, provided you with information about ways to save energy and installed certain energy saving products in your home. Is that correct?

1. Yes
 2. No [THANK AND TERMINATE]
 98. (Don't Know) [THANK AND TERMINATE]
 99. (Refused) [THANK AND TERMINATE]
- [IF CV1=2, 98, 99 THANK AND TERMINATE]

Program Participation and Process

First, I would like to ask you about your participation in the program.

- P1. How did you learn about the <PROGRAM_PHASE>? [MULTIPLE RESPONSE; UP TO 3]
(Energizing Indiana Representative)
(Utility Representative)
(Purdue Extension Representative)
(Local Community Action Agency (CAP Agency))
(Habitat for Humanity)
(Local Housing Authority)
(At church)
(At a community event)
(Through a community organization)
(Flyer)
(Word-of-mouth)
(Newspaper)
00. (Other) [Specify _____]
98. (Don't know)
99. (Refused)

- P2. What motivated you to participate in this program? [MULTIPLE RESPONSE; UP TO 3]
1. (The items were free of charge)
2. (Wanted to save energy)
3. (Wanted to reduce the utility bill)
4. (Wanted to help the environment)
00. (Other, specify)
98. (Don't know)
99. (Refused)

- P3. Was the process for participating in the program clearly explained to you?
Yes
No
(Don't Know)
(Refused)
[ASK IF P3=2]

- P4. Can you please explain which part of the process was not clearly explained to you? [OPEN END]
98. (Don't know)
99. (Refused)

Program Satisfaction

[ASK SECTION OF ALL RESPONDENTS]

Now, I would like to ask a few questions about your satisfaction with the program.

- SA1. On a 1 to 10 scale, where 1 is 'very dissatisfied' and 10 is 'very satisfied,' how satisfied are you with Energizing Indiana's <PROGRAM PHASE> overall? [0-10, 98=DON'T KNOW, 99=REFUSED]

[SKIP IF SA1=5-10, 98, 99]

SA2. Why did you rate it that way? [OPEN END]

SA3. From your perspective, what if anything, could be done to improve the program?

00. OPEN END

96. (No/nothing)

98. (Don't know)

99. (Refused)

SA4. Can you think of any reasons why people might not participate in this program?

01. (Not aware)

00. (OPEN END)

96. (No/nothing)

98. (Don't know)

99. (Refused)

P7. Again, on a 1 to 10 scale, where 1 is 'very dissatisfied' and 10 is 'very satisfied,' how satisfied were you with... [ROTATE] [NUMERIC, 0-10, 98=Don't know, 99=Refused]

a. The amount of time between when you called to schedule the assessment and when it was done

b. The time it took to complete the assessment

c. The energy saving upgrades installed

d. The professionalism of the program representative or representatives who visited your home

e. The quality of work performed by the program representative(s)

[ASK IF P7c<5]

P8. Why were you dissatisfied with the energy savings upgrades that were installed in your home?

[MULTIPLE RESPONSE; UP TO 8]

(The CFLs were not bright enough)

(The CFLs burned out)

(Did not like CFL light quality)

(The CFLs flickered)

(The water pressure of the low-flow aerator(s) were too low)

(The water pressure of the low-flow showerhead(s) was too low)

(I did not like the style of the showerhead)

00. (Other [OPEN END])

98= (Don't Know)

99=(Refused)

Health and Safety

[Ask only if respondent is **IQW participant**]

Now, I have a few questions about tests for health and safety that the program representative may have conducted.

HS1. Did the program representative(s) conduct any tests for combustion safety and carbon monoxide?

Yes

No [SKIP TO NEXT SECTION]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[Ask if HS1=1]

HS2. Did the program representative(s) determine that any repairs or replacements needed to be made as a result of the tests?

Yes

No

98. (Don't know)

99. (Refused)

[Ask if HS2=1, else SKIP TO NEXT SECTION]

HS3. What repairs or replacements needed to be made? [OPEN END]

[Ask if HS2=1]

HS4. Have the repairs or replacements been made yet?

Yes

No

98. (Don't know)

99. (Refused)

[Ask if HS4=2]

HS5. Why haven't the repairs or replacements been made yet?

1. (The cost was too high)

2. (Have not had time/too busy)

3. (Waiting for someone else to take action (e.g., homeowner, family, etc.))

00. (Other (specify: _____))

98. (Don't know)

99. (Refused)

Measure Verification

[All Respondents]

Now, I would like to ask you some questions about the energy upgrades that were made during your home energy assessment.

Compact Fluorescent Light Bulb Battery [CFL Flag]

CFL1. Our records show that you received [Quantity CFL] CFLs through the program. Is that correct?

1. Yes

2. No

8. (Don't know) [SKIP TO NEXT SECTION]

9. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_CFL = CFL1, if CFL1=1]

[ASK IF CFL1=2]

CFL2. How many CFLs did you receive during the home energy assessment?

[RECORD NUMBER 0-20]

0. Did not receive any CFLs [SKIP TO NEXT SECTION]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_CFL = CFL2, If CFL2 = 1-20]

CFL3. How many of the CFLs were installed at the time of the assessment?

(INTERVIEWER NOTE: Quantity should not exceed <V_CFL>. If respondent is confused or says a number higher than <V_CFL> please prompt with the verified quantity received.)

[RECORD NUMBER 0-20]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE Diff_CFL = V_CFL - CFL3]

[Ask if CFL3 > 0]

CFL4. How many of the <CFL3> CFLs are still installed?

(INTERVIEWER NOTE: Quantity should not exceed <CFL3>. If respondent indicates all were installed please enter <CFL3>) [RECORD NUMBER 0-20]

98. (Don't know) [SKIP TO CFL6]

99. (Refused) [SKIP TO CFL6]

[COMPUTE Remo1_CFL = CFL3 - CFL4]

[Ask if Remo1_CFL>0, else SKIP to CFL6]

CFL5. Why did you remove the CFLs? [OPEN END]

01. (Didn't like the color of the light)

02. (Not bright enough)

03. (They flickered)

04. (Didn't like how they looked in the fixture)

05. (They failed)

00. (Other - specify)

98. (Don't know)

99. (Refused)

[If Diff_CFL=0, SKIP TO CFL Free rider Questions]

CFL6. What did you do with the <Diff_CFL> CFLs that were not installed during the assessment?

[MULTIPLE RESPONSE; UP TO 3]

(Installed them later)

(Stored them for future use)

(Threw them away in the garbage)

(Gave them to someone else)

00. (Other, specify)

98. (Don't know)

99. (Refused)

[Ask if CFL6=1, ELSE GO TO CFL12]

CFL7. How many of the <Diff_CFL> CFLs did you install later?

[RECORD NUMBER 0-20]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE L8R_CFL = CFL7, If CFL7=1-20]

[COMPUTE Rema_CFL = Diff_CFL – L8R_CFL]

[SKIP TO CFL12 IF L8R_CFL =0]

CFL9. Are these <L8R_CFL> CFLs still installed?/ Is this CFL still installed?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[Ask if CFL9=2, else SKIP to CFL12]

[SKIP IF L8R_CFL=1]

CFL10. How many of the <L8R_CFL> CFLs are still installed?

[RECORD NUMBER 0-20]

98. (Don't know) [SKIP TO CFL12]
99. (Refused) [SKIP TO CFL12]

[COMPUTE Remo2_CFL = L8R_CFL – CFL10]

CFL11. Why did you remove the <Remo2_CFL> CFLs? [OPEN END]

01. (Didn't like the color of the light)
02. (Not bright enough)
03. (They flickered)
04. (Didn't like how they looked in the fixture)
05. (They failed)
00. (Other – specify)
98. (Don't know)
99. (Refused)]

[ASK IF Rema_CFL > 0]

CFL12. Do you plan to install any of the <Rema_CFL> remaining CFL bulbs that you received during your assessment within the next 6 to 12 months?

1. Yes
2. No
98. (Don't Know)
99. (Refused)

CFL Free rider Questions

[ASK SECTION IF V_CFL=1-20 AND the customer is an HEA participant. If IQW participant, skip to Shower Head Battery]

I have a few more questions about the lighting in your home.

CFLFR1. Before the home energy assessment, had you already installed any CFLs in your home?

- (Yes)
(No)
98. (Don't know)
 99. (Refused)

[ASK CFLFR1a IF CFLFR1=1, ELSE SKIP TO CFLFR2]

CFLFR1a. How many CFLs were already installed in your home? [RECORD NUMBER 0-20, 98=DK, 99=Refused]

NCFLFR2. If you had not received the CFLs that the program gave you during the assessment, would you have purchased them at the regular price (IF NEEDED: Regular price range of \$2.00 to \$4.00 per bulb)?

1. Yes
2. No [SKIP TO CFLFR3]
8. (Don't know) [SKIP TO CFLFR3]
9. (Refused) [SKIP TO CFLFR3]

[SKIP IF NCFLFR2=2,8,9]

NNCFLFR2. If you had not received the CFLs that the program gave you during the assessment, would you have purchased more CFLs, the same amount of CFLs, fewer CFLs, or no CFLs?

1. Purchased more
2. Purchased the same amount
3. Purchased fewer
4. Not purchased
8. (Don't know)
9. (Refused)

[SKIP IF NNCFLFR2=4]

NNNCFLFR2. If you had not received the CFLs that the program gave you during the assessment, would you have purchased them earlier, at the same time, or later?

1. Purchased earlier
2. Purchased at the same time
3. Purchased them later
8. (Don't know)
9. (Refused)

[ASK IF NNCFLFR2= 3 AND NNNCFLFR2=2 OR 3]

CFLFR2a. How many would you have purchased on your own at the regular price? (INTERVIEWER NOTE: Provide regular price range of \$2.00 to \$4.00 per bulb if needed)

[Record Number 0-20]

[ASK IF NNCFLFR2=2, 3 AND NNNCFLFR2=3]

CFLFR2b. When would you have purchased them on your own?

Within a few months

Within a year

More than a year

98. Don't know

99. Refused

CFL Spillover Questions

CFLFR3. Did your experience with the CFLs provided by Energizing Indiana's <PROGRAM_PHASE> make it more or less likely that you would purchase and install CFLs in the future?

Yes/More likely

No/Less likely

98. Don't know

99. Refused

CFLFR4. Have you purchased any additional CFLs since receiving the CFLs from Energizing Indiana?

Yes

No

98. Don't know

99. Refused

[ASK CFLRF4a-d if CFLFR4=1, ELSE SKIP TO NEXT SECTION]

CFLFR4a. How many CFLs did you purchase? [RECORD NUMBER 0-30]

CFLFR4b. How many of these CFLs are currently in use? [RECORD NUMBER 0-30]

CFLFR4c. Using a 1 to 10 scale, with 1 meaning that the program had no influence at all, and 10 meaning that the program was very influential, please rate the influence of the Energizing Indiana Home Energy Assessment program on your decision to purchase additional CFLs. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Not at all influential Very influential
1 2 3 4 5 6 7 8 9 10

CFLFR4d. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and a 10 indicating that you were very satisfied, please rate your satisfaction with the CFLs that you have purchased. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Very dissatisfied Very satisfied
1 2 3 4 5 6 7 8 9 10

[SKIP IF CFL FLAG=0]

My next set of questions is about the other items you received through the program.

Showerhead Battery [Showerhead Flag]

SHO1. Our records show that you received [Quantity Showerhead] low-flow showerhead(s) through the program. Is that correct?

1. Yes

2. No

8. (Don't know) [SKIP TO NEXT SECTION]

9. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_SHO = SHO1, if SHO1=1]

[ASK IF SHO1=2]

SHO2. How many showerheads did you receive during the home energy assessment?

[RECORD NUMBER 1-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_SHO = SHO2, If SHO2 = 1-10]

SHO3. How many showerheads were installed at the time of the assessment? (INTERVIEWER NOTE: Quantity should not exceed <V_SHO>. If respondent is confused or says a number higher than <V_SHO> please prompt with the verified quantity received.)

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE Diff_SHO = V_SHO - SHO3]

[Ask if SHO3 > 0]

SHO4. How many of the <SHO3> showerhead(s) are still installed?

(INTERVIEWER NOTE: Quantity should not exceed <SHO3>. If respondent indicates all were installed please enter <SHO3>)

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO SHO6]

99. (Refused) [SKIP TO SHO6]

[COMPUTE Remo1_SHO = SHO3 - SHO4]

[Ask if Remo1_SHO>0, else SKIP to SHO6]

SHO5. Why did you remove the showerhead(s)? [OPEN END]

1. (Didn't like the performance)

2. (Didn't like the appearance)

3. (Didn't like the showerhead type)

4. (It failed)

00. (Other - specify)

98. (Don't know)

99. (Refused)

[If Diff_SHO=0, SKIP TO Showerhead Free rider Questions]

SHO6. What did you do with the <Diff_SHO> showerhead(s) that was/were not installed during the assessment? [MULTIPLE RESPONSE; UP TO 3]

(Installed them later)

(Stored them for future use)

(Threw them away in the garbage)

(Gave them to someone else)

00. (Other, specify)

98. (Don't know)

99. (Refused)

[Ask if SHO6=1, ELSE TO SHO12]

SHO7. How many of the <Diff_SHO> showerhead(s) did you install later?

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE L8R_SHO = SHO7, If SHO7=1-10]

[COMPUTE Rema_SHO = Diff_SHO - L8R_SHO]

[SKIP TO SHO12 IF L8R_SHO=0]

SHO9. Are these <L8R_SHO> showerhead(s) still installed?/Is this showerhead still installed?

- 1. Yes
- 2. No
- 98. (Don't know)
- 99. (Refused)

[Ask if SHO9=2, else SKIP to SHO12]

[SKIP IF L8R_SHO=1]

SHO10. How many of the <L8R_SHO> showerhead(s) are still installed?

[RECORD NUMBER 0-10]

- 98. (Don't know) [SKIP TO SHO12]
- 99. (Refused) [SKIP TO SHO12]

[COMPUTE Remo2_SHO = L8R_SHO – SHO10]

SHO11. Why did you remove the <Remo2_SHO> showerhead(s)? [OPEN END]

- 1. (Didn't like the performance)
- 2. (Didn't like the appearance)
- 3. (Didn't like the showerhead type)
- 4. (It failed)
- 00. (Other – specify)
- 98. (Don't know) 99. (Refused)

[ASK IF Rema_SHO > 0]

SHO12. Do you plan to install any of the <Rema_SHO> remaining showerhead(s) that you received during your assessment within the next 6 to 12 months?

- 1. Yes
- 2. No
- 98. (Don't Know)
- 99. (Refused)

Showerhead Free rider Questions

[ASK SECTION IF V_SHO > 0 and the customer is an HEA participant. If an IQW participant, skip to Faucet Aerators Battery]

SHOFR1. Before the home energy assessment, had you already installed any low-flow showerheads in your home?

- Yes
- No
- 98. (Don't know)
- 99. (Refused)

[ASK SHOFR1a IF SHOFR1=1, ELSE SKIP TO SHOFR2]

SHOFR1a. How many low-flow showerheads were already installed in your home? [RECORD NUMBER 0-10, 98=DK, 99=Refused]

NSHOFR2. If you had not received the low flow showerheads that the program gave you during the assessment, would you have purchased them at the regular price?

1. Yes
2. No [SKIP TO SHOFR3]
8. (Don't know) [SKIP TO SHOFR3]
9. (Refused) [SKIP TO SHOFR3]

[SKIP IF NSHOFR2=2,8,9]

NNSHOFR2. If you had not received the low flow showerheads that the program gave you during the assessment, would you have purchased more, the same amount, fewer, or no low flow showerheads?

1. Purchased more
2. Purchased the same amount
3. Purchased fewer
4. Not purchased
8. (Don't know)
9. (Refused)

[SKIP IF NNSHOFR2=4]

NNNSHOFR2. If you had not received the low flow showerheads that the program gave you during the assessment, would you have purchased them earlier, at the same time, or later?

1. Purchased earlier
2. Purchased at the same time
3. Purchased them later
8. (Don't know)
9. (Refused)

[ASK IF NNSHOFR2=3 AND NNNSHOFR2=2 OR 3]

SHOFR2a. How many would you have purchased on your own? [Record Number]

[ASK IF NNSHOFR2=2, 3 AND NNNSHOFR2=3]

SHOFR2b. When would you have purchased them on your own?

- Within a few months
- Within a year
- More than a year
- 98. Don't know
- 99. Refused

Showerhead Spillover Questions

SHOFR3. Did your experience with the low-flow showerheads provided by Energizing Indiana's <PROGRAM_PHASE> make it more or less likely that you would purchase and install low-flow showerheads in the future?

- Yes/More likely
- No/Less likely
- 98. Don't know
- 99. Refused

SHOFR4. Have you purchased any additional low-flow showerheads since receiving the low-flow showerheads from Energizing Indiana?

Yes

No

98. Don't know

99. Refused

[ASK SHOF4a-d if SHOFR4=1, ELSE SKIP TO NEXT SECTION]

SHOFR4a. How many low-flow showerheads did you purchase? [RECORD NUMBER 0-10]

SHOFR4b. How many of these low-flow showerheads are currently in use? [RECORD NUMBER 0-10]

SHOFR4c. Using a 1 to 10 scale, with 1 meaning that the program had no influence at all, and 10 meaning that the program was very influential, please rate the influence of the Energizing Indiana Home Energy Assessment program on your decision to purchase additional low-flow showerheads. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Not at all influential Very influential
1 2 3 4 5 6 7 8 9 10

SHOFR4d. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and a 10 indicating that you were very satisfied, please rate your satisfaction with the low-flow showerheads that you have purchased. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Very dissatisfied Very satisfied
1 2 3 4 5 6 7 8 9 10

Faucet Aerators Battery [Faucet Aerators Flag]

FA1. Our records show that you received [Quantity Aerator] low-flow faucet aerator(s) through the program. Is that correct?

1. Yes

2. No

8. (Don't know) [SKIP TO NEXT SECTION]

9. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_FA = FA1, if FA1=1]

[ASK IF FA1=2]

FA2. How many faucet aerators did you receive during the home energy assessment?

[RECORD NUMBER 1-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE V_FA = FA2, If FA2 = 1-10]

FA3. How many aerator(s) were installed at the time of the assessment? (INTERVIEWER NOTE: Quantity should not exceed <V_FA >. If respondent is confused or says a number higher than <V_FA > please prompt with the verified quantity received.)

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE Diff_FA = V_FA - FA3]

[Ask if FA3 > 0]

FA4. How many of the <FA3> aerator(s) are still installed?

(INTERVIEWER NOTE: Quantity should not exceed < FA3>. If respondent indicates all were installed please enter < FA3>)

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO FA6]

99. (Refused) [SKIP TO FA6]

[COMPUTE Remo1_FA = FA3 - FA4]

[Ask if Remo1_FA>0, else SKIP to FA6]

FA5. Why did you remove the aerator(s)? [OPEN END]

1. (Don't like the appearance)
2. (Don't like the performance)
3. (They failed)
00. (Other - specify)
98. (Don't know)
99. (Refused)

[If Diff_FA=0, SKIP TO Faucet Aerator Free rider Questions]

FA6. What did you do with the <Diff_FA> aerator(s) that was/were not installed during the assessment? [MULTIPLE RESPONSE; UP TO 3]

(Installed them later)

(Stored them for future use)

(Threw them away in the garbage)

(Gave them to someone else)

00. (Other, specify)

98. (Don't know)

99. (Refused)

[Ask if FA6=1, ELSE TO FA12]

FA7. How many of the <Diff_FA> aerator(s) did you install later?

