Large Filing Separator Sheet

Case Number: 12-1477-EL-EEC

File Date: 5/15/2012

Section: 1

Number of Pages: 200

Description of Document: Annual Efficiency Status Report

FILE

Duke Energy®

139 East Fourth Street, Rm. 1212-Main
P.O. Box 960
Cincinnati, Ohio 45201-0960
Tel: 513-287-4337
Fax: 513-287-4386
dianne.kuhnell@duke-energy.com

Dianne B. Kuhnell.
Senior Paralegal

VIA HAND DELIVERY

May 15, 2012

Docketing Division
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215

Re: Case No. 12-1477-EL-EEC

Dear Docketing Division:

Enclose please find an original and twelve copies of the *Annual Energy Efficiency Status Report of Duke Energy Ohio, Inc.* and an original and ten copies of *Appendices A – Q.* Please date-stamp the two extra copies of the *Application* and return in the envelope provided.

PLEASE NOTE: We respectfully request that Appendices C - Q should be filed (each appendix) as a separate line docket entry. Appendices A, B can be filed together with the Application as one docket entry.

Should you have any questions, please contact me at (513) 287-4337.

Very truly yours,

Dianne Kuhnell

Dianne Kuhnell
Senior Paralegal

Enclosures

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Annual Energy Efficiency Portfolio Status Report of Duke Energy Ohio, Inc.	)))	Case No. 12-1477-EL-EEC

ANNUAL ENERGY EFFICIENCY STATUS REPORT

OF DUKE ENERGY OHIO, INC.

I. Introduction

Pursuant to Rule 4901:1-39-05, Ohio Administrative Code (OAC)., Duke Energy Ohio, Inc. (Duke Energy Ohio or Company) must file an annual status report by May fifteenth each year. The annual status report must contain a section on compliance which includes an update to the benchmark report, an assessment of program performance, and an independent program evaluator report. Following is Duke Energy Ohio's submission demonstrating its compliance with the State's energy mandates for 2011.

II. Third Annual Energy Efficiency Portfolio Status Report

This portfolio status report represents the Company's third filing of a status report on the load impacts achieved through implementation of its energy efficiency and demand response programs pursuant to Rule 4901:1-39-05 (C), O.A.C. This report is composed of the following two sections: (1) Compliance Demonstration which provides information on load impact achievements relative to the baseline and (2) Program Performance Assessment which summarizes program activities and evaluation, measurement, and verification information.

4901:1-39-05 (A) and (B) Initial Benchmark Report

Pursuant to Rule 4901:1-39-05 (A), O.A.C., Duke Energy Ohio must file the following information in a benchmark report:

(1) The energy and demand baselines for kilowatt-hour sales and kilowatt demand for the reporting year; including a description of the method of calculating the baseline, with supporting data.

(2) The applicable statutory benchmarks for energy savings and electric utility peak-demand reduction.

In compliance with 4901:1-39-05(B), in preparing the baseline, Duke Energy Ohio is required to adjust the sales and/or demand baseline for normal weather as well as for changes in numbers of customers, sales, and peak demand to the extent such changes are outside its control.

This benchmark update report provides information on two areas. The first area involves the baseline for 2011, including a discussion of adjustments made to normalize for weather and to adjust for changes in numbers of customers, sales, and peak demand, where those changes are outside the control of Duke Energy Ohio. The second area involves an estimate of the statutory benchmarks for energy savings and electric utility peak-demand reduction.

In estimating the baseline for Duke Energy Ohio for the year 2011, the Company uses the three-year average of the actual level of total energy sold (sales plus losses) and peak demand, adjusted for differences from normal weather. Table 1 provides the historical level of total energy (kWh) for the years 2006 to 2010, the amount of the weather adjustment, and the weather normalized level of total energy.

Table 1 - Duke Energy Ohio Baseline and Benchmark for 2011

Year	Total Energy (MWh)	Weather Normalization Adjustment (MWh)	Weather Normal Level of Total Energy (MWh)	Baseline: Three Year Average (MWh)	Benchmark Percentage	Benchmark Requirement (MWh)
2006	22,402,660	262,896	22,665,556			
2007	23,510,777	(763,963)	22,746,814			
2008	22,321,489	(72,401)	22,249,088			
2009	20,405,122	320,494	20,725,616	22,553,819	0.3%	67,661
2010	22,545,823	(621,454)	21,924,369	21,907,173	0.5%	109,536
2011				**21,633,024**	**0.7%**	**151,431**

Year	Peak Demand (MW)	Weather Normalization Adjustment (MW)	Weather Normal Level of Peak Demand (MW)	Baseline: Three Year Average (MW)	Benchmark Percentage	Benchmark Requirement (MW)
2006	4,520	71	4,591			
2007	4,607	(279)	4,328			
2008	4,125	337	4,462			
2009	4,002	476	4,478	4,460	1.00%	44.6
2010	4,114	330	4,444	4,423	0.75%	33.2
2011				**4,461**	**0.75%**	**33.5**

The Company employs the following process to normalize kWh and kW for differences in the weather: Using econometric equations for each customer class, from the load forecast process discussed in the Long-Term Forecast Report filing, the adjustment process for kWh is performed as follows:

Let: $KWH(N) = f(W(N))g(E)$

$KWH(A) = f(W(A))g(E)$

Where: $KWH(N)$ = electric sales - normalized

$W(N)$ = weather variables - normal

E = economic variables

$KWH(A)$ = electric sales - actual

$W(A)$ = weather variables – actual

Then: $KWH(N) = KWH(A) * f(W(N))g(E)/f(W(A))g(E)$

$= KWH(A) * f(W(N))/f(W(A))$

With this process, weather-normalized sales are computed by scaling actual monthly sales for each class by a factor from the econometric equation that accounts for the impact of deviations from monthly normal weather. Similarly, using an econometric equation for peak, the adjustment process for kW is performed as follows:

Let: $KW(N) = f(W(N))g(E)$

$KW(A) = f(W(A))g(E)$

Where: $KW(N)$ = electric peak demand - normalized

$W(N)$ = weather variables - normal

E = economic variable

$KW(A)$ = electric peak demand - actual

$W(A)$ = weather variables - actual

Then: $KW(N) = KW(A) * f(W(N))g(E)/f(W(A))g(E)$

$= KW(A) * f(W(N))/f(W(A))$

With this process, weather-normalized peak demand is computed by scaling actual peak demand by a factor from the econometric equation that accounts for the impact of deviations from normal weather.

Once total energy and peak demand have been adjusted for normal weather, the computation of the baseline for 2011 is simply the average of the load values for the three years 2008 to 2010. The baseline values for energy and demand are provided above in Table 1.

4901:1-39-05(C)(1)(a)-(c) Portfolio Status Report and Compliance Demonstration

In accordance with 4901:1-39-05(C)(1)(a), with the establishment of the baseline energy and peak demand, the level of the statutory benchmark is computed by applying the appropriate incremental percentage of achievement, as stated in S.B. 221, to the baseline. The computation

of the benchmark achievement level for 2011 is provided above on Table 1. The baseline for energy is 151,431 MWH and the baseline for peak loads is 33.5 MW.

Duke Energy Ohio respectfully submits that this information is responsive to all of the baseline and benchmark calculations as set forth in Rule 4901:1-39-05(A), O.A.C., and requests that the Commission approve these baseline and benchmark calculations as submitted.

In response to 4901:1-39-05(C)(1)(b), which requires a comparison of the applicable benchmark of actual energy savings and peak-demand reductions achieved, as a result of the Company's 2011 efforts to promote customer participation in its energy efficiency and demand response programs, the Company has achieved incremental energy and demand impacts in 2011 as summarized below in Table 2. Details of impacts for each program are provided in Appendix A.

Table 2: Incremental Energy Efficiency and Demand Response Program Impact Summary

	Participants/Measures	MWH	MW
Demand Response Programs			
Power Manager		0	14.7
PowerShare		0	8.7
Powershare Generators		0	3.8
Total Demand Response Programs		**0**	**27.2**
Energy Efficiency Programs			
Residential Programs	2,760,870	138,981	15.4
Non-Residential Programs	382,634	76,718	19.8
Total EE Programs	**3,143,504**	**215,699**	**35.2**
Prior Bank from 2010 Filing		426,379	145.2
Adjustments to Prior Years		(339)	(8.8)
Total Load Impacts		**641,739**	**198.8**

Table 3 provides a comparison of the impacts relative to the benchmarks previously mentioned. This indicates that the Company has complied with the S.B. 221 statutory benchmarks for the year 2011.

Table 3: Comparison of Achieved Impacts to the 2011 Benchmark

	2011 Benchmark	Achievement	Variance Over/(Under)
MWH	151,431	641,739	490,308
MW	33.5	198.8	165.3

In addition, since the Company's efforts exceeded the requirement, there is a residual amount of load impacts that carry forward to support achievement of the 2012 benchmarks.

In compliance with 4901:1-39-05(C)(1)(c), an affidavit indicating that the reported performance complies with the statutory benchmarks is provided in Appendix B.

4901:1-39-05(C)(2) Program Performance Assessment

As part of Duke Energy Ohio's Electric Security Plan (ESP) filing in 2008, the Company proposed a set of energy efficiency and demand response programs. These were subsequently approved on December 17, 2008 and reaffirmed (except for the Prepaid Meter Program) in the Commission's Order in Case No. 09-1999-EL-POR. Implementation of the new Save-A-Watt programs began January 2009. Program descriptions and key activities are provided below.

4901:1-39-05 (C)(2)(a)(i) Program Descriptions and Key Activities

Residential Programs

Smart $aver® Residential Program

The Smart $aver® Residential program offers a variety of programs and measures that allow customers to take action and reduce energy consumption. The program is available to residential customers served by Duke Energy Ohio.

Compact Flourescent Lamps (CFL) Program

The CFL Program is designed to increase the energy efficiency of residential customers by offering customers CFLs to install in high-use fixtures within their homes. The CFLs are offered through an on-demand ordering platform, enabling eligible customers to request CFLs and have them shipped directly to their homes. Eligibility is based on past campaign participation (i.e. coupons, Business Reply Cards (BRCs) and other Duke Energy Ohio programs distributing CFLs). Bulbs are available in 3, 6, 8, 12 and 15 pack kits that have a mixture of 13

and 20 watt bulbs. The maximum number of bulbs available for each customer is 15, but customers may choose to order less.

Customers have the flexibility to order and track their shipment through three separate channels:

1) Telephone:

   Customers may call a toll-free number to access the Interactive Voice Response (IVR) () system which provides prompts to facilitate the ordering process. Both English and Spanish-speaking customers may easily validate their account, determine their eligibility and place their CFL order over the phone.

2) Duke Energy Web Site:

   Customers can go online to complete the ordering process. Eligibility rules and frequently asked questions are also available.

3) Online Services (OLS):

   Customers who participate in the Online Services program are encouraged to order their CFLs through the Duke Energy Ohio web site if they are eligible.

The benefits of providing these three distinct channels include:

- Improved customer experience
- Advanced inventory management
- Simplified program coordination
- Enhanced reporting
- Increased program participation
- Reduced program costs

Many customers have utilized the simple ordering process and the convenience of bulbs being shipped directly to their home. Over 157,000 orders were placed between January and December; resulting in over 1,900,000 bulbs distributed. Participation is tracked at the customer level which allows Duke Energy Ohio to focus attention and resources on non-program participants. Duke Energy Ohio will continue to educate customers on the benefits of CFLs while addressing barriers for consumers who have not participated in the program. Additionally, the ease of program participation will also be highlighted to encourage use of the on-demand ordering platform.

Duke Energy Ohio will continue to market the CFL program through various channels including Email, Bill Messages, Bill Envelopes, Social Media, Direct Mail, Printed Collateral, Earned Media[1], and other Duke Energy Program collaboration efforts. Response of each channel is tracked and monitored.

CFL Program Potential Changes

Innovative marketing campaigns and tactics will be utilized to improve awareness for hard to reach and late adopter[2] customers.

Duke Energy Ohio is investigating expanding its lighting offer to include specialty bulbs such as indoor recessed lights, candelabras, three-way bulbs and dimmable bulbs. The web based e-commerce store will provide discounted specialty lights and ship directly to the home. Building on the insights and lessons learned from the current CFL promotion, Duke Energy Ohio will determine best practices and go-to-market options to inform customers of the specialty bulb offer.

[1] Earned media refers to favorable publicity gained through promotional efforts other than advertising.
[2] Customers who are slow to start using or buying a new product, technology, or idea.

Property Manager Program

The Property Manager Program is an extension of the CFL program and allows Duke Energy Ohio to target multi-family apartment complexes. Eligible units are those Duke Energy Ohio served apartments on a residential rate. Honeywell manages the program and partners with Ohio property managers to enroll multi-family properties.

The program helps property managers upgrade lighting with energy efficiency 13 watt CFLs, reducing maintenance costs while improving tenant satisfaction by lowering energy bills. Each apartment may qualify for up to 12 bulbs per unit depending on the size.

Once enrolled, the property manager identifies the number of permanent lighting fixtures available. Duke Energy Ohio provides the CFLs but the property manager pays for all shipping costs.

The CFLs are installed in permanent fixtures during routine maintenance visits. The property manager provides tracking for the number of bulbs installed. Honeywell validates this information and provides a report for each individual unit on the property.

A Property Manager CFL promotional and landing page were developed for managers to self-serve and learn more about the program. A contract, installation worksheet and CFL frequently asked question sheet are available for download. Marketing material including information on CFL savings and safety sheets are available in English and Spanish to further support the program.

Property Manager Program Potential Changes

The Company plans to begin marketing the program through additional channels to increase participation and educate apartment associations about the program. Marketing strategy will include phone solicitation, apartment association functions/networking, onsite meetings and

presentations, email blasts and trade shows. In addition, the vendor will market the program to Ohio property managers through various channels including tradeshows, email, and apartment association events. Duke Energy Ohio will continue to support the property manager program by updating and maintaining program information on the Web site.

Residential HVAC Program

Duke Energy Ohio served homeowners currently residing in or building a single family residence, condominium, duplex or mobile home are eligible for this program. Installation of a high efficiency heat pump or air conditioner will result in a $300 incentive. Wisconsin Energy Conservation Corporation (WECC) administers the program and establishes relationships with home builders and HVAC contractors who interface directly with residential customers. These trade allies adhere to program requirements and submit the incentive application. Once the application is processed, WECC disburses the incentive funds. For replacement of an existing system, a Duke Energy Ohio customer receives $200 and the HVAC contractor receives the remaining $100. For new home construction, the home builder receives the full $300 incentive but has the option to pass the incentive on to the customer. CustomerLink handles calls from trade allies and customers about the program.

Duke Energy Ohio and WECC have formed strong relationships with our valuable trade allies across Ohio. These partnerships help application fulfillment and prompt payment of incentives as well as maintain top-of-mind awareness of the program and its benefits. Over 500 trade allies applied for and received incentives during 2011. Participation in the Heat Pump and Air Conditioner Smart $aver® Residential program exceeded the 2011 annual participation goal.

Residential HVAC Program Potential Changes

Complementary measures are being considered as an enhancement to the existing program including attic insulation and air sealing, duct insulation and sealing, and HVAC tune ups. Additional monetary incentives will be offered to customers who choose to participate.

Duke Energy Ohio has completed a request for proposal and vendor selection process for the Residential HVAC Program; the transition to a new program administrator, GoodCents, occurred during February of 2012. GoodCents, a vendor for demand-side management services, is responsible for all Residential HVAC program tasks associated with developing and maintaining a motivated trade ally network, providing customer call support services, processing customer incentive applications and fulfilling incentive, and performing onsite verifications of approved measures.

The Company is also evaluating the use of electronic submission of the incentive application to expedite fulfillment and payment disbursement.

Residential Energy Assessments Program

The Residential Energy Assessments program includes two separate programs: 1) Personalized Energy Report (PER)® and 2) Home Energy House Call (HEHC).

PER® Program targets residential customers that own a single family home with at least four months of billing history. PER® provides Duke Energy Ohio customers with a customized report aimed at helping them better manage their energy costs.

This report provides customers:

- Up to 12 months of energy usage history
- Pie chart breakdown of where energy is being used
- Comparison of their energy usage to similar homes

- Customized energy tips to help save energy and money

The PER® program utilizes two primary marketing channels to acquire customers. Customers receive a direct mail offer that allows them to complete a home energy survey either in hardcopy format or online where customers sign into their Online Services (OLS) bill pay and view environment. Customers who participate in the mailed offer are asked to complete and return the enclosed survey. Once the survey is processed, the customer's Personalized Energy Report is mailed to the customer. Online participants can view and print their report in a PDF format immediately after completing the online survey.

Duke Energy Ohio partners with several key vendors in support of the PER® program: McKay Press, Aclara®, and Niagara Conservation. McKay Press is responsible for printing the solicitation letters, surveys and final reports. Aclara® combines customer usage data with survey responses, provided by iKindred, to produce the customized report. Niagara Conservation provides fulfillment of the six CFL bulb incentives.

PER Program Potential Changes:

Customers will still have the capability to participate in the online version of the PER® program and print a copy of their report. The program will no longer be targeted to solicit participation or utilize the direct mail option. Duke Energy Ohio will discontinue distributing the free six CFLs to avoid confusing this offer with the Smart $aver® Residential program.

HEHC targets residential customers that own a single family home with at least four months of billing history. HEHC is a free in-home assessment designed to help customers reduce energy usage and save money. An energy specialist completes a 60 to 90 minute walk through assessment of the home and analyzes energy usage to identify energy saving opportunities. The Building Performance Institute (BPI) certified energy specialist discusses behavioral and

equipment modifications that can save energy and money with the customer. A customized report is provided to the customer that identifies actions the customer can take to increase their home efficiency. Example recommendations might include the following:

- Turning off vampire load equipment when not in use
- Turning off lights when not in the room
- Using CFLs in light fixtures
- Using a programmable thermostat to better manage heating and cooling usage
- Replacing older equipment
- Adding insulation and sealing the home

Customers receive an Energy Efficiency Starter Kit with a variety of measures that can be directly installed by the energy specialist. The kit includes measures like CFLs, low flow shower head, low flow faucet aerators, outlet/switch gaskets, weather stripping and energy saving tips booklet.

Duke Energy Ohio partners with several key vendors in support of the HEHC program: WECC, ProtoType, CustomerLink and Niagara Conservation. WECC administers the assessment component of the program. Additional key vendors include ProtoType for mailing services, CustomerLink for customer care support and scheduling (call center and back office), and Niagara Conservation for fulfillment of the Energy Efficiency Starter Kits.

HEHC Program Potential Changes:

Some program enhancements to increase program impacts and raise participation satisfaction levels being considered include:

- Evaluating other measures for the Energy Efficiency Starter Kit
- Analyzing seasonal trends

- Redesigning collateral – new acquisition material (print and email), align materials with customer leave behinds and revise customer comment cards.
- Removing the geographic limitation and begin to mass promote utilizing our delivery channels and possibly adding new channels.

Energy Efficiency Education Program for Schools

The Energy Efficiency Education Program for Schools Program is an energy conservation program available in Ohio. The Energy Efficiency Education Program is available to K-12 students enrolled in public and private schools and who reside in households served by Duke Energy Ohio.

The program educates students on energy efficiency in homes and schools through innovative lessons based upon science and math related curriculum. Education materials focus on concepts, such as renewable fuels and energy conservation and include interactive activities, such as online home audits that engage families in the learning experience. Students may also assist in such assignments as conducting energy assessments of their schools.

The Energy Efficiency Education Program has not performed as well as anticipated primarily due the complexity of customer acquisition through the school channel. As originally designed with the program vendor, effective implementation required multiple audience engagement e.g. parents, administrators, students, teachers. Depending upon different directives and priorities from school administrators, curriculum flexibility among teachers to incorporate an optional program, and awareness and participation from parents to complete the home energy surveys with their children, it proved to be challenging to get immediate adoption. After two years of less than anticipated performance, Duke Energy switched program vendors and is currently incorporating a more dynamic live school performance delivery channel that has been

extremely well received to date. Duke Energy Ohio partnered with a new third party vendor, The National Theatre for Children (NTC) to administer the program.

School principals are the main point of contact and will schedule the live theatrical performance at their convenience for the entire school. Once the principal has confirmed the performance date and time, two weeks prior to the performance, all materials are delivered to the principal's attention for distribution. Materials include school posters, teacher guides, classroom and family activity books.

The Energy Efficiency Education Program for Schools provides principals and teachers with an innovative curriculum that educates students about energy, electricity, ways energy is wasted and how to use our resources wisely. Education materials focus on concepts such as energy, renewable fuels, and energy conservation through classroom and take home assignments, enhanced with a live 25 minute theatrical production performed by two professional actors. The current program is developed to educate students - kindergarten through eighth grade.

Students are encouraged to complete a home energy survey with their family (found in their activity book), so they can receive an Energy Efficiency Starter Kit that contains specific energy efficiency measures to reduce home energy consumption.

Energy Efficiency Education Program Potential Changes:

The National Theatre for Children (NTC) has been the program administrator since October 2011. NTC is working closely with Duke Energy Ohio to enhance the program by

- Partnering with Duke Energy Ohio Account/District Managers to leverage existing relationships for additional acquisition channels.
- Leveraging give-a-ways to stir additional excitement in the schools/classrooms.

- Developing an alternative kit for those customers who have already participated in the Energy Efficiency Education Program.
- Enhancing all data processing methods.

As the program evolves in 2012, it is anticipated that there will be additional enhancements to be made to improve the customer's experience when participating in the Energy Efficiency Education Program.

Low Income Services Program

The Low Income Services Program provides assistance to low income customers through several measures. The upfront costs of high efficiency equipment are an especially difficult barrier for low income customers to overcome. The Weatherization and Refrigerator Replacement program is available to any low income customer up to 200% of the federal poverty level who has not participated in this program within the past 10 years.

An Electric Maintenance Service program is available for low-income elderly and disabled customers up to 175% of poverty level. This program offers low-cost solutions for energy efficiency. Customers may receive energy efficiency products and services such as compact fluorescent bulbs, low flow showerheads and aerators, water heater wraps, HVAC cleaning, HVAC filters, and energy efficiency education.

These programs are promoted through, but not limited to, Community Action Agencies, Non-Governmental Organizations (NGO's), and direct mail to customers.

The Agency Assistance Kit or Low Income CFL Program was designed to provide compact fluorescent bulbs to Duke Energy Ohio customers seeking assistance from participating agencies. Duke Energy Ohio, in partnership with local assistance agencies, offered the Agency Assistance Kit program to low income customers. With the assistance of agency representatives,

customers were required to complete a short energy efficiency survey, for submission to Duke Energy Ohio and enrollment into the program. Upon receipt of the survey and validation of eligibility, Duke Energy Ohio shipped a free 12-pack of CFL bulbs directly to the customer's home. For their assistance in helping customers complete the survey, agencies received monetary compensation for each survey completed.

The assistance of agency representatives was a crucial element to the success of the program. Due to the downturn of the economy, agencies saw an influx of customers seeking help. The agencies found themselves less able to dedicate time and resources to programs not considered a high priority. As a result, the Low Income CFL Program did not see the amount of participation originally estimated.

The Smart $aver® Residential program offers CFLs to all residential customers in Ohio through the automated Interactive Voice Response (IVR)/Web platform, including low income customers. Upon evaluation, Duke Energy Ohio found that the number of income qualified program participants in Smart $aver® CFL program far exceeds the participation rate in the Agency Assistance Kit program results from past years. The Smart $aver® program reached a much larger audience of low income eligible customers. Local agencies now receive CFL postcards which provide information on the free CFL offer and instructions on how to place orders for CFL bulbs.

Low Income Services Program Potential Changes:

Duke Energy Ohio continues to evaluate opportunities to provide new offers to low income customers in the most cost effective manner. Because the previous vendor for the Refrigerator Replacement Program is not currently offering a weatherization program, Duke Energy Ohio is currently looking at options to fill the vacancy.

Duke Energy has filed for approval in Case No. 11-4393-EL-RDR, a new Low Income Neighborhood program modeled after a current offering by other utilities. This program will target neighborhoods where a significant number of the residents are below 200% of the federal poverty guidelines. Duke Energy Ohio is reviewing potential vendor bids for an administrator to the Low Income Neighborhood program.

Home Energy Comparison Report (HECR) Program

HECR is a periodic comparative usage report that compares customers' energy use to similar residences in the same geographical area along with specific energy saving recommendations to encourage energy saving behavior.

The reports are distributed in printed form up to 12 times per year and may not be delivered during the off-peak energy usage months in the fall and spring. The report's energy analysis content for each home is compared to the average energy use of neighbors in similar home types for the same period. Suggested energy efficiency improvements given the usage profile for that home are also provided. In addition, measure-specific coupons, rebates or audit follow-ups from other Company programs are offered to sample customers, based on the customer's energy profile.

The audience is Duke Energy Ohio customers who are identified through demographic information as highly likely to decrease energy usage in response to the information contained in the HECR document. These customers reside in individually-metered, owner-occupied, single-family residences receiving electric[3] service from the Company. Focusing on owner-occupied residences predisposes the report recipient to invest in energy-saving technology. Analyzing only single-family residences eliminates the possibility of erroneous data caused by thermal transfer between adjacent units in multi-family structures.

[3] Twelve months of usage data is necessary to produce the report.

HECR Program Potential Changes:

In 2012 the creation of the report will transition from an internal production by Duke Energy Ohio to Tendril Networks who have been contracted through an RFP process to deliver reports. Duke Energy Ohio is considering several possible changes to the program. Plans are in place to investigate various forms of messaging and other means to motivate customers who consume less than the average amount of electricity to maintain their better-than-average performance. Providing the report to customers on-line or through other electronic means is a feature in development.

Power Manager® Program

The Power Manager Program provides incentives to residential consumers who allow the company to cycle their outdoor compressor during peak energy periods between May and September. Participating customers of the Company who have a functioning outdoor A/C unit are eligible for the program.

Participants in the Power Manager program allow Duke Energy Ohio to control their air conditioners during peak summer demand periods. Customers receive a one-time enrollment incentive of $25 or $35 depending on the Power Manager option they choose. In addition, they receive credits for each Power Manager event. Following the end of the event season, which runs from May through September, if warranted, customers receive a credit that ensures their total credit for the season is a minimum of $5 or $8 depending on the option in which they enrolled.

Due to the heat and subsequent high electric demand during the summer of 2011, Power Manager was activated on nine different days in Ohio. During these events, Duke Energy Ohio cycled customers' air conditioning units off and on, helping shift demand and lower the

afternoon peak. A third party installs the device on customers' A/C units. The program is promoted through two primary channels, Zip code specific direct mail and the Company website.

Power Manager Program Potential Changes:

There are no plans to change the operation of the Power Manager program. Duke Energy Ohio plans to further refine marketing of the program. Based on the 2011 success of marketing Power Manager to customers who had participated in Duke Energy Ohio's HEHC program, Duke Energy Ohio is expanding this approach in 2012 to also include participants in the Smart $aver^{®}$ Residential program. Studies show that customers who have participated in other programs have a higher satisfaction with Duke Energy than other customers. The intent is to build on this previous relationship.

Duke Energy Ohio also plans to utilize, in the 2012 marketing, information learned from customer studies done following the 2011 marketing campaigns and the participant surveys conducted following Power Manager events in the summer of 2011. This information will help target the messaging and offers to non-participating customers.

Residential Retrofits Program

The Residential Retrofit pilot program was marketed to Ohio customers as Energy Solutions @ Home, (ES@H). The program targeted residential customers living in owner-occupied, single family homes built prior to the introduction of energy efficiency building codes in 1983 and who have unusually high electric use.

It was designed as a bundled energy efficiency solution for homeowners where trained energy professionals identify and install high impact energy home improvements. When homeowners make energy improvements to their homes, they receive on-going energy savings from lower heating and cooling costs because the leaky gaps and non-insulated areas of their

homes are eliminated. It's an easy process for the customer because Duke Energy Ohio identifies the most effective energy-saving home improvements, provides a team of energy experts including skilled contactors and offers an incentive to lower the customer's installation cost.

Duke Energy Ohio's ES@H program focuses on the top four energy home improvements: air sealing, attic insulation, duct sealing and duct insulation. Offered individually or in combination, when these improvements are correctly installed, they substantially lower the amount of energy loss in a home and provide the greatest energy savings opportunities.

The process includes three steps and begins with a phone call:

- Step 1: Phone Assessment

  Duke Energy Ohio helps customers determine if they are a good candidate for the offer via a short phone conversation with one of Duke Energy Ohio's Energy Experts. The Expert uses energy audit software to conduct a high level assessment of the home considering the home's age, size, heating equipment, electric use and estimated insulation levels. The customer receives the following results during the call:

  - installation recommendations
  - anticipated energy savings and payback
  - estimated installation cost
  - estimated incentive amount

  With the Expert's assistance, customers decide if these improvements are right for them and then help them take the next step by scheduling an in-home assessment.

- Step 2: In-home Assessment

  A BPI (Building Performance Institute) certified assessor visits the home, listens to the customer's concerns and verifies or updates the information collected during the phone call. Using the same audit tool, the Assessor produces a final project plan on site with the final recommendations, exact costs, custom incentive and out-of-pocket payment amount. It also includes the estimated energy savings and project payback period.

- Step 3: Installation

  Customers who agree to the project plan are contacted by their assigned program contractor to schedule the installation. When the work is complete, the Duke Energy Ohio incentive is deducted from the contractor's invoice as an immediate customer benefit.

Marketing for the program began in May 2010 using direct mail campaigns to reach the targeted customers. The mailings were grouped and distributed based upon customers' geographic location to allow contractors and auditors to serve customers efficiently, with a minimum of travel between participant's homes. The pilot program tested several direct mail approaches, including a self-mailer, a postcard, a series of three postcards on the same theme, and a letter followed by a postcard to generate interest in the program. Duke Energy Ohio also marketed the program on a website where customers could learn more about the program and used outbound reminder calls to encourage participation.

The pilot was ended in March 2011. Duke Energy Ohio did not propose to continue the pilot. Measures were added to the Smart $aver® Residential program to accommodate customer preferences of implementing on a prescriptive basis instead of an overall home enhancement.

Non-Residential Programs

Smart $aver® Non-Residential Program

The Smart $aver® Non-Residential Program provides incentives to commercial and industrial consumers for installation of high efficiency equipment in applications involving new construction, retrofit, and replacement of failed equipment. The program also uses incentives to encourage maintenance of existing equipment in order to reduce energy usage. Incentives are provided based on Duke Energy Ohio's cost effectiveness modeling to assure cost effectiveness over the life of the measure.

Commercial and industrial consumers can have significant energy consumption but may lack knowledge and understanding of the benefits of high efficiency alternatives. Duke Energy Ohio's program provides financial incentives to customers to reduce the cost of high efficiency equipment. This allows customers to realize a quicker return on investment. The savings on utility bills allows customers to reinvest in their business. The Smart $aver® Non-Residential program also increases market demand for high efficiency equipment. Because of the increased demand, dealers and distributors will stock and provide high efficient alternatives as they see increased demand for the products. Higher demand for high efficiency equipment can also result in lower prices.

The program promotes prescriptive incentives for the following technologies – lighting, HVAC, pumps, variable frequency drives, food services and process equipment. Equipment and incentives are predefined based on current market assumptions and Duke Energy's engineering analysis. The eligible measures, incentives and requirements for both equipment and customer eligibility are listed in the applications posted on Duke Energy Ohio's Business and Large Business websites for each technology type.

Duke Energy Ohio contracts with WECC to handle the fulfillment responsibilities of the program and to provide training and technical support to our Trade Ally (TA) network. CustomerLink provides call center services to customers who call the program's toll free number.

All non-residential customers served by Duke Energy Ohio are eligible for the Smart $aver® Non-Residential program. Although customers may choose to opt-out of the Duke Energy Ohio program and energy efficiency rider, all customers are opted in at this time.

Getting the TAs to support the program has proven to be the most effective way to promote the program to our business customers. At program rollout, Duke Energy Ohio and the WECC Trade Ally team took an aggressive approach to contacting trade allies associated with the technologies in and around Duke Energy Ohio's service territory. TA company names and contact information appears on the TA search tool located on the Smart $aver® website. This tool was designed to help customers who do not already work with a TA, to find someone in their location who can serve their needs. WECC manages the TA database where contact information and participation is reported.

Duke Energy Ohio continues to look for ways to engage the TAs in promotion of the program, including the utilization of focus groups. Duke Energy Ohio developed a collateral tool kit to allow TAs to use the Smart $aver® logo along with white papers, case studies, and other types of collateral developed by Duke Energy Ohio. Originally, a tool kit was available for Variable Frequency Drives. Toolkits are now available for Lighting and HVAC.

Duke Energy Ohio's website is a great source of program information. Customers and trade allies can visit the website and learn about the program, program benefits, search for participating vendors, ask questions on-line, and complete application forms. Recent updates to

the website include videos for lighting controls and programmable thermostats. A new HVAC calculator is available in addition to the lighting and VFD calculators. A countdown clock was added to the Lighting web page to bring attention to the legislation that phases out T12 lamps.

Duke Energy Ohio continues to develop case studies and testimonials from customers who have participated in the program to be used to help promote the program – showing actual savings and benefits for each technology type.

Recent changes to the program include increasing the minimum efficiency requirements for HVAC incentives. This is due to the adoption of ASHRAE 90.1-2007 in Ohio.

In accordance with new federal standards, Duke Energy Ohio is phasing out the incentives for standard T8 and T5 fixtures replacing T12s. In addition incentives for reduced wattage (RW) and high performance (HP) T8 lamps will be reduced as well.

