Duke Energy Ohio Exhibit_____

BEFORE THE

PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio, Inc., for an Energy Efficiency Cost Recovery Mechanism and for Approval of Additional Programs for Inclusion in its Existing Portfolio.	)))))	Case No. 11-4393-EL-RDR

SECOND SUPPLEMENTAL DIRECT TESTIMONY OF

TIMOTHY J. DUFF

ON BEHALF OF

DUKE ENERGY OHIO, INC.

May 30, 2011

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I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Timothy J. Duff. My business address is 526 South Church Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC, an affiliate of Duke Energy Ohio, Inc., (Duke Energy Ohio, or Company) as General Manager, Retail Customer and Regulatory Strategy, Customer Strategy & Innovation.

Q. ARE YOU THE SAME TIMOTHY J. DUFF WHO FILED DIRECT TESTIMONY IN THIS PROCEEDING ON JULY 20, 2011 AND SUPPLEMENTAL TESTIMONY ON NOVEMBER 22, 2011?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR SECOND SUPPLEMENTAL DIRECT TESTIMONY IN THIS PROCEEDING?

A. The purpose of my second supplemental direct testimony is to respond to questions raised by the Public Utilities Commission of Ohio (Commission) in its Entry of May 9, 2012. I will discuss the five questions set forth in Paragraph 9, items a., b., c., d., and e.

II. PROCEDURAL DISCUSSION

Q. PLEASE EXPLAIN THE COMPANY'S HISTORY WITH RESPECT TO ENERGY EFFICIENCY.

A. Duke Energy Ohio was one of the first Ohio utilities to comply with the State of Ohio's new energy efficiency and peak demand reduction mandates that were set forth in Amended Substitute Senate Bill 221 (SB221), codified in Ohio Revised Code 4928.64. Duke Energy Ohio proposed energy efficiency programs and a cost recovery mechanism in its first electric security plan (ESP), filed under Case No. 08-920-EL-SSO, *et al.* That proposal, among others, was incorporated into a stipulation that was approved by the Commission on December 17, 2008. In that first ESP, the Company agreed, among other things, to comply with the Commission's rules related to energy efficiency and peak demand reduction that were to be enacted thereafter.

Q. ONCE THE COMMISSION'S RULES RELATED TO ENERGY EFFICIENCY AND PEAK DEMAND REDUCTION WERE ENACTED, DID THE COMPANY SEEK TO COMPLY WITH THESE RULES?

A. Yes. The Company filed its energy efficiency and peak demand reduction programs for approval in December of 2009 in Case No. 09-1999-EL-POR. After lengthy proceedings, the Company's portfolio of programs, with the exception of prepaid metering, was approved by the Commission on December 15, 2010. The Commission's rules directed electric utilities to file their respective initial program portfolio plans prior to January 1, 2010 and then again to file updated portfolio plans by April 15, 2013. Duke Energy Ohio had intended to and was working toward filing its updated portfolio plan by April 15, 2013, in a manner consistent with the Commission's rules.

Q. PLEASE EXPLAIN THE REASONS FOR FILING THE APPLICATION IN THIS PROCEEDING, INCLUDING THE REQUEST FOR APPROVAL OF ADDITIONAL PROGRAMS TO BE INCLUDED IN THE COMPANY'S EXISTING PORTFOLIO.

A. The cost recovery and incentive mechanism approved as a component of the stipulation in the Company's first ESP was due to expire at the end of 2011 and be trued-up in 2012, so it became evident that the Company needed a new cost recovery mechanism to replace Rider DR-SAW. At the same time, in evaluating the projected impacts from its existing portfolio, the Company recognized that it could improve the likelihood of meeting its energy efficiency mandates if it could add three new programs to its existing portfolio. The Company's intention was to supplement its existing initial portfolio rather than request approval of a new portfolio plan. The Commission's rules do not provide any prescriptive process for adding new programs to an existing, initial portfolio; however the Commission's May 9, 2012, Entry in this proceeding informs that the Company should have included the information required in O.A.C. 4902:1-39, to aid the Commission in reaching a decision about whether to permit inclusion of these additional programs in the existing portfolio. Duke Energy Ohio regrets any confusion this filing caused or any perceived resistance to following the Commission's regulatory process as set forth in the rules. The Company's intention was not to contravene any Commission order, but rather to economize

regulatory resources. The Company sought to provide some additional programs in between full portfolio applications and to maximize energy efficiency results in the interim. The Company did not intend to avoid or circumvent a full portfolio review in 2013.

III. QUESTIONS POSED BY THE COMMISSION

Q. IN RESPONSE TO THE QUESTION POSED BY THE COMMISSION, PLEASE EXPLAIN WHY THE COMPANY'S APPLICATION WAS GRANTED A WAIVER OF THE REQUIREMENTS ESTABLISHED IN O.A.C. 4901:1-39, INCLUDING 4901:1-39-03(B), 4901:1-39-04 AND 4901:1-39-05?

A. O.A.C. 4901:1-39 sets forth elements required by the Commission in connection with the planning and approval of an energy efficiency compliance program, including an assessment of potential, a proposed portfolio, and potential recovery mechanism. Rule 4901:1-39-03(B) sets forth the information required for the Commission to approve a portfolio. In its Application in this proceeding, the detailed information required to be filed with a complete portfolio application was not provided as the Company was not seeking approval of a new portfolio, but rather was intending only to supplement its existing portfolio with three additional programs. However, the Commission instructed that information from O.A.C. 4901:1-39-03, 4901:1-04 and 4901:1-39-05, are all required whenever any new program is proposed. Accordingly, in order to assist the Commission in its determination with respect to the three programs submitted in this proceeding, the Company is now providing the information requested by O.A.C. 4901:1-39-03,

4901:1-39-04, and 4901:1-39-05, for each of the programs in its existing portfolio and for the three new programs proposed. To meet the requirements of O.A.C. 4901:1-39-05, the Company submitted its completed portfolio status report on May 15, 2012. For the purposes of this Application, Duke Energy Ohio respectfully requests that the Commission take administrative notice of that filing.

The only information required by O.A.C. 4901:1-39 (A), that is not included here, is an Assessment of Potential. As the Company did not anticipate the need for such a study until the time of filing for approval of its second portfolio plan, such a study has not been completed. However the Company will file an updated market potential study in early 2013.

The Company vetted the three new programs and existing programs with the Duke Energy Ohio Energy Efficiency Collaborative, including discussions around the projected annual program cost, energy savings impacts, and cost effectiveness. This information was also available to the intervenors in this proceeding. In the stipulation, the Parties, with the exception of the Ohio Energy Group, all agreed that the three new programs should be included to supplement the Company's existing portfolio. The Ohio Energy Group did not raise any concerns with respect to the portfolio or the addition of the three new programs in hearing or on brief, and really had no reason to oppose these programs since all three of the programs are targeted at residential customers.

It was anticipated that the Commission would approve adding these programs outside of a program portfolio plan filing upon recommendation from the Stipulating Parties and that the Commission might consider doing so with the

understanding that the Company was not intending its Application in this proceeding to constitute its second program portfolio plan filing to be filed in early 2013. Pursuant to the Commission's directives in its most recent Opinion and Order in this proceeding, Duke Energy Ohio is now including as Attachment 1, all of the information required of a utility program portfolio plan application, absent the Assessment of Potential. Also included as Attachment 2 to my testimony, is a Summary of Planned Evaluation, Measurement and Verification Activities for Duke Energy's Energy Efficiency Programs in Ohio, prepared by TecMarket Works. As previously mentioned, the Company will file its updated Assessment of Potential with the Commission in early 2013.

Duke Energy Ohio's energy efficiency compliance path, subsequent to the enactment of the Commission's rules, progressed in logical fashion based upon the starting ESP and the portfolio approval in Case No. 09-1999-EL-POR. Thus, the Assessment of Potential was anticipated for filing in early 2013. To the extent the Commission deems an Assessment of Potential to be integral to this filing, the Company respectfully requested a one-time waiver of the requirements set forth in O.A.C. 4901:1-39-03, for a brief window of time until the Assessment of Potential may be completed and filed. The Commission's granting of this waiver on a provisional basis in its last Opinion and Order has not been, nor will it be prejudicial to any party and will allow the Company to enhance its energy efficiency portfolio.