[RECORD NUMBER 0-10]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[COMPUTE L8R_FA = FA7, If FA7=1-10]

[COMPUTE Rema_FA = Diff_FA - L8R_FA]

[SKIP TO FA12 IF L8R_FA=0]

FA9. Are these <L8R_FA> aerator(s) still installed?

- 1. Yes
- 2. No
- 98. (Don't know)
- 99. (Refused)

[Ask if FA9=2, else SKIP to Faucet Aerator Free rider Questions]

[SKIP IF L8R_FA=1]

FA10 How many of the <L8R_FA> aerator(s) are still installed?

[RECORD NUMBER 0-10]

- 98. (Don't know) [SKIP TO FA12]
- 99. (Refused) [SKIP TO FA12]

[COMPUTE Remo2_FA = L8R_FA – FA10]

FA11. Why did you remove the <Remo2_FA> aerator(s)? [OPEN END]

- 1. (Don't like the appearance)
- 2. (Don't like the performance)
- 3. (They failed)
- 00. (Other – specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF Rema_FA > 0]

FA12. Do you plan to install any of the <Rema_FA> remaining aerator(s) that you received during your assessment within the next 6 to 12 months?

- 1. Yes
- 2. No
- 98. (Don't Know)
- 99. (Refused)

Faucet Aerator Free rider Questions

[ASK SECTION IF V_FA>0 and customer is an HEA participant. If an IQW participant, skip to Pipe Wrap Battery]

FAFR1. Before the home energy assessment, had you already installed any low-flow faucet aerators in your home?

- Yes
- No
- 98. (Don't know)
- 99. (Refused)

[ASK FAFR1a IF FAFR1=1, ELSE SKIP TO FAFR2]

FAFR1a. How many low-flow faucet aerators were already installed in your home? [RECORD NUMBER 0-10, 98=DK, 99=Refused]

NFAFR2. If you had not received the faucet aerators that the program gave you during the assessment, would you have purchased them at the regular price?

1. Yes
2. No [SKIP TO FAFR3]
8. (Don't know) [SKIP TO FAFR3]
9. (Refused) [SKIP TO FAFR3]

[SKIP IF NFAFR2=2,8,9]

NNFAFR2. If you had not received the faucet aerators that the program gave you during the assessment, would you have purchased more, the same amount, fewer, or no faucet aerators?

1. Purchased more
2. Purchased the same amount
3. Purchased fewer
4. Not purchased
8. (Don't know)
9. (Refused)

[SKIP IF NNFAFR2=4]

NNNFAFR2. If you had not received the faucet aerators that the program gave you during the assessment, would you have purchased them earlier, at the same time, or later?

1. Purchased earlier
2. Purchased at the same time
3. Purchased them later
8. (Don't know)
9. (Refused)

[ASK IF NNFAFR2=3 AND NNNFAFR2=2 OR 3]

FAFR2a. How many would you have purchased on your own?
[RECORD NUMBER 0-10, 98=DK, 99=Refused]

[ASK IF NNFAFR2=2, 3 AND NNNFAFR2=3]

FAFR2b. When would you have purchased them on your own?

- Within a few months
- Within a year
- More than a year
- 98. Don't know
- 99. Refused

Faucet Aerator Spillover Questions

FAFR3. Did your experience with the low-flow faucet aerators provided by Energizing Indiana's <PROGRAM_PHASE> make it more or less likely that you would purchase and install low-flow faucet aerators in the future?

- Yes/More likely
- No/Less likely
- 98. Don't know
- 99. Refused

FAFR4. Have you purchased any additional low-flow faucet aerators since receiving the low-flow faucet aerators from Energizing Indiana?

Yes

No

98. Don't know

99. Refused

[ASK FAF4a-d if FAFR4=1, ELSE SKIP TO NEXT SECTION]

FAFR4a. How many low-flow faucet aerators did you purchase?

[RECORD NUMBER 0-10, 98=DK, 99=Refused]

FAFR4b. How many of these low-flow faucet aerators are currently in use? [RECORD NUMBER 0-10, 98=DK, 99=Refused]

FAFR4c. Using a 1 to 10 scale, with 1 meaning that the program had no influence at all, and 10 meaning that the program was very influential, please rate the influence of the Energizing Indiana Home Energy Assessment program on your decision to purchase additional low-flow faucet aerators. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Not at all influential Very influential
1 2 3 4 5 6 7 8 9 10

FAFR4d. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and a 10 indicating that you were very satisfied, please rate your satisfaction with the low-flow faucet aerators that you have purchased. [NUMERIC, 1-10, 98=Don't know, 99=Refused]

Very dissatisfied Very satisfied
1 2 3 4 5 6 7 8 9 10

Pipe Wrap Battery [Pipe Wrap Flag]

PW1. Our records show that you received water pipe wrap through the program. Is that correct?

1. Yes

2. No [SKIP TO NEXT SECTION]

8. (Don't know) [SKIP TO NEXT SECTION]

9. (Refused) [SKIP TO NEXT SECTION]

[Ask if PW1=1]

PW2. Was the pipe wrap installed at the time of the assessment?

Yes

No [SKIP TO PW5]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[Ask if PW2 = 1]

PW3. Is the pipe wrap still installed?

Yes [SKIP TO NEXT SECTION]

No

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[Ask if PW3=2]

PW4. Why did you remove pipe wrap? [OPEN END]

98. (Don't know)

99. (Refused)

[Ask if PW2=2]

PW5. What did you do with the pipe wrap? [MULTIPLE RESPONSE; UP TO 3]

(Installed it later)

(Stored it for future use)

(Threw it away in the garbage)

(Gave it to someone else)

00. (Other, specify)

98. (Don't know)

99. (Refused)

Pipe Wrap Free rider Questions

[ASK SECTION IF PW1=1 and respondent is an HEA participant. If IQW participant, skip to Water Heater Tank Wrap Battery]

PWFR1. Before the home energy assessment, had you already installed pipe wrap in your home?

(Yes)

(No)

98. (Don't know)

99. (Refused)

PWFR2. If you had not received the pipe wrap that the program gave you during the assessment, would you have...

purchased the pipe wrap at the same time

purchased the pipe wrap at a later time

not purchased pipe wrap

8. Don't know

9. Refused

[ASK if PWFR2=2]

PWFR2b. When would you have purchased it on your own?

Within a few months

Within a year

More than a year

98. Don't know

99. Refused

Water Heater Tank Wrap Battery [Water Heat Tank Wrap Flag]

WH1. Our records show that you received water heater tank wrap through the program. Is that correct?

1. Yes

2. No [SKIP TO NEXT SECTION]

8. (Don't know) [SKIP TO NEXT SECTION]

9. (Refused) [SKIP TO NEXT SECTION]

[Ask if WH1=1]

WH2. Was the tank wrap installed at the time of the assessment?

Yes

No [SKIP TO HW5]

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[Ask if WH2 = 1]

WH3. Is the tank wrap still installed?

Yes [SKIP TO NEXT SECTION]

No

98. (Don't know) [SKIP TO NEXT SECTION]

99. (Refused) [SKIP TO NEXT SECTION]

[Ask if WH3=2]

WH4. Why did you remove tank wrap? [OPEN END]

00. (OPEN END)

98. (Don't know)

99. (Refused)

[Ask if WH2=2]

WH5. What did you do with the tank wrap? [MULTIPLE RESPONSE; UP TO 3]

(Installed it later)

(Stored it for future use)

(Threw it away in the garbage)

(Gave it to someone else)

00. (Other, specify)

98. (Don't know)

99. (Refused)

Water Heater Tank Wrap Free rider Questions

[ASK SECTION IF WH1=1 and respondent is an HEA participant. If IQW participant, skip to next section]

WHFR1. Before the home energy assessment, had you already installed water heater tank wrap?

Yes

No

98. (Don't know)

99. (Refused)

WHFR2. If you had not received the tank wrap that the program gave you during the assessment, would you have...

purchased the tank wrap at the same time

purchased the tank wrap at a later time

not purchased tank wrap

8. (Don't know)

9. (Refused)

[ASK if WHFR2=2]

WHFR2a. When would you have purchased it on your own?

Within a few months

Within a year

More than a year

98. Don't know

99. Refused

Air Sealing Battery

[Ask if respondent is **IQW participant** and [Airseal] = Y]

AR1. Our records show that your home was air sealed through the program. Is that correct? (EXPLANATION OF AIR SEALING, IF NEEDED: If the respondent received air sealing, they would have seen the program representative use a blower door (a piece of equipment (usually red) that covers the main door of a home and has a fan) to measure the air infiltration (leakage) into their home. The program rep would use the blower door to identify air leaks in the home, and then would seal these areas with spray foam or caulk.)

1. Yes

2. No

98. (Don't know)

99. (Refused)

Attic Insulation Battery

[Ask if respondent is **IQW participant** and [Attic Insulation] = Y]

AI1. Our records show that you received attic insulation through the program. Is that correct?

1. Yes

2. No

98. (Don't know)

99. (Refused)

Audit Findings and Recommendations [All Respondents]

Now, we would like to ask you a few questions about the information you received during the home energy assessment.

AU1. On a scale from 1 to 10, where 1 is "not at all knowledgeable" and 10 is "very knowledgeable," how would you rate your knowledge of energy efficiency BEFORE you participated in the program? [0-10, 98=DON'T KNOW, 99=REFUSED]

AU2. How much did you learn about energy efficiency from the program representative or representatives who came to your home?

1. Nothing

2. Very Little

3. Some

4. A lot

97. (Not applicable – not home at the time of the consultation)

98. (Don't know)

99. (Refused)

AU3. Did the program representative provide you with a written report with audit findings and recommendations on additional steps to take to save energy at the time of your home energy assessment appointment?

- 1. Yes
- 2. No
- 97. (Not applicable – not home at the time of the consultation)
- 98. (Don't know)
- 99. (Refused)

AU4. Did the program representative discuss the audit findings and recommendations with you?

- Yes
- No
- 97. (Not applicable – not home at the time of the consultation)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF AU4<>1]

AU5. How useful was this information? Was it...

- 1. Very useful
- 2. Somewhat useful
- 3. Not at all useful
- 98. (Don't know)
- 99. (Refused)

AU6. In addition to the products received during the assessment, have you taken action on any of the recommendations you received at the time of the assessment?

- Yes
- No
- (Don't know) [SKIP TO NEXT SECTION]
- (Refused) [SKIP TO NEXT SECTION]

[ASK IF AU6=1]

AU7. What recommendations did you take action on? Did you... [1=Yes, 2=No, 98=Don't know, 99=Refused]

- a. Take shorter showers
- b. Turn off lights when no longer in the room
- c. Program thermostat
- d. Unplug unused appliances
- e. Take action on other recommendation(s)

[ASK IF AU7e=1]

AU8. What other recommendations did you take action on? [OPEN END]

[ASK IF AU6=2]

AU9. Why have you not taken action on any of these recommendations? [MULTIPLE RESPONSE, UP TO 5]

1. (Still planning on taking action, waiting to start a remodeling project)
2. (The cost was too high)
3. (Have not had time/too busy)
4. (Waiting for someone else to take action (e.g., homeowner, family, etc.))
00. (Other (specify: _____))
98. (Don't know)
99. (Refused)

Additional Spillover

[Ask if respondent is a **HEA participant**, else skip to next section]

SO1. After you received the home energy assessment, did you take any other actions to improve the energy efficiency of your home, which were not provided or recommended to you by the program representative?

1. Yes
2. No
98. (Don't Know)
99. (Refused)

[ASK IF SO1=1; ELSE SKIP TO NEXT SECTION]

SO2. How much influence did your participation in <PROGRAM_PHASE> have on your decision to take additional energy efficiency action(s) on your own? Please use a scale that ranges from 1 to 10 where 1 is "not at all influential" and 10 is "very influential", RECORD 1-10; 98=Don't Know; 99=Refused]

Not at all influential Very influential
1 2 3 4 5 6 7 8 9 10

[ASK IF SO2=8,9 or 10; ELSE SKIP TO NEXT SECTION]

SO3. More specifically, how did the <PROGRAM_PHASE> influence your decision to make additional changes to your home to increase your energy savings? [OPEN END; 98=Don't Know; 99=Refused]

SO4. Now, I have a few questions about the energy saving actions you took that were not provided or recommended by the program representative and did not receive a rebate from Energizing Indiana. Did you: [1=Yes; 2=No; 98=Don't Know; 99=Refused]

- a. Install insulation in your home?
- b. Purchase an ENERGY STAR Appliance?
- c. Purchase a new high efficiency water heater?
- d. Purchase a new air conditioner?
- e. Purchase a new furnace?

[ASK IF SO4a=1]

SO5. Where did you install insulation in your home? [OPEN END; 98=Don't Know; 99=Refused]

[ASK IF SO4b=1]

SO6. Did you purchase an ENERGY STAR refrigerator, dishwasher, clothes washer or freezer? [MULT. RESP.]

1. (Yes, Refrigerator)
2. (Yes, Dishwasher)
3. (Yes, clothes washer)
4. (Yes, freezer)
5. (No)
98. (Don't Know)
99. (Refused)

[ASK IF SO4c=1 ELSE SKIP TO SO9]

SO7. Was the water heater you purchased an electric or gas water heater?

1. Electric water heater
 2. Gas water heater
98. (Don't Know)
99. (Refused)

[ASK IF SO4c=1, ELSE SKIP TO SO9]

SO8. Was it a storage or tankless water heater?

1. Tankless water heater
 2. Storage water heater
98. (Don't Know)
99. (Refused)

SO9. Are there any other energy efficient upgrades that you made that were not provided or recommended by the program representative and did not receive a rebate from Energizing Indiana?
[OPEN END; 96= (None)98=Don't Know; 99=Refused]

Demographics

We're almost finished. I now have a few final questions about your household and then we are done.

D1. Approximately, how many people live in your household full time (at least nine months out of the year)?

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13 or more
- 98 (Don't know)
- 99 (Refused)

D2. In what year were you born?
00. [NUMERIC OPEN END FROM 1890 TO 1994]
9999. (REFUSED)

D3. What is the last grade of school you completed?
1. (Grade school or less (1-8))
2. (Some high school (9-11))
3. (Graduated high school (12))
4. (Vocational/technical school)
5. (Some college (1-3 years))
6. (Graduated college (4 years))
7. (Post graduate education)
98 (Don't know)
99 (Refused)

D4. How would you describe your race/ethnicity (If necessary: White, African American, Arab American, Hispanic, Asian, or something else?) [MULTIPLE RESPONSE, ALLOW UP TO 5 RESPONSES]

1. (White or Caucasian)
2. (Black or African American)
3. (Arab American)
4. (Hispanic/Spanish-American)
5. (Asian)
6. (Native American/Indian)
00. (Other, Specify)
98. (Don't Know)
99. (Refused)

D5. Which of the following categories best represents your annual household income from all sources in 2011, before taxes? Please stop me when I get to your range. (READ)

1. Less than \$15,000
2. \$15,000-\$29,999
3. \$30,000-\$49,999
4. \$50,000-\$74,999
5. \$75,000-\$99,999
6. \$100,000 and over
98 (Don't know)
99 (Refused)

[SKIP IF D1= 98, 99]

D5b. Was your total household income from all sources in 2011 below, above or exactly equal to [X]?

1. Below [X]
2. Above [X]
3. Equal to [X]
8. (Don't know)
9. (Refused)

IF D1 =	X=	ASK IF
1	\$22,340	D5=02
2	\$30,260	D5=03
3	\$38,180	D5=03
4	\$46,100	D5=03
5	\$54,020	D5=04
6	\$61,940	D5=04
7	\$69,860	D5=04
8	\$77,780	D5=05
9	\$85,700	D5=05
10	\$93,620	D5=05
11	\$101,540	D5=06
12	\$109,460	D5=06
13+	\$117,380	D5=06

That's all of the questions I have for you today. Thank you for your time. Energizing Indiana appreciates your participation.

Indiana Core Home Energy Audit Program Staff On-line Survey

Opinion Dynamics, on behalf of Energizing Indiana, is conducting this survey of auditors working in the Home Energy Audit Program to assess auditor and customer satisfaction.

We expect the survey to take approximately 15 minutes to complete. Your responses will be kept confidential and the results of this survey will be reported in aggregate.

E-mail Invitation

From: Opinion Dynamics

Subject: Auditor Survey-Home Energy Audit Program

Dear [NAME],

Opinion Dynamics, on behalf of Energizing Indiana is conducting an evaluation of the Indiana Home Energy Audit Program. As a part of this evaluation, we are conducting an online survey with program auditors. This survey is intended to solicit your feedback on the program operations, as well as your customer's thoughts on the program. Your feedback is incredibly important and greatly appreciated!

Please click on the link below to take this short survey:

[INSERT UNIQUE URL TO SURVEY]

Sincerely,

Erinn Monroe

Evaluation Project Manager

Landing Page

Thank you for taking a few minutes to complete this survey about Indiana's Home Energy Audit Program! Opinion Dynamics Corporation, on behalf of Energizing Indiana, is conducting this survey as a part of an evaluation of the Home Energy Audit Program. We expect the survey to take no longer than 15 minutes to complete. Remember your responses will be kept confidential. Thanks again for participating in this important survey!

[PROGRAMMING NOTES: Please include a "Process Bar" at the top of each page. Also, please only put one question on each page.]

DEMOGRAPHICS

D1. Are you Building Performance Institute (BPI) Certified?

1. Yes
2. No
8. Don't know

[ASK IF D1=1, ELSE SKIP]

D2. Which BPI Certifications do you hold? [MULTIPLE RESPONSE; SELECT ALL THAT APPLY]

1. Building Analyst
2. Envelope
3. Residential Building Envelope Whole House Air Leakage Control Installer
4. Manufactured Housing
5. Heating
6. Air Conditioning and Heat Pump
7. Multi-Family
00. Other (Please specify: _____)

Job Training and Requirements

JT1. Prior to working on this program, did you participate in any other residential auditing work?

1. Yes
2. No
8. Don't know

JT2. Do you feel that the training required to become an auditor is adequate to prepare you for the job?

1. Yes
2. No

JT3. Do you think that any additional training should be provided?

1. Yes
2. No

[SKIP IF JT3=2]

JT3a. In your opinion, what additional elements should be included in the training process for auditors?

[OPEN END]

00. OPEN END

JT4. Have you ever completed audits of homes under the Low Income Weatherization Program?

1. Yes
2. No
8. Don't know

Audit

A1. How long does the audit usually take?