Smart $aver® Non-Residential Program Potential Changes:

Standards continue to change and new, more efficient technologies continue to emerge in the market. The Company expects to continue to add new measures to provide incentives for customers to take advantage of a broader suite of products. The Company undertakes an annual review of technologies and efficiency levels through internal sources and with the assistance of outside technical experts.

Smart $aver® Custom Rebate Program

Duke Energy Ohio's Smart $aver® Nonresidential Custom Incentive Program (formerly Smart $aver® Custom Rebate) offers financial assistance to qualifying commercial, industrial and institutional customers (that have not opted out) to enhance their ability to adopt and install cost-effective electrical energy efficiency projects.

The Smart $aver® Custom Incentive program is designed to meet the needs of Duke Energy Ohio customers with electrical energy saving projects involving more complicated or alternative technologies, or those measures not covered by standard Smart $aver Prescriptive Incentives.

The Custom Incentive Program application is for projects that are not listed on the applications for Smart $aver® Prescriptive Incentives Program. Unlike the Prescriptive Incentives Program, Custom Incentives measures require approval prior to the project implementation. Proposed energy efficiency measures may be eligible for the Custom Incentives Program if they clearly reduce electrical consumption and/or demand.

Currently there are the following application forms that are located on the Duke Energy Ohio website under the Smart $aver® Incentives (Business and Large Business tabs).

- Application Part 1 – Administrative Information
- Application Part 2 Worksheets – Energy Savings Calculations & Basis
    - Variable Frequency Drives
    - Energy Management Systems
    - Compressed Air
    - Lighting
    - General

The program is promoted through but not limited to the following;

- Trade ally outreach
- Duke Energy Ohio Business Relations Managers
- Duke Energy Ohio segment specific workshops
- Duke Energy Ohio website

Smart $aver® Custom Rebate Program Potential Changes:

Based on the performance of the Custom Incentives Program to date, Duke Energy Ohio recommends that the program be continued in its current form.

Mercantile Self-Direct Rebates Program

The Duke Energy Ohio Mercantile Self-Direct program was enacted in accordance with Public Utilities Commission of Ohio (Commission) Rule 4901:1-39-05(G).A.C., and the Commission's Opinion and Order in Case No. 10-834-EL-POR. Mercantile and national/regional accounts customers with aggregate annual usage of 700,000 kWh or greater are eligible for the program.

These customers may elect to commit energy savings or demand reductions to Duke Energy's benchmark achievements from programs completed in the prior three calendar years and ineligible for Smart $aver® incentives. In return, Duke Energy Ohio will assist the customer in filing an application with Commission for approval of a portion of the incentive the customer would have received had they participated in Duke Energy Ohio's standard Smart $aver® Non-Residential programs.

Where applicable, customers that accept a Self-Direct rebate and were opted out of the energy efficiency rider or that paid a lesser rider rate at the time of project completion will be invoiced for the differential in rider charges from the point in time of project completion to present and will continue paying the full rider amount going forward.

The marketing channels for Mercantile Self-Direct project applications closely resemble those of the Smart $aver® Prescriptive and Smart $aver® Custom programs, based on applicability, as described in previous sections of this filing.

Rebates for Self-Direct projects eligible for a cash rebate reasonable arrangement will be a percentage of the dollar amount that would apply to the same project if evaluated in the Smart $aver® Prescriptive & Custom programs. Where measures are ineligible for a cash rebate arrangement, customers may receive a commitment payment, as defined by Commission.

Self Direct Prescriptive Program - The Self-Direct Prescriptive program provides rebates for mercantile customers who implement energy efficiency and/or demand reductions projects to install higher efficiency equipment. Major categories include lighting, motors, pumps, VFD's, food service and process equipment. Eligible measures are reflective of the Smart $aver® Prescriptive Incentive portfolio. Additionally, projects completed for measures that were removed from the Prescriptive portfolio due to changes in market standards, minimum code requirements and federal/state minimum efficiency legislation will be eligible for rebate if the projects were completed before the measure was removed from the Prescriptive portfolio. While many of the measures recorded under the Smart $aver® Prescriptive program will remain Prescriptive in nature under the Self-Direct program, in accordance with Commission rules and orders on the mercantile program, certain measures must be evaluated under the Self-Direct Custom program to enable the use of as-found baseline.

Self Direct Custom Program - The Self-Direct Custom program offers rebates for completed mercantile projects involving more complicated scopes, unique technologies or measures not covered by Self-Direct Prescriptive rebates but that resulted in improvements upon facility electrical energy efficiency. A proposed energy efficiency measure may be eligible for a Self-Direct Custom rebate if it clearly reduces electrical consumption and/or demand. Unlike the Smart $aver® Custom program, measurable and verifiable behavioral and operational measures are eligible.

In accordance with the Commission's rules, the Self-Direct Custom Rebate program also offers rebates for replacement of failed equipment using the failed equipment, as opposed to the market standard choice at time of failure, as the baseline. Such projects would be eligible for commitment payment and ineligible for a cash rebate reasonable arrangement. This applies equally to the replacement of equipment that is at or beyond its useful life as well as behavioral/operational measures with sufficient associated cost.

Non-Residential Energy Assessments Program

The purpose of the Non-Residential Energy Assessment program is to assist non-residential customers in assessing their energy usage and providing recommendations for more efficient use of energy. The program will also help identify those customers who could benefit from other Duke Energy Ohio Energy Efficiency non-residential programs.

Duke Energy Ohio offers several different types of assessments to help customers identify energy efficiency opportunities. The Online Assessment tool is available for all non-residential customers through the Duke Energy website. This tool is available free of charge. For customers with a peak demand over 500 kW, Duke Energy Ohio offers a Telephone Assessment free of charge to the customer. The assessor will gather basic data from the customer and provide recommendations over the phone based on experience and information provided during the interview. Lastly, Duke Energy Ohio offers an On-Site Assessment wherein an assessor will spend one or more days at a customer's site identifying opportunities for increased energy efficiency. After the audit is completed, the customer receives a written report of the audit findings. The cost of the On-Site Assessment varies depending on the length of time an assessor spends at a customer's facility. The cost of the audit is shared by Duke Energy Ohio and the customer. The

customer pays 50% of the cost, and Duke Energy Ohio pays 50%, but the customer's cost can be further reduced if they proceed with adopting the recommendations made in the audit.

After evaluating the success of the current audits, Duke Energy Ohio is employing new approaches to higher drive adoption of energy efficiency through audits. One such program is Smart Building Advantage (SBA). SBA is more comprehensive audit that addresses the entire operation of a building in great detail. In a similar vein, Duke Energy Ohio is testing technology specific audits. The purpose is to help customers identify strategies targeted at their most energy intensive processes, provide them with concrete cost estimates to implement the recommendations, and connect the customer with vendors that deliver the energy efficiency improvements.

Impacts captured as a result of Energy Assessment recommendations are recorded in Duke Energy Ohio's non-residential incentive programs. As a result, they are not presented for this section.

Non-Residential Energy Assessment Program Potential Changes:

Duke Energy Ohio recommends that the program be continued in its current form.

PowerShare® Program

The PowerShare® program is Duke Energy Ohio's demand side management (or demand response) program geared toward Commercial and Industrial customers. The primary offering under PowerShare® is named CallOption and it provides customers a variety of offers that are based on their willingness to shed load during times of peak system usage. These credits are received regardless of whether an event is called or not. Energy credits are also available for participation (shedding load) during curtailment events. The notice to curtail under these offers is between 6 hrs (emergency) and day-ahead (economic) and there are penalties for non-compliance during an event.

- The program is promoted through but not limited to the following;
    - Duke Energy Ohio Business Relations Managers
    - Email to customers
    - Duke Energy Ohio website

Key activities for 2011 included account manager training as well as development and use of a new program marketing brochure. Customer targets continued to be large manufacturers, water/wastewater facilities and a new target group for 2011 were school systems. In addition, Duke Energy Ohio began testing Automated Demand Response technologies that have been deployed in other areas (e.g. California, Australia) that could simplify the ways for commercial customers to curtail. The overall objective of examining Automated DR is to expand demand response beyond the typical customer market of large industrial customers and drive opportunities in the commercial market space.

PowerShare® Program Potential Changes:

Changes for 2012 involve integrating the new requirements of the PJM Interconnection, LLC which is the new Regional Transmission Organization (RTO) for Duke Energy Ohio. The major changes are the notification period is reduced to 90 minutes from 6 hours and the requirement of a curtailment test if no emergency events are called during the summer. To help offset any negative reactions to these changes, Duke Energy Ohio has increased the annual incentives by $3/kW-year.

4901:1-39-05(C)(2)(a)(i) Cont'd... Number and Type of Participants and Comparison of Forecasted Savings to Achieved Savings

The number of participants or measures installed by customer type is summarized above in Table 2. Details on participation by measure are provided in Appendix A.

The Company's programs are approved for implementation through April 15, 2013. Table 4 provides a comparison of achieved impacts through 2011 as well as the forecasted impacts that were presented in the Company's ESP filing in 2008.

Table 4: Comparison of Achievement to Forecasted Impacts and Trend Projection Through 2011

	Achieved Load Impacts [1]		Forecasted Load Impacts [2]							
	MWH through 2011	MW through 2011	MWH 2009	MWH 2010	MWH 2011	MWH Total	MW 2009	MW 2010	MW 2011	MW Total
Pre-existing Programs from 2009 Appendix A	206,670	34.1	-	-	-	0	-	-	-	0.0
Powershare Generators	0	62.8	-	-	-	0	-	-	-	0.0
Non-SAW: CUFA CFL bulb program	1,344	0.1	-	-	-	0	-	-	-	0.0
Residential Programs										
Residential Energy Assessments	17,584	2.1	7,757	16,439	26,279	50,475	2.20	4.70	7.50	14.4
Smart $aver® Residential (formerly Smart Saver Residential)	341,003	36.5	35,587	75,801	121,456	232,844	4.80	10.50	17.10	32.4
Low Income Services	4,432	0.5	7,138	14,422	20,552	42,107	1.00	2.00	2.90	5.9
Energy Efficiency Education Program for Schools	2,569	0.4	7,802	23,406	46,812	78,020	1.60	4.90	9.70	16.2
Home Energy Comparison Report	16,204	2.9	-	-	-	0	-	-	-	0.0
Residential Retrofits (formerly Energy Solutions @ Home)	71	0.0	-	-	-	0	-	-	-	0.0
Power Manager®	0	49.6	-	-	-	0	29.40	13.50	13.60	56.5
Non Residential Programs										
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	185,890	35.6	38,579	81,017	123,246	242,842	9.30	19.60	29.70	58.6
Smart $aver® Custom (formerly Custom Rebate)	43,115	11.1	7,896	16,582	26,137	50,615	1.30	2.80	4.40	8 5
PowerShare®	0	40.9	-	-	-	0	78.90	32.50	24.40	135 8
Mercantile Self Direct Rebates	55	0.0	-	-	-	0	-	-	-	0.0
Total for All Programs	**818,936**	**276.6**	**104,754**	**227,667**	**364,482**	**696,903**	**128.50**	**90.50**	**109.30**	**328.3**

This table indicates that the achieved MWH and MW impacts through 2011 are above the 2011 forecast. While the impacts for the Low Income program are lower than forecasted, additional impacts for low income customers were realized through the Smart $aver® Residential campaign.

4901:1-39-05(C)(2)(a)(ii) Energy Savings Counted Toward Benchmark as a Result of Mercanitle Customers

The energy savings counted towards the benchmark for 2011 as a result of energy efficiency improvements and implemented by mercantile customers and committed to the Company are 54,587 kWh.

4901:1-39-05(C)(2)(a)(iii) Peak Demand Reduction Counted Toward Benchmark as a Result of Mercantile Customers

The peak-demand reductions counted towards the benchmark for 2011 as a result of energy efficiency improvements and implemented by mercantile customers and committed to the Company are 10.8 kW.

4901:1-39-05(C)(2)(a)(iv) Peak-Demand Reductions Claimed Due to Transmission and Distribution Infrastructure Improvements

The Company is not claiming any impacts from transmission and distribution infrastructure improvements at this time.

4901:1-39-05(C)(2)(b) Evaluation, Measurement, and Verification (EM&V)

Energy savings and peak-demand reduction values are documented in the individual program EM&V studies in the appendices. The following studies have been completed:

Process Evaluations Only

- Energy Solutions @ Home (formerly Home Energy House Call Plus - Residential Retrofit Pilot)..... Appendix D
- Non-Residential Energy Assessments ..... Appendix E
- Smart $aver® Custom (formerly Custom Rebate) ..... Appendix F
- Demand Response Evaluations
    - Power Manager®..... Appendix G
    - Power Share®..... Appendix H

Process & Impact Evaluations:

- Low Income Services - Refrigerator Replacement ..... Appendix I
- Home Energy Comparison Report..... ..... Appendix J

- Energy Efficiency Education Program for Schools..... Appendix K
- Personalized Energy Report (PER)® ..... Appendix L
- Residential Energy Assessments

  (Home Energy House Call revised 2011)..... Appendix M
- Smart $aver® Residential – HVAC ..... Appendix N

The cost effectiveness of the current programs is provided below in Table 5.

Table 5: Cost Effectiveness Test Results of Current Programs

	Utility Test	TRC Test	RIM Test	Participant Test
RESIDENTIAL CUSTOMER PROGRAMS				
Residential Energy Assessments	2.46	2.44	1.08	210.25
Residential Smart $aver® Energy Efficiency	2.42	1.21	0.88	2.43
Low Income Services	2.19	2.19	0.79	NA
Energy Efficiency Education Program for Schools	2.69	2.69	0.94	NA
Power Manager	1.40	1.67	1.40	NA
NON-RESIDENTIAL CUSTOMER PROGRAMS				
Non-Residential Energy Assessments	NA	NA	NA	NA
Smart $aver® for Non-Residential Customers	3.81	2.20	1.27	2.83
Power Share	3.54	29.79	1.23	NA

4901:1-39-05(C)(2)(c) Continuation of Programs

Based on the success experienced and feedback from customers and trade allies, Duke Energy Ohio proposes continuing with the existing suite of offers, as well as, including additional measures and programs upon approval of Case No. 11-4393-EL-RDR into the current portfolio. The portfolio is subject to annual adjustments for changes in efficiency levels or market conditions.

With respect to future program expansion or modification, the Company did not offer any piloted programs in calendar year 2011. However, the following programs were submitted for approval for 2012 in Case No. 11-4393-EL-RDR[4]:

[4] The programs listed in this section will be implemented upon an approval by the Commission.

Appliance Recycling Program

The Appliance Recycling program will encourage customers to responsibly dispose of older, functional but inefficient refrigerators and freezers. These are typically second or third units in the home. Customers will have the old unit picked up at their home at no charge and will receive an incentive for participating. Disposed units will have 95 percent of material recycled with only 5 percent entering landfills. Program marketing will consist of direct mail, social media, and community presentations and publications like newsletters. Point of sale messaging will also be pursued with prominent appliance retailers.

Low Income Neighborhood Program

The Duke Energy Ohio Neighborhood Program takes a non-traditional approach to serving income-qualified areas of the Duke Energy Ohio service territory. The program engages targeted customers with personal interaction in a familiar setting while ultimately reducing energy consumption by directly installing measures and educating the customer on better ways to manage their energy bills. Examples of direct installed measures include CFLs, water heater and pipe wrap, low flow shower heads/faucet aerators, window and door air sealing and HVAC filter replacements. Targeted low income neighborhoods qualify for the program if at least 50% of the households are at or below 200% of the federal poverty guidelines. Duke Energy Ohio will analyze electric usage data and previous program participation to prioritize neighborhoods that have the greatest need and propensity to participate. While the goal is to serve neighborhoods where the majority of residents are lower income, the program is available to all Duke Energy Ohio customers in the defined neighborhood. This program will be available to both homeowners and renters occupying single family and multi-family dwellings in the target neighborhoods that have electric service provided by Duke Energy Ohio. A community-based kick-off event will be held for targeted neighborhoods.

These kick-off events will feature local community leaders and energy experts that will explain program components. The purpose of the kick-off event is to rally the neighborhood around energy efficiency and to help customers understand steps needed to lower their energy bills. Following the kick-off event, energy assessments will be completed in the customers' homes and the appropriate energy saving measures will be installed if the customer elects to have the work completed. Direct mail and call center support will supplement community based outreach. This program will be used as a lead generation source for other Duke Energy Ohio and external energy efficiency programs.

Home Energy Solutions (formerly called Home Energy Management)Program

Home Energy Solutions is an approach to delivering energy efficiency solutions to customers in a way that combines a number of energy efficient measures into more valuable solutions. Home Energy Solutions will combine energy usage information and recommendations with the ability to leverage potential pricing options and energy management offerings into convenient in-home solutions.

At the center of the Home Energy Solutions is the Home Energy Manager (HEM). HEM is a smart grid enabled consumer technology that will allow customers and Duke Energy Ohio to manage in-home devices and information to deliver energy efficiency optimization and demand response benefits. The HEM will integrate with other devices in the home, offering customers critical feedback and control of high use energy devices. Examples include thermostats, electric water heaters, pool/spa pumps, electric vehicle charging stations and smart appliances, where available. Customers will have the capability to set preferences on how and when these devices use energy based upon their personal comfort, energy savings goals and the current energy rate. This is particularly valuable for customers participating in one of the various rate plans Duke Energy Ohio is offering. Customers will also have remote access to their HEM system via a web browser and

smart phones. Pilot participants must be single family, owner occupied residences, have a central air conditioning system and 12 months of historical energy usage for the existing premises. The pilot will be promoted using direct mail, web, social media and interactive communications. Additional pilots may be pursued in 2012.

4901:1-39-05(D) Independent Program Evaluator Report

Appendix C provides an up-to-date summary regarding process evaluations and expenditures, EM&V methodologies and protocols by program.

4901:1-39-05 (E)(1) and (2)(a-b) Peak Demand Reductions

Duke Energy Ohio has satisfied its peak-demand reduction benchmarks through energy efficiency and peak-demand response programs implemented by the Company and programs implemented on mercantile customer sites where the mercantile program is committed to the electric utility.

4901:1-39-05(F) and (G)(1-5) Mercantile Customers

Duke Energy Ohio's Mercantile Self Direct program is the avenue through which mercantile customers commit energy and demand impacts from their energy efficiency projects to Duke Energy Ohio in exchange for cash rebates or commitment payments. The program uses the constructs for calculating and deeming energy and demand savings that are present in the Custom Incentive and Prescriptive Incentive programs, respectively.

As of December 31, 2011, no customers have requested rider exemption in exchange for commitment of energy and demand savings to Duke Energy Ohio. Upon approval of the customer's application, Duke Energy Ohio tenders an offer letter agreement to the customer which outlines the cash rebate or commitment payment offered. After the customer signs the offer letter agreement, Duke Energy Ohio submits a mercantile application to Commission on

behalf of the customer. Upon Commission approval of the application or the passing of 60 days, Duke Energy Ohio remits payment to the customer for the agreed dollar amount.

The offer letter provided to applicants pursuant to each project submitted to Duke Energy Ohio requires the customer to affirm its intention to commit and integrate the energy efficiency projects listed in the offer into Duke Energy Ohio's peak demand reduction, demand response and/or energy efficiency programs. The offer letter agreement also requires the customer to agree to serve as joint applicant in any future filings necessary to secure approval of this arrangement as required by the Commission and to comply with any information and reporting requirements imposed by rule or as part of that approval. Noncompliance by the customer with the terms of the commitment is not applicable at this time.

The attached offer letter agreement template (Appendix Q), used for each mercantile application (examples in Appendix O and Appendix P), provides for formal declaration. Additionally, the attached example application documents request that the applicant allow Duke Energy Ohio to share information only with vendors associated with program administration. The release is limited to use of the information contained within the application and other relevant data solely for the purposes of reviewing the application, providing a rebate offer, submitting documentation to the Commission for approval and payment of the rebate. All program administration vendor contracts strictly prohibit the sharing of customer information for other purposes.

Upon customer request, Duke Energy Ohio will agree, as it is able to do so, to provide information to the Commission in the proper format such that confidential customer information is redacted from the public record.

With regard to the customers in Duke Energy's Ohio territory who have undertaken self-directed energy efficiency projects, these initiatives will not be evaluated by the Company's independent evaluation contactor (TecMarket Works). These efforts have been implemented in the past and were self-directed by our mercantile customers without involvement in Duke Energy Ohio's energy efficiency or demand reduction programs under Duke Energy Ohio's Save-A-Watt mechanism. As a result they will not be included in the evaluations of Duke Energy programs.

4901:1-39-05(H) Prohibition Against Counting Measures Required by Law Toward Meeting the Statutory Benchmark

Duke Energy Ohio did not count, in meeting its statutory benchmark, the adoption of measures that were required to comply with energy performance standards set by law or regulation, including but not limited to, those embodied in the Energy Independence and Security Act of 2007, or an applicable building code.

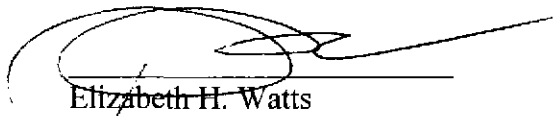
4901:1-39-05 (I) and (J) Benchmarks Not Reasonably Achievable

The above referenced sections do not apply to Duke Energy Ohio as it has met and exceeded the statutory benchmarks for the 2011 calendar year.

III. Conclusion

With this status report, Duke Energy Ohio has demonstrated that it is in compliance with the statutory load impact requirements as measured and reported in its Benchmark Report filed May 15, 2012. Duke Energy Ohio respectfully requests that the Commission find that the Company has met its compliance requirements for the 2011 compliance year.

Respectfully submitted,



Elizabeth H. Watts
Associate General Counsel
Amy B. Spiller
Deputy General Counsel
Rocco D'Ascenzo
Associate General Counsel
Duke Energy Ohio, Inc.
139 E. Fourth Street Suite 1303
Cincinnati, Ohio 45202

APPENDIX A: 2011 Incremental Activity

2011 Total Reported Achievement

	Incremental Participation	Incremental Annual KWH - Gross FR, at Plant	Incremental Annual KW - Gross FR, at Plant
Grand Total	**3,143,504**	**215,359,677**	**53,637.3**

Adjustments to Prior Years

Adjustment				Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
2009 Adjustment					(387,362)	(819.3)
2010 Adjustment					48,146	(7,938.0)
Grand Total					**(339,216)**	**(8,757.3)**

Note: The KWH adjustments are very minor, less than 0.2% of the filed data in each year, but have been included in this filing as a matter of completeness. Additionally, these adjustments include 2009 and 2010 amount for CUFA that were not reported for those periods.
Note: The KW adjustments are 0.9% and 6% respectively compared to the filed amounts in each year, mainly due to a change in reporting methodology in SAW Powershare. We have included them as in this filing as a matter of completeness.
For SAW Powershare, we are reporting the monthly average over the contract periods rather than the summer peak, which yielded lower results, especially in 2010.

Non SAW EE

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Non-SAW: CUFA CFL bulb program	Non-SAW: CUFA CFL bulb program			6,126	348,053	34.3
Grand Total				**6,126**	**348,053**	**34.3**

Impacts for 2009 and 2010 of approximately 100 and 895 MWHs and 10 and 92 KW respectively were not reported in prior years and have been included in the Adjustments to Prior Year section above.

SAW Programs not Subject to Return Cap

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Mercantile Self Direct Rebates	OH_SD Custom	Nonres	Custom	8	20,555	2.3
Mercantile Self Direct Rebates	OH_SD Custom	Nonres	Custom	2	34,032	8.4
Grand Total				**10**	**54,587**	**10.8**

Non SAW Demand Response

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Powershare Generators	Powershare Generators	Nonres	DR			3,819.2
Grand Total				**0**	**0**	**3,819.2**

Note: Incremental to achievement from prior years.

SAW Demand Response

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Power Manager®	Power Manager®	Res	DR			14,655.4
PowerShare®	PowerShare®	Nonres	DR			8,677.6
Grand Total				**0**	**0**	**23,333.1**

Note: Incremental to achievement from prior years.

SAW HECR

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Home Energy Comparison Report	OH_Home Energy Comparison Report - Commercialized	Res	-	800,396	13,382,603	2,373.7
Grand Total				**800,396**	**13,382,603**	**2,373.7**

Notes: Impact data is averaged over year across pilot and commercialized programs. The participants are total participant-months

SAW EE excluding HECR

Filing Program	Measure	Customer	Filing Program with Technology	Participation	Annual KWH - Gross FR, at Plant	Annual KW - Gross FR, at Plant
Energy Efficiency Education Program for Schools	OH_K-12 Education Program- Curriculum	Res	-	2,836	689,425	122.3
Energy Efficiency Education Program for Schools Total				**2,836**	**689,425**	**122.3**
Low Income Services	OH_Agency Assistance Portal	Res	-	1,529	1,042,454	102.7
Low Income Services	OH_Low Income Weatherization- Refrigerator Replacement	Res	-	27	34,115	4.7
Low Income Services Total				**1,556**	**1,076,569**	**107.3**
Residential Energy Assessments	OH_Home Energy House Call - Energy Efficiency Starter KIT	Res	-	4,014	3,295,307	320.8
Residential Energy Assessments	OH_Online Audit	Res	-	2	682	0.1
Residential Energy Assessments	OH_Personalized Energy Report	Res	-	5,047	1,720,492	169.5
Residential Energy Assessments Total				**9,063**	**5,016,481**	**490.3**
Smart $aver® Residential (formerly Smart Saver Residential)	OH_Property Manager 13WCFL	Res	-	3,633	154,353	14.7
Smart $aver® Residential (formerly Smart Saver Residential)	OH_RCFL Opt-In Free CFLs	Res	-	1,932,452	109,793,572	10,814.1
Smart $aver® Residential (formerly Smart Saver Residential)	OH_Smart Saver - Central Air Conditioner	Res	-	2,597	2,759,319	560.7
Smart $aver® Residential (formerly Smart Saver Residential)	OH_Smart Saver - Heat Pump	Res	-	2,204	5,725,343	920.0
Smart Saver® Residential (formerly Smart Saver Residential) Total				**1,940,896**	**118,432,588**	**12,309.4**
Residential Retrofits (formerly Energy Solutions @ Home)	OH_Residential Retrofit Pilot	Res	-	7	35,345	7.2
Smart Saver® Residential (formerly Smart Saver Residential) Total				**7**	**35,345**	**7.2**
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	866	22,726	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	3	28,526	1.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	111,203	14.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	43	18,224	0.0

Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	95	281,836	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	244,780	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	514,824	86.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	47,571	12.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	79	93,684	10.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	539,680	90.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	139,856	23.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	769,243	83.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	123,801	2.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	70	43,956	16.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	17,817	5.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	19,125	4.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	44,097	13.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	58,453	18.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	166,309	47.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	24,498	6.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	11,172	3.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	37,102	11.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	24,332	5.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	20,998	10.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	12,569	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	12,748	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	85,857	54.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	39,325	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	48,002	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	62,356	34.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	45,615	7.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	17,494	2.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	41,923	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	16,824	2.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	35,849	6.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	266	66,651	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	710	461,076	52.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	16	4,706	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	15	11,435	1.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	8	2,789	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	157	141,852	16.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	46	44,159	5.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	24	20,555	2.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	53	22,711	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	12	7,147	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	2	1,845	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	422,623	3.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	17	17,760	2.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	49	42,578	4.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	122	96,451	11.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	55	46,070	5.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	122	96,451	11.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	81	67,849	7.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	66,464	11.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	59,160	9.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	19,845	3.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	76	65,851	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	152,039	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	27,819	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	12	56,200	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	169	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	2	1,732	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	59	66,042	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	6	10,113	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	40	13,951	3.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	570	214,732	49.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	506,016	74.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	214,633	24.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	116,813	38.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	9,814	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	16	12,735	4.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	97,563	32.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	21,332	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	30	23,293	7.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	370,514	122.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	72,566	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	106	84,369	27.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	297,634	100.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	63,666	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	54	41,927	14.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	10	5,443	0.0

Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	4	4,332	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	163,825	54.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	50,613	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	30	23,878	7.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	27,191	4.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	132,655	44.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	24,675	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	776	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	21,686	2.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	151,468	51.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	27,925	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	35	27,175	9.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	108,128	36.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	20,814	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	20	15,529	5.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	26,034	4.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	126	591,722	67.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	96	80,950	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	43	22,852	7.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	776,356	130.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	338,161	51.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	708	33,861	9.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	2,408	509,405	82.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	233,608	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	6,109	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	340,240	23.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	308,674	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	583,662	66.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	204,489	10.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	114,900	17.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	436	74,756	14.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	334	70,199	13.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	12	3,153	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	15	7,187	1.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	10	4,866	0.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	13	7,586	0.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	14	3,549	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	12	5,547	0.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	11	4,144	0.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	15	4,800	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	5	1,605	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	13	5,873	0.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	15	3,602	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	13	4,948	0.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	59	15,744	2.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	26	11,386	1.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	30	7,605	1.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	14	6,472	0.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	44	11,354	1.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	29	9,280	1.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	41	23,924	2.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	27	13,138	1.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,145,296	166.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	132	8,660	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	5,838	502,162	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	748	32,715	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	17	4,856	1.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	276,903	5.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	177,597	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	109,721	(9.3)
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	167,998	19.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	8	75,293	8.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	27	25,217	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,188,632	219.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	248	1,178,714	134.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	270,950	12.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	46,817	8.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	72,517	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	142,264	19.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	57,632	9.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	183,751	1.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	11	12,941	1.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	85,961	9.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	14,925	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	65,991	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,496	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	60,927	0.0

Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	97,698	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	338,191	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	106,885	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	83,416	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	173,615	32.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	243,976	45.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	250,874	46.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	259,158	47.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	257,649	47.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	255,517	47.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	209,233	38.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	214,869	39.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	257,449	31.9
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	16	1,831	0.7
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	65	11,050	4.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	2	235	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	20	9,897	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	7	8,999	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	400	398,799	109.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	60	209,031	34.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	0	5,371.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	6,334	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	15	24,899	3.8
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	10	19,425	3.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	20,414	3.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,017	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,996	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,462	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,094	0.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,419	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,953	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	739	0.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	3,882	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,308	0.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,994	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,701	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	4,562	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,012	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,787	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,764	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,998	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,781	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	4,620	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	3,260	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	4,488	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,850	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	3,216	0.6
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,039	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,827	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,795	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,826	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	4,351	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,807	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,058	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	3,260	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,058	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,847	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,309	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,712	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,847	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,893	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,196	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,039	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,680	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	4,077	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,487	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,162	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,504	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	3,839	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,932	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,232	0.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,917	0.3
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,893	0.5
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	1,109	0.2
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	574	0.1
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	2,183	0.4
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	544,965	217.0

Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	28	34,018	0.0
Smart $aver® Custom (formerly Custom Rebate)	OH_SAW Custom	Nonres	Custom	1	333,206	43.1
Smart $aver® Custom (formerly Custom Rebate) Total				16,345	23,756,125	8,755.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Beverage Reach-in Controller	Nonres	Energy Star Food Service Products	35	25,097	1.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Freezers 15 to 30 ft3 - var	Nonres	Energy Star Food Service Products	2	1,862	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Freezers 30 to 50ft3 - var	Nonres	Energy Star Food Service Products	1	1,852	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Freezers less than 15ft3 - var	Nonres	Energy Star Food Service Products	1	638	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Refrigerators 15 to 30 ft3 - var	Nonres	Energy Star Food Service Products	3	1,391	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Refrigerators 30 to 50ft3 - var	Nonres	Energy Star Food Service Products	2	1,692	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Refrigerators less than 15ft3 - var	Nonres	Energy Star Food Service Products	1	289	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_ENERGY STAR Commercial Solid Door Refrigerators more than 50ft3 - var	Nonres	Energy Star Food Service Products	3	3,642	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Fryer	Nonres	Energy Star Food Service Products	1	1,250	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Holding Cabinet Full Size Insulated	Nonres	Energy Star Food Service Products	4	22,522	3.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Holding Cabinet Half Size Insulated	Nonres	Energy Star Food Service Products	1	1,924	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Icemaker (100 to 500 lbs day)	Nonres	Energy Star Food Service Products	1	642	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Icemaker (Greater Than 1000 lbs day)	Nonres	Energy Star Food Service Products	2	2,754	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Steamer_5 pan	Nonres	Energy Star Food Service Products	2	29,626	5.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Vending Equipment Controller	Nonres	Energy Star Food Service Products	62	53,151	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC 135,000 - 240,000 per ton	Nonres	HVAC	970	108,190	39.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC 240,000 - 760,000 per ton	Nonres	HVAC	1,003	50,667	21.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC 65,000 - 135,000 per ton	Nonres	HVAC	773	48,640	17.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC greater than 760,000 per ton	Nonres	HVAC	90	7,769	2.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC less than 65,000 1 Ph per ton	Nonres	HVAC	18	1,100	0.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_AC less than 65,000 3 Ph per ton	Nonres	HVAC	233	10,663	3.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Air Cooled Chiller Tune Up per ton	Nonres	HVAC	10,574	1,363,183	491.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Air-Cooled Screw Chiller COP = 2.86, IPLV = 3.48 per ton	Nonres	HVAC	1,660	289,325	104.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Air-Cooled Screw Chiller COP = 2.86, IPLV = 3.97 per ton	Nonres	HVAC	577	132,130	47.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Air-Cooled Screw Chiller COP = 2.86, IPLV = 4.33 per ton	Nonres	HVAC	711	294,028	106.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00 per ton	Nonres	HVAC	190	71,704	25.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Refrigeration System Tune Up	Nonres	HVAC	2	17,490	2.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Energy Star Room AC over 14,000 Btu hr	Nonres	HVAC	2	330	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Efficiency Commercial Electric Water Heater 4.5 kW EF 0.93	Nonres	HVAC	1	410	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_HP 135,000 - 240,000 per ton	Nonres	HVAC	14	2,124	0.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_HP 65,000 - 135,000 per ton	Nonres	HVAC	6	763	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_HP less than 65,000 1 Ph per ton	Nonres	HVAC	20	2,385	0.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_HP less than 65,000 3 Ph per ton	Nonres	HVAC	5	327	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Packaged Terminal AC	Nonres	HVAC	85	2,678	1.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Setback Programmable Thermostat	Nonres	HVAC	292	363,440	61.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Thermal Storage	Nonres	HVAC	2	0	311.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Water Cooled Chiller Tune Up per ton	Nonres	HVAC	40,170	2,589,326	934.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Water-Cooled cent Chiller greater than 300 ton 0.58 kW_ton with 0.35 kW_ton IPLV	Nonres	HVAC	1,588	298,905	107.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Water-Cooled Centrifugal Chiller less than 150 ton 0.63 kW_ton with 0.38 kW_ton I	Nonres	HVAC	240	86,224	31.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Water-cooled screw chiller less than 150 ton 0.71 kW_ton with 0.53 kW_ton IPLV p	Nonres	HVAC	163	42,071	15.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Water-cooled screw chiller less than 150 ton 0.79 kW_ton with 0.55 kW_ton IPLV p	Nonres	HVAC	262	42,636	15.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Window Film	Nonres	HVAC	39,809	175,022	29.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_2 High Bay 6L T-5 High Output replacing 1000W HID	Nonres	Lighting	15	25,535	5.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS 2 High Bay 6L T-5 High Output replacing 1000W HID	Nonres	Lighting	18	30,642	6.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS 2 High Bay Fluorescent 8LF32T8 - Replacing 1000W HID	Nonres	Lighting	44	103,148	21.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay 2L T-5 High Output	Nonres	Lighting	141	58,183	10.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay 3L T-5 High Output	Nonres	Lighting	135	64,906	12.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay 4L T-5 High Output	Nonres	Lighting	1,915	1,809,380	340.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay 6L T-5 High Output	Nonres	Lighting	1,537	616,439	115.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay 8L T-5 High Output	Nonres	Lighting	94	263,907	49.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay T8 4ft Fluorescent 4 Lamp (F32 Watt T8)	Nonres	Lighting	1,593	1,050,515	196.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay T8 4ft Fluorescent 6 Lamp (F32 Watt T8)	Nonres	Lighting	9,547	9,830,389	1,844.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Bay T8 4ft Fluorescent 8 Lamp (F32 Watt T8)	Nonres	Lighting	300	208,637	39.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance Low Watt T8 4ft 1 lamp, replacing standard T8	Nonres	Lighting	217	7,521	1.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance Low Watt T8 4ft 2 lamp, replacing standard T8	Nonres	Lighting	11,437	557,948	113.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance Low Watt T8 4ft 3 lamp, replacing standard T8	Nonres	Lighting	2,394	196,710	40.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance Low Watt T8 4ft 4 lamp, replacing standard T8	Nonres	Lighting	3,278	286,175	58.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 1 lamp, replacing standard T8	Nonres	Lighting	11	282	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 1 lamp, replacing T12-HPT8	Nonres	Lighting	17	1,419	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 2 lamp, replacing standard T8	Nonres	Lighting	1,455	59,755	11.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 2 lamp, replacing T12 High Output 8ft 1 lamp	Nonres	Lighting	271	62,275	12.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 2 lamp, replacing T12-HPT8	Nonres	Lighting	2,714	294,125	106.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 3 lamp, replacing standard T8	Nonres	Lighting	120	3,544	1.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 3 lamp, replacing T12-HPT8	Nonres	Lighting	1,576	301,479	61.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 4 lamp, replacing standard T8	Nonres	Lighting	187	12,963	2.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 4 lamp, replacing T12 High Output 8ft 2 lamp	Nonres	Lighting	1,497	580,423	118.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS High Performance T8 4ft 4 lamp, replacing T12-HPT8	Nonres	Lighting	1,815	407,770	83.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Low Watt T8 lamps 2-4ft, replacing standard 32 Watt T8	Nonres	Lighting	93,451	1,799,739	371.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Occupancy Sensors over 500 Watts	Nonres	Lighting	1,975	2,590,872	529.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Occupancy Sensors under 500 Watts	Nonres	Lighting	10,093	5,300,314	1,102.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Pulse Start Metal Halide (retrofit only)	Nonres	Lighting	82	37,777	10.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS T-5 4 ft 4 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	16	1,869	0.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS T-5 High Output 2 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	36	3,328	0.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_CFL Reflector Flood	Nonres	Lighting	24	6,316	1.3

Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_CFL Screw high wattage	Nonres	Lighting	201	90,833	18.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_CFL12PK_MIXBC_22	Nonres	Lighting	168	421,850	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Compact Fluorescent Fixture	Nonres	Lighting	589	213,242	43.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Compact Fluorescent Screw In	Nonres	Lighting	12,256	2,580,436	525.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Delamping T12 4ft to T-8	Nonres	Lighting	18	3,420	0.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Exterior HID replacement above 175W to 250W HID retrofit	Nonres	Lighting	197	87,445	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Exterior HID replacement above 250W to 400W HID retrofit	Nonres	Lighting	141	107,216	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Exterior HID replacement above 400W HID retrofit	Nonres	Lighting	16	21,883	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Exterior HID replacement to 175W HID retrofit	Nonres	Lighting	24	7,195	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Garage HID replacement above 175W to 250W HID retrofit	Nonres	Lighting	70	70,791	8.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Garage HID replacement above 250W to 400W HID retrofit	Nonres	Lighting	11	19,121	2.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Garage HID replacement to 175W HID retrofit	Nonres	Lighting	224	153,614	17.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Bay 4L T-5 High Output	Nonres	Lighting	325	307,075	57.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Bay 6L T-5 High Output	Nonres	Lighting	467	187,298	34.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Bay 8L T-5 High Output	Nonres	Lighting	20	56,150	10.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Bay T8 4ft Fluorescent 4 Lamp (F32 Watt T8)	Nonres	Lighting	237	156,291	29.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Bay T8 4ft Fluorescent 6 Lamp (F32 Watt T8)	Nonres	Lighting	1,195	1,230,472	230.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance Low Watt T8 4ft 1 lamp, replacing standard T8	Nonres	Lighting	156	5,407	1.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance Low Watt T8 4ft 2 lamp, replacing standard T8	Nonres	Lighting	3,759	183,381	37.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance Low Watt T8 4ft 3 lamp, replacing standard T8	Nonres	Lighting	2,019	165,897	34.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance Low Watt T8 4ft 4 lamp, replacing standard T8	Nonres	Lighting	2,356	205,683	42.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 1 lamp, replacing T12-HPT8	Nonres	Lighting	1	83	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 2 lamp, replacing standard T8	Nonres	Lighting	113	4,641	0.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 2 lamp, replacing T12 8ft 1 lamp	Nonres	Lighting	337	29,851	6.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 2 lamp, replacing T12 High Output 8ft 1 lamp	Nonres	Lighting	50	11,490	2.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 2 lamp, replacing T12-HPT8	Nonres	Lighting	194	21,024	7.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 3 lamp, replacing T12-HPT8	Nonres	Lighting	249	47,632	9.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 4 lamp, replacing standard T8	Nonres	Lighting	51	3,535	0.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 4 lamp, replacing T12 8ft 2 lamp	Nonres	Lighting	267	17,137	3.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_High Performance T8 4ft 4 lamp, replacing T12 High Output 8ft 2 lamp	Nonres	Lighting	261	101,196	20.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Auto Traffic Signals	Nonres	Lighting	753	223,993	68.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Case lighting	Nonres	Lighting	800	391,804	33.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Downlight	Nonres	Lighting	997	257,273	52.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Exit Signs Electronic Fixtures (Retrofit Only)	Nonres	Lighting	1,544	379,682	51.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Lamps	Nonres	Lighting	2,244	524,322	106.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LED Pedestrian Signals	Nonres	Lighting	402	65,242	19.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Low Watt T8 lamps 2-4ft, replacing standard 32 Watt T8	Nonres	Lighting	48,664	937,202	193.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LW HPT8 4ft 1 Lamp, Replace T12	Nonres	Lighting	87	7,595	1.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LW HPT8 4ft 2 lamp, Replace T12	Nonres	Lighting	3,044	339,996	69.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LW HPT8 4ft 3 lamp, Replace T12	Nonres	Lighting	2,470	516,879	105.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_LW HPT8 4ft 4 lamp, Replace T12	Nonres	Lighting	1,873	454,477	93.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Occupancy Sensors over 500 Watts	Nonres	Lighting	351	460,987	94.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Occupancy Sensors under 500 Watts	Nonres	Lighting	1,490	782,470	162.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_Pulse Start Metal Halide 320W retrofit only	Nonres	Lighting	116	52,421	10.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 4 ft 1 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	50	2,913	0.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 4 ft 2 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	1,655	95,619	19.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 4 ft 3 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	34	4,452	0.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 High Output 1 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	8	585	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 High Output 2 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	271	25,050	5.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 High Output 3 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	109	13,294	2.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-5 High Output 4 Lamp with Electronic Ballast (replacing T-12 fixture)	Nonres	Lighting	109	27,568	5.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 2ft 1 lamp	Nonres	Lighting	125	6,098	1.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 2ft 2 lamp	Nonres	Lighting	1,097	128,160	26.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 2ft 3 lamp	Nonres	Lighting	208	12,017	2.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 2ft 4 lamp	Nonres	Lighting	105	23,995	4.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 3ft 1 lamp	Nonres	Lighting	164	16,843	3.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 3ft 2 lamp	Nonres	Lighting	180	30,734	6.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 3ft 4 lamp	Nonres	Lighting	1	359	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 4ft 1 lamp	Nonres	Lighting	681	40,214	8.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 4ft 2 lamp	Nonres	Lighting	11,158	701,944	144.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 4ft 3 lamp	Nonres	Lighting	1,973	248,241	50.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 4ft 4 lamp	Nonres	Lighting	6,055	940,613	192.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 8ft 1 lamp	Nonres	Lighting	15	1,233	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 8ft 2 lamp	Nonres	Lighting	735	50,012	10.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_T-8 High Output 8 ft 2 Lamp	Nonres	Lighting	199	45,476	9.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_115 Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	2	757	0.2
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_10 Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	1	2,526	0.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_15 Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	1	3,788	1.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_1-5 Horse Power Motors - Incentives per participant	Nonres	Motors/Pumps/VFD	4	484	0.1
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_20 Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	1	5,051	1.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_25-100 Horse Power Motors - Incentives per participant	Nonres	Motors/Pumps/VFD	12	13,588	3.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_5 Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	1	1,262	0.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_7½ Horse Power High Efficiency Pumps	Nonres	Motors/Pumps/VFD	1	1,894	0.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_7½-20 Horse Power Motors - Incentives per participant	Nonres	Motors/Pumps/VFD	15	6,562	1.8
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 10 Horse Power - Process Pumping	Nonres	Motors/Pumps/VFD	7	80,392	16.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 15 Horse Power - Process Pumping	Nonres	Motors/Pumps/VFD	5	87,015	18.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 15 Horse Power Pumps	Nonres	Motors/Pumps/VFD	4	183,024	0.4

Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 20 Horse Power Pumps	Nonres	Motors/Pumps/VFD	5	305,033	0.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 25 Horse Power Pumps	Nonres	Motors/Pumps/VFD	4	305,034	0.6
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 3 Horse Power Pumps	Nonres	Motors/Pumps/VFD	2	18,303	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 30 Horse Power - Process Pumping	Nonres	Motors/Pumps/VFD	2	69,612	14.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 30 Horse Power Pumps	Nonres	Motors/Pumps/VFD	13	1,189,638	2.3
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 5 Horse Power - Process Pumping	Nonres	Motors/Pumps/VFD	8	45,938	9.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 5 Horse Power Pumps	Nonres	Motors/Pumps/VFD	1	15,252	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 50 Horse Power - Process Pumping	Nonres	Motors/Pumps/VFD	2	116,019	24.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS Variable Frequency Drive 715 Horse Power Pumps	Nonres	Motors/Pumps/VFD	1	22,877	0.0
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_VFD HVAC Fan	Nonres	Motors/Pumps/VFD	1,652	2,205,622	370.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_VFD HVAC Pump	Nonres	Motors/Pumps/VFD	215	817,772	137.5
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_VFD Process Pump 1-50 HP	Nonres	Motors/Pumps/VFD	135	138,344	29.4
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_VSD Air Compressors	Nonres	Motors/Pumps/VFD	60	40,441	9.7
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential)	OH_BONUS PC Network Energy Management	Nonres	Other	800	171,879	30.9
Smart $aver® Non-Residential (formerly Smart Saver Non-Residential) Total				**366,279**	**52,907,117**	**11,031.2**
Grand Total				**2,336,972**	**201,913,650**	**32,823.6**

Note: Save-a-Watt (SAW) is Duke Energy Ohio's recovery incentive mechanism for energy efficiency and peak demand reduction programs. Some of the measures included in this filing are applicable under the SB221 guidelines and not under the SAW mechanism. For clarity, these have been presented separately.

AFFIDAVIT
OF
THOMAS J. WILES

COMES NOW Thomas J. Wiles being duly sworn, deposes and says:

1. My name is Thomas J. Wiles. I am employed by Duke Energy Business Services, Inc. as General Manager Market Analytics.

2. This Affidavit will be filed with the Ohio Public Utilities Commission in support of Duke Energy Ohio's Annual Energy Efficiency Portfolio Status Report (the Report) which is required by Ohio Administrative Code §4901:1-39-05 (C).

3. As General Manager Market Analytics, I have responsibility for load research, demand side management analytics and load management analytics. As part of my professional responsibilities I assisted with the underlying analysis and preparation of Duke Energy Ohio's Report.

4. The information contained within the Report is true and accurate to the best of my knowledge.

5. The performance detailed in the Report demonstrates that Duke Energy Ohio has complied with the statutory benchmarks contained in Ohio Revised Code 4928.66

FURTHER AFFIANT SAITH NOT.

Thomas J. Wiles

State of Ohio)
) SS:
County of Hamilton)

Subscribed to and sworn to before me this 10th day of May, 2012.

ADELE M. DOCKERY
Notary Public, State of Ohio
My Commission Expires 01-05-2014

Notary Public

Annual Summary of Planned EM&V Activities for Duke Energy's Energy Efficiency Programs in Ohio

Appliance Recycling, My Home Energy Report, Home Energy Solutions, Energy Efficiency Education for Schools, Low Income Neighborhoods, Non-Residential Energy Assessments, Power Manager®, PowerShare®, Residential Energy Assessments, Residential Smart $aver® HVAC, Smart $aver® CFLs, Smart $aver® CFLs: Property Managers, and Non-Residential Smart $aver® Prescriptive and Custom

Prepared for
Duke Energy
139 East Fourth Street
Cincinnati, OH 45201

May 15, 2012

Submitted by
TecMarket Works
165 West Netherwood Road
2nd Floor, Suite A
Oregon, Wisconsin 53575
(608) 835-8855

TECMARKET Works

TABLE OF CONTENTS

Introduction and Program Background

This section presents program descriptions, end uses/measures covered, markets targeted, program implementation activities (marketing efforts, delivery channels, financial incentives), program implementation and EM&V budgets, and expected program participation (number of participants (or units), number of measures, expected savings, and share of savings by program relative to EE/DR portfolio).

Appliance Recycling

Appliance Recycling provides appliance recycling services to residential customers by providing an incentive to customers that turn in their primary and/or secondary working refrigerator or freezer for recycling. The program takes inefficient kWhs off the system and also responsibly handles the hazardous materials used in the older refrigerators or freezers.

End uses, measures covered

Primary and/or secondary working refrigerators and freezers.

Markets targeted

Residential customers served on Duke Energy Ohio's residential rate schedules.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The marketing strategy for this program will focus on a grassroots approach. Some of the marketing tactics planned to be utilized to meet participation goals are direct mail, social media, press releases, community presentations and partnerships, and inclusion in community publications, such as newsletters, etc. Also any marketing tactics that the selected program administrator has found to be successful with this type of program. A monetary incentive will be given to participants.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt cost recovery mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million[1].

Table 1. Expected Program Participation: Appliance Recycling

Number of Participants	3,380
Number of Measures	2 or more
Expected Savings	1,517 kW and 5,638,971 kWh
Share of Savings Relative to EE/DR Portfolio	1% kW and 2.8% kWh

[1] Participation, program budgets, and EM&V budgets are living documents that are periodically revisited and adjusted for actual versus projected participation, changes in program offerings, etc. To this end, estimates of 2012 participation have been included coupled with anticipated spend rate for 2012. Typically the EMV spend per program is relative to either or both the program administrative costs and/or the share of savings relative to the portfolio. However, new programs require a higher percentage of EMV expenditures to accurately measure the market, though these costs are still within the bounds of the total EMV portfolio budget. It should be noted that many evaluation activities extend beyond the calendar year of the program and may not precisely track the program cycle budgets as a fraction of the implementation budget for the calendar year.

My Home Energy Report (MyHER)

Previously called Home Energy Comparison Report or HECR, My Home Energy Report is the HECR program commercialized. The purpose of MyHER is to determine whether receiving comparative usage data for similar residences in the same geographic area motivates customers to better manage and reduce energy usage. Tendril, through proprietary techniques, compiles energy usage and publicly available information (location, size, home age, occupancy) on nearby similar homes to develop the comparisons. Reports are mailed to the residence monthly or up to 12 reports a year. The reports contain personalized tips and messages based on customers' energy usage patterns, information about their homes, as well as follow up opportunities such as an offer to participate in Duke Energy's energy efficiency programs.

End uses, measures covered

This is an informational program only. No measures are provided.

Markets targeted

The program is structured to target a sample of customers whose eligibility requirements include residing in individually-metered, owner-occupied, single-family residences served on Duke Energy Ohio's residential rate schedules. The initial pilot also excluded any customers who had previously participated in any Duke Energy's energy efficiency programs, though commercialization offers this program to the entire population of eligible customers.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

Reports are mailed to the residence in one of the formats determined from the 2010-2011 EMV to be the most effective. The reports contain personalized tips and messages based on customers' energy usage patterns, information about their homes, as well as follow up opportunities such as an offer to participate in Duke Energy's energy efficiency programs. There are no program incentives.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt cost recovery mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 2. Expected Program Participation: My Home Energy Report

Number of Participants	245,209
Number of Measures	Monthly reports up to 12 per yr.
Expected Savings	11,277 kW and 41,917,723 kWh
Share of Savings Relative to EE/DR Portfolio	7.7% kW and 21.2% kWh

Home Energy Solutions

Home Energy Solutions is an approach to delivering energy efficiency solutions to customers in a way that combines a number of energy efficient measures into more valuable solutions. Home

Energy Solutions will combine energy usage information and recommendations with the ability to leverage potential pricing options and energy management offerings into convenient in-home solutions.

End uses, measures covered

At the center of the program is Home Energy Manager (HEM), a smart grid enabled consumer technology that will allow customers and Duke Energy Ohio to manage in-home devices and information to deliver energy efficiency optimization and demand response benefits. The HEM will integrate with other devices in the home, offering customers critical feedback and control of high use energy devices.

Markets targeted

The audience is Ohio residential Duke Energy customers. These customers reside in individually-metered, owner-occupied, single-family residences receiving concurrent service from Duke Energy. In addition, customers are required to have a broadband internet connection, central heating/AC system and 12 months of historical energy usage information. Any Duke Energy customer that has broadband, central heating/AC and 12 months energy usage is eligible regardless of income level.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The marketing strategy for this program will follow a more traditional consumer electronics industry model. Some of the marketing tactics planned to utilize to meet participation goals are direct mail, social media, press releases, radio/TV advertisements, and print ads.

Customer will receive the equipment at a discounted price. Customers will have the opportunity to lower their monthly energy bill by receiving the tools, education and support necessary to enable them to create and maintain greater energy efficiency or conservation. As well as participating in demand response events.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 3. Expected Program Participation: Home Energy Solutions

Number of Participants	2,880
Number of Measures	1 device
Expected Savings	1,846 kW and 843,112 kWh
Share of Savings Relative to EE/DR Portfolio	1.3% kW and .4% kWh

Energy Efficiency Education Program for Schools

The Energy Efficiency Education Program for Schools provides energy efficiency informational and educational support and resources to K-8 students through a performance by the National Theatre for Children. The goal of the program is to use students as an information route to achieve cost effective savings in the homes of the children using the support and assistance of the parents.

End uses, measures covered

- 1.5 GPM low flow shower head
- 1.5 GPM kitchen faucet aerator with swivel and flip valve
- Water flow meter bag
- Water temperature gauge card (Hot Water Temp Card)
- 13 watt Energy Star rated mini compact fluorescent (60 watt incandescent equivalent)
- 18 watt Energy Star rated mini compact fluorescent (75 watt incandescent equivalent)
- GPM needle spray bathroom faucet aerator
- Combination Pack of switch and outlet gasket insulators (12/pk)
- Energy Efficient Limelight style night light
- Duke Energy labeled DOE "Energy Savers" booklet
- Roll of Teflon tape for showerhead
- Product information and instruction sheet
- Duke Energy Business Reply Card

Non-Duke Energy customers receive a smaller kit containing:

- Water flow meter bag (Hot Water Temp Card)
- 13 watt Energy Star rated mini compact fluorescent (60 watt incandescent equivalent)
- Outlet gasket insulators
- Duke Energy labeled DOE "Energy Savers" booklet
- Product information and instruction sheet

Markets targeted

The Energy Efficiency Education Program for Schools reaches out to K-8 students whose schools are in or near Duke Energy's service territory through performances to educate them about energy efficiency.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The Energy Efficiency Education Program for Schools provides principals and teachers with innovative math and science related curriculum that educate students about energy, resources, electricity, ways energy is wasted and how to use our resources wisely. Education materials focus on concepts such as energy, renewable fuels, and energy conservation through classroom and take home assignments to engage student's families. Curriculum materials are enhanced with a live 25 minute theatrical production for elementary students and a live 40 minute theatrical production for middle school students, both performed by two professional actors. The current program is developed to educate students - kindergarten through eighth grade. School principals

are the main point of contact and will schedule the performance at their convenience for the entire school. Participants receive an energy efficiency starter kit.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 4. Expected Program Participation: Energy Efficiency Education Program for Schools

Number of Participants	14,000
Number of Measures (kits)	1 kit + Education
Expected Savings	911 kW and 3,384,679 kWh
Share of Savings Relative to EE/DR Portfolio	.6% kW and 1.7% kWh

Low Income Neighborhoods Program

A non-traditional approach to serving income-qualified areas of the DE Ohio territory. Program engages targeted customers with personal interaction in a familiar setting while ultimately reducing energy consumption by directly installing measures and educating the customer on better ways to manage their energy bills.

End uses, measures covered (including but not limited to)

The following energy saving measures are examples of what will be installed or performed as appropriate:

- CFLs
- Water heater and pipe wrap
- Low-flow shower/faucet aerators
- HVAC filters/replacement
- Air sealing to include doors and windows

Markets targeted

The Low Income Neighborhood program will target residential neighborhoods with a high percentage of low income residential customers. Home owners and renters in single and multi-family dwellings that have electric service provided by Duke Energy Ohio are allowed to participate. At least 50% of homes in each targeted area must meet the 0-200% poverty level criteria. The program is available to all customers in defined areas.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The Low Income Neighborhood Program will recruit participants through community engagement activities. A community-based kick-off event will be held for targeted neighborhoods, followed by energy assessments completed in the customers' homes and the appropriate energy saving measures will be installed. Customers will receive education on the

proper use of the installed measures, as well as energy saving tips they can adopt to help lower their energy costs.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 5. Expected Program Participation: Low Income Neighborhood Program

Number of Participants	1,339
Number of Measures	1 assessment + weatherization (varies)
Expected Savings	339 kW and 1,261,802 kWh
Share of Savings Relative to EE/DR Portfolio	.2% kW and .6% kWh

Non-Residential Energy Assessments

The Energy Assessment Program provides informational and educational support and resources to non-residential customers to help identify energy savings opportunities. Its primary purpose is to provide customers with energy efficiency recommendations that will convince them to enroll in Duke Energy's prescriptive or custom program offerings. Its secondary purpose is to engage customers in low cost/no cost behavior measures. The program is also a customer satisfaction support tool, designed to build the relationship between the customer and Duke Energy in a way that additional energy savings are acquired via the Duke Energy offerings as a result of a service that focuses on providing customers tailored information about efficiency opportunities for their facility.

End uses, measures covered

No measures are offered by this program, it is designed to help customers discover energy savings opportunities.

Markets targeted

Non-residential customers.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The program is marketed through phone and face-to-face contact with customers by Duke Energy representatives, the Duke-Energy.com web content and Duke Energy's Business Services Newsline. Duke Energy provides the online and off-site phone assessments at no cost to the customers. Duke Energy shares the cost of an on-site facility assessment with the customer. The facility assessment costs $3,000 for a one day assessment and $600 for each additional day. If the customer chooses to undertake a Smart $aver® project after receiving the assessment report through this program, Duke Energy then reimburses the customer's half of the assessment costs.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 6. Expected Program Participation: Non-Residential Energy Assessments

Number of Participants	
Number of Measures	N/A
Expected Savings	N/A
Share of Savings Relative to EE/DR Portfolio	N/A

Power Manager®

Power Manager is a voluntary residential program, available to homeowners with central air conditioning (AC) and heat pumps. On days where energy demand and energy costs are both expected to be high, Duke Energy has permission from Power Manager participants to cycle their air conditioning systems off for a period of time.

End uses, measures covered

Duke Energy installs a load management switch next to the participants' air conditioner on the outside of their home. The radio-controlled device cycles their air conditioner off and on during peak load periods between May and September.

Markets targeted

Duke Energy residential customers that own a single-family home with a functional central air conditioning unit with an outside compressor.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The program is promoted using various channels with an emphasis on direct mail, email and web-based promotions.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 7. Expected Program Participation: Power Manager

Number of Participants	49,492
Number of Measures	1
Expected Savings	58,219 kW
Share of Savings Relative to EE/DR Portfolio	39.6% kW

PowerShare

PowerShare is a demand response program designed to reduce non-residential customers' energy use during periods of high energy prices or during periods when high energy usage would cause energy supplies across the transmission and distribution system to drop to near-critical levels. In both these situations, the PowerShare program allows Duke Energy to purchase capacity from their customers by paying their commercial and industrial customers to reduce their energy demand, thus increasing the available energy supply.

End uses, measures covered

The PowerShare program allows Duke Energy to purchase capacity from their customers by paying their commercial and industrial customers to reduce their energy demand, thus increasing the available energy supply.

Markets targeted

Nonresidential customers that are able to curtail a minimum of 100 kW and have an interval meter. The PowerShare program is promoted mainly by Duke Energy account managers. Account managers speak to large business customers on a one-to-one basis to determine whether they are suitable candidates for participating.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

Incentives range from $12 to $25 per kW per year, depending on the curtailment option chosen.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 8. Expected Program Participation: PowerShare

Number of Participants	44
Number of Measures	1
Expected Savings	47,373 kW
Share of Savings Relative to EE/DR Portfolio	32.2% kW

Residential Energy Assessments

The Residential Energy Assessments program provides a report to the occupants recommending energy savings measures for their home. The service also provides measures that can be directly installed in the home, such as compact fluorescent bulbs and weather stripping.

End uses, measures covered

The Energy Efficiency Starter Kit includes:

- 1.5 GPM low flow shower head
- 1.5 GPM kitchen faucet aerator with swivel and flip valve

- 17 feet roll of Closed Cell Foam weather stripping
- 13 watt Energy Star rated mini compact fluorescent (60 watt incandescent equivalent)
- 18 watt Energy Star rated mini compact fluorescent (75 watt incandescent equivalent)
- 1.0 GPM needle spray bathroom faucet aerator
- Outlet gasket insulators
- Switch gasket insulators
- Duke Energy labeled DOE "Energy Savers" booklet
- Roll of Teflon tape for showerhead

Markets targeted

Duke Energy residential customers that own a single-family home and have lived there for at least four months.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The program is marketed to Duke Energy customers by direct mail. These mailings target customers within specific regions for more efficient routes for the auditors in order to increase productivity. Customers have to meet certain requirements for eligibility.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 9. Expected Program Participation: Residential Energy Assessments

Number of Participants	4,250
Number of Measures	1 kit and audit recommendations
Expected Savings	1,285 kW and 9,122,437 kWh
Share of Savings Relative to EE/DR Portfolio	.9% kW and 4.6% kWh

Residential Smart $aver HVAC and Additional Measures

The Duke Energy Residential Smart $aver® HVAC program provides rebates for installations of higher efficiency heating and cooling measures in new or existing homes. The Additional Measures portion of the program is pending approval and includes Tune and Seal.

End uses, measures covered

The program provides incentives for central air conditioners (CAC) with electronically commutated fan motors (ECM)s, and heat pumps with ECMs.

Markets targeted

The main method of marketing the program to residential customers is through the trade ally network.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

Qualified purchases by residential customers are eligible for rebates of $200 to the homeowner, and $100 to the HVAC contractor/dealer. Home builders who install qualified equipment are eligible for rebates of $300 that they may choose to pass on to the home buyers.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 10. Expected Program Participation: Residential Smart Saver HVAC

Number of Participants	7,873
Number of Measures	7
Expected Savings	6,068 kW and 35,772,263 kWh
Share of Savings Relative to EE/DR Portfolio	2% kW and 4% kWh

Smart $aver CFLs

Residential customers have the ability to 'opt-in' and order CFLs on the Duke Energy Website, calling the IVR toll free number or by logging into their account information in OLS (Online Services). The program was designed to provide on-demand ordering while checking eligibility with program updates in the CFL tracker. Platform provided customers to check status of order from beginning to end (delivery to home).

End uses, measures covered

Customers are eligible for up to 15 CFLs (depending on past program participation).

Markets targeted

Marketing campaign consists of intercepting customers as they log into OLS, email, bill messages, bill envelopes, Press Releases, Social Media (Twitter & Facebook), direct mail, outbound dial pilot with Call Center, Outreach, Retiree Luncheons and Social Events, Low Income Agency Postcard, MyHER report, Direct mail, Newspaper and Videos (Education and Installation messages).

Program implementation activities (marketing efforts, delivery channels, financial incentives)

A new distribution vendor has recently been adopted by Duke Energy for the 2012 program cycle. Details are pending but will require regular uploads of participation and shipment to customers within 2-4 weeks.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke

Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 11. Expected Program Participation: Smart Saver CFLs

Number of Participants	459,500
Number of Measures (kits)	1 bulb
Expected Savings	2827 kW and 25,519,925 kWh
Share of Savings Relative to EE/DR Portfolio	1.9% kW and 12.9% kWh

Smart $aver CFLs: Property Managers

Property Managers of multi-family residential buildings have the ability to 'opt-in' and order free CFLs on the Duke Energy Website for installation in residential units (not common areas). Platform provided customers to check status of order from beginning to end (delivery to home).

End uses, measures covered

Property Managers are eligible for up to 18 CFLs per residential unit.

Markets targeted

Marketing campaign consists of intercepting property managers as they log into OLS, email, bill messages, bill envelopes, Press Releases, Social Media (Twitter & Facebook), direct mail, outbound dial pilot with Call Center, Outreach, Retiree Luncheons and Social Events, Low Income Agency Postcard, and Direct mail.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

A new distribution vendor has recently been adopted by Duke Energy for the 2012 program cycle. Details are pending but will require regular uploads of participation and shipment to customers within 2-4 weeks.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 12. Expected Program Participation: Smart Saver CFLs: Property Managers

Number of Participants	55,000
Number of Measures (kits)	1 bulb
Expected Savings	257 kW and 2,324,090 kWh
Share of Savings Relative to EE/DR Portfolio	.2% kW and 1.2% kWh

Smart $aver Prescriptive and Custom

The Non-Residential Smart $aver program seeks to reward businesses for saving energy by providing rebate incentives to install qualifying high-efficiency lighting, cooling or motors/pumps. Customers who want to install measures not on the Smart $aver® Prescriptive list are provided the opportunity to apply for a rebate through the Custom program.

End uses, measures covered

High-efficiency lighting, cooling or motors/pumps, or custom equipment.

Markets targeted

Commercial and Industrial customers.

Program implementation activities (marketing efforts, delivery channels, financial incentives)

The Wisconsin Energy Conservation Corporation markets the program to trade allies and vendors using a combination of brochures, website resources, cold calls, and speaking engagements, and they in turn market the program to end use customers. Duke Energy markets to the end use customer through brochures distributed at trade shows. Financial incentives are in the form of rebates.

For the Custom Incentive program, WECC performs a technical review of applications to validate engineering assumptions. Financial incentives are in the form of rebates.

Program Implementation and EM&V budgets

The 2012 EM&V portfolio budget for the 2012-2013 program year represents 5% of total portfolio program costs, pursuant to Duke Energy's Save-a-Watt mechanism. In addition, Duke Energy budgets 6% of the EM&V costs (0.3% of the portfolio budget) to support the statewide evaluator as mandated by PUCO. Total utility costs for program implementation are $25.9 million.