Q. HOW WILL THE COMPANY INCORPORATE THE RESULTS OF AN ASSESSMENT OF POTENTIAL INTO ITS PORTFOLIO PLAN?

A. Upon completing an Assessment of Potential, the Company will use the results to gauge the comprehensiveness of its approved portfolio with respect to technical, economic, and achievable potential. Specifically, the Company will look at whether there are any programs that are identified as being feasible and potential offerings that are not currently included in the Company's second portfolio. After its review of the Assessment of Potential, the Company will determine if there are significant programmatic gaps in the portfolio that should be addressed in order to ensure that all meaningful cost-effective energy efficiency programs are included in its offerings to customers. The Company will include a summary of these findings along with a plan to address the gaps and a projected timeline when it files the Assessment of Potential with the Commission.

Q. PLEASE EXPLAIN WHY IT IS APPROPRIATE TO SEEK APPROVAL OF A NEW COST RECOVERY MECHANISM AT THIS TIME.

A. Duke Energy Ohio did not file for approval of a cost recovery and incentive mechanism when it initially sought approval of its portfolio because the stipulated settlement in its first ESP case provided the mechanism for cost recovery through 2011. However, it was understood that the Commission required the Company to file its portfolio for approval on 2009 to be in compliance with the newly enacted energy efficiency related rules. Therefore the Company submitted its portfolio for approval but did not include a proposed mechanism for cost recovery since one was already approved and with the exception of the lost generation revenue component, the existing mechanism was consistent with the new rules.

Q. THE COMMISSION'S NEXT QUESTION IS: WHAT IS THE RANGE OF REVENUE THAT COULD BE EARNED VIA DUKE ENERGY OHIO'S INCENTIVE MECHANISM. PLEASE RESPOND.

A. The Application in this proceeding, based upon historical program performance and market conditions, projected the possibility that the Company could earn an incentive of $4.5 million dollars by exceeding its annual statutory target by 8.5 percent. Although this amount was projected at the time the Application was filed, the actual amount of incentive revenue that can be earned will vary based on actual program participation and the actual cost incurred to achieve the energy efficiency impacts. The minimum incentive is zero, if the Company fails to exceed its annual statutory mandate. The maximum range of incentive is very difficult to project with accuracy, but for illustrative purposes, assuming the Company could achieve the required additional 11,100 MWh of energy efficiency savings needed to exceed its annual benchmark by 15 percent, while maintaining the same level of portfolio cost effectiveness, the Company would reach a maximum shared savings percentage of 13 percent and earn an incentive of approximately $8.2 million dollars.

Q. THE COMMISSION'S NEXT QUESTION IS: SHOULD DUKE ENERGY OHIO'S INCENTIVE BE LIMITED TO PERFORMANCE THAT EXCEEDS THE ANNUAL STATUTORY BENCHMARKS?

A. The Company does not believe that its incentive should be limited to performance that exceeds the annual statutory benchmark.

Q. WHY IS IT NOT ADVISABLE TO TIE AN INCENTIVE TO PERFORMANCE THAT EXCEEDS STATUTORY BENCHMARKS?

A. As indicated, in JEZ Attachment 1 to the testimony of James E. Ziolkowski, contained in the Company's Application, Duke Energy Ohio was projecting to deliver 186,241 MWh of energy efficiency impacts and exceed its annual statutory benchmark by approximately 8.5 percent or 14,665 MWh. Assuming this level of over-achievement, the Company would earn an after-tax shared savings incentive percentage of 7.5 percent, which would equate to an incentive of $4,477,041. If the Company only received incentive on the net benefits associated with its performance that exceeded the annual statutory benchmarks, it would only be eligible to earn 7.9 percent of the projected $4,477,041 incentive or $352,520. Duke Energy Ohio does not believe that a possible incentive of roughly $350,000 on a projected portfolio of spend that is over $25 million would provide a meaningful incentive. A shared savings incentive structure that only recognizes the net benefit of impacts that exceed the Company's annual mandate minimizes the importance of optimizing the cost effectiveness of the programs until the Company reaches its compliance target. By providing the utility a meaningful shared savings based upon the net benefit associated with all impacts, the Company is motivated to deliver as much energy efficiency as it can in the most cost effective manner possible. Also, the Commission has approved incentive mechanisms for other utilities in Ohio that include incentive for performance that does not exceed statutory benchmarks.

Q. THE COMMISSION'S NEXT QUESTION IS: SHOULD THE INCENTIVE BE EQUAL TO OR GREATER THAN THE RETURN ON INVESTMENT THAT DUKE ENERGY OHIO COULD EARN BY INVESTING THE SAME SUMS IN UTILITY INFRASTRUCTURE?

A. Given both energy and non-energy related benefits that are associated with utility-offered energy efficiency, a company's allowed return on investment should be greater than the return it receives with respect to its investments in traditional utility infrastructure. However, focusing on the allowed return on investment associated with energy efficiency spending does not align the interests of a utility and its customers. This analysis puts too much emphasis on how much a utility spends rather than promoting the utility to focus on cost-effectiveness, which is what aligns best with customers' interests. That is why the incentive mechanism offered by the Company is not linked to return on investment, but on the Company's ability to meet and exceed performance thresholds in an economically efficient manner.

Q. DOES THE PROPOSED INCENTIVE MECHANISM ALIGN DUKE ENERGY OHIO'S INTERESTS WITH THE INTERESTS OF ITS CUSTOMERS?

A. Yes. The incentive mechanism included in the Stipulation filed with its Application in this proceeding aligns the interests of both Duke Energy Ohio and its customers with respect to implementing energy efficiency. This stipulated shared savings incentive mechanism is based on Duke Energy Ohio sharing a small percentage of the net benefits associated with energy efficiency impacts

achieved through its portfolio of programs only in the case that it has exceeded its annual energy efficiency requirements established by SB 221. This incentive mechanism motivates and rewards the company to specifically accomplish two outcomes, both of which fundamentally align with customers' interests with respect to energy efficiency. First, it incents the Company to provide a wide array of energy efficiency opportunities to customers that will attract enough participation to allow the Company to exceed its annual energy efficiency requirements. Second, it incents the Company to operate and bring its offerings to market in the most cost-effective manner possible, as the more cost-effective a program is, the higher the net benefit that the Company will share with customers.

Q. IS THE PROPOSED INCENTIVE MECHANISM APPROPRIATE AND CONSISTENT WITH OHIO LAW?

A. Yes. Such a mechanism has been approved by the Commission for other utilities and as stated above, the mechanism aligns with state energy policy and is consistent with the requirements set forth in O.A.C. 4901:1-39.

Q. PLEASE DESCRIBE THE INCENTIVE MECHANISM THAT THE COMMISSION HAS APPROVED PREVIOUSLY.

A. The Columbus Southern Power Company and Ohio Power Company, (collectively AEP Ohio) employ a shared savings incentive mechanism that was approved by the Commission in Case Nos. 11-5568-EL-POR and 11-5569-EL-POR.

Q. PLEASE DESCRIBE THE SHARED SAVINGS INCENTIVE MECHANISM THAT WAS APPROVED FOR THESE TWO COMPANIES.

A. The shared savings incentive mechanism provides that AEP Ohio shall receive a share of the net benefits that, on an after-tax basis, will range from 5 to 13 percent depending on AEP Ohio's level of performance above compliance with its annual energy efficiency mandate. The table below is a representation of the shared savings incentive structure that was approved for AEP Ohio.

Incentive Structure

Achievement of Annual Target	After-Tax Shared Savings
≤ 100	0.0%
>100-105	5.0%
≥105-110	7.5%
≥110-115	10.0%
≥115	13.0%

Q. HOW DOES THIS SHARED SAVINGS INCENTIVE STRUCTURE APPROVED FOR AEP OHIO COMPARE WITH THE ONE PROPOSED IN THE STIPULATION AND RECOMMENDATION IN THIS PROCEEDING?

