Evaluation of
2012 Residential Energy Audit Program

Final Report

Prepared for FirstEnergy Ohio Companies:

The Cleveland Electric Illuminating Company

Ohio Edison Company

The Toledo Edison Company

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1 Executive Summary

During 2012, the Ohio Operating companies The Cleveland Electric Illuminating Company ("CEI"), Ohio Edison Company ("Ohio Edison"), and The Toledo Edison Company ("Toledo Edison") (collectively "Companies") continued to offer the Residential Energy Audit Program. Through this program, residential customers can receive a comprehensive energy audit for a discounted fee of $100. At the time of the energy audit, the audit contractor can directly install several energy efficiency measures at no additional charge to the customer. In addition, energy auditors would, if appropriate, recommend additional, rebate eligible, improvements that could be installed for the customer by a participating home improvement contractor.

The Residential Energy Audit (REA) program was administered by Honeywell, which worked with contractors to implement the program. There were 90 contractors who were in the program in 2012.

A total of 2,171 households participated in the REA Program in 2012. Participation by operating company was as follows:

- Cleveland Electric Illuminating 784
- Ohio Edison 1,141
- Toledo Edison 246

The estimated gross kWh energy savings and kW peak demand reductions for the REA program in 2012 are summarized in Table 6-1.

Table 1-1. Overall Evaluation Results for Ex Ante and Ex Post Gross kWh and kW Savings for REA Program in 2012 Overall and by Operating Company

Utility	Ex Ante Expected Gross Savings		Ex Post Verified Gross Savings	
	Gross kWh	Gross kW	Gross kWh	Gross kW
CEI	561,958	300.49	554,810	110.8
OE	746,660	162.46	656,047	108.8
TE	145,215	33.58	115,677	24.8
All Companies	1,453,832	496.54	1,326,533	244.4

The gross kWh savings totals shown in Table 1-1 give a realization rate for kWh savings of about 91 percent, as determined by the ratio of verified gross kWh savings to expected gross kWh savings. The realization rate for kW reductions was about 49 percent.

Of the total kWh savings, 80.6 percent resulted from direct install measures and 19.4 percent from rebate measures. Direct install measures accounted for 52.3 percent of kW demand reductions and rebate measures for 47.7 percent.

Taken together, the various types of CFLs directly installed through the program accounted for just over three-fourths (77.2 percent) of the total kWh savings, ENERGY STAR windows for 14.5 percent, and all other measures for the remaining 8.3 percent.

2 Introduction

Under contract with the Companies, ADM performed evaluation, measurement, and verification (EM&V) services to determine and verify the savings being realized through the REA Program during 2012.[1] The evaluation of the REA program included both impact and process evaluations. ADM conducted the impact evaluation, and NMR Group conducted the process evaluation (under subcontract with ADM). This document is the final report on the evaluation of the program.

ADM's impact evaluation of the REA Program for 2012 was guided by the following research questions.

- What were the energy savings and peak demand reduction impacts for the measures installed as a result of the energy audits and rebated retrofit jobs completed in response to audit recommendations?
- How many and what types of retrofit jobs were recommended by the residential energy auditors? How many and what types of retrofits were completed?
- How many customers registered for a comprehensive home energy audit in 2012? How many comprehensive home energy audits were completed in 2012?
- How many contractors participated in the Program in 2012? How many jobs did each contractor complete?

Other research questions pertained to process evaluation.

- How do customers proceed in completing recommended retrofit jobs? What choices do they make in financing retrofit jobs?
- How many customers who access rebates through the Program in completing retrofit jobs? What is the number of customers that access rebates and services through other EDC programs in completing retrofit jobs?
- What are the estimated costs of completed retrofit projects?
- To what extent have contractors increased their capacity to deliver energy efficiency services in Ohio?
- To what extent are customers satisfied with the Program?

The methods used for the evaluation and the results of applying those methods are presented in the following chapters.

[1] The program is also referred to as the Comprehensive Residential Retrofit Program.

3 Description of Residential Energy Audit Program

In 2012, the Companies offered the Residential Energy Audit Program to their residential customers.

3.1 DESCRIPTION OF PROGRAM

The REA program, which was administered by Honeywell, had three main elements during 2012.

- Residential customers could receive a comprehensive energy audit for a discounted fee of $100.
- At the time of the energy audit, several direct install measures were available at no charge to the customer.
- Energy auditors would also recommended additional, rebate eligible, improvements that could be installed by a participating home improvement contractor.

The residential energy audits were performed by contractors certified through the Building Performance Institute (BPI). The audit service included the following:

- Evaluation of the home's heating and cooling system, insulation, windows, doors, appliances, and lighting;
- Diagnostic testing with a blower door to detect air leaks in the home's building envelope; and
- Providing an energy audit report that recommends energy-saving projects and measures appropriate to the home.

As part of an audit, the auditor could install, for no additional charge, several types of measures. These direct install measures included:

- ENERGY STAR® Compact Fluorescent Lamps (CFLs)
- Water Reduction Measures (low flow showerheads, faucet aerators)
- Pipe Wrap Insulation

In addition, energy auditors might also recommended other measures to improve energy efficiency that could be installed by a participating home improvement contractor. The Companies offered rebates for having the following types of measures installed by a contractor.

- Attic Insulation, with rebates up to $50
- Wall Insulation, with rebates up to $150
- Duct Sealing, with rebates up to $75
- ENERGY STAR Qualified Window, with a rebate of $50 per window

- ENERGY STAR Qualified Ceiling Fan, with a rebate of $25 per fan

The rebated measures would be installed by participating home improvement contractors at the customer's option. Customers could also receive a recommendation from the home energy auditor for installing an Energy Star qualified Ceiling Fan with an Energy Star Light Fixture Kit.

3.2 PROGRAM PARTICIPATION AND OUTCOMES

A total of 2,171 households participated in the REA Program in 2012. Participation by operating company was as follows:

- Cleveland Electric Illuminating 784
- Ohio Edison 1,141
- Toledo Edison 246

There were 90 contractors who signed up for the program. However, there were three contractors who accounted for nearly two-thirds of the measures rebated by the program.

Further information on how many and what types of measures were installed through the program is provided in Chapter 5.

4 Evaluation Methodology

This chapter describes the methods used in the evaluation of the 2012 REA program.

4.1 METHODS FOR IMPACT EVALUATION

The general research question to be answered by the impact evaluation component is framed as follows:

- What are the energy savings and peak demand reduction impacts for the measures installed as a result of the energy audits and rebated retrofit jobs completed in response to audit recommendations?

The choice of methods that were used to perform the EM&V activities to answer this question was informed by reference to the Draft Ohio TRM (TRM)[2], the Joint Utility Comments[3] document, and the Ohio Independent Evaluator 2010 Evaluation Plan[4]. In addition, the methods were chosen to build on information collected during a project initiation meeting and succeeding discussions with program staff from the Companies and Honeywell.

ADM determined kWh energy savings and kW demand reductions for each program measure using the TRM algorithms with data obtained from the program's tracking database and augmented as necessary from site visits, surveys, and contractor job invoices. The activities involved in conducting the impact evaluation of energy and demand savings included four major activities.

- Reviewing *ex ante* savings values
- Surveying customers
- Performing on-site verification visits
- Performing impact analysis calculations using the TRM algorithms.

Each of these activities is discussed in turn.

4.1.1 Review of Ex Ante Savings Values

During July 2012, ADM reviewed all of Honeywell's savings and demand reduction calculations for the Program. This review was followed by ongoing dialogue to clarify the program's rebate policies and savings calculations. As a result of this dialogue, the Program and Honeywell

[2] Vermont Energy Investment Corporatin (VEIC), *State of Ohio Energy Efficiency Technical Reference Manual*, Prepared for Public Utilities Commission of Ohio, Draft of August 6, 2010

[3] November 3, 2010 Ohio TRM Joint Objections and Comments, Case Number 09-512-GE-UNC.

[4] ECONorthwest, Inc., *Ohio Independent Evaluator 2010 Evaluation Plan*, Prepared for Public Utilities Commission of Ohio, December 6, 2010

modified some of the Program's rebate policies and savings calculations to be more consistent with the TRM and the Joint Utility Comments documents, where applicable.

The review also helped ADM and Honeywell reach an understanding of the data that Honeywell needed to provide to have the claims for program energy savings and demand reductions verified. As noted above, Honeywell was asked to provide information for some measures in addition to that reported in the tracking system data. Such information included the following:

- For insulation Improvement measures:
  - Baseline R-value of the pre-existing ceiling and/or wall insulation
  - New R-value after ceiling or wall insulation has been added
  - Square footage of insulated area
  - SEER of Air Conditioning equipment
  - COP of Heat Pump
- For window retrofits:
  - Average U factor value of the windows installed
  - Number of Energy Star windows installed
  - Square footage of the windows installed
- For water reduction measures:
  - GPM ratings of installed aerators and showerheads
  - R-Value of pipe wrap installed
  - Verification of water heater as electric or gas

After the close of the program year, the Companies provided the tracking system data for the program and Honeywell provided the additional technical information required to verify savings. ADM reviewed these data and cleaned and edited the data for purposes of analysis. The cleaning and editing involved:

- Verifying rebate status as completed
- Verifying measure rebate requirements (e.g., Energy Star qualified windows and ceiling fans) for completed rebate applications
- Identifying duplicate data entries
- Identifying cases with incomplete data (e.g., no model number provided)

After completing this data review activity, ADM informed the Companies and Honeywell of the results of the data review and requested information for resolving any problems in using the supplied data for the evaluation. For example, if cases lacked model numbers, we requested that the missing information be provided. Cases where the data were not sufficient to be used to verify savings were dropped from the analysis file.

4.1.2 Survey of Customers

A telephone survey of customers was conducted to determine in-service rates (ISR) for the various CFL measures installed and to estimate annual CFL hours of operation. Other measures on record as being installed for a customer by the Program were also verified during the telephone interview.

For the survey of customers, ADM used a sampling plan designed to allow estimates of savings to be determined with ±10 percent precision at the 90 percent confidence level for the program. To guide preparation of the sampling plan, ADM considered how many customers who participated in the REA program in 2012 would need to be surveyed to accomplish an unbiased review of records to determine the level of correlation between premise-level savings reported by the program (i.e., *ex ante* expected savings as reported by the implementer through AEG's "Vision" tracking system) and actual savings (i.e., *ex post* verified savings that were verified using the evaluation methodologies).

Program data through October 2012 showed the coefficient of variance for *ex ante* kWh savings for non-zero savings sites to be 0.92. Given this, ADM determined that using the Dalenius-Hodges stratification methodology would be a cost-effective method to achieve the required sampling precision. A stratified sampling plan was developed that used a minimum of two and a maximum of four strata per Operating Company. Strata boundaries were defined for each Operating Company that would ensure that the coefficient of variance in each stratum would be 0.5 or less. This plan showed that using a stratified sample of 40 participant customers could provide sampling precision of approximately ±8.05 percent at the 90 percent confidence level.

In practice, a sample of 49 customers was surveyed according to the stratification scheme shown in Table 4-1.

Table 4-1. Stratified Sampling Plan for Telephone Survey of 2012 REA Participant Customers

Stratum	CEI	OE	TE
0		2	2
1	14	5	4
2		5	3
3	3	2	1
4	2	5	1
Totals	19	19	11

4.1.3 On-site Verification Visits

On-site verification visits were conducted at the homes of 9 participant customers to verify installation of rebate measures, including insulation (attic and/or wall) and Energy Star windows and of direct install measures, such as faucet aerators, low flow showerheads and

pipe wrapping. The data collected by field staff depended on the measures installed and the heating and cooling equipment in the home:

- For insulation or duct sealing:
  - SEER rating of the central air conditioner
  - Capacity of the central air conditioner in BTUH
  - COP of the heat pump
  - Baseline R-Value of the insulation (interview contractor or home owner)
  - Upgrade R-Value of the insulation installed
  - Square footage of the area insulated
- For Energy Star Windows:
  - U ≤ 0.30 (verification of triple pane windows installed)
  - Number of Energy Star windows installed
  - Square footage of the windows installed
- For Water Reduction Measures
  - ISR verification of faucet aerators and low-flow showerheads
  - Verification of GPM ratings of installed aerators and showerheads
  - R-Value of pipe wrap installed
  - Visual verification of pipe wrap installed
  - Verification of water heater as electric or gas

4.1.4 Perform Impact Analysis to Calculate kWh and kW Savings

To verify the energy savings and demand reductions claimed for program measures, ADM used the algorithms specified in the TRM or as revised based on recommendations contained in the Joint Utility Comments.

For the measures in the 2012 REA, algorithms from the TRM were applied to calculate *ex post* kWh savings and kW demand reductions. For each measure installed through the REA Program in 2012, total energy (kWh) savings and total peak demand (kW) reduction for that measure were determined as a product of the number of measures verified as being installed and the savings per measure. Table 4-2 summarizes the approach used for the impact analysis, which are explained in the following discussion.