1. Less than one hour
2. 1-2 hours
3. 2-3 hours
4. Over 3 hours
5. Audit times vary/It depends

[ASK IF A1=5; ELSE SKIP TO A3]

A2 Please explain what factors contribute to the time it takes to complete the audit. [OPEN END]

00. OPEN END

A3 When performing an audit, do you typically install the measures in the home or leave the measures for the customer to install?

	1. Typically, I install all of the measures	2. Typically, I leave all of the measures	3. Install or leave measures varies/It depends
a. Compact Fluorescent Lamps (CFLs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Low-Flow Faucet Aerators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Low-Flow Showerheads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Water Heater Insulation Wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Hot Water Pipe Wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Typically, I install all of the measures in the home [SKIP TO A4]
2. Typically, I leave all of the measures for the customer to install [SKIP TO A3a]
3. Installing or Leaving measures varies/It depends [SKIP TO A3b]

[ASK IF A3a-e=2,]

A3aa. Please explain the circumstances under which you leave [MEASURES a-e] for the customer to install. [OPEN END]

00. OPEN END

[ASK IF A3a-e=3; ELSE SKIP TO A4]

A3ba. Please explain the circumstances under which you do not install all of the measures for the customer. [OPEN END]

00. OPEN END

A4. Are there any challenges involved with the installation of any of the following:

	1. Yes	2. No
a. Compact Fluorescent Lamps (CFLs)	<input type="checkbox"/>	<input type="checkbox"/>
b. Low-Flow Faucet Aerators	<input type="checkbox"/>	<input type="checkbox"/>
c. Low-Flow Showerheads	<input type="checkbox"/>	<input type="checkbox"/>
d. Water Heater Insulation Wrap	<input type="checkbox"/>	<input type="checkbox"/>
e. Hot Water Pipe Wrap	<input type="checkbox"/>	<input type="checkbox"/>

[ASK IF A4a-e=1; ELSE SKIP TO A6]

A5. Can you please describe the challenges faced with the installation of [MEASURE NAME A5a-e]?
[OPEN END]

00. OPEN END

A6. Do you experience any challenges in conducting your daily activities?

1. Yes
2. No

[ASK IF A6=1; ELSE SKIP TO A7]

A6a. Please describe the challenges you experience? [OPEN END]

00. OPEN END

A7. Do you provide each home with a report of audit findings and recommendations at the time of the audit?

1. Yes
2. No

[ASK IF A7=2; ELSE SKIP TO A8]

A7a. Please describe the circumstances under which you do not provide customers with an audit report?
[OPEN END]

00. OPEN END

A8. How often do you discuss audit findings and recommendations with customers?

1. Always
2. Sometimes
3. Rarely
4. Never

[ASK IF A8=2, 3, 4; ELSE SKIP TO A9]

A8a. Please describe the circumstances under which you do not discuss audit findings and recommendations with customers? [OPEN END]

00. OPEN END

A9. How often do you make the following recommendations to customers? [ROTATE]

	1. Every single audit	2. Most audits	3. Some audits	4. Rarely	5. Never
a. Taking shorter showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Turning off lights when no longer in the room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Programming thermostat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Unplugging unused appliances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Wash clothes in cold water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A10. Are there any other recommendations outside of what we've previously presented that you commonly make to customers?

1. Yes
2. No

[ASK IF A10=1, ELSE SKIP TO CS1]

A10a. Please describe what additional recommendations you commonly make to customers. [OPEN END]

00. OPEN END

Customer Satisfaction

CS1. Do your customers appear to understand the program and what is included in the audit?

1. Yes
2. No

CS2. What are the most frequent questions you get from customers? [OPEN END]

00. OPEN END

CS3. How do you address these questions? [OPEN END]

00. OPEN END

CS3a. Do you think that customers participating in the audit program are more likely to install additional measures on their own?

1. Yes
2. No
8. Don't know

[ASK IF CS3a=1; ELSE SKIP TO CS4]

CS3b. What types of energy efficiency measures do you think the customers are likely to install? [OPEN END]

00. OPEN END

CS4. On a scale of 1-5, where 1 is very dissatisfied and 5 and very satisfied, how satisfied do you think customers are with the program? [NUMERIC 1-5]

1. Very dissatisfied
2. Somewhat dissatisfied
3. Neither satisfied/nor dissatisfied
4. Somewhat satisfied
5. Very satisfied
8. Don't know

[IF CS4<3, ASK SC4a, ELSE SKIP TO CS5]

CS4a. Why do you think customers may be dissatisfied with the program? [OPEN END]

00. OPEN END

CS5. On a scale of 0 to 10, where 0 is extremely dissatisfied and 10 is extremely satisfied, how satisfied do you think program customers are with...

	10 Extremely Satisfied	9	8	7	6	5	4	3	2	1	0 – Extremely Dissatisfied	8. Don't know
a. The amount of time between when you called to schedule the assessment and when it was done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The time it took to complete the assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The energy savings upgrades installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. The quality of the work performed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. The audit report findings or recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CS5aa. In your opinion, what aspects of the program are customers most satisfied with?

1. Application process
2. Scheduling process
3. Installation of measures
4. Types of measures available
5. Audit report
6. Recommendations
00. Other (Please specify: _____)
98. Don't know

CS6. In your opinion, what aspects of the program are customers least satisfied with? [EXCLUDE RESPONSES SELECTED IN CS5aa]

1. Application process
2. Scheduling process
3. Installation of measures
4. Types of measures available
5. Audit report
6. Recommendations
00. Other (Please specify: _____)
98. Don't know

CS7. What, if anything, could be done to improve the program for customers? [OPEN END]

00. OPEN END

Post-Interview Recruitment Screener

R1. Thank you very much for taking the time to assist us with this survey and evaluation! Your contribution is a very important part of this process. If any additional questions arise during our research, may we follow up with you by phone?

1. Yes
2. No
9. Refused

[IF R1=1; ELSE SKIP TO END OF SURVEY]

R1a. What is your name? [OPEN END]

00. OPEN END

R1b. What is the best phone number to reach you at? [OPEN END]

00. OPEN END

R1c. What is the best e-mail address to reach you at? [OPEN END]

00. OPEN END

End of Survey Message

Opinion Dynamics, on behalf of Energizing Indiana, thanks you again for participating in this survey!

Indiana Core Low Income Weatherization Audit Program Staff On-line Survey

Opinion Dynamics, on behalf of Energizing Indiana, is conducting this survey of auditors working in the Low Income Weatherization Audit Program to assess auditor and customer satisfaction.

We expect the survey to take approximately 15 minutes to complete. Your responses will be kept confidential and the results of this survey will be reported in aggregate.

E-mail Invitation

From: Opinion Dynamics

Subject: Auditor Survey-Low Income Weatherization Audit Program

Dear [NAME],

Opinion Dynamics, on behalf of Energizing Indiana is conducting an evaluation of the Indiana Low Income Weatherization Audit Program. As a part of this evaluation, we are conducting an online survey with program auditors. This survey is intended to solicit your feedback on the program operations, as well as your customer's thoughts on the program. Your feedback is incredibly important and greatly appreciated!

Please click on the link below to take this short survey:

[INSERT UNIQUE URL TO SURVEY]

Sincerely,

Allison Carlson

Evaluation Project Manager

Landing Page

Thank you for taking a few minutes to complete this survey about Indiana's Low Income Weatherization Audit Program! Opinion Dynamics Corporation, on behalf of Energizing Indiana, is conducting this survey as a part of an evaluation of the Low Income Weatherization Audit Program. We expect the survey to take no longer than 15 minutes to complete. Remember your responses will be kept confidential. Thanks again for participating in this important survey!

[PROGRAMMING NOTES: Please include a "Process Bar" at the top of each page. Also, please only put one question on each page.]

DEMOGRAPHICS

D1. Are you Building Performance Institute (BPI) Certified?

- 1. Yes
- 2. No
- 8. Don't know

[ASK IF D1=1, ELSE SKIP]

D2. Which BPI Certifications do you hold? [MULTIPLE RESPONSE; SELECT ALL THAT APPLY]

1. Building Analyst
2. Envelope
3. Residential Building Envelope Whole House Air Leakage Control Installer
4. Manufactured Housing
5. Heating
6. Air Conditioning and Heat Pump
7. Multi-Family
00. Other (Please specify: _____)

Job Training and Requirements

JT1. Prior to working on this program, did you participate in any other residential auditing work?

1. Yes
2. No
8. Don't know

JT2. Do you feel that the training required to become an auditor is adequate to prepare you for the job?

1. Yes
2. No

JT3. Do you think that any additional training should be provided?

1. Yes
2. No

[SKIP IF JT3=2]

JT3a. In your opinion, what additional elements should be included in the training process for auditors?

[OPEN END]

00. OPEN END

JT4. Have you ever completed audits of homes under the Home Energy Audit Program?

1. Yes
2. No
8. Don't know

Audit

A1. How long does the audit usually take?

1. Less than two hours
2. 2-3 hours
3. 3-4 hours
4. 4-5 hours
5. Over 5 hours
6. Audit times vary/It depends

[ASK IF A1=6; ELSE SKIP TO A3]

A2. Please explain what factors contribute to the time it takes to complete the audit. [OPEN END]

00. OPEN END

A3. When performing an audit, do you typically install the following measures in the home or leave the measures for the customer to install?

	1. Typically, I install all of the measures	2. Typically, I leave all of the measures	3. Install measures or leave varies/It depends
a. Compact Fluorescent Lamps (CFLs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Low-Flow Faucet Aerators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Low-Flow Showerheads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Water Heater Insulation Wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Hot Water Pipe Wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Typically, I install all of the measures in the home [SKIP TO A4]
2. Typically, I leave all of the measures for the customer to install [SKIP TO A3a]
3. Installing or Leaving measures varies/It depends [SKIP TO A3b]

[ASK IF A3a-e=2]

A3aa. Please explain the circumstances under which you leave [MEASURE a-e] for the customer to install. [OPEN END]

00. OPEN END

[ASK IF A3a-e=3 ELSE SKIP TO A4]

A3ba. Please explain the circumstances under which you do not install all of the measures for the customer. [OPEN END]

00. OPEN END

A4. Do you perform combustion and carbon monoxide tests in every home that has gas appliances?

1. Yes
2. No
8. Don't know

[ASK IF A4=2 or 8; IF A4=1 SKIP TO A6]

A5. Under what circumstances are combustion and carbon monoxide tests not performed in homes with gas appliances? [OPEN END]

00. OPEN END

A6. When conducting combustion and carbon monoxide tests, how often do you find a need for a replacement or repair?

1. Always
2. Sometimes
3. Rarely
4. Never

[ASK IF A6=1, 2, or 3, ELSE SKIP TO A9]

A7. What most often needs replacement or repair?

1. Ventilation
2. Gas kitchen appliances
3. Furnace/boiler
4. Water heater
5. Clothes dryer
00. Other (Please specify: _____)

A8. If a replacement or repair is needed, how do you typically address the situation? [OPEN END]

00. OPEN END

A9. How often do you find that asbestos is present in the home?

1. Always
2. Sometimes
3. Rarely
4. Never

[ASK IF A9=1, 2, or 3, ELSE SKIP TO A11]

A10. If asbestos is found, how you typically address the situation? [OPEN END]

00. OPEN END

A11. During your audits, have you ever encountered any other health or safety issues?

1. Yes
2. No

[ASK IF A11=1, ELSE SKIP TO A14]

A12. What other health and safety issues have you encountered during home audits? [OPEN END]

00. OPEN END

A13. How do you typically handle these situations? [OPEN END]

00. OPEN END

A14. Do you perform a blower door guided air sealing in every home that is audited?

1. Yes
2. No

[ASK IF A14=2, ELSE SKIP TO A16]

A15. Please explain the circumstances under which you do not perform a blower door guided air sealing in every home that is audited? [OPEN END]

00. OPEN END

A16. Are there any challenges involved with the installation of any of the following:

	1. Yes	2. No
a. Compact Fluorescent Lamps (CFLs)	<input type="checkbox"/>	<input type="checkbox"/>
b. Low-Flow Faucet Aerators	<input type="checkbox"/>	<input type="checkbox"/>

	1. Yes	2. No
c. Low-Flow Showerheads	<input type="checkbox"/>	<input type="checkbox"/>
d. Water Heater Insulation Wrap	<input type="checkbox"/>	<input type="checkbox"/>
e. Hot Water Pipe Wrap	<input type="checkbox"/>	<input type="checkbox"/>
f. Air Sealing	<input type="checkbox"/>	<input type="checkbox"/>
g. Attic Insulation	<input type="checkbox"/>	<input type="checkbox"/>

[ASK IF A16a-e=1; ELSE SKIP TO A18]

A17. Can you please describe the challenges faced with the installation of [MEASURE NAME A5a-e]?
[OPEN END]

00. OPEN END

A18. Do you experience any challenges in conducting your daily activities?

- 1. Yes
- 2. No

[ASK IF A18=1; ELSE SKIP TO A19]

A18a. Please describe the challenges you experience? [OPEN END]

00. OPEN END

A19. Do you provide each home with a report of audit findings and recommendations at the time of the audit?

- 1. Yes
- 2. No

[ASK IF A19=2; ELSE SKIP TO A20]

A19a. Please describe the circumstances under which you do not provide customers with an audit report?
[OPEN END]

00. OPEN END

A20. How often do you discuss audit findings and recommendations with customers?

- 1. Always
- 2. Sometimes
- 3. Rarely
- 4. Never

[ASK IF A20=2, 3, or 4; ELSE SKIP TO A21]

A20a. Please describe the circumstances under which you do not discuss audit findings and recommendations with customers? [OPEN END]

00. OPEN END

A21. How often do you make the following recommendations to customers? [ROTATE]

	1. Every single audit	2. Most audits	3. Some audits	4. Rarely	5. Never
a. Taking shorter showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Turning off lights when no longer in the room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Programming thermostat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Unplugging unused appliances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Wash clothes in cold water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A22. Are there any other recommendations outside of what we've previously presented that you commonly make to customers?

1. Yes
2. No

[ASK IF A22=1, ELSE SKIP TO CS1]

A22a. Please describe what additional recommendations you commonly make to customers. [OPEN END]

00. OPEN END

Customer Satisfaction

CS1. Do your customers appear to understand the program and what is included in the audit?

1. Yes
2. No

CS2. What are the most frequent questions you get from customers? [OPEN END]

00. OPEN END

CS3. How do you address these questions? [OPEN END]

00. OPEN END

CS3a. Do you think that customers participating in the audit program are more likely to install additional measures on their own?

1. Yes
2. No
8. Don't know

[ASK IF CS3a=1; ELSE SKIP TO CS4]

CS3b. What types of energy efficiency measures do you think the customers are likely to install? [OPEN END]

00. OPEN END

CS4. On a scale of 1-5, where 1 is very dissatisfied and 5 and very satisfied, how satisfied do you think customers are with the program? [NUMERIC 1-5]

1. Very dissatisfied
2. Somewhat dissatisfied
3. Neither satisfied/nor dissatisfied
4. Somewhat satisfied
5. Very satisfied
8. Don't know

[IF CS4<3, ASK SC4a, ELSE SKIP TO CS5]

CS4a. Why do you think customers may be dissatisfied with the program? [OPEN END]

00. OPEN END

CS5. On a scale of 0 to 10, where 0 is extremely dissatisfied and 10 is extremely satisfied, how satisfied do you think program customers are with...

	10 Extremely Satisfied	9	8	7	6	5	4	3	2	1	0 – Extremely Dissatisfied	8. Don't know
a. The amount of time between when you called to schedule the assessment and when it was done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The time it took to complete the assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The energy savings upgrades installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. The quality of the work performed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. The audit report findings or recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CS5aa. In your opinion, what aspects of the program are customers most satisfied with?

1. Application process
2. Scheduling process
3. Installation of measures
4. Types of measures available
5. Audit report
6. Recommendations
00. Other (Please specify: _____)
98. Don't know

CS6. In your opinion, what aspects of the program are customers least satisfied with? [EXCLUDE RESPONSES SELECTED IN CS5aa]

1. Application process
2. Scheduling process
3. Installation of measures
4. Types of measures available
5. Audit report
6. Recommendations
00. Other (Please specify: _____)
98. Don't know

CS7. What, if anything, could be done to improve the program for customers? [OPEN END]
00. OPEN END

Post-Interview Recruitment Screener

[PROGRAMMING NOTES: Each question in this section should be on a separate page.]

R1. Thank you very much for taking the time to assist us with this survey and evaluation! Your contribution is a very important part of this process. If any additional questions arise during our research, may we follow up with you by phone?

1. Yes
2. No
9. Refused

[IF R1=1; ELSE SKIP TO END OF SURVEY]

R1a. What is your name? [OPEN END]
00. OPEN END

R1b. What is the best phone number to reach you at? [OPEN END]
00. OPEN END

R1c. What is the best e-mail address to reach you at? [OPEN END]
00. OPEN END

End of Survey Message

Opinion Dynamics, on behalf of Energizing Indiana, thanks you again for participating in this survey!

ENERGY EFFICIENT SCHOOLS

Energizing Indiana School Education Program: Net-to-Gross Survey

Hello, my name is [NAME] and I'm calling on behalf of [UTILITY] regarding the Energizing Indiana Schools Education Program. May I please speak with [PARENT/GUARDIAN NAME].

[IF REINTRODUCED TO CONTACT NAME] Hello, my name is [NAME] and I'm calling on behalf of [UTILITY] regarding the Energizing Indiana Schools Education Program.

[IF NEEDED] This program delivers energy efficient kits to students in 5th and 6th grade and is supplemented by a curriculum taught in school about energy efficiency.

Q1. [UTILITY] is sponsoring additional research about the Schools Education Program to help them best deliver free energy savings to families and to educate children about energy efficiency. Our records indicate that you returned a postcard to Energizing Indiana that gave some feedback about the program. Would you be willing to participate in a quick 15 minute survey to talk about the kit that your household received?

31. No, I did not send a postcard **[TERMINATE: I'm sorry but you do not qualify for this survey. Thank you for your time. Goodbye]**

I have a few questions about the items in the Energy Efficiency Kit that your household received and whether they are currently installed.