A. It is identical in structure with one minor difference. In the stipulation that was approved in the AEP Ohio proceeding, the parties agreed to a cap on the total

annual amount of incentive that it could collect. Here, the Parties in this proceeding agreed to omit the cap.

Q. PLEASE EXPLAIN WHY THE STIPULATION AND RECOMMENDATION IN THIS PROCEEDING DOES NOT INCLUDE A CAP?

A. Placing a cap on a shared savings incentive structure is counterintuitive to the desired outcomes of the shared savings incentive structure. Imposing a cap on the amount the Company may earn sends one of two signals to the Company to stop delivering energy efficiency, or stop maximizing cost effectiveness and net benefit realized from the portfolio. The Parties ultimately reached a stipulation that did not include a cap.

Q. ABSENT A CAP ON THE INCENTIVE, IS THE AMOUNT OF INCENTIVE THE COMPANY MAY EARN REASONABLE AND FAIR?

A. Yes. Because the amount of incentive the Company is eligible to earn is directly tied to the amount of energy efficiency delivered to customers and the level of cost effectiveness of the portfolio. The higher the amount of incentive realized by Duke Energy Ohio, the higher amount of value and savings will be realized by customers. In fact, for every dollar of net benefit (avoided cost less the program cost) realized through customer participation in the Company's energy efficiency programs, the customers will earn no less than 87 percent of the value. Given this relationship, the larger the Company's earned incentive under its proposed shared savings mechanism, the better off customers will be.

IV. THE SEET THRESHOLD

Q. ARE YOU FAMILIAR WITH THE COMMISSION'S REQUIREMENT TO REVIEW AN ELECTRIC DISTRIBUTION UTILITY'S EARNINGS TO DETERMINE WHETHER THAT UTILITY HAS SIGNIFICANTLY EXCESSIVE EARNINGS?

A. Yes. I am generally familiar with this statutory requirement.

Q. ARE YOU FAMILIAR WITH THE WAY IN WHICH THIS TEST IS APPLIED WITH RESPECT TO DUKE ENERGY OHIO?

A. Yes. I am aware that the methodology was agreed upon, and approved by the Commission in Duke Energy Ohio's first ESP, and again in the most recent ESP in Case No. 11-3549-EL-SSO as well as in the Commission's SEET generic docket.

Q. ARE YOU ALSO FAMILIAR WITH THE FEDERAL ENERGY REGULATORY COMMISSION'S FORM 1?

A. Yes. My responsibilities include having some familiarity with FERC Form 1.

Q. THE COMMISSION'S NEXT QUESTION IS: HOW SHOULD THE PROPOSED INCENTIVE MECHANISM BE VIEWED BY THE COMMISSION IN LIGHT OF DUKE ENERGY OHIO'S SIGNIFICANTLY EXCESSIVE EARNINGS THRESHOLD?

A. The Company currently includes all electric revenues reported in the filing of its FERC Form 1. For this reason, all of the revenue collected and earnings associated with the Company's previous energy efficiency recovery mechanism (save-a-watt) were captured in the Company's recent significantly excessive

earnings test (SEET) filing in Case No. 12-1280-EL-UNC. Duke Energy Ohio does not believe that the treatment of the revenues and earnings associated with its proposed incentive mechanism requires adjustment for this purpose since the revenue associated with energy efficiency incentives is included in the SEET. The Commission will have an opportunity each year to examine whether or not the Company has significantly excessive earnings.

Q. WITH THE INCLUSION OF ALL OF THE SUPPORTING DOCUMENTATION IN YOUR TESTIMONY, HAVE YOU PROVIDED INFORMATION SUFFICIENT TO ALLOW THE COMMISSION TO DETERMINE WHETHER OR NOT TO APPROVE THREE NEW PROGRAMS FOR INCLUSION IN THE DUKE ENERGY OHIO ENERGY EFFICIENCY PORTFOLIO AND AN INCENTIVE MECHANISM THAT WAS AGREED TO BY MOST OF THE PARTIES IN THIS PROCEEDING?

A. Yes. With the exception of an updated Assessment of Potential, Duke Energy Ohio respectfully submits that the Commission now has current complete data sufficient to review and approve the Company's second program portfolio plan.

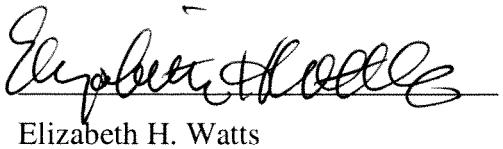
V. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PREFILED SECOND SUPPLEMENTAL DIRECT TESTIMONY?

A. Yes, it does.

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing Second Supplemental Direct Testimony of Timothy J. Duff was served on the following parties this 30th day of May, 2012, by electronic mail, regular mail or overnight delivery.



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Pursuant to Rule 4901:1-39-04 (A), O.A.C., Duke Energy Ohio, Inc. (Duke Energy Ohio) must file the following information in a portfolio application:

4901:1-39-04(C) (1) Executive Summary

Duke Energy Ohio has a long history of implementing energy efficiency and peak demand reduction programs. In 1992, Duke Energy Ohio formed a collaborative to develop and implement energy efficiency programs to help reduce the electrical demand of customers. The Company has a history of working effectively with its Collaborative. Since 1992, the Company has continuously offered energy efficiency programs for its customers.

In 2006, Duke Energy Ohio filed an application with the Public Utilities Commission of Ohio (Commission), seeking approval to implement a new expanded set of energy efficiency programs.[1] On July 11, 2007, the Commission approved the new set of energy efficiency programs for implementation. [2] As part of the proceeding on the Company's Electric Security Plan (ESP) in 2008, the Company filed and an application for approval to implement its save-a-watt set of energy efficiency programs.[3] As noted earlier, the Company filed the proposed programs on July 31, 2008 and the Commission subsequently approved the save-a-watt set of programs on December 17, 2008 for implementation for the years 2009 through 2011.[4] On December 29, 2009, the Company filed an updated portfolio plan for approval.[5] The portfolio, except for pre-paid metering, was approved on December 15, 2010 for implementation through April 15, 2013.[6]

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[1] *In the Matter of the Application for Recovery of Costs, Lost Margin, and Performance Incentive Associated with the Implementation of Electric Residential Demand Side Management Programs by the Cincinnati Gas & Electric Company,* Case No. 06-91-EL-UNC, Application (January 24, 2006)
[2] *Id.* Opinion and Order, (July 11, 2007)
[3] *In re Duke Energy Ohio's Application for an SSO,* Case No. 08-920-EL-SSO, et seq., Application, (July 31, 2008)
[4] *In re Duke Energy Ohio's Application for an SSO,* Case No. 08-920-EL-SSO, et seq., Opinion and Order, (December 17, 2008)
[5] *In re Duke Energy Ohio's Application for a POR,* Case No. 09-1999-EL-POR, Application, (December 29, 2009)
[6] *In re Duke Energy Ohio's Application for a POR,* Case No. 09-1999-EL-POR, Opinion and Order, (December 15, 2010)

Duke Energy Ohio filed an application to establish a new recovery mechanism on July 20, 2011. Within this application, the Company proposed to supplement its existing portfolio with three new programs. Now, after receiving further direction from the Commission in its May 9, 2012 Opinion and Order, the Company is respectively requesting the Commission grant it a waiver of one rule in Chapter 4901:1-39, O.A.C. and approve its second program portfolio plan based upon the information contained herein.

The following programs were proposed and approved by the Commission in the Company's initial program portfolio plan and are currently being offered. [7]

Residential Programs

Smart $aver® Residential

Residential Energy Assessments

Home Energy Comparison Report

Energy Efficiency Education Program for Schools

Low Income Services

Power Manager

Non-Residential Programs

Smart $aver® Prescriptive

Smart $aver® Custom

Smart $aver® Energy Assessments

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[7] *In re Duke Energy Ohio's Application for a POR,* Case No. 09-1999-EL-POR, Opinion and Order, (December 15, 2010)

PowerShare®

This portfolio of programs represents a comprehensive peak demand reduction and energy efficiency plan of action. The approach being pursued through the continuation of programs and introduction of three proposed programs will encourage innovation and provide market access for cost-effective demand reduction and energy efficiency for all customer classes. In addition to the Company proposed programs, Duke Energy Ohio also offers the Self Directed program available to qualifying Mercantile customers.

