2011 PORTFOLIO STATUS REPORT OF THE ENERGY EFFICIENCY AND PEAK DEMAND RESPONSE PROGRAMS

OF

OHIO POWER COMPANY

VOLUME II

APPENDICES H - N

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AEP Ohio
Energy Efficiency/Demand Response Plan
Year 3 (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report
Home Energy Reports Program

Presented to

AEP OHIO®
A unit of American Electric Power

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Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, Ohio 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Bill Provencher, Associate Director
608.497.2327
bill.provencher@navigant.com

Paul Wozniak, Senior Consultant
312.583.5741
paul.wozniak@navigant.com

Bethany Glinsmann, Senior Consultant
608.497.2331
bethany.vittetoeglinsmann@navigant.com

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E. Executive Summary

This document summarizes the evaluation research on AEP Ohio's pilot Home Energy Reports (HER) Program.[1] In 2010, the program had been operating for only a few months and only process findings were reported. The report includes estimates of electric savings, participant[2] satisfaction findings, and research recommendations from impact and process evaluations conducted by Navigant.

Classified as an "indirect feedback" program[3], the HER Program helps residential participants reduce unnecessary electricity use by encouraging them to alter habits of electricity use (i.e., positive reinforcement behavior modification.) The two-year pilot serves roughly 10 percent of AEP Ohio's 1.3 million residential customers. Participants were enrolled on an opt-out basis in the energy efficiency service operated and delivered by Opower Inc., the program implementation subcontractor. To learn about program, participants were selected randomly from diverse groups, including:

- Higher-than-average electricity users (high use customer), *abbreviated as* HU - located throughout the AEP Ohio service area, living in single-family homes and consuming more than 21,000 kWh/year. The group was initially 125,000 participants at pilot launch in August 2010.

- Lower-income households, *abbreviated as* LI - all shared common enrollment in a State of Ohio program called Percentage of Income Payment Plan (PIPP). To stay enrolled, all households must have a verified annual income below 150 percent of the Federal Poverty Level (FPL). The PIPP helps customers arrange affordable long-term payment agreements. The group was initially 25,000 participants.

- Advanced Metering Infrastructure, *abbreviated as* AMI - all were located within the footprint of AEP Ohio's Sm*art Grid Demon*stration Project. This group contained 62,025 participants.

The Home Energy Report presents participants a written report that is received separately from participant's bills. This consists of a single page front and back report containing:

- A bar chart comparison of last month's electricity costs for the participant and for two groups of "similar homes".

---

[1] Also known as Behavior Modification Program.
[2] *Definitions of AEP Ohio customers vs. HER participants:* (i) "*Participants*" are those customers who received the HER and are included in the HER analysis; (ii) "*Control Group*" or "non-participants" refers to the non-participants who were not part of the HER analysis and were selected as the control group for the analysis; and (iii) "*Customer*" refers generally to all AEP Ohio customers (HER participants, non-participants and all other customers).
[3] "The State of the Utility Bill" by Ben Foster and Elana Alschuler, ACEEE Report Number B111, November 11, 2011.

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- A line graph that compares monthly electric use for each of the previous 12 months for the participant and for the two groups of "similar homes".
- A bar chart that shows the participant whether they are using more or less electricity than during the comparable season last year.
- Bulleted lists of simple actions to reduce electric use.

Access to participant information and more relevant tips is also available through an Internet web portal available even after a participant opts-out of the mailed reports.

E.1 Evaluation Objectives

The major objectives of the 2011 evaluation are to:

1. Quantify energy savings attributable to the HER program
2. Estimate program cost effectiveness
3. Test for differences in energy savings among participant subgroups
4. Evaluate participant satisfaction with changes in wording and features of mailed report
5. Recommend changes that would improve the program

E.2 Evaluation Methods

For the impact evaluation, Navigant used a linear fixed effects regression (LFER) model to estimate program savings. The LFER model combines both cross-sectional and time series data in a panel dataset. The data consists of billing data both before and after the start of the program, for both treatment (program) households receiving the Home Energy Reports, and control households that do not receive the reports. Importantly, the program enlists an experimental design: households are randomly allocated to the control and treatment groups. This eliminates the issue of selection bias that complicates the evaluation of many behavioral programs. The basic LFER model casts the average daily energy use as a function of a household-specific constant term, a variable indicating whether the observation is in the pre- or post-program period, and a variable indicating whether the household is a treatment (program) household or a control household.

For the process evaluation, the primary method for obtaining participant views on the HER pilot was a wave of telephone interviews conducted with 212 residential participants (*this is comprised of 142 HU participants and 70 LI participants)*. For baseline comparison, similar telephone interviews were done with a control group of about 70 residential non-participants. The process evaluation also drew upon implementation contractor program materials, web site

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materials, and published literature by principals, advisers and academic affiliates. Table E-1 presents the data collection conducted for the evaluation.

Table E-1. Data Collection Activities for Impact & Process

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Billing data	Residential participants and control group	300,000	Participant /Control Group	300,000	March 2012 - April 2012
In-depth interviews and CATI surveys	AEP Ohio Program Coordinator	1	Continued contact as needed	1	May 2011- March 2012
	Participating and Control Group customers	Roster of Participant and Control Group populations	Random sample of each sub-population as fielded by the Blackstone Survey Group	Participant= 212 Control Group=70	March 2012

E.3 Key Findings and Recommendations

Key Impact Findings

The impact results for the HER program are shown in Table E-2. The total estimated energy savings for the 2011 calendar year were 53.9 GWh. On a percentage basis, average program savings were 1.69 percent for 2011.

Navigant found that savings vary by energy use level: participants with high energy use saved more energy than participants with low energy use. Savings also vary by participant type, of which there are three: households enabled with a smart meter (AMI households), low income households (LI households), and higher use households (HU households).

- HU participants had the highest estimate of program savings, at 384 kWh per participant for 2011
- Average savings for LI participants were 197 kWh per participant in 2011
- Average savings for AMI participants were 96 kWh per participant in 2011

Importantly, savings differences among the groups are not necessarily due to the identifiers defining group membership. For instance, it is not appropriate to conclude that receipt of an

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AMI meter causes HER program savings to be low; factors correlated with group membership, such as the fact that AMI meters were installed in certain locations of the service territory characterized by a particular set of demographic characteristics, might explain the relationship.

Table E-2. Estimated Program Savings by Participant Type

Type of Statistic	Total	HU	LI	AMI
Percent Savings	1.69%	1.93%	1.28%	0.85%
(standard error)	*0.05%*	*0.06%*	*0.18%*	*0.13%*
kWh Savings per customer	291	383.85	196.95	95.69
(standard error)	*9.35*	*12.66*	*28.43*	*14.22*
Total MWh Savings	53,882	45,292	3,473	4,839
(standard error)	*1,747*	*1,494*	*501*	*719*

Note: All values are statistically significant at the 5% level.

Key Impact Recommendations

- AEP Ohio may consider a persistence study at some point in the future.
- Continue the HER program as long as regularly reported electric savings remain cost-effective.