Q3. The kit that your household received contained six compact fluorescent light bulbs (CFLs), three were smaller 13-watt CFLs and three were larger 23-watt CFLS. Of the three smaller CFLs, how many are currently installed? [RECORD NUMBER 0-3; 98=Don't know, 99=Refused]
[SKIP TO Q7 if Q3=8,9]

[SKIP IF Q3= 3]

Q4. Of the [3-Q3 response] small 13-watt bulbs that you are not currently using, how many do you plan on installing? [RECORD NUMBER 0-3; 98=Don't know, 99=Refused]
[SKIP TO Q7 if Q4=8,9]

[SKIP IF Q3= 3 OR IF Q3+Q4 = 3]

[create total installed/planning to install small bulb calculation]

Q5. What are your reasons for not installing or planning to install the **[IF 3- total installed small= 1), say "single", IF (3- total installed small= 2), say "two" IF (3- total installed small= 3), say "three"]** remaining 13-watt bulb(s)? **[DO NOT READ, MULTIPLE RESPONSE]**

- 01. (Was installed but bulb(s) burned out)
- 02. (Quality of light)
- 03. (Mercury content)
- 04. (Requires special disposal/Must be recycled)
- 05. (Fire Hazard)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF Q3= 3 OR IF Q3+Q4 = 3]

Q6. What did you do with the **[IF 3- total installed small= 1), say “single”, IF (3- total installed small= 2), say “two” IF (3- total installed small= 3), say “three”]**remaining 13-watt bulb(s)? **[DO NOT READ]**

- 01. (Put into storage)
- 02. (Gave away)
- 03. (Threw away in trash)
- 04. (Recycled/Dropped off at hazardous waste center)
- 05. (Brought to a Home Depot or another retail store to recycle)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

Q7. The kit that your household received also contained three larger 23-watt CFLs. Of these three, how many are currently installed? **[RECORD NUMBER 0-3; 98=Don't know, 99=Refused]**
[SKIP TO Q11 if Q7=8,9]

[SKIP IF Q7=3]

Q8. Of the **[3-Q7 response]** large 23-watt bulbs that you are not using, how many do you plan on installing in your home? **[RECORD NUMBER 0-3; 98=Don't know, 99=Refused]**
[SKIP TO Q11 if Q8=8,9]

[SKIP IF Q7= 3 OR IF Q8 = 3]

[create total installed/planning to install large bulb calculation]

Q9. What are your reasons for not installing or planning to install the **[IF (3- total installed large = 1), say “single”, IF (3- total installed large = 2), say “two” IF (3-- total installed large = 3), say “three”]** remaining 23-watt bulb(s)? **[DO NOT READ, MULTIPLE RESPONSE]**

- 01. (Was installed but bulb(s) burned out)
- 02. (Quality of light)
- 03. (Mercury content)
- 04. (Requires special disposal/Must be recycled)
- 05. (Fire Hazard)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF Q7= 3 OR IF Q7+Q8 = 3]

Q10. What did you do with the [IF (3- total installed large = 1), say “single”, IF (3- total installed large = 2), say “two” IF (3-- total installed large = 3), say “three”] remaining 23-watt bulb(s)? [DO NOT READ]

01. (Put into storage)
02. (Gave away)
03. (Threw away in trash)
04. (Recycled/Dropped off at hazardous waste center)
05. (Brought to a Home Depot or another retail store to recycle)
00. (Other, Please specify: _____)
98. (Don’t know)
99. (Refused)

[SKIP TO Q14 IF Q3+ Q4 + Q7 + Q8 = 0, (i.e. Installed and plans to install NO bulbs from kit)]

Q11. Did you have any CFLs installed in your home before you received the kit from Energizing Indiana’s School Education Program?

1. Yes
2. No [SKIP TO Q13]
8. (Don’t know) [SKIP TO Q13]
9. (Refused) [SKIP TO Q13]

Q12. How many CFLs were you already using in your home prior to receiving the kit from Energizing Indiana? [RECORD NUMBER 0-100; 998=Don’t know, 999=Refused]

Q13. Were you planning on buying CFLs for your home before you received the Energy Efficient kit?

1. Yes
2. No
3. (No, I already have them installed in all available sockets)
4. (Maybe)
8. (Don’t know)
9. (Refused)

Q14. The kit contained a **high-efficiency showerhead**. Is the **high-efficiency showerhead** currently installed in your home?

1. Yes [SKIP TO Q18]
2. No [ANSWER Q15, Q16 & Q17 THEN SKIP TO Q20]
8. (Don’t know) [SKIP TO Q18]
9. (Refused) [SKIP TO Q18]

Q15. Do you plan on installing the **high-efficiency showerhead**?

1. Yes [SKIP TO Q18]
2. No [ANSWER Q16 & Q17 THEN SKIP TO Q20]
3. (Maybe) [SKIP TO Q18]
8. (Don’t know) [SKIP TO Q18]
9. (Refused) [SKIP TO Q18]

[ASK IF Q15=2]

Q16. What are your reasons for not installing and not planning to install the **high-efficiency showerhead**? **[DO NOT READ; MULTIPLE RESPONSE]**

- 01. (Water volume)
- 02. (Water temperature)
- 03. (Water pressure)
- 04. (Did not like the design / look of it)
- 05. (Did not fit / could not install)
- 06. (Already had **high-efficiency showerheads** installed in every possible location)
- 07. (Do not have a shower)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[ASK IF Q15=2]

Q17. What did you do with the **high-efficiency showerhead**? **[DO NOT READ]**

- 01. (Put into storage)
- 02. (Gave away)
- 03. (Sold it)
- 04. (Threw away in trash)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF Q15=2]

Q18. Did you have any other **high-efficiency showerheads** installed in your home before you received the kit?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[SKIP IF Q15=2]

Q19. Were you planning on buying a **high-efficiency showerhead** for your home before you received the kit?

- 1. Yes
- 2. No
- 3. No, I already have them installed in all showers
- 4. Maybe
- 8. (Don't know)
- 9. (Refused)

Q20. The kit that your household received contained a **kitchen faucet aerator**. Is the **faucet aerator** currently installed in your home?

1. Yes [SKIP TO Q24]
2. No [ANSWER Q21, Q22, & Q23 THEN SKIP TO Q26]
8. (Don't know) [SKIP TO Q24]
9. (Refused) [SKIP TO Q24]

Q21. Do you plan on installing the **kitchen faucet aerator**?

1. Yes [SKIP TO Q24]
2. No [ANSWER Q22 & Q23 THEN SKIP TO Q26]
3. (Maybe) [SKIP TO Q24]
8. (Don't know) [SKIP TO Q24]
9. (Refused) [SKIP TO Q24]

[ASK IF Q21=2]

Q22. What are your reasons for not installing and not planning to install the **kitchen faucet aerator**?
[DO NOT READ]

01. (Water volume)
02. (Water temperature)
03. (Water pressure)
04. (Did not like the design/look of it)
05. (Did not fit/could not install)
06. (Already had kitchen faucet aerators installed in every possible location)
07. (Do not have a kitchen faucet)
00. (Other, Please specify: _____)
98. (Don't know)
99. (Refused)

[ASK IF Q21=2]

Q23. What did you do with the **kitchen faucet aerator**? [DO NOT READ]

01. (Put into storage)
02. (Gave away)
03. (Sold it)
04. (Threw away in trash)
00. (Other, Please specify: _____)
98. (Don't know)
99. (Refused)

[SKIP IF Q21=2]

Q24. Did you have any other **kitchen faucet aerators** installed in your home before you received the kit?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[SKIP IF Q21=2]

Q25. Were you planning on buying a **kitchen faucet aerator** for your home before you received the kit?

1. Yes
2. No
3. No, I already have them installed in all faucets
4. Maybe
8. (Don't know)
9. (Refused)

Q26. The kit that your household received contained a **FilterTone® Alarm**, which is an alarm that detects when it is time to clean or change the filter on a heating or air-conditioning system. Is the **FilterTone® Alarm** currently installed in your home?

1. Yes [SKIP TO Q30]
2. No [ANSWER Q27, Q28, & Q29 THEN SKIP TO Q32]
8. (Don't know) [SKIP TO Q30]
9. (Refused) [SKIP TO Q30]

Q27. Do you plan on installing the **FilterTone® Alarm**?

1. Yes [SKIP TO Q30]
2. No [ANSWER Q28 & Q29 THEN SKIP TO Q32]
3. (Maybe) [SKIP TO Q30]
8. (Don't know) [SKIP TO Q30]
9. (Refused) [SKIP TO Q30]

[ASK IF Q27=2]

Q28. What are your reasons for not installing and not planning to install the **FilterTone® Alarm**? **[DO NOT READ, MULTIPLE RESPONSE]**

01. (Did not like the design/look of it)
02. (Did not fit/could not install)
03. (Already had alarms installed in every possible location)
00. (Other: specify)
98. (Don't know)
99. (Refused)

[ASK IF Q27=2]

Q29. What did you do with the **FilterTone® Alarm**? **[DO NOT READ]**

- 01. (Put into storage)
- 02. (Gave away)
- 03. (Sold it)
- 04. (Threw away in trash)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF Q27=2]

Q30. Did you have any other **FilterTone® Alarms** installed in your home before you received the kit?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[SKIP IF Q27=2]

Q31. Were you planning on buying a **FilterTone® Alarm** for your home before you received the kit?

- 1. Yes
- 2. No
- 3. No, I already have them installed in all available locations
- 4. Maybe
- 8. (Don't know)
- 9. (Refused)

Q32. The kit that your household received contained an **LED Night Light**. Is the **LED Night Light** currently installed in your home?

- 1. Yes [SKIP TO Q36]
- 2. No [ANSWER Q33, Q34 & Q35 THEN SKIP TO Q39]
- 8. (Don't know) [SKIP TO Q36]
- 9. (Refused) [SKIP TO Q36]

Q33. Do you plan on installing the **LED Night Light**?

- 1. Yes [SKIP TO Q36]
- 2. No [ANSWER Q34 & Q35 THEN SKIP TO Q39]
- 3. (Maybe) [SKIP TO Q36]
- 8. (Don't know) [SKIP TO Q36]
- 9. (Refused) [SKIP TO Q36]

[ASK IF Q33=2]

Q34. What are your reasons for not installing and not planning to install the **LED Night Light**? **[DO NOT READ]**

- 01. (Did not like the design/look of it)
- 02. (Did not fit/could not install)
- 03. (Already had LED Night Lights installed in every possible location)
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF Q33=2]

Q35. What did you do with the **LED Night Light**? **[DO NOT READ]**

- 01. (Put into storage)
- 02. (Gave away)
- 03. (Sold it)
- 04. (Threw away in trash)
- 00. (Other, Please specify: _____)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF Q33=2]

Q36. Did you replace an existing night light when you installed the new **LED Night Light**?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[SKIP IF Q33=2]

Q37. Did you have any other **LED Night Lights** installed in your home before you received the kit?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[SKIP IF Q33=2]Q38. Were you planning on buying an **LED Night Light** for your home before you received the kit?

- 1. Yes
- 2. No
- 3. (No, I already have them installed in all available locations)
- 4. (Maybe)
- 8. (Don't know)
- 9. (Refused)

Q39. Now, I'd like to ask you about any energy efficient purchases that you made after receiving the kit that you did not receive a rebate or incentive for. Since receiving the kit, have you added any other energy efficient equipment or services in your home that did not receive a rebate?

1. Yes
2. No [SKIP to Q41]
8. (Don't know) [SKIP to Q41]
9. (Refused) [SKIP to Q41]

	<p>Q40. Since you received the kit, have you purchased and installed any [a – r]? [ONLY REPEAT THIS QUESTION AFTER THE RESPONDENT ANSWERS YES TO INSTALLING A MEASURE, OTHERWISE SAY IT ONCE AND LIST THE MEASURES UNTIL ANOTHER YES RESPONSE]</p>
a. CFLs	<p>YES=1, NO=2 (SKIP TO Q41), 98=Don't know, 99=Refused (SKIP TO Q41) [IF YES, then carry through Q40a and Q40b. Otherwise, at end of Q40 a-r, then skip to Q41.</p>
b. High-efficiency showerheads	
c. Faucet Aerators	
d. FilterTone Alarms	
e. LED Night Lights	
f. LED bulbs	
g. Fluorescent tubes	
h. ENERGY STAR Lighting fixtures	
i. ENERGY STAR ceiling fans	
j. Energy Efficient Refrigerators/freezers	
k. Energy Efficient Windows	
l. Energy Efficient Doors	
m. Energy Efficient Clothes washers	
n. Insulation	
o. ENERGY STAR Dishwashers	
p. Energy Efficient Central	

	Q40. Since you received the kit, have you purchased and installed any [a – r]? [ONLY REPEAT THIS QUESTION AFTER THE RESPONDENT ANSWERS YES TO INSTALLING A MEASURE, OTHERWISE SAY IT ONCE AND LIST THE MEASURES UNTIL ANOTHER YES RESPONSE]
ACs	
q. Energy Efficient Heat pumps	
r. Other energy efficient measures (_____)	

	Q40a. How many did you install? [IF i = YES]
a. CFLs	aa. ____ Bulbs
b. High-efficiency showerheads	bb. ____
c. Faucet Aerators	cc. ____
d. FilterTone Alarms	dd. ____
e. LED Night Lights	ee. ____
f. LED bulbs	ff. ____ Bulbs
g. Fluorescent tubes	gg. ____ Bulbs
h. ENERGY STAR Lighting fixtures	hh. ____
i. ENERGY STAR ceiling fans	ii. ____
j. Energy Efficient Refrigerators/freezers	jj. ____
k. Energy Efficient Windows	kk. ____ Square Feet
l. Energy Efficient Doors	ll. ____
m. Energy Efficient Clothes washers	mm. ____
n. Insulation	nn. ____ Square Feet
o. ENERGY STAR Dishwashers	oo. ____
p. Energy Efficient Central ACs	pp. ____
q. Energy Efficient Heat pumps	qq. ____
r. Other energy efficient measures (_____)	rr. ____

	Q40b. On a scale of 1-10, where 1 is not at all influential and 10 is highly influential, how influential was receiving the energy efficiency kit on your decision to install this/these energy-efficient products(s). [IF i = YES]
a. CFLs	a. 1 2 3 4 5 6 7 8 9 10
b. High-efficiency showerheads	b. 1 2 3 4 5 6 7 8 9 10
c. Faucet Aerators	c. 1 2 3 4 5 6 7 8 9 10
d. FilterTone Alarms	d. 1 2 3 4 5 6 7 8 9 10
e. LED Night Lights	e. 1 2 3 4 5 6 7 8 9 10
f. LED bulbs	f. 1 2 3 4 5 6 7 8 9 10
g. Fluorescent tubes	g. 1 2 3 4 5 6 7 8 9 10
h. ENERGY STAR Lighting fixtures	h. 1 2 3 4 5 6 7 8 9 10
i. ENERGY STAR ceiling fans	i. 1 2 3 4 5 6 7 8 9 10
j. Energy Efficient Refrigerators/freezers	j. 1 2 3 4 5 6 7 8 9 10
k. Energy Efficient Windows	k. 1 2 3 4 5 6 7 8 9 10
l. Energy Efficient Doors	l. 1 2 3 4 5 6 7 8 9 10
m. Energy Efficient Clothes washers	m. 1 2 3 4 5 6 7 8 9 10
n. Insulation	n. 1 2 3 4 5 6 7 8 9 10
o. ENERGY STAR Dishwashers	o. 1 2 3 4 5 6 7 8 9 10
p. Energy Efficient Central ACs	p. 1 2 3 4 5 6 7 8 9 10
q. Energy Efficient Heat pumps	q. 1 2 3 4 5 6 7 8 9 10
r. Other energy efficient measures (_____)	r. 1 2 3 4 5 6 7 8 9 10

Q41. That completes this survey. Do you have any comments that you would like to make about the Energy Efficient Schools Education Program? [OPEN-END]

00. (Other, Please specify: _____)

98. (Don't know)

99. (Refused)

Thank you very much for your participation. Your responses will help Energizing Indiana continue to improve its Schools Education Program.

Energizing Indiana School Building Assessment Program Non-Participant Survey

Introduction

Hello, my name is [INTERVIEWER] and I'm calling on behalf of Energizing Indiana, may I please speak with [NAME].

[REINTRODUCE ONCE CONTACT IS ON PHONE]

You may recall that a representative from Energizing Indiana called you in the past year to invite you to participate in the School Building Assessment Program. This program provides a thorough assessment of how you use energy at your school and suggestions for cost-effective energy saving improvements. Our records show you were not able to participate in the 2012 program. So, Energizing Indiana has asked us to follow-up with you to get your opinions about this program and what it offers, so that it can be improved. My questions will take about 5 minutes.

Screening

S1. To double check, our records show that a representative from Energizing Indiana approached you about having a school building assessment at [SERVICE_ADDRESS]. Is that correct? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Yes
2. No
98. Don't know – *If No/Don't know – politely terminate.*

S2. And can you tell me the name of the utility that provides electricity to your school?

1. Duke Energy
2. Vectren Energy Delivery of Indiana
3. IPL
4. Indiana Michigan Power
5. NIPSCO
6. A municipal or cooperative utility of the Indiana Municipal Power Agency
98. Don't know

Program Awareness

Now I'd like to talk with you about how you learned about the School Building Assessment Program.

PA1. How did you first find out about the Assessment Program? [SELECT ONLY ONE]

1. A person from Energizing Indiana contacted us
2. A person from our electric utility contacted us
3. Our electric utility sent us materials about the program
4. Energizing Indiana sent us materials about the program
5. Energizing Indiana website
6. Electric utility's web site
7. From another school or industry colleague
8. Other _____
98. Don't know
99. Refused

Participation Barriers, including Previous Energy Audits

PB1. What factors kept your school from participating in the School Building Assessment Program? Were there any other factors that prevented your school from participating? [SELECT ALL THAT APPLY; AND ALSO RECORD VERBATIM RESPONSES]

1. Not enough funding
2. Staff did not have enough time to facilitate participation
3. Did not see the need/benefit/value
4. School had previously received an energy assessment
5. School was moving to a new building [SKIP TO PD2]
6. Other _____
98. Don't know
99. Refused

PB2. [ONLY ASK IF PB1=4; OTHERWISE SKIP TO CP1] May I ask who conducted the energy assessment?

1. A contracting company [SPECIFY] _____
2. Another energy efficiency program [SPECIFY] _____
3. The school's internal maintenance staff
4. Other _____
98. Don't know
99. Refused

PB3. Please help me understand how extensive the audit was at your school, was it...? [READ]

1. Walk-through, no report
2. Walk-through with detailed report, no savings estimates or payback period provided
3. Walk-through with detailed report providing savings estimates and payback periods
98. Don't know
99. Refused

PB4. Did you install any energy efficiency improvements as a result of the audit?

1. Yes [SPECIFY MEASURES] _____
2. No
98. Don't know
99. Refused

PB5. Did you receive any rebates on the improvements that you installed?

1. Yes [SPECIFY SPONSOR OF REBATES] _____
2. No
98. Don't know
99. Refused

Clarity of Program Features, Awareness of other Programs, and EE Actions Being Taken

CP1. We want to know if some features of the program were clear to you. Was it clear to you that the energy efficiency assessment that the School Building Assessment Program conducts is at no cost to your school?

1. Yes
2. No
98. Don't know
99. Refused

CP2. Was it clear to you that the Program provides a written report containing energy saving recommendations and tips regarding low cost improvements to participating schools?

1. Yes
2. No
98. Don't know
99. Refused

CP3. Was it clear to you that by participating in the schools assessment program you would receive information on how to apply for rebates on energy efficiency equipment improvements through Energizing Indiana's and [UTILITY]'s other programs?

1. Yes
2. No [SKIP TO CP5]
98. Don't know [SKIP TO CP5]
99. Refused [SKIP TO CP5]

CP4. Ok, so it seems like you are familiar with Energizing Indiana's and [UTILITY]'s rebates. How did you hear about the rebates offered through Energizing Indiana's and [UTILITY]'s other programs? [SELECT ONLY ONE]

1. When our school was contacted to participate in the School Building Assessment Program
2. Our school was contacted directly by Energizing Indiana's Commercial Program staff
3. From the contractor who performed our audit
4. Materials provided by electric utility
5. Materials provided by Energizing Indiana
6. Energizing Indiana website
7. Electric utility's web site
8. From another school or industry colleague
9. Other _____
98. Don't know
99. Refused

CP5. Is your school currently making any energy efficiency improvements?