Implementation of Duke Energy Ohio's portfolio of programs is expected to enable Duke Energy Ohio to meet or exceed the statutory benchmarks for peak demand reduction and energy efficiency.

Due to its lack of clarity regarding the need to file its original application under the requirements of 4901:1-39, O.A.C., Duke Energy Ohio does not have an updated Assessment of Potential at this time, but is in the process of updating its energy efficiency Assessment of Potential as a supplement to this application by or before April 15, 2013. The Assessment of Potential or market potential study will identify levels of technical, economic, and achievable market potential. Once the study is complete, the results will be compared with the programs previously developed through the Collaborative process and adjustments will be made to the programs as necessary based on these findings. Additional program offerings may be filed for approval with the Commission, as appropriate. Likewise, the Assessment of Potential will be filed with the Commission along with the Company's recommendations for integration with the portfolio.

4901:1-39-04(C) (2) Stakeholder Participation

As noted above, Duke Energy Ohio has a long history of working with external stakeholders through a collaborative process. The Company's energy efficiency collaborative first began in 1992. Since that time, the Company has continued to engage in a Demand Side Management (DSM) collaborative process in order to obtain insights and feedback on the design and operation of existing

programs as well as ideas for new programs. Duke Energy Ohio seeks to obtain consensus approval from the collaborative on proposals to be filed with the Commission. This same approach was employed in the development of the Company's programs, which were filed and subsequently approved by the Commission for implementation for 2009 through April 15, 2013 time period and was used with respect to the portfolio of programs that the Company is requesting approval of in this application.

4901:1-39-04 (C) (3) Other Public Utilities' Programs

The Company did not undertake any effort to coordinate its energy efficiency plan with other utilities in the State of Ohio. While the Company does not coordinate its programs with the other public utilities, it does participate in conversations with some of the other utilities to understand both the successes and challenges associated with their portfolios of programs. The Company does coordinate the design and implementation of its programs with its affiliate utility located in Northern Kentucky as well as with all other utility affiliates of Duke Energy (Duke Energy Kentucky, Duke Energy Indiana, and Duke Energy Carolinas).

4901:1-39-04 (C) (4) Existing Programs

Duke Energy Ohio began implementation of its existing programs on January 1, 2009. Below the Company provides the response to the requested items for each of the existing previously approved programs as well as a description of proposed programs and additional information as required by O.A.C. 4901:1039-04(C)(5).

New Proposed Programs

The Company is proposing three new programs with this application. The programs are called "Appliance Recycling Program", "Low Income Neighborhood Program", and "Home Energy Solutions".

Now, based on the Commission's guidance and the conditional waiver granted on May 9, 2012, the Company is providing the information requested on proposed new programs as specified under O.A.C.

4901:1-39-04(C)(5)(a) to (l), so that the Commission may consider the inclusion of these three new programs as part of its second program portfolio plan. A description of each program is provided herein. These programs were presented to the Duke Energy Ohio Collaborative (Duke Energy Community Partnership) members in second quarter 2011.

Descriptions Applicable to All Programs

In Rule 4901:1-39-04 (C)(5)(a) to (l) O.A. C., there are a few elements for which the response is essentially the same for all of the existing and new programs. These are the information requests under Rule 4901:1-39-04 (C)(5)(d), (e), (l) O.A.C.. The common responses are provided below.

Rule 4901:1-39-04(C)(5)(d) O.A.C., the proposed duration of the program for each program is five years but the approval requested is for three years.

Rule 4901:1-39-04(C)(5)(e) O.A.C., an estimate of the level of program participation is included in the table provided in response to Rule 4901:1-39-04(C)(5)(b) O.A.C..

Rule 4901:1-39-04(C)(5)(k) O.A.C., the proposed market transformation activities, if any, which have been identified and proposed to be included in the program portfolio plan. The common response is:

> The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

Rule 4901:1-39-04(C)(5)(l) O.A.C., the evaluation, measurement, and verification plans for each program are provided in Supplemental Attachment 2 which is included with the testimony of Timothy J. Duff in Attachment 1.

4901:1-39-04 (B) - Cost Effectiveness of Existing and New Programs

The cost-effectiveness test results for the existing and new programs are provided in Table 1. All programs pass the TRC and UCT tests.

Table 1:

	Program Cost Effectiveness Test Results**			
	Utility Test	**TRC Test**	**RIM Test**	**Participant Test**
RESIDENTIAL CUSTOMER PROGRAMS				
Energy Education Program for Schools	2.35	3.64	1.52	NA
Home Energy Comparison Report	2.48	2.48	1.53	NA
Low Income Services	1.26	4.69	0.92	NA
PowerManager	3.98	4.75	3.98	NA
Residential Energy Assessments	2.83	3.04	1.68	NA
Smart $aver Residential	3.00	2.61	1.82	3.88
NON-RESIDENTIAL CUSTOMER PROGRAMS				
Smart $aver Non Residential Custom	4.90	1.23	2.81	1.45
Power Share	4.05	7.83	4.05	NA
Smart $aver Non Residential Prescriptive	5.80	2.59	3.41	2.68
NEW PROPOSED PROGRAMS				
Appliance Recycling Program	3.59	4.25	1.99	NA
Home Energy Solutions	1.59	2.35	1.44	4.29
Low Income Neighborhood Program	1.33	2.31	1.02	NA

**Cost Effectiveness is calculated on NPV for life of measure

The following descriptions are in response to 4901:1-39-04 (C) (4).

Existing Programs

Program Name: Smart $aver® Residential

(a) The Smart $aver® Program provides incentives to customers, builders, and heating, ventilation and air conditioning (HVAC) dealers and weatherization contractors to promote and install high-efficiency air conditioners and heat pumps with electronically commutated fan motors (ECMs), as well as attic insulation and air sealing, duct sealing and insulation, HVAC tune ups and lighting. These programs are promoted through trade ally outreach and direct communication to customers using numerous channels such as direct mail, community presentations and website promotions. In regard to lighting offers, online promotions and social media have been particularly effective. In addition, the Company is evaluating additional bulb types for the home such as indoor floodlighting. The Property Manager Program is an extension of the CFL program and allows Duke Energy to target multi-family apartment complexes.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry.

An impact evaluation, "Ohio Residential Smart $aver CFL Program - Results of a Process and Impact Evaluation"[8], was conducted for the lighting portion of the program in 2010 consisting of an engineering analysis thus adjusting the impacts for this program based on the findings.

[8] As filed in Case No. 11-1311-EL-EEC

	2012	2013	2014	2015	2016
kW	6,068	11,083	16,137	20,944	26,353
kWh	35,772,263	59,684,106	81,421,540	98,048,753	116,695,554
Participants	522,373	825,249	1,078,009	1,232,008	1,416,031

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of measures installed)

(c) Residential

(d) Five years (2012 – 2016)[9]

(e) See above (b)

(f) Duke Energy Ohio served homeowners currently residing or building a single family residence, condominium, duplex or mobile home.

The Property Manager program is available to Duke Energy Ohio served apartments on a residential rate.

(g) The Program will be promoted by, but not limited to:

a. Email

b. Bill Messages

c. Bill Envelopes

d. Social Media

e. Direct Mail

f. Printed Collateral

g. Earned Media[10]

h. Other Duke Energy Program collaboration efforts

(h) Third party vendors will be used

(i) The projected program budget:

[9] Data is forecasted for five years. This application requests approval for three years.

[10] Earned media refers to favorable publicity gained through promotional efforts other than advertising.