Table 4-2. Summary of Methods Used for Analysis of kWh Savings and kW Reductions

Evaluation Question	Data Collection Methods	Data Analysis Method
kWh energy savings per measure, direct install or rebate?	Data from tracking database Desk review Customer telephone survey On-site verification visits	Algorithms from TRM
kW demand reduction per measure, direct install or rebate?	Data from tracking database Desk review Customer telephone survey On-site verification visits	Algorithms from TRM

ADM obtained the data elements needed to verify per-unit savings for these measures in various ways:

- Extracting savings values from Honeywell's tracking and reporting database
- Making onsite visits to a sample of customer homes
- Collecting data through surveys of samples of customers, or
- Using data from job invoices obtained from a sample of contractors

The methods used to calculate kWh and kW savings are presented for the following measures:

- CFLs categorized by type and wattage
- Kitchen and bathroom faucet aerators
- Low flow showerheads
- Pipe wrap
- Attic and wall insulation
- Duct sealing
- Energy Star qualified windows
- Energy Star qualified ceiling fans

4.1.4.1 Compact Fluorescent Lamps

Energy and demand savings for CFLs were calculated using the TRM algorithms for residential direct installation of Energy Star CFLs using an early replacement scenario.

Calculation of Energy Savings. The algorithm for calculating energy savings is:

$$\Delta kWh = ((\Delta Watts)/1000)*ISR*Hours*WHFe$$

where:

- ΔWatts = CFL Watts *3.25

- ISR = 0.89[5]
- WHFe = Waste Heat Factor for Energy to account for cooling savings from efficient lighting = 1.07 as stipulated in the TRM (see footnote 25, p. 19).

Honeywell's tracking database for the Program reports the quantity of CFLs installed by CFL Wattage and type of CFL for the following CFL measures:

- 7 Watt Candelabra CFLs
- 13 Watt CFLs
- 14 Watt Globe CFLs
- 20 Watt CFLs
- 25 Watt CFLs
- 3-Way CFLs (12/22/33 Watt)

A survey of customers was used to collect the data to verify the number of CFLs installed in the home by Program auditors and triangulated with the CFL installation data collected from the onsite verification visits for program-installed CFLs.

Calculation of Summer Coincident Peak Demand Savings. The algorithm for calculating demand savings is:

$$\Delta kW = ((\Delta Watts)/1000)*ISR*WHFd*CF$$

where:

- WHFd = Waste Heat Factor for Demand to account for cooling savings from efficient lighting = 1.21
- CF = Summer Peak Coincidence Factor = 0.11

4.1.4.2 Low Flow Showerheads

Energy and demand savings for low flow showerheads were calculated using algorithms from the TRM for residential low flow showerheads auditors to implement a direct installation/early replacement policy. Only savings pertaining to electric hot water heating were calculated.

Calculation of Energy Savings. The algorithm for calculating energy savings is:

$$\Delta kWh = ISR * (GPMbase - GPMlow) * kWh/GPMreduced$$

where:

- ISR = actual In Service Rate as verified by ADM onsite visits and surveys.[6]

[5] Recommended by Duke Energy in the Joint Utility Objections & Comments document (see p. 29), as verified or modified by the ADM 2012 Customer Survey.

[6] Assumed value is 1.0, based on direct install Program policy.

- GPMbase = Gallons per minute of baseline showerhead = 2.87, as stipulated by the TRM for a baseline standard showerhead; (see footnote 236 on p.93).
- GPMlow = Gallons per minute of low flow showerhead = actual as verified by ADM onsite visits and surveys.[7]
- kWh/GPMreduced = assumed kWh savings per GPM reduction = 149, as stipulated by the TRM; (see footnote 242 on p.94)

Calculation of Summer Coincident Peak Demand Savings. The algorithm for calculating demand savings is:

ΔkW = ΔkWh/Hours*CF

where:

- Hours = 29
- CF = Summer Peak Coincidence Factor = 0.00371

4.1.4.3 Faucet Aerators

Energy and demand savings for faucet aerators were calculated using the TRM algorithms for residential low flow faucet aerators in which the Program intends for auditors to implement a direct installation/early replacement policy. Only savings pertaining to electric hot water heating were calculated. The Program may install aerators for either kitchen or bathroom faucets, or both.

Calculation of Energy Savings. The algorithm for calculating energy savings is:

ΔkWh = ISR * ((((GPMbase - GPMlow)/GPMbase) * # people * gals/day * days/year * DR)/F/home)*8.3*(Tft – Tmains)/1,000,000)/ DHW Recovery Efficiency/ 0.003412

where:

- ISR = actual In Service Rate as verified by ADM onsite visits and surveys.[8]
- GPMbase = Gallons per minute of baseline faucet = 2.2, as stipulated by the TRM; (see footnote 227 on p.90).
- GPMlow = Gallons per minute of low flow showerhead = actual as verified by ADM onsite visits and surveys.[9]
- # people = average number of people per household = 2.46, as stipulated by the TRM; (see footnote 228 on p.90).

[7] Assumed value is 1.5, based on Program installation policy (Waterpik Ecoflow 3 mode showerhead).

[8] Assumed value is 1.0, based on direct install Program policy.

[9] Assumed value is 1.5 for kitchen faucets and 1.0 for bathroom faucets, based on Program installation policy.

- Gals/day = average gallons per day used by all faucets in the home = 10.9, as stipulated by the TRM; (see footnote 229 on p.90).
- Days/year = 365
- DR = percentage of water flowing down the drain = 50%
- F/home = average number of faucets in the home = 3.5, as stipulated by the TRM; (see footnote 231 on p.90).
- 8.3 = Constant to convert gallons to pounds
- Tft = Assumed temperature of the water used by faucet = 80, as stipulated by the TRM; (see footnote 232 on p.90).
- Tmains = Assumed temperature of water entering house = 57.8, as stipulated by the TRM; (see footnote 233 on p.90).
- DHW Recovery Efficiency = Recovery efficiency of electric hot water heater = 0.98
- 0.003412 = constant to convert MMBtu to kWh

Calculation of Summer Coincident Peak Demand Savings. The algorithm for calculating demand savings is:

ΔkW = ΔkWh/Hours*CF

where:

- Hours = 21
- CF = Summer Peak Coincidence Factor = 0.00262

4.1.4.4 Pipe Wrap

Energy and demand savings for adding insulation to un-insulated domestic hot water pipes were calculated using the TRM algorithms for domestic hot water pipe insulation in which the Program intends for auditors to implement a direct installation/early replacement policy. Only savings pertaining to electric hot water heating were calculated.

Calculation of Energy Savings. The algorithm for calculating energy savings is:

ΔkWh = (1/Rexist – 1/Rnew) * (L*C) *ΔT *8,760)/ηDHW/3413

where:

- Rexist = R-value of un-insulated pipe = 1.0 (see TRM, p. 97, footnote 250).
- Rnew= R-value of hot water pipe after being wrapped with insulation.
- L = Length of pipe wrapped by insulation from water heater up to the first elbow
- C = Circumference of pipe wrapped by insulation in feet,
- ΔT = 65^{o} F , (See TRM, p. 97, footnote 250)

- 8,760 = number of hours in a year.
- ηDHW = Recovery efficiency of electric hot water heater = 0.98 (see TRM, p.97, footnote 252).
- 3,413 = Conversion from Btu to kWh.

Calculation of Summer Coincident Peak Demand Savings.

The algorithm for calculating demand savings is:

ΔkW = ΔkWh/8760

where:

- ΔkWh = savings from pipe wrap installation
- 8760 = number of hours in a year

4.1.4.5 Insulation

Energy and demand savings for improving the insulation of attics, ceilings, and walls were calculated using a single set of algorithms in the TRM that apply equally to retrofitting the insulation in attics, roofs, ceilings, and walls. Savings were calculated for both cooling and heating if an electric heat pump is used by the customer. The Program accomplishes domestic insulation retrofits through participating home improvement contractors hired by customers who decide to implement recommendations made by the home energy auditors.

Calculation of Energy Savings for Air Conditioning. The algorithm for calculating energy savings is:

ΔkWh = ((1/Rexist – 1/Rnew) * CDH * DUA *Area/1000/ηCool

where:

- Rexist = R-value of baseline insulation
- Rnew = R-value of improved insulation
- CDH = Cooling Degree Hours
- DUA = Discretionary Use Adjustment, to account for the fact that people do not always operate air conditioning systems when the outside temperature is greater than 75° F = 0.75 (see TRM, p. 37, footnote 74).
- Area = Square footage of insulated area
- ηCool = SEER of air conditioning equipment

Calculation of Energy Savings for Electric Heating. The algorithm for calculating energy savings is:

ΔkWh = ((1/Rexist – 1/Rnew) * HDD * 24 *Area/1000/ηHeat

where:

- HDD = Heating Degree Days, which depend on customer's location (defined by zipcode) and corresponding HDD value in a look-up table.
- ηHeat = COP of electric heating equipment (resistance or heat pump)

Calculation of Summer Coincident Peak Demand Savings.

The algorithm for calculating demand savings is:

ΔkW = ΔkWh/FLHcool * CF

where:

- FLHcool = Full load cooling hours, which depend on customer's location (defined by zip code) and corresponding FLH value in look-up table
- CF = 0.5 (see TRM, p. 38, footnote 76)

4.1.4.6 Duct Sealing

Energy and demand savings for duct sealing retrofits were calculated using Evaluation of Distribution Efficiency algorithms in the TRM. Savings were calculated for cooling and electric heating (resistance or heat pump). The Program accomplishes duct sealing retrofits through home improvement (market) contractors hired by customers who decide to implement recommendations made by the Honeywell auditors.

Calculation of Energy Savings for Air Conditioning. The algorithm for calculating energy savings is:

$\Delta kWh = ((CFM50_{DLbefore} - CFM50_{DLafter}) * 60 * CDH * DUA * 0.018/1000/\eta Cool$

where:

- $CFM50_{DLbefore}$ = baseline blower door test results = actual, based on ADM review of contractor invoices
- $CFM50_{DLafter}$ = blower door test results after duct sealing = actual, based on ADM review of contractor invoices
- 60 = Constant to convert cubic feet per minute to cubic feet per hour
- CDH = Cooling Degree Hours, which depend on customer's location (defined by zip code) and corresponding CDH value in look-up table
- DUA = Discretionary Use Adjustment, to account for the fact that people do not always operate their air conditioning system when the outside temperature is greater than 75o F = 0.75 (see TRM, p. 110, footnote 279)
- 0.018 = The volumetric heat capacity of air (Btu/ft3oF) invoices

- ηCool = SEER of air conditioning equipment = actual, based on ADM review of contractor invoices

Calculation of Energy Savings for Electric Heating.

The algorithm for calculating energy savings is:

$\Delta kWh = ((CFM50_{DLbefore} - CFM50_{DLafter}) * 60 * 24 * HDD * 0.018/1000/\eta Heat$

where:

- $CFM50_{DLbefore}$ = as previously defined.
- $CFM50_{DLafter}$ = as previously defined.
- HDD = as previously defined.
- ηHeat = Coefficient of Performance of heating equipment = actual, based on ADM review of contractor invoices or on-site visits.

Calculation of Summer Coincident Peak Demand Savings.

The algorithm for calculating demand savings is:

$\Delta kW = \Delta kWh/FLHcool * CF$

where:

- FLHcool = Full load cooling hours, as previously defined.
- CF = 0.5 (see TRM, p. 112, footnote 282).

4.1.4.7 Energy Star Windows

Energy and demand savings for the purchase of Energy Star windows were calculated using a deemed savings approach, as specified in the TRM for electric heating and cooling savings. The TRM specifies that all deemed savings values for Energy Star windows are per 100 square feet of windows and depends on the type of heating and cooling equipment in the home, as shown in Table 4-3.

Table 4-3. Deemed Savings Values for Energy Star Qualified Windows

Type of Energy Savings	***Average Annual kWh Savings (per 100 square feet of Energy Star windows)***	***Average Summer Coincident Peak kW Savings (per 100 square feet of Energy Star windows)***
Heating Savings (Electric Resistance)	302	NA
Heating Savings (Heat Pump)	237	NA
Cooling Savings (Central AC)	126	0.063

Energy and demand savings for Energy Star qualified windows were computed as the product of the deemed savings values associated with the heating and cooling equipment in the home and the square footage of Energy Star windows installed.

4.1.4.8 Energy Star Ceiling Fans

Energy and demand savings for the purchase of Energy Star qualified ceiling fans (with compact fluorescent lights) were calculated using a deemed savings approach, as specified in the TRM. Based on recommendations in the Joint Utility Comments, ADM revised the average annual energy savings for Energy Star ceiling fans with Light Kits to 192 kWh and revised the average annual demand savings to .024 kW. ADM verified the Energy Star status of rebated ceiling fans by checking the model of the ceiling fan rebated against the U.S. federal Energy Star database for ceiling fans with a compact fluorescent light kit.