Key Process Findings

- HER does impact positive energy efficiency behavior changes.
- LI behavior changes appear to be mostly focused on in-home reductions in energy use as opposed to purchasing lower use (higher efficiency) appliances and CFLs.
- HU behavior appears to be a mix of upgrading to more efficient appliances and CFLs, as well as changing behavior in the home.
- The majority of participants are satisfied – however, the LI participants are more satisfied with the HER than the HU participants.
- LI participants typically accept HER home comparisons, while HU participants tend to contest whether HER home comparisons are accurate.
- Energy tips in the Home Energy Reports are noted by a majority, but only acted on by less than a majority of HER participants.
- Energy conservation (reducing electricity use) is very important to both HU and LI customers, but more important overall to LI participants.

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Based solely on process survey results, Navigant recommends:

- To meet participant demand, AEP Ohio should consider increasing the number of program participants, while also measuring a larger control group population.
- Providing participants a "next steps" sheet indicating how to improve energy efficiencies on a periodic basis (e.g., quarterly).
- Given the heavy focus and appreciation of LI participants of the HER report, AEP Ohio should consider implementing the Home Energy Report more densely to the LI segment if it does not reduce the cost-effectiveness significantly.
- Design improvements to the HER were helpful to program participants; ongoing improvements to the layout and content should be a focus in the following year of the HER program.
- The newly-introduced opt-out option should be retained in 2012, and attention to placement of the opt-out option should be considered to reduce participant concerns on the ability not to "opt out."

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1. Introduction and Purpose of the Study

The purpose of the Home Energy Reports (HER) Program is to reduce the energy consumption of residential households through behavioral changes. Relevant energy habits include turning off appliances when power is not necessary, installing low-cost energy efficiency measures, and participating in AEP Ohio efficiency programs.

The goal of the HER pilot program was to determine whether providing customers with information on their energy usage and methods to manage that usage would lead to measurable changes in energy consumption. The pilot was launched in August 2010 with a mailing of the HER to more than 200,000 residential customers selected as participants. The Home Energy Reports Program rewards participants with ongoing encouragement that can produce energy savings, lower energy bills as well as improved participant satisfaction.

1.1 Evaluation Overview

This evaluation report presents the findings from the impact and process evaluations of the AEP Ohio residential Home Energy Reports Program for Program Year 2011 (PY 2011). The goal of the impact evaluation is to quantify electric energy savings attributable to the HER program. The goal of the process evaluation is to obtain increased understanding of the typical AEP Ohio residential participant and their household energy habits. A telephone survey was conducted as part of the process evaluation gathered data on the participants' energy use, energy conservation behavior, and acceptance of the HER recommendations. In this way, the evaluation provides a reference document for future marketing and trouble-shooting. In the participant survey for program year 2011, the process evaluation also collected data on appliances removed from service in the past year.

The current participant telephone survey included verification that the HERs were received, read and understood by a random sample of participants. In addition, the current survey collected participant opinions on whether HER information was believable, helpful and actionable. Recipients were also asked about whether they discussed the reports with others. A battery of questions about appliance ownership, unplugging of appliances, appliance switch-off practices, and removal of older, less efficient appliances was also included.

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2. Program Description

2.1 Program Description

The purpose of the Home Energy Reports (HER) Program is to give feedback to residential participants that will help them change energy use habits to save energy. This occurs through the use of motivational messages connected with information in a bi-monthly personalized report about a participant's energy use. The information includes improvement actions that a residential participant can use to change their household's metered electrical use. To implement this program, AEP Ohio contacted with Power, Inc. to handle the development and distribution of the reports.

The HER provides recipients with the following items:

- A bar chart comparison of last month's electricity costs for the recipient and for two groups of "similar homes"
- A line graph that compares monthly electric use for each of the previous 12 months for the recipient and for the two groups of about 100 similar homes[4]
- A bar chart that shows the recipient whether it is using more or less electricity than during the comparable season last year
- A short, bullet list of simple actions to reduce electric use

Participants are encouraged to actively manage their electricity use by "social norm" bill reporting.[5] The primary communication method is a brief printed report that arrives by mail soon after the monthly utility bill. However, irregular mailers, door hangers, and other devices are used experimentally with subsets of participating households.

[4] Prior to April 2011, the HER used for AEP participants substituted "neighbors" for "similar homes."
[5] Social norms are beliefs about "what other people are doing." An example from the realm of mundane behavior is looking down the street to see how long the grass is on lawns of neighbors.

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Figure 2-1. Engagement Flow – HER Process from Mailing to Participant Action

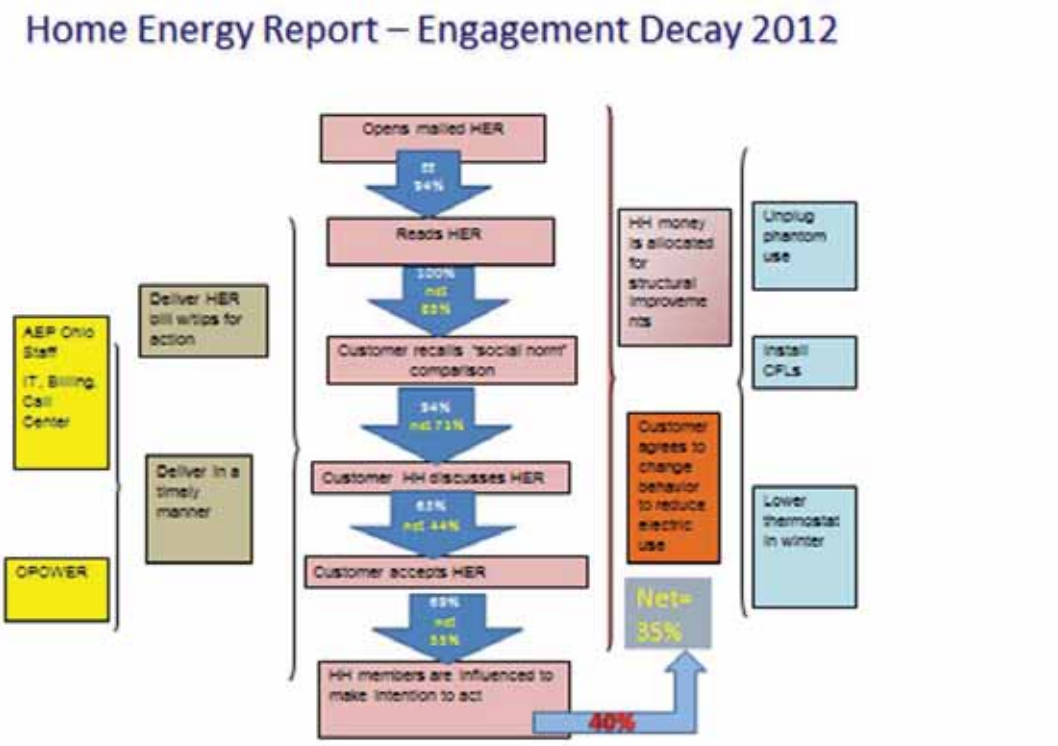


Figure 2-1 shows participant engagement flow from receipt of the HER to a participant taking action on information provided in the HER This process flow was followed for delivery and participant involvement with the HER. It is a well-accepted adage that different customers want different things. Likewise, different customers react differently to the program messaging. Achieving savings through the program may be a matter of marketing to a specific residential segment. A market segmentation analysis may be a fruitful investment should AEP Ohio wish to pursue deeper understanding and use of this type of demand management tool.