Table 13. Expected Program Participation: Non-Residential Smart $aver Prescriptive

Number of Participants	322,417
Number of Measures	301
Expected Savings	14,188 kW and 65,843,647 kWh
Share of Savings Relative to EE/DR Portfolio	9.7% kW and 33.24% kWh

Table 14. Expected Program Participation: Non-Residential Smart $aver Custom

Number of Participants	5,603
Number of Measures	5,603
Expected Savings	3,895 kW and 34,120,477 kWh
Share of Savings Relative to EE/DR Portfolio	2.7% kW and 17.23% kWh

Evaluation Objectives

This section provides an overview of the Research Questions that will be addressed in each of the following evaluation components.

a) Impact Evaluation Research Questions
b) Process Evaluation Research Questions
c) Additional Research Questions (if needed)

Impact Evaluation Research Questions

1. What are the per-unit energy savings?
2. What are the per-home energy savings?
3. What are the demand savings (coincident and non-coincident) by measure?
4. What is the common practice for normal replacement measures not covered by code?

The tables in the section titled "Impact Evaluation: Data Collection Methods" summarizes the above questions as follows:

Impact Evaluation Research Question	Summarized As:
1. What are the per-unit energy savings?	per-unit energy savings
2. What are the per-home energy savings?	per-home/building energy savings
3. What are the demand savings (coincident and non-coincident) by measure?	demand savings (coincident and non-coincident)
4. What is the common practice for normal replacement measures not covered by code?	Non-code measures

Process Evaluation Research Questions

1. Are the program management and operations efficient and effective?
2. Are program participants satisfied with the program?
3. Is the program targeting, marketing and outreach effective?
4. What are the reasons for participating and barriers to participation?
5. Are the incentive/rebate levels and effective and influential?
6. Are vendors and stakeholders satisfied with the program?
7. What are the evaluation contractor recommendations for improvements?
8. What is the level of freeridership and spillover associated with this program?

The tables in the section titled "Process Evaluation Methods" summarizes the above questions as follows:

Process Evaluation Research Question	Summarized As:
1. Are the program management and operations efficient and effective?	operational efficiency/effectiveness
2. Are program participants satisfied with the program?	participant satisfaction
3. Is the program targeting, marketing and outreach effective?	marketing effectiveness

4. What are the reasons for participating and barriers to participation?	reasons/barriers to participate
5. Are the incentive/rebate levels and effective and influential?	incentive effectiveness
6. Are vendors and stakeholders satisfied with the program?	vendor/stakeholder satisfaction
7. What are the evaluation contractor recommendations for improvements?	recommendations
8. What is the level of freeridership and spillover associated with this program?	program freeridership/spillover

Additional Research Questions (if needed)

There are no plans for market assessments, baseline research, or non-energy benefits research at this time. There are a few program evaluations that include cross-cutting evaluation activities to determine if a certain program leads to higher levels of participation in other Duke Energy programs.

1. Does this program lead to higher levels of participation in other programs?
2. What lessons can be learned from the way rate payers access the variety of Duke Energy web sites.

These questions have been added to the tables in "Process Evaluation Methods" as appropriate.

Process Evaluation Research Question	Summarized As:
Does this program lead to higher levels of participation in other programs?	other programs
What lessons can be learned from the way rate payers access the variety of Duke Energy web sites.	web site

Overall Evaluation Approach

Billing Analysis

For programs that are to be evaluated using a billing data analysis, the standard procedure that will be used involves estimating a fixed-effect panel model. This model uses data both across households (i.e., cross-sectional) and over time (i.e., time-series). With these types of data, it becomes possible to control, simultaneously, for differences across households as well as differences across periods in time. The fixed-effect refers to the model specification aspect that differences across homes that do not vary over the estimation period (such as square footage, heating system, etc.) can be explained, in large part, by customer-specific intercept terms.

In the model, the dependent variable is the customer's monthly energy usage obtained from billing data normalized by number of days in the month (to account for differences in days across months). These data will span both the pre- and post-participation period for the customer. Because the consumption data in the panel model include months before and after the installation of measures through the program, the period of program participation (or the participation window) may be defined specifically for each customer. This feature of the panel model allows for the pre-installation months of consumption to effectively act as controls for post-participation months. In addition, this model specification, unlike annual pre/post-participation models such as annual change models, does not require a full year of post-participation data. Effectively, the pre-participation data for participants are used as the control group (i.e., used to estimate the baseline), thus eliminating the need for a non-participant group.

The fixed effects model can be viewed as a type of differencing model in which all characteristics of the home, which (1) are independent of time and (2) determine the level of energy consumption, are captured within the customer-specific constant terms. In other words, differences in customer characteristics that cause variation in the level of energy consumption, such as building size and structure, are captured by constant terms representing each unique household.

Algebraically, the fixed-effect panel data model is described as follows:

$$y_{it} = \alpha_i + \lambda_t + \beta x_{it} + \delta \cdot Part_{it} + \varepsilon_{it} \quad (1)$$

where:

y_{it} = energy consumption for customer i during month t
α_i = constant term for customer i
λ_t = monthly indicator variable for time t
β = vector of coefficients
x = vector of variables that represent non-program factors causing changes in energy consumption for site i during month t (specifically weather terms)
δ = estimated program impact
$Part_{it}$ = an indicator variable that equals 1 if site i was a participant in the program during month t

ε_{it} = error term for site *i* during month *t*.

With this specification, the weather data and the monthly indicator variables capture the effect of those non-program factors that vary month to month and affect energy use for each customer.

Engineering Estimates

Engineering estimates will be developed using a combination of engineering algorithms and building energy simulation modeling. The engineering methods and data collection strategies are designed to follow the International Measurement and Verification Protocol (IPMVP).

Engineering Algorithms

Engineering algorithms for simple measures such as lighting follow the basic form:

$$kWh = units \times (Watts_{base} - Watts_{ee}) / 1000 \times hours \times (1+WHF_e)$$

$$kW = units \times (Watts_{base} - Watts_{ee}) / 1000 \times (1+WHF_d) \times CF$$

where:

$Watts_{base}$ = baseline watts per unit
$Watts_{ee}$ = efficient watts per unit
hours = annual lighting operating hours
WHF_e = waste heat factor for energy
WHF_d = waste heat factor for demand
CF = coincidence factor

For some measures, unit energy savings will be derived from building energy simulation models:

$$\Delta kWh = units \times (\Delta kWh/unit)$$
$$\Delta kW_S = units \times (\Delta kW/unit) \times CF_S$$

where:

ΔkW = gross coincident demand savings
ΔkWh = gross annual energy savings
units = quantity of measures installed
CF = coincidence factor
ΔkW/unit = electricity demand savings per unit derived from simulation modeling
ΔkWh/unit = electricity consumption savings per unit derived from simulation modeling

Building Energy Simulation Modeling

Building energy simulations will be used to estimate savings of individual projects, or to develop parameters used in engineering algorithms. The DOE-2.2 building energy simulation program will be used. When developing engineering parameters, the simulations will be conducted using a set of prototypical building models. The prototypical simulation models will be derived from the residential and commercial building prototypes used in the California Database for Energy Efficiency Resources (DEER) study, with adjustments make for local building practices and climate. Simulations will be driven by the TMY3 long-term average weather data for Covington, KY (Cincinnati Airport).

Building specific models will be developed for selected sites in the Nonresidential Smart $aver Custom program, following the IPMVP Option D Calibrated Simulation Model approach. The models will be calibrated to a combination of measure performance and billing data.

Impact Analysis Reconciliation

For programs that involve a billing data analysis as well as an engineering analysis to determine program impacts, a comparison will between the results of the two will be made to determine if there is a statistically significant difference between them. If there is, then the model in equation will change the participation variable from an indicator variable to the engineering-based savings for that customer (i.e., a statistically-adjusted engineering or SAE model). This will provide further information on the difference between the estimates. Since the billing data use all participants (rather than a sample as is usually the case with the engineering analysis), and uses actual usage to derive impacts, for cases where there are statistically significant differences, the billing analysis is often assumed to provide the most accurate estimate of the effect of the program.

Since the billing data are based upon monthly energy use (kWh), it is not possible to derive the demand (kW) savings from this analysis. To develop these estimates, the ratio of the kW to kWh savings found in the engineering analysis will be applied to the kWh estimates from the billing analysis to get a statistically adjusted estimate of demand. Billing analysis also provides the team with a means to assess take-back effects.

Process Evaluations

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

1. Reviewing program materials and methods of operation
2. Holding an evaluation project initiation meeting with Duke Energy to review all study objectives
3. Conducting interviews with program managers and implementers
4. Conducting interviews with trade allies, partners, key managers and implementers
5. Designing interview and survey instruments
6. Conducting surveys with participants and/or non-participants

7. Analyzing process evaluation data
8. Developing process evaluation reports

These activities are described below and apply to the evaluation efforts associated with the process evaluation for each program being assessed. During the planning process the specific researchable issues on which each study will focus will be established and the process evaluation plan will be designed to specifically address those issues.

1. Review program materials and methods of operation

Early in the evaluation process, the evaluation team will request program materials and begin a review of all available information to familiarize our team with the operations of the program. We like to gain as much knowledge as possible prior to launching the process evaluation field efforts. This includes reviewing all program-specific documents and incorporating this information with the verbal information obtained during discussions with Duke Energy and discussions with the program implementers.

Together, the review of the documents collected, linked with the verbal information obtained from managers, provides the foundation for a number of activities, including: 1) identification of researchable issues for the process evaluation, 2) obtainment of information needed to start the development of interview and survey protocols and instruments, 3) identification of appropriate analytical methods. Typically we examine between 2 and 6 documents per program during this task.

2. Hold an evaluation project initiation meeting to review study objectives

The evaluation team will meet Duke Energy to review the evaluation efforts, finalize general evaluation plans, and develop program-specific plans. The project initiation meeting will be preceded by a conference call with the Duke Energy evaluation managers to review each project and discuss any desired refinements to the overall activities.

Through the initial scheduling process, we will work to identify key individuals that will serve as information sources. Typically these are the Duke Energy evaluation and program managers and others. These are often the same people who are responsible for cost-effective program operations and program delivery and interaction with the market. If possible, we will want to hear from several of these individuals during the initiation meeting, but we will follow up with all identified individuals as necessary.

During the project initiation meeting we will review the upcoming work in detail. We will discuss the programs design, operation, and timing. We will work with Duke Energy to identify researchable issues for each program with the program implementers (through follow up discussions as necessary) to reach an agreement on the issues that will be incorporated into each program's evaluation. The researchable issues will be the dominant focus of the process evaluation efforts. Through this process, we will ensure that key researchable issues are not missed during the planning phase.

3. Conduct interviews with program managers and implementers

The evaluation team will also conduct formal interviews with program managers and implementers to obtain a detailed level of knowledge about each program. This is one of the most important tasks in the process evaluation effort. At this point in the study, the evaluation team will be familiar with the program's general program processes and the program managers. We will understand the general operational systems and procedures of the program, but will need additional information on the design and operations of these systems at a level of detail needed to conduct a process evaluation.

Through our formal interviews, we will explore the detailed implementation process associated with each program. We will also discuss intended program designs, operational procedures, marketing and outreach efforts, tracking and data handling systems, interactions with contractors, allies, and participants' application procedures. (Note that the California Evaluation Framework, which was developed under the guidance of Nick Hall at TMW, provides additional details on standard industry practices on the investigative nature of the process evaluation. To minimize the length of this write-up, we have not included all of this information here.)

To guide these interviews, the evaluation team will develop interview protocols that identify who will be interviewed, and each of the questions to be asked of each manager. This protocol will be provided to the managers prior to the interview.

While these interviews are primarily to serve as the initial program-level process evaluation information gathering task, it is also the time at which we will go over the program theories and logic models (if available) with the program managers to identify needed changes. The interview questions and the manager's responses will serve as one of the data sources for the process evaluation's analysis efforts. The responses will also help set the stage for the identification of the issues to be addressed during the interactions with the trade allies, contractors, participants and non-participants.

4. Conduct interviews with trade allies, partners, key managers and implementers

For a few of the program evaluations, interviews will be conducted with a sample of partners, trade allies and program implementation staff (note that the specific programs and targeted groups will be identified in the program-by-program planning process). This task is where skilled process interviewers are required. These interviews will focus on the program's design, operations, operational conditions, the interaction between the ally, the program and the participant, the service stream and the activities in that stream, the influence of the program and the ally on the participants' decision to take actions, and other considerations. In addition, the interviews will focus on the interviewee's opinions about which parts of the program work best and least well, and what kind of recommendations are suggested by the interviewee.

We will work with Duke Energy to identify the population of key allies for the interview sample. The key ally sample will be a targeted sample drawn to get at allies that are most involved with the program being evaluated. This allows us to identify a set of "must interview" allies that have been or are significantly involved in the program and who consequently should be high priority interview targets. If Duke Energy can identify a set of high-priority allies, we can identify these allies as interview targets. The remaining key allies not included in the interview sample will be put in the non-key ally sample and a random assignment of the non-key ally sample will be

conducted to develop a priority list of sample targets for the ally survey. These approaches allow us to obtain a strong key ally sample and follow-up with a strong ally sample of the remaining key and non-key allies.

The interviews will follow a prescribed protocol that guides the interview to address the key researchable issues. The protocol and the questions to be asked will be developed by the evaluation team and reviewed by Duke Energy managers prior to field implementation. The interviews will be scheduled by the evaluation team to be convenient to the interviewee. The interviews may be recorded to preserve a record to support the analysis, but maintained as confidential information. Process evaluation results are typically confidential so that the interviewee will provide opinions and information that are objective and accurate, without concern that their comments will be linked to them as an individual. However, all issues, comments and concerns, as well as interviewee recommendations for program changes, are reported to Duke Energy.

5. Design interview and survey instruments

A separate interview or survey protocol and instrument will be drafted for each of the targeted programs and survey groups as appropriate for each program (allies, participants and non-participants). The protocols and instruments for the allies will focus on a wide range of design, management and operational issues. The surveys with participants will focus on the participation experience, the ability of the program to help the customer, program and program-component satisfaction, ability of the program to accomplish the reasons for participation, actions that would have been taken without the program, and services that the participants indicated to be of values. The development of the participant survey instruments will also be fed by the results of the program managers' interviews and the trade ally interviews and surveys. Typically these interviews and surveys identify a range of issues that need to be tested or assessed in the participant survey. The non-participant survey will focus on customer perceptions of the program, the value of the program, the ability of the program to understand and serve a customer need, program design and operational issues, and the reasons for non-participation. This survey will also explore program changes that can be expected to increase participation and satisfaction rates among the non-participants.

For each of these data collection efforts, Duke Energy managers will be given the opportunity to review and comment on the protocols and the interview and survey data collection instruments.

These instruments and protocols will be used to guide all data collection efforts. Our primary data collection approaches will employ in-depth interviews and surveys, linked to document and records reviews and analysis. All data collection efforts involving key managers or staff, contractors, customers and trade allies will be guided by protocols and instruments that will be reviewed by Duke Energy prior to their use. This is a critical step. This step identifies the information that will be collected to feed the process, analysis, and recommendation efforts.

6. Conduct surveys with participants and/or non-participants

In this task we will conduct the process surveys with the participants and non-participants as appropriate. All participant surveys will be coordinated with the impact evaluation team to make sure impact questions are included in the survey as needed. This is particularly important for

evaluations that use engineering analysis and modeling approaches that must be calibrated to the participants' use conditions. In addition, all non-participant surveys will be coordinated with the any planned market assessment efforts to minimize data collection costs.

At the kick-off meeting we will discuss and confirm the contact standards in which the process or the impact evaluation can contact a participant. Typically, participants are given an option to participate in the evaluation effort (any part of it). In addition, we have employed a 3 to 5 contact attempt (at different times of the week and days of the week) standard for reaching participants before dropping a participant and adding another contact to the sample.

Participant sample sizes will be determined based on participation in the programs (as well as by measure, if needed). Generally, where ramp up of the program is slow, sample sizes are small. In general, however, participant sampling for process evaluation efforts will employ a 90% +/- 10% level of precision at the program level, but may be expanded or contracted depending on the level of reliability needed for each program, the needs of the impact evaluation effort (specifically NTG estimates), and the available budget for that effort. The data collection approach for the participant is expected to be a random assignment approach across the programs based on downloads from the participant tracking records.

We may also conduct non-participant surveys. We will work with Duke Energy to augment this effort with any needed non-participant efforts, as necessitated by the researchable issues for the process evaluation effort. For non-participants we have used several sampling approaches in the past, including residential neighbor or neighborhood approaches, residential income-certified approaches, commercial business size and type matching approaches, marketing contact approaches or other approaches. When non-participant surveys are indicated, we will work with Duke Energy to identify the best approach for each program.

Surveys with participants will focus on a wide range of issues including their experiences with the program, their reasons for participation, their satisfaction with the program and the service components provided within the program. The survey will inquire about the most and least valuable parts of the program and inquire about their recommended changes. As noted above, surveys will also ask about actions taken and measure use conditions when energy impact estimates must be calibrated to participant use conditions.

Non-participant surveys focus attention on the reasons for non-participation and their perception of the needs for the services provided. These surveys also focus on marketing and outreach efforts and opportunities and ways that Duke Energy can motivate additional participation. When impact estimates need to be adjusted for non-participant considerations, these surveys also focus on actions they have taken on their own, and the measure use conditions associated with those actions.

During the survey development process, Duke Energy managers will be given the opportunity to include additional questions in the participant and non-participant survey instruments. No surveys will be launched prior to the approval of the protocol.

7. Analyze process evaluation data

This task covers a wide range of analytical efforts employing analysis strategies and systems that the evaluation team has used successfully for over many years and on which the California Evaluation Protocols are based. It includes analysis of the following types of information consistent with the researchable issues identified for the assessment, and structuring the analysis in a way that allows a documentation of the program's structure and operation, an assessment of these conditions, and the development of recommendations to improve the program.

This assessment includes:

- ✓ Analysis of program materials, manager interviews, ally interviews and surveys, participant interviews and non-participant interviews to understand the organization and operations of the programs in order to identify strengths and weaknesses and make recommendations for program changes.
- ✓ Analysis of marketing materials (when requested) to determine their strengths and weaknesses and coverage to make recommendations on ways to improve the marketing efforts or materials.
- ✓ Analysis of ally interview and survey results to identify strengths and weaknesses in the relationships and operational conditions between the programs and the contractors and allies who help make the programs work well for their customers, the utility and themselves.
- ✓ Analysis of the participant information and survey results to identify drivers of satisfaction and their experiences with the programs from the view of the most important person in the chain of events: the customer who participates. This involves assessing a wide range of participant information and understanding their personal experiences and opinions about the programs, including ways that they think the program can be improved.
- ✓ Analysis of non-participant information to identify the barriers to participation and to assess the program's ability to satisfy customer needs. This analysis will result in the development of recommendations that can be expected to increase participation rates and strengthen program acceptance.

The primary purpose of the analysis efforts is to feed the development of actionable program change recommendations that can be expected to improve the performance and cost effectiveness of the programs.

Much of this analysis is basic statistical comparisons of data collected and the professional assessment of expressed opinions by managers, allies, participants and non-participants. For in-depth statistical analysis we use SPSS and can covert output files to SAS or Excel or in other requested formats.

8. Develop Process Evaluation Reports

The evaluation team will deliver both a draft and final process evaluation write-up for each program. The draft report will be provided in time to be reviewed by Duke Energy and their consultant team, so that comments can be provided to the evaluation team. Following the receipt of comments, the report will be finalized into the draft final report. Once Duke Energy accepts the report, it will be made into a final report. As always, the evaluation team is open to other

comments from key Ohio or program/portfolio-associated stakeholders including Commission contractors used to help oversee the evaluation efforts. We recognize that in many cases the regulatory body in the state will request to review draft reports and provide comments prior to the final draft report, and we will work with the Ohio Commission and their contractors to meet the needs of all stakeholders.

Present Evaluation Results
In this task key members of the research team may travel to Duke Energy and present the results of the study to Duke Energy managers and other information consumers. The presentations will typically consist of a PowerPoint slide show of the evaluation approach, key findings, and a review of the evaluation recommendations. Presentation locations and dates will be arranged by Duke Energy.

Impact Evaluation Methods by Program

This section describes the impact evaluation methods by program (and measure if appropriate) and discusses why the selected method was chosen over other reasonable alternatives.

Appliance Recycling

The impact evaluation will use a participant actions-based approach to evaluate the energy impacts of the program, linked to a new and used market effects impact adjustment for estimating net grid-based energy impacts. This assessment will also include an in situ metering assessment to determine the energy consumption of the appliance collected from the home.

My Home Energy Report

While the foundation of the billing analysis will follow the general approach in equation 1, there is a slight difference due to the characteristics of the program. Since all participants (i.e., the treatment group) participate at the same time, estimating the model without a control group of non-participating customers results in a perfect correlation between the participation variable and the monthly indicator variables and weather variables. In other words, the lack of distribution of the treatment data across customers prevents the differentiation of program effects from non-program effects. Therefore, the billing analysis for this program will include both the treatment group and a non-treatment control group that will be controlled for prior participation in other programs as well as follow on offers.

Home Energy Solutions

The billing analysis for this program will use the specification expressed in equation 1. The billing analysis will also take advantage of both the whole-premise interval metered data as well as the HVAC system run-time information collected from the in-home energy management system.

Energy Efficiency Education for Schools Program

The billing analysis for this program will use the specification expressed in equation 1.

Engineering equations will be derived for each distributed by the program, which include CFLs, low-flow showerheads, faucet aerators, outlet/switch gaskets, water temperature card and LED night lights.

The combined billing and engineering analysis will be done to provide independent estimates of savings. The billing analysis is based on actual consumption data, and will be the primary evaluation method. However, given the potential for low savings, the billing analysis may be inconclusive and the engineering analysis will be used as a backup strategy.

Low Income Neighborhoods

The billing analysis for this program will use the specification expressed in equation 1.

Engineering analysis for the Low Income Neighborhoods program will use a simplified engineering approach that incorporates field monitoring of replaced refrigerators. Power meters will be installed directly to the old refrigerators in the customers' homes. Impact estimations will be calculated by subtracting the new refrigerator's energy consumption, provided by the manufacturer, from the energy consumed by the customer's existing refrigerator as measured by the power meter. The availability of field monitored data collected by program implementers as a component of the screening process for refrigerator replacements makes the engineering approach feasible. Both approaches will be used and the results will be combined as necessary.

Non-Residential Energy Assessments

Engineering analysis for the Non-Residential Energy Assessments program will use a simplified engineering approach. Simple engineering equations based on the draft Ohio TRM will be used for measures covered in the TRM. For non-TRM measures, simplified engineering equations derived from secondary research on industrial measures will be used.

Program participation is expected to be small, making a billing analysis impractical. The relatively small expected savings for this program do not support field M&V activities.

Power Manager

The TecMarket Works team is not responsible for the impact evaluation of this program. Rather, the TecMarket Works team reviews the impact evaluation conducted internally by Duke Energy staff, to ensure that the approach is consistent with accepted evaluation procedures.

Impact estimates during Power Manager load control periods are based upon models developed for the natural duty cycle of M&VAC units. Natural duty cycle models are specified and estimated individually for M&V AC units to better capture the unique dependence of duty cycle on temperature and humidity characteristic of each AC unit. A limited dependent variable model specification is adopted for hourly duty cycle, the independent variable in the models. Candidate specifications for dependent variables in the models include temperature averaged over the prior 2-hour, 4-hour, and 6-hour intervals, and a weighted temperature average with declining weights over the previous six hours. Candidate specifications also include similar sets of averages based on temperature-humidity index (THI) and heat index (16-element polynomial). Models are estimated with the SAS procedure QLIM. The dependent variable specification selected for an AC unit is based on fit diagnostics from hourly model fits over the typical load control hours,

2:00–6:00 PM. For the selected model, distinct parameters are estimated in each hour of interest, resulting in a set of hourly natural duty cycle fits for each M&V AC.

Simulation with M&V natural duty cycle models is used to determine average load reduction per household within high and low M&V strata during each hour of load control and for each PM cycling strategy. These strata results are combined with the population weights to estimate average load reduction per household in the PM population. The potential load impacts estimated in this manner represent the load reduction which would be achieved if all switches controlled as expected. Impact results for PM load control in the Midwest are obtained by simulation with the Midwest M&V sample, and impact results for the PM load control in the Southeast are obtained by simulation with the Southeast M&V sample.

The simulation procedure is very similar for the two basic PM control strategies, Target Cycle and fixed cycling. In a fixed cycling simulation, the same specified shed percentage is applied to all AC. At the start of a target cycle simulation, a shed percentage for the specified hour (and day) of load control is calculated for each AC from information specific to that unit and the load reduction target (1.5 kW or 1 kW). These shed percentages remain the same throughout the simulation. Other than this, the simulation procedure is the same for Target Cycle and fixed cycling.

A single realization in the simulation is generated by a random draw of residuals for each of the M&V natural duty cycle model fits, which are evaluated at the temperature and humidity of the control hour (and day). This gives a set of simulated natural duty cycles appropriate for the control hour. Load reduction for each M&V AC is calculated as follows:

Duty cycle reduction = MAX[Duty cycle - (1 – Shed percentage), 0]

*Load reduction = Connected load * Duty cycle reduction*

For households with multiple AC, realized load reduction is aggregated to the household level by summing load reduction from all household AC. These realized load reductions are averaged within the strata, to produce single realizations of average load reduction per household within both high and low strata. These two sample averages constitute the result from one pass through the simulation corresponding to one draw of model residuals.

Several thousand passes through the simulation are performed to adequately capture the variation in average load reduction within strata that is consistent with our duty cycle models and M&V sample sizes. The results accumulate into distributions of sample averages for both high and low strata. The grand means of these distributions are the most significant output from a simulation run. They are the estimates of average load reduction per household in the high and low strata for the specified control hour and cycling strategy.

PowerShare

The TecMarket Works team is not responsible for the impact evaluation of this program. Rather, the TecMarket Works team reviews the impact evaluation conducted internally by Duke Energy staff, to ensure that the approach is consistent with accepted evaluation procedures.

The approach used by Duke Energy consists of the estimation of a M&V baseline load shape (MVB) for each customer, based upon non-event data. The load shed by the customer during an event is estimated by using the MVB to simulate the customer's load during the event period would be if there was no event. This is compared to the actual load curve of the customer to determine the amount of load shed. The MVB load is needed for settlement, regulatory reporting purposes, and/or to verify that pledged reduction levels are achieved. The details of the MVC are discussed below.

The development of the MVB consists of the following steps:

1) Collecting and processing interval load data from customer meters and designation of event days and quiet periods (the quiet periods are identified by the customer).

2) Estimation of a statistical model that relates hourly energy consumption to:
   - A Fourier transform of hour of the day
   - A Fourier transform of hour of the week
   - A Fourier transform of hour of the month
   - Temperature Humidity Index
   - Binary variables for NERC Holidays and quiet periods, if appropriate
   - Interactions between the variables

   Data from event days and quiet periods are not included in the data used to estimate the model. Data from event days and generator test days are excluded from the data used to estimate the model. Independent variables are constructed to model quiet periods and NERC holidays as distinct from "normal" days.

3) To determine the what the customer's load would be during an event period had there been now event, the values for the independent variables during an event period are used within the statistical model developed in the second step. The statistical model is also used to determine the customer's load during a system peak day by using the peak day weather conditions rather than the actual event day weather conditions.

4) The load curtailed by the customer is then estimated by taking the difference between the load curve simulated by the statistical model for both actual event day and system peak day weather conditions and the customer's actual load curve during the event period in question.

Residential Energy Assessments

The billing analysis for this program will use the specification expressed in equation 1. The billing analysis was chosen over an engineering analysis since it is based on actual consumption data. Given Duke Energy's approach to targeting higher yield customers, it is important to include billing analysis in the evaluation approaches. The savings are expected to be large

enough to support a billing analysis. Engineering supported by field M&V was too expensive, given the relative importance of this program to the overall portfolio due to historical participation.

Residential Smart $aver HVAC

The billing analysis for this program will use the specification expressed in equation 1.

The engineering analysis conducted for the Residential Smart $aver program will consist of building energy simulation modeling of prototypical homes, with key engineering parameters developed from pre/post monitoring of a sample of HVAC units.

The combined billing and engineering analysis will be done to provide independent estimates of savings. The billing analysis is based on actual consumption data, and will be the primary evaluation method that incorporates occupant behavior relative to the use of the HVAC system. The engineering analysis will be incorporated into the billing analysis as engineering priors in a statistically adjusted engineering (SAE) analysis.

Smart $aver CFLs

The engineering analysis conducted for the Smart $aver CFL program will consist of simplified engineering equations, with key parameters developed from field monitoring. Customer surveys will be used to estimate the in-service rate.

Billing analysis will not be used, since the impact of a CFL is small relative to the total consumption, and may not be observable in a billing analysis. The engineering analysis will be supported by field M&V, consistent with the IPMVP.

Smart $aver CFLs: Property Managers

The engineering analysis conducted for the Smart $aver CFL Property Manager program will consist of simplified engineering equations, with key parameters developed from field monitoring. Customer surveys will be used to estimate the in-service rate.

Billing analysis will not be used, since the impact of a CFL is small relative to the total consumption, and may not be observable in a billing analysis. The engineering analysis will be supported by field M&V, consistent with the IPMVP.

Smart $aver Prescriptive and Custom

Engineering analysis for the Non-Residential Smart $aver program will use a combination of engineering equations and building energy simulation modeling. Important measures in the prescriptive component of the program are expected to include commercial lighting and variable speed drives. The Custom component of the program is expected to include lighting measures not covered under the prescriptive component, HVAC equipment and controls, new construction projects, and industrial processes. A combination of engineering equations and building energy simulation modeling will be applied to the custom projects. Field measurements will support the engineering analysis consistent with the IPMVP.

Engineering approaches were selected over billing analysis to provide better insight into individual measure savings. Given the wide variety of program participants and affected facilities, it is not clear the savings will be sufficient as a fraction of the total consumption to support a billing analysis.

Impact Evaluation: Data Collection Methods

This section presents the data collection methods used to address each Impact Evaluation Research Question above.

Appliance Recycling

Table 15. Impact analysis method and data collection method for each Impact Evaluation Research Question for Appliance Recycling

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering equation informed by in-situ metering	In-situ monitoring of all replaced refrigerators by the implementer
per-home/building energy savings	Same as above (one measure per home)	In-situ monitoring of replaced refrigerator
demand savings (coincident and non-coincident)	Engineering equation informed by in-situ metering	In-situ monitoring of replaced refrigerator

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Appliance Recycling

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

My Home Energy Report

Table 16. Impact analysis method and data collection method for each Impact Evaluation Research Question for My Home Energy Report

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	Billing Analysis	Pre/post billing from all participants and a control group. Weather data (temperature, humidity, dew point, HDD, CDD) for the entire period. Report date for each treatment customer. Participation in other Duke Energy programs
demand savings (coincident and non-coincident)	N/A	

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for My Home Energy Report

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Home Energy Solutions

Table 17. Impact analysis method and data collection method for each Impact Evaluation Research Question for Home Energy Solutions

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	Billing Analysis	Pre/post billing from all participants and a control group. Weather data (temperature, humidity, dew point, HDD, CDD) for the entire period. Report date for each treatment customer.
demand savings (coincident and non-coincident)	N/A	

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Home Energy Solutions

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Energy Efficiency Education for Schools Program

Table 18. Impact analysis method and data collection method for each Impact Evaluation Research Question for the Energy Efficiency Education for Schools Program

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	Billing Analysis	• Pre/post billing from all participants • Weather data (temperature, humidity, dew point, HDD, CDD) for the entire period. • Participant date for each customer.
per-home/building energy	Engineering Analysis	Mail survey of homes

savings		receiving kit
demand savings (coincident and non-coincident)	Engineering Analysis	kW per kWh factor derived from engineering analysis applied to billing analysis

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Energy Efficiency Education for Schools Program

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Low Income Neighborhoods

Table 19. Impact analysis method and data collection method for each Impact Evaluation Research Question for Low Income Neighborhoods

Note: The impact evaluation for the Low Income Neighborhood program will be developed after program participation is gauged at a minimum of 6 months following program administration. With sufficient participants, a billing analysis will be conducted where energy usage for each customer will be analyzed before and after their participation to determine if they have decreased their energy consumption as a result of their participation. If participation is lower than expected, savings estimates based on engineering algorithms and participant surveys can be conducted.