4.1.4.9 Calculation of First-Year Pro-Rata Savings per Measure

First-year pro-rata savings for direct install measures were calculated by determining the dates of the audits and then using these dates to determine the number of months remaining in 2012 for which annual savings could be attributed as first-year savings. For rebate measures, the dates of installation were used to calculate pro rata first-year savings.

4.1.4.10 Calculation of Lifetime kWh Savings per Measure

Lifetime kWh savings for direct install and rebate measures were calculated for each measure by multiplying annual kWh savings for a measure by the deemed effective useful life specified for that type of measure in the TRM.

4.2 PROCESS EVALUATION APPROACH

The process evaluation effort focused on issues related to program management and implementation. The effort included (1) reviewing the program tracking database and (2) conducting interviews with various parties.

4.2.1 Review of Program Tracking Database

NMR reviewed the tracking database for the REA program in order to address the following research questions:

- How many customers registered for a comprehensive home energy audit in 2012? How many comprehensive home energy audits were completed in 2012?
- How many and what types of retrofit jobs were recommended by the residential energy auditors? How many and what types of retrofit jobs were completed?
- How many customers accessed rebates through the Program in order to complete home improvement retrofits?

- How many contractors participated in the Program in 2012? What is the rate of jobs completed by each contractor?

4.2.2 Interviews

In-depth interview were conducted with program staff and implementation contractors to obtain information with which to address issues that pertained to rebate satisfaction, participation factors, customer awareness, program strengths and weaknesses, and marketing practices. The information obtained through the interviews was intended to answer the following research questions for the process evaluation:

1. To what extent were customers satisfied with the Program?
2. How did customers hear of the Program?
3. What factors influenced customer participation in the Program?
4. To what extent have contractors increased their capacity to deliver energy efficiency services in Ohio?
5. What are the estimated costs of completed retrofit projects?

NMR completed 18 semi-structured in-depth interviews with the following parties:

- Two with program management staff from the Companies and the implementation contractor Honeywell;
- Eight with contractors that submitted eight or more rebates (referred to as active participating contractors in the text); and
- Eight with contractors that submitted two or fewer rebates (referred to as inactive participating contractors in the text).

Respondents from these groups represent all of the major groups participating in the REA program, except participating customers. Contact information for contractors was provided by Honeywell.

Separate interview guides were tailored to these three groups of respondents. (Copies of these guides are provided in Appendix B) Using these guides, NMR staff conducted in-depth telephone interviews during March 2013. The interviews were focused on identifying implementation issues and concerns relating to the REA. General topics included:

- Program goals and objectives
- Rebates
- Marketing
- Training
- Program strengths and weaknesses

4.2.2.1 Interviews with Program Management Staff

NMR completed two in-depth interviews with program management staff for the REA program, one with the Companies' program manager and one with the program manager from Honeywell, the implementation contractor for the program.

4.2.2.2 Contractor Interviews

The selection of contractors who were interviewed was based on the number of rebate applications submitted to the program. The evaluation team classified contractors as *active* or *inactive* based on the number of rebate applications they submitted to the program. While most contractors submitted ten or more applications, inactive contractors had submitted fewer than three rebates to the program. Some contractors conducted audits in addition to installing additional measures. Thus, there were three groups of contractors from which those interviewed were selected:

- Active, who had submitted at least eight rebate applications in 2012
- Inactive, who had submitted fewer than three applications in 2012
- Contractors who had conducted audits as well as installing additional measures.

Table 4-3 provides a breakdown of contractors according to this classification. In 2012, there were 33 active contractors and 57 inactive contractors. There were 12 contractors who performed audits as well as installed additional measures.

- Combined, all contractors interviewed represent just over 40% of all rebates submitted to the program in 2012.
- The eight contractors interviewed as part of the active contractor group submitted a total of 757 rebate applications in 2012. Although interviews were not targeted based on number of audits, two of the active contractors interviewed conducted a total of 110 audits or 15% of all audits conducted by participating contractors.
- Each of the inactive contractors interviewed submitted only one rebate to the program, for a total of eight applications in 2012.

Table 4-4. Rebate Applications Submitted by Contractor Sample

	Active Contractors	Inactive Contractors	Audit Contractors
Total Number of Contractors	33	57	12
Contractors Interviewed	8	8	2
Total Number of Applications	1,724	124	725
Applications Submitted by Sample	757	8	110
Percent of Total Applications	44%	6%	15%

4.2.3 Incentive Level Review

As a first step in understanding the effectiveness of different rebate levels for the rebate measures in the REA, NMR performed an incentive level review to provide a comparison of incentive levels offered by FirstEnergy's REA program to those offered by other US utilities.[10] This effort is a first step in understanding the effectiveness of varying rebate levels offered.

The incentive review focused on the following measures:

- ENERGY STAR Windows
- Attic Insulation
- Wall Insulation
- ENERGY STAR Ceiling Fans
- Duct Sealing

Through internet research, the NMR evaluation team reviewed energy efficiency offerings for ten utilities and/or organizations. The utilities and organization included in the review were:

- Columbia Gas
- ConEd
- Delmarva
- Dominion
- Efficiency VT
- Energize CT
- Focus on Energy
- MASS Save
- Puget Sound Energy
- SMECO

The findings from this review are presented in Chapter 5.

[10] A full understanding of the effectiveness of different rebates levels requires examining rebates in the context of other drivers for successful program offerings, such as program implementation design, marketing efforts, and program maturity. However, such an undertaking was not in the scope of effort for this evaluation.

5 Detailed Evaluation Findings

The findings from the evaluation effort are presented in this chapter. Section 5.1 presents the findings from the impact evaluation, while Section 5.2 presents the findings from the process evaluation.

5.1 FINDINGS FROM IMPACT EVALUATION

Table 5-1 shows the quantities of qualified energy efficient measures that were rebated per operating company and for the total REA Program in 2012. Table 5-2 shows estimates of annual kWh savings by measure, operating company, and for the total REA Program in 2012. Table 5-3 shows estimates of annual kW savings by measure, operating company, and for the total REA Program in 2012.

The program-level estimates of energy savings reported in Table 5-2 and the peak demand reductions reported in Table 5-3 were developed by applying the methods described in Chapter 4. On a measure-by-measure basis, savings per unit developed from applying TRM values or algorithms were multiplied by the quantities in Table 5-1 to develop the per-measure savings estimates that were aggregated to give program-level savings, overall and by operating company. For CFLs, savings were calculated by applying an in-service rate of 92.5 percent to the reported quantities, based on data collected through the survey of customers.

The results reported in the tables show the following.

- Total kWh savings for the REA program in 2012 were 1,326,533 kWh. Total kW demand reductions were 244.4 kW.
- Among the three service territories, CEI accounted for 41.8 percent of total kWh savings, OE for 49.5 percent, and TE for 8.7 percent.
- Of the total kWh savings, 80.6 percent resulted from direct install measures and 19.4 percent from rebate measures. Direct install measures accounted for 52.3 percent of kW demand reductions and rebate measures for 47.7 percent.
- Taken together, the various types of direct install CFLs accounted for just over three-fourths (77.2 percent) of the total kWh savings. ENERGY STAR windows accounted for 14.5 percent of total kWh savings. The other measures combined accounted for the remaining 8.3 percent of total kWh savings.

Table 5-1. Quantities of Qualified Measures Installed through REA Program in 2012 by Operating Company and Type of Measure

	CEI	***OE***	***TE***	***Total***
Direct Install Measures				
12/22/33 Watt 3-way CFL	554	695	90	1,339
13 Watt CFL (60 watt)	3,564	4,160	533	8,257
14W Globe CFL	762	1,217	159	2,138
20 Watt CFL (75 watt)	1,789	2,238	390	4,417
25 Watt CFL (100 watt)	1,326	1,529	358	3,213
7W Candelabra CFL	639	778	109	1,526
Bath Aerators	68	126	5	199
Kitchen Aerators	32	66	4	102
EHW Pipe Insulation	39	54	5	98
Low Flow Showerheads	44	110	7	161
Energy Audits	102	474	159	735
Total Numbers of Direct Install Measures	**8,919**	**11,447**	**1,819**	**22,185**
Rebate Measures				
Attic Insulation	13	247	106	366
Wall Insulation	14	214	70	298
Duct Sealing	7	4	46	57
ENERGY STAR Windows	4,821	3,412	618	8,851
Ceiling Fans	13	14	1	28
Total Numbers of Rebate Measures	**4,868**	**3,891**	**841**	**9,600**
Grand Total for Numbers of Measures	**13,787**	**15,338**	**2,660**	**31,785**

Note: Counts are based on ex post estimates.

Table 5-2. Ex Post Estimates of Annual kWh Savings by Measure and Operating Company

	CEI	***OE***	***TE***	***Total***
Direct Install Measures				
12/22/33 Watt 3-way CFL	26,134	32,924	4,380	63,437
13 Watt CFL (60 watt)	155,778	180,518	22,950	359,246
14W Globe CFL	36,004	57,106	7,066	100,176
20 Watt CFL (75 watt)	120,012	149,244	26,399	295,654
25 Watt CFL (100 watt)	70,323	80,856	19,218	170,397
7W Candelabra CFL	15,044	18,124	2,582	35,750
Bath Aerator	1,650	3,103	123	4,876
Kitchen Aerator	767	1,633	99	2,499
EHW Pipe Insulation	8,166	10,515	961	19,642
Low Flow Showerhead	4,387	11,769	749	16,905
Total Annual kWh Savings, Direct Install	**438,264**	**545,791**	**84,527**	**1,068,581**
Rebate Measures				
Attic Insulation	1,396	16,211	6,036	23,643
Wall Insulation	2,375	17,993	5,249	25,616
Duct Sealing	5,306	1,116	5,205	11,627
ENERGY STAR Windows	105,344	72,598	14,448	192,390
Ceiling Fans	2,125	2,338	213	4,676
Total Annual kWh Savings, Rebates	**116,546**	**110,256**	**31,150**	**257,952**
Grand Total of Annual kWh Savings	**554,810**	**656,047**	**115,677**	**1,326,533**

Table 5-3. Ex Post Estimates of Annual kW Savings by Measure and Operating Company

	CEI	***OE***	***TE***	***Total***
Direct Install Measures				
12/22/33 Watt 3-way CFL	3.1	3.9	0.5	7.6
13 Watt CFL (60 watt)	18.5	21.7	2.7	43.0
14W Globe CFL	4.3	6.8	0.8	12.0
20 Watt CFL (75 watt)	14.2	18.0	3.1	35.4
25 Watt CFL (100 watt)	8.1	10.1	2.2	20.4
7W Candelabra CFL	1.8	2.2	0.3	4.3
Bath Aerator	0.2	0.4	0.0	0.6
Kitchen Aerator	0.1	0.2	0.0	0.3
EHW Pipe Insulation	0.9	1.2	0.1	2.2
Low Flow Showerhead	0.6	1.6	0.1	2.3
Total kW Savings, Direct Install	**51.9**	**66.2**	**10.0**	**128.0**
Rebate Measures				
Attic Insulation	1.0	18.4	8.0	27.4
Wall Insulation	0.4	6.8	2.2	9.4
Duct Sealing	0.2	0.1	1.5	1.9
ENERGY STAR Windows	57.0	17.0	3.0	77.0
Ceiling Fans	0.2	0.3	0.0	0.5
Total kW Savings, Rebates	**59.0**	**42.6**	**14.8**	**116.4**
Grand Total of kW Savings	**110.8**	**108.8**	**24.8**	**244.4**

5.2 FINDINGS FROM PROCESS EVALUATION

This section presents the findings from the process evaluation effort.

5.2.1 Findings from Data-Tracking Analysis

- ***Tracking direct install measures.*** According to program staff, not all participating contractors installed the direct install measures when performing audits or completing projects. Direct install measures account for a large portion of program savings and are crucial to achieving program goals.
- ***A few contractors accounted for the majority of rebated measures.*** While a total of 90 contractors participated in the program, three contractors accounted for nearly two-thirds of all rebates processed and nearly all of the insulation rebates.
- ***A few measures accounted for the majority of program savings.*** Combined direct install lighting measures and ENERGY STAR windows accounted for over 90 percent of kWh savings for the program.

- ***Establishing and growing contractor network.*** The Companies successfully recruited 90 participating contractors but only 33 contractors worked on a significant number of projects in 2012. These contractors represent a good base to build from, but to achieve program savings goals, additional contractors must be recruited and/or participation increased among existing participating contractors. Contractors who joined the program late in 2012 suggested that the Companies hold informational meetings with building department staff to help spread awareness of the program.
- ***Understanding of program objectives.*** While active contractors demonstrated an understanding of the resource acquisition objectives of the REA program, only one active contractor mentioned consumer education as a goal of the program. This suggests that contractors may not fully understand this aspect of the program and may require some additional training.

5.2.2 Findings about Marketing, Outreach, and Education Efforts

- ***Sources of customer awareness*.** Contractors became aware of the program from program staff and other contractors. The Companies provided participating contractors with a variety of resources to help promote the program, including: customer education packets, uniform patches, vehicle magnets, and authorization to use the program logo on their company's website, promotional materials, and business cards.
- ***Future of marketing.*** Contractors believe that marketing efforts could be improved through additional bill inserts and targeted mass media. Program staff agreed that direct mail and additional bill inserts would be effective in increasing program participation but were unsure if mass media would be effective. Whether or not the program moves forward with additional marketing efforts, the Companies should continue to encourage and support contractors to market the program independently.