A redesign of AEP's HER was undertaken to improve program messaging to participants. Changes included:

- Revised description of the report with the addition of an "opt out" option
- Language was changed from comparing participants to their "neighbors" to a comparison to "similar homes"
- Certain changes in language to charts and graphs
- Additional points to drive customers to update their profile information online and improve comparison accuracy

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When the AEP Ohio pilot was first launched in August 2010, reports were mailed to more than 150,000 participants over a period of four weeks. The report's information was intended to stimulate participant to reduce their energy use and create average energy savings in the one to three percent range (depending on local energy use patterns). In addition to these 150,000 participants, another 72,000 (mail and web only) participants in the AMI pilot program began receiving the HER reports.

The participant and control groups each consist of three types of residential participants:

- AMI (participants enabled with interval electric metering through automated metering infrastructure, AMI)
- HU (high-use participants) are single-family homes consuming more than 21,000 kWh/year for this study
- LI (Percentage-of-Income Payment Plan Program) designating lower income households participating in Ohio's statewide program that arranges for customers to pay a percentage of income monthly toward utility bills

Structured into the experimental design is variation in mailing frequency. Participants are randomly assigned to the different mailing frequency groups. Thus, some groups of participants receive six bimonthly reports a year and another group receives eight reports annually.

- AMI Participants are assigned to one of five "mailing frequency" groups: semi-annually, quarterly, bi-monthly, or online-only
- HU participants receive reports bi-monthly, with a portion of the HU participants receiving additional seasonal reports
    - LI participants received bi-monthly

The set of feasible participants, those identified having sufficient billing history and have average daily energy use within a certain range of values are randomly assigned to either the treatment or control groups.[6] **Error! Reference source not found.** gives the number of treatment and control households in each participant group, by report frequency. There are twice as many treatment households as control households in the program.

[6] See the Appendix for discussion of the control group.

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Table 2-1. Number of Participants and Non-Participants

Type, Frequency	Participants	Non-Participants
AMI	66,161	23,034
Web-Only	4,120	0
Semi-Annual	9,303	3,455
Quarterly	27,911	10,361
Bi-Monthly	24,827	9,218
HU	129,027	63,967
Bi-Monthly	104,179	49,055
Bi-Monthly + Seasonal	24,848	14,912
LI	20,806	18,565
Bi-Monthly	20,806	18,565
Subtotal	215,994	105,566
TOTAL		321,560

For the process evaluation survey, one control group was drawn from a control group previously identified as candidates for the high use group. A total of 321,560 participants and non-participants in the study which is made up of 215,994 participants and 105,560 non-participants.

2.2 Evaluation Objectives

The major objectives of the PY 2011 evaluation are to:

1. Quantify energy savings attributable to the HER program
2. Estimate program cost effectiveness
3. Evaluate participant satisfaction with changes in wording and features of mailed report
4. Test for differences in energy savings between participant subgroups
5. Recommend changes that would improve the program

The evaluation will seek to answer the following key research questions.

2.2.1 Impact Questions

1. Do Home Energy Reports lead to measurable energy savings for residential participants? If so, how much?
2. Do energy savings vary by the three major participant types enrolled (i.e., AMI, HU, and LI)?

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3. Do energy savings vary by participants' energy consumption level?

4. What are the program benefits, costs, and cost effectiveness?

2.2.2 Process Questions

Awareness and Participation

1. Are all adult members of participating households aware of the reports and their frequency?

2. Is there evidence of "neighborhood effects" through communication with neighbors, friends, and relatives?

3. What is the level of familiarity with AEP Ohio efficiency programs among those participants who express doubts about the value of the Home Energy Report? Is participation increasing among HER recipients?

4. Are participants who do not take action on energy tips more lacking in motivation or more lacking in financial resources to make equipment stock changes?

Program Characteristics and Barriers

5. Do participants have confidence in the comparison of their household electricity use with "other similar homes"?

6. Did participants notice the wording changes and opt-out features instituted in mid-2011? Have their satisfaction ratings changed, in aggregate, since the Navigant evaluation survey of February 2011?

Electric Appliance Use and Disposal

7. Do participant households participate in other AEP Ohio programs at a higher rate than non-participant households?

8. Do participants (both HU and LI) report unplugging appliances more often than do the control group?

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3. Evaluation Methodology

3.1 Description of the Data

3.1.1 Data Used in Impact Evaluation

The impact analysis follows the census approach, using data from all treatment and control households to implement a balanced analysis. Navigant used monthly billing data from AEP Ohio's customer information system, spanning the period from November 2007 to January 2012. The billing data included a unique customer ID, the start and end dates of each bill cycle, and the quantity of energy consumed during the bill cycle. Navigant acquired daily weather data for Columbus, Ohio from the web site, Weather Underground.[7] We linked the daily weather data with the billing data and calculated heating and cooling degree days for each bill period for each customer. Navigant also received participant information from AEP Ohio, including information about participation in the HER program, participation in other AEP Ohio programs, and the type of participant.

Participants meeting the following criteria were included in the analysis:

- At least six months of pre-program billing data
- At least six months of post-program billing data
- Did not opt-out of the program
- Not a web-only participant

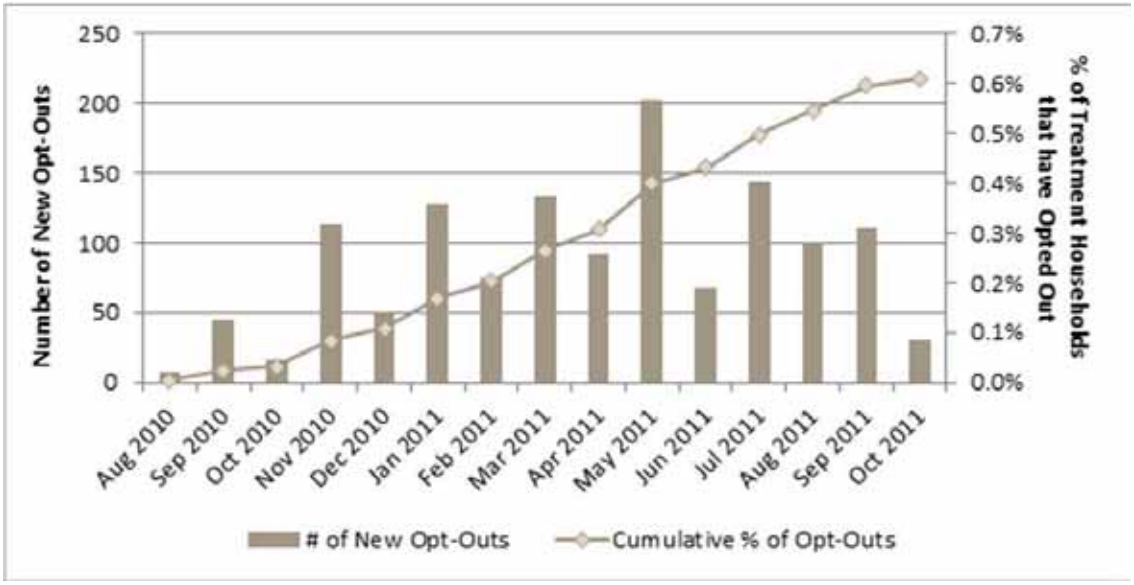
Navigant dropped web-only AMI customers due to a lack of similar control households. Web-only customers are AMI customers that elected to stop receiving paper reports or were originally selected as web-only participants. We take the conservative approach and treat all web-only customers as opt-outs, assuming no program savings for these customers. The final dataset contains 300,547 participants and control group members.