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	TBD	TBD
per-home/building energy savings	TBD	TBD
demand savings (coincident and non-coincident)	TBD	TBD
Non-code measures	TBD	TBD

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Low Income Neighborhoods

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Non-Residential Energy Assessments

Table 20. Impact analysis method and data collection method for each Impact Evaluation Research Question for Non-Residential Energy Assessments

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering Equations	Phone survey of participants; secondary research
per-home/building energy	Sum of measure savings	Same as above

savings	installed at each site	
demand savings (coincident and non-coincident)	Engineering Equations	Same as above

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Non-Residential Energy Assessments

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Power Manager

Table 21. Impact analysis method and data collection method for each Impact Evaluation Research Question for Power Manager

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	N/A	
demand savings (coincident and non-coincident)	Review of Duke Energy's evaluation	

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Power Manager

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

PowerShare

Table 22. Impact analysis method and data collection method for each Impact Evaluation Research Question for PowerShare

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	N/A	
demand savings (coincident and non-coincident)	Review of Duke Energy's evaluation	

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for PowerShare

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Residential Energy Assessments

Table 23. Impact analysis method and data collection method for each Impact Evaluation Research Question for Residential Energy Assessments

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	Billing Analysis	• Pre/post billing from all participants • Weather data (temperature, humidity, dew point, HDD, CDD) for the entire period. • Participant date for each customer.
per-home/building energy savings	Engineering Analysis	Phone survey of a sample of customers
demand savings (coincident and non-coincident)	Engineering analysis	kW per kWh factors derived from engineering analysis

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Residential Energy Assessments

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Residential Smart $aver HVAC

Table 24. Impact analysis method and data collection method for each Impact Evaluation Research Question for Residential Smart $aver HVAC

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	N/A	
per-home/building energy savings	Billing Analysis	• Pre/post billing from all participants • Weather data (temperature, humidity, dew point, HDD, CDD) for the entire period. • Participant date for each customer. • Engineering estimates for each customer
per-home/building energy savings	Engineering Analysis based on DOE-2 simulations	Onsite verification visits at a sample of HVAC units Post installation monitored data on a sample of HVAC units
demand savings (coincident and non-coincident)	Engineering Analysis	Same as per home energy savings

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Residential Smart $aver HVAC

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Residential Smart $aver CFLs

Table 25. Impact analysis method and data collection method for each Impact Evaluation Research Question for Residential Smart $aver CFLs

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering equations	Phone survey of a sample of participants; light logging at a subsample of participants
per-home/building energy savings	Engineering equations	Same as above
demand savings (coincident and non-coincident)	Engineering equations	Same as above

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Residential Smart $aver CFLs

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Residential Smart $aver CFLs: Property Managers

Table 26. Impact analysis method and data collection method for each Impact Evaluation Research Question for Residential Smart $aver CFLs: Property Managers

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering equations	Phone survey of a sample of participants; light logging at a subsample of participants
per-home/building energy savings	Engineering equations	Same as above
demand savings (coincident and non-coincident)	Engineering equations	Same as above

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Residential Smart $aver CFLs: Property Managers

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Smart $aver Prescriptive

Table 27. Impact analysis method and data collection method for each Impact Evaluation Research Question for Smart $aver Prescriptive

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering equations and building energy simulation modeling	Field monitoring at a sample of 60 participant sites of key engineering parameters for engineering equations.
per-home/building energy savings	Sum of savings by building.	Same as above
demand savings (coincident and non-coincident)	*Engineering equations*	*Field monitoring of key* engineering parameters for engineering equations.
Non-code measures	A subset of the impact evaluation method.	Secondary research and interviews with design professionals and trade allies to establish common practice.

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Smart $aver Prescriptive

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Smart $aver Custom

Table 28. Impact analysis method and data collection method for each Impact Evaluation Research Question for Smart $aver Custom

Impact Evaluation Research Question	Impact Analysis Method	Data Collection Method
per-unit energy savings	Engineering equations and building energy simulation modeling	Field monitoring at a sample of 10 program year 2012 participant sites of key engineering parameters for engineering equations. Whole building onsite surveys for building energy simulations.
per-home/building energy savings	Whole building simulation model or sum of savings by building.	Same as above
demand savings (coincident and non-coincident)	Engineering equations and building energy simulation modeling	Field monitoring of key engineering parameters for engineering equations and *building energy simulations.* Whole building onsite surveys and billing data for building energy simulations

Non-code measures	A subset of the impact evaluation method.	Secondary research and interviews with design professionals and trade allies to establish common practice.

Source of data and analysis plan for determining inputs for TRC cost effectiveness test for Smart $aver Custom

Duke Energy conducts the TRC analysis internally using the evaluation team's inputs of program impacts and freeridership.

Process Evaluation Methods By Program

This section describes the process evaluation methods by program and discusses why the selected method was chosen over other reasonable alternatives.

Appliance Recycling

The process evaluation will consist of a review of the program operations and practices, including its management practices, marketing materials and efforts, processing of units, including the pick-up and handling of the units, the scheduling systems and approaches and tracking and reporting systems. The evaluation will also assess the participant screening approach used during customer contact and scheduling efforts to make sure that the screening approach filters out or appropriately limits participation from customers who would have effectively disposed of their units without the program.

My Home Energy Report

TecMarket Works will conduct in-depth management interviews with program management to assess program operations. Customer surveys will be conducted with those that receive the report to gauge awareness, satisfaction with the reports and the messages, and changes in behaviors.

Home Energy Solutions

TecMarket Works will conduct in-depth management interviews with program management to assess program operations. Participant surveys will be planned after the program is approved and there is sufficient participation.

Energy Efficiency Education for Schools Program

Participant surveys are conducted through a paper questionnaire provided in the energy efficiency kit sent to participating student families. Duke Energy supplies survey results to TecMarket Works for analysis. The survey focuses on program satisfaction and kit measure use and conditions.

TecMarket Works will also conduct in-depth management interviews with program management, third-party implementers (National Theatre for Children), and Niagara (EE kit providers) to assess program operations. In addition, a random sample of teachers and administrators from participating schools and administrators from non-participating schools will be selected for short surveys to assess program operations, materials, barriers, and incentives.

Low Income Neighborhoods

The process evaluation will include interviews with program management, program implementation staff and any third party contractors assisting with the program operations. Participant surveys will also be conducted to assess customer satisfaction, Duke Energy partner communications and staff, their interactions and expectations with the partners, satisfaction with the services and measures provided and questions about behavioral changes made to reduce consumption.

Non-Residential Energy Assessments

TecMarket Works will conduct in-depth management interviews with program management to assess program operations. TecMarket Works will develop a customer survey for the program participants to be implemented after they have had time to follow at least some the recommendations offered during the energy audit of their business or facility. The survey will ask the customer for information specific to each of the recommendations included in the audit report.

Power Manager

There is no need for a full process evaluation of Power Manager in 2012. TecMarket Works may conduct a customer survey for the program participants to be implemented within 3 days after they have experienced a control event and will include questions regarding the impact of the events on their use of their air conditioner as well as the impact of the event on their comfort.

PowerShare

There is no need for a full process evaluation of PowerShare in 2012 unless required by PJM.

Residential Energy Assessments

TecMarket Works will conduct in-depth management interviews with program management to assess program operations. TecMarket Works will develop a customer survey for the program participants to be implemented after they have had time to install at least some of the measures in the kit and to follow the recommendations offered during the home energy audit. The survey will ask the customer for information specific to each of the measures included in the Energy Efficiency Starter Kit. In addition, the participant will be asked to report the actions that they have taken that were caused in whole or in part by the recommendations provided in the audit report. For each measure that was installed and for each recommendation taken, the participant will be asked questions pertaining to their intentions to take that action without the intervention of the program.

Residential Smart $aver: HVAC

TecMarket Works will conduct in-depth management interviews with program management and third-party vendors to assess program operations. TecMarket Works will develop a customer survey for the program participants to be implemented after they have had installed the rebated equipment. The survey will ask the customer for information about the equipment rebated and their satisfaction with the program.

Smart $aver CFLs

TecMarket Works will conduct in-depth management interviews with program management and third-party vendors to assess program operations. TecMarket Works will conduct a customer survey that will ask the customer for information about the CFLs, installation rates, and their satisfaction with the program and Duke Energy.

The non-participant survey will ask the customer for information about CFLs, light bulb preferences, and their satisfaction Duke Energy. Half of both participant and non-participant surveys will be targeted to low income residential customers.

Smart $aver CFLs: Property Managers

TecMarket Works will conduct in-depth management interviews with program management and third-party vendors to assess program operations. TecMarket Works developed a customer survey for the program participants (property managers) to be implemented after they have installed the free CFLs. The survey will ask the customer for information about the CFLs, installation rates, and their satisfaction with the program and Duke Energy.

TecMarket Works will develop a customer survey for the program participants (property managers) to be implemented after the program manager has installed the free CFLs. The survey will ask the occupant for information about the CFLs, removal rates, and their satisfaction with the program and Duke Energy.

Smart $aver (Prescriptive and Custom)

TecMarket Works will conduct in-depth management interviews with program management to assess program operations. TecMarket Works will develop a customer survey for the program participants to be implemented after they have had time to work with the new measures installed at their business or facility.

Process Evaluation: Data Collection Methods

Appliance Recycling

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Participant surveys Third-party vendor interviews
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys

My Home Energy Report

Table 29. Process analysis method and data collection method for each Process Evaluation Research Question for My Home Energy Report

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	N/A	
reasons/barriers to participate	Qualitative and quantitative assessment of interview results	Participant surveys
incentive effectiveness	N/A	
vendor/stakeholder satisfaction	N/A	
recommendations	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	N/A	
other programs	Qualitative assessment of interview results Secondary research	Management interviews Participant surveys
web site	Secondary research	Management interviews

Home Energy Solutions

Table 30. Process analysis method and data collection method for each Process Evaluation Research Question for Home Energy Solutions

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	N/A	
vendor/stakeholder satisfaction	N/A	
recommendations	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program	Qualitative and quantitative	Participant surveys

freeridership/spillover	assessment of interview results	
other programs	Qualitative assessment of interview results Secondary research	Management interviews Participant surveys
web site	Secondary research	Management interviews

Energy Efficiency Education for Schools Program

Table 31. Process analysis method and data collection method for each Process Evaluation Research Question for Energy Efficiency Education for Schools Program

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys Teacher and school administrator surveys
marketing effectiveness	N/A	
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Teacher and school administrator surveys Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Participant surveys Teacher and school administrator surveys Third-party vendor interviews
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Teacher and school administrator surveys Third-party vendor interviews
recommendations	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Teacher and school administrator surveys Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys

Low Income Neighborhood

Table 32. Process analysis method and data collection method for each Process Evaluation Research Question for Low Income Neighborhood

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews CAP agency interviews
participant satisfaction	Qualitative and quantitative	CAP agency interviews

	assessment of interview results	Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews CAP agency interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews CAP agency interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews CAP agency interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	CAP agency interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews CAP agency interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys

Non-Residential Energy Assessments

Table 33. Process analysis method and data collection method for each Process Evaluation Research Question for Non-Residential Energy Assessments

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Participant surveys
vendor/stakeholder satisfaction	N/A	
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Participant surveys
program freeridership/spillover	*Qualitative and quantitative* assessment of interview results	*Participant surveys*
other programs	Qualitative assessment of interview results Secondary research	Management interviews Participant surveys

Power Manager

Table 34. Process analysis method and data collection method for each Process Evaluation Research Question for Power Manager

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational	N/A	

efficiency/effectiveness		
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	N/A	
reasons/barriers to participate	N/A	
incentive effectiveness	Qualitative and quantitative assessment of interview results	Participant surveys
vendor/stakeholder satisfaction	N/A	
recommendations	N/A	
program freeridership/spillover	N/A	

PowerShare

Table 35. Process analysis method and data collection method for each Process Evaluation Research Question for PowerShare

Note: there will not be any process evaluation activities for PowerShare in 2012.

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	N/A	
participant satisfaction	N/A	
marketing effectiveness	N/A	
reasons/barriers to participate	N/A	
incentive effectiveness	N/A	
vendor/stakeholder satisfaction	N/A	
recommendations	N/A	
program freeridership/spillover	N/A	

Residential Energy Assessments

Table 36. Process analysis method and data collection method for each Process Evaluation Research Question for Residential Energy Assessments

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews

		Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys
other programs	Qualitative assessment of interview results Secondary research	Management interviews Participant surveys

Residential Smart $aver HVAC

Table 37. Process analysis method and data collection method for each Process Evaluation Research Question for Residential Smart $aver

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
participant satisfaction	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys

Residential Smart $aver CFLs

Table 38. Process analysis method and data collection method for each Process Evaluation Research Question for Residential Smart $aver CFLs

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
participant satisfaction	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Participant surveys

Residential Smart $aver CFLs: Property Managers

Table 39. Process analysis method and data collection method for each Process Evaluation Research Question for Residential Smart $aver CFLs: Property Managers

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Property Manager surveys
participant satisfaction	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Property Manager surveys Occupant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews

		Property Manager surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Property Manager surveys Occupant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Property Manager surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Property Manager surveys Occupant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Property Manager surveys

Smart $aver Prescriptive

Table 40. Process analysis method and data collection method for each Process Evaluation Research Question for Smart $aver Prescriptive

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Third-party vendor interviews Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Third-party vendor interviews Participant surveys

Smart $aver Custom

Table 41. Process analysis method and data collection method for each Process Evaluation Research Question for Smart $aver Custom

Process Evaluation Research Question	Process Analysis Method	Process Data Collection Method
operational efficiency/effectiveness	Qualitative assessment of interview results	Management interviews Third-party vendor interviews
participant satisfaction	Qualitative and quantitative assessment of interview results	Third-party vendor interviews Participant surveys
marketing effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
reasons/barriers to participate	Qualitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
incentive effectiveness	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
vendor/stakeholder satisfaction	Qualitative assessment of interview results	Third-party vendor interviews
recommendations	Qualitative and quantitative assessment of interview results	Management interviews Third-party vendor interviews Participant surveys
program freeridership/spillover	Qualitative and quantitative assessment of interview results	Third-party vendor interviews Participant surveys Application review

Tracking System Review

For all programs, the tracking data will be reviewed to characterize the program participation and prioritize data collection activities.

For engineering-based impact evaluations, the important measures will be identified and the impact evaluation activities will be designed to estimate savings for the measures making up the majority of the program savings. The tracking data review will include an overall assessment of data quality, identification of key missing data, and a review of the energy savings estimates and algorithms used by the tracking system. Energy savings estimates for each measure in the tracking system will be compared to program design estimates. Variations will be investigated and resolved. Hardcopy program documents will be requested to fill in key missing data and verify the accuracy of the data entry. Recommendations will be made to identify additional tracking data elements that can be used to assist in future evaluation activities.

Sampling Plan

The sampling plan is consistent across programs, and is based upon standard statistical sample design approaches. The details of the sample design are presented in the following table.

	Participants	Non-Participants	Metering
Sample frame	All participants during the year in question	Customers who meet the program eligibility but did not participate in the program	Participants installing measures identified in evaluation plan
Sample size	Based upon statistical sampling size equations. If prior information on the mean and variance of key variables, the sample size for a proportion is used, with small population correction as appropriate	Based upon statistical sampling size equations. If prior information on the mean and variance of key variables, the sample size for a proportion is used, with small population correction as appropriate	Simple random sample or stratified random sample designs are used. Sample size based on target confidence and precision, expected variation in the population and total population size, with small population correction as appropriate
Relative Precision	The targeted level of precision for the completed surveys is ±10 at a 90% level of confidence. Target precision at the program level varies according to the relative proportion of the program savings to the total portfolio savings.	The targeted level of precision for the completed surveys is ±10 at a 90% level of confidence. Target precision at the program level varies according to the relative proportion of the program savings to the total portfolio savings.	The targeted level of precision for the completed surveys is ±10 at a 90% level of confidence at the program level. Target precision at the measure level varies according to the relative proportion of the measure savings to the total program savings.

These general sample design guidelines are not a factor in the billing data analysis. For the billing data analysis, the general sample design is to estimate the model over all participants in the program. As such, there is no sample design.

Program	Data Collection Method	Sampling and Precision
Appliance Recycling	Process: participant surveys Impact: engineering estimates	Process: survey 80 out of 3,380 participants for 9.1% precision at 90% CI. Impact: 80 out of 3,380 participants for 9.1% precision at 90% CI.
MyHER	Process: participant surveys Impact: billing analysis	Process: survey 250 out of 245,209 participants for 5.2% precision at 90% CI. Impact: framed by groups and all MyHER customers.
Home Energy Solutions	Process: participant surveys Impact: billing analysis	Process: survey 80 out of 2,880 participants for 9.1% precision at 90% CI.

		Impact: framed by groups and all Home Energy Solutions participants.
Energy Efficiency Education Program for Schools	Process: participant surveys Impact: engineering estimates Impact: billing analysis	Census targeted for mailed survey. Precision will depend on response rate and program participation levels. Impact (engineering): Census targeted. Precision will depend on response rate and program participation levels. Impact (billing analysis): framed by all participants.
Low Income Neighborhood	Process: participant surveys Impact: TBD	Process: survey 80 out of 1,339 participants for 8.9% precision at 90% CI. Impact: TBD
Non-Residential Energy Assessments	Process: participant surveys Impact: engineering estimates	Process: Census targeted. Precision will depend on response rate and program participation levels. Impact: Census targeted. Precision will depend on response rate and program participation levels.
Power Manager	Process: participant surveys Impact: runtime data analysis	Process: survey 80 out of 49,492 participants for 9.2% precision at 90% CI. Impact: sample of 125 households out of 49,492 participants, analyzing runtime data from the thermostat providing 7.3% precision at 90% CI.
PowerShare	Impact: meter data analysis	Impact: meter data analysis includes all participants.
Residential Energy Assessments	Process: participant surveys Impact: engineering estimates Impact: billing analysis	Process: survey 80 out of 4,250 participants for 9.1% precision at 90% CI. Impact (engineering): 80 out of 4,250 participants for 9.1% precision at 90% CI. Impact (billing analysis): data from all participants.
Residential Smart $aver: HVAC and Additional Measures	Process: participant surveys Impact: engineering estimates	Process: survey 80 out of 7,873 participants for 9.1% precision at 90% CI.

	• Pre/post monitored data on a sample of HVAC units Impact: billing analysis	Impact (engineering): survey 80 out of 7,873 participants engineering model development. Post monitoring: 30 out of 7,873 participants for engineering model development. Precision determined from billing analysis. Impact (billing analysis): data from all participants.
Smart $aver CFLs	Process: Participant surveys Impact: engineering estimates	Two EM&V cycles have already occurred. Most recent process: surveyed 120 out of 2,636,554 participants (from PY 2011) for 7.5% precision at 90% CI. Impact: 120 out of 2,636,554 participants (from PY 2011) for 7.5% precision at 90% CI.
Smart $aver CFLs: Property Managers	Process: occupant surveys and property manager surveys Impact: engineering estimates	Process: survey 80 out of 55,000 occupants for 9.2% precision at 90%. Survey sample design for property managers still in progress, depending on population of participating property managers. Impact: 80 out of 55,000 participants for 9.2% precision at 90% CI.
Smart $aver Prescriptive	Process: participant surveys Impact: engineering estimates Impact: metering	Process: survey 80 out of 322,417 participants for 9.2% precision at 90% % CI. Impact: 80 out of 322,417 participants for 9.2% precision at 90% CI. Metering and engineering analysis. Measures and sample sizes depend on participation.
Smart $aver Custom	Process: participant surveys Impact: engineering estimates Impact: metering	Process: survey 25 out of 5,603 participants for 18.4% precision at 90% CI. Impact: Stratified sample of 10 2012 program year participants with a varying number of measures per participant for Target 10% precision at 90% CI. Metering and engineering analysis.

Reporting

The report outline follows PUCO's Evaluation Report Template. TecMarket Works developed a report template that includes all of PUCO's required information. The outline of the report template is presented in the three images below, and will be modified accordingly for the type of evaluation and the methodologies therein.

Executive Summary

Key Findings and Recommendations

The key findings and recommendations identified through this evaluation are presented below.

1.

Implementation Rates: Key Findings

Engineering Impact Estimates: Key Findings

Table 1. Summary of Program Savings by Measure

Measure	Participation Count	Ex Ante Per unit kWh impact	Ex Ante Per unit kW impact	Gross Ex Ante kWh Savings	Gross Ex Ante kW Savings

Introduction and Purpose of Study

Summary Overview

Summary of the Evaluation

Evaluation Objectives

Researchable Issues

Description of Program

Program Participation

Program	Participation Count for 2010
Non-Residential Energy Assessments	20

Methodology

Overview of the Evaluation Approach

Study Methodology

Data collection methods, sample sizes, and sampling methodology

Number of completes and sample disposition for each data collection effort

Expected and achieved precision

Description of baseline assumptions, methods and data sources

Description of measures and selection of methods by measure(s) or market(s)

Use of TRM values and explanation if TRM values not used

Threats to validity, sources of bias and how those were addressed

Evaluation Findings

Impact Evaluation

Process Evaluation

Market Analysis

Conclusions and Recommendations for Program Changes

Appendix A: Required Savings Tables

The required table showing measure-level participation counts and savings for each program is below. **Also include tables showing calculations done to achieve Adjusted Gross Savings for each program.**

Required tables will include the following (see Excel file for details):

1. Participation counts and ex ante savings estimates at the measure level for each program
2. Gross savings calculations at the measure level for each program.
    - At a minimum, *Gross Verified Savings* must be reported.
    - If additional adjustments are made, *Adjusted Gross Savings* can be reported using Option A, B, C only.

Measure	Participation Count	Verified Per unit kWh impact	Verified Per unit kWh impact	Gross Verified kWh Savings	Gross Verified kW Savings

Evaluation Schedule

Evaluation schedules are periodically adjusted for changes in program offerings, researchable issues, or evaluation goals. Below are the schedules as planned in March, 2012. However, some of the evaluation activities may be re-scheduled or canceled.

Appliance Recycling

EM&V for OH Proposed Appliance Recycling Program

This program is pending approval, therefore the expected start date is tentative

Expected Start Date*
3/1/2012

	Months After Program Implementation-->	4	6	8	10	12	14	16
Process	Interview Program Managers and Implementors	Instrument Development	Conduct Interviews	Analysis				
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis			
	Non-Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis			
	Analysis and Early Feedback				Analysis			
	Process Evaluation Report						Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14	16
Impact	Selective monitoring			Spot monitoring of refrigerators and freezers.				
	In Situ Site visits			In situ metering assessment to determine the energy consumption of 140 appliances collected from the home (70 refrigerators and 70 freezers)	Duke staff will conduct site visits at a sample of sites to verify unit installation and gather building characteristics data.			
	Data Cleaning				Data from process evaluations and On site will be analyzed and prepared for the engineering analysis			
	Engineering Estimates				Extrapolate short term monitoring data to annual consumption for refrigerator baseline. Engineering estimates of efficient refrigerator based on DOE data			
	Impact Evaluation Report						Final Report	Duke reviews and addresses report recommendations

* Equipment installed and enough participation for statistically significant results

My Home Energy Report

EM&V for OH MyHER (My Home Energy Report)

Expected Start Date
4/1/2012

	Task Completed by-->	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis					
	Participant Surveys			Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors			Instrument Development	Conduct Surveys	Analysis			
	Process Evaluation Report						Final Report	Duke reviews and addresses report recommendations	
	Task Completed by-->	4	6	8	10	12	14	16	18
Impact	Billing Analysis						A statistical billing analysis of program participants will be conducted and compared to the engineering estimates		
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

Home Energy Solutions

EM&V for OH Home Energy Solutions

This program is pending approval, therefore the expected start date is tentative.

Expected Start Date*
6/1/2012

	Months After Program Implementation >	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis					
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis				
	Non Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis				
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis				
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations		
	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Impact	Billing Analysis				Billing data request for date range of 3/1/12 - 3/1/13	A statistical billing analysis of program participants will be conducted and compared to the engineering estimates			
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Energy Efficiency Education Program for Schools

EM&V for OH Energy Efficiency Education Program for Schools

Expected Start Date*:
9/1/2011

	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis					
	Student Family Surveys			Instrument Developn	Sample Selection participant dates of 10/1/11 through 7/31/12 and Conduct Surveys	Analysis			
	Interview Program Vendors	Instrument Development	Conduct Surveys with NTC, Teachers, and School Administrators	Analysis					
	Review of NTC Presentation			(no April presentations)	On-Site Review (early May) and Analysis				
	Analysis and Early Feedback				Memo				
	Process Evaluation Report							Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Impact	Engineering Estimates					Engineering estimates of savings will be developed for efficiency actions identified through the participant surveys. Average savings per participant based on self-reported efficiency actions will be calculated			
	Billing Analysis						A statistical billing analysis of program participants will be conducted and compared to the engineering estimates.		
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

Low Income Neighborhoods

EM&V for OH Low Income Neighborhood

Expected Start Date*
3/1/2012

This program is pending approval, therefore the expected start date is tentative.

	Months After Program Implementation-->	4	6	8	10	12	14
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis			
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis		
	Non-Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis		
	Interview Program Vendors and CAP agencies	Instrument Development	Conduct Surveys	Analysis			
	Analysis and Early Feedback			Memo			
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14
Impact	The impact evaluation for the Low Income Neighborhood program will be developed after program participation is gauged at a minimum of 6 months following program administration. With sufficient participants, a billing analysis will be conducted where energy usage for each customer will be analyzed before and after their participation to determine if they have decreased their energy consumption as a result of their participation. If participation is lower than expected, savings estimates based on engineering algorithms and participant surveys can be conducted.		Gauge program participation and determine methodology				
	Impact Evaluation Report						

Non-Residential Energy Assessments

EM&V for OH Non-Residential Energy Assessments

Expected Start Date
10/1/2011

	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis					
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis				
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations		
	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Impact	Engineering Estimates				Engineering estimates of savings will be developed for efficiency actions identified through the participant surveys				
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

Power Manager

EM&V for OH Power Manager

There is no need to conduct a process evaluation in 2012, but Recency surveys will be done.

Expected Start Date*:
2/1/2012

Months After Program Implementation-->	4	6	8	10	12	14
Participant Recency Surveys (as needed)	Instrument Development	Conduct Surveys	Conduct Surveys	Analysis		
Process Evaluation Report (as needed)					Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

EM&V for OH Power Manager

Expected Start Date*
2/1/2012

Months After Program Implementation-->	4	6	8	10	12	14	16
Impact							
Operability Studies (as needed)	Duke contractors conducting field work	Duke contractors conducting field work	Duke contractors conducting field work				
A/C Cycling Study (as needed)	Duke contractors conducting field work	Duke contractors conducting field work	Duke contractors conducting field work				
Impact Analysis				Duke Energy will conduct impact estimates. Time-series framework to estimate baseline energy usage. The interval data will be analyzed to estimate load reductions during control events.			
Impact Analysis Review and Report					TMW Review of Impact Estimates in Impact Report		
Impact Analysis Report						Final Report	Duke reviews and addresses any memo recommendations

* Equipment installed, and enough participation for statistically significant results

PowerShare

EM&V for OH PowerShare

A process evaluation will only be conducted if it is required by PJM.

Expected Start Date*
1/1/2012

	Months After Program Implementation-->	4	6	8	10	12	14	16
Process	Interview Program Managers and Implementers (if needed)	Instrument Development	Conduct Interviews	Analysis				
	Participant Surveys (if needed)		Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors (if needed)		Instrument Development	Conduct Surveys	Analysis			
	Process Evaluation Report (if needed)					Final Report	Duke reviews and addresses report recommendations	
	Months After Program Implementation-->	4	6	8	10	12	14	16
Impact	Impact Analysis Review					Duke Energy will conduct impact estimates		
	Impact Analysis Report						Final Report	Duke reviews and addresses any memo recommendations

* Equipment installed, and enough participation for statistically significant results

Residential Energy Assessments

EM&V for OH Residential Energy Assessments

Expected Start Date:
10/3/2011

	Months After Program Implementation-->	4	6	8	10	12	14	16
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis				
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis			
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations	
	Months After Program Implementation-->	4	6	8	10	12	14	16
Impact	Engineering Estimates				Engineering estimates of savings will be developed for efficiency actions identified through the participant surveys Average savings per participant based on self-reported efficiency actions will be calculated.			
	Billing Analysis				A statistical billing analysis of program participants will be conducted and compared to the engineering estimates			
	Impact Evaluation Report						Final Report	Duke reviews and addresses report recommendations

Residential Smart $aver: HVAC and Additional Measures

EM&V for OH Residential Smart Saver: HVAC and Additional Measures

Expected Start Date*
3/1/2012

	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis					
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis				
	Non Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis				
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis				
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations		
	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Impact	Selective monitoring				Monitoring of whole HVAC systems and affected measures. These data will be used to inform the engineering analysis.				
	Site visits				Site visits will be conducted as part of the M&V activities				
	Data Cleaning				Monitored data will be analyzed and prepared for the engineering analysis				
	Engineering Estimates					Building characteristics data from the verification surveys, and the data from the monitoring sample will be used to develop and calibrate a series of prototypical DOE 2 models representing a range of building ages and operating modes			
	Building Simulation Modeling					The calibrated DOE-2 simulation models (for HVAC) will be run using long term average weather data for Cincinnati, OH			
	Billing Analysis					A statistical billing analysis of program participants will be conducted and compared to the engineering estimates			
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Residential Smart $aver: CFLs

EM&V for OH Residential Smart $aver: CFLs

Expected Start Date*
6/29/2011

	Months After Program Implementation-->	4	6	8	10	12	14
Process	Interview Program Managers and Implementers	Instrument Development		Conduct Interviews	Analysis		
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis		
	Non-Participant Surveys		Instrument Development	Conduct Surveys	Analysis		
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis		
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14
Impact	Engineering Estimates				Engineering estimates of savings will be developed for efficiency actions identified through the participant surveys. Average savings per participant based on self-reported efficiency actions will be calculated.		
	Impact Evaluation Report					Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Residential Smart $aver: Property Manager CFLs

EM&V for OH Residential Smart $aver: Property Manager CFLs

Expected Start Date*
8/31/2011

	Months After Program Implementation-->	4	6	8	10	12	14	16
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis				
	Participant Surveys	Instrument Development		Conduct Surveys	Analysis			
	Non-Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors (property managers)		Instrument Development	Conduct Surveys	Analysis			
	Process Evaluation Report						Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14	16
Impact	Engineering Estimates			Logger Study and Program Manager tracking data collection	Engineering estimates of savings will be developed for efficiency actions identified through the participant surveys. Average savings per participant based on self-reported efficiency actions will be calculated			
	Impact Evaluation Report						Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Non-Residential Smart $aver: Prescriptive

EM&V for OH Non-Residential Smart $aver Prescriptive

Expected Start Date*
6-1-2011

	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Process	Interview Program Managers and Implementers		Instrument Development	Conduct Interviews	Analysis				
	Participant Surveys			Instrument Development	Conduct Surveys	Analysis			
	Interview Program Vendors			Instrument Development	Conduct Surveys	Analysis			
	Process Evaluation Report						Final Report	Duke reviews and addresses report recommendations	
	Months After Program Implementation-->	4	6	8	10	12	14	16	18
Impact	Selective monitoring					Short-term monitoring of lighting systems			
	Data Cleaning					Data from process evaluations and M&V will be analyzed and prepared for the engineering analysis			
	Engineering Estimates					WECC database review	Site survey data and M&V will be used to develop engineering estimates of savings		
	Impact Evaluation Report							Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Non-Residential Smart $aver: Custom

EM&V for OH Non-Residential Smart $aver Custom

Expected Start Date*:
1/1/2013

	Months After Program Implementation -->	4	6	8	10	12	14
Process	Interview Program Managers and Implementers	Instrument Development	Conduct Interviews	Analysis			
	Participant Surveys		Instrument Development	Conduct Surveys	Analysis		
	Non-Participant Surveys (as needed)		Instrument Development	Conduct Surveys	Analysis		
	Interview Program Vendors		Instrument Development	Conduct Surveys	Analysis		
	Process Evaluation Report					Final Report	Duke reviews and addresses report recommendations
	Months After Program Implementation-->	4	6	8	10	12	14
Impact	Selective monitoring (may not be performed if valid data collected through Process Eval).			Short term monitoring of affected systems. These data will be used to inform the engineering analysis.			
	Data Cleaning			Data from process evaluations and On site will be analyzed and prepared for the engineering analysis.			
	Engineering Estimates				Building characteristics data and the data from the measurement verification will be used to develop engineering estimates of savings.		
	Impact Evaluation Report					Final Report	Duke reviews and addresses report recommendations

* Equipment installed, and enough participation for statistically significant results

Process Evaluation of the Energy Solutions @ Home Pilot Program in Ohio and South Carolina

Final Report

Prepared for
Duke Energy
139 East Fourth Street
Cincinnati, OH 45201

Draft Report: June 20, 2011
Finalized: July 26, 2011

Subcontractor

Carol Yin
Yinsight, Inc.

Submitted by:

Nick Hall and
John Wiedenhoeft
TecMarket Works
165 West Netherwood Road
Oregon, Wisconsin 53575
(608) 835-8855

TECMARKET Works

Table of Contents

Executive Summary

This document presents the evaluation report for Duke Energy's Energy Solutions @ Home Pilot Program (ES@H) as it was administered in Ohio from May 2010 through March 2011 and South Carolina from August 2010 through March of 2011.

The evaluation was conducted by TecMarket Works with assistance from Yinsight. The survey instruments were developed by TecMarket Works. The survey was administered by TecMarket Works. Yinsight (a TecMarket Works subcontractor) conducted the in-depth interviews with program management.

Summary of findings

The key findings of this evaluation are presented below:

1. The most-cited reason for non-participation in the ES@H program was the feeling that the customer already does enough in their home to save energy and participation in a program is not needed.

2. Participants at all levels of the program are following through and installing measures recommended in the phone and in-home audit. This suggests the program is influential, causing measures to be taken at all levels of participant involvement.

3. The primary motivating factor that drove participation decisions for the ES@H was the drive to reduce energy costs.

4. The primary barriers to participation in the in-home audit were a reluctance to pay the initial $50 fee as well as a perception held by the phone audit participants that the phone audit had given them enough to do without an in-home audit. Forty percent of phone audit participants felt the phone audit was influential in their decision to NOT schedule an in-home audit.

5. Satisfaction with the program is high at all participation levels. Satisfaction with Duke Energy is high for all survey respondents, participants and non-participants.

6. The freeridership rate for the in-home audit and subsequent installations is estimated to be below 20 percent.

7. Due to low program participation, gas heat customers were subsequently allowed to participate in the ES@H program. This may have negatively affected the program's cost-effectiveness.

8. The program is not as successful as anticipated at having participants move through the participation process. Fewer than one dozen out of 113 participants (less than 10%) have progressed through all the stages of the ES@H pilot, ending with the installation of one or more of the recommended measures.

Summary of Recommendations

1. Duke Energy should evaluate the cost effectiveness of the program by factoring out the costs of serving gas heat customers. This would allow Duke Energy to make a more realistic estimate of what a full-scale program would cost, relative to electric savings and gas savings independently and together.