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$4,622,702	$4,122,071	$4,146,680	$3,778,106	$4,141,982

(j) Varies by measure

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Residential Energy Assessments

(a) Duke Energy Ohio provides an in-home assessment called Home Energy House Call. Home Energy House Call is promoted primarily through direct mail and targets owner-occupied, single family residences. The targeting also considers geographic location to better align assessor resources to manage costs and maintain a positive customer experience. The assessors are Building Performance Institute, Inc. certified and spend sixty to ninety minutes with customers as they evaluate the home and explain ways to save energy and money. The assessors offer low cost/no cost recommendations that encourage behavioral changes and inform customers about energy efficiency considerations for higher cost investment decisions like new HVAC or appliances. The assessors also install measures from an energy efficiency kit while in the home.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry.

An impact evaluation, "Process and Energy Impact Evaluation of the Home Energy House Call Program in Ohio"[11], was conducted in 2010 consisting of a billing analysis thus adjusting the impacts for this program based on the findings.

	2012	2013	2014	2015	2016
kW	1,285	2,570	3,855	5,140	6,425
kWh	9,122,437	18,244,874	27,367,311	36,489,748	45,612,185
Participants	4,250	8,500	12,750	17,000	21,250

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

[11] As filed in Case No. 11-1311-EL-EEC

(c) Residential

(d) Five years (2012 – 2016)[12]

(e) See above (b)

(f) Available to individually metered residential customers receiving concurrent service from the Company. On-site assessments are only available to owner-occupied single family residences with at least 4 months of billing history.

(g) Program participation is primarily driven through targeted mailings to pre-qualified residential customers. To supplement this activity and keep acquisition costs low, e-mail marketing will be used when targeted customers have elected to receive offers electronically. Utilizing two different marketing channels will increase awareness levels of the program, thus potentially increasing program participation.

Home Energy House Call program information and an online assessment request form is available at http://www.duke-energy.com/ohio/savings/home-energy-house-call.asp.

(h) Various third party vendors are contracted for program administration, customer service/call center support and scheduling, and fulfillment of the energy efficiency kits. A Building Performance Institute (BPI) certified energy specialist conducts the in-home assessment.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$1,274,608	$1,302,562	$1,310,925	$1,313,635	$1,316,356

[12] Data is forecasted for five years. This application requests approval for three years.

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Home Energy Comparison Report (marketed as My Home Energy Report)

(a) The Home Energy Comparison Report compares household electric usage to similar, neighboring homes and provides recommendations to lower energy consumption. These normative comparisons are intended to induce an energy consumption behavior change. The Home Energy Comparison Report is sent via direct mail to targeted customers with desirable characteristics who are likely to respond to the information.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry. Over time, as impact and process evaluations are performed on the Company's Ohio programs, the results will be incorporated into the future cost-effectiveness evaluation of the programs.

	2012	2013	2014	2015	2016
kW	11,277	11,360	11,452	11,544	11,659
kWh	41,917,723	42,224,529	42,565,839	42,908,729	43,337,816
Participants	245,209	247,003	249,000	251,006	253,516

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

(c) Residential

(d) Five years (2012 – 2016)[13]

(e) See above (b)

(f) The audience is Duke Energy Ohio customers who are identified through demographic information as likely to decrease energy usage in response to the information contained in the My Home Energy Report document. These customers reside in individually-metered, single-family residences receiving concurrent service from the Company.

[13] Data is forecasted for five years. This application requests approval for three years.

(g) The Program will be marketed through direct mail. The Company is also exploring the potential of providing the report to customers on-line or via mobile channels.

(h) The My Home Energy Report is sent via direct mail to targeted Duke Energy Ohio customers with desirable characteristics who are likely to respond to the information. The reports are distributed up to 12 times per year; however delivery may be interrupted during the off-peak energy usage months in the fall and spring.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$1,769,226	$1,520,547	$1,542,688	$1,565,313	$1,580,966

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Energy Efficiency Education Program for Schools

(a) This program educates students in the classroom about sources of energy and energy efficiency in homes, and it provides students the ability to conduct an energy audit of their homes. After completing a home energy survey, participants receive an Energy Efficiency Starter Kit. The program is promoted to teachers and school administrators.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry. Over time, as impact and process evaluations are performed on the Company's Ohio programs, the results will be incorporated into the future cost-effectiveness evaluation of the programs.

	2012	2013	2014	2015	2016
kW	911	1,821	2,927	4,033	5,138
kWh	3,384,679	6,769,357	10,879,324	14,989,291	19,099,257
Participants	14,000	28,000	45,000	62,000	79,000

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

(c) Residential

(d) Five years (2012 – 2016)[14]

(e) See above (b)

(f) Eligible participants include Duke Energy residential customers who reside in households with school-age children enrolled in public and private schools.

(g) The Program will be promoted by, but not limited to:

a. Direct mail

[14] Data is forecasted for five years. This application requests approval for three years.

b. Email

c. Printed Collateral

d. Social Media

e. Earned media[15]

(h) School principals are the main point of contact and will schedule the 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, and classroom and family activity books.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$688,541	$690,770	$798,813	$784,834	$785,317

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

[15] Earned media refers to favorable publicity gained through promotional efforts other than advertising.

Program Name: Low Income Services

(a) The company offers a refrigerator replacement program that complements weatherization services offered by other parties. The program is available to customers with incomes up to 200 percent of the federal poverty level and may be offered through Community Action Agencies or Non-Governmental Organizations.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry. Over time, as impact and process evaluations are performed on the Company's Ohio programs, the results will be incorporated into the future cost-effectiveness evaluation of the programs.

	2012	2013	2014	2015	2016
kW	24	48	72	96	120
kWh	176,220	352,440	528,660	704,880	881,100
Participants	140	280	420	560	700

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

(c) Low income residential

(d) Five years (2012 – 2016)[16]

(e) See above (b)

(f) Qualified customers must have electric service through Duke Energy, own their refrigerator, and have a household income equal to or less than 200 percent of poverty level.

[16] Data is forecasted for five years. This application requests approval for three years.

(g) Because the Refrigerator Replacement Program is dependent upon customer participation in the other weatherization programs, all sign ups are handled by local agencies during the weatherization process. Duke Energy is not currently marketing this program.

(h) A third party vendor will complete the refrigerator replacement and will be paid by the Company.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$119,732	$120,005	$120,282	$120,565	$120,854

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Power Manager

(a) This program is a residential load control program and offers incentives to single family residential customers that allow the Company to cycle their outdoor central air conditioning compressor and fan during peak load periods between May and September.

(b) Regarding the basis for peak demand savings, an annual evaluation is conducted from a sample of the Power Manager participants to determine the capability available from the Power Manager customers and applied for that year.

	2012	2013	2014	2015	2016
kW	58,219	60,136	60,135	60,232	60,485
kWh	0	0	0	0	0
Participants	49,492	51,122	51,121	51,203	51,418

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of devices)

(c) Residential

(d) Five years (2012 – 2016)[17]

(e) See above (b)

(f) This program is available to Duke Energy Ohio residential customers residing in owner-occupied, single-family residences with a functioning outdoor air conditioning unit.

(g) The Program will be promoted by, but not limited to:

a. Direct mail

b. Promotion through other Duke Energy programs

(h) A device is installed on participating customer air conditioning units by a vendor contracted by Duke Energy Ohio. Once installed the customer's A/C unit can be cycled off and back on during event season (May – September).

[17] Data is forecasted for five years. This application requests approval for three years.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$3,390,989	$1,858,878	$1,776,550	$1,769,423	$1,814,026

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Non-Residential Smart $aver® Prescriptive

(a) The Smart $aver® Prescriptive program consists of over 250 measures including but not limited to the five broad technology categories of: Lighting, HVAC, Motors/Pumps/Drives, Energy Star Food Service Equipment, and Process Equipment. The incentives offered are designed to offset a portion of the capital cost of moving to higher efficiency equipment. Incentives are also offered to offset the cost of proactive maintenance on existing equipment. The incentive amounts are known to the customer before they undertake their project, so the customer can proceed with their project and submit documentation after installation.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry.

An impact evaluation, "Evaluation of the Non-Residential Smart $aver® Prescriptive Program in Ohio – Results of a Process and Impact Evaluation" [18], was conducted for the lighting portion of the program in 2010 consisting of an engineering analysis thus adjusting the impacts for this program based on the findings.