1. Yes
2. No
3. Don't Know

CP6. [ONLY ASK IF CP5 = 1; OTHERWISE SKIP TO PD1] What kinds of energy efficient improvements is your school making? [OPEN END; probe with lighting, heating windows, envelope, hot water etc]

Participation Decisions

Finally, we need your best advice on how to improve the School Building Assessment Program.

PD1. What changes or improvements, if any, would make it more likely that your school would be interested in and able to participate in the Assessment Program? These changes could be about how to communicate about the program, how to reach decision-makers, or how the program is run. Anything that you think would help your school participate. [OPEN END] (Probe: Is there any other type of assistance you need to help improve the energy efficiency of your facilities?)

PD2. What is the title of the person who ultimately decides whether or not to participate in energy efficiency programs like the School Building Assessment Program?

1. Superintendent
2. Facility/ Building Manager
3. Principal
4. Vice Principal
5. Other _____
98. Don't know
99. Refused

Closing

Those are all the questions I had for you. Thank you for your input.

Energizing Indiana Schools: Education Program Participating Teacher Survey

For the email:

Dear **[First and Last Name]**

On behalf of **[insert appropriate utility]**, the Cadmus Group, an independent evaluator, invites you to take part in an important study to provide feedback about your experience with the Energizing Indiana Schools: Education Program.

Our records from the utility show that you participated in the program during the spring or fall of 2012. As an educator, and participant, your opinions and guidance are crucial to making sure the Energizing Indiana Schools: Education Program succeeds with teachers and students.

To **complete the online feedback survey**, please click on this website address or paste this address into your browser: <http://www.cvent.com/d/gcqw18>

To show our appreciation for your completing the survey, we will enter your name into a drawing to win one of four \$100 VISA gift cards. Only the small group of teachers participating in this survey is eligible to win.

The survey should only take 5 minutes to complete. All of your responses will be kept confidential and are for research purposes only.

Questions about this study can be directed to Jeana Swedenburg at The Cadmus Group, Inc. (303-389-2531 or jeana.swedenburg@cadmusgroup.com).

Thank you for taking the time to assist us in this research.

1. Please enter your first and last name here. This is how we will identify who is eligible to be entered into the raffle to win one of four \$100 VISA gift cards!

2. Please confirm which electric utility services your school.
 - a. Duke Energy
 - b. Vectren Energy Delivery of Indiana
 - c. IPL
 - d. Indiana Michigan Power
 - e. NIPSCO
 - f. A municipal or cooperative utility of the Indiana Municipal Power Agency
3. How did you first learn about the Energizing Indiana Schools: Education Program? Please select one response.
 - a. Energizing Indiana Website
 - b. Energizing Indiana program staff
 - c. Resource Action Programs staff
 - d. Electric utility program staff
 - e. Another teacher
 - f. Principal or other administrator
 - g. Other _____

4. What were the most important reasons you signed up for Energizing Indiana Schools: Education Program. Please select up to three responses.
 - a. Curriculum fit with existing lesson plans
 - b. Energy saving products provided for students and families
 - c. Energy savings for students and families
 - d. Financial savings on utilities bills for students and families
 - e. Participated in a similar energy education program in the past
 - f. Recommended by teacher, principal, or other administrator
 - g. Adopted by school and/or fellow teachers
 - h. Promotes energy saving behavior both in and out of the classroom
 - i. Other _____

5. On a scale of 1-10, how well do you think the program's lesson plans fit with Indiana's Curriculum Standards? Please select one response.
 - a. 1 – Not a good fit with curriculum standards
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10 - Very good fit with curriculum standards
 - k. Unaware of Indiana Curriculum Standards

6. On a scale of 1-10, how would you rate the effectiveness of the teaching materials you received through the program? Select one response.
 - a. 1 – Not at all effective
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10 – Very effective

7. Using a scale of 1-10, to what extent do you agree or disagree with the following statement: "My students understood the lessons/curriculum"? Please select one response.
 - a. 1 – Strongly disagree
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10 – Strongly agree

8. Using a scale of 1-10, to what extent do you agree or disagree with the following statement: “My students were engaged in the lessons”? Please select one response.
- a. 1 – Strongly disagree
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10 – Strongly agree
9. Using a scale of 1-10, to what extent do you agree or disagree with the following statement: “My students installed the energy saving products from the kit”? Please select one response.
- a. 1 – Strongly disagree
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10 – Strongly agree
 - k. Unsure
10. What was the most beneficial part of the Education Program? Select one response.
- a. The content of the curriculum
 - b. The workbooks and posters provided to teachers
 - c. The conservation toolkit
 - d. The \$50 mini-grant
 - e. Other _____
11. Did you have energy conservation content included in your lesson plans before you decided to participate in the Energizing Indiana Schools: Education Program?
- a. Yes
 - b. No
12. Did you receive 80% or more of the student surveys back from your class?
- a. Yes (Go to Question 13)
 - b. No
13. Did you mail back all of the surveys that you received?
- a. Yes (Go to Question 15)
 - b. No
14. Why not?
-

15. Did you mail back 80% or more of your classroom's student surveys, qualifying you for the \$50 mini grant?
- a. Yes
 - b. No
- (Go to Question 15)

16. Why not?

17. On a scale of 1-10, how likely would you be to recommend the Energizing Indiana Schools Program to other teachers? Please select one response.

- a. 1 – Not at all likely
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6
- g. 7
- h. 8
- i. 9
- j. 10 – Very likely

18. Overall, on a scale of 1-10, how satisfied are you with the Energizing Indiana Schools: Education Program? Please select one response.

- a. 1 – Not at all satisfied
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6
- g. 7
- h. 8
- i. 9
- j. 10 – Very satisfied

19. What suggestions, if any, do you have for improving the Energizing Indiana Schools: Education Program?

**Thank you for your participation in the
Energizing Indiana Schools: Education Program
and for completing this survey!**

Energizing Indiana School Building Assessment Program Participant Survey

Introduction

Hello, my name is [INTERVIEWER] and I'm calling on behalf of Energizing Indiana, may I please speak with [NAME].

[REINTRODUCE ONCE CONTACT IS ON PHONE]

Our records show your school participated in Energizing Indiana's School Building Assessment Program -- a program where Energizing Indiana Energy Advisors conduct thorough building energy efficiency assessments and provide detailed reports to school officials on the benefits of energy efficiency and the savings associated with operational improvements. We are conducting interviews with school facility staff that participated in the Program in 2012. Do you have 20 minutes to talk with me? As a thank you for completing this questionnaire, we will send you a \$25 VISA check card, or donate \$25 dollars to the American Red Cross on your behalf. Your individual responses will be used by [UTILITY] to improve school energy efficiency programs they offer in your area.

Screening

S1. Our records show that [SCHOOL NAME] received an energy assessment through the Energizing Indiana School Building Assessment Program. Is that correct? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Yes
2. No [THANK AND TERMINATE]
98. Don't know [ASK TO BE TRANSFERRED TO SOMEONE MORE FAMILIAR WITH THE PROGRAM; REINTRODUCE]

S2. Please confirm which electric utility services your school:

1. Duke Energy
2. Vectren Energy Delivery of Indiana
3. IPL
4. Indiana Michigan Power
5. NIPSCO
6. A municipal or cooperative utility of the Indiana Municipal Power Agency
98. Don't know
99. Refused

Program Awareness

Now I'd like to talk with you about how you learned about the School Building Assessment Program.

PA1. How did you first learn about the Assessment Program? [DO NOT READ; SELECT ONLY ONE]

1. Our school was contacted directly by Energizing Indiana
2. Our school was contacted directly by our electric utility
3. Materials provided by electric utility
4. Materials provided by Energizing Indiana
5. Energizing Indiana website
6. Electric utility's web site
7. From another school or industry colleague
8. Other _____
98. Don't know
99. Refused

Participation Decisions

PD1. What were the most important reasons you signed up for the Energizing Indiana School Building Assessment Program? [DO NOT READ; SELCECT ALL THAT APPLY]

1. To save money on utility bills
2. To learn what equipment needed replacing
3. To learn how the school was operating under current conditions
4. To learn way to be more energy efficient
5. To learn how to reduce operating costs
6. Other _____
98. Don't know
99. Refused

PD2. What is the title of the person who ultimately decided to participate in the School Building Assessment Program?

1. Superintendent
2. Facility/ Building Manager
3. Principal
4. Vice Principal
7. Other _____
98. Don't know
99. Refused

Measure Implementation

For these next few questions you may need to directly reference the information provided in the Energy Assessment Report you received at the close out meeting after your school's audit.

M1. Has your school implemented any of the listed Operations and Maintenance or Capital Projects recommendations from the assessment report yet?

1. Yes [SKIP TO M3]
2. No
98. Don't know
99. Refused

M2. Why did the school choose not to implement any recommended equipment from the assessment?

1. Not enough funding [SKIP TO M4]
2. Not enough time [SKIP TO M4]
3. Did not see the need/benefit/value [SKIP TO M4]
4. Did not know how to continue with the process to install the equipment [SKIP TO M4]
5. Could not find a contractor to install the equipment [SKIP TO M4]
6. Planning to install the equipment in the future [SKIP TO M4]
7. Other _____ [SKIP TO M4]
98. Don't know [SKIP TO M4]
99. Refused [SKIP TO M4]

M3. Please list any recommendations that the school implemented as a result of receiving the assessment report [IF NEEDED: these are listed as the "OM" and "CP" recommendations in the report]

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Did you receive a rebate? (Y/N)	If you received a rebate, which program did you receive it through?	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent did you adopt this recommendation?

M4. Is your school planning to implement any of the listed Operations and Maintenance or Capital Projects recommendations from the assessment report in the *next 2 years*? Please list which measures you plan to implement in the *next 2 years*. [0=None; 98=Don't know; 99=Refused]

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Are you expecting to receive a rebate? (Y/N)	If you are expecting to receive a rebate, please list the Utility Incentive Program	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent do you plan to adopt this recommendation

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Are you expecting to receive a rebate? (Y/N)	If you are expecting to receive a rebate, please list the Utility Incentive Program	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent do you plan to adopt this recommendation

M5. Is your school planning to implement any of the listed Operations and Maintenance or Capital Projects recommendations from the assessment report in **2 to 5 years**? Please list which measures you plan to implement in **2 to 5 years**. [0=None; 98=Don't know; 99=Refused]

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Are you expecting to receive a rebate? (Y/N)	If you are expecting to receive a rebate, please list the Utility Incentive Program	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent did you adopt this recommendation

M6. Is your school planning to implement any of the listed Operations and Maintenance or Capital Projects recommendations from the assessment report in the **5 to 10 years**? Please list which measures you plan to implement in **5 to 10 years**. [0=None; 98=Don't know; 99=Refused]

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Are you expecting to receive a rebate? (Y/N)	If you are expecting to receive a rebate, please list the Utility Incentive Program	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent do you plan to adopt this recommendation

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Are you expecting to receive a rebate? (Y/N)	If you are expecting to receive a rebate, please list the Utility Incentive Program	[FOR behavioral recommendations, i.e. changing thermostat settings] To what extent do you plan to adopt this recommendation

M7. [ASK IF ANY MEASURES INSTALLED OR PLANNING TO BE INSTALLED] What was the most influential component of the School building Assessment Program in your school's plans or decisions to install the recommended equipment? [PROMPT IF NECESSARY; SELECT ONLY ONE]

1. The walk-through energy assessment
2. The close-out meeting to discuss the results of the assessment
3. The Energy Assessment Report
4. The 90-day follow up call
5. Other _____
98. Don't know
99. Refused

M8. Are there any recommendations that you feel your school will not consider implementing now or in the future? Why?

Recommendation Number (i.e. OM1; CP1)	Recommendation Description	Why (i.e., price, payback period, safety, red tape)?

Spillover

SO1. Did your school adopt any of the best practices tips and recommendation that were included in the report?

- 1. Yes
- 2. No [SKIP TO SO3]
- 98. Don't know
- 99. Refused

SO2. Which of the best practices tips has your school adopted? [PROMPT IF NECESSARY; MARK ALL THAT ARE MENTIONED]

- 1. Turn off lights when rooms are unoccupied
- 2. Encourage the use of task lighting instead of ambient lighting to directly illuminate work areas
- 3. Replace incandescent lamps with CFLs where possible on desks and in overhead lighting
- 4. Adjust window shades to help maintain occupant comfort
- 5. Turn off office equipment when not in use and enable standby or power saving features
- 6. Remove personal plug loads such as refrigerators, space heaters, and personal printers
- 7. Encourage students and staff to bring energy awareness from school back into their homes
- 8. Other _____
- 98. Don't know
- 99. Refused

SO3. Since receiving the energy assessment, has you school purchased and installed any energy efficient equipment that was not recommended in the report and did not receive a rebate?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

SO4. What measures did the school install that were not recommended and did not receive a rebate? Please designate the quantity and units.

Measure	Quantity	Units

SO5. On a scale of 1-10, where 1 means not at all influential and 10 means very influential, how influential was the energy assessment on your school's decision to install these non-rebated, non-recommended energy-efficient products?

[RECORD RATING 1-10]

Free-ridership

FR1. Were there any measures or practices recommended in the Energy Assessment Report that your school was already considering to implement?

Recommendation Number (i.e. OM1; CP1)	Recommendation Description

FR2. Have your school ever received an energy assessment other than the one conducted by Energizing Indiana?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

FR3. When did your school receive this assessment?

- 1. Before 2008
- 2. 2008
- 3. 2009
- 4. 2010
- 5. 2011
- 6. 2012 (prior to receiving the Energizing Indiana assessment)
- 7. 2012 (after received the Energizing Indiana assessment)
- 98. Don't know
- 99. Refused

FR4. Before Energizing Indiana contacted you with the opportunity to receive a free energy assessment of your school, had the school administration planned and allocated funds to conduct a similar energy assessment in 2012, without any cost reduction from other programs?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

FR5. Had the school planned and allocated funds to conduct a similar energy assessment in the next 5 years, without any cost reductions from other programs?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

Satisfaction

S1. Using a 1-10 scale, with 1 being extremely dissatisfied and 10 being extremely satisfied, how would you rate your satisfaction with the Energy Advisor's knowledge and professionalism?

[RECORD RATING 1-10]

S2. [ASK IF S1= 7 OR LESS] Why were you less than satisfied with the Energy Advisor's knowledge and professionalism? [OPEN END]

S3. Using a 1-10 scale, with 1 being extremely dissatisfied and 10 being extremely satisfied, how would you rate your satisfaction with the Energy Assessment Report?

[RECORD RATING 1-10]

S4. [ASK IF S3= 7 OR LESS] Why were you less than satisfied with the Energy Assessment Report? [OPEN END]

S5. Using a 1-10 scale, with 1 being extremely dissatisfied and 10 being extremely satisfied, how satisfied were you with the amount of new information you learned as a result of participating in the program?

S6. [ASK IF S5= 7 OR LESS] Why were you less than satisfied with the amount of new information you learned? [OPEN END]

S7. Was there any additional information you would have liked to learn from the assessment?

1. Yes [SPECIFY]
2. No
98. Don't know
99. Refused

S8. Using a 1-10 scale, with 1 being extremely dissatisfied and 10 being extremely satisfied, how would you rate your satisfaction with the program overall?

[RECORD RATING 1-10]

S9. [ASK IF S8= 7 OR LESS] Why were you less than satisfied with the program overall? [OPEN END]

S10. Were there any aspects of the School building Assessment Program that were challenging?

1. Yes [SPECIFY]
2. No
98. Don't know
99. Refused

S11. What suggestions, if any, do you have for improving the Energizing Indiana School Building Assessment Program?

1. [OPEN END]
2. No suggestions
98. Don't know
99. Refused

Closing

As I mentioned earlier, we are going to mail you a \$25 VISA check card as a thank you for completing this questionnaire. To which name and address would you prefer we mail the incentive? [OPEN END]

Those are all the questions I had for you. Thank you for your input.

RESIDENTIAL LIGHTING

Indiana Core Lighting Program Retailer Interviewer Guide (Store Level)

Opinion Dynamics team will conduct interviews with representatives from a census of the participating retailer chains in order to determine corporate level retailers' satisfaction with the program, whether it is meeting their expectations, barriers to participation and/or how it could be improved. These interviews will attempt to gather information regarding the purchasing, stocking, and sales trends for CFLs both at the corporate level and at the store level. We will probe the retailers about current or pending issues that might affect lighting programs in the near- and long-term and gather feedback on how they think the program will or will not need to adapt to address these challenges.

Hello, may I please speak with the electrical department manager?

My name is _____. I am from Opinion Dynamics Corporation and am calling on behalf of the Energizing Indiana program.

Your store is participating in a discount lighting program called Energizing Indiana. I would like to ask you a few questions about the program. Can you answer a few questions about the program? Of not can you please direct me to the best person to talk with about this or is there someone else that would be better to talk to?

[WHEN CORRECT PERSON IS REACHED] This interview should take approximately 10 minutes of your time and all of your responses will remain confidential. Is now a good time, or is there a more convenient time for me to call you back? [CONTINUE WITH SURVEY OR MAKE AN APPOINTMENT TO CALL BACK.]

Before we start, I would like to ask for your permission to tape-record this interview, so that I won't have to take notes while we talk. I would like to once again assure you that all of your responses will remain confidential.

Effectiveness of Program Design, Process, and Implementation

1. Has the participation process and program requirements been clearly explained?
2. Did the program supply all the necessary materials such as marketing materials and rebate application forms in a timely manner?
 - a. [IF NO] Why do you say that?
3. Has the program met your expectations? [IF NO, PROMPT FOR DETAILS]
4. Has anything not been working well? [IF YES, PROMPT FOR DETAILS]
5. In your opinion, are there any current issues that pose challenges for energy efficient lighting programs? [PROBE FOR EISA, THE ECONOMY, PRICE ELASTICITY]
 - a. [ASK IF YES] What are these issues? Do you think the program needs to adapt its approaches in order to address these challenges?

Program Satisfaction

6. On a scale of 0 to 10, where 0 means very dissatisfied and 10 means very satisfied, how would you rate your level of satisfaction with the program in general?
 - a. [ASK ONLY IF SATISFACTION <5] Why do say that?

7. In what way could the program processes be improved?

CFL Awareness and Barriers

8. From your perspective as a retailer, what do you think are some of the barriers to expanding the market for energy efficient lighting products?

Program Marketing and Product Promotion

Next, I'd like to talk more specifically about program marketing and product promotion.