2. Future marketing approaches, when possible, should target customers already interested in improving their homes' efficiency. Additionally, marketing approaches that counter the perception that the customer has already done enough to save energy should be considered.

3. Continue to use sub-goals at each stage of customer participation to separately gauge the success of each component. This allows Duke Energy to develop a more granular understanding of which components should be used in the design of future programs.

4. Duke Energy should consider the costs versus benefits of using community-based marketing (linking up with community groups to distribute and share materials) to advertise future implementations of the ES@H delivery mechanism.

Introduction

This document presents the evaluation report for Duke Energy's Energy Solutions @ Home Pilot Program as it was administered in Ohio from May 2010 through March 2011 and South Carolina from August 2010 through March of 2011.

The evaluation was conducted by TecMarket Works with assistance from Yinsight. The survey instruments were developed by TecMarket Works. The survey was administered by TecMarket Works. Yinsight (a TecMarket Works subcontractor) conducted the in-depth interviews with program management.

Program Description

The Energy Solutions @ Home (ES@H) pilot was designed to inform residential customers about ways to reduce energy use through building envelope improvements. Building envelope refers to the physical structure that separates the interior of the building from the outside environment. ES@H offered incentives for four specific retrofits: attic insulation, duct sealing, infiltration reduction, and duct insulation.

The first level of participation was an over-the-phone audit conducted by Duke Energy staff. Customers were asked about home characteristics such as home age and square footage, whether they had electric heat, or whether they had a pool. Customers were also asked whether there were rooms in their house that felt uncomfortable or drafty. Duke Energy staff discussed the ES@H pilot with the customer to gauge their level of interest and the opportunity for savings. Then if the customer was deemed to have savings opportunities and was interested, an in-home audit was scheduled. For a $50 fee, ES@H auditors visited customers' homes and provided a printed report containing customized recommendations about improvements that could be made to attic insulation, duct sealing, infiltration reduction, and duct insulation. The printed report also contained a price quote for construction work if the customer decided to have Duke Energy's third party building contractors install the recommended improvements. If the customer decided to go ahead with the improvements, the $50 fee was applied to the cost of the improvements. In the latter part of the pilot, the $50 fee was waived completely. Table 1 shows the total number of participants at the time of the participant surveys in late March 2011 as well as the number of participants who terminated their involvement in the program after the phone audit and in-home audit, and those who proceeded to a Duke Energy coordinated installation (or "full participation") .

Table 1. Point of furthest participation in the ES@H program

	Total participants	Participation terminated after Phone Audit	Participation terminated after In-Home Audit	Participation proceeded to Duke Energy coordinated Install
OH customers	68	30	28	10
SC customers	45	23	21	1

Customers in both states	113	53	49	11

Duke Energy offered the Energy Solutions @ Home pilot in Ohio and South Carolina. The Duke Energy program manager reported that in Ohio, the ES@H pilot arose from a recommendation from the Collaborative to offer customers a more in-depth audit. Duke Energy began offering a pilot program that provided a whole house audit, but Duke Energy reported that customers found the offer was too complex and time-consuming.. The ES@H pilot is the outgrowth of the whole house audit, designed to focus only on the building envelope. In OH, the ES@H pilot began in May of 2010. In SC, the ES@H pilot began in August 2010. Both pilots were due to conclude on March 18th, 2011. Duke Energy had also proposed to offer this pilot in North Carolina, but had not received approval from the regulatory agency until January 2011. However, at the time of the evaluation interviews in early March of 2011, Duke Energy had decided to discontinue both pilots because they found that they are less successful than expected. As seen in Table 1, fewer than one dozen customers out of 113 participants (less than 10%) have progressed through all the stages of the ES@H pilot, ending with the installation of the recommended measures. Duke Energy is now pursuing a prescriptive incentive through the trade allies model to encourage customer adoption of building envelope improvements. Duke Energy had anticipated that 250 (150 in Ohio and 100 in South Carolina)customers would "flow through" to the status of having completed at least one or more of the recommended installations. The Duke Energy program manager reported that they have analyzed program data and are writing a case study on the effectiveness of the ES@H pilot.

Methodology

This section presents the methodological approach for conducting this process evaluation. The evaluation consisted of the use of in-depth interviews with program managers and the use of program surveys with participants and non-participants.

Interviews

In-depth interviews were conducted with three Duke Energy managers and two vendors in early March of 2011.

Development of the Surveys

There were four levels of customer interaction in the ES@H program (non-participation, phone audit participation, home audit participation, and full participation with a Duke Energy coordinated installation).

TecMarket Works developed four different customer surveys in order to evaluate customer experience with the program as well as to identify barriers to each level of participation. Each of the four surveys focused on a specific level of customer interaction with the program or the lack of interaction (non-participant). These include:

1. A non-participant survey was developed to identify key barriers to initial participation in the program.

2. A survey for the participants in the phone audit was developed to gauge satisfaction with the phone audit, identify and gauge spillover, and identify barriers to further participation in the program.

3. A survey for the in-home audit participants was developed to gauge customer satisfaction, audit freeridership, spillover and to determine barriers to full participation in the program.

4. Finally, a survey was developed for full participants in the program who proceeded to a Duke Energy coordinated installation to gauge satisfaction as well as freeridership and spillover.

The home audit and full participation surveys asked the participants for information specific to each of the recommended measures in the home audit report. In addition, the participant was asked to report the actions that they had taken that were caused in whole or in part by the recommendations provided in the ES@H audit report. For each measure that was installed and for each recommendation taken, the participant was asked questions pertaining to their intentions to take that action without the intervention of the program. This information was used to estimate program free-ridership for the purpose of informing program managers of the level of free-ridership.

Two methods were used for surveys. For the non-participant survey a random sample of 300 out of 74,376 contacts provided by Duke Energy resulted in 30 completed surveys (10%) with customers who knew about the offered program[1].

For the remainder of the surveys, the program participation rate was such that TecMarket Works used a census sample of all participants rather than a random sample of the participants. In the census sample, surveys were completed with a number of participants, including 17 of 53 (32%) phone audit participants, 18 of 31 (58%) in-home audit participants, and 6 of 11 (55%) full program participants.

In order to provide a clearer focus on the program as a whole and because of the low number of participants in both Ohio and South Carolina, survey results are not stratified by state. State stratification would result in a population too small to segregate into separate evaluations.

The surveys can be found in Appendix A: Energy Solutions @ Home Non-Participant Survey Instrument, Appendix B: Energy Solutions @ Home Phone Audit But No In-home Audit Participant Survey Instrument, and Appendix C: Energy Solutions @ Home In-Home Audit But No Installation Participant Survey Instrument.

[1] Most contacts did not recall receiving information about the program.

Program Operations

The information presented in this section of the report presents an overview and analysis of the Energy Solutions @ Home's program operations. It is derived from a review of program materials and interviews with three Duke Energy managers and two vendors in early March of 2011. The results of these efforts are presented below.

Background and Objectives

The Energy Solutions @ Home (ES@H) pilot was designed to inform residential customers about ways to reduce energy use through building envelope improvements. For a $50 fee, ES@H auditors visited customer homes and provided a printed report containing customized recommendations about improvements that could be made to attic insulation, duct sealing, infiltration reduction, and duct insulation. The printed report also contained a quote for construction work if the customer decided to have Duke Energy's third party building contractors install the recommended improvements. If the customer decided to go ahead with the improvements, the $50 fee was refunded to the customer. In the latter part of the pilot, the $50 fee was waived completely.

Duke Energy offered the Energy Solutions @ Home pilot in Ohio and South Carolina. The Duke Energy program manager reported that in OH, the ES@H pilot arose from a recommendation from the Collaborative to offer customers a more in-depth audit. Duke Energy began offering a pilot program that provided a whole house audit, but Duke Energy reported that customer found it was too complex and time-consuming. The ES@H pilot is the outgrowth of the whole house audit, designed to focus only on the building envelope. In OH, the ES@H pilot began in May of 2010. In SC, the ES@H pilot began in August 2010. Both pilots were due to conclude on March 18th, 2011. However, at the time of the evaluation interviews in early March of 2011, Duke Energy had decided to discontinue all the pilots because they found that they are less successful than expected. Fewer than one dozen customers out of 113 participants have progressed through all the stages of the ES@H pilot, ending with the Duke Energy coordinated installation of the recommended measures. Duke Energy is now pursuing a prescriptive incentive through trade allies model to encourage customer adoption of building envelope improvements. Duke Energy had anticipated that 250 customers (150 in Ohio and 100 in South Carolina) would "flow through" to the completed installations; instead less than a dozen participants out of 173 audit participants took part in the program and, as a result, installed measures. The Duke Energy program manager reported they were in the process of analyzing program data and writing a case study on the effectiveness of the ES@H pilot.

One Duke Energy program manager reported that the pilot had dual objectives. For Duke Energy's management, one objective of the pilot was to test a program delivery mechanism that provided a customized approach to offering customers an opportunity to save energy in their home through specific improvements relating to the building envelope. The program manager reported that Duke Energy had planned to evaluate

customer adoption and contractor performance as part of the pilot, to determine whether the pilot was scalable: *"We wanted to determine if it is a good fit and if it is financially viable."*

The Duke Energy program manager also reported that the pilot had a customer objective, which was to help the customers save energy and improve the comfort of their homes. Duke Energy designed the ES@H pilot so that customers could have sustained energy savings and also know that their utility is helping them.

Program Design & Implementation

The phone audit was implemented by Duke Energy staff in the Customer Prototype Lab (CPL).

A third party contractor, the Wisconsin Energy Conservation Corporation (WECC), implemented the home audit and installation components of the ES@H pilot under Duke Energy's direction. WECC subcontracted the home audits to Thermo-Scan Inspections (TSI) and the technical consultation and program training to Advanced Energy. The installation was executed by program contractors selected via a bid process by TSI. WECC facilitated communications between all parties and monitored the performance of the subcontractors. WECC reported that they designed the home audit final report, and they oversaw the post-installation inspections.

Duke Energy selected four building envelope measures for the ES@H pilot with input from several consultants. In addition, they leveraged data gathered during the earlier, whole house audit pilot. The whole house audit pilot indicated that the most common recommendations to upgrade the energy efficiency of the building envelope were attic insulation and air sealing. The Duke Energy Market Analytics division also modeled energy savings for different installation scenarios, looking at savings resulting from different combinations of the four building envelope measures as well as single measures.

Marketing

The ES@H pilot was designed for customers with electric heat. Although Duke Energy did not have every customer's heating fuel type in their customer database, they estimated that high winter electric energy use that correlated to winter weather conditions were likely to have electric heat. The customers that met these related conditions were targeted in the pilot program.

Marketing was conducted through direct mail campaigns based upon customers' geographic location. Geographic targeting allowed contractors and auditors to serve customers efficiently, with a minimum of driving between participant's homes. Duke Energy also marketed the ES@H pilots on a website to which they directed customers who wanted more information.

Program participation required multiple steps on the part of the customer. The Duke Energy program manager reported that they tracked customer responses at each of the steps. For example, they tracked customer inbound phone calls, number of customers who accepted the initial phone assessment, and number of customers who agreed to an in-home audit.

A Duke Energy program manager described their marketing efforts: "*We tried many different things; we tried letters and postcards, automatic calls...tried many different ways of reaching the customer.*" The ES@H team tried multiple direct mail approaches, including a self-mailer, a postcard, a series of three postcards on the same theme, and a letter followed by a postcard. The program manager reported customer response rates for each approach were tracked. Duke Energy is currently assessing that information to guide future marketing decisions.

One Duke Energy program manager reported that they analyzed participant income levels, and found that higher-income customers had a higher response rate. However, the program manager also acknowledged that their sample size was not large enough for conclusive findings.

Duke Energy tested ways to leverage marketing by other residential programs such as the Home Energy House Call. The Home Energy House Call (HEHC) is a long-standing Duke Energy residential audit program in which auditors would visit customer homes, conduct a visual survey, and fill out a questionnaire with the customers' input on their household energy use and home characteristics, and directly install some low cost measures including CFLs. Starting in December of 2010, the ES@H leveraged HEHC marketing by sending an ES@H auditor to the HEHC audit and offering an impromptu conversion of those customers to combined HEHC/Energy Solutions @ Home audit, with the $50 fee waived. Customers who accepted received the HEHC's direct installs as well as the ES@H's quote. However, the overall pilot program participation impacted by the HEHC collaboration offer was not high, leading to the conclusion that this approach may not be effective. In addition to impromptu conversions, the pilot program staff had been considering making calls to former HEHC customers, but the pilot ended before they implemented this marketing approach.

Phone Audit

The phone audit was conducted by Duke Energy staff in the Customer Prototype Lab (CPL). Those customers who agreed to have an in-home audit were then served for the remainder of the ES@H pilot by third party vendors who were overseen by Duke Energy staff. One program manager reported that based upon preliminary data, 155 Duke Energy customers called (at the time of the interview) to enquire about the ES@H pilot.

A Duke Energy program manager reported that during the phone audit from the customer, staff in the CPL call center tried to help keep program costs down by identifying those customers who would be most likely to adopt the recommended measures. A spreadsheet-based audit tool was developed to track customer's responses.

Customers were asked about home characteristics such as whether they had electric heat or had a pool. Customers were also asked whether there were rooms in their house that felt uncomfortable or drafty.

Duke Energy staff discussed the ES@H pilot with the customer to gauge their level of interest and the opportunity for savings. The call center staff was also provided with sales training to teach them how to turn customer objections into opportunities. The Duke Energy program manager reported "*I think the training went very well and was well received.*" While several CPL call center staff members were trained, most of the phone audits were conducted by one call center specialist due to low pilot participation.

The spreadsheet audit tool generated an estimate of the cost range of the improvements, along with an estimated payback period. This estimate was converted to a PDF format that the phone auditor could e-mail to the customer or send a hard copy if they did not have an e-mail account. If the improvements sounded interesting to the customer, the customer could immediately schedule a home audit. Customers were told that the home auditor would be able to verify the need for the recommended measures and provide the final calculation of the cost of making the improvements. If the customer wanted to schedule the in-home audit, their phone audit and contact information were given to Thermo-Scan Inspections (TSI), a third party vendor.

The Duke Energy manager reported that the Customer Prototype Lab had an internal goal of converting 50% of the phone audit participants into in-home audit participants. In OH, they obtained a 66% success rate for this conversion.

RECOMMENDATION: Continue to use sub-goals at each stage of customer participation to separately gauge the success of each component. This allows Duke Energy to develop a more granular understanding of which components should be used in the design of future programs.

In-Home Audit

A third party vendor, TSI, conducted the home audits. TSI was a subcontractor to WECC, and scheduled customers using an online tool developed by WECC. Auditors were professionals with Building Performance Institute (BPI) certification, and trained to assess what a quality installation looked like. Their training consisted of classroom as well as field training, through BPI and Advanced Energy.

Auditors physically measured the square footage of the home in areas where insulation was needed. The ES@H pilot did not include a blower door test for infiltration, but auditors categorized each house as either "leaky" or "tight", largely based upon the age and condition of the house. As a default, any house that did not have recent building envelope renovations was considered "leaky".

The Duke Energy program manager also reported that the auditors were asked to take on a sales responsibility and encourage customers to make a decision to go forward with the

installations. The auditors were given sales training. Preliminary feedback to the program manager suggested that results were mixed, likely due to the fact that sales skills typically are not needed for auditing professionals. The fact that ES@H participation started low and remained low during the pilot period may indicate that the delivery of sales training was ineffective.

The audit tool used to generate the recommendation report underwent numerous revisions before it was finalized for field delivery. According to one interviewee, over two dozen improvements were made to the tool. Some of the improvements were needed to correct errors in the tool; other changes were needed to improve the accuracy and usefulness of the tool. Each time the audit tool was improved, it necessitated a change to the cost effectiveness calculations via DSMore, a financial modeling tool provided by a Duke Energy contractor. After a few improvements were noted, the vendors developed a streamlined process in which they communicated the needed improvement directly to the DSMore contractor team. The DSMore team would then provide results to the Program Manager.

Recommendation Report

The audit recommendations relied on the use of accurate customer data including the house's geographic location, square footage, house type, and their past year's electric energy usage. Recommendations were made in four technology areas, including: attic insulation, duct insulation, duct sealing, and infiltration reduction.

The home audit report included a final cost calculation of both the construction costs and the incentive that Duke Energy could provide. The incentive calculation was customized to each household's physical characteristics as well as past energy usage through the application of DOE2, Department of Energy engineering software and DSMore, a financial tool for modeling energy savings. Data collected by the home auditor was entered in the WECC Audit Tool software on the auditor's laptop in order to conduct the cost effectiveness calculations and to develop the recommendations for each home.

Installation

The Duke Energy program manager reported that two contractors were selected to potentially perform the work in each of the pilot areas. The contractors were preselected by TSI through a competitive bidding process. TSI reported that it was a good thing that they were able to select the contractors because they needed to work closely with those contractors on a daily basis to assure a high quality, timely installation.

Post Installation Inspection

TSI conducted the post-installation inspections and was responsible for arranging for re-visits by the contractor if repairs or corrections were needed. WECC oversaw the post-

installation inspections. In Ohio one contractor was an insulation industry contractor who was required to revisit some customer homes after the inspection to correct some problems with the installation. The other contractor was a certified home performance contractor. Post-installation inspections of his work did not identify any problems or issues that required re-visits.

The ES@H pilot originally planned to inspect the first five installations completed by each contractor, and periodic follow up verifications after that. WECC reported they were contracted to conduct inspections on 5% of the installations. That plan was not implemented because program participation was so low that WECC representatives were able to inspect each installation.

Quality Control and Pilot Data Tracking

The Computer Prototype Lab tracked program progress using a dashboard, but reported some difficulties getting data back from their vendors once customers were handed off to those vendors for the home audit and construction work. A Duke Energy program manager voiced a need for real-time tracking, and for automated synchronization of customer data across the different vendors involved in the pilot.

One program manager explained that quality control was built into the ES@H pilot because the field audit was intended to verify the phone audit. "*Any erroneous numbers are corrected in the field audit.*"

Barriers to Participation

Duke Energy program managers identified three different types of barriers to participation. The first type was due to aspects of the program's design. One Duke Energy program manager believed that a major barrier was uncertainty about the incentive amount prior to undergoing the home audit. Because it was customized to specific home characteristics, customers only received the final incentive calculation after the in-home audit was completed. The program manager believed that the customers who participated "had to feel pretty strongly" about the benefits of energy efficiency. Another barrier reported by Duke Energy staff was that the customer wanted to be able to select their own contractor. Other participants who were handy in home repair wanted to be able to receive the rebate and be able to make the recommended improvements themselves.

The second type of barrier was due to customers' need for education about energy efficiency. One Duke Energy program manager believed that the biggest barrier was helping customers recognize that they had a problem with the energy efficiency of their home, and recognize that there were opportunities in the building envelope to improve comfort and save money. The program manager believed that because customers were not aware they had a problem, they were not interested in a solution. Another program manager also shared the same opinion: "*How do we crack the nut; how do we make them*

see this is a program that would save them money and energy and they would be more comfortable?"

One program manager reported that some customers had already made improvements to their building envelope and erroneously believed "*they have done everything they need to*". This manager believed that while people were generally aware that they should insulate their home, the market was "*still in its infancy for understanding what the other components are, such as sealing...I don't think that's common knowledge.*"

The third type of barrier was economic. Several of the interviewees believed that the economic downturn was a major barrier and relayed that customers had told them that this was not a good time to undertake expensive home improvements. One of the program managers and one of the vendors both suggested that a financing program would have helped some customers continue on to the installations. However, in TecMarket Works' evaluation experience, there has not been a clear link established between available financing and an increase in the number of successful home improvements. Many customers do not want to go into debt more than they need to and the residential market in general is reluctant to finance energy efficient improvements unless they think the savings are going to be worth the cost.

Areas for Improvement

Throughout the duration of the pilot, Duke Energy staff made continuous improvements to operations and resolved many issues in developing and implementing the pilot program. This section addresses a few of the larger issues that were more difficult to resolve. One issue may have been an artifact of the pilot testing process. Other issues would need to be resolved before Duke Energy could scale the pilot up to full program implementation.

Gas heat customers. Although the phone audit identified the electric heat customers who called, gas heat customers were not excluded from participation in the home audit. When asked about this, two of the interviewees explained that customer uptake was so low that Duke Energy decided to include gas heat customers so they would have a large enough sample with which to continue testing portions of the ES@H pilot. In Ohio, Duke Energy does provide gas to their customers. However, because Duke Energy was only able to claim savings for electric heat customers, gas heat customers were only offered a $50 rebate for undertaking the recommended improvements. One vendor was tasked with following up on those home audit customers who needed time to discuss installation costs with their spouse, housemate, or family, and reported that although the auditors had to explain to gas customers why the rebate was so small, "*nobody ever got really upset about it.*" In fact, "*most customers when I followed up would thank us for the time, said they got good information but they couldn't make the improvements right now.*" However, this may not be a representative response, particularly given one program manager's belief, mentioned earlier, that pilot participants were those customers who had a pre-existing interest in energy efficiency.

Although gas heat customers were only included in the pilot due to unusually low participation, this increased the costs of the program and may have decreased the cost effectiveness of the pilot. A decrease in cost effectiveness would affect Duke Energy's decisions about the viability of the ES@H program delivery mechanism.

> RECOMMENDATION: If the ES@H pilot were offered to customers who may not already be interested in energy efficiency, Duke Energy should consider managing gas heat customer expectations in the initial phone call by focusing on the payback for recommended building envelope improvements. This would require developing the appropriate gas savings calculations, which Duke Energy could explain they were doing solely as a service for their customers. Alternately, Duke Energy could focus on how building envelope improvements would decrease electric energy costs during the summer cooling season.

> RECOMMENDATION: Duke Energy should evaluate the cost effectiveness of the program by factoring out the costs of serving gas heat customers. This would allow Duke Energy to make a more realistic estimate of what a full-scale program would cost, relative to electric savings.

Incentive uncertainty. All the Duke Energy program managers mentioned that the incentive process needed to be improved. "*The use of the custom incentive was a barrier to the customer*". The program manager gave as an example, the sales pitch of "*We're going to sell you a car and give you a rebate, but we don't know what the rebate is*". One of the vendors agreed with this sentiment and reported that in comparison to their other utility clients, the ES@H's customized incentive was hard for the customer to understand, and difficult for the auditor to justify to the customer. "*It's easier for the customer to understand the incentive if it's a 25% or 50% of the cost [of the improvements].*"

Marketing. Duke Energy program managers also agreed that marketing could be improved, even though they made multiple efforts to do so during the pilot period. One Duke Energy program manager believed that program costs would have been greatly reduced if more market research had been conducted prior to the deployment of each campaign: "*I think we should have spent more money talking to the customer before we sent out a communication to see how they would respond*". This program manager felt that Duke Energy needed more intelligence on what kind of collateral would have worked for both the direct mail and website. "*We put a lot of resources into developing a website that didn't get a lot of use.*" When asked to identify one priority area for improvement, one Duke Energy manager responded, "*I would like to know how we could get to this target group, [and do] whatever market research we need to find out who this target market is.*"

One of the vendors mentioned that the marketing seemed vague. "*It encouraged customers to call if they wanted to talk about their energy efficiency...It would have been better to clarify [that the program offered a home audit for] $50...[It] just said call us and we could help you.*"

One of the program managers and both the vendors who were interviewed suggested that community-based marketing might be more cost effective.

> RECOMMENDATION: Duke Energy should consider the costs versus benefits of using community-based marketing (linking up with community groups to distribute and share materials) to advertise future implementations of the ES@H delivery mechanism.

Streamlining tools. On the operational side, one program manager reported some difficulty "*juggling all the tools*" that were used in the Customer Prototype Lab for program delivery. These included an audit tool, a customer prototype tool, a customer relationship management tool, a scheduling tool, and another tool to bring up customer information on a map. Even though the staff managed all the tools successfully, the program manager believed a more streamlined solution would have been necessary if the pilot were scaled up to a stand-alone program.

Pilot Program Successes and Lessons Learned

The two main objectives of the pilot were to test a new program delivery mechanism and to help customers save energy. At the time of these interviews, the Duke Energy program managers were assembling their findings into a business case. One program manager also said there may be a separate "learnings report" produced by the Customer Prototype Lab.

Feedback suggested that the overall experience was a good one for customers who "*flowed through*" the entire ES@H pilot. The Duke Energy program managers were able to test many marketing approaches and at the time of the interview were awaiting the final analysis of the marketing data. They agree that their findings will allow them to improve marketing plans for other programs. Preliminary feedback to the Duke Energy program manager suggests that when the $50 fee was waived, customer interest did increase but so did the number of "no shows" for the home audit. Two of the program managers both felt that the infrastructure that was developed to track and monitor program data was very good.

Every person interviewed believed that the ES@H pilot benefitted from the excellent working relationship between Duke Energy and the third party vendors. "*The collaboration between Marketing Communications and CPL and the vendors; I think it was outstanding.*" "*Everyone was very willing to look for solutions and cooperate.*"

In particular, the program manager reported that the phone auditor in the call center in the Customer Prototype Lab was "*very responsive, and very good at working with the customer.*" Another program manager agreed, "*We lucked out because we happened to have a specialist* [phone auditor in the CPL] *who was very skilled at sales. That was crucial. We wouldn't have gotten what we have without that person.*" One of the vendors also lauded this phone auditor: "*[Duke] pretty much had one person who handled all the calls, and he did a great job. The time [he spent with customers] and level of knowledge*

he had...this was a very big program and you would [normally] need multiple people with those kinds of skills, handling what he did."

The Future of the Energy Solutions @Home Pilot

At the time of these interviews, the pilot results were being assessed through a stage gate process to determine the pilot's viability. One Duke Energy program manager reported that Duke Energy had recently formalized their pilot process to include a stage gate process. *"There's no lack of rigor in the way we run prototypes."* While the data analysis was not yet completed, the Duke Energy program staff was able to report some preliminary customer satisfaction surveys that suggested customers who did decide to make the necessary envelope improvements were pleased with the program. However, the overall program participation was much lower than planned.

At the time of the interview, Duke Energy was considering several possible futures for this set of measures, including adding them as prescriptive measures to the Residential Smart $aver® offerings, and letting contractors and vendors play the main role in selling the measures. This approach has proven successful for Smart $aver®, to the extent that the vendors have become a major marketing channel for that program. One interviewee pointed out that allowing customers to select their own contractors also meant that more contractors would be interested in promoting the program.

One Duke Energy program manager reported that in Duke Energy's consideration of the future of the ES@H, they are keeping an eye on developments in the industry. The program manager reported that due to the availability of ARRA dollars, many similar programs addressing building envelope improvements have been started at state and local levels that have resulted in the greater availability of trained auditors and home performance contractors. This new infrastructure may signal a market transformation in this area that may not require utility-based home audit programs. There may be another role that the utility is better suited to play.

Survey Results

This section presents the results of the participant and non-participant surveys.

TecMarket Works developed four different customer surveys in order to evaluate customer experience with the program as well as to identify barriers to each level of participation. Each of the four surveys focused on a specific level of customer interaction with the program or the lack of interaction (non-participant). These include:

1. A non-participant survey was developed to identify key barriers to initial participation in the program.

2. A survey for the participants in the phone audit was developed to gauge satisfaction with the phone audit, identify and gauge spillover, and identify barriers to further participation in the program.

3. A survey for the in-home audit participants was developed to gauge customer satisfaction, audit freeridership, spillover, and to determine barriers to full participation in the program.

4. Finally, a survey was developed for full participants in the program who proceeded to a Duke Energy-coordinated installation to gauge satisfaction as well as freeridership and spillover.

Non-Participant Results

To determine survey eligibility, non-participants were asked if they recalled seeing the Energy Solutions @ Home mailed promotional material. All 30 surveyed non-participants did recall seeing the promotional material.

Barriers to Participation

To determine barriers to participation, non-participants were asked for their reason for not scheduling an appointment with an Energy Expert through the Energy Solutions @ Home program. Possible responses were: "Feel I already do enough to save energy in the home" (n=10), "Feel I am already knowledgeable about ways to save energy" (n=6), "Not a good time for me" (n=4), "Initial cost was too expensive" (n=3), "Not interested in saving energy" (n=0), "I like my home the way it is" (n=3), "Already had an audit" (n=3), and "Cannot afford to make any improvements" (n=2). The ratio of these responses is illustrated in Figure 1 below.

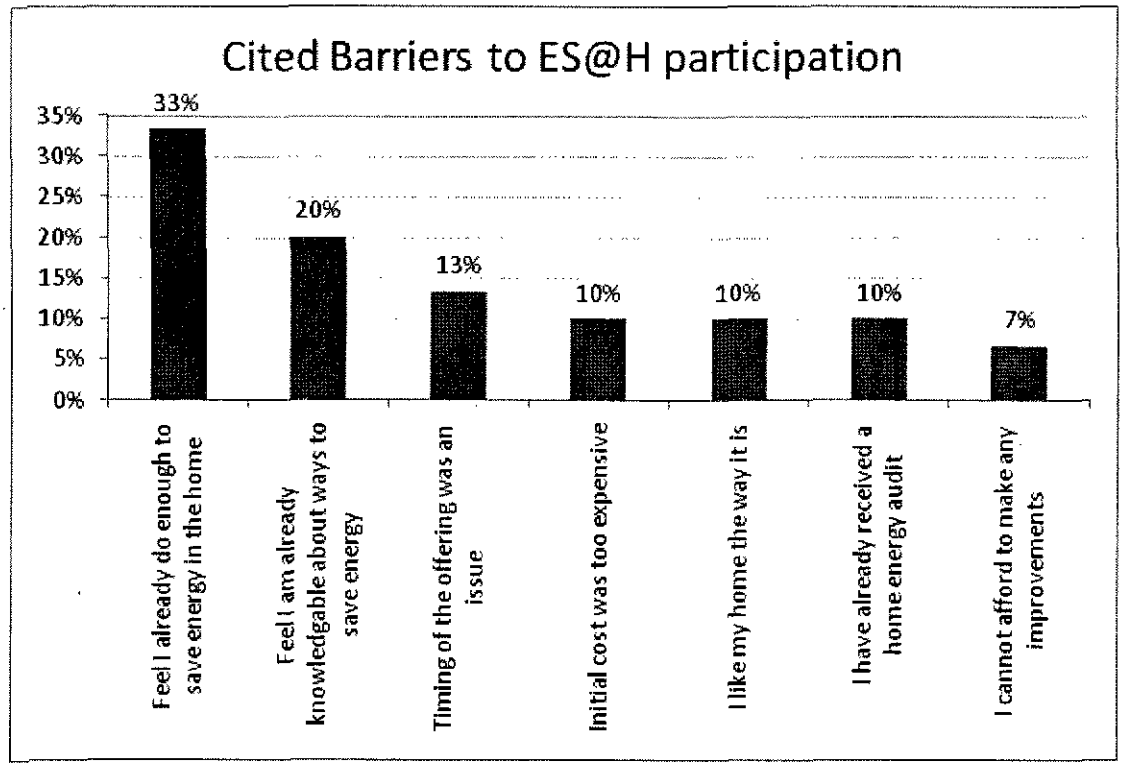


Figure 1. Non-participant cited barriers to participation in ES@H

Additionally, three survey respondents gave the individual responses below:

- "My bill is below average"
- "Home is listed as more efficient than the "most efficient" in Duke Energy's Home Energy Comparison Report"
- "Had not got around to it"

Timing

Non-participant survey respondents were then asked if timing of the offer was an issue for them. Five out of 30 (17%) indicated that this was the case. Those five survey respondents were then asked to elaborate on why the timing was an issue, however all five found it difficult to give specific details but rather noted that the timing of the contact and the phone audit was not appropriate for them.

Pricing

Non-participant survey respondents were asked if they thought $50 was too expensive for a home energy assessment. 12 out of 30 (40%) respondents indicated that they thought $50 was too expensive for an assessment and 18 out of 30 (60%) said they thought that that $50 was not too expensive for a home energy assessment.

The 12 non-participant survey respondents who thought $50 was too expensive for a home energy assessment were asked what price Duke Energy should charge for the Home Energy Assessment after being given the following description: "In this assessment, a skilled energy inspector comes to your home and inspects it for any opportunities to reduce your energy consumption and provide you with a report listing suggestions for you. They then can provide contacts with approved contractors in order to make the home more energy efficient. In addition, the $50 audit fee is refunded after the installation of program-approved improvements by one of the program contractors."

Four respondents said they though the cost should be free; one non-participant thought Duke Energy should charge $20 and another thought Duke Energy should charge $25. Six non-participants stated that they didn't know what amount Duke Energy should charge for the assessment.

Non-participants who gave an amount they thought Duke Energy should charge for the assessment were then asked if they would participate if the price was that amount. The non-participant who gave an amount of $20 and one non-participant who thought the assessment should be free stated that they would be interested in having an energy assessment at those price points. Two of the non-participants who thought the assessment should be free answered that they "Don't know" if they would be interested in participating, and the non-participant who gave an amount of $25 as well as one that answered "Free" stated that they would not be interested in participating even at those price points.

Understanding of the Program

Non-participant survey respondents were asked if they felt they understood the Energy Solutions @ Home offer from Duke Energy when they received it. All 30 survey respondents indicated they felt they understood the offer.

Perceived Potential for Energy Efficient Improvements

Non-participants were asked if they felt they had already explored all possibilities for improving the energy saving and comfort level of their home. Seventeen (57%) respondents felt that they had explored all possibilities, 7 (23%) respondents felt that they hadn't explored all possibilities and 6 (20%) stated that they didn't know if they had explored all possibilities.

Non-participant survey respondents who answered "No" to exploring all possibilities for improving the energy saving and comfort level were then asked what types of things were left to be done.