Figure 3-1 shows the number of program participants that opted-out in each month of the program. By October 2011 roughly 0.6 percent of participants had opted-out, a relatively low portion compared to similar programs.

[7] www.wunderground.com

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Figure 3-1. Frequency Distribution of Opt-Out Households, by Month and Cumulative Percent



3.1.2 Data Used in Process Evaluation

Navigant selected the sample for the process evaluation using principles of randomization, drawing from a sample frame of all participants used in the billing records analysis for impact evaluation. The process sample includes participants (recipients of the HER) and the control group who do not receive HER communications. The sampling frame was transferred to Navigant in conformance with strict customer privacy guidelines.

The process evaluation used participant data gathered by a computer-assisted telephone interview (CATI) of a sample of AEP Ohio residential customers. The survey was conducted by reaching 282 residential participants of AEP Ohio, including 212 program participants and 70 control group participants. Fielding of the survey was the week of March 14-26, 2012, about 18 months after the pilot was launched, and 13 months since the previous Navigant survey. Telephone interviews were managed by a subcontractor to the evaluation team.

To identify changes in household response between the first and second survey, many items on the 2012 survey replicate items used in the 2011 survey, though many differ. Also, similar types of participants were interviewed in each round of surveying, but the participants were not matched to identical households. Participant interviews averaged 16.5 minutes.

The telephone survey included a verification question asking whether the HER reports were indeed being received at the participating households (see discussion on following pages.) Response datasets were supplied electronically in SPSS and Excel formats to Navigant for statistical analysis. Results are reported below. Summary statistics, crosstabs and *t*-tests were used to validate the sampling assumptions and conduct exploration of the dataset.

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Table 3-1. Process Evaluation Analysis-Number of Households Surveyed (by role, type, and mailed report frequency)

Type, Frequency	Participants	Control Group
HU	**142**	
Bi-Monthly	113	55
Bi-Monthly + Seasonal	29	15
LI	**70**	
Bi-Monthly	55	
Bi-Monthly + Seasonal	15	
Subtotal	70	
Column TOTAL	**212**	**70**

3.2 Comparability of Participants and the Control Group

For the impact evaluation Table 3-2, comparability of participant and non-participant is more robust than for the process evaluation. This is because, at the start, a group of comparable households was randomly assigned to the treatment or controls populations.

For the process evaluation survey Table 3-4 the high use group had a control group. However, the low income group does not have such a similar control. Thus, for the appliance churn section that follows, only the high use segment will be explored.

Other group comparisons are made as appropriate to the purposes of this evaluation. Aggregated to a higher level, Table 3-2Table 3-2 summarizes the participant vs. non-participant comparison.

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Table 3-2. Survey Respondents, March 2012, Participants vs. Non-Participants

Status- Home Energy Report	Frequency	Percent
Non-Participant[8] (not enrolled, were not mailed HER reports)	70	25%
Participant (were mailed HER report)	212	75%
Total	**282**	**100%**

As shown in Table 3-2, the 282 survey respondents include 212 households that were mailed the HER. Also included were 70 residential non-participants (control group) who were not mailed the reports, yet were interviewed as controls to measure biases and develop adjustment factors.

3.3 Comparability of Participant Sub-Populations

Data from the 212 surveyed participants (HU and LI participants) could be sorted into groups according to other attributes, in order to determine whether focused sub-populations would return higher levels of savings than another. Not reported here (for space and purpose reasons) are background analyses done to identify patterns of higher or lower conservation. A purposeful look was made to measure and compare two groups: above-average use households and lower-than-average income households.

- The first category is labeled "LI" and represents households with annual income less than 150 percent of federal poverty level as of August 2010.
- The second category is labeled "HU" and represents participants with higher-than-average daily electricity use in the 24-month period July 2008-June 2010.

[8] Control Group non-participants selected for a reference population originally met criteria for the EE group.

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Table 3-3. Participant Respondents by Category

Category of residential customer	Number	Percent
HU=Higher-than-average daily electricity use	142	67%
LI=Household income below 150% FPL (federal poverty level)	70	33%
Total	**212**	**100%**

The Participant group had members of each category (LI and HU). HU was primarily defined by higher-than-average daily electricity use.

Control Group respondents were all drawn from an original high use population, with some assigned to "control" non-participant groups by random distribution. Thus, all non-participant control group respondents are higher than average daily electricity users.

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Table 3-4. Process Respondents by Treatment/Control, Segment and Frequency of Mailed HER

Frequency	Treatment	Control
HU		
Bi-Monthly	182 (86%)	55 (79%)
Bi-Monthly + Seasonal	30 (14%)	15 (21%)
Subtotals	**212**	**70**
LI		
Bi-Monthly	69 (99%)	0%
Bi-Monthly + Seasonal	1 (1%)	0%
Subtotals	**70**	**0**

The LI (lower income) participant group was much more likely to live in older buildings than the HU (high use) group. Older buildings are more likely to have opportunities for low-cost conservation measures, such as those recommended in the Home Energy Reports. Half the homes of LI participants were built prior to 1960, as shown in Table 3-5. Also, a barrier is that more LI participants live in rental housing where the incentive to invest in energy efficiency is lower.

Table 3-5. Vintage of HER Respondent Housing

	Analysis Group		
Year Built	**HU**	**LI**	**N**
Before 1960	40 (30%)	23 (51%)	63

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Year Built	Analysis Group		
1960-69	18 (13%)	4 (9%)	12
1970-79	29 (22%)	4 (9%)	33
1980-89	17 (13%	3 (7%)	20
1990-99	13 (10%)	6 (13%)	19
2000-05	13 (10%)	3 (7%)	16
2006-12	4 (3%)	2 (4%)	6
Total	**134**	**45**	**179** **(Total Responses Out of 212 Houses Contacted)**

The sample used for process surveys originated from two subsets of the AEP Ohio residential sector's one million electric customers: higher-than-average electric use households (HU) and lower-than-average income households (LI) who may need assistance with their utility bills.

In turn, three samples are extracted from these two subsets for use in the analysis.

- Higher-than-average-use participants (HU) selected from the participants enrolled since the August 2010 launch.
- Control group selected randomly from HU customer before the 2010 launch. These non-participants control group customers do not receive personalized HER communications and are considered non-participants.
- Lower-income participants (LI) selected without respect to kilowatt-hour use. These received the HER and are considered participants.

Participant and the control population were chosen in a manner that can be shown to be free of bias. Percentages cited here as results should not be transferred to the overall AEP Ohio residential population without careful review by a statistician. It should be recognized that the

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precision of telephone survey responses is necessarily lower than with the physical measurement of electric use for a specific period of time.