5.2.3 Findings about Financial Incentives and Rebate Processing

- ***Rebate levels.*** Contractors would like to see the wall and attic insulation rebate amounts increased. With the exception of window rebates, when compared to other utilities offering rebates in the Companies service territory, the REA rebates are much lower and, as a result, contractors push the other rebates to customers. Contractors are satisfied with the window rebate because it is the highest among utility programs.
- ***Audit cost.*** Program staff and contractors acknowledge that the cost of an audit might be prohibitive to some customers but are generally in agreement that the audit cost is reasonable considering the services provided by the audit. However, some contractors mentioned that other audit programs in the Companies' service territory are offered at a lower cost of $50. When territories overlap, contractors recommend the cheaper audit. Some contractors suggested that instead of trying to compete with other audit programs by lowering cost, the Companies should consider providing contractors (and customers) with materials extolling the benefits of participation in the Companies' program.

- ***Rebate distribution process*.** Program staff indicated that it takes an average of 41 days to disburse a customer's rebate check after an application is submitted (or nearly six weeks on average). In addition, contractors indicated that some of their customers have had to wait upwards of eight months to receive their rebate. According to program staff, improperly filled out and incomplete forms are the two main causes for delays in rebate processing. Implementation staff indicated that they were working on revising the form in hopes of reducing the number of incomplete forms being submitted.
- ***Rebate form tracking*.** When customers do not receive rebates in a timely manner they often turn to contractors to seek a solution. Because customers submit rebates to the program and not contractors, contractors are not aware of the status of rebates. Some contractors expressed interest in staying informed about the status of rebates submitted by their customers. These contractors would like to be informed when rebates are submitted, rejected, processed, and issued (mailed out).

5.2.4 Findings about Program Training and Quality Control

- ***Training*.** One-half of all contractors interviewed said that they had attended training for the program. While all of the active contractors who did not attend training said they do not need training, some inactive contractors who did not receive training indicated that the reason they are not very active in the program is because they do not understand how the program works and would like some additional training.
- ***Robust quality control process***. The REA program has a robust quality control process that includes onsite follow-up visits for audits and measure installations. In addition to fraud, the quality control procedures in place can help identify improperly installed measure.

5.2.5 Findings about Program Strengths and Limitations

- ***Rebate levels*.** Among active and inactive contractors, financial incentives were both the most frequently mentioned program strength and weakness. While contractors said the incentives are an important benefit of the program, they also said that in general, competing programs offer customers greater rebates. According to contractors, this can make the program difficult to promote because it is not competitive. The one category where the Companies' rebate is greater is for ENERGY STAR Windows.
- ***Contractor satisfaction is mixed*.** Among active and inactive contractors, level of satisfaction with the program is mixed. When asked to rate level of satisfaction on one a scale of one (very dissatisfied) to five (very satisfied), five out of eight active contractors and five out of eight inactive contractors were satisfied. The average rating among active contractors was 3.6 and the average rating among inactive contractors was 3.4 on the five point scale.
- ***Lack of marketing*.** Overall, contractors indicated that there should be additional marketing for the program. Contractors would like to see the program marketed through mass media.

6 Conclusions and Recommendations

This chapter summarizes major conclusions from the impact and process evaluation efforts and provides recommendations regarding the implementation of the REA program.

6.1 CONCLUSIONS

6.1.1 Conclusions from Impact Evaluation

The overall evaluation results for estimated gross kWh energy savings and kW peak demand reductions for the REA program in 2012 in the Companies' service territories are summarized in Table 6-1.

Table 6-1. Overall Evaluation Results for Ex Ante and Ex Post Gross kWh and kW Savings for REA Program in 2012 Overall and by Operating Company

Utility	Ex Ante Expected Gross Savings		Ex Post Verified Gross Savings	
	Gross kWh	Gross kW	Gross kWh	Gross kW
CEI	561,958	300.49	554,810	110.8
OE	746,660	162.46	656,047	108.8
TE	145,215	33.58	115,677	24.8
All Companies	1,453,832	496.54	1,326,533	244.4

The gross kWh savings totals shown in Table 6-1 give a realization rate for kWh savings of about 91 percent, as determined by the ratio of verified gross kWh savings to expected gross kWh savings. The realization rate for kW reductions was about 49 percent.

Of the total kWh savings, 80.6 percent resulted from direct install measures and 19.4 percent from rebate measures. Direct install measures accounted for 52.3 percent of kW demand reductions and rebate measures for 47.7 percent.

Taken together, the various types of CFLs directly installed through the program accounted for just over three-fourths (77.2 percent) of the total kWh savings, ENERGY STAR windows for 14.5 percent, and all other measures for the remaining 8.3 percent.

6.1.2 Conclusions from Process Evaluation

The overall assessment of the REA Program to date is that a robust foundation has been laid for the program becoming successful in the long term. In the initial program period, program staff have created key data-tracking procedures, designed rebate and audit forms, developed program processes and procedures, and established a network of participating contractors.

Because the REA program was launched in late 2011, program staff time during 2012 was taken up identifying, recruiting, and training participating contractors. In total, program staff

successfully recruited 90 contractors as partners in the program. Early efforts to market the program in 2012 were considered successful. A core group of contractors marketed the program to their customers. When asked how customers first heard about the program, active and inactive contractors overwhelmingly reported that customers find out about the program through contractor efforts. This core group of contractors represents a resource the program can leverage as it continues to develop.

Notwithstanding their success promoting the program, contractors expressed frustration with the time required for some customers to receive rebates, the lack of a single point of contact, and the need for additional training on the program. Nevertheless, most active and some inactive contractors interviewed expressed interest in continuing with the program. It will be important that staff remain engaged with contractors as the program continues to develop and grow. Contractors are a valuable resource not just for program delivery but also for program marketing.

In order to keep existing contractors productive and to foster greater involvement by less active contractors, the Companies should work with existing active contractors to establish a feedback loop that will allow them to identify and address program concerns. The success of contractor-driven programs, like the REA Program, is intrinsically tied to the engagement and performance of participation contractors. Contractors act as the program's sales force and are therefore vital to realizing program goals. Using the existing contractors as a base, program staff can proceed to deepening and expanding relationships to more effectively achieve program goals.

6.2 RECOMMENDATIONS

Based on the findings and conclusions from the impact and process evaluation of the REA Program, the following recommendations are offered for consideration.

- *Examine financial incentives.* Some of the contractors interviewed were disappointed with the rebate levels offered by the program and pointed out that they are not in line with other rebates offered by other utilities in the Companies' service territory. When compared with rebates offered by other utilities, the Companies' incentive levels for the REA program rank among the lowest. The Companies should review program rebates and evaluate the effectiveness of current incentive levels.
- *Cultivate contractor and customer relationships.* Now that the Companies have established relationships in place with contractors and customers, these relationships should be nurtured and built on. Regular contact with the contractors can provide information as to why some contractors are submitting hundreds of rebates while others are submitting few rebates. In the future, program staff should explore other measures or opportunities that contractors and customers might be interested in not currently covered by the Companies' programs.

- *Make direct install measures a program requirement.* Direct install measures account for a large portion of program savings and are crucial to achieving program goals. The Companies should make direct install of CFLs a program requirement.
- *Consider bundling rebates to increase deeper savings.* The Companies should consider building upon the popularity of ENERGY STAR window rebates by bundling them with other measures. For example, the Companies could require that customers install another rebated measure to become eligible for a window rebate. Alternatively, rebate values could be increased when multiple measures are installed. Bundling measures could result in deeper savings as customers move from single installations to multiple installations.

Appendix A: Required Savings Tables

Tables showing measure-level participation counts and savings for the Residential Energy Audit Program were provided in Chapter 5. This appendix provides two additional tables summarizing savings for first-year ex post pro-rata kWh savings and lifetime ex post kWh savings.

- Table A-1 reports the first-year *ex post* pro-rata kWh savings by utility and measure.
- Table A-2 reports the lifetime *ex post* kWh savings by utility and measure.

Table A-1. First Year Ex Post Pro-Rata (2012) kWh Savings by Utility and Measure

	CEI	***OE***	***TE***	***Total***
Direct Install Measures				
12/22/33 Watt 3-way CFL	15,558	19,601	2,608	37,767
13 Watt CFL (60 watt)	96,096	111,357	14,157	221,610
14W Globe CFL	20,625	32,714	4,048	57,387
20 Watt CFL (75 watt)	74,246	92,331	16,332	182,909
25 Watt CFL (100 watt)	43,990	50,579	12,022	106,591
7W Candelabra CFL	8,629	10,395	1,481	20,505
Bath Aerator	1,080	2,032	81	3,193
Kitchen Aerator	7	15	1	23
EHW Pipe Insulation	5,565	7,165	655	13,385
Low Flow Showerhead	3,068	8,232	524	11,824
Totals, Direct Install Measures	268,864	334,421	51,909	655,194
Rebate Measures				
Attic Insulation	776	9,018	3,358	13,152
Wall Insulation	1,338	10,137	2,957	14,431
Duct Sealing	2,128	448	2,087	4,662
ENERGY STAR Windows	83,683	57,670	11,477	152,830
Ceiling Fans	1,755	1,931	176	3,862
Totals, Rebate Measures	89,680	79,204	20,055	188,937
Grand Totals, All Measures	358,546	413,624	71,962	844,132

Table A-2. Lifetime Ex Post kWh Savings by Utility and Measure

	EUL (Years)	CEI	OE	TE	Total
Direct Install Measures					
12/22/33 Watt 3-way CFL	8	209,069	263,389	35,040	507,498
13 Watt CFL (60 watt)	8	1,246,224	1,444,146	183,599	2,873,969
14W Globe CFL	8	288,029	456,847	56,529	801,405
20 Watt CFL (75 watt)	8	960,093	1,193,951	211,188	2,365,232
25 Watt CFL (100 watt)	8	562,584	646,845	153,744	1,363,173
7W Candelabra CFL	8	120,352	144,991	20,659	286,002
Bath Aerator	5	8,249	15,513	616	24,378
Kitchen Aerator	5	3,835	8,165	495	12,495
EHW Pipe Insulation	15	122,495	157,722	14,411	294,628
Low Flow Showerhead	5	21,934	58,847	3,745	84,525
Totals, Direct Install Measures		3,542,864	4,390,416	680,026	8,613,305
Rebate Measures					
Attic Insulation	25	34,890	405,279	150,897	591,066
Wall Insulation	25	59,366	449,823	131,222	640,411
Duct Sealing	20	106,120	22,320	104,100	232,540
ENERGY STAR Windows	25	2,633,602	1,814,948	361,200	4,809,750
Ceiling Fans	10	21,255	23,380	2,125	46,760
Totals, Rebate Measures		2,855,233	2,715,750	749,544	6,320,527
Grand Totals, All Measures		6,398,098	7,106,166	1,429,570	14,933,833

Appendix B: Interview Guides for Process Evaluation

This appendix contains the guides used during the in-depth interviews for the process evaluation.

INTERVIEW GUIDE

Program Management/ Implementation Contractor

**Ohio First Energy Comprehensive Residential Retrofit Program,
Known as Residential Energy Audit Program (REA)**

Date _____ Interviewer _____

Name _____ Organization _____

Title _____

Phone _____ Email _____

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

My name is ____, I am from NMR Group and am part of the evaluation team for the Ohio FirstEnergy Residential Energy Audit (REA) Program. I am conducting a series of in-depth interviews with various parties who are involved with the program as part of a process evaluation. The process evaluation documents and analyzes program implementation activities to assess whether or not the program is operating as intended and solicits feedback about any program enhancements that could take place. Do you have time to talk right now?
[If no, arrange for callback time.]

[NOTE: Unless indicated otherwise, all questions should be asked to both FirstEnergy and Honeywell. Adapt and probe to each organization as appropriate]

Program Goals/Objectives

As I noted, the program that I would like to discuss today is the 2012 REA program, which provides residential single-family homeowners with a comprehensive home energy audit. Customers pay a discounted fee of $100 for the service.

1. First, I would like to talk about the goals and objectives of the program. What are the overall program objectives as you see them? [Probe: consumer awareness/education, increasing penetration, market transformation, energy/demand savings, regulatory driven by Ohio Senate Bill 221 to reduce energy demand, other]

2. How do the energy audits address those objectives? (Probe)
    a. What role do the direct install measures play in achieving those objectives?
    b. What role do additional improvement recommendations play?

3. We are currently evaluating the 2012 program year. In what month did the program begin?

a. Is this program a continuation of a previous FirstEnergy program? [If YES CONTINUE, if NO Go TO 4] [NOTE: Program might be modeled after a similar FirstEnergy program in PA, if so note briefly]
b. What is your understanding about how 2012 program is different from other FirstEnergy programs that have been run?