	2012	2013	2014	2015	2016
kW	14,188	25,469	32,760	43,762	55,863
kWh	65,843,647	118,283,250	153,796,791	206,243,747	263,932,781
Participants	322,417	621,737	892,688	1,196,009	1,529,637

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participant (refers to number measures installed)

(c) Commercial, industrial and government facilities

[18] As filed in Case No. 11-1311-EL-EEC

(d) Five years (2012 – 2016)[19]

(e) See above (b)

(f) All non-residential customers served by Duke Energy in Ohio are eligible for the Smart $aver program. Although customers may choose to opt-out of the Duke Energy program and energy efficiency rider, none of its customers have selected to opt out to date.

(g) The Program will be promoted by, but not limited to:

a. Existing market channels, equipment providers and contractors.

b. Email

c. Newsletters

d. Direct Mail

e. Duke Energy website

f. Account and Segment Managers

(h) The program offers predefined incentives 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.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$5,453,116	$4,851,113	$5,165,570	$5,507,377	$5,879,166

(j) Varies by measure

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

[19] Data is forecasted for five years. This application requests approval for three years.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Smart $aver® Custom

(a) The Smart $aver® Custom program is intended to capture quantifiable energy savings from projects that do not fit into the Prescriptive portfolio. A key difference between the Prescriptive and Custom programs is that the Custom program requires that the customer submit an application before they begin their project. Proposed energy efficiency measures may be eligible for Custom Incentives if they clearly reduce electrical consumption and/or demand. Application forms are available on the Duke Energy website under the Smart $aver® Incentives Business and Large Business tabs. Once a project is submitted, it undergoes a technical review to validate the viability of the technology and the reasonableness of the energy savings claims. After the technical review, the energy savings are modeled against the customers load profile (or a representative load profile) to calculate the avoided energy and avoided capacity associated with the installation. At this point, the customer is tendered an incentive offer. Provided the customer acknowledges acceptance of the offer and completes the project, the customer is issued an incentive check after providing documentation showing completion of the project. Duke Energy Ohio reserves the right to adjust the incentive amount paid either up or down should the installation deviate from what was originally submitted. Potential incentive amounts are based on the avoided energy and avoided capacity produced by the measure(s).

Both the Smart $aver® Prescriptive and Custom programs allow for customers to either receive their incentive checks directly, or to assign them to a vendor, provided the vendor reduces the amount invoiced to the customer by the amount of the incentive.

(b) Regarding the basis for calculating energy savings and peak demand reduction, the technical review feature of the program serves to uniquely evaluate each project for its energy and capacity savings based on standard engineering methods for calculating and/or modeling energy savings against the appropriate baseline for the energy conservation measure(s) within the proposed customer project. The values presented below are based on historical program participation, impacts per customer project as identified in the technical review for historical projects and anticipated program growth.

	2012	2013	2014	2015	2016
kW	3,895	7,984	12,278	16,787	21,521
kWh	34,120,477	69,946,977	107,564,803	147,063,519	188,537,172
Participants	5,306	10,877	16,727	22,870	29,319

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of measures installed)

(c) Commercial, industrial and government facilities

(d) Five years (2012 – 2016)[20]

(e) See above (b)

(f) All Duke Energy Ohio non-residential customers who have not opted out are eligible to receive Custom Incentives.

(g) Program promotional channels will include, but not be limited to:

a. Equipment providers, contractors, engineering firms and other trade allies.

b. Email

c. Newsletters

d. Direct Mail

e. Duke Energy website

f. Account and Segment Managers

[20] Data is forecasted for five years. This application requests approval for three years.

As described in section (a), incentives are based on avoided energy and capacity of the project and serve to aid customers in overcoming financial hurdles to implementing projects.

(h) The Custom Incentive Program was implemented in 2009 and will continue forward as an ongoing program with processes as described in section (a).

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$4,241,766	$4,560,972	$4,908,168	$5,286,007	$5,697,406

(j) Varies by measure

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Smart $aver® Assessments

(a) The Smart $aver® Assessments program purpose 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.

(b) All impacts captured as a result of Energy Assessment recommendations were originally assumed to be captured and recorded in Duke Energy Ohio's non-residential incentive programs.

	2012	2013	2014	2015	2016
kW	NA	NA	NA	NA	NA
kWh	NA	NA	NA	NA	NA
Participants	NA	NA	NA	NA	NA

(c) Commercial, industrial and government facilities

(d) Five years (2012 – 2016)[21]

(e) Participation from customers who receive an energy assessment and elect to implement recommendations is captured in other non-residential programs.

(f) All Duke Energy Ohio non-residential customers who have not opted out are eligible. Duke Energy reserves the right to decline to participate in an assessment if the Company believes there is not sufficient opportunity to justify the cost of an assessment.

(g) Promotional channels will include, but not be limited to:

a. Duke Energy Ohio website

[21] Data is forecasted for five years. This application requests approval for three years.

b. Account and Segment Managers

Duke Energy Ohio shares in the cost of energy assessments. Additionally, Duke Energy Ohio may provide some reimbursement of the customer's portion of the assessment costs, where applicable, if projects are implemented as a result of recommendations in the assessment report.

(h) Assessments will be provided by Duke Energy Ohio or a qualified third party.

(i) Program costs as a result of Energy Assessment recommendations are recorded in Duke Energy Ohio's non-residential incentive programs.

(j) Varies by audit type

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: PowerShare®

(a) PowerShare® is Duke Energy Ohio's demand response program offered to commercial and industrial customers. The program offers various options for customers to choose from.

(b) Regarding the basis for peak demand savings, an annual evaluation is conducted on participants to determine the capability available from the PowerShare® customers and applied for that year.

	2012	2013	2014	2015	2016
kW	47,373	51,112	56,454	61,796	67,138
kWh	0	0	0	0	0
Participants	44	48	53	58	63

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of devices)

(c) Non-residential customers

(d) Five years (2012 – 2016)[22]

(e) See above (b)

(f) All non-residential customers who are able to meet the load shedding requirements.

(g) The Program will be promoted by, but not limited to:

a. Account and Segment Managers

(h) In the QuoteOption of the program, customers receive notice of a price offer from Duke Energy Ohio to reduce load. Based on the price offered, the customer makes the decision as to whether or not they will reduce load. If a customer elects not to reduce load, there are no penalties for declining participation in the event. Participation is purely voluntary. The customer only receives a credit for the number of kilowatt-hours they reduced during the event, multiplied by the price offered by Duke Energy Ohio.

[22] Data is forecasted for five years. This application requests approval for three years.

Under the CallOption program, customers receive a monthly credit for providing Duke Energy Ohio with the right to call on the customers load during emergency situations. Each of the CallOption offers contain an emergency provision wherein the customer agrees to provide a minimum number of interruptions for curtailments initiated by the Regional Transmission Operator, PJM Interconnection, Inc., (PJM). The minimum number of events is dictated by PJM. But the customer also has the option to agree to provide load for economic events. Under the CallOption program, the customer agrees to a predetermined price at which Duke Energy Ohio has the right, but not the obligation, to initiate an event. If an economic event is called, the customer receives an energy credit for reducing load during the event that is equal to the predetermined price for energy, less the base cost of energy that is embedded in their rate.

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$1,654,434	$1,616,697	$1,790,683	$1,966,407	$2,141,949

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

The following descriptions are in response to 4901:1-39-04 (C) (5).

New Programs

Program Name: Appliance Recycling Program

(a) 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.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry. Over time, as impact and process evaluations are performed on the Company's Ohio programs, the results will be incorporated into the future cost-effectiveness evaluation of the programs.

	2012	2013	2014	2015	2016
kW	1,517	3,480	5,669	7,858	10,046
kWh	5,638,971	12,935,064	21,070,815	29,206,566	37,342,318
Participants	3,380	7,751	12,626	17,501	22,376

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of appliances)

(c) Residential

(d) Five years (2012 – 2016)[23]

(e) See above (b)

[23] Data is forecasted for five years. This application requests approval for three years.