9. When selling products discounted through the program, have you ever placed them in a more prominent spot within the store?
- [IF YES] What lighting products did you place in a more prominent spot? Why those products and not the other discounted lighting products? [PROBE SPECIFICALLY FOR CFLS VS. LEDS]
 - [IF YES] How frequently during the time the program was active did you do that?
10. Did you use Energize Delaware Lighting program signage to promote the lighting products incented through the program?
- [IF NO] Why didn't you use program signage?
 - [IF YES] How often did you have the signage up?
 - [IF YES] What signage did you find most helpful in promoting incented lighting products? Did any specific types of signage work best for some products but not the others? If so, why?
 - [IF YES] Overall, how satisfied are you with the signage? Why do you say that?
11. Did Energize Delaware Lighting Program field representatives provide you with marketing materials that promoted products other than energy efficient lighting or were the marketing materials focused primarily on lighting?
- [IF YES] To the best of your knowledge, what programs did those marketing materials promote?
Don't recall
12. Are there any marketing materials that you would like to have seen the program provide? If so, what are they?
13. Did you have any events at your store aimed at promoting the Energize Delaware Lighting Program ?
- [IF YES] What events were they? What products were promoted during those events? Who facilitated the events? How helpful were the events in selling the featured products? Why do you say that?
14. Did your store do anything on its own, without the help of the Energize Delaware Lighting Program to promote energy efficient lighting products? [PROBE SEPARATELY FOR CFLS AND LEDS]
- What did your store do on its own to promote energy efficient lighting products? [PROBE FOR MARKETING, TRAINING, ETC.]
 - Was that done on the corporate level or at the store level?

Additional Comments

15. Those are all the questions I have. What else do you think we would want to know about the lighting program based on our conversation today?

Thank you for your time.

COMMERCIAL & INDUSTRIAL

Energizing Indiana Commercial and Industrial Prescriptive Rebate Program Participant Survey (Lighting Only)

Survey Audience

This survey is designed for Energizing Indiana's commercial and industrial customers who receive rebates for energy equipment rebated through Energizing Indiana's Commercial and Industrial Prescriptive Rebate program. The survey focuses on the customer experience and level of satisfaction. We will conduct the survey with participants who received rebates for lighting measures in CY12.

READ:

Hello my name is \$I from Opinion Dynamics, an independent research firm.

Our records show that your company participated in Energizing Indiana's Commercial and Industrial Prescriptive Rebate program -- a program where Energizing Indiana gives business customers rebates when they install energy efficient equipment. We're talking with customers like you about their experiences with the program and with the equipment installed.

Energizing Indiana is a state wide program implemented by GoodCents. We have found that some people are more familiar with the name GoodCents in relation to this program than Energizing Indiana. For the purpose of this survey we will be referring to the program as Energizing Indiana.

Are you the best person to speak with about the Energizing Indiana's Commercial and Industrial Prescriptive Rebate program?

(IF NOT ASK FOR BEST PERSON)

START PHONE SURVEY HERE

S1. Our records show that [BUSINESS NAME] applied for Energizing Indiana rebate for lighting at [SERVICE_ADDRESS]. Is that correct?

1. (Yes)
2. (No) [THANK & TERMINATE]
00. (No, measure is incorrect – Record correct measure _____)
98. (Don't Know) [THANK & TERMINATE]
99. (Refused) – [THANK & TERMINATE]

S2. Has your company applied for Energizing Indiana rebates for lighting at any other locations?

1. (Yes)
2. (No) [SKIP TO S4]
00. (No, measure is incorrect – Record correct measure _____)
98. (Don't Know) [SKIP TO S4]
99. (Refused) [SKIP TO S4]

S3. Can you list those additional locations and their addresses for me?

00. [Record each additional location name and address]
98. (Don't know)
99. (Refused)

S4. At [SERVICE_ADDRESS] our records indicate you installed (LIST MEASURES). Is that correct? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. (Confirmed)
00. (Changed - indicate changes:_____)
98. (Don't know)
99. (Refused)

S5. Our records indicate your business operates (HOURS OF USE) per year. Is this accurate for all areas of your facility? (i.e. office hours versus warehouse, etc.) [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. (Confirmed)
00. (Changed - indicate changes:_____)
98. (Don't know)
99. (Refused)

READ:

Now I'd like to talk with you about how you learned about the Rebate Program.

M1. How did you first learn about Energizing Indiana's Commercial and Industrial Prescriptive Rebate program? [DO NOT READ; MULTIPLE RESPONSE, RECORD UP TO 3, If respondent provides specific vendor, contractor, or trade organization, record answer in open end box]

1. (Unfamiliar with Energizing Indiana's program and believes rebate was provided by [UTILITY_NAME])
2. (Printed material or outreach materials sent by the customer's utility [UTILITY_NAME])
3. (Through printed material or outreach materials sent by Energizing Indiana)
4. (Internet research/found Program on Energizing Indiana website)
5. (Thorough customer's own utility's web site [UTILITY_NAME])
6. (Program sponsored event (conference, workshop, or technology demonstration.))
7. (Vendor contractor marketing. Specify _____)
8. (Firm approached/contacted by vendor or contractor. Specify _____)
9. (Word of mouth; from another business colleague. Specify _____)
10. (Word of mouth from a family, friend, or neighbor)
11. (Through a trade organization or professional organization/association. Specify _____)
12. (At a trade show. Specify _____)
13. (Participation in other Energizing Indiana Programs. Specify _____)
14. (Past Program participants. Specify _____)
00. (Other, Specify _____)
98. (Don't know)
99. (Refused)

M2. What were the most important factors that influenced your decision to **participate** in the Commercial and Industrial program and to pursue a rebate? [DO NOT READ RESPONSES; MARK ALL MENTIONED – MULTIPLE RESPONSE]

1. (To save money on utility bills; save money on electric bills)
2. (To obtain a rebate; Program incentive)
3. (To reduce the upfront cost)
4. (To replace old or broken equipment)
5. (To acquire the latest technology)
6. (Because the Program was sponsored by [UTILITY_NAME])
7. (Because the Program was sponsored by Energizing Indiana)
8. (Previous experience with other programs sponsored by [UTILITY_NAME])

9. (Previous experience with other Energizing Indiana Programs)
10. (Recommended by Energizing Indiana contact)
11. (Recommended by sponsoring utility contact)
12. (Recommended by contractors/trade allies/channel partners)
13. (Contractor/Trade Ally would manage the rebate application)
14. (Recommended by another industry colleague; word of mouth)
15. (Recommended by family, friend, or neighbor)
16. (Part of a broader remodeling or renovation)
17. (Decision of corporate management who may be in another location)
00. (Other, Specify:_____)
98. (Don't know)
99. (Refused)

M3. How knowledgeable or familiar would you say you are with Energizing Indiana's commercial business programs? Would you say:

1. Not at all familiar
2. Not too familiar
3. Somewhat familiar
4. Very familiar
5. (Doesn't differentiate between Energizing Indiana' programs and programs sponsored by their own utility.)
8. (Don't know)
9. (Refused)

INTERVIEWER NOTES:

In these questions, please note whether the respondent said that management in another location, including corporate management in another state, directed them to participate

READ:

Now I'd like to talk about the equipment you decided to install through the Commercial and Industrial Prescriptive Rebate program.

MP1. Did your organization hire a contractor specifically to determine which energy efficient equipment to install?

1. (Yes)
2. (No) [SKIP TO MP4]
8. (Don't know) [SKIP TO MP4]
9. (Refused) [SKIP TO MP4]

MP2. How did you choose the contractor? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. (Already had a relationship with them)
2. (Recommended by a neighboring business)
3. (They sought us out)
4. (We contacted them with information from Energizing Indiana website)
00. (Other [SPECIFY] _____)
98. (Don't know)
99. (Refused)

MP3. How influential was your contractor in your plans or decision to install [MEASURE1]?

1. Not at all influential
2. Not too influential
3. Somewhat influential
4. Very influential
8. (Don't know)
9. (Refused)

[SKIP IF MP3 IS DK OR REF]

MP3a. Can you explain why you feel that way? [OPEN-END

00. (OPEN-END:_____)
98. (Don't Know)
99. (Refused)

MP4. How did you determine which lighting measures to install?

[DO NOT READ; PROMPT ONLY IF NECESSARY]

1. (Technology needed to be replaced)
2. (Recommendation from contractor)
3. (Internal staff decided)
4. (Maintenance contractor recommendations to replace faulty equipment)
5. (Energy Audit)
6. (Decision of corporate management -may be in another location)
7. (Followed code requirements)
00. (Other [SPECIFY] _____)
98. (Don't know)
99. (Refused)

MP5. Which of the following best describes [MEASURE1]?

1. It replaced a piece of faulty lighting technology
2. It was a retrofit of an existing lighting technology
3. It was an additional fixture or piece of lighting technology that was not there before
00. (Other [SPECIFY] _____)
98. (Don't know)
99. (Refused)

Satisfaction Module

READ:

Now I'd like to ask some questions about your satisfaction with the Energizing Indiana's Commercial and Industrial Prescriptive Rebate program.

PS1. Were there any aspects of the Commercial and Industrial Prescriptive Rebate program that were challenging for your business?

1. (Yes)
2. (No) – SKIP TO PS2
8. (Don't know) – SKIP TO PS2
9. (Refused) – SKIP TO PS2

[IF YES, ASK]

PS1a. What were they?

- 00. [RECORD RESPONSE] _____
- 98. (Don't know)
- 99. (Refused)

PS2. Who was most responsible for completing the rebate application and accompanying paperwork? Was this you, someone else in your organization, a contractor or vendor, someone from someone from, or someone else? [READ LIST, RECORD ONE RESPONSE]

- 1. You
- 2. Someone else in your organization [SKIP TO PS3]
- 3. Contractor / vendor / other trade ally [SKIP TO PS3]
- 4. GoodCents
- 5. Utility
- 00. (Other [RECORD]) [SKIP TO PS3]
- 98. (Don't know)
- 99. (Refused)

PS2a. On a scale of 1 to 5, with 1 being very easy and 5 being very difficult, how easy was to complete the application? [NUMERIC 1-5]

- 8. (Don't know)
- 9. (Refused)

[IF PS2a = 4 or 5]

PS2b. What did you find hard about it?

- 00. [RECORD]
- 98. (Don't know)
- 99. (Refused)

PS3. Using a scale from 1 to 10, with 1 being extremely dissatisfied and 10 being extremely satisfied, how would you rate your satisfaction with the following:

[NUMERIC 1-10; 96=(Not applicable), 98=(Don't know), 99=(Refused)]

	Extremely Satisfied 10	9	8	7	6	5	4	3	2	Extremely Dissatisfied 1
a. The materials that described the program and eligibility requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The Contractor's knowledge of the program (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The application process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. The choices of eligible lighting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. The program overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Speed of receiving rebate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[ASK FOR EACH PS3= less than 5]

PS4. You said you were dissatisfied with [REFER TO LIST]. Why did you say that?

[DO NOT READ RESPONSES; THESE ARE POSSIBLE ANSWERS CUSTOMERS MIGHT PROVIDE; MULTIPLE RESPONSE]

(The process took too long)

(Too many delays between steps in the process)

(The process was too complex)

(The contractor did not seem to understand the program)

(The contractor was not able to share program materials)

(The application material was difficult to understand)

(The choices of equipment was too limiting)

(Lack of coordination and communication among program staff)

(The program staff was not responsive; could not get questions answered)

(The program staff was not knowledgeable)

(The incentives were less than I expected)

(Unable to get information on the status of the application)

00. (Other [SPECIFY] _____)

98. (Don't know)

99. (Refused)

PS5 Please tell us what, if anything, Energizing Indiana could have done to improve your experience.

00. [RECORD RESPONSE] _____

96. (Nothing)

98. (Don't know)

99. (Refused)

Free-ridership Module

READ:

Now I'd like to talk with you a little more about the lighting equipment for which you received a rebate from Energizing Indiana.

FR0a. First, did your organization have specific plans to install the [MEASURE1] **BEFORE learning about** the Energizing Indiana program rebate?

1. (Yes)

2. (No) [SKIP TO FR1]

8. (Don't know) [SKIP TO FR1]

9. (Refused) [SKIP TO FR1]

[SKIP IF FR0a=2, 98 or 99]

FR0b. Prior to participating in this rebate program, was the purchase and installation of the lighting equipment included in your organization's capital budget

1. (Yes)

2. (No)

8. (Don't know)

9. (Refused)

[ASK EVERYONE]

FR1. Would you have installed the **same** lighting equipment without the Energizing Indiana rebate?

(Yes) [SKIP TO FR2]

(No)

8. (Don't know)

9. (Refused)

[Ask if FR1=No, 98 or 99]

FR1a. Would you have installed different lighting equipment without the rebate program?

Yes, would have done something [CONTINUE TO FR2]

No, would NOT have installed/upgraded anything [SKIP TO FR6]

8. (Don't know) [SKIP TO FR10]

9. (Refused) [SKIP TO FR10]

Ask FR2 through FR5 if FR1 or FR1a = YES

[Do not ask if efficiency is not a factor in equipment choice (e.g., CFL).]

FR2. Let me make sure I understand. When you say you would have installed the same lighting equipment without the rebate, would you have installed lighting that was **just as energy efficient**?

1. (Yes)

2. (No)

8. (Don't know)

9. (Refused)

[Ask only for [MEASURE1] where quantity >1]

FR3. And would you have installed the same **quantity** of high efficiency lighting without the rebate?

1. (Yes)

2. (No)

8. (Don't know)

9. (Refused)

FR4. When would you have installed this equipment? Would you have installed it:

At the same time?

Within one to two years?

Within three to five years?

In more than five years?

8. (Don't know)

9. (Refused)

FR5. Before participating in the program, had you ever installed any of the same type of high efficiency lighting measures?

1. (Yes) [SKIP TO FR11]

2. (No) [SKIP TO FR11]

8. (Don't know) [SKIP TO FR11]

9. (Refused) [SKIP TO FR11]

[Ask FR6 to FR9 only if FR1 or FR1a = NO]

FR6. So, you would **not** have implemented [MEASURE1] **at all**. Is that correct?

Yes/correct, we would not implemented anything without the program rebate [**Skip to next section: Spillover**]

No/not correct, would have implemented something without the rebate [Continue]

8. (Don't know)

9. (Refused)

FR7. Again, help me understand. Would you have implemented similar but less energy efficient lighting measures?

- 1. (Yes)
- 2. (No)
- 8. (Don't know)
- 9. (Refused)

FR8. Would you have implemented less lighting equipment measures without the rebate?

- 1. (Yes)
- 2. (No)
- 8. (Don't know)
- 9. (Refused)

FR9 In terms of project timing, would you have completed the lighting measures within the same time frame?

- Yes
- No/ it would have taken longer
- Within another time period. Specify
- 8. (Don't know)
- 9. (Refused)

FR10. Before participating in the program, had you ever implemented any of the same kinds of high efficiency lighting measures that you implemented through the program?

- 1. (Yes)
- 2. (No)
- 8. (Don't know)
- 9. (Refused)

FR11. On a scale from 1 to 10, with 1 being not very influential and 10 very influential, how influential was receiving the Energizing Indiana rebate in your decision to install efficient lighting equipment?
[NUMERIC 1-10; 96= Not applicable, 98=Don't know, 99=Refused]

Very Influential 10	9	8	7	6	5	4	3	2	Not Very Influential 1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spillover Module

Note to interviewer: Spillover may be associated with the participant installing additional lighting of the same type and efficiency, but without benefit of a rebate **and/or** different energy efficient equipment.

READ:

Now we'd like to ask a few questions about **other** energy efficient equipment.

SO1. **Since participating** in the program, has your organization **already** installed any additional high efficiency lighting technology or strategies of the **same kind** that you installed for the rebate?

- 1. (Yes)
- 2. (No) [SKIP TO SO5]
- 8. (Don't know) [SKIP TO SO5]
- 9. (Refused) [SKIP TO SO5]

SO1a. Did you receive a rebate from Energizing Indiana for the additional installations?

- 1. (Yes) [SKIP TO SO5]
- 2. (No)
- 8. (Don't know) [SKIP TO SO5]
- 9. (Refused) [SKIP TO SO5]

SO2. How many additional high efficiency lighting fixtures has your organization installed? [NUMERIC]

- 1. [RECORD QUANTITY] _____
- 98. (Don't know)
- 99. (Refused)

SO3. When did your company install these fixtures?

- 00. Record response: _____
- 98. (Don't remember)
- 99. (Refused)

SO4. On a scale from 1 to 10, with 1 meaning not at all influential and 10 meaning strongly influential, **how much influence** did your experience with the Energizing Indiana programs have on your decision to install the additional efficient equipment without a rebate?

[SCALE 1-10; 96= Not applicable, 98=Don't know, 99=Refused]

Strongly Influential 10	9	8	7	6	5	4	3	2	Not At All Influential 1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SO5. Since participating in the program, has your company made any energy-efficiency improvements or installed any **OTHER** additional energy-efficient equipment for which you did **NOT** receive a program rebate? This would be equipment that is **different** from the [MEASURE1] that you installed through the program?

- 1. (Yes)
- 2. (No) [SKIP TO CLOSING]
- 8. (Don't know) [SKIP TO CLOSING]
- 9. (Refused) [SKIP TO CLOSING]

SO6. What **types and quantities of equipment** did your organization install, and did each replace or retrofit an existing piece of equipment or was it a new installation?

[OPEN END. 98= Don't Know. 99= Refused. 96=N/A].

- 1. RECORD EQUIPMENT: _____ QUANTITY: _____ REPLACE/RETROFIT/NEW INSTALL: _____
- 2. RECORD EQUIPMENT: _____ QUANTITY: _____ REPLACE/RETROFIT/NEW INSTALL: _____

3. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
4. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
5. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____

SO7. When did these improvements occur?

00. Date

98. (Don't know)

99. (Refused)

SO8. Since implementing these efficiency improvements have you noticed a change on your utility bill?

1. (Yes)

2. (No)

8. (Don't know)

9. (Refused)

Closing Module

C1. Do you have any additional comments about the Energizing Indiana Commercial and Industrial Prescriptive Rebate program that you'd like to share? [RECORD COMMENTS: _____]

We are performing a research study evaluating the energy savings from the Core Prescriptive program and are offering \$50 for participation.

A1. Would you consider participating?

1. Yes

2. No [ATTEMPT TO CONVERT "LET ME ASSURE YOU THAT WE ARE NOT SELLING ANYTHING AND YOU WILL NOT BE CONTACTED BY ANYONE ELSE INTERESTED IN SELLING YOU ANYTHING", OTHERWISE, T&T]

3. (Don't know) [ATTEMPT TO CONVERT "LET ME ASSURE YOU THAT WE ARE NOT SELLING ANYTHING AND YOU WILL NOT BE CONTACTED BY ANYONE ELSE INTERESTED IN SELLING YOU ANYTHING", OTHERWISE, T&T]

Great! This study relies on metering the hours of operation for lighting fixtures. If you choose to participate, a small on/off lighting meter would be installed at a time that meets your schedule, and would be retrieved in December. Our research does not impact the functioning of your lighting and is typically not visible. All that we would need from you is your permission to install the meters and to record the length of time the lights are on.

A2. Would you be willing to help us with this study?

1. Yes

2. No [ATTEMPT TO CONVERT, OTHERWISE, T&T]

Great, thank you. To ensure we meet your scheduling convenience someone from The Cadmus Group will call you in the next two days to set the appointment.