4. What is the definition of program success for the 2012 REA program? What are the factors of success that FirstEnergy is using? [Probe: energy savings, demand savings, budget, number of improvements made, other]
   a) Does the program have specific targets for the number of rebates, participating customers, or energy (kWh) and/or demand (kW) savings? Please describe those targeted goals.
   b) How well did the program meet those goals in 2012? (get specific supporting evidence from respondent)

5. How were the goals developed? What process was used in developing goals?

Program Resources

1. Describe your role in the program. Who else is involved in program implementation? How much time do you (and others) spend on the program on a daily basis?

2. [Ask FirstEnergy PM only] How long has Honeywell been involved with the program?

3. [Ask FirstEnergy PM only] Describe Honeywell's role in the program.

4. Do you feel that the program has appropriate level of resources to meet its objectives? [Probe for financial resources and personnel resources.] Do you have adequate budget to meet program objectives? Do you have adequate support to manage and implement this program?

Program Design

Next I would like to ask you about the details of how each of the measures in the program fits into the program design.

1. What technical guidelines, if any, does the program provide participating contractors for energy audits?
   a. What about the installation of various measures covered by the program? [Probe: for each measure offered.]

2. What training, if any, does the program provide participating contractors for energy audits?
   a. What about the installation of various measures covered by the program? [Probe: for each measure offered.]

3. Why did FirstEnergy in Ohio select the direct install measures included in the program? And why did FirstEnergy select the additional recommended measures? [USE lists below as reference]

Direct Install Measures:

- ENERGY STAR® CFLs
- Low Flow Showerheads
- Faucet Aerators
- Pipe Wrap Insulation

Additional Measures:

- Roof and Ceiling Insulation
- Wall Insulation
- ENERGY STAR Qualified Windows
- Duct Sealing
- ENERGY STAR Qualified Ceiling Fan with ENERGY STAR Light Fixture Kit

4. How important was the ENERGY STAR qualification in the selection of improvements to support in the program?

5. If a customer chooses to install additional recommended home improvements, what are the next steps? How does a customer choose a home improvement contractor? What other assistance does the program provide? [Probe: financial incentives, rebates, interaction with other programs, participating contractors, etc.]

6. The majority of energy and demand savings from the program during 2012 are expected to come from direct install measures, most of which come from lighting measures.
    a. Why were the majority of the planned/actual savings focused on direct install lighting measures??
    b. What did the program do to promote adoption of additional optional measures? Probe:
        i. Roof and Ceiling Insulation
        ii. Wall Insulation
        iii. ENERGY STAR Qualified Windows
        iv. Duct Sealing
        v. ENERGY STAR Qualified Ceiling Fan with ENERGY STAR Light Fixture Kit

7. To what extent was Honeywell involved in helping design the program?

Partners

Next I would like to ask you about the participating home improvement contractors that partnered with FirstEnergy to deliver the program.

1. How did the program choose the group of participating contractors?

    a. Were contractors selected based on the type(s) of products or services they offered?

2. Did the program target any contractors who declined to participate? Why/why not? [Probe for details]

3. How long as FirstEnergy been working with this group of contractors? Are these contractors FirstEnergy partners in other programs? Describe briefly.

4. What certification(s) or qualifications does the program require of participating contractors?

5. To what extent was Honeywell involved in helping recruit and work with participating contractors?

6. Why have a good number of contractors who signed up for the program not yet participated? [Probe: lack of: customer leads, customer interest, contractor interest, incentives, etc.]
    a. What can the program do to overcome these barriers?

7. What steps has the program taken to generate interest among inactive participating contractors?
    a. Do you actively communicate with participating contractors? Probe: active vs. inactive. What outreach, if any, do you engage in with participating contractors?

8. What are the reasons that two contractors account for 73% of home improvement measure installations? What are these two contractors doing that other contractors are not? Probe: What makes them different?
    a. Are the motivations of these two contractors the same as other contractors?
    b. What could be done to increase the number of installations among other active participating contractors?

9. To what extent have contractors increased their capacity to delivery efficiency service in Ohio? [Probe: Have contractors changed their business practices? Are they offering additional/new services to customers?]

Rebates

1. The rebate levels for qualified improvements are [Verify amounts]:

- Up to $50 Attic Insulation
- Up to $150 for Wall Insulation
- Up to $75 Duct Sealing
- $50 ENERGY STAR Qualified Windows
- $25 ENERGY STAR Qualified Ceiling Fans

2. How did you decide on these rebate levels? Review for each product individually.

3. Has the program made any changes to the rebate levels since the program started?

4. Does the program plan to make any changes to the rebate levels in the foreseeable future?

5. Are the current rebate levels sufficient to encourage customer participation?

Marketing, Outreach, Education

Let's talk about marketing, outreach and education efforts that FirstEnergy and/or Honeywell have used with the 2012 program:

1. How do customers find out about the program?

2. What type of marketing messages targeted at customers work best for the program? Do marketing messages vary by product type, customer group, or in any other way?

3. What marketing messages do not work well? Why?

4. Describe the types of materials that FirstEnergy and Honeywell uses to spread the program's marketing messaging [Probes below by program component].

Participating Contractors

1. Describe the program's marketing approach with participating contractors? What program information or marketing materials do FirstEnergy and/or Honeywell provide for contractors to distribute to customers? [Probe for brochures, advertising incentives, other?]

2. Do contractors contribute to the program's marketing or outreach effort in any way? [Probe: advertising, brochures, signage, other] If so, describe.

3. OVERALL--In what ways could marketing, outreach, and consumer education efforts be changed or improved with consumers and/or contractors?

4. Describe any training that the program provides to contractors. [Probe for workshops, printed material, product demonstrations, other]

Rebate Applications, Tracking, and Quality Control—

Next I want to talk about the rebate application process.

Application Steps

1. Describe the steps that customers follow to receive a rebate on the installation of qualified improvements.
   a. How do customers find the application? [Probe: Do contractors distribute, available on-line, other]
   b. Are applications accepted only by mail?
   c. How much time lapses between the time that an application is received by the program and the customer receives the rebate?

Application Dates

2. What are the eligible purchase and service dates?

Qualifying Improvements

3. What information does the program require to confirm that the improvement qualifies for the rebate? Does the program require original sales slips as documentation, or is a copy of the sales receipt sufficient?
4. What information does the program require to confirm that the product was installed or serviced by a partner contractor? What if the product was installed or serviced by a contractor that is not a FirstEnergy partner?
5. Does the program perform on-site inspections to confirm that the measures were installed? If yes, do on-site inspections confirm that measures were installed correctly?

Overall

6. Is there anything that could be done differently to improve the rebate process?

Strengths & Limitations

1. What are the program's greatest strengths?
   a. Is there something that would be worth emulating in other programs?
   b. Are there any nuances to the way that the program is structured that contributes to its success?
2. What are the program's greatest weaknesses or limitations?
   a. Is there anything that you tried that did not work out as you expected
   b. What are the challenges facing the program as it moves forward?

Thank you for your time. Do you have anything else to share with me on these topics or other topics that I have not addressed?

INTERVIEW GUIDE

Active Participant Contractors

**Ohio First Energy Comprehensive Residential Retrofit Program,
Known as Residential Energy Audit Program (REA)**

Date:
Interviewer:
Respondent:
Company / Store:
Title:
Phone:
Email:

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

My name is ____, I am from NMR Group and calling on behalf of the Ohio FirstEnergy Residential Energy Audit (REA) Program. I am calling to ask you some questions about how that program has worked for you and to get some feedback about any program enhancements that could take place.
Are you the person at [INSERT COMPANY] who is most familiar with the FirstEnergy Residential Energy Audit Program? (IF YES) Do you have time to talk right now?
(IF NO) Who would be more familiar with the program at [INSERT COMPANY]?
[Arrange for transfer/callback time.]

[IF NEEDED]
Through this program you would have installed energy efficient light bulbs, low flow shower heads, faucet aerators, pipe wrap, roof and ceiling insulation, wall insulation, ENERGY STAR windows, and duct sealing, as well as making recommendations for retrofits to the customer's home. Do you recall participating in this program?

Contractor Information

To get started I'd like to get a little background information about the number and types of work your company has completed as part of the program.

1. According to our records between January 1, 2012 and December 31, 2012 your company completed approximately
    a. [# from sample] Energy Audits [IF ZERO, THANK AND TERMINATE]
2. Installed… [confirm #s, if necessary email list for confirmation before or after interview]
    a. [# from sample] ENERGY STAR CFLs
    b. [# from sample] Low Flow Showerheads

c. [# from sample] Faucet Aerators
d. [# from sample] Pipe Wrap Insulation
e. [# from sample] Roof Insulation
f. [# from sample] Wall Insulation
g. [# from sample] ENERGY STAR Qualified Windows
h. [# from sample] Duct Sealing
i. [# from sample] ENERGY STAR Qualified Ceiling Fans with ENERGY STAR Light Fixture Kit

[IF REVISE ALL TO ZERO, THANK AND TERMINATE]

3. Prior to participating in the program, which of the following services and / or measures did your company offer:
   a. Energy Audits
   b. ENERGY STAR CFLs
   c. Low Flow Showerheads
   d. Faucet Aerators
   e. Pipe Wrap Insulation
   f. Roof Insulation
   g. Wall Insulation
   h. ENERGY STAR Qualified Windows
   i. Duct Sealing
   j. ENERGY STAR Qualified Ceiling Fans with ENERGY STAR Light Fixture Kit

4. Can you tell me roughly for what percentage of audits you recommended the following measures?
   a. Insulation (roof or wall)
   b. ENERGY STAR Qualified Windows
   c. Duct Sealing
   d. ENERGY STAR Qualified Ceiling Fans with ENERGY STAR Light Fixture Kit

5. Roughly what percentage of customers acted on your recommendation and installed each of the following measures?
   a. Insulation (roof or wall)
   b. ENERGY STAR Qualified Windows
   c. Duct Sealing
   d. ENERGY STAR Qualified Ceiling Fans with ENERGY STAR Light Fixture Kit

6. Which of the retrofit measures that you installed did you find the easiest to sell? [REPEAT LIST ABOVE IF NEEDED] Why?

7. What types of retrofit jobs were the most difficult to sell? Why?

Program Goals/Objectives

Now I'd like to ask you a few questions about the program itself.

1. What are the overall FirstEnergy program objectives as you see them? [Probe: consumer awareness/education, increasing penetration, market transformation, energy/demand savings, regulatory driven by Ohio Senate Bill 221 to reduce energy demand, other]

2. How did you first learn about the FirstEnergy program? Who did you first learn about the program from? [Probe: FirstEnergy staff, Honeywell staff, someone else?] Describe how your company became involved in the program. [Probe: Were you actively recruited? How were you selected for the program?]

3. Did you have any concerns about participating in the program?

4. What factors influenced your decision to participate in the program? [Probe for specific drivers and motivations]

Rebates

1. Is the current cost of the audit to customers ($100) sufficient to encourage customer participation? If no, what price level would better encourage customer participantion?

2. How effective was the reduced cost audit in generating customer interest in the program?

3. Are the current rebate levels sufficient to encourage customers to pursue additional recommended measures? [Probe for differences by measure]
   [IF NECESSARY] The rebate levels for qualified products are:
   - Up to $50 Attic Insulation
   - Up to $150 for Wall Insulation
   - Up to $75 Duct Sealing
   - $50 ENERGY STAR Qualified Windows
   - $25 ENERGY STAR Qualified Ceiling Fans

4. How effective were the rebates in generating customer interest in additional measures? [Probe for differences by measure]
   a. Were any of the rebates more effective than others? Why?

5. How satisfied are you with the amount of the rebates? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, or Very Dissatisfied?
   1. Very satisfied
   2. Somewhat satisfied
   3. Neither satisfied nor dissatisfied
   4. Somewhat dissatisfied
   5. Very dissatisfied
   6. Refused
   7. Don’t know

6. [IF 3, 4 or 5] What types of changes would have to be made to the *rebate amounts* to make you more satisfied?

Marketing, Outreach, Education

Let's now talk about marketing, outreach and education efforts that FirstEnergy and/or your company have used with the program:

5. How do customers find out about the FirstEnergy program [Probe: Do you tell them about it? Do they already know about it by the time that they talk to you? Other?]

I'd like to ask you about the marketing and promotion efforts directed at the comprehensive energy audit.

6. Describe the types of marketing and promotion efforts that FirstEnergy uses to promote comprehensive energy audits. [PROBE for brochures, billboards, radio ads, direct mail, other?]
   a. What types of marketing messages were most effective? Why?

7. In what ways could program marketing, outreach, and consumer education efforts around comprehensive energy audits be changed or improved to assist partnering contractors?
   a. What marketing messages did not work as well? Why?