(f) The audience is Ohio residential Duke Energy customers that own one or more second refrigerators and/or freezers currently in use. These residential customers reside in individually-metered, residences receiving concurrent service from the Company.

(g) Program marketing will consist of direct mail, social media, and community presentations and publications like newsletters. Point of sale messaging may also be pursued with prominent appliance retailers. Customers will receive a $30 incentive check for each of their qualifying appliance up to two units per year. Appliance pick up and recycling is free to Duke Energy Ohio customers.

(h) Third party vendors will be used

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$716,723	$846,203	$928,363	$931,084	$933,840

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Low Income Neighborhood Program

(a) 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. Ultimately, the program aims to reduce energy consumption by directly installing measures and educating the customer on better ways to manage their energy bills.

(b) Regarding the basis for the load impacts, the program managers and analysts initially developed the inputs for each program or measure from industry information such as the Electric Power Research Institute, Energy Star, E-Source, other utility program information, as well as from external experts in the industry. Over time, as impact and process evaluations are performed on the Company's Ohio programs, the results will be incorporated into the future cost-effectiveness evaluation of the programs.

	2012	2013	2014	2015	2016
kW	339	679	1,018	1,358	1,697
kWh	1,261,802	2,523,604	3,785,406	5,047,208	6,309,010
Participants	1,339	2,678	4,017	5,356	6,695

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

(c) Low Income Residential

(d) Five years (2012 – 2016)[24]

(e) See above (b)

(f) 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.

[24] Data is forecasted for five years. This application requests approval for three years.

(g) The marketing strategy for this program will focus on a grassroots approach. The Program will be promoted by, but not limited to:

a. Direct mail

b. Social media

c. Door hangers

d. Press releases

e. Community presentations and partnerships

f. Inclusion in community publications such as newsletters, etc

(h) Third party vendors will be used

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$500,923	$484,571	$487,557	$488,459	$489,380

(j) Not applicable

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

Program Name: Home Energy Solutions

(a) Home Energy Solutions is an approach to delivering energy efficiency solutions designed to offer customers energy savings and the ability to participate in demand response programs. Utilizing smart grid enabled consumer technology; this program provides customers with an engagement and energy management platform and the functionality to potentially enable a variety of demand response opportunities that will allow customers to realize significant benefits. The energy management platform will allow customers to potentially integrate and manage the energy consumption of a number of devices in the home, offering customers critical feedback and the potential for demand response applications for high use energy devices. Examples include:

- Thermostats
- Electric Water Heaters
- Pool/Spa Pumps

This capability has the potential to expand to include other device types over time, such as 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. Customers will also have remote access to their engagement platform and energy management system via a web browser and smart phones. The program is designed to increase customer engagement and understanding of their energy consumption. Additionally, including this product in the portfolio has the potential to increase customer interest participating in time differentiated pricing opportunities

	2012	2013	2014	2015	2016
kW	1,846	14,093	31,263	46,894	62,369
kWh	843,112	6,435,752	14,276,690	21,415,034	28,481,949
Participants	2,880	21,984	48,768	73,152	97,292

kW – Gross Cumulative Summer Coincident kW w/losses. kWh – Gross Cumulative kWh w/losses. Participants – Cumulative Participants (refers to number of households participating)

(c) Residential

(d) Five years (2012 – 2016)[25]

(e) See above (b)

(f) The audience is residential Duke Energy Ohio customers. These customers reside in individually-metered, owner-occupied, single-family residences receiving concurrent service from Duke Energy Ohio. In addition, customers are required to have a broadband internet connection, central heating/AC system and 12 months of historical energy usage information. Any customer meeting these requirements is eligible for the program.

(g) The marketing strategy for this program will follow a more traditional consumer electronics industry model. The Program will be promoted by, but not limited to:

a. Direct mail

b. Social media

c. Press releases

d. Radio/TV advertisements

e. Print advertisements

(h) Third party vendors will be used

(i) The projected program budget:

	2012	2013	2014	2015	2016
Annual Total Utility Costs	$1,452,794	$7,032,452	$9,422,721	$8,753,556	$9,108,476

(j) The full extent of the direct customer costs associated with this program is not fully known at this time. Duke Energy Ohio is in the process of selecting a third party vendor to administer the program, which will ultimately determine the amount of incentive that the Company will be able to provide to offset the equipment cost necessary for participation. The amount of the

[25] Data is forecasted for five years. This application requests approval for three years.

incentive in not determined at this time but will be implemented at a level that retains the cost effectiveness of the program.

(k) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

(l) The EM&V plans for each program are provided in Supplemental Attachment 2.

With respect O.A.C. Rule 4901:1-39-03(B) Program Design Criteria:

Appliance Recycling Program

(1)

	Utility Test	TRC Test	RIM Test	Participant Test
Appliance Recycling	3.59	4.25	1.99	NA

(2) A typical refrigerator made before 1993 uses over 1,000 kWh per year, so removing these "pre-1993" units from the utility grid provides significant energy and capacity benefits which will benefit the nonparticipating customers.

(3) Participation in the program is open to all residential customers with an eligible working inefficient second refrigerator and/or freezer to be recycled. Customers may recycle up to two eligible refrigerators, freezers or a combination of the two over a twelve month period.

(4) Based on the projected participation here is the forecasted energy savings and peak demand reduction associated with the program.

Appliance Recycling Program	2012	2013	2014	2015	2016
Cumulative Participation	3,380	7,751	12,626	17,501	22,376
Gross Cumultive kWh w/losses	5,638,971	12,935,064	21,070,815	29,206,566	37,342,318
Gross Cumulative Summer Coincident kW w/losses	1,517	3,480	5,669	7,858	10,046

(5) There are environmental benefits associated with the recycling of refrigerators and freezers that are collected thru the program. Disposed units will have 95 percent of material recycled with only 5 percent entering landfills.

(6) Given that the program is targeted at the old secondary refrigerators and freezers in residential homes, the program is not offered to non-residential customers. The program is available for all residential customers that have refrigerators and freezers qualifying for the program.

(7) Based upon its design and purpose the program will have little to no impact on the construction of new facilities or retrofitting of existing capital stock. The primary purpose of the program is to retire older inefficient appliance stock that exists in the market today.

(8) The Duke Energy Corporation has signed a contract with a vendor to perform the recycling of refrigerators and freezer across all five of its jurisdictions, so Duke Energy Ohio has already been able to take advantage of the economies of scale in the vendor pricing. Duke Energy Ohio will continue to cooperate with other Ohio utilities to determine potential savings available through the integration of programs.

(9) Information cards could be left for customers with older appliances during the Home Energy House Call audit with information about the Appliance Recycling program. As the Company gains more experience with the program, it will consider further integration with other programs, as well as evaluating adding complementary measures to other existing programs. Customers may also recycle up to 2 appliances within a 12 month period. If a customer has multiple appliances, one pick up could be considered to lower per appliance costs.

(10) Duke Energy Ohio has contracted with a recycling firm in Ohio.

(11) One main barrier may be the customer's understanding of Duke Energy Ohio's motivation in promoting the recycling of a refrigerator or freezer. It will be important to communicate that this program benefits the customer, the environment and supports Duke Energy Ohio's Energy Efficiency programs. The marketing kickoff message will be a key method for overcoming that barrier by educating Duke Energy Ohio customers on how much energy and money they can save by recycling their old appliances.

(12) In developing the program, Duke Energy Ohio evaluated similar program offerings by other Ohio utilities and considered Duke Energy Ohio's 2009 market potential study (Assessment of Potential) which provided information about the potential for an appliance recycling program.

(13) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

Low Income Neighborhood Program

(1)

	Utility Test	TRC Test	RIM Test	Participant Test
Low Income Neighborhood Program	1.33	2.31	1.02	NA

(2) Customers living in the targeted low income neighborhoods that do not participate in installing the program measures can still benefit from the information provided at the kick-off events, the community outreach materials, and the energy saving recommendations provided. Additionally, there is some anecdotal evidence that improving the efficiency of homes in a neighborhood can increase property values of all homes in the neighborhood.