3.4 Analytical Methods

3.4.1 Impact Evaluation Methods

Estimates of program impacts are derived via linear fixed effects regression (LFER) analysis. The simplest version of an LFER model convenient for exposition is one in which average daily consumption of kWh by participant and non-participant *k* in bill t, denoted by ADC_{kt}, is a function of three terms: the binary variable *Treatment*, taking a value of 0 if non-participant *k* is assigned to the control group, and 1 if participant *k* is assigned to the participant group; the binary variable $Post_t$, taking a value of 0 if bill *t* is before the participant's *program start date* and 1 if the bill is received on or after the program start date; and the interaction between these variables, $Post_t \cdot Treatment_k$. Formally,

Equation 1

$$ADC_{kt} = \alpha_{0k} + \alpha_1 Post_t + \alpha_2 Participant_k \cdot Post_t + \varepsilon_{kt}$$

Three observations about this specification deserve comment. First, the coefficient α_{0k} captures *all* participant-specific and non-participant specific effects on electricity use that do not change over time, including those that are unobservable. Second, α_1 captures the average effect *among non-participants* of being in the post-treatment period. In other words, it captures the effects of exogenous factors, such as economic conditions, that affect all non-participants in the program period but not in the pre-program period. Third, $\alpha_1 + \alpha_2$ captures the average effect *among participants* of being in the post-program period, and so the effect directly attributable to the Home Energy Reports program is captured by the coefficient α_2. In other words, this coefficient captures the *difference-in-difference* in average daily kWh use between the participants and non-participants across the pre-program and treatment periods. Consequently the Difference-in-Differences (DID) statistic is considered the best indicator of program effects in a program evaluation. This model can be estimated over any time horizon, including annually and seasonally.

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Navigant expands the basic model to account for program savings by participant type (AMI, HU, LI) and energy use level (high, middle, low).[9] Basically, this involves creating $Post_t$ and $Post_t \cdot Treatment_k$ variables for each subgroup of participants by interacting these variables with group indicator variables. The full regression equation is given by:

Equation 2

$$\begin{aligned} ADC_{kt} = {} & \alpha_{0k} + \alpha_1 Post_t + \alpha_2 Participant_k \cdot Post_t + \alpha_3 AMI_k \cdot Low_k \cdot Post_t \\ & + \alpha_4 AMI_k \cdot Low_k \cdot Post_t \cdot Participant_k + \alpha_5 AMI_k \cdot Mid_k \cdot Post_t \\ & + \alpha_6 AMI_k \cdot Mid_k \cdot Post_t \cdot Participant_k + \alpha_7 AMI_k \cdot High_k \cdot Post_t \\ & + \alpha_8 AMI_k \cdot High_k \cdot Post_t \cdot Participant_k + \alpha_9 HU_k \cdot Low_k \cdot Post_t \\ & + \alpha_{10} HU_k \cdot Low_k \cdot Post_t \cdot Participant_k + \alpha_{11} HU_k \cdot High_k \cdot Post_t \\ & + \alpha_{12} HU_k \cdot High_k \cdot Post_t \cdot Participant_k + \alpha_{13} LI_k \cdot Low_k \cdot Post_t \\ & + \alpha_{14} LI_k \cdot Low_k \cdot Post_t \cdot Participant_k + \alpha_{15} LI_k \cdot Mid_k \cdot Post_t \\ & + \alpha_{16} LI_k \cdot Mid_k \cdot Post_t \cdot Participant_k + \alpha_{17} LI_k \cdot High_k \cdot Post_t \\ & + \alpha_{18} LI_k \cdot High_k \cdot Post_t \cdot Participant_k + \varepsilon_{kt} \end{aligned}$$

Where,

ADC_{kt} = The average daily use in kWh for participant or non-participant *k* during billing cycle *t*. This is the dependent variable in the model.

$Post_t$ = A binary variable indicating whether bill cycle *t* is in the post-program period (taking a value of 1) or in the pre-program period (taking a value of 0).

$Participant_k$ = A binary variable indicating whether participant *k* is in the participant group (taking a value of 1) or in the non-participant group (taking a value of 0).

AMI_k = A binary variable indicating whether participant or non-participant or non-participant *k* is in the AMI group (taking a value of 1) or not (taking a value of 0).

HU_k = A binary variable indicating whether participant or non-participant *k* is in the HU group (taking a value of 1) or not (taking a value of 0).

[9] Navigant splits the sample into equal-sized high, medium, and low energy use groups based on household energy use during the pre-program year (August 1, 2009 to July 31, 2010). The low use group had average daily energy use less than 37.1 kWh. The high use group had average daily energy use greater than 52.0 kWh.

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LI_k	= A binary variable indicating whether participant or non-participant *k* is in the LI group (taking a value of 1) or not (taking a value of 0).
Low_k	= A binary variable indicating whether participant or non-participant *k* is in the low energy use group (taking a value of 1) or not (taking a value of 0).
Mid_k	= A binary variable indicating whether participant or non-participant *k* is in the middle energy use group (taking a value of 1) or not (taking a value of 0).
$High_k$	= A binary variable indicating whether participant or non-participant *k* is in the high energy use group (taking a value of 1) or not (taking a value of 0).
α_{0k}	= The participant or non-participant -specific fixed effect (constant term) for household *k*. The fixed effect controls for all participant or non-participant -specific effects on energy consumption that do not change over time, such as the number of household members, the size of the dwelling, or a thermostat that is always set at a certain temperature.
$\alpha_1 - \alpha_{18}$	= Regression parameters corresponding to the independent variables.

The household-specific fixed effect (α_{0k}) implicitly captures the effects of the household characteristics that do not change over time, such as square footage of the dwelling, number of occupants, and indoor temperature preferences.

In Equation 2 high use participants in the middle use group are the baseline, and so the direct effect of the HER program for these participants is given by α_2. The parameters for the other subgroups measure the effects for each subgroup relative to the effects for the HU participants in the middle use group. To calculate savings for each subgroup, we must add the baseline effect to the effect for each subgroup. For example, the sum $\alpha_2 + \alpha_4$ captures the average effect of the HER program for AMI participants in the low use group. Likewise, the sum $\alpha_2 + \alpha_{10}$ captures the average effect of the HER program for HU participants in the low use group.

Navigant estimated Equation 2 for each season. Seasons are defined as:

- Winter Bill periods ending between December 21st and March 20th
- Spring Bill periods ending between March 21st and June 20th
- Summer Bill periods ending between June 21st and September 20th
- Fall Bill periods ending between September 21st and December 20th

Average household savings for the season are generated by multiplying a season's estimate of household average daily savings (ADS) by the number of days in the season (90 days for winter, 92 days for spring, 92 days for summer, and 91 days for fall). Importantly, this is an estimate of average household seasonal savings *conditional on the household remaining in the program for the entire season.*

Average annual savings are generated by multiplying the annual estimate of household ADS by 365 days. *This estimate of average annual savings applies to households that remain in the program for the full year.*

Of the 300,547 participants and non-participants included in the analysis, 32,955 moved out during the study period. These participants and non-participants were omitted from the regression analysis to estimate program effects, but were included in the estimate of total program savings. As the move-out dates were not available for this analysis, Navigant assumed these participants and non-participants moved out at a constant rate over the study period. Furthermore, we assume that until a participant moves out, their program savings are equal to savings over the same period for participants that remain in the program for the entire study period.

Total program savings in 2011 are obtained by summing over savings in each season. Savings in each season are the product of average household seasonal savings and the number of households in the sample for the season, and include pro-rated savings for participants who move out during the program period.

3.4.2 Process Data Collection and Analysis Methods

Survey interviews were structured by a CATI-managed questionnaire. Interviews with participants were done by telephone through an independent phone survey firm.