8. Apart from the FirstEnergy program marketing and promotion efforts, does your comoany do anything else could be done to market or promote comprehensive energy audits offered through the program?
   a. [IF NO] Why not? [Probe for perceived need, budget, personnel resources, timing, etc.]
   b. [IF YES] What type of marketing and outreach does your company do to promote its practice of performing comprehensive energy audits? [Probe for specifics: brochures, newspaper, magazines, radio, television, Internet, press releases, store circulars, etc.]
      i. How do your marketing and promotion efforts for comprehensive energy audtis differ from the FirstEnergy program marketing materials and activities?
      ii. To what extent do they complement each other? To what extent do they overlap?

Next I'd like to ask you about the marketing and promotion efforts directed at the additional measures offered by the program. [If necessary, these include:

- Attic Insulation
- Wall Insulation
- Duct Sealing
- ENERGY STAR Qualified Windows
- ENERGY STAR Qualified Ceiling Fans]

9. Do the types of marketing and promotion efforts that FirstEnergy or your company uses to promote additional measures differ from those used to promote the comprehensive energy audits? [IF NO SKIP TO NEXT SECTION]

10. Describe the types of marketing and promotion efforts that FirstEnergy uses to promote these additional measures. [PROBE for brochures, billboards, radio ads, direct mail, other?] [PROBE for any differences between installation and tune up services]

11. How effective are the FirstEnergy program marketing and promotion materials for additional measures? Could they be improved in any way? How so?

12. In what ways could program marketing, outreach, and consumer education efforts be changed or improved to assist participating contractors?
    a. What types of marketing messages around additional measures were most effective? Why?
    b. What marketing messages around additional measures did not work as well? Why?

13. Apart from the FirstEnergy program marketing and promotion efforts, does your company do anything else to market or promote additional energy improvements rebated by the program? [
    a. [IF NO] Why not? [Probe for perceived need, budget, personnel resources, timing, etc.]
    b. [IF YES] What type of marketing and outreach does your company do to promote the additional measures? [Probe for specifics: brochures, newspaper, magazines, radio, television, Internet, press releases, store circulars, etc.]
        i. How do your marketing and promotion efforts differ from the FirstEnergy program marketing materials and activities?
        ii. To what extent do they complement each other? To what extent do they overlap?

Rebate Applications, and Tracking

Next I want to talk about the rebate application process.

Application Steps

1. Describe the steps that you must make to help customers apply for a rebate for the installation of measures covered by the program. [PROBE: filling out application form, providing receipts, other]

2. What information does the program require from you to confirm that the product qualifies for the rebate? Does the program require original sales slips as documentation, or is a copy of the sales receipt sufficient?

3. Do customers fill out the rebate application form or do you fill out the form for them? [Probe: To what extent do you help customers fill out the rebate application?]
    a. How much effort is it for your company to fill out the information requirements on the program application forms?
    b. [If they help] How much time does it take you to help customers with the application?]
    c. Do you have any recommendations for improvements to the application form or application process?

4. Is there anything else that could be done differently to improve the rebate process?

Technical Assistance

Training

1. Has the FirstEnergy program provided any training to you or your staff for any of the following areas: [Probe: FirstEnergy or Honeywell] [Probe for each product type: Did the program explain the energy savings potential of the various types of equipment supported by the program, best applications for use, ENERGY STAR qualifications, other?). [PROBE FOR EACH MEASURE]
   a. Comprehensive Energy Audit
   b. Direct Install Measures
      i. ENERGY STAR® CFLs
      ii. Low Flow Showerheads
      iii. Faucet Aerators
      iv. Pipe Wrap Insulation
   c. Additional Measures
      i. Attic Insulation
      ii. Wall Insulation
      iii. Duct Sealing
      iv. ENERGY STAR Qualified Windows
      v. ENERGY STAR Qualified Ceiling Fans
         1. [IF YES] What type of training did the program provide?
         2. [IF YES] Approximately how many employees received training?
         3. Is there any training you would like FirstEnergy to provide? [Probe for specifics by product type]

Audits

1. Does your company have a formal policy or set of guidelines that technicians are required to follow for residential energy audits? If yes, what are the guidelines?

2. What technical guidelines does the program provide to contractors for energy audits?

3. Does your company have a formal policy or set of guidelines that technicians are required to follow for the installation of measures covered by the program, including:
   a. Direct Install Measures
      i. ENERGY STAR® CFLs
      ii. Low Flow Showerheads
      iii. Faucet Aerators
      iv. Pipe Wrap Insulation
   b. Additional Measures
      i. Attic Insulation
      ii. Wall Insulation
      iii. Duct Sealing
      iv. ENERGY STAR Qualified Windows

v. ENERGY STAR Qualified Ceiling Fans

Strengths & Limitations

3. What are the program's greatest strengths?
   a. What ONE aspect of the program do you think had the greatest impact on the number of audits your company completed? [Probe: training, incentives, advertising, etc.]
   b. What other aspects of the program impacted the number of audits you company completed? [Probe: training, incentives, advertising, etc.]
   c. What ONE aspect of the program do you think had the greatest impact on the number of additional measure installations your company completed? [Probe: training, incentives, advertising, etc.]
   d. What other aspects of the program impacted the number of additional measure installations your company completed? [Probe: training, incentives, advertising, etc.]

4. Are there any nuances to the way that the program is structured that contributes to its success?

5. What are the program's greatest weaknesses or limitations?
   a. What was the ONE most important barrier affecting audit participation level?
   b. What other barriers affected audit participation level?
   c. What was the ONE most important barrier affecting additional measure adoption?
   d. What other barriers affected additional measure adoption?

6. Based on your experience with the program so far, what are the most important improvements that still need to be made to the program? [Probe: What are the challenges facing the program as it moves forward?]

7. [IF FILLS OUT APPLICATIONS FOR CUSTOMERS] Thinking about how easy or hard it was to complete applications, how satisfied were you with the ease of filling out applications? Would you say you are very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied?
   1. Very satisfied
   2. Somewhat satisfied
   3. Neither satisfied nor dissatisfied
   4. Somewhat dissatisfied
   5. Very dissatisfied
   6. Refused
   7. Don't know

8. [IF 3, 4 or 5] What about the application forms would have to change to make you more satisfied?

9. Thinking of your OVERALL experience with the program, how satisfied are you with the program? Would you say you are very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied?
    1. Very satisfied
    2. Somewhat satisfied
    3. Neither satisfied nor dissatisfied
    4. Somewhat dissatisfied
    5. Very dissatisfied
    6. Refused
    7. Don't know

10. [IF 3, 4 or 5] What about the program would have to change to make you more satisfied?

11. Are there any other program issues we have not discussed that you would like to mention?

12. Approximately how many full-time equivalent workers are employed at your company?
    1. Fewer than 5
    2. 5 to 9
    3. 10 to 19
    4. 20 to 49
    5. 50 to 99
    6. 100 to 249
    7. 250 or More
    8. (Refused)
    9. (Don't know)

13. Was it necessary to increase your company's work force to perform energy audits or measure installs created by the Residential Energy Audit Program?
    a. If yes, by what percentage would you say your work force increased?

14. How many years has your company been in the energy efficiency business? [RECORD #; 9 = Don't know]

Thank you for your time. Do you have anything else to share with me on these topics or other topics that I have not addressed?

INTERVIEW GUIDE

Inactive Participant Contractors

Ohio First Energy Comprehensive Residential Retrofit Program
Known as Residential Energy Audit Program (REA)

Date:
Interviewer:
Respondent:
Company / Store:
Title:
Phone:
Email:

[NOTE: THE QUESTIONS IN THIS INTERVIEW GUIDE WILL NOT NECESSARILY BE READ VERBATIM BUT MAY BE MODIFIED TO SUIT THE INTERVIEW. IN ADDITION, THE INTERVIEWERS MAY SKIP QUESTIONS THAT ARE LESS RELEVANT TO A PARTICULAR INTERVIEW]

My name is ____, I am from NMR Group and calling on behalf of the Ohio FirstEnergy Residential Energy Audit (REA) Program. I am calling to ask you some questions about how that program has worked for you and to get some feedback about any program enhancements that could take place.
Are you the person at [INSERT COMPANY] who is most familiar with the FirstEnergy Residential Energy Audit Program? (IF YES) Do you have time to talk right now?
(IF NO) Who would be more familiar with the program at [INSERT COMPANY]?
[Arrange for transfer/callback time.]

[IF NEEDED]
You would have signed up as a participating contractor for this program. Through this program you would have installed energy efficient light bulbs, low flow shower heads, faucet aerators, pipe wrap, roof and ceiling insulation, wall insulation, ENERGY STAR windows, and duct sealing, as well as making recommendations for retrofits to the customer's home. Do you recall signing up as a participating contractor for this program?

Contractor Information
As I noted, the program that I would like to discuss today is the 2012 Residential Energy Audit Program, which provides residential single-family homeowners with a comprehensive home energy audit. Customers pay a discounted fee of $100 for the service. In addition, customers may receive direct install measures or choose to pursue additional measures recommend as a result of the audit.
To get started I'd like to confirm a few things.

8. According to our records between January 1, 2012 and December 31, 2012 your company completed no work as part of the program, is this correct?

   [IF YES – GO TO NEXT SECTION. IF NO – RECORD WORK COMPLETED AND THANK AND TERMINATE]
   b. [# from sample] Energy Audits
   j. [# from sample] ENERGY STAR CFLs
   k. [# from sample] Low Flow Showerheads
   l. [# from sample] Faucet Aerators
   m. [# from sample] Pipe Wrap Insulation
   n. [# from sample] Roof Insulation
   o. [# from sample] Wall Insulation
   p. [# from sample] ENERGY STAR Qualified Windows
   q. [# from sample] Duct Sealing
   r. [# from sample] ENERGY STAR Qualified Ceiling Fans with ENERGY STAR Light Fixture Kit

9. Does your company perform residential energy energy audits? If yes, how many audits did you perform in 2012? Where were these audits completed?
10. Does your company install or sell any energy efficient equipment for residential homes? [If yes] Which ones? [IF NO TO 2 AND 3 – THANK AND TERMINATE]

Program Awareness

6. How did you first learn about the FirstEnergy program? Who did you first learn about the program from? [Probe: FirstEnergy staff, Honeywell staff, someone else?] Describe how your company became involved in the program. [Probe: Were you actively recruited? How were you selected for the program?]

7. What factors influenced your decision to sign-up as a participating contractor in the program? [Probe for specific drivers and motivations]

8. What is your understanding of how the program works? [Probe for understanding of audit, direct install measures, and additional measures]

9. [If aware of energy audits] What steps, if any, have you taken to notify customers of the comprehensive energy audits or the program itself?

Reasons for Lack of Activity

10. Did your company begin any energy efficiency work with the intent to go through the program in 2012? [If yes] What did you do? [Probe:
    a. How many and for what types of measures?
    b. When do you expect these projects to be completed?
    c. What prevented you or the customer from submitting an application?
    d. What prevented you or the customer from completing the work?

11. [IF NO] Are there specific reasons why you have not yet participated in the program? [Probe: lack of: customer leads, customer interest, contractor interest, incentives, etc.]

12. As you may know, the current cost of the audit is $100 to customers. Is the current cost of the audit to customers sufficient to encourage customer participation?
13. Are you familiar with the measures that are currently rebated through the program? [If necessary, the rebated measures are:
    a. Attic Insulation
    b. Wall Insulation
    c. Duct Sealing
    d. ENERGY STAR Qualified Windows
    e. ENERGY STAR Qualified Ceiling Fans

14. [If familiar with measures] Are you familiar with the current program rebate levels for the additional recommended measures?
    [If not familiar with measures or the rebate levels, read below]
    - Up to $50 Attic Insulation
    - Up to $150 for Wall Insulation
    - Up to $75 Duct Sealing
    - $50 ENERGY STAR Qualified Windows
    - $25 ENERGY STAR Qualified Ceiling Fans

15. Are the current rebate levels sufficient to encourage customers to pursue additional recommended measures? [Probe for differences by measure]
    - Up to $50 Attic Insulation
    - Up to $150 for Wall Insulation
    - Up to $75 Duct Sealing
    - $50 ENERGY STAR Qualified Windows
    - $25 ENERGY STAR Qualified Ceiling Fans

16. [If aware of rebate amounts] How effective do you think the rebates are/could be in generating customer interest in additional measures? [Probe for differences by measure]
    b. Do you think any of the rebates would be more effective than others? Why?

17. [If aware of rebate amounts prior to interview] How satisfied are you with the amount of the rebates? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, or Very Dissatisfied?
    8. Very satisfied
    9. Somewhat satisfied
    10. Neither satisfied nor dissatisfied
    11. Somewhat dissatisfied
    12. Very dissatisfied
    13. Refused
    14. Don’t know

18. [IF 3, 4 or 5] What types of changes would have to be made to the *rebate amounts* to make you more satisfied?

19. Did you have any concerns about participating in the program?

Marketing, Outreach, Education

14. Are you aware of any marketing or promotion for comprehensive residential energy audits provided by the program? [IF NO SKIP TO 4]

15. Describe the types of marketing and promotion efforts that FirstEnergy uses to promote comprehensive energy audits. [PROBE for brochures, billboards, radio ads, direct mail, other?]