(3) Targeted Low Income neighborhoods qualify for the program if at least 50% of the households have incomes of 0%-200% of the federal poverty guidelines and is available to homeowners and renters of single or multi-family residences. However, participation in the program is open to all residences within a targeted neighborhood that would like to participate in the program.

(4) Based on the projected participation here is the forecasted energy savings and peak demand reduction associated with the program.

Low Income Neighborhood Program	2012	2013	2014	2015	2016
Cumulative Participation	1,339	2,678	4,017	5,356	6,695
Gross Cumultive kWh w/losses	1,261,802	2,523,604	3,785,406	5,047,208	6,309,010
Gross Cumulative Summer Coincident kW w/losses	339	679	1,018	1,358	1,697

(5) Aside from the energy benefits, a primary goal for this program is to empower Low Income customers to better manage their energy bills. Crucial steps include providing these customers with free energy saving measures and educating them on how to manage their energy needs. By providing customers with solutions to lower energy costs, the amount in bill savings can be used to help contribute to the cost of other necessities such as housing. As mentioned earlier, there is some anecdotal evidence that improving the efficiency of homes in a neighborhood can increase property values of all homes in the neighborhood.

(6) This program design is specific to residential homes and targeted at what is a commonly underserved segment of the residential market, so it is really not applicable to non-residential customers. The program is targeted at Low Income neighborhoods with at least 50% of the households having incomes of 0%-200% of the federal poverty guidelines. The community approach in this program offers many benefits, for example: greater acceptance is possible when neighbors and friends go through the program together and efficiencies are gained by working in close proximity for longer periods of time. However, Duke Energy Ohio offers other low income programs for customers that are not within the selected areas, such as weatherization and the availability of free CFLs through the Smart $aver® Residential program.

(7) Based upon its design and purpose the program will have little to no impact on the construction of new facilities or retrofitting of existing capital stock. The primary purpose of the program is to assist low income customers in making their homes more efficient and teaching ways to lower their energy bills.

(8) The Duke Energy Corporation is in final negotiations with a vendor to perform the low income neighborhood program across all five of its jurisdictions, so the Company has already

been able to take advantage of the economies of scale in the vendor pricing. Duke Energy Ohio will continue to cooperate with other Ohio utilities to determine potential savings available through the integration of programs.

(9) This program is a whole home approach. Following the kick-off event, energy assessments will be completed in the customers' homes and the appropriate energy saving measures will be installed. Such measures include CFLs, water heater and pipe wrap, low-flow shower/faucet aerators, HVAC filters/replacement, and air sealing to include doors and windows. 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.

(10) Duke Energy Ohio is in negotiations with a DSM program vendor in Ohio.

Ohio has received substantial weatherization funding increases from the American Recovery and Reinvestment Act (ARRA). The additional ARRA funding has made utility "piggyback" funding less important and more complex than historical periods. Duke Energy Ohio is committed to assisting income qualified customers, but a new program is needed that complements the state weatherization programs. As a result, Duke Energy Ohio is proposing this new Neighborhood Program, which is independent of stimulus dollars and agency involvement.

This new Low Income Neighborhood Program can run successfully both during and after the ARRA time period.

(11) One main barrier may be the customer's understanding of Duke Energy Ohio's motivation in promoting energy efficiency. It will be important to communicate that this program benefits the customer, the environment and Duke Energy Ohio stakeholders. Time commitment may be

another barrier. Customers may feel they do not have the time to have someone come into their home to perform the energy assessment and receive energy efficiency education. The kick-off message will be a key method for overcoming that barrier so that leaders can point to concrete examples of before and after comparisons. If we can engage the entire community, we can create the feeling of a movement that residents feel the need to be a part of because others in their neighborhood are participating.

(12) In developing the program, Duke Energy Ohio evaluated similar program offerings by other utilities within Duke Energy's service territories.

(13) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

Home Energy Solutions Program

(1)

	Utility Test	TRC Test	RIM Test	Participant Test
Home Energy Solutions Program	1.59	2.35	1.44	4.29

(2) Participating customers will have the opportunity to maximize their energy savings potential by setting higher goals/preferences on their systems, as well as by participating in demand response programs. Customers doing so provide significant energy and capacity benefits which will benefit the entire system including nonparticipating customers.

(3) Based on the nature of the program, there are requirements to participation. Residential customers must reside in individually-metered, owner-occupied, single-family residences receiving electric service from Duke Energy Ohio. In addition, customers are required to have a broadband internet connection, central heating/AC system and 12 months of historical energy usage data. As the Company's advanced metering infrastructure rollout continues, the number of eligible customers will also increase.

(4) Based on the projected participation here is the forecasted energy savings and peak demand reduction associated with the program.

Home Energy Solutions Program	2012	2013	2014	2015	2016
Cumulative Participation	2,880	21,984	48,768	73,152	97,292
Gross Cumultive kWh w/losses	843,112	6,435,752	14,276,690	21,415,034	28,481,949
Gross Cumulative Summer Coincident kW w/losses	1,846	14,093	31,263	46,894	62,369

(5) The primary non-energy benefit realized through Duke Energy Ohio's Home Energy Solutions Program is the increased level of customer convenience it provides. The program will allow customers to experience the convenience of having a central point of control for multiple energy consuming devices, as well as being able to control device settings remotely from Wi-Fi enabled devices, such as a Smartphone. Another potential non-energy benefit is that the program could make ownership of electric vehicles more attractive due to its potential ability to manage the operation of electric vehicle charging stations*.

**Where available*

(6) Given the nature of the program, it is solely targeted at residential customers; however, non-residential customers have opportunities to employ energy management systems through the Company's Non-Residential Smart $aver® Custom Program. Within the residential class, there are requirements necessary to participate in the program (as listed above); however, any residential Duke Energy Ohio customer that meets these criteria is eligible for the program.

(7) Over time the program could positively impact the production and customer adoption of Smart Appliances and other controllable equipment, as well as potential increasing interest in the development of retrofit modules for current non-smart appliances. While the amount of influence may be small the design of the Home Energy Solutions should provide enough value for customers where the demand for these types of controllable solutions should increase.

(8) The Duke Energy Corporation is working to reach agreement on a contract with a vendor to develop the platform upon which Home Energy Solutions is based across all five of its jurisdictions, so the Company has already been able to take advantage of the economies of scale in the vendor pricing. Duke Energy Ohio will continue to cooperate with other Ohio utilities to

determine potential savings available through integration of programs. Duke Energy Ohio plans to finalize the selection of a vendor for the hardware components of Home Energy Solutions upon receiving Commission approval of the program.

(9) In addition to the energy and peak demand savings currently attributed to this program, additional load shifting benefits from customer adoption of time-differentiated pricing is likely. This program and the increased amount of pre-programmed control will potentially make time-differentiated rates more appealing and less risky for customers. The design of the Home Energy Solutions platform is too facilitate the incorporation of additional measures as new technology emerges. Measures would be added under the Home Energy Solutions program.

(10) Duke Energy Ohio is working with a vendor and will rely on their expertise to help with vendor selection for the hardware components of Home Energy Solutions.

(11) One main barrier may be the customer's understanding of Duke Energy Ohio's motivation in offering a product and program(s) that create energy savings for the customer. It will be important to communicate that this program benefits the customer, the environment and supports Duke Energy Ohio's energy efficiency programs. Third party competitors that are offering energy management products/services will also prove to be a potential barrier. The marketing message will be a key method for overcoming these barriers by educating Duke Energy Ohio customers on how much energy and money they can save by working with their utility as a trusted energy partner and taking advantage of the unique programs and information that only Duke Energy Ohio can provide.

(12) In developing the program, Duke Energy Ohio evaluated similar program offerings by other utilities within Duke Energy's service territories and will rely on the vendor's expertise.

(13) The Company believes promoting investment in energy efficiency measures and customer engagement will advance the adoption of energy efficiency measures and behavior. The Company will continue to examine the level of free ridership in each of these programs as a potential indicator of market transformation.

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

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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 Saver 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 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			
	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:
10/4/2011

	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
10/8/2011

	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 $aver: 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*
3/1/2011

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