Since this research is so important to us, after the meters are successfully retrieved, we will provide \$50 as a thank-you for your participation.

A3. Do you have any specifications for times for us to install?

A4. Are you the person to contact for the installation?

1. Yes [CONFIRM NAME]
2. No ["WHO SHOULD WE CONTACT THEN?"]

A5. Also, is this telephone number the primary one to use to confirm the appointment and with any questions? *[If customer provides a secondary phone number, enter that in the Scheduling system Tracking page Comment field.]*

A6. And could you confirm the address of the house that will be receiving the installations?

1. Street Address
2. City
3. ZIP

Thank you for your time and participation in this survey and in Energizing Indiana's program. Energizing Indiana appreciates your responses and will use this feedback to improve its program effectiveness.

***Energizing Indiana Commercial and Industrial Prescriptive rebate Program Participant Survey
(HVAC, VFD, and ENERGY STAR Restaurant Equipment)***

Survey Audience

This survey is designed for Energizing Indiana’s commercial and industrial customers who receive rebates for energy equipment rebated through Energizing Indiana’s Commercial and Industrial Prescriptive Rebate program. The survey focuses on the customer experience and level of satisfaction. We will conduct the survey with participants who received rebates for HVAC/VFDs, ENERGY STAR restaurant equipment, and other specialty products rebated in CY12.

READ:

Our records show you were the contact person for your company’s participation Energizing Indiana’s Commercial and Industrial Prescriptive Rebate program -- a state wide program where Energizing Indiana gives business customers rebates when they install energy efficient equipment. We’re talking with customers like you about their experiences with the program and with the equipment installed. Your answers are confidential and will only be used for research purposes.

INTERVIEWER NOTES:

The participant sample will be screened to identify customers who applied for HVAC/VFD and ENERGY STAR and other specialty product rebates. If records indicate multiple measures were rebated, the measure with the largest claimed savings will be the focus of the survey.

HVAC, VFDs, and ENERGY STAR restaurant equipment are the measure that the survey asks about. If the respondent indicates they applied for rebates for these measures at more than one location, please ask them to provide the address of each of the locations where they have installed similar measures and have received a rebate through the program. If they indicate that they have received a rebate for lighting inform them that lighting rebates are not included in this survey and ask them to focus their responses on their experience with the rebate program for HVAC, VFDs, and ENERGY STAR restaurant equipment.

START PHONE SURVEY HERE

S1. Our records show that [BUSINESS NAME] applied for Energizing Indiana rebate for [MEASURE 1], [MEASURE 2] at [SERVICE_ADDRESS]. Is that correct? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Yes
2. No
3. No, measure is incorrect – Record correct measure _____
98. Don’t Know

S2. Has your company applied for Energizing Indiana rebates for [MEASURE 1], [MEASURE 2] under the Commercial and Industrial program at any other locations? [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Yes
2. No [SKIP TO S4]
3. No, measure is incorrect – Record correct measure _____
98. Don’t Know

S3. Can you list the other locations and addresses where you have installed [MEASURE 1], [MEASURE 2] equipment that you applied for a rebate under the Energizing Indiana Commercial and Industrial program for me?

1. [Record each additional location name and address]

S4. At [SERVICE_ADDRESS] our records indicate you installed [MEASURE 1, MEASURE 2, MEASURE 3. LIST MEASURES]. [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Confirmed
2. Changed (indicate changes)

S5. Our records indicate your business operates (HOURS OF USE). Is this accurate for all areas of your facility? (i.e. office hours versus warehouse, etc.) [DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Confirmation
2. Changed (indicate changes)

M. Program Awareness

INTERVIEWER NOTES:

This section is asked of all respondents. Questions assess marketing channels and program awareness. In particular, we are interested in customer awareness of programs and reasons for participation.

READ:

Now I'd like to talk with you about how you learned about the Rebate Program.

M1. How did you first learn about Energizing Indiana's Commercial and Industrial Prescriptive Rebate program? [DO NOT READ; MULTIPLE RESPONSE, RECORD UP TO 3, If respondent provides specific vendor, contractor, or trade organization, record answer in notes at end of survey]

1. Unfamiliar with Energizing Indiana's program and believes rebate was provided by [UTILITY_NAME]
2. Printed material or outreach materials sent by the customer's utility [UTILITY_NAME]
3. Through printed material or outreach materials sent by Energizing Indiana
4. Internet research/found Program on Energizing Indiana website
5. Thorough customer's own utility's web site [UTILITY_NAME]
6. Program sponsored event (conference, workshop, or technology demonstration.)
7. Vendor contractor marketing. Specify _____
8. Firm approached/contacted by vendor or contractor. Specify _____
9. Word of mouth; from another business colleague. Specify _____
10. Word of mouth from a family, friend, or neighbor
11. Through a trade organization or professional organization/association. Specify _____
12. At a trade show. Specify _____
13. Participation in other Energizing Indiana Programs. Specify _____
14. Past Program participants. Specify _____
15. Other, Specify _____
98. Don't know
99. Refused

M2. What were the most important factors that influenced your decision to **participate** in the Commercial and Industrial program and to pursue a rebate? [DO NOT READ RESPONSES; MARK ALL MENTIONED]

1. To save money on utility bills; save money on electric bills
2. To obtain a rebate; Program incentive

3. To reduce the upfront cost
4. To replace old or broken equipment
5. To acquire the latest technology
6. Because the Program was sponsored by [UTILITY_NAME]
7. Because the Program was sponsored by Energizing Indiana
8. Previous experience with other programs sponsored by [UTILITY_NAME]
9. Previous experience with other Energizing Indiana Programs
10. Recommended by Energizing Indiana contact
11. Recommended by sponsoring utility contact
12. Recommended by contractors/trade allies/channel partners
13. Contractor/Trade Ally would manage the rebate application
14. Recommended by another industry colleague; word of mouth
15. Recommended by family, friend, or neighbor
16. Part of a broader remodeling or renovation
17. Decision of corporate management who may be in another location
18. Other, Specify
98. Don't know
99. Refused

M3. How knowledgeable or familiar would you say you are with Energizing Indiana's commercial business programs? Would you say:

1. Not at all familiar
2. Not too familiar
3. Somewhat familiar
4. Very familiar
5. **[DO NOT READ]** Doesn't differentiate between Energizing Indiana' programs and programs sponsored by their own utility.
98. **[DO NOT READ]** Don't know **[SKIP TO MP SECTION (NEXT SECTION)]**
99. **[DO NOT READ]** Refused **[SKIP TO MP SECTION (NEXT SECTION)]**

MP. Decision Making and Purchase Patterns

INTERVIEWER NOTES:

In these questions, please note whether the respondent said that management in another location, including corporate management in another state, directed them to participate

READ:

Now I'd like to talk about the equipment you decided to install through the Commercial and Industrial Prescriptive Rebate program.

MP1. Did your organization hire a contractor specifically to determine which energy efficient equipment to install? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

1. Yes
2. No **[SKIP TO MP4]**
98. Don't know **[SKIP TO MP4]**
99. Refused **[SKIP TO MP4]**

MP2. How did you choose the contractor? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

1. Already had a relationship with them
2. Recommended by a neighboring business
3. They sought us out
4. We contacted them with information from Energizing Indiana website
5. Other [SPECIFY] _____
98. Don't know
99. Refused

MP3. How influential was your contractor in your plans or decision to install [MEASURE1]? **[Record any comments]**

1. Not at all influential
2. Not too influential
3. Somewhat influential
4. Very influential
98. Don't know
99. Refused

MP4. How did you determine which measures to install?
[DO NOT READ; PROMPT ONLY IF NECESSARY]

1. Technology needed to be replaced
2. Recommendation from contractor
3. Internal staff decided
4. Maintenance contractor recommendations to replace faulty equipment
5. Energy Audit
6. Decision of corporate management -may be in another location
7. Followed code requirements
8. Other [SPECIFY] _____
98. Don't know
99. Refused

MP5. Thinking about the [MEASURE1] you received a rebate for, what were the major reasons your organization purchased the [MEASURE1]?

**[DO NOT READ, RECORD ALL MENTIONED] [MULTIPLE RESPONSE, UP TO 3]
[IF NEEDED, PROBE WITH: *Were there any other reasons?*]**

1. To replace old or outdated equipment
2. Remodeling/expanding
3. Improve performance
4. Reduce energy costs
5. To get a rebate from the program
6. To get latest technology
7. To protect the environment
8. Because the Program was sponsored by[UTILITY_NAME]
9. Previous experience with other [UTILITY_NAME] Programs
10. Recommended by UTILITY_NAME] contact
11. Recommended by contractors/trade allies
12. Recommended by business colleague
13. To reduce maintenance and operational costs
14. To promote a green image at my organization

- 15. To promote corporate social responsibility
- 16. Other, specify
- 98. Don't know
- 99. Refused

PS. Program & Measure Satisfaction

INTERVIEWER NOTES:

This section is asked to assess the respondent's satisfaction with a series of program components. The results will be used to report overall satisfaction levels as well as reasons for dissatisfaction, if any.

READ:

Now I'd like to ask some questions about your satisfaction with the Energizing Indiana's Commercial and Industrial Prescriptive Rebate program.

PS1. Were there any aspects of the Commercial and Industrial Prescriptive Rebate program that were challenging for your business? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

[IF PS1 =1]

PS1a. What were they? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

- 1. *[RECORD RESPONSE]* _____
- 98. Don't know
- 99. Refused

PS2. Who was most responsible for completing the rebate application and accompanying paperwork? Was this you, someone else in your organization, a contractor or vendor, someone else? **[READ LIST, RECORD ONE RESPONSE]**

- 1. You
- 2. Someone else in your organization **[GO TO PS3]**
- 3. Contractor / vendor / other trade ally **[GO TO PS3]**
- 4. GoodCents **[GO TO PS3]**
- 5. Utility **[GO TO PS3]**
- 6. Other *[RECORD]* **[GO TO PS3]**
- 98. Don't know
- 99. Refused

PS2a. On a scale of 1 to 10, how easy was to complete the application? With 1 being very easy and 10 being very difficult? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

- 1. *(Record response)* _____
- 98. Don't know
- 99. Refused

[IF PS2a = 6 to 10]

PS2b. What did you find hard about it? **[DO NOT READ; PROMPT ONLY IF NECESSARY]**

- 1. [RECORD]
- 98. Don't know
- 99. Refused

PS3. Using a scale from 1 to 10, with 1 being extremely dissatisfied and 10 being extremely satisfied, how would you rate your satisfaction with the following:
[SCALE 1-10; 96= Not applicable, 98=Don't know, 99=Refused]

	Extremely Satisfied 10	9	8	7	6	5	4	3	2	Extremely Dissatisfied 1
a. The materials that described the program and eligibility requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The Contractor's knowledge of the program (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The application process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. The choices of eligible measures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. The program overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Speed of receiving rebate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

[ASK FOR EACH PS3= less than 5]

PS4. You said you were dissatisfied with [REFER TO LIST]. Why did you say that?

[DO NOT READ RESPONSES; THESE ARE POSSIBLE ANSWERS CUSTOMERS MIGHT PROVIDE]

- Was not aware of any program materials
- Program materials were not clear
- Materials did not provide the information needed
- Distinction between the Energizing Indiana rebate program and the [Utility] rebate program is not clear.
- The process took too long
- Too many delays between steps in the process
- The process was too complex
- The contractor did not seem to understand the program
- The contractor was not able to share program materials
- The application material was difficult to understand
- The choices of equipment was too limiting
- Lack of coordination and communication among program staff
- The program staff was not responsive; could not get questions answered
- The program staff was not knowledgeable
- The incentives were less than I expected
- Unable to get information on the status of the application
- Other [SPECIFY] _____

- 98. Don't know
- 99. Refused

PS5. Please tell us what, if anything, Energizing Indiana could have done to improve your experience.
[DO NOT READ; PROMPT ONLY IF NECESSARY]
[RECORD RESPONSE] _____

- 98. Don't know
- 99. Refused

FR. Free-ridership

INTERVIEWER NOTES:

This section is asked to assess level of free-ridership attributable to each participant. Results of this section will be used to calculate the savings weighted net-to-gross ratio for this program.

READ:

Now I'd like to talk with you a little more about the equipment for which you received a rebate from Energizing Indiana.

FR0a. First, did your organization have specific plans to install the [MEASURE1] *BEFORE* learning about the Energizing Indiana program rebate? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes
- 2. No [SKIP TO FR1]
- 98. Don't know [SKIP TO FR1]
- 99. Refused [SKIP TO FR1]

[SKIP IF FR0a=2, 98 or 99]

FR0b. Prior to hearing about the rebate program, was a [MEASURE 1] included in the organization's capital budget?

- Yes
- No
- Don't know
- Refused

FR1. When would you have installed this equipment without the program? Would you have installed it: At the same time?

- Within one to two years?
- Within three to five years?
- In more than five years?
- 98. Don't know
- 99. [DO NOT READ] Refused

[Ask FR2 to FR7 only if FR0b = NO]

FR2. Without the rebate from Energizing Indiana would you have still purchased [MEASURE 1]? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes [GO to FR4]
- 2. No
- 98. Don't know [GO to FR7]
- 99. Refused [GO to FR7]

FR3. To confirm, without the rebate, you would not have implemented [MEASURE1] at all. Is that correct?

Yes/correct, we would not have implemented anything without the program rebate [Skip to next section: Spillover]

No/not correct, we would have implemented something without the rebate [Continue]

- 98. Don't know [GO to FR7]
- 99. [DO NOT READ] Refused [GO to FR7]

[Ask only for [MEASURE1] where quantity >1;

[SKIP IF [MEASURE1]= measure where quantity doesn't apply]]

FR4. Would you have installed the same model of [MEASURE1], but fewer of them?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

FR5. Without the rebate from Energizing Indiana would you have still purchased a [MEASURE1] that was just as efficient, more efficient, or less efficient than the one you purchased?

- 1. Same efficiency [GO to FR7]
- 2. More efficient [GO to FR7]
- 3. Less efficient
- 98. Don't know [GO to FR7]
- 99. Refused [GO to FR7]

FR6. Again, just to help me understand. Would you have purchased a [MEASURE 1] but a less energy efficient [MEASURE1]? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

FR7. In terms of project timing, would you have completed the lighting measures within the same time frame?

- Yes
- No/ it would have taken longer
- Within another time period. Specify
- 98. Don't know
- 99. [DO NOT READ] Refused

FR8. Before participating in the program, had you ever implemented any of the same type of high efficiency lighting measures that you implemented through the program? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

FR9. On a scale from 1 to 10, with 1 being extremely influential and 10 being not at all influential, how influential was receiving the Energizing Indiana rebate in your decision to install efficient lighting equipment?

[SCALE 1-10; 96= Not applicable, 98=Don't know, 99=Refused]

Very Influential 10	9	8	7	6	5	4	3	2	Not Influential 1	Very Influential
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SO. Spillover

INTERVIEWER NOTES:

This section is asked to assess the level of any spillover attributable to the program. Results of this section will be used to determine whether spillover is present for this program. Spillover may be associated with the participant installing additional measures of the same type and efficiency, but without benefit of a rebate and/or different energy efficient equipment.

READ:

Now we'd like to ask a few questions about other energy efficient equipment.

[SKIP TO SO4 IF [Measure 1] = HVAC or Coolroof]

SO1. Since participating in the program, has your company made any energy-efficiency improvements or installed any OTHER additional energy-efficient equipment? This would be equipment that is different from the [MEASURE1] that you installed through the program? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes
- 2. No [SKIP TO CLOSING]
- 98. Don't know [SKIP TO CLOSING]
- 99. Refused [SKIP TO CLOSING]

SO1a. Did you receive a rebate from Energizing Indiana for the additional equipment you installed? [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes [SKIP TO SO5]
- 2. No
- 98. Don't know [SKIP TO SO5]
- 99. Refused [SKIP TO SO5]

SO2. What types and quantities of equipment did your organization install, and did each replace an existing piece of equipment or was it a new installation?
[OPEN END. 98= Don't Know. 99= Refused. 96=N/A].

- 1. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
- 2. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
- 3. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
- 4. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____
- 5. RECORD EQUIPMENT:_____ QUANTITY:_____ REPLACE/RETROFIT/NEW
INSTALL:_____

SO3. When did your company install these measures? [DO NOT READ; PROMPT ONLY IF NECESSARY]

Date

98. [DO NOT READ] Don't know

SO4. Since implementing these efficiency improvements have you noticed a change on your utility bill?
 [DO NOT READ; PROMPT ONLY IF NECESSARY]

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

SO5. On a scale from 1 to 10, with 1 meaning not at all influential and 10 meaning strongly influential, how much influence did your experience with the Energizing Indiana programs have on your decision to install these additional efficient equipment with a rebate?

[SCALE 1-10; 96= Not applicable, 98=Don't know, 99=Refused]

Strongly Influential 10	9	8	7	6	5	4	3	2	Not At All Influential 1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C. Closing

Do you have any additional comments about the Energizing Indiana Commercial and Industrial Prescriptive Rebate program that you'd like to share? [RECORD COMMENTS: _____]

Thank you for your time and participation in this survey and in Energizing Indiana's program. Energizing Indiana appreciates your responses and will use this feedback to improve its program effectiveness.

Energizing Indiana Non-Residential CFL Distribution Survey

Survey Audience

This survey is designed for Energizing Indiana's Commercial and Industrial Rebate Program customers who received a set of CFL bulbs from Energizing Indiana. The survey focuses on whether they have installed the bulbs and the potential energy savings generated, and if the campaign raised awareness of Energizing Indiana's commercial energy efficiency programs.

Note: Some of the interviewees may have received a very similar box of CFLs at their residences sent out the Duke Energy, which may cause some confusion for respondents from those areas.

Wattage Equivalent Definition: If respondent is more familiar with the wattage equivalents instead of bulb watts:

13 watt bulbs = 60 watt-equivalent bulb

18 watt bulbs = 75 watt-equivalent bulb

Introduction:

Hi, my name is **(FIRST NAME)** and I'm calling on behalf of Energizing Indiana. We are talking with businesses who received a box of compact fluorescent light bulbs, or CFL light bulbs that Energizing Indiana mailed out recently. CFLs are the energy-saving bulbs with a twisty shape.

May I please speak to the person most familiar with the CFLs and how your business has used them?

[IF RESPONDENT EXPRESSES RESERVATIONS AT THIS POINT, USE THE FOLLOWING SCRIPT TO PERSUADE. IF RESPONDENT DOES NOT EXPRESS RESERVATIONS, SKIP TO A1.]:

We'd like to ask some questions about your opinion regarding the light bulbs and how you used them. This should only take about ten minutes, and will help us improve Energizing Indiana's programs and understand how to assist business customers in saving money on their energy bills. This is not a sales call: my questions are for research purposes only. All of your answers are confidential, and will not be shared with Energizing Indiana in any way that identifies you.

A. Screening and Verification

A1. Did you business receive a box of 6 CFLs in the mail from Energizing Indiana?