16. In what ways could program marketing, outreach, and consumer education efforts be changed or improved to assist partnering contractors?

17. Does your company do anything else to market or promote comprehensive energy audits offered through the program?
    a. [IF NO] Why not? [Probe for perceived need, budget, personnel resources, timing, etc.]
    b. [IF YES] What do you do? [Probe for specifics: brochures, newspaper, magazines, radio, television, Internet, press releases, store circulars, etc.]

Next I'd like to ask you about the marketing and promotion efforts directed at the additional measures offered by the program. [If necessary, these include:

- Attic Insulation
- Wall Insulation
- Duct Sealing
- ENERGY STAR Qualified Windows
- ENERGY STAR Qualified Ceiling Fans]

18. Do the types of marketing and promotion efforts that FirstEnergy or your company uses to promote additional measures differ from those used to promote the comprehensive energy audits? [IF NO SKIP TO NEXT SECTION]

19. Describe the types of marketing and promotion efforts that FirstEnergy uses to promote these additional measures. [PROBE for brochures, billboards, radio ads, direct mail, other?] [PROBE for any differences between installation and tune up services]

20. In what ways could program marketing, outreach, and consumer education efforts be changed or improved to assist participating contractors?

21. Apart from the FirstEnergy program marketing and promotion efforts, do you do anything else to market or promote additional energy improvements rebated by the program?
    a. [IF NO] Why not? [Probe for perceived need, budget, personnel resources, timing, etc.]

b. [IF YES] What do you do? [Probe for specifics: brochures, newspaper, magazines, radio, television, Internet, press releases, store circulars, etc.]
    i. How do your marketing and promotion efforts differ from the FirstEnergy program marketing materials and activities?
    ii. To what extent do they complement each other? To what extent do they overlap?

Technical Assistance

Training

2. Has the FirstEnergy program provided any training to you or your staff for any of the following areas: [Probe: FirstEnergy or Honeywell] [Probe for each product type: Did the program explain the energy savings potential of the various types of equipment supported by the program, best applications for use, ENERGY STAR qualifications, other?). [PROBE FOR EACH MEASURE]
    a. Comprehensive Energy Audit
    b. Direct Install Measures
        i. ENERGY STAR® CFLs
        ii. Low Flow Showerheads
        iii. Faucet Aerators
        iv. Pipe Wrap Insulation
    c. Additional Measures
        i. Attic Insulation
        ii. Wall Insulation
        iii. Duct Sealing
        iv. ENERGY STAR Qualified Windows
        v. ENERGY STAR Qualified Ceiling Fans
            1. [IF YES] What type of training did the program provide?
            2. [IF YES] Approximately how many employees received training?
            3. Is there any training you would like FirstEnergy to provide? [Probe for specifics by product type]

3. Under what circumstances do you recommend additional measures to customers? [PROBE: Do you recommend measures to every customer, only if customer asks, varies by measure, other?] [Probe for differences by measure.]

4. Do you explicitly market the FirstEnergy program rebates when you recommend rebated measures?

5. As you understand it, what are the major benefits of the energy improvements covered by the program? [PROBE for cost savings, energy savings, thermal benefits, durability, environmental benefits, resale value, other]

Audits

4. Does your company have a formal policy or set of guidelines that technicians are required to follow for residential energy audits? If yes, what are the guidelines?

5. What technical guidelines does the program provide to contractors for energy audits?

6. Does your company have a formal policy or set of guidelines that technicians are required to follow for the installation of measures covered by the program, including:
    a. Direct Install Measures
        i. ENERGY STAR® CFLs
        ii. Low Flow Showerheads
        iii. Faucet Aerators
        iv. Pipe Wrap Insulation
    b. Additional Measures
        i. Attic Insulation
        ii. Wall Insulation
        iii. Duct Sealing
        iv. ENERGY STAR Qualified Windows
        v. ENERGY STAR Qualified Ceiling Fans

Strengths & Limitations

15. What are the program's greatest strengths?
    a. What ONE aspect of the program do you think had the greatest impact on the number of audits your company completed? [Probe: training, incentives, advertising, etc.]
    b. What other aspects of the program impacted the number of audits you company completed? [Probe: training, incentives, advertising, etc.]
    c. What ONE aspect of the program do you think had the greatest impact on the number of additional measure installations your company completed? [Probe: training, incentives, advertising, etc.]
    d. What other aspects of the program impacted number of additional measure installations your company completed? [Probe: training, incentives, advertising, etc.]

16. Are there any nuances to the way that the program is structured that contributes to its success?

17. What are the program's greatest weaknesses or limitations
    a. What was the ONE most important barrier affecting audit participation level?
    b. What other barriers affected audit participation level?
    c. What was the ONE most important barrier affecting additional measure adoption?
    d. What other barriers affected additional measure adoption?

18. Based on your experience with the program so far, what are the most important improvements that still need to be made to the program? [Probe: What are the challenges

facing the program as it moves forward?] How could the program change to allow you or encourage you to participate more actively?

19. [IF FILLS OUT APPLICATIONS FOR CUSTOMERS] Thinking about how easy or hard it was to complete applications, how satisfied were you with the ease of filling out applications? Would you say you are very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied?
    8. Very satisfied
    9. Somewhat satisfied
    10. Neither satisfied nor dissatisfied
    11. Somewhat dissatisfied
    12. Very dissatisfied
    13. Refused
    14. Don't know

20. [IF 3, 4 or 5] What would have made you more satisfied?

21. Thinking of your OVERALL experience with the program, how satisfied are you with the program? Would you say you are very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied?
    8. Very satisfied
    9. Somewhat satisfied
    10. Neither satisfied nor dissatisfied
    11. Somewhat dissatisfied
    12. Very dissatisfied
    13. Refused
    14. Don't know

22. [IF 3, 4 or 5] What would have made you more satisfied?

23. Are there any other program issues we have not discussed that you would like to mention?

24. Approximately how many full-time equivalent workers are employed at your company?
    10. Fewer than 5
    11. 5 to 9
    12. 10 to 19
    13. 20 to 49
    14. 50 to 99
    15. 100 to 249
    16. 250 or More
    17. (Refused)
    18. (Don't know)

25. How many years has your company been in the energy efficiency business? [RECORD #; 9 = Don't know]

Thank you for your time. Do you have anything else to share with me on these topics or other topics that I have not addressed?

Appendix C: Participant Telephone Survey Instrument

EDC	Code
Illuminating Company	1
Ohio Edison	2
Toledo Edison	3

A1 *Hello, my name is (interviewer name), and I am calling on behalf of (name of EDC), your electric utility company. May I speak with (name of respondent)?*

Yes	01	
No	02	[IF *NOT AVAILABLE, ASK FOR ANOTHER ADULT FAMILIAR WITH HOUSEHOLD'S PARTICIPATION IN ENERGY EFFICIENT PRODUCTS PROGRAM]*

A2 *I'm with Research America, an independent research firm. We are speaking with households that participated in (name of EDC's) Residential Energy Audit Program. Through this program you may have had energy efficient equipment installed in your home for free, such as compact fluorescent lamps – otherwise known as CFLs –, low flow showerheads, faucet aerators, or water heater pipe insulation. You may also have received a rebate for installing other items recommended by the energy auditor including attic or wall insulation, duct sealing, Energy Star qualified windows, or Energy Star qualified ceiling fans. Do you recall participating in this program?*

Yes	01	[SKIP TO A6]
No	02	
Don't Know	98	
Refused	99	[THANK AND TERMINATE]

A3 *Is it possible that someone else in your household would be familiar with the products or services you received through this program?*

Yes	01	
No	02	[THANK AND TERMINATE]
Don't Know	98	[THANK AND TERMINATE]
Refused	99	[THANK AND TERMINATE]

A5 *May I speak with that person?*

Yes	01	[RECYCLE THROUGH A1 and A2 WITH NEW RESPONDENT]
No	02	[THANK AND TERMINATE]
Don't Know	98	[THANK AND TERMINATE]
Refused	99	[THANK AND TERMINATE]

A6 *Great, thank you. First I want to assure you that I'm not selling anything. We are calling program participants to assess customer satisfaction with the energy efficient products installed through*

the program. ***You will receive a $10 gift card from Shell for participating in this survey.*** *May I take a few minutes to talk with you about the products and services you received and how satisfied you have been with those products and services? Your responses will be kept confidential.*

Yes	01	[PROCEED WITH INTERVIEW]
No	02	[THANK TERMINATE]
Refused	99	[THANK AND TERMINATE]

THE INTERVIEW

1. *First, please tell me how you heard about the Residential Audits program?* [DO NOT READ; INDICATE ALL THAT APPLY]

Contractor	01
Retail Store	02
Bill Insert	03
Direct Mail from EDC	04
Energy Save Ohio Website	05
Print Ad	06
TV	07
Word-of-Mouth	08
Other (specify)	09

Specify Other: _____

2. *Next, I would like to verify the energy efficiency measures that were direct installed in your home by a home energy auditor. Our records indicate that you had the following measures direct installed.* [READ ITEMS THAT DATBASE SHOWS WERE DIRECT INSTALLED; RECORD ANSWERS INDICATED BY RESPONDENT]

Is that correct?

	Yes	No	IF YES, GO TO
a. CFLs	01	02	Q3
b. Low Flow Showerheads	01	02	Q8
c. Faucet Aerators	01	02	Q10
d. Pipe Wrap Insulation	01	02	Q14

IF NO MEASURES DIRECT INSTALLED, SKIP TO Q18

CFLs

3. *Before the CFLs were installed by the home energy auditor, about how many CFLs did you have installed in your home? Would you say:*

None	01
1-5	02
6-10	03
More than 10	04
Don't Know	98

4. *Does your home presently contain more CFLs or more incandescent light bulbs?*

More CFLs	01
More Incandescent	02
About the same	03
Don't Know	98

5. *Would you purchase CFLs in the future?*

Yes	01
No	02
Don't Know	98

6. *How satisfied have you been with your new CFLs? Would you say "Very Satisfied," "Satisfied," "Neutral," "Dissatisfied", "Very Dissatisfied," or "Don't Know"?*

Very Satisfied	01
Satisfied	02
Neutral	03
Dissatisfied	04
Very Dissatisfied	05
Don't Know	98

[ASK Q7 IF Q6 = DISSATISFIED OR VERY DISSATISFIED WITH CFLS]

7. *Why aren't you satisfied with your new CFLs?*

Low Flow Showerheads

8. *How satisfied have you been with your new Low Flow Showerheads? Would you say "Very Satisfied," "Satisfied," "Neutral," "Dissatisfied", "Very Dissatisfied," or "Don't Know"?*

Very Satisfied	01
Satisfied	02
Neutral	03
Dissatisfied	04
Very Dissatisfied	05
Don't Know	98

[ASK Q9 IF Q8 = DISSATISFIED OR VERY DISSATISFIED WITH LOW FLOW SHOWERHEADS]

9. *Why aren't you satisfied with your low flow showerheads?*

Faucet Aerators

10. *How satisfied have you been with your new **bath aerators**? Would you say "Very Satisfied," "Satisfied," "Neutral," "Dissatisfied", "Very Dissatisfied," or "Don't Know"?*

Very Satisfied	01
Satisfied	02
Neutral	03
Dissatisfied	04
Very Dissatisfied	05
Don't Know	98

[ASK Q11 IF Q10 = DISSATISFIED OR VERY DISSATISFIED WITH BATH AERATORS]

11. *Why aren't you satisfied with your bath aerators?*

12. *How satisfied have you been with your new **kitchen aerators**? Would you say "Very Satisfied," "Satisfied," "Neutral," "Dissatisfied", "Very Dissatisfied," or "Don't Know"?*

Very Satisfied	01
Satisfied	02
Neutral	03
Dissatisfied	04
Very Dissatisfied	05
Don't Know	98

[ASK Q13 IF Q12 = DISSATISFIED OR VERY DISSATISFIED WITH KITCHEN AERATORS]

13. *Why aren't you satisfied with your kitchen aerators?*

Pipe Wrap Insulation

14. Is your hot water heater an electric powered water heater or a gas powered water heater?

Electric hot water heater	01
Gas hot water heater	02
Don't know	98

15. How satisfied have you been with your hot water pipe insulation? Would you say "Very Satisfied," "Satisfied," "Neutral," "Dissatisfied", "Very Dissatisfied," or "Don't Know"?

Very Satisfied	01
Satisfied	02
Neutral	03
Dissatisfied	04
Very Dissatisfied	05
Don't Know	98

[ASK Q16 IF Q15 = DISSATISFIED OR VERY DISSATISFIED WITH PIPE WRAP]

16. Why aren't you satisfied with your pipe insulation?

HOME IMPROVEMENT RETROFITS

17. *Our records show that you received a rebate for the following home improvements that were installed by a participating contractor:* _____ [READ ITEMS THAT RECORDS SHOW WERE CONTRACTOR INSTALLED; RECORD ANSWER INDICATED BY RESPONDENT]

Is that correct?