Answers are as follows:

- Need an efficient heat pump
- Need insulation and efficient heat pump
- Need new windows and efficient HVAC
- Need insulation in walls
- Need insulation, windows, and an efficient furnace

Non-participant survey respondents were asked if they called or emailed Duke Energy with questions about the program. None of the survey respondents indicated that this was the case.

Importance of Issues

Non-participant survey respondents were asked how important environment issues are to them, how important decreasing their monthly energy bill is to them, and how important maintaining the comfort of their home is to them. The possible answers were Very Important, Important, Neither Important nor Not Important, Not Important, and Not at all Important. The answers are presented in Figure 2 below.

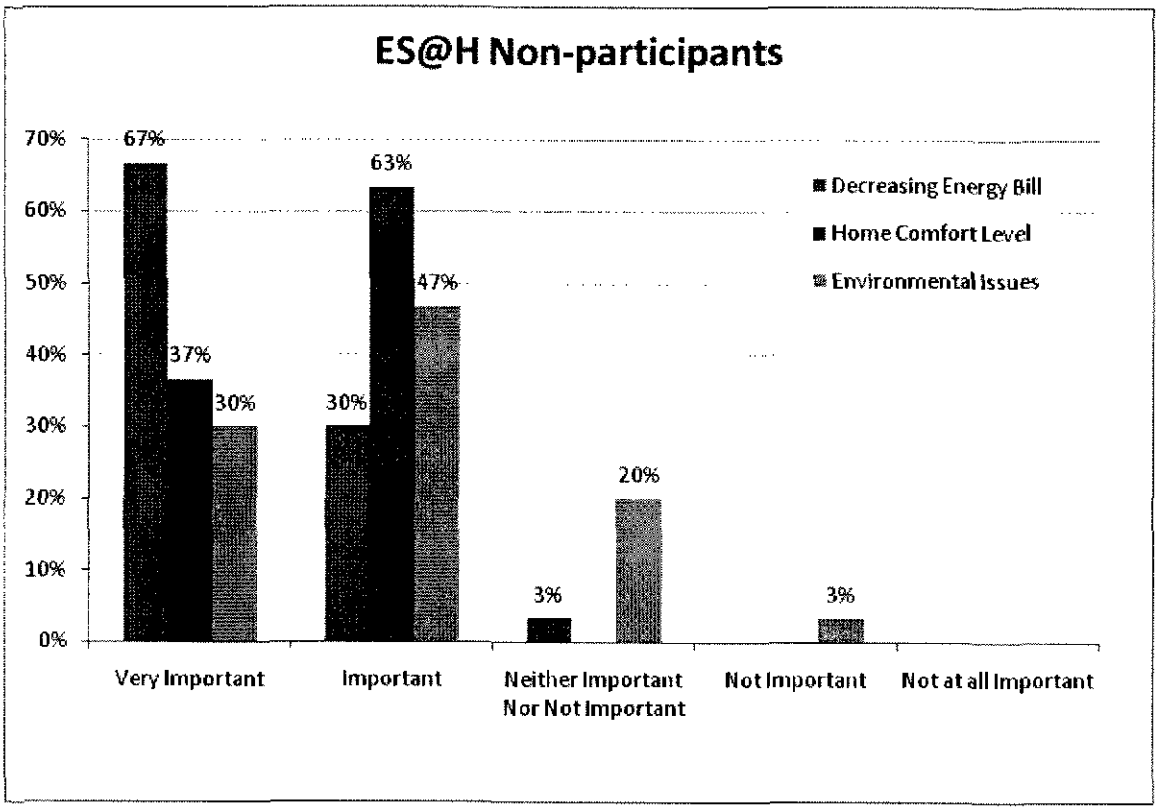


Figure 2. Ranking of importance of three issues by non-participants

Non-participant survey respondents were then asked what they believed was the most pressing environmental issue of today. The responses are as follows:

- Fossil fuel usage (n=2)
- Air quality (n=2)
- Conservation and elimination of waste
- Japan's nuclear crisis
- Waste
- Endangered species
- Need for more energy
- More nuclear power plants
- Recycling

Participation and Satisfaction in Other Duke Energy Programs

Non-participants were asked if they had ever participated in any of Duke Energy's energy efficiency programs. Twelve (40%) non-participant survey respondents indicated that they had. Six had participated in Smart $aver® CFL, five had participated in Power Manager®, and one had participated in the Personalized Energy Report®. Non-participant survey respondents were then asked to rank their satisfaction with these programs on a 1 to 10 scale with 1 meaning least satisfied and 10 meaning most satisfied. The satisfaction

rate for each program is very high (9 for Smart $aver® CFL and 9.4 for Power Manager®) and overall satisfaction with Duke Energy is high at 8.6. Table 2 shows the summarized satisfaction results for non-participant survey respondents.

Table 2. ES@H non-participant participation in other Duke Energy programs

Program in which they participated	Average satisfaction rating	Number participating	Percentage of ratings at or below 7 on the satisfaction scale
Smart $aver® CFL	9	6	0%
Power Manager®	9.4	5	0%
Personalized Energy Report®	10	1	0%
Duke Energy	8.6	30	10%

Participant Results

Results of the surveys of the participants are presented below.

Program Awareness and Motivating Factors

All participants were asked what first made them aware of the ES@H program and what factors motivated them to participate. The results for each class of participant are shown in Table 3 and Table 4 below.

Table 3. Program awareness of all participants

	Phone Audit (n=17)		In-Home Audit (n=18)		Complete Process (n=6)	
	N	%	N	%	N	%
Mailer/ Brochure	10	59%	9	50%	4	67%
Duke Energy Web Site	4	24%	5	28%	1	17%
Call from Duke Energy	2	12%	4	22%	1	17%
Friend	1	6%	0	0%	0	0%

Table 4. Motivating factors of all ES@H participants

	Phone Audit (n=17)		In-Home Audit (n=18)		Complete Process (n=6)	
	Important	Most Important	Important	Most Important	Important	Most Important

Reduce Energy Costs	88%	82%	94%	67%	100%	83%
Receiving the assessment	18%	12%	39%	28%	50%	0%
Information provided	24%	6%	17%	6%	50%	17%

As can be seen in Table 4, the desire to reduce energy costs is overwhelmingly the most-cited motivating factor for program participation.

Phone Audit and In-home Audit Participant Results

Participation in the Energy Solutions @ Home program begins with an over-the-phone audit of the participant's home. At the end of the over-the-phone audit, the customer is asked if they would like to schedule an in-home audit. An in-home audit is then scheduled if the customer wishes. According to Duke Energy tracking data, a total of 113 phone audits were converted to 60 in-home audits for a conversion rate of 53% (a conversion rate that was in line with Duke Energy's expectations of 50%). Eleven of the 60 (18.3%) home audit participants proceeded to installation and full participation which was well below Duke Energy's target conversion rate of 75 percent.

Fifty-three participants terminated participation after the phone audit and 49 participants terminated participation after the in-home audit.

TecMarket Works attempted a census of these participants with a separate survey for each group depending on its type of participation. For phone audit participants, 17 of the 53 (32%) participants were surveyed. For in-home audit participants, 18 of the 49 (37%) participants were surveyed. Since many of the survey questions were identical regardless of participation, similar aspects the phone and in-home surveys are compared together in this section.

Phone and In-home Participant Satisfaction

The surveyed participants are very satisfied with the Energy Solutions @ Home program. Table 5 below shows the respondents' mean satisfaction scores with various aspects of the program. In order to avoid confusion for participants, those with in-home audits were only asked about their satisfaction with the in-home audit (and not the phone audit).

Table 5. Satisfaction for Phone Audit and In-home audit participants

	Phone Audit			In-Home Audit		
Metric	**Average Rating**	**N**	**Percentage of ratings at or below 7**	**Average Rating**	**N**	**Percentage of ratings at or below 7**
Scheduling phone audit	9	15	13%	NA	NA	NA
Scheduling home audit	NA	NA	NA	8.8	18	17%
Interactions with phone auditor	9.3	15	0%	NA	NA	NA
Interactions with in-home auditor	NA	NA	NA	9.2	17	0%
Knowledge of phone auditor	9.3	15	0%	NA	NA	NA
Knowledge of in-home auditor	NA	NA	NA	9.2	17	0%
Phone/In-home Audit report	9	13	0%	8.9	14	7%
Interactions with Duke Energy Staff	9.2	13	0%	9.3	16	6%
Overall Satisfaction with ES@H	8.7	15	13%	9	18	5%

Overall program satisfaction is high at 8.7. Surveyed participants rated their satisfaction with the auditors who came to their homes and performed the audit. On a 1 to 10 scale, the auditors' friendliness, help, and knowledge were rated at 9.3. The lowest satisfaction rating (8.4) was with the audit report providing new ideas for improving efficiency.

Recommendations and Rebates

Both phone and in-home audit survey participants were also asked if the audit provided by Duke Energy included new ideas for energy savings that they had not thought of previously as well as the likelihood of using the recommendations provided in the audit. Additionally, in-home audit participants were asked to rate their satisfaction in the rebate offered by Duke Energy through the ES@H program. The results are provided in Table 6 below.

Table 6. Satisfaction with recommendations and rebates

	Phone Audit			In-home Audit		
Metric	**Average satisfaction rating**	**N**	**Percentage of ratings at or below 7**	**Average satisfaction rating**	**N**	**Percentage of ratings at or below 7**
New ideas from phone/home audit	6.3	13	62%	7.1	15	46%

recommendations						
Likelihood of using phone/home audit recommendations	7	12	33%	6.9	15	40%
Rebate Level	NA	NA	NA	7.6	10	30%

Installation Rates of Phone Audit Recommendations

Customers who participated in a phone audit only were given either two or four installation recommendations. All phone audit participants were given the recommendations to reduce air leakage by 25% and to insulate their attic to R-38. Thirty participants were also given the additional recommendations to seal ducts and insulate ducts to 8 inches.

All 17 of the phone audit survey participants received the first two recommendations and 8 of 17 (47%) received all four recommendations.

As seen in Table 7, phone audit respondents state they installed 8 recommendations as a result of the phone audit. Additionally, respondents plan to install 7 recommendations.

Table 7. Phone audit recommendation status

Recommendation	N	Installed as a result of audit		Installed prior to audit		Plan to install in the future	
		N	%	N	%	N	%
Seal Air Leaks	17	6	35%	4	24%	1	6%
Insulate Attic	17	2	12%	3	17%	5	30%
Seal Ducts	8	0	0	2	25%	1	13%
Insulate Ducts	8	0	0	3	38%	0	0

All surveyed participants who had not yet taken, but who reported that they plan to take the recommended action, indicated they would be installing within the next year. Additionally, one participant indicated that he would be installing attic insulation and sealing ducts within the next six months from the time of the survey.

When a phone audit survey respondent indicated non-installation of a recommended measure, the respondent was additionally asked for the reason behind that non-installation. The reasons included: don't believe it will improve comfort, don't believe it will reduce bills, don't believe it will save energy, cannot afford it at this time, and other unspecified reasons. The results are tabulated in Table 8 below.

Table 8. Reasons for non-installation of phone audit recommendations

Recommendation	Total	Do not believe it will improve/save...			Cannot afford	Other
		Comfort	Bills	Energy		
Seal Air Leaks	6	1	1	0	2	2

Insulate Attic	6	2	0	2	2	0
Seal Ducts	3	0	1	0	1	1
Insulate Ducts	3	0	1	0	2	0

Additional Installations

Phone audit survey respondents were asked if they had purchased any energy efficient equipment or made any improvements to their home that may have been influenced by the audit. The results are tabulated in Table 9.

Table 9. Energy Efficiency Purchases Since ES@H phone audit

Respondent	Action Taken	Quantity	Location	How do you know it's efficient?	Influence of audit (1-10)*
1	Heat pump replaced	1	Basement	Energy Star rated	9
2	Water heater replaced	1	Basement	Energy Star rated	8
3	Heat pump replaced	1	Outside	Energy Star rated	1
4	Installed CFL	6	Home	Energy Star rated	10
	Water heater replaced	1	Basement	Energy Star rated	7
6	CFLs	20	Home	Energy Star rated	1

* 1= little or no influence, 10=very strong influence

Other energy efficient actions given by survey respondents included:

- Turned down thermostat
- Shrink-wrapped windows
- Did an audit with another company
- Tuned up heat pump

Importance of Specified issues

Phone and in-home audit survey respondents were asked how important environment issues are to them, how important decreasing their monthly energy bill is to them, and how important maintaining the comfort of their home is to them. The possible answers were Very Important, Important, Neither Important nor Not Important, Not Important, and Not at all Important. The answers are presented in Figure 3 below.

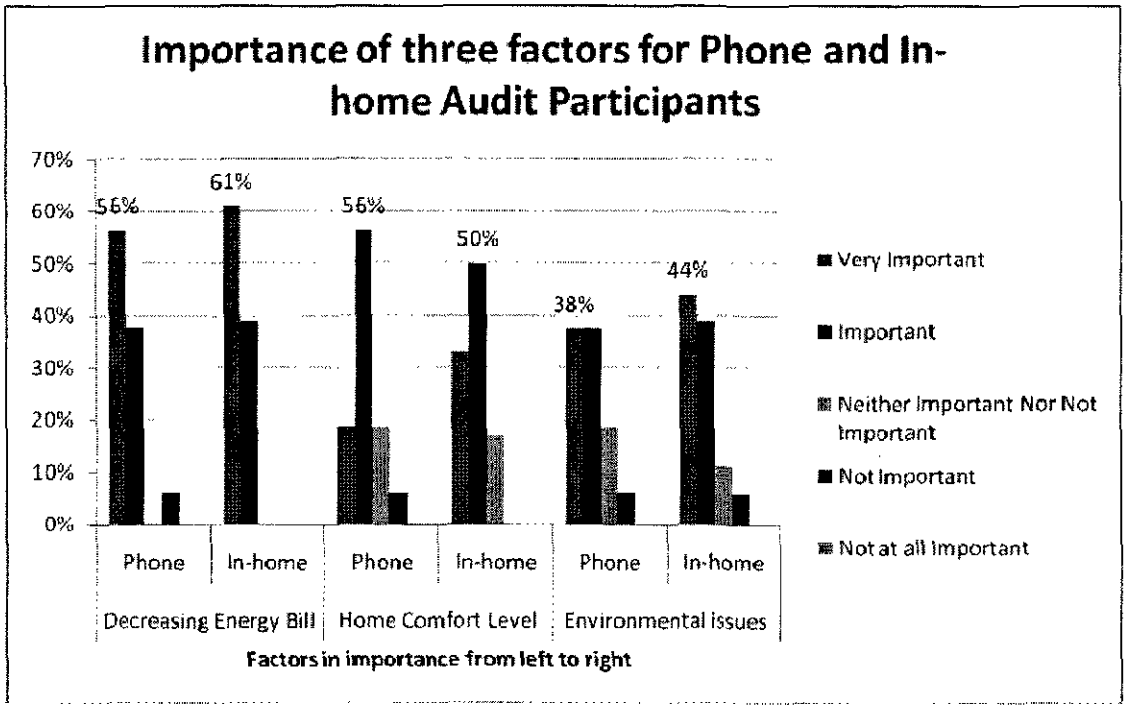


Figure 3. Importance of Factors for Phone and In-Home Audit Participants

Barriers to In-Home Audit Participation

Phone audit survey respondents were asked an open-ended question for their reasons for not scheduling an appointment for a home audit.

- 7 of 17 (41%) thought the initial cost was too expensive
- 5 (29%) respondents thought the phone assessment had given them enough to do at the time
- 3 (18%) respondents felt that the phone assessment had given them no new information and did not feel the home audit would provide new information
- 2 (12%) respondents hired non-Duke Energy affiliated contractors for in-home assessments

Additionally, respondents were asked specifically about the timing and price of the in-home assessment as well as their understanding of the in-home assessment offer.

Three of 17 (18%) respondents said the timing was an issue for them. One participant specifically stated that he is never home and another cited that it was a bad time financially.

Five of 17 (29%) respondents felt the initial cost of $50 for the audit was too expensive. Two respondents gave price points they deemed reasonable for the audit (free and $25) and both indicated that they would have participated in the in-home audit at those price points.

One respondent said that he did not initially understand the in-home audit offer, but he contacted Duke Energy with questions and his questions were answered adequately.

Finally, phone audit survey respondents were asked to rate the influence of the phone survey on their decision not to schedule and in-home survey. Two (12%) respondents rated the phone survey "Very Influential" to their decision, 5 (29%) rated the phone survey "Influential", 7 (41%) rated the phone survey as "Not Very Influential", and 3 (18%) respondents said the phone survey "Had No Influence" on their decision not to proceed with an in-home audit.

Based on the responses to the open-ended questions, instances of high influence of the phone survey resulted from two main factors:

1. All but one of the respondents who felt that the phone audit had given them enough to do rated the phone survey as "Influential"
2. Two phone survey participants who learned nothing new in the phone survey were the only respondents who deemed the survey to be "Very Influential" in their decision not to schedule an in-home audit.

Installation Rates of In-home Audit Participants

In-home audit participants were asked which of the installation recommendations from the in-home audit had been installed or were planned to be installed. The general installation recommendations were identical to the phone survey recommendations; however, the home audit provided a more detailed analysis of each installation recommendation and allowed Duke Energy to calculate an incentive using DSMore. In addition, some fan recommendations were added, but not incented, during the in-home audit.

Table 10. Status of recommendations as a result of in-home audit

Recommendation	N	Installed as a result of audit		Planned Installation	
		N	%	N	%
Seal Air Leaks	18	7	39%	4	22%
Insulate Attic	18	3	17%	5	28%
Seal Ducts	7	0	0	1	14%
Insulate Ducts	7	2	28%	1	14%
Extend Bath Exhaust fan	7	0	0	3	43%
Add Whole House Fan	2	0	0	2	100%

Survey participants that planned installations all indicated they would be installing within the next year.

When an in-home audit survey respondent indicated non-installation of a recommended measure, the respondent was additionally asked for the reason behind that non-installation. The reasons included: don't believe it will improve comfort, don't believe it

will reduce bills, don't believe it will save energy, cannot afford it at this time, and other. The results are tabulated in Table 11 below.

Table 11. Reasons for non-installation of in-home audit recommendations

		Do not believe it will improve/save...			Cannot
Recommendation	Total	Comfort	Bills	Energy	afford
Seal Air Leaks	7	1	1	3	2
Insulate Attic	10	5		1	4
Seal Ducts	6		3		3
Insulate Ducts	4	1	1		2

Additional Installations

Phone audit survey respondents were asked if they had purchased any energy efficient equipment or made any improvements to their home that may have been influenced by the audit. The results are tabulated in Table 12.

Table 12. Energy Efficiency Purchases Since ES@H in-home audit

Respondent	Action Taken	Quantity	Location	How do you know it's efficient?	Influence of audit
1	Heat pump replaced	1	Basement	Energy Star rated	7
2	New Windows	7	House	Energy Star rated	8
3	New Dishwasher	1	House	Energy Star rated	1
4	Water heater replaced	1	Basement	Energy Star rated	9
5	Heat pump replaced	1	Basement	Energy Star rated	5
6	CFLs	10	Home	Energy Star rated	10
	Heat pump replaced	1	Basement	Energy Star rated	7
7	CFLs	18	Home	Energy Star rated	1

Other energy efficient actions given by survey respondents included:

- Turned down thermostat (n=3)
- Bought programmable thermostat (not yet installed)
- Started using a power strip for electronics on standby

In-Home Audit Freeridership

Five of 24 in-home audit participants (this total includes the 18 respondents who stopped participation in the program after the in-home audit plus six who participated fully in the ES@H program) stated that they had already been considering getting a home energy

assessment prior to participation in ES@H. Two of those five stated that they would have purchased an assessment from someone else, both within the next year.

The respondents who indicated they would have purchased a home assessment from someone else were also asked what they thought they would have to pay for an in-home assessment from someone other than Duke Energy. One respondent stated $150, and one respondent stated he would pick a contractor that offered it as a package with installation work, indicating that it would not have been a formal audit, but rather a contractor's assessment of the customer's needs for their services.

To calculate an estimated in-home audit freeridership level, the respondent who indicated he would have bought an assessment within a year was assigned 100% freeridership and the remaining three respondents who indicated they had been considering a home assessment were assigned 50% freeridership. The freeridership calculation is 1(1) + 3(0.5)/24 which equals 0.104 or 10.4% freeridership. This freeridership level applies to the in-home audit regardless of whether the participant proceeded to installation of the recommended measures.

Barriers to Complete Installation Participation

Twelve of the in-home audit survey respondents who made installations or stated that they were planning to make installations were asked an open-ended question for their reasons for not proceeding to installation with the Duke Energy approved vendor.

- 5 respondents preferred the quality of another contractor
- 4 respondents preferred to do the work themselves
- 2 respondents felt there was too much paperwork involved
- 1 respondent felt that they needed more time to prepare financially

Complete Installation Participant Results

At the time of this evaluation, 11 participants had participated fully in the ES@H program which included the installation of recommended improvements by a Duke Energy-approved contractor. TecMarket works surveyed 6 of these 11 participants with the results presented below.

Program Satisfaction

The surveyed participants are very satisfied with the Energy Solutions @ Home program. Table 13 below shows the respondents' mean satisfaction scores with various aspects of the program.

Table 13. ESAH Program satisfaction for full participants

Metric	Average satisfaction rating	N	Percentage of ratings at or below 7

Scheduling phone audit	9	6	0%
Scheduling home audit	8.3	6	17%
Interactions with phone auditor	9.5	6	0%
Interactions with in-home auditor	8.5	6	0%
Knowledge of phone auditor	9	6	0%
Knowledge of in-home auditor	8.8	6	17%
Phone/In-home Audit report	8	6	34%
Interactions with Duke Energy Staff	9.5	6	0%
Rebate level	8.3	6	17%
Overall Satisfaction with ES@H	9	6	0%

Installation Satisfaction

Additionally, full participation survey respondents were asked to rate their satisfaction with the contractor that provided the installation of the recommended measures.

Table 14. Satisfaction with contractor

Metric	Average satisfaction rating	N	Percentage of ratings at or below 7
Contractor Services	9	6	0%
Contractor pricing	8.3	6	17%
Contractor quality	9	6	0%
Overall contractor satisfaction	8.5	6	0%

Influence of Program Components on Decision to Complete Installation

Each full installation survey respondent was asked to rate on a 1 to 10 scaled (with 1 being least influential and 10 being most influential) the influence of the assessment, contractor coordination, and incentive on their decision to proceed to installation. The results are presented below.

Table 15. Influence of program on measure installation

Respondent	Influence of incentive	Influence of assessment	Influence of contractor coordination
1	9	8	4
2	8	8	8
3	9	6	5
4	10	7	1
5	10	9	7
6	7	9	7

mean	8.8	7.8	5.3

As can be seen in Table 15, of the three items assessed, the program incentive was the most influential factor attributed to full participation in the ES@H program followed by the influence of the assessment and lastly, the influence of the contractor.

Overall Program Participant Opinions

Survey respondents were asked what they like most and least about the program. This section presents the results of these questions.

What Participants Liked Most

We asked the participants what they liked most about the program. Their responses are bulleted below.

Phone audit participants:

- "The report was good and the information was helpful"
- "It answered all my questions"
- "Just the fact that it's offered"

In-home audit participants:

- "I enjoyed talking to the auditor"
- "The friendly staff"
- "The completeness of the report"

Complete installation participants:

- "The rebate" (n=2)
- "Learning about energy efficiency and saving money"
- "Everything"
- "Knowing Duke Energy is there to work with me"

What Participants Liked Least

TecMarket Works asked the surveyed participants what they liked least about the program. Their responses are below.

Phone audit participants:

- "$50 is too expensive for the in-home audit"

In-home audit participants:

- "Felt like I could do it myself for cheaper"
- "Had some scheduling issues early on"
- "Rebate was confusing"
- "Wanted to use my own contractor"
- "Paying $50 and not finding it worth it"

Complete installation:

- "Wanted more improvement ideas"

Improvements to the Program

We also asked the surveyed participants for any improvements to the program or anything about the program that they would like to see modified or changed.

Phone audit:

- "Offer a blower test"
- "Offer a more thorough audit"

In-home audit:

- "Make the rebate process more transparent"
- "Give more improvement ideas"

Complete installation:

- "Provide follow-up so we know that the savings are really there"
- "Add window installation"

Appendix A: Energy Solutions @ Home Non-Participant Survey Instrument

The questions below require mostly short, scaled replies from the interviewee, and not all questions will be asked of all participants. This interview should take approximately 10 to 15 minutes.

Non-Responder Survey

Use five attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EST or 9-7 CST Monday through Saturday. No calls on Sunday. (Sample size N =?)

SURVEY

Call back 1: Date: _____, Time: _____ ❑AM or ❑PM
Call back 2: Date: _____, Time: _____ ❑AM or ❑PM
Call back 3: Date: _____, Time: _____ ❑AM or ❑PM
Call back 4: Date: _____, Time: _____ ❑AM or ❑PM
Call back 5: Date: _____, Time: _____ ❑AM or ❑PM

❑ Contact dropped after fifth attempt.

Introduction

Note: Only read words in bold type.

If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back:

Hello, my name is _____. I am calling on behalf of Duke Energy to conduct a customer survey about the Energy Solutions at Home Program. May I speak with _____ please?

Please let me assure you we are not selling anything. We are conducting a brief customer survey on behalf of Duke Energy. Duke Energy recently mailed you a letter informing you of a new program they are offering to homeowners, Energy Solutions @ Home. The letter you received compared the energy usage of your home to the energy usage of an average similar type home in your neighborhood.

The letter also had a number to call to schedule an appointment with our Energy Experts for a detailed Energy Assessment of your home if you wanted one.

Do you recall this letter? (*If no or don't know, thank and go to THE END*)

If Yes:

Duke Energy has not heard from you and would like to ask you a few follow-up questions. Your answers will be confidential and will be grouped with others, so please be candid and honest in your answers. Do you have a few minutes?

1. **What was your reason for not calling to schedule an appointment with our Energy Experts for a comprehensive energy assessment of your home?**
   a) Not a good time for me
   b) Felt Initial assessment would be too time-consuming
   c) Initial cost was too expensive
   d) Not interested in saving energy
   e) Feel I already do enough to save energy in my house
   f) Feel I am already knowledgeable about ways to save energy
   g) Don't believe the projected savings are accurate
   h) I like my home the way it is
   i) Other: _____

1b. Was there any other reason?

_____

IF THESE ARE NOT SPECIFICALLY STATED IN 1 OR 1B:

2. **Was the timing of the offering an issue for you?**

   a) Yes
   b) No *(skip to 3)*

2a. Why do you say that? _____

3. **The energy assessment costs $50. Do you think $50 for a home energy assessment was too expensive?**

   a) Yes
   b) No *(skip to 4)*

3a. In this assessment, a skilled energy inspector comes to your home and inspects it for any opportunities to reduce your energy consumption and provide you with a report listing suggestions for you. They then can provide contacts with approved contractors in order to make the home more energy efficient. In addition, the $50 audit fee may be applied toward program-approved installation costs..

What price should Duke Energy charge for this service?

a) _____
b) Don't Know (*skip to 4*)

3b. If it were priced at this level, would you be interested in having an energy assessment? Again, we are not promoting or selling, we are only interested in customer opinions.

a) Yes
b) No
c) Don't Know

4. Did you understand what Duke Energy was offering?

a) Yes --- *Skip to 5*
b) No
c) Don't Know/Not Sure

4a. Was there anything specific about the program's offering that you didn't understand?

_____

5. Do you feel that you have already explored all possibilities for improving the energy saving and comfort level of your home?

a) Yes --- *Skip to 6*
b) No
c) Don't Know

5a. *If no or don't know,* **What types of things do you think are left to be done (again, we are not selling anything).**

Type 1: _____
Type 2: _____
Type 3: _____
Type 4: _____

6. When you were offered this program, did you call or email Duke Energy with questions about the program?

a) Yes – what were the questions? _____
b) No ---- *Skip to 7*

6b. Did they answer your questions adequately?
a. Yes
b. No

7. Generally speaking, how important are environmental issues to you? Would you say they are...

a) Very Important
b) Important
c) Neither Important Nor Not Important
d) Not Important, or
e) Not at all Important

8. What do you think is the most pressing environmental issues today?

_____

9. Generally speaking, how important is decreasing your monthly energy bill to you? Would you say it is...

a) **Very Important**
b) **Important**
c) **Neither Important Nor Not Important**
d) **Not Important, or**
e) **Not At All Important**

10. How important is maintaining the comfort level of your home to you? Would you say it is...

a) **Very Important**
b) **Important**
c) **Neither Important Nor Not Important**
d) **Not Important, or**
e) **Not At All Important**

11. Have you ever participated in any of Duke Energy's energy efficiency programs? These are programs that provide energy audits of your home, or offer purchase rebates to buy the more energy efficient equipment when you make updates to your home.

a) Yes
b) No - *skip to household/demographic questions*
c) Don't Know/Not Sure - *read the list of programs, ask again*

11b. In which of the Duke Energy programs did you participate?

a. Smart Saver CFL, which offers free CFLs
b. Smart Saver
c. Low Income program
d. Home Energy House Call
e. K12, aka "Get Energy Smart" or NEED
f. Personalized Energy Report
g. Other _____

Using a 1-10 scale with 1 meaning completely dissatisfied and 10 meaning completely satisfied, how would you rate your overall satisfaction with the <above> program(s)?

1 2 3 4 5 6 7 8 9 10

Repeat for all programs.

12. Using the same 1-10 scale, overall, how satisfied are you with Duke Energy and its programs and services?

1 2 3 4 5 6 7 8 9 10

13. What can Duke Energy do to increase your interest in the Energy Solutions at Home service?

_____

14. In what type of building do you live?

a. Single-family detached building
b. Mobile Home/Manufactured home
c. Condominium
d. Duplex/two-family
e. Multi-family building (3 or more units)
f. Townhouse

15. What year was your residence built?

a. 1959 and before
b. 1960-1979
c. 1980-1989
d. 1990-1997
e. 1998-2000

f. 2001-2007
g. 2008-present
h. Don't Know

***16.* About how many square feet of living space are in your home?**
(Do not include garages or other unheated areas)
Note: A 10 foot by 12 foot room is 120 square feet

a. Less than 500
b. 500 – 999
c. 1000 – 1499
d. 1500 – 1999
e. 2000 – 2499
f. 2500 – 2999
g. 3000 – 3499
h. 3500 – 3999
i. 4000 or more
j. Don't know

17. What type of fuel do you use for indoor cooking?
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

18. What type of fuel do you use for clothes drying?
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other
f. No clothes dryer

Air Conditioning

This next set of questions asks about how you cool your home. Please mark the response that best answers each question.

***19.* Do you use one or more of the following to cool your home?**
(Mark all that apply)
a. None, do not cool the home
b. Heat pump for cooling
c. Central air conditioning
d. Through the wall or window air conditioning unit
e. Geothermal Heat pump

20. How many rooms in your home (excluding bathrooms, but including finished basements) are cooled?

a. None
b. 1-3
c. 4
d. 5
e. 6
f. 7
g. 8
h. 9
i. 10 or more

21. How old is your cooling system?

a. 0-4 years
b. 5-9 years
c. 10-14 years
d. 15-19 years
e. 19 years
f. Don't know

22. How many window-unit or "through the wall" air conditioner(s) do you use?

a. None
b. 1
c. 2
d. 3
e. 4
f. 5
g. 6
h. 7
i. 8 or more

25. What is your thermostat setting on a hot *summer weekday* (Monday through Friday) when you are using the air conditioner

	< 65	65 to 68	69 to 72	73 to 75	73 to 75	76 to 78	>78	OFF	Do not have a thermostat that controls the air conditioner
Morning (6 am – 12 pm)									
Afternoon									

(12 pm – 5 pm)									
Evening (5 pm – 10 pm)									
Night (10 pm – 6 am)									

26. What is your thermostat setting on a hot *summer weekend* (Saturday or Sunday) when you are using the air conditioner

	< 65	65 to 68	69 to 72	73 to 75	73 to 75	76 to 78	>78	OFF	Do not have a thermostat that controls the air conditioner
Morning (6 am – 12 pm)									
Afternoon (12 pm – 5 pm)									
Evening (5 pm – 10 pm)									
Night (10 pm – 6 am)									

27. **Do you have a programmable thermostat?**
    a. Yes
    b. No

YOUR HOUSEHOLD

The following questions are about your household. Please keep in mind that all information you provide will be kept strictly confidential and will not be released to anyone. This information will be combined with information provided by other households and will be used for statistical purposes only.

28. **How many people live in this home?**
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5
    f. 6
    g. 7
    h. 8 or more

29. **How many persons are usually home on a weekday afternoon?**

a. 0
b. 1
c. 2
d. 3
e. 4
f. 5
g. 6
h. 7
i. 8 or more

30. **What is the fuel used in your primary heating system?** *(Mark all that apply)*
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

31. **Which of the following best describes your home's primary heating system?**
a. None
b. Central forced air furnace
c. Electric Baseboard
d. Heat Pump
e. Geothermal Heat Pump
f. Other

32. **If you have a central furnace system, how old is the primary system?**
a. 0-4 years
b. 5-9 years
c. 10-14 years
d. 15-19 years
e. 19 years
f. Don't know
g. Do not have

33. **What is the fuel used by your water heater?** ***(Mark all that apply)***
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

34. **How old is your water heater?**
a. 0-4 years
b. 5-9 years
c. 10-14 years
d. 15-19 years

e. > 19 years
f. Don't know

Optional - the following questions are for classification purposes only and will not be used for any other purpose than to help Duke Energy continue to improve service.