3.4.3 Response Rate

Navigant's evaluation team supplied the survey house with a sampling frame 4,200 names and phone numbers of participants (700 for each of six participant categories.) Of these 4,200, only a portion of these participants were contacted, as many could not be reached because of answering machines, unanswered phones because of participant screening of caller ID, etc. The refusal rate to participation by customers contacted was zero. Some 294 persons answering the phone were screened, qualified and answered enough questions to be considered "completes."

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4. Detailed Evaluation Findings

4.1 Impact Results

The parameter estimates for Equation 2 are given in Table 18 in the Appendix. This model is the source of total program savings and program savings by participant-type, presented in Table 9. The following results emerge from Table 4-1:

- The total estimated annual energy savings for 2011 was 53.9 GWh. Total savings include pro-rated savings for the 21,940 treatment households that moved during the study period. As move-out dates are unknown, Navigant assumes distribution of move-outs was equal across 17 months from August 2010 to December 2011.
- On a percentage basis, average program savings were 1.69 percent for the 2011 calendar year
- All estimates of savings are statistically significant at the 5 percent significance level

Table 4-1. Estimated Program Savings by Participant Type

Type of Statistic	Total	HU	LI	AMI
Sample Size, Treatment	178,458	114,728	16,907	46,823
Sample Size, Control	89,132	56,391	15,124	17,617
Percent Savings	1.69%	1.93%	1.28%	0.85%
(standard error)	*0.05%*	*0.06%*	*0.18%*	*0.13%*
kWh Savings per customer	291	383.85	196.95	95.69
(standard error)	*9.35*	*12.66*	*28.43*	*14.22*
Total MWh Savings	53,882	45,292	3,473	4,839
(standard error)	*1,747*	*1,494*	*501*	*719*

Note: All values are statistically significant at the 5% level. The sample sizes indicate the number of customers included in the regression analysis.

4.1.1 Results by Participant Type

Navigant uses Equation 2 to calculate average savings by participant type (AMI, HU, LI). Savings estimates are given in **Error! Reference source not found.**, revealing the following results:

- High Use (HU) participants are driving the overall program savings. These have the highest estimate of absolute and percentage savings. HU participants account for 45.3 GWh (1.93%) in 2011

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- AMI participants have the lowest estimate of program savings, both in absolute and percentage terms. AMI participants are located in a geographic region with a higher rate of multi-family buildings and more recently constructed buildings. As such, their average energy use is lower than for the HU and LI groups. AMI participants accounted for 4.8 GWh (0.85%) in 2011
- LI participants accounted for 3.5 GWh (1.28%) in 2011
- Estimated savings across the three types of participants are statistically significantly different at the 5 percent significance level

4.1.2 Results by Energy Use Level

Navigant also uses Equation 2 to calculate average savings by energy use level (low, middle, high). Savings estimates are given in Table 4-2, revealing the following results:

- Participants in the medium and high use groups are driving the overall program savings. Participants in the medium use group account for 20.6 GWh in 2011
- Participants in the high use group account for 27.4 GWh in 2011
- Participants in the low use group have the lowest estimate of program savings, both in absolute and percentage terms
- Estimated savings across the three use levels are statistically significantly different at the 5 percent significance level

Table 4-2. Estimated Program Savings by Use Level

Type of Statistic	Low	Middle	High
Sample Size, Treatment	53,887	62,278	62,293
Sample Size, Control	26,978	30,827	31,328
Percent Savings	1.02%	2.00%	1.71%
(standard error)	*0.12%*	*0.09%*	*0.08%*
kWh Savings per customer	95	322	428
(standard error)	*10.79*	*13.92*	*20.91*
Total MWh Savings	5,521	20,645	27,416
(standard error)	*626*	*893*	*1,338*

Note: All values are statistically significant at the 5% level.

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4.1.3 Positive Feedback: Spillover Enrollment to Other AEP Ohio Programs

Navigant investigated the effect of the HER program on increasing participation in three AEP Ohio energy efficiency programs: Appliance Recycling, Appliance Rebate, and Home Audit. Of these three programs, only the Appliance Recycling program existed prior to the start of the HER program. Navigant compared the change in participation for the treatment group to the change in participation for the control group via the Difference-in-Differences (DID) statistic:

DID = (% participants, treatment, post - % participants, treatment, pre) –

(% participants, control, post - % participants, control, pre)

Navigant then multiplies the DID statistic by the number of treatment households to get the change in uptake of the three programs due to the HER program. The inputs to and results of the DID calculation are presented in Table 4-3

Table 4-3. Change in Program Uptake Due to HER Program

Table 4-3. Change in Program Uptake Due to HER Program

	Program		
	Appliance Recycling	Appliance Rebate	Audit
# HER Treatment Households	215,994	215,994	215,994
# Participants, pre	728	0	0
# Participants, post	2,158	2,155	1,836
Change in Participants (#)	1,430	2,155	1,836
Change in Participants (%)	0.662%	0.998%	0.850%
# HER Control Households	105,566	105,566	105,566
# Participants, pre	263	0	0
# Participants, post	824	944	662
Change in Participants (#)	561	944	662
Change in Participants (%)	0.531%	0.894%	0.627%
DID statistic (%)	0.131%	0.103%	0.223%
Change in Program Uptake due to HER Program (# Participants)	**282**	**224**	**482**

Note: The pre-HER program data for the Appliance Recycling program covers the period of May 2009 through September 2010.

The HER program resulted in 282 additional participants in the Appliance Recycling Program, 224 additional participants in the Appliance Rebate Program, and 482 additional participants in the In-Home Audit Program. The additional savings from these participants is jointly produced by both the HER Program and the relevant program. That is, the savings would not have occurred without the HER program; nor would they have occurred without the other AEP Ohio program itself. AEP Ohio may allocate the savings from these additional participants to the HER or the other program as it sees appropriate.

4.2 Process Results

The process analysis for 2011 focused on customer participation. The focus in this program year is to gain an understanding of participant implementation of HER recommendations Final goals for this program year are to gain an understanding of participant implementation of the HER and participant use of the report.