1. Yes
2. No
3. Yes, but I sent them back to Energizing Indiana
4. Confusion between bulbs received at home and bulbs received at business
98. Don't know
99. Refused

[IF A1=2 OR 3, 98 OR 99, THANK AND TERMINATE]

A2. [IF A1 = 4] Duke Energy sent out a similar box of CFLs to their residential customers. However, this survey is specifically about a set of bulbs sent out by Energizing Indian to their commercial customers. Did your business receive a box of 6 CFLs in the mail from Energizing Indiana?

1. Yes
2. No
98. Don't know
99. Refused

A3.

[IF ERROR! REFERENCE SOURCE NOT FOUND.=2, -98, OR -99 ASK IF THERE IS A BETTER PERSON TO SPEAK TO ABOUT HOW THE BUSINESS USED THE CFLS, IF/WHEN PERSON COMES TO THE PHONE, REPEAT INTRODUCTION WITH NEW RESPONDENT. IF THAT PERSON IS NOT AVAILABLE, ARRANGE TO CALL BACK IF POSSIBLE AND TERMINATE.]

A4. First, I have some questions about the box of CFLs and how your business is using the bulbs it received. There should have been 6 bulbs in the box. Were any of the bulbs broken or missing when the box arrived?

1. Yes
2. No
98. Don't know
99. Refused

A5. [ASK IF A4=1] How many were broken?

1. [RECORD QUANTITY]
2. None
98. Don't know
99. Refused

A6. [ASK IF A4=1] How many were missing?

1. [RECORD QUANTITY]
2. None
98. Don't know
99. Refused

A7. The box contained six CFLs, three 13 watt bulbs and three 18 watt bulbs. How many of the three 13 watt bulbs have you installed in your business so far? [SEE WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. 1
2. 2
3. 3
96. None [SKIP TO A12]
97. Did not differentiate between the 13 watt and 18 watt bulbs [SKIP TO A17]
98. Don't know
99. Refused

A8. [ASK IF A7=1] Did the 13 watt bulb replace another CFL, or a regular, incandescent bulb? [IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular light bulbs." RECORD QUANTITY FOR EACH TYPE OF BULB REPLACED. TOTAL QUANTITY MUST MATCH RESPONSE TO A7, CLARIFY IF NEEDED] [SEE WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. CFL
2. Incandescent
3. Or something else, specify: _____
98. Don't know
99. Refused

[ASK IF A7 = 2 or 3]

A8a/b/c. How many of the 13 watt bulbs replaced other CFLs and how many replaced regular incandescent bulbs? [NOTE: IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular light bulbs." QUANTITY MUST MATCH <A7>]

a. CFL [RECORD QUANTITY]

b. Incandescent [RECORD QUANTITY]

c. Or something else, specify: _____ [RECORD QUANTITY]

[CALCULATE VERIFIED A8a and A8b VARIABLES INCLUDING THOSE WHO SAID 1]

A9. [ASK IF A8b=1] Thinking of the 13 watt CFL bulb that replaced an incandescent bulb, did it replace a bulb in a lamp that is on: [READ OPTION 1 and RECORD QUANTITY AND THEN RE-READ QUESTION AND READ OPTION 2] [TOTAL QUANTITY MUST MATCH RESPONSE TO A8.2; CLARIFY IF NEEDED] [SEE WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. All or most of the time during business hours

2. Only periodically to rarely during business hours

98. Don't know

99. Refused

A9a/b. [ASK IF A8b>1] Thinking of the <A8b> 13 watt CFL bulbs that replaced incandescent bulbs, how many replaced bulbs in a lamp that is:

a. All or most of the time during business hours [RECORD QUANTITY]

b. Only periodically to rarely during business hours [RECORD QUANTITY]

[CALCULATE VERIFIED A9a and A9b VARIABLES INCLUDING THOSE WHO SAID 1]

A10. [ASK IF A9.1>0] Of the [INSERT TOTAL FROM A9.1] CFLs that you installed that are on all or most of the time during business hours, about how many per day do you think those lights are on? [READ RESPONSES]

1. On during all business hours

2. On during and after business hours

3. Other [RECORD NUMBER OF HOURS]

98. Don't know [DO NOT READ]

99. Refused [DO NOT READ]

A11. [ASK IF A9.2>0] Of the [INSERT TOTAL FROM A9.2] CFLs that you installed that are only on periodically to rarely during business hours, about how many hours per day do you think those lights are on?

1. [RECORD NUMBER OF HOURS]

98. Don't know

99. Refused

A12. The box also contained three 18 watt CFLs. How many of the 18 watt CFLs have you installed in your business so far?

1. 1

2. 2

3. 3

4. None [SKIP TO A22]

98. Don't know [SKIP TO A17]

99. Refused [SKIP TO A22]

A13. [ASK IF A12=1] Did the 18 watt CFL(s) replace another CFL, or a regular, incandescent bulb? [IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular light bulbs." [RECORD QUANTITY FOR EACH TYPE OF BULB REPLACED. TOTAL QUANTITY MUST MATCH RESPONSE TO A12. CLARIFY IF NEEDED] [APPLY WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. CFL
2. Incandescent
3. Or something else, specify: _____
98. Don't know
99. Refused

[ASK IF A12 = 2 or 3]

A3a/b/c. How many 18 watt bulbs replaced other CFLs and how many replaced regular, incandescent bulbs? [NOTE: IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular right light bulbs." QUANTITY MUST MATCH <A12>]

- a. CFL [RECORD QUANTITY]
- b. Incandescent [RECORD QUANTITY]
- c. Or something else, specify: _____ [RECORD QUANTITY]

[CALCULATE VERIFIED A13a and A13b VARIABLES INCLUDING THOSE WHO SAID 1]

A14. [ASK IF A13b=1] Thinking of the 18 watt CFL bulb that replaced an incandescent bulb, did it replace a bulb in a lamp that is on: [READ OPTION 1 AND RECORD QUANTITY AND THEN RE-READ QUESTION AND READ OPTION 2] [TOTAL QUANTITY MUST MATCH RESPONSE TO A13.2. CLARIFY IF NEEDED] [APPLY WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. All or most of the time during business hours
2. Only periodically to rarely during business hours
98. Don't know
99. Refused

A14a/b. [ASK IF A13b>1] Thinking of the <A13b> 13 watt CFL bulbs that replaced incandescent bulbs, how many replaced bulbs in a lamp that is:

- a. All or most of the time during business hours [RECORD QUANTITY]
- b. Only periodically to rarely during business hours [RECORD QUANTITY]

[CALCULATE VERIFIED A14a and A14b VARIABLES INCLUDING THOSE WHO SAID 1]

A15. [ASK IF A14.1>0] Of the [INSERT TOTAL FROM A14.1] CFLs that you installed that are on all or most of the time during business hours, about how many hours per day do you think those lights are on? [READ RESPONSES]

1. On during all business hours
2. On during and after business hours
3. Other [RECORD NUMBER OF HOURS]
98. Don't know [DO NOT READ]
99. Refused [DO NOT READ]

A16. [ASK IF A14.2>0] Of the [INSERT TOTAL NUMBER FROM A14.2] CFLs that you installed that are only on periodically to rarely during business hours, about how many hours per day do you think those lights are on?

1. [RECORD NUMBER OF HOURS]

98. Don't know

99. Refused

A17. [ASK IF A7=4 or A7=98 or A12=98] Of the six CFLs you received from Energizing Indiana, how many have you installed in your business so far?

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. None [SKIP TO A25]

98. Don't know [SKIP TO A25]

99. Refused [SKIP TO A25]

A18. [ASK IF A17=1] Did the new bulb replace another CFL, or a regular, incandescent bulb? [IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular light bulbs." [RECORD QUANTITY FOR EACH TYPE OF BULB REPLACED. TOTAL QUANTITY MUST MATCH RESPONSE TO A12. CLARIFY IF NEEDED] [APPLY WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. CFL

2. Incandescent

3. Or something else, specify: _____

98. Don't know [SKIP TO A22]

99. Refused [SKIP TO A22]

[ASK IF A17 = 2 or 3]

A18a/b/c. How many of the new CFL bulbs replaced other CFLs and how many replaced regular incandescent bulbs? [NOTE: IF RESPONDENT IS UNSURE, SAY, "Incandescent bulbs are regular right light bulbs." QUANTITY MUST MATCH <A12>]

a. CFL [RECORD QUANTITY]

b. Incandescent [RECORD QUANTITY]

c. Or something else, specify: _____ [RECORD QUANTITY]

[CALCULATE VERIFIED A13a and A13b VARIABLES INCLUDING THOSE WHO SAID 1]

A19. [ASK IF A18b=1] Thinking of the CFL bulb that replaced an incandescent bulb, did it replace a bulb in a lamp that is on: [READ OPTION 1 AND RECORD QUANTITY AND THEN RE-READ QUESTION AND READ OPTION 2] [TOTAL QUANTITY MUST MATCH RESPONSE TO A13.2. CLARIFY IF NEEDED] [APPLY WATTAGE EQUIVALENT DEFINITION IF NEEDED]

1. All or most of the time during business hours

2. Only periodically to rarely during business hours

98. Don't know

99. Refused

A19a/b. [ASK IF A18b>1] Thinking of the <A13b> CFL bulbs that replaced incandescent bulbs, how many replaced bulbs in a lamp that is:

- a. All or most of the time during business hours [RECORD QUANTITY]
- b. Only periodically to rarely during business hours [RECORD QUANTITY]

[CALCULATE VERIFIED A14a and A14b VARIABLES INCLUDING THOSE WHO SAID 1]

A20. [ASK IF A19.1>0] Of the [INSERT TOTAL FROM A19.1] CFLs that you installed that are on all or most of the time during business hours, about how many hours per day do you think those lights are on? [READ RESPONSES]

1. On during all business hours
 2. On during and after business hours
 3. Other [RECORD NUMBER OF HOURS]
98. Don't know [DO NOT READ]
99. Refused [DO NOT READ]

A21. [ASK IF A19.2>0] Of the [INSERT TOTAL FROM A19.2] CFLs that you installed that are only on periodically to rarely during the business hours, about how many hours per day do you think those lights are on?

1. [RECORD NUMBER OF HOURS]
98. Don't know
99. Refused

A22. [ASK IF A7=1,2,3 OR 4 AND A7+A12>0 OR IF A7=5 AND A17>0] Okay, you said you installed about [IF A7=1, 2, 3 OR 4 READ IN QUANTITY A7 AND A12, OR A7=5 READ IN QUANTITY A17] CFLs from the box you received from Energizing Indiana. Have you removed any of those CFLs you installed?

1. Yes
 2. No
98. Don't know
99. Refused

A23. [ASK IF A7 <> 1,2,3,OR 5, OR A12 <> 1,2 OR 3] Do you remember which wattage they were? [READ LIST, RECORD QUANTITY FOR EACH TYPE]

1. 13 watt [RECORD QUANTITY]
 2. 18 watt [RECORD QUANTITY]
98. Don't know
99. Refused

A24. [ASK IF Error! Reference source not found.=1. ELSE SKIP TO Error! Reference source not found.] Why did you remove that/those bulb(s)? [ALLOW MULTIPLE RESPONSE IF OFFERED, DO NOT PROMPT]

1. Burnt out [RECORD QUANTITY]
2. Broke/stopped working [RECORD QUANTITY]
3. Bulb was too bright [RECORD QUANTITY]
4. Bulb was not bright enough [RECORD QUANTITY]
5. Delay in light coming on [RECORD QUANTITY]
6. Didn't fit properly [RECORD QUANTITY]
7. Stuck out of fixture [RECORD QUANTITY]
8. Did not work with dimmer/3-way switch [RECORD QUANTITY]
9. No savings/savings not obvious [RECORD QUANTITY]

- 10. Safety concern [RECORD QUANTITY]
- 11. Flicker [RECORD QUANTITY]
- 12. Light color [RECORD QUANTITY]
- 13. Interference with radio, TV, other electronic devices [RECORD QUANTITY]
- 14. Made a buzzing noise [RECORD QUANTITY]
- 15. Other (Specify): _____ [RECORD QUANTITY]
- 98. Don't know
- 99. Refused

A25. [ASK IF A7=1,2,3, OR 4 AND A5+A6+A7+A12<6, OR IF A7=5 AND A5+A6+A17>6, ELSE SKIP TO B1] Of the 6 bulbs that were sent to your office, you said that [INSERT TOTAL FROM A5] were broken, [INSERT TOTAL FROM A6] were missing, and [IF A7=1,2,3, or 4 INSERT A7+A12, OR IF A7=5 INSERT A17] were installed. What did you do with the remaining [IF A7=1,2,3, or 4 INSERT (6-(A5+A6+A7+A12), IF A7=5 INSERT (6-(A5+A6+A17)))] bulbs that you have not installed? [READ LIST IF NECESSARY]

- 1. Stored them for later use [RECORD QUANTITY]
- 2. Gave them away [RECORD QUANTITY]
- 3. Threw them away or recycled them [RECORD QUANTITY]
- 00. Or something else, specify [RECORD QUANTITY]
- 98. Don't know
- 99. Refused

A26. [ASK IF A25.1>1 ELSE SKIP TO B1] Thinking of the [INSERT QUANTITY FROM A25.1] CFLs you put in storage, how many will you likely install within one year?

- 1. [RECORD QUANTITY]
- 98. Don't know
- 99. Refused

A27. [ASK IF A26.1>0, ELSE SKIP TO B1] Will you use them to replace regular, incandescent light bulbs, or another CFL?

- 1. Incandescent
- 2. CFL
- 3. Both
- 98. Don't know
- 99. Refused

B. Saturation

B1. Now, I have some questions about your experience with CFLs in your business. At the time, you received the 6 bulbs from Energizing Indiana, were you already using CFLs in your business?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

B2. [ASK IF B1=1, ELSE SKIP TO C1] About how many of the bulbs that were installed in your business were CFLs, prior to receiving the box from Energizing Indiana?

- 1. [RECORD QUANTITY]
- 2. All
- 98. Don't know
- 99. Refused

B3. [ASK IF B1=1] About how many extra CFLs did you have in storage, in your business, before you received the box?

1. [RECORD QUANTITY]
2. None
98. Don't know
99. Refused

C. Customer Experience

C1. Now, I have a few questions about your satisfaction with the CFLs you received. First, how supportive are you of Energizing Indiana's giveaway of CFLs? Would you say you are... [READ LIST]

1. Very supportive of the effort
2. Somewhat supportive
3. Not very supportive
4. Not at all supportive
98. Don't know
99. Refused

C2. [ASK IF C1=3 or 4, ELSE SKIP TO D1] Why do you give that rating?

1. [RECORD QUANTITY]
98. Don't know
99. Refused

D. Free-ridership & Spillover

D1. Since receiving the giveaway from Energizing Indian, have you purchased any additional CFLs?

1. Yes
2. No
98. Don't know
99. Refused

D2. [ASK IF D1=1, ELSE SKIP TO E1] How many bulbs did you purchase?

1. [RECORD QUANTITY]
98. Don't know
99. Refused

D3. [ASK IF D1=1] How many of those have you installed?

1. [RECORD QUANTITY]
98. Don't know
99. Refused

D4. [ASK D1=1] How influential would you say the Energizing Indiana CFL giveaway was in your decision to purchase additional CFLs? Would you say it was [READ LIST]:

1. Very influential
2. Somewhat influential
3. Not very influential
4. Not at all influential
98. Don't know
99. Refused

E. Program Awareness

E. Program Awareness

E1. Are you aware that Energizing Indiana offers rebates for equipment that can help you use energy more efficiently in your business?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

E2. [ASK IF E1=1] Were you familiar with the Energizing Indiana commercial energy efficiency programs before receiving the box of CFLs?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

E3. [ASK IF E2=1, ELSE TO E4] How did you first hear about the programs?

- 1. Energizing Indiana representative
- 2. Energizing Indiana website
- 3. Energizing Indiana mailing/bill insert
- 4. Word of mouth/friend/neighbor
- 5. Other [Specify: _____]
- 98. Don't know
- 99. Refused

E4. [ASK IF E1=1] Have you received any of energy-efficiency rebates for commercial equipment from Energizing Indiana?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

E5. Have you requested any additional information or taken any other actions to learn more about the energy efficiency programs available to your business since receiving the CFLs?

- 1. Yes
- 2. No
- 98. Don't know
- 99. Refused

E6. [ASK IF E5=1] What actions have you taken to learn more about the rebates available to your business? [PROMPT IF NECESSARY, RECORD MULTIPLES]

- 1. Filled out form that came in box with CFL giveaway
- 2. Visited Energizing Indiana's website
- 3. Visited utility's website
- 4. Asked contractor about program
- 5. Other [Specify: _____]
- 98. Don't know
- 99. Refused

E7. [ASK IF E1=1] How likely are you to apply for Energizing Indiana's energy-efficiency rebates in the future? Would you say you are... [READ LIST]

1. Very likely
2. Somewhat likely
3. Not very likely
4. Not at all likely
98. Don't know
99. Refused

F. Firmographics

F1. Does your business rent or own its property?

1. Own
2. Rent
3. Other [Specify: _____]
98. Don't know
99. Refused

F2. What kind of business is your company [READ LIST, SELECT ONLY ONE]:

1. Office
2. Retail
3. Grocery
4. Hospitality (hotels, restaurants)
5. Healthcare
6. Manufacturing
7. Industrial
8. Government
9. Other [SPECIFY]
98. Don't know
99. Refused

F3. What are the typical business hours at your location?

1. RECORD HOURS: [OPEN TEXT BOX NOT JUST NUMERIC]
98. Don't know
99. Refused

F4. Is your business heated primarily with [READ LIST, SELECT ONLY ONE]:

1. Natural Gas
2. Heat Pump
3. Electric heater
4. Propane
5. Fuel Oil
6. Wood
7. Something else [SPECIFY]
98. Don't know
99. Refused

F5. Does your business use any other kind of heating in addition to that? [DO NOT READ, MARK ALL THAT APPLY]

1. Natural Gas
2. Heat Pump
3. Electric heater
4. Propane
5. Fuel Oil
6. Wood
7. Something else [SPECIFY]
98. Don't know
99. Refused

F6. How do you cool your business in the summer? [DO NOT READ, MARK ALL THAT APPLY]

1. Use room air conditioner
2. Use a central air conditioner
3. Use a heat pump
4. Use a swamp cooler
5. Use fans or ceiling fans
6. Open windows in morning and evening
7. None
8. Other [SPECIFY]
98. Don't know
99. Refused

F7. Including yourself, how many people work at your business at this location?

1. [RECORD RESPONSE]
98. Don't know
99. Refused

F8. Approximately, how many square feet is your business?

1. Less than 1,000 square feet
2. 1,000 to 4,999
3. 5,000 to 24,000
4. 25,000 to 49,999
5. 50,000 to 99,999
6. 100,000 to 199,999
7. 200,000 to 499,999
8. 500,000 or more
98. Don't know
99. Refused

F9. Would you like to provide any additional feedback to Energizing Indiana about the CFL giveaway?

1. [RECORD RESPONSE]

That concludes the survey. Thank you for your time today, Energizing Indiana appreciates your feedback.