35. **What is your age group?**
    a. 18-34
    b. 35-49
    c. 50-59
    d. 60-64
    e. 65-74
    f. Over 74

36. **Please indicate your annual household income.**
    a. Under $15,000
    b. $15,000-$29,999
    c. $30,000-$49,999
    d. $50,000-$74,999
    e. $75,000-$100,000
    f. Over $100,000

Those are all of the questions I have for you. Thank you for participating.

Appendix B: Energy Solutions @ Home Phone Audit But No In-home Audit Participant Survey Instrument

The questions below require mostly short, scaled replies from the interviewee, and not all questions will be asked of all participants. This interview should take approximately 10 to 15 minutes.

Energy Solutions at Home Program

Phone Audit Participant Survey

Use five attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EST or 9-7 CST Monday through Saturday. No calls on Sunday. (Sample size N =?)

SURVEY

Introduction

Note: Only read words in bold type.

Hello, my name is _____. I am calling on behalf of Duke Energy to conduct a customer survey about the Energy Solutions at Home Program. May I speak with _____ please?

If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back:

Call back 1:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 2:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 3:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 4:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 5:	Date: _____,	Time: _____	❑AM or ❑PM

❑ Contact dropped after fifth attempt.

We are conducting this survey to obtain your opinions about the Energy Solutions at Home Program. Duke Energy's records indicate that you participated in the Energy Solutions at Home Program. We are not selling anything. The survey will take about 10 minutes and your answers will be confidential, and will help us to make improvements to the program to better serve others. May we begin the survey?

Note: If this is not a good time, ask if there is a better time to schedule a callback.

1. **Do you recall participating in the Energy Solutions at Home Program?**

a. Yes - *Skip to Q2.* →
b. No
c. DK/NS

This program was provided through Duke Energy. In this program, you registered to receive a home energy assessment for $90. In return, the assessors provided you with custom energy-saving recommendations for you and your home, as well as suggestions for major upgrades that were eligible for Duke Energy's incentive programs. These incentives included rebates as well as assistance with project construction.

Do you remember participating in this program?

a Yes - *Go to Q2.* →
b. No
c. DK/NS

If No or DK/NS terminate interview and go to next participant.

2. **Our records indicate that you participated in a phone assessment, but chose not schedule a home assessment, is this correct?**
   a. Yes
   b. No – *ask question 2a.*

   2a. **Did you complete an on-site home audit?**
   Yes – *start new survey with home audit protocol*
   No – *continue survey*

3. **How did you first learn of the Energy Solutions at Home program?**
   a. Mailer/brochure
   b. Other Duke Energy program -- **Which one?** _____
   c. Duke Energy Web Site
   d. Friend
   e. Relative
   f. Other: _____

4. **Please think back to the time when you were deciding to participate in the Energy Solutions at Home program. What factors motivated you to**

participate? (*do not read list, place a "1" next to the response that matches best)*

a. The assessment
b. The program incentives
c. The technical assistance from the assessor
d. Coordination with contractor
e. Coordination with lending institution
f. Recommendation of someone else (*Probe*: **Who?**_____)
g. Wanted to reduce energy costs
h. The information provided by the Program
i. Past experience with this program
j. Because of past experience with another Duke Energy program
k. Recommendation from other utility program
    i. (*Probe*: **What program?** _____)
l. Recommendation of family/friend/neighbor
m. Other (SPECIFY) _____
n. Don't know/don't remember/not sure (DK/NS)

If multiple responses: 2.a. **Were there any other reasons?** *(number responses above in the order they are provided - Repeat until 'no' response.)*

Duke Energy has not heard from you since your phone assessment and would like to ask you a few follow-up questions. Your answers will be grouped with others so please be candid and honest in your answers. Do you have a few minutes?

5. **What was your reason for not scheduling an appointment with our Energy Experts for a comprehensive energy assessment of your home?**

a) Not a good time for me
b) Felt Initial assessment would be too time-consuming
c) Initial cost was too expensive
d) Not interested in saving energy
e) Feel I already do enough to save energy in my house
f) Feel I am already knowledgeable about ways to save energy
g) Don't believe the projected savings are accurate
h) I like my home the way it is
i) Felt that the over-the-phone assessment gave me enough to do at this time
j) ❑Was not aware that there were further steps to the program

5b. Was there any other reason?

a. Yes **What were the other reasons?**

_____

b. No

IF THESE ARE NOT SPECIFICALLY STATED IN 5 OR 5B:

6. **Was the timing of the offering an issue for you?**

   a. Yes
   b. No *(skip to 7)*

   6a. Why do you say that? _____

7. **The energy assessment cost $50 and could later be applied to the cost of program-approved improvements. Do you think $50 for a home energy assessment was too expensive?**
   a. Yes
   b. No *(skip to 8)*

   In this assessment, a skilled energy inspector comes to your home and inspects it for any opportunities to reduce your energy consumption and provide you with a report listing suggestions for you. They then can provide contacts with contractors in order to make the home more energy efficient. ..

   7a. What price should Duke Energy charge for this service?

   a. _____
   b. Don't Know (*skip to 8*)

   7b. If it were priced at this level, would you be interested in having an energy assessment? Again, we are not promoting or selling, we are only interested in customer opinions.
   a. Yes
   b. No
   c. Don't Know

8. **Did you understand what Duke Energy was offering?**
   a. Yes --- *Skip to 9*
   b. No
   c. Don't Know/Not Sure

   8a. Was there anything specific about the program's offering that you didn't understand?

   _____

9. **After you completed the over-the-phone assessment, did you call or email Duke Energy with any additional questions about the program?**

   a. Yes
   b. No ---- *Skip to 10*

   9b. Did they answer your questions adequately?
   a. Yes
   b. No

10. **What effect, if any, did the phone audit have on your decision not to schedule a home audit. Was it...**

    a. **Very influential**
    b. **Influential**
    c. **Not very influential**
    d. **Of no influence at all**

Measure Questions

If <Insulation / AC / furnace / caulking and sealing / heat pump> was recommended:

11. **Did you install the <measure> as recommended in the Energy Solutions at Home Assessment Report?**

    a. Yes *–ask question 11a*
    b. No – *ask question 11b*
    c. DK

    If yes, **11a. What did you do?** _____
    ask about next measure if measures are exhausted skip to question 12

    If no, **11b. Do you have plans to install <measure>?**
    a. Yes – *go to question 11c*
    b. No – *skip to question 11d*
    c. DK – *skip to question 11d*

    11c. When do you plan to install this measure?
    a. Within the next 6 months
    b. Within the next year
    c. Within the next two years
    d. Within the next three years
    e. After three years
    f. Don't Know

11d. Can you tell me why you have decided to delay or skip installation ?

a. Don't believe it will improve comfort
b. Don't believe it will save energy
c. Don't believe it will reduce bills
d. Installing other measures first
e. Cannot afford it at this time
f. Other : _____

Repeat question 11 until all measures are exhausted

12. **Did you receive a rebate through the Energy Solutions as Home program for this installation?**
    a) Yes
    b) No – skip to question 15
    c) DK – skip to question 15

13. **Did you find the level of the rebate satisfactory?**
    a) Yes
    b) No
    c) DK

14. *If no to question 13* **What amount would you consider a satisfactory rebate for this installation?** _____

15. **Did you receive a rebate from any other Duke Energy incentive programs for this installation?**
    a) Yes
    b) No – *skip to question 16*
    c) DK/NS – *skip to question 16*

    If yes, **15a. From which program?**
    a) Res Smart Saver
    b) Home Energy House Call
    c) Smart Saver CFL
    d) Other: _____
    e) Don't Know

16. **Before receiving the Energy Solutions at Home phone assessment, what was your level of interest in this installation?**
    a) None
    b) Already been thinking about doing it
    c) Already collecting information about this type of project
    d) Already begun to get product information and price estimates
    e) Already made a firm decision to install

f) Already negotiated with a supplier to install the project

If c or d above, **16a. Would you have focused as much attention to the energy efficiency aspects of the project if you would have done it on your own without the phone assessment?**

a) Yes
b) No
c) Don't know

Repeat for all measures installed...

Spillover Questions

17. **Since you participated in the Energy Solutions at Home Program, have you purchased and installed any other type of energy efficiency equipment or made energy efficiency improvements in your home that were not recommended by the assessment report?**

a) Yes
b) No
c) Don't Know

If Yes, **What did you do?**

_____

_____

18. **What type and quantity of high efficiency equipment did you install on your own?** *Probe to get exact type and quantity and location*

Type 1: _____	Quantity 1: _____	Location 1: _____
Type 2: _____	Quantity 2: _____	Location 2: _____
Type 3: _____	Quantity 3: _____	Location 3: _____
Type 4: _____	Quantity 4: _____	Location 4: _____

19. *For each type listed in 18 above,*
How do you know that this equipment is high efficiency? For example, was it Energy Star rated?

Type 1: _____
Type 2: _____
Type 3: _____
Type 4: _____

I'm going to read a statement about this equipment that you purchased on your own. On a scale from 1-10, with 0 indicating that you strongly disagree, and 10 indicating that you strongly agree, please rate the following statement.

20. **My experience with the Energy Solutions at Home Program in <month/year> influenced my decision to install <Type 1/Type 2/Type 3/Type 4> on my own.**

Type 1:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 2:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 3:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 4:	1	2	3	4	5	6	7	8	9	10	Don't Know

21. **What other actions, if any, have you taken in your home to save energy and reduce utility bills at least in part as a result of what you learned in this program?**

Response 1: _____
Response 2: _____
Response 3: _____
Response 4: _____

22. **Do you feel that you have already explored all possibilities for improving the energy saving and comfort level of your home?**
    a) Yes --- *Skip to 23*
    b) No
    c) Don't Know

If no or don't know,
22a. What types of things do you think are left to be done (again, we are not selling anything).
Type 1: _____
Type 2: _____
Type 3: _____
Type 4: _____

23. **Generally speaking, how important are environmental issues to you? Would you say they are…**

    a. **Very Important**
    b. **Important**
    c. **Neither Important nor Not Important**

d. **Not Important**
e. **Not at all Important**

24. **What do you think is the most pressing environmental issues today?**

_____

25. **Generally speaking, how important is decreasing your monthly energy bill to you? Would you say it is...**

a. **Very Important**
b. **Important**
c. **Neither Important Nor Not Important**
d. **Not Important, or**
e. **Not At All Important**

26. **How important is maintaining the comfort level of your home to you? Would you say it is...**

a. **Very Important**
b. **Important**
c. **Neither Important Nor Not Important**
d. **Not Important, or**
e. **Not At All Important**

27. **What additional services would you like the program to provide that it does not now provide?**
Response: _____
_____

28. **Are there any other things that you would like to see changed about the program?**
Response: _____

29. **What do you think can be done to increase people's interest in participating in the Energy Solutions at Home Program?**
Response 1: _____
Response 2: _____
Response 3: _____
Response 4: _____

30. **What do you like most about this program?**
Response: _____

31. **What do you like least about this program?**
Response: _____

Now I am going to ask you some general satisfaction statements. On a scale from 1-10, with 1 indicating that you strongly disagree, and 10 indicating that you strongly agree, please rate the following statements.

32. **Scheduling the over-the-phone energy assessment was easy to do.**

1 2 3 4 5 6 7 8 9 10 Don't Know

If 7 or less, **How could this be improved?**

_____

33. **The interactions and communications I had with the over-the-phone energy assessor were satisfactory.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

If 7 or less, **How could this be improved?**

_____

34. **The over-the-phone energy assessor was helpful and knowledgeable.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

If 7 or less, **How could this be improved?**

_____

35. **Scheduling the home energy assessment was easy to do**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

36. **The interactions and communications I had with Duke Energy staff were satisfactory.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

If 7 or less, **How could this be improved?**

---

37. **The over-the-phone assessment report was easy to read and understand.**

1 2 3 4 5 6 7 8 9 10 Don't Know

If 7 or less, **How could this be improved?**

---

38. **The recommendations in the over-the-phone assessment report provided new ideas that I was not previously considering.**

1 2 3 4 5 6 7 8 9 10 Don't Know

If 7 or less, **How could this be improved?**

---

39. **The recommendations in the over-the-phone assessment report increased the likelihood that I would take recommended actions.**

1 2 3 4 5 6 7 8 9 10 Don't Know

If 7 or less, **How could this be improved?**

---

40. **Overall I am satisfied with the program.**

1 2 3 4 5 6 7 8 9 10 Don't Know

If 7 or less, **How could this be improved?**

---

41. **Have you ever participated in any of Duke Energy's other energy efficiency programs? These are programs that provide energy audits of your home, or offer purchase rebates to buy the more energy efficient equipment when you make updates to your home.**

a. Yes
b. No - *skip to household/demographic questions - q45*
c. Don't Know/Not Sure - *read the list of programs, ask again*

41a. In which of the Duke Energy programs did you participate?
a. Smart Saver CFL, which offers coupons for CFLs
b. Smart Saver
c. Low Income program
d. Home Energy House Call
e. K12, aka "Get Energy Smart" or NEED
f. Personalized Energy Report
g. Other _____

42. **Using a 1-10 scale with 1 meaning completely dissatisfied and 10 meaning completely satisfied, how would you rate your overall satisfaction with the** <above> **program(s)?**
1 2 3 4 5 6 7 8 9 10 Don't Know

Repeat for all programs.

43. **Using the same 1-10 scale, overall, how satisfied are you with Duke Energy and its programs and services?**
1 2 3 4 5 6 7 8 9 10 Don't Know

44. **What can Duke Energy do to increase your interest in the Energy Solutions at Home service?**

_____

Housing Characteristics

45. **In what type of building do you live?**
a. Single-family detached building
b. Mobile Home/Manufactured home
c. Condominium
d. Duplex/two-family
e. Multi-family building (3 or more units)
f. Townhouse

46. **What year was your residence built?**
a. 1959 and before
b. 1960-1979
c. 1980-1989
d. 1990-1997
e. 1998-2000
f. 2001-2007
g. 2008-present

h. Don't Know

47. **About how many square feet of living space are in your home?**
(Do not include garages or other unheated areas)
Note: A 10 foot by 12 foot room is 120 square feet
a. Less than 500
b. 500 – 999
c. 1000 – 1499
d. 1500 – 1999
e. 2000 – 2499
f. 2500 – 2999
g. 3000 – 3499
h. 3500 – 3999
i. 4000 or more
j. Don't know

48. **What type of fuel do you use for indoor cooking?**
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

49. **What type of fuel do you use for clothes drying?**
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other
f. No clothes dryer

Air Conditioning
This next set of questions asks about how you cool your home. Please mark the response that best answers each question.

50. **Do you use one or more of the following to cool your home?**
(Mark all that apply)
a. None, do not cool the home=
b. Heat pump for cooling
c. Central air conditioning
d. Through the wall or window air conditioning unit
e. Geothermal Heat pump

51. **How many rooms in your home (excluding bathrooms, but including finished basements) are cooled?**
    a. None
    b. 1-3
    c. 4
    d. 5
    e. 6
    f. 7
    g. 8
    h. 9
    i. 10 or more

52. **How old is your cooling system?**
    a. 0-4 years
    b. 5-9 years
    c. 10-14 years
    d. 15-19 years
    e. 19 years
    f. Don't know

53. **How many window-unit or "through the wall" air conditioner(s) do you use?**
    a. None
    b. 1
    c. 2
    d. 3
    e. 4
    f. 5
    g. 6
    h. 7
    i. 8 or more

54. **What is your thermostat setting on a hot *summer weekday* (Monday through Friday) when you are using the air conditioner**

	< 65	65 to 68	69 to 72	73 to 75	73 to 75	76 to 78	>78	OFF	Do not have a thermostat that controls the air conditioner
Morning (6 am – 12 pm)									
Afternoon (12 pm – 5 pm)									
Evening (5 pm – 10 pm)									
Night (10 pm – 6 am)									

55. **What is your thermostat setting on a hot *summer weekend* (Saturday or Sunday) when you are using the air conditioner**

	< 65	65 to 68	69 to 72	73 to 75	73 to 75	76 to 78	>78	OFF	Do not have a thermostat that controls the air conditioner
Morning (6 am – 12 pm)									
Afternoon (12 pm – 5 pm)									
Evening (5 pm – 10 pm)									
Night (10 pm – 6 am)									

56. **Do you have a programmable thermostat?**
    a. Yes
    b. No

Your Household

The following questions are about your household. Please keep in mind that all information you provide will be kept strictly confidential and will not be released to anyone. This information will be combined with information provided by other households and will be used for statistical purposes only.

57. How many people live in this home?
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5
    f. 6
    g. 7
    h. 8 or more

58. How many persons are usually home on a weekday afternoon?
    a. 0
    b. 1
    c. 2
    d. 3

e. 4
f. 5
g. 6
h. 7
i. 8 or more

59. What is the fuel used in your primary heating system? *(Mark all that apply)*
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

60. Which of the following best describes your home's primary heating system?
a. None
b. Central forced air furnace
c. Electric Baseboard
d. Heat Pump
e. Geothermal Heat Pump
f. Other

61. If you have a central furnace system, how old is the primary system?
a. 0-4 years
b. 5-9 years
c. 10-14 years
d. 15-19 years
e. 19 years
f. Don't know
g. Do not have

62. What is the fuel used by your water heater? ***(Mark all that apply)***
a. Electricity
b. Natural Gas
c. Oil
d. Propane
e. Other

63. How old is your water heater?
a. 0-4 years
b. 5-9 years
c. 10-14 years
d. 15-19 years
e. > 19 years
f. Don't know

Optional - the following questions are for classification purposes only and will not be used for any other purpose than to help Duke Energy continue to improve service.

64. What is your age group?

a. 18-34
b. 35-49
c. 50-59
d. 60-64
e. 65-74
f. Over 74

65. Please indicate your annual household income.

a. Under $15,000
b. $15,000-$29,999
c. $30,000-$49,999
d. $50,000-$74,999
e. $75,000-$100,000
f. Over $100,000

Those are all of the questions I have for you. Thank you for participating.

Appendix C: Energy Solutions @ Home In-Home Audit But No Installation Participant Survey Instrument

The questions below require mostly short, scaled replies from the interviewee, and not all questions will be asked of all participants. This interview should take approximately 10 to 15 minutes.

Energy Solutions at Home Program

Participant Survey

If Energy Solutions at Home participant, then contact for survey. Use five attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EST or 9-7 CST Monday through Saturday. No calls on Sunday. (Sample size N =?)

SURVEY

Introduction

Note: Only read words in bold type.

Hello, my name is _____. I am calling on behalf of Duke Energy to conduct a customer survey about the Energy Solutions at Home Program. May I speak with _____ please?

If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back:

Call back 1:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 2:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 3:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 4:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 5:	Date: _____,	Time: _____	❑AM or ❑PM

❑ Contact dropped after fifth attempt.

We are conducting this survey to obtain your opinions about the Energy Solutions at Home Program. Duke Energy's records indicate that you participated in the Energy Solutions at Home Program. We are not selling anything. The survey will take about 10 minutes and your answers will be confidential, and will help us to

make improvements to the program to better serve others. May we begin the survey?

Note: If this is not a good time, ask if there is a better time to schedule a callback.

1. **Do you recall participating in the Energy Solutions at Home Program?**

a. Yes, *begin* ——— ~~*Skip*~~ *to Q2.*
b. No,
c. DK/NS

This program was provided through Duke Energy. In this program, you registered to receive a home energy assessment for $90. In return, the assessors provided you with custom energy-saving recommendations for you and your home, as well as suggestions for major upgrades that were eligible for Duke Energy's incentive programs. These incentives included rebates as well as assistance with project financing.

Do you remember participating in this program?

a. Yes, *begin* ——— ~~*Go*~~ *to Q2.*
b. No,
c. DK/NS

If No or DK/NS terminate interview and go to next participant.

2. **How did you first learn of the Energy Solutions at Home program?**
   a. Mailer/brochure
   b. Other Duke Energy program - **Which one?** _____
   c. Duke Energy Web Site
   d. Friend
   e. Relative
   f. Other

3. **Please think back to the time when you were deciding to participate in the Energy Solutions at Home program. What factors motivated you to participate?** (*do not read list, place a "1" next to the response that matches best)*

   a. ____ The assessment
   b. ____ The program incentives
   c. ____ The technical assistance from the assessor

d. ____ coordination with contractor
e. ____ coordination with lending institution
f. ____ Recommendation of someone else (*Probe*: **Who?**_____)
g. ____ Wanted to reduce energy costs
h. ____ The information provided by the Program
i. ____ Past experience with this program
j. ____ Because of past experience with another Duke Energy program
k. ____ Recommendation from other utility program
(*Probe*: **What program?** _____)
l. ____ Recommendation of family/friend/neighbor
m. ____ Other (SPECIFY) _____
n. ____ Don't know/don't remember/not sure (DK/NS)

If multiple responses: 3.a. **Were there any other reasons?** *(number responses above in the order they are provided - Repeat until 'no' response.)*

4. **Prior to participating in Energy Solutions at Home, had you participated in any other Duke Energy rebate or incentive programs** (*check all that apply*)?

a) Yes
b) No

If yes, 4a: **Which programs?**
a) Res Smart Saver
b) Non-res Smart Saver
c) Home Energy House Call
d) K-12
e) Power Manager
f) Low Income
g) CFLs (coupons or IVR, web, BRC)
h) Personalized Energy Report
i) Other : _____
j) Don't Know

Program Free-Ridership Questions

5. **Before you heard about the Energy Solutions at Home from Duke Energy, had you already been considering getting a home energy assessment?**

   a) Yes
   b) No
   c) Don't Know

6. **If the assessment from Duke Energy's Energy Solutions at Home Program had not been available, would you still have:**

   6a. **Purchased a home assessment from someone else?**

   a. Yes
   b. No – *skip to question 7*
   c. Don't Know – *skip to question 7*

   If yes, 6b. **Assessments from private suppliers typically cost from $150 to $300 dollars compared to the $50 charged by Duke Energy.**

   What do you think you would have had to pay for the assessment if you would not have obtained it from Duke Energy?

   $ _____

   6c. **Would you have purchased the assessment within the next year, the next two years, the next three years or after three years?**

   a) Within the next year
   b) Within the next two years
   c) Within the next three years
   d) After three years
   e) Don't Know

7. **Were you aware that the $50 home audit fee may be applied to the installation cost of program-approved upgrades?**
   a) Yes
   b) No
   c) DK

SATISFACTION QUESTIONS

Now I am going to ask you some general satisfaction statements. On a scale from 1-10, with 1 indicating that you strongly disagree, and 10 indicating that you strongly agree, please rate the following statements.

8. **Scheduling the over-the-phone energy assessment was easy to do.**

   1 2 3 4 5 6 7 8 9 10

   ❑ Don't Know

   If 7 or less, **How could this be improved?**

   _____

9. **The interactions and communications I had with the over-the-phone energy assessor were satisfactory.**

   1 2 3 4 5 6 7 8 9 10

   ❑ Don't Know ❑ Not Applicable (no interaction)

   If 7 or less, **How could this be improved?**

   _____

10. **The over-the-phone energy assessor was helpful and knowledgeable.**

    1 2 3 4 5 6 7 8 9 10

    ❑ Don't Know ❑ Not Applicable (no interaction)

    If 7 or less, **How could this be improved?**

    _____

11. **Scheduling the home energy assessment was easy to do**

    1 2 3 4 5 6 7 8 9 10

    ❑ Don't Know ❑ Not Applicable (no interaction)

12. **The interactions and communications I had with the home energy assessor were satisfactory.**

    1 2 3 4 5 6 7 8 9 10

    ❑ Don't Know ❑ Not Applicable (no interaction)

    If 7 or less, **How could this be improved?**

    _____

13. **The home energy assessor was helpful and knowledgeable.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

If 7 or less, **How could this be improved?**

_____

14. **The interactions and communications I had with Duke Energy staff were satisfactory.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know ❑ Not Applicable (no interaction)

If 7 or less, **How could this be improved?**

_____

15. **The assessment report was easy to read and understand.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

16. **The recommendations in the assessment report provided new ideas that I was not previously considering.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

17. **The recommendations in the assessment report increased the likelihood that I would take recommended actions.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

18. **The coordination offered between Duke Energy and a contractor increased the likelihood that I would take recommended actions.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

19. **The rebate offered by Duke Energy above and beyond the federal stimulus rebate increased the likelihood that I would take recommended actions.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

20. **Overall I am satisfied with the program.**

1 2 3 4 5 6 7 8 9 10

❑ Don't Know

If 7 or less, **How could this be improved?**

_____

Measure Questions

21. *If <Insulation/AC/furnace/caulking and sealing/heat pump> was recommended:*
Did you install any measures as recommended in the Energy Solutions at Home Assessment Report?
    a) Yes – *have them list measures installed, skip to 22.*
        i. Measure 1:_____
        ii. Measure 2:_____
        iii. Measure 3:_____
        iv. Measure 4:_____

    b) No – *ask question 21 a & b.*
    c) DK

21a. *For any measures not installed,* **Do you have plans to install <measure> within the next**
    a. Six months
    b. Year
    c. 2 years
    d. 3 year
    e. More than 3 years
    f. Don't know

21b. For any measures not installed **Can you tell me why you have decided to delay or skip installation for this measure?**
    a. Don't believe it will improve comfort
    b. Don't believe it will save energy
    c. Don't believe it will reduce bills
    d. Installing other measures first
    e. Cannot afford it at this time
    f. Other : _____

22. *For all installed measures from question 21,*
Did you use any Energy Solutions at Home-specific services such as contractor coordination, financial coordination, or rebates to help complete this installation?
    a) Yes
    b) No
    c) Don't Know

23. **Did you use any other Duke Energy programs, such as Smart Saver or Home Energy House Call to help complete this installation?**
    a) Yes -- **Which one?** _____
    b) No -- *skip to Spillover Questions q36*
    c) Don't know -- *skip to Spillover Questions q36*

If they used ESAH services ask questions 24 to 35.

24. **Did you use a contractor coordinated with Duke Energy for the installation?**
    a) Yes – *skip to question 26*
    b) No
    c) Not sure

25. *If no to 24.*, **Why did you choose not to use a contractor coordinated with Duke Energy (check all that apply)?**
    a) Did it themselves
    b) Preferred the quality of another contractor
    c) Preferred the price of another contractor
    d) Felt there was too much paperwork involved
    e) Switched to a different program (which one?)
    f) Other: _____

On a 1-to-10 scale please rate your satisfaction with your contractor in the following areas:

25a. Communication

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

If 7 or less, **How could this be improved?**

_____

25b. Services offered

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

If 7 or less, **How could this be improved?**

_____

25 c. Pricing

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

If 7 or less, **How could this be improved?**

_____

25 d. Quality of work

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

If 7 or less, **How could this be improved?**

_____

25 e. Overall satisfaction

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

If 7 or less, **How could this be improved?**

_____

26. **Did you receive a rebate for this installation from the Duke Energy 'Energy Solutions at Home' program, excluding the federal stimulus rebate?**
    a) Yes
    b) No
    c) DK/NS

27. **Did you find the rebate amount from Energy Solutions at Home was satisfactory?**
    a) Yes -- *skip to question 28*
    b) No
    c) DK/NS

    27a.. **What amount would you consider a satisfactory rebate for this installation?** _____

28. **Did you receive a rebate from any other Duke Energy incentive programs for this installation?**
    a) Yes
    b) No
    c) DK/NS

    If yes, **28a. From which program?**
    a) Res Smart Saver
    b) Home Energy House Call
    c) Smart Saver CFL
    d) Other: _____
    e) Don't Know

29. **Before receiving the Energy Solutions at Home assessment, what was your level of interest in this installation?**

    a. None
    b. Already been thinking about doing it
    c. Already collecting information about this type of project
    d. Already begun to get product information and price estimates
    e. Already made a firm decision to install
    f. Already negotiated with a supplier to install the project

On a 1-to-10 scale, with a 1 meaning that it had no influence and a 10 meaning it was very influential in your decision to perform the installation please rate the influence of each of the following factors on your decision to perform the installation:

30. **The home assessment and the report**

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

31. **Duke Energy coordination with the contractor**

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

32. **The Duke Energy incentive amount**

1 2 3 4 5 6 7 8 9 10 ❑ Don't Know

33. **If the home assessment wasn't available through the Energy Solutions at Home Program, which of the following statements are you in most agreement:**

a) I would not have undertaken the project
b) I may not have undertaken the project
c) I would have undertaken the project but at a later time – *ask question 33a*
d) I would have undertaken the project at the same time – *ask question 33a*
e) I am not sure what I would have done.

33 a. *If c or d above*, **Would you have focused as much attention to the energy efficiency aspects of the project if you would have done it on your own without the assessment?**
a. Yes
b. No
c. Don't know

34. **If Duke Energy coordination with the contractor wasn't available through the Energy Solutions at Home Program, which of the following statements are you in most agreement:**

a) **I would not have undertaken the project**
b) **I may not have undertaken the project**
c) **I would have undertaken the project but at a later time**
d) **I would have undertaken the project at the same time**
e) **I am not sure what I would have done.**

35. If the Duke Energy financial incentive wasn't available through the Energy Solutions at Home Program, which of the following statements are you in most agreement:

a) **I would not have undertaken the project**

b) **I may not have undertaken the project**
c) **I would have undertaken the project but at a later time**
d) **I would have undertaken the project at the same time**
e) **I am not sure what I would have done.**

Spillover Questions

36. Since you participated in the Energy Solutions at Home Program, have you purchased and installed any other type of energy efficiency equipment or made energy efficiency improvements in your home that were not recommended by the assessment report?

a. Yes
b. No
c. Don't Know

37. What type and quantity of high efficiency equipment did you install on your own?
PROBE TO GET EXACT TYPE AND QUANTITY AND LOCATION

Type 1: :_____	Quantity 1: _____	Location 1:_____
Type 2: :_____	Quantity 2: _____	Location 2:_____
Type 3: :_____	Quantity 3: _____	Location 3:_____
Type 4: :_____	Quantity 4: _____	Location 4:_____

38. *For each type listed in 37 above,* **How do you know that this equipment is high efficiency? For example, was it Energy Star rated?**

Type 1: _____
Type 2: _____
Type 3: _____
Type 4: _____

I'm going to read a statement about this equipment that you purchased on your own. On a scale from 1-10, with 0 indicating that you strongly disagree, and 10 indicating that you strongly agree, please rate the following statement.

39. My experience with the Energy Solutions at Home Program in <month/year> **influenced my decision to install** <Type 1/Type 2/Type 3/Type 4> **on my own.**

Type 1:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 2:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 3:	1	2	3	4	5	6	7	8	9	10	Don't Know
Type 4:	1	2	3	4	5	6	7	8	9	10	Don't Know

40. What other actions, if any, have you taken in your home to save energy and reduce utility bills at least in part as a result of what you learned in this program?

Response 1: _____
Response 2: _____
Response 3: _____
Response 4: _____

41. What additional services would you like the program to provide that it does not now provide?

Response: _____

42. Are there any other things that you would like to see changed about the program?

Response: _____

43. What do you think can be done to increase people's interest in participating in the Energy Solutions at Home Program?

Response 1: _____
Response 2: _____
Response 3: _____
Response 4: _____

44. What do you like most about this program?

Response: _____

45. What do you like least about this program?
Response: _____

That is the end of our survey, thank you for your time and feedback today! (*politely end call*)

Appendix D: Energy Solutions @ Installation Participant Survey Instrument

The questions below require mostly short, scaled replies from the interviewee, and not all questions will be asked of all participants. This interview should take approximately 10 to 15 minutes.

Energy Solutions at Home Program

Participant Survey

Contact Module
SURVEY INTRODUCTION

If Energy Solutions at Home participant, then contact for survey. Use five attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EST or 9-7 CST Monday through Saturday. No calls on Sunday. (Sample size N =?)

SURVEY

Introduction

Note: Only read words in bold type.

Hello, my name is _____. I am calling on behalf of Duke Energy to conduct a customer survey about the Energy Solutions at Home Program. May I speak with _____ please?

If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back:

Call back 1:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 2:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 3:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 4:	Date: _____,	Time: _____	❑AM or ❑PM
Call back 5:	Date: _____,	Time: _____	❑AM or ❑PM

❑ Contact dropped after fifth attempt.

We are conducting this survey to obtain your opinions about the Energy Solutions at Home Program. Duke Energy's records indicate that you participated in the Energy Solutions at Home Program. We are not selling anything. The survey will take about 10 minutes and your answers will be confidential, and will help us to

make improvements to the program to better serve others. May we begin the survey?

Note: If this is not a good time, ask if there is a better time to schedule a callback.

1. **Do you recall participating in the Energy Solutions at Home Program?**

a. Yes, *begin* ——— ~~Skip~~ *to Q2.*
b. No,
c. DK/NS

This program was provided through Duke Energy. In this program, you registered to receive a home energy assessment for $90. In return, the assessors provided you with custom energy-saving recommendations for you and your home, as well as suggestions for major upgrades that were eligible for Duke Energy's incentive programs. These incentives included rebates as well as assistance with project financing.

Do you remember participating in this program?

a. Yes, *begin* ——— ~~Go~~ *to Q2.*
b. No,
c. DK/NS

If No or DK/NS terminate interview and go to next participant.

2. **How did you first learn of the Energy Solutions at Home program?**
   a. Mailer/brochure
   b. Other Duke Energy program **(which one?)**
   c. Duke Energy Web Site
   d. Friend
   e. Relative
   f. Other

3. **Please think back to the time when you were deciding to participate in the Energy Solutions at Home program. What factors motivated you to participate?** (*do not read list, place a "1" next to the response that matches best)*

   a. ____ The entire group of services rolled together as a single service
   b. ___The home assessment
   c. ____ The program's financial incentives
   d. ____ The technical assistance from the assessor