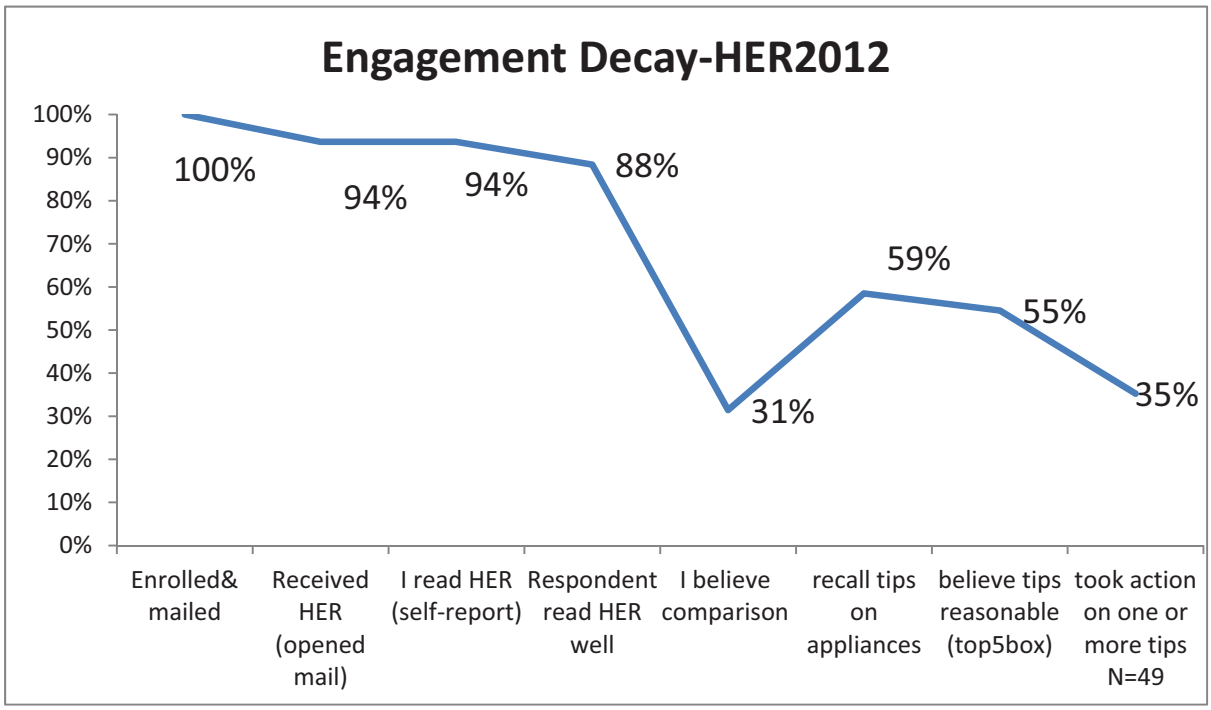
4.2.1 The Process of Engagement

A random sample of registered participants were telephoned and asked in 2012 whether they received at least one HER in the past 12 months. In response, it was found that approximately 94 percent of households contacted verified that the HER was delivered and the participant recalled obtaining the HER – this is a similar to the results from the 2011 survey.

A key focus in assessing participant engagement is to understand the drop-off rate of participant involvement in a program. Participant program engagement often drops off precipitously or goes into latency, such that the participant reengages at a later date, but many times the participant can remain unengaged. Custom engagement over a period of time is also referred to "engagement decay", which refers to a participant's initial heavy focus and eventual shifting of focus away from continued participant implementation of HER activities. The following diagram shows the actual survey data results of HER participant engagement decay for the HER program.

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Figure 4-1. Engagement Decay Curve from 2011 Participant Survey - HER Participant Actual Engagement Percentages during the PY3



The timeline starts at the extreme left with 100 percent of enrolled participants – as noted, 94 percent received the HER. Ninety-four percent of those participants who recall receiving the HER also read the HER. Of the ninety-four percent, 88 percent of the respondents reported that they read through the HER thoroughly. From the perspective of a utility planning manager, HER delivery and implementation efforts can be gauged well from this data since a strong majority of HER participants that receive the HER also read through the material, which is the first step to implementation (and also a key goal of the HER program). The difference between the 94 percent and the 88 percent is referred to as the engagement decay coefficient. Engagement decay terms follow.

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Table 4-4. Terms Used in Engagement Decay Model

Descriptor	Useful in answering question	Uses
Engagement decay coefficient	What can we expect from mailing HER to N residences	Metric for the utility manager at proposal review stage and for long-term planning
Communications loss coefficient	What is the potential for the product to work at this stage of participant engagement?	Metric for the program manager who can adjust design features to reduce loss of engagement at specific steps

4.2.2 Participant Responses and Satisfaction with the HER

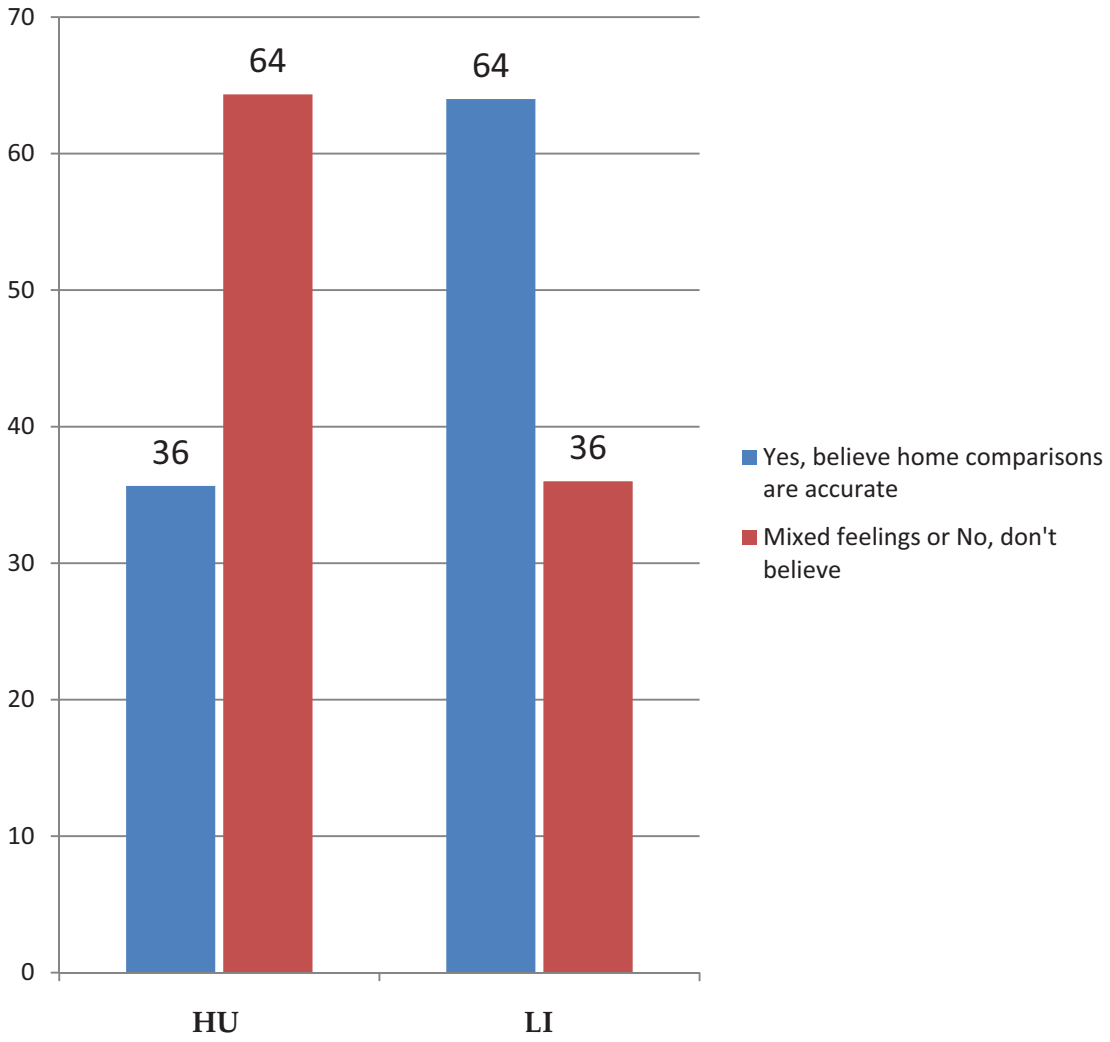
The process evaluation of PY 2011 investigated the results of changes that AEP Ohio and Opower implemented to improving readership, user implementation, HER participant satisfaction as well as reducing the measurable drop-off in participant engagement after the Home Energy Reports were received by participants in the house. Participant satisfaction was a major theme and the satisfaction levels were assessed.