	Yes	*No*	*DK*
a. Attic Insulation	*01*	*02*	*98*
b. Wall Insulation	*01*	*02*	*98*
c. Energy Star qualified Windows	*01*	*02*	*98*
d. Duct Sealing	*01*	*02*	*98*
e. Energy Star qualified Ceiling Fan	*01*	*02*	*98*

[If attic insulation = Yes, go to Q18]

[If wall insulation = Yes, go to Q22]

[If Energy Star windows = Yes, go to Q26]

[If duct sealing =Yes, go to Q30]

[If Energy Star ceiling fans = Yes, go to Q34]

Attic Insulation

18. *I'm going to read some considerations that might have affected your decision to have additional attic insulation installed in your home. After listening to the list, please tell me the top 3 factors that influenced your decision. Which was the most important? Second-most important? Third most important?*

a. The rebate incentive amount provided	1	2	3
b. Being able to cover the out-of-pocket costs	1	2	3
c. Being able to finance the costs of the retrofit	1	2	3
d. Realizing a good payback window for the investment	1	2	3
e. The retrofit recommendation seemed credible	1	2	3
f. Impact of attic insulation on reducing my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

19. *Using a scale from 1 to 5 where 1 is "very dissatisfied," 2 is "dissatisfied", 3 is "neutral", 4 is "satisfied", and 5 is "very satisfied", how satisfied were you with the*

a. Rebate application process	_____	[ENTER 1-5 OR 98]
b. Rebate dollar amount you received	_____	[ENTER 1-5 OR 98]
c. Insulation performance after installation	_____	[ENTER 1-5 OR 98]

[ASK Q20 IF Q19 (a-c) = 1 OR 2]

20. *Why weren't you satisfied with the ___ (rebate application process/ rebate amount/ or your insulation performance) after the installation?*

21. What was your approximate total out-of-pocket cost for installing the additional attic insulation?

$_____

Wall Insulation

22. *I'm going to read some considerations that might have affected your decision to have additional wall insulation installed in your home. After listening to the list, please tell me the top 3 factors that influenced your decision. Which was most important? Second-most important? Third most important?*

a. The rebate incentive amount provided	1	2	3
b. Being able to cover the out-of-pocket costs	1	2	3
c. Being able to finance the costs of the retrofit	1	2	3
d. Realizing a good payback window for the investment	1	2	3
e. The retrofit recommendation seemed credible	1	2	3
f. Impact of wall insulation on reducing my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

23. Using a scale from 1 to 5 where 1 is "very dissatisfied," 2 is "dissatisfied", 3 is "neutral", 4 is "satisfied", and 5 is "very satisfied", how satisfied are you with the

a. Rebate application process _____ [ENTER 1-5 OR 98]
b. Rebate dollar amount you received _____ [ENTER 1-5 OR 98]
c. Insulation performance after installation _____ [ENTER 1-5 OR 98]

[ASK Q24 IF Q23 (a-c) = 1 OR 2]

24. Why weren't you satisfied with the rebate application process/ rebate amount/ or your insulation performance after the installation?

25. What was your approximate total out-of-pocket cost for installing the additional wall insulation?

$_____

Energy Star qualified Windows

26. *I'm going to read some considerations that might have affected your decision to have Energy Star qualified windows installed in your home. After listening to the list, please tell me the top 3 factors that influenced your decision. Which was most important? Second most important? Third most important?*

a. The rebate incentive amount	1	2	3
b. Being able to cover the out-of-pocket costs	1	2	3
c. Being able to finance the costs of the retrofit	1	2	3
d. Realizing a good payback for the investment	1	2	3
e. The retrofit recommendation seemed credible	1	2	3
f. Impact of energy efficient windows on reducing my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

27. Using a scale from 1 to 5 where 1 is "very dissatisfied," 2 is "dissatisfied", 3 is "neutral", 4 is "satisfied", and 5 is "very satisfied", how satisfied were you with the

d. Rebate application process	_____	[ENTER 1-5 OR 98]
e. Rebate dollar amount you received	_____	[ENTER 1-5 OR 98]
f. Insulation performance after installation	_____	[ENTER 1-5 OR 98]

[ASK Q28 IF Q27 (a-c) = 1 OR 2]

28. Why weren't you satisfied with the ___ (rebate application process/ rebate amount/ or your insulation performance) after the installation?

29. What was your approximate total out-of-pocket cost for installing the Energy Star qualified windows?

$_____

Duct Sealing

30. *I'm going to read some considerations that might have affected your decision to have the ducts in your home sealed. After listening to the list, please tell me the top 3 factors that influenced your decision. Which was most important? Second most important? Third most important?*

a. The rebate incentive amount provided	1	2	3
b. Being able to cover the out-of-pocket costs	1	2	3
c. Being able to finance the costs of the retrofit	1	2	3
d. Realizing a good payback window for the investment	1	2	3
e. The retrofit recommendation seemed credible	1	2	3
f. Impact of sealed ducts on reducing my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

31. Using a scale from 1 to 5 where 1 is "very dissatisfied," 2 is "dissatisfied", 3 is "neutral", 4 is "satisfied", and 5 is "very satisfied", how satisfied were you with the

a. Rebate application process _____ [ENTER 1-5 OR 98]
b. Rebate dollar amount you received _____ [ENTER 1-5 OR 98]
c. Insulation performance after installation _____ [ENTER 1-5 OR 98]

ASK Q32 IF Q31 (a-c) = 1 OR 2]

32. Why weren't you satisfied with the___ (rebate application process/ rebate amount/ or your duct performance) after the work was performed?

33. What was your approximate total out-of-pocket cost for the duct sealing job?

$_____

Energy Star Qualified Ceiling Fan

34. *I'm going to read some considerations that might have affected your decision to have an Energy Star rated ceiling fans installed in your home. After listening to the list, please tell me the top 3 factors that affected your decision. Which was most important? Second most important? Third most important?*

a. The rebate incentive amount provided	1	2	3
b. Being able to cover the out-of-pocket costs	1	2	3
c. Being able to finance the costs of the retrofit	1	2	3
d. Realizing a good payback window for the investment	1	2	3
e. The retrofit recommendation seemed credible	1	2	3
f. Impact of sealed ducts on reducing my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

35. *Using a scale from 1 to 5 where 1 is "very dissatisfied," 2 is "dissatisfied", 3 is "neutral", 4 is "satisfied", and 5 is "very satisfied", how satisfied were you with the*

d. Rebate application process _____ [ENTER 1-5 OR 98]
e. Rebate dollar amount you received _____ [ENTER 1-5 OR 98]
f. Ceiling fan performance after installation _____ [ENTER 1-5 OR 98]

ASK Q36 IF Q35 (a-c) = 1 OR 2]

36. Why weren't you satisfied with the___ (rebate application process/ rebate amount/ or ceiling fan performance)?

37. What was your approximate total out-of-pocket cost for the Energy Star qualified ceiling fan purchase?

$_____

RETROFIT RECOMMENDATIONS

38. *Our records indicate that the home energy auditor made recommendations for the following home improvements that you declined to pursue:* _____ [READ RECOMMENDATIONS FROM RECORDS; RECORD ANSWER INDICATED BY RESPONDENT]

Is that correct?

	Yes	*No*	*DK*
a. Attic Insulation	*01*	*02*	*98*
b. Wall Insulation	*01*	*02*	*98*
c. Energy Star qualified Windows	*01*	*02*	*98*
d. Duct Sealing	*01*	*02*	*98*
e. Energy Star qualified Ceiling Fan	*01*	*02*	*98*

[If attic insulation = Yes, go to Q39]

[If wall insulation = Yes, go to Q40]

[If Energy Star windows = Yes, go to Q41]

[If duct sealing =Yes, go to Q42]

[If Energy Star ceiling fans = Yes, go to Q43]

Attic Insulation

39. *I'm going to read some considerations that might have affected your decision* ***to decline the recommendation to add more attic insulation*** *in your home. After listening to the list, please tell me the top 3 factors that influenced your decision to decline the recommendation. Which was most important? Second most important? Third most important?*

a. The rebate offered was not enough of an incentive	1	2	3
b. Was not able to cover the out-of-pocket costs	1	2	3
c. Financing was not offered to fund the retrofit	1	2	3
d. Payback period for the investment was not attractive	1	2	3
e. Retrofit recommendation did not seem very credible	1	2	3
f. Did not think more attic insulation would reduce my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

Wall Insulation

40. *I'm going to read some considerations that might have affected your decision **to decline the recommendation to add more wall insulation** in your home. After listening to the list, please tell me the top 3 factors that affected your decision to decline the recommendation. Which was most important? Second most important reason? Third most important reason?.*

a. The rebate offered was not enough of an incentive	1	2	3
b. Was not able to cover the out-of-pocket costs	1	2	3
c. Financing was not offered to fund the retrofit	1	2	3
d. Payback period for the investment was not attractive	1	2	3
e. Retrofit recommendation did not seem very credible	1	2	3
f. More wall insulation would not reduce my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

Energy Star Qualified Windows

41. *I'm going to read some considerations that might have affected your decision to decline **the recommendation to install Energy Star rated windows** in your home. After listening to the list, please tell me the top 3 factors that affected your decision to decline the recommendation. Which was most important? Second most important? Third most important reason?*

a. The rebate offered was not enough of an incentive	1	2	3
b. Was not able to cover the out-of-pocket costs	1	2	3
c. Financing was not offered to fund the retrofit	1	2	3
d. Payback period for the investment was not attractive	1	2	3
e. Retrofit recommendation did not seem very credible	1	2	3
f. More energy efficient windows would not reduce my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

Duct Sealing

42. *I'm going to read some considerations that might have affected your decision **to decline the recommendation to seal the ducts** in your home. After listening to the list, please tell me the top 3 factors that affected your decision to decline the recommendation. Which was most important? Second most important? Third most important?*

a. The rebate offered was not enough of an incentive	1	2	3
b. Was not able to cover the out-of-pocket costs	1	2	3
c. Financing was not offered to fund the retrofit	1	2	3
d. Payback period for the investment was not attractive	1	2	3
e. Retrofit recommendation did not seem very credible	1	2	3
f. More tightly sealed ducts would not reduce my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

Energy Star qualified Ceiling Fan

43. *I'm going to read some considerations that might have affected your decision* ***to decline the recommendation to install Energy Star rated ceiling fans*** *in your home. After listening to the list, please tell me the top 3 factors that influenced your decision to decline the recommendation. Which was most important? Second most important? Third most important?*

a. The rebate offered was not enough of an incentive	1	2	3
b. Was not able to cover the out-of-pocket costs	1	2	3
c. Financing was not offered to fund the retrofit	1	2	3
d. Payback window for the investment was not attractive	1	2	3
e. Retrofit recommendation did not seem very credible	1	2	3
f. Energy Star qualified ceiling fans would not reduce my electric bill	1	2	3
g. Other (Specify: _____)	1	2	3

RECRUITMENT FOR ONSITE VISIT

44. You will receive an additional $10 gift card from Shell if you would agree to a brief onsite visit from one of our field engineers. The engineer will simply record some of the key characteristics of the equipment that was installed in your home through this program. The visit should only take about 20 minutes. For an additional gift card, would you be agreeable to this?

Yes	01
No	02

HOME DEMOGRAPHICS

I'd like to finish up by asking you some questions about your home.

45. *Which of the following best describes your home? [READ LIST: OPTIONS 01-07]*

Single-family home, detached construction	01
Single-family home, factory manufactured/modular	02
Mobile home	03
Row house	04
Two or Three family attached residence	05
Apartment with 4+ families	06
Condominium	07
Other	08
Don't Know	98
Refused	99

Specify Other: _____

46. *Do you own or rent this residence?*

Own	01
Rent	02
Don't Know	98
Refused	99

47. *Approximately when was your home built?* [DO NOT READ RESPONSE OPTIONS]

Before 1960	01
1960-1969	02
1970-1979	03
1980-1989	04
1990-1999	05
2000-2005	06
2006 or Later	07
Don't know	98
Refused	99

48. *How many square feet is the above-ground living space?*

Square Feet: _____	
Don't know	98
Refused	99

[ASK Q49 IF Q48 = 98 OR 99]

49. Would you estimate the above-ground living space is about:

Less than 1,000 square feet	01
1000-2000 square feet	02
2000-3000 square feet	03
3000-4000 square feet	04
4000-5000 square feet	05
Greater than 5000 square feet	06
Don't know	98
Refused	99

50. How many square feet of below-ground living space is heated or air conditioned?

Square Feet: _____	
Does not apply	88
Don't know	98
Refused	99

[ASK Q51 IF Q49 *influenced* = 98 0R 99]

51. Would you estimate the below-ground living space is about:

Less than 1,000 square feet	01
1000-2000 square feet	02
2000-3000 square feet	03
3000-4000 square feet	04
4000-5000 square feet	05
Greater than 5000 square feet	06
Don't know	98
Refused	99

That's all the questions I have. Thank you for your time.

You will receive your gift card(s) within the next 30 days. Do you have any questions?

OK. Good bye.