The most controversial aspect of the Home Energy Reports from a process perspective is the way in which the HER compares neighbor's homes to one another. Prior to April 2011, the wording used in the HER to compare a nearby home was "compared to your neighbor's home." This phrase offended certain HER participants and AEP Ohio responded to address the issue and AEP Ohio requested Opower to alter the language. The phrase used in the HER was changed in a redesign format to "similar homes" (as opposed to "…your neighbor's home").

A parallel participant concern was whether the HER accurately compared its home's energy use to a similar home's energy use. Only 36 percent of respondents to the current evaluation survey said they had confidence in this report of their home's energy use. This is roughly equivalent to the 43 percent reported in the previous survey.

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Figure 4-2. Perception of Accuracy in Comparing Energy use Between the Participant's Home and a Group of 100 Similar Homes in Locality



Most participants recall seeing the section formerly labeled with the phrase "Neighbor Comparison" and now replaced with "Similar Homes Comparison." A handful of the 182 participants interviewed for the current evaluation offered comments that they had mixed beliefs about the accuracy of comparing energy use between homes—even if those homes are described as "similar" by AEP Ohio. This may be a lingering effect from the previous HER using "similar homes," or possibly an example of lack of statistical knowledge.

Similar to findings in the previous survey, HER participants in the HU category (those who use above-average amounts of electricity) appear resistant to claims that their homes are comparable to others in the area with similar house size and HVAC systems. Findings include:

- Doubts vary with the participant depending on trouble paying bills and/or socioeconomic status

- Low income respondents are confident that the HER comparisons are accurate
- It was found that lower-income participants in the LI program are more likely to believe the HER comparisons by a ratio of 2:1 (64% believe; 36% do not or have mixed feelings)
- Higher-than-average electric users appear to have strong doubts about the accuracy of the comparisons
- There is a 2:1 ratio of homes that do not accept the comparisons compared to those who do accept the comparisons - high use energy users appear to be more mistrustful of AEP Ohio's intent or simply skeptical of AEP Ohio's competency to make energy use comparisons

Further analysis shows two other attributes influence ratings on this question: (i) ownership of a single-family home, and (ii) certain participant attributes. When restricted to single-family homeowners, the response about comparability was slightly more favorable toward the HER, regardless of LI or HU group membership. This may be due to the feelings of control and ability to make structural changes or financial investments without first needing permission or cooperation. It also may be due to a homeowner's greater and longer involvement with their residential quarters.

4.2.3 Satisfaction with the Home Energy Report

An important metric is participant satisfaction and there was emphasis to document satisfaction issues raised in the media and by HER participants. A number of participant satisfaction issues arose during the year and they were as follows[10]:

- Specific word choices were problematic and altered through a HER redesign (e.g., use of "neighbor's home" and replaced with "similar home")
- Additional HER redesign changes were included in a revised HER with the goal to improve participant use of the HER
- Addition of phone number and e-mail address to a corner of the HER with notice alerting readers to the fact that participants could stop all HER participation ("opt out")Slight changes in HER layout were also tested.
- Altered modules on specific "tips" which were changed based upon seasonality (e.g., summer cooling tips and winter heating tips)

[10] Based upon an interview with Janet Phan Rehberg, M.B.A., CEM, AEP Ohio Implementation Manager on May 7, 2012.

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- Graphics were added to the outside of HER envelope in an effort to have more participants open the HER envelope

In an effort to also document overall participant satisfaction with the HER, participant satisfaction with the HER was tested and the following information was obtained, see Figure 4-3Figure 4-3.

Figure 4-3. Satisfaction with Home Energy Report by HU and LI Consumers

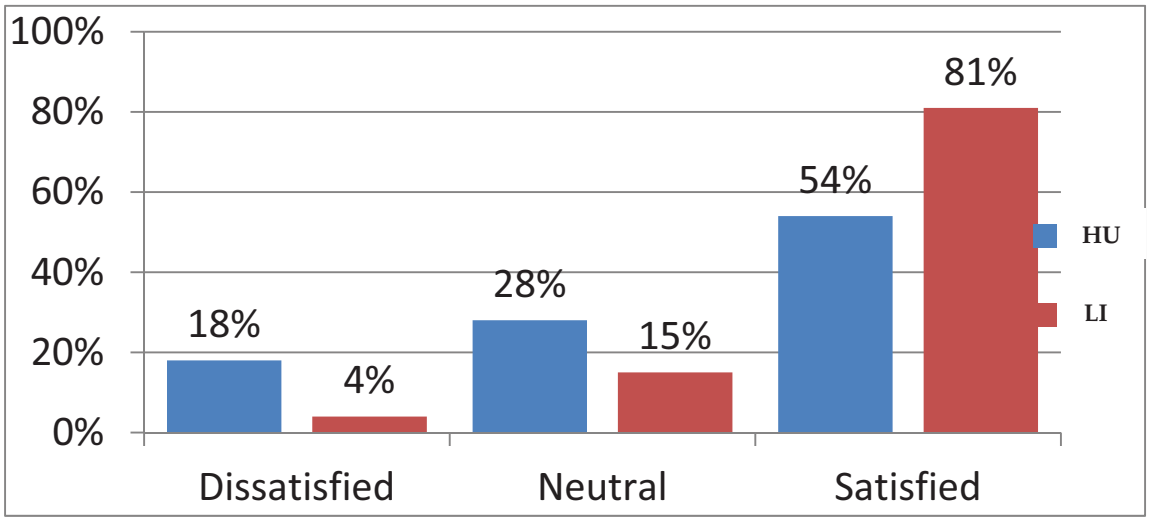


Table 4-5Table 4-5 refers to both HU and LI energy users in the HER test households. More than a majority of HU and LI participants were satisfied with the HER program. As noted, this data was gathered through a random sample of HER participants. This data shows that a limited number of HU and LI participants are dissatisfied with the HER. Also, slightly over a quarter of the participants reported a neutral stance on the HER, while, in comparison, a large majority of participants reported being satisfied.

Navigant was asked to measure participant satisfaction following the changes noted above. Participants were questioned whether they noticed any changes to the HER instituted by AEP Ohio in April 2011. Seventy-nine percent of HU segment readers report noticing format, graphic or other changes. Among LI readers, the percentage was 69 percent.

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Table 4-5. Awareness of Changes in Format or Wording

	Percent reporting noticing changes in format of Home Energy Report	
Participants that Noticed Changes	HU readers N=99	LI readers N=31
Percentage of Participants	79%	69%

Of note, in response to this question not one participant noted the new "opt out" option in the HER program. The opt-out option was an important format and content change implemented in 2011. At a later time in the survey, the same HER participant was asked if it was aware it could opt-out, and 22 percent were aware of the opt-out option. This level of awareness was similar among LI and HU participants.

4.2.4 Satisfaction with Participant-Initiated Contacts to Get Help Saving Energy

Participant contact with utility personnel can also influence the participant's perception of service quality. To determine how many respondents might have been affected by such contact, HER participants were asked whether during the prior year they had contacted AEP Ohio with questions related to managing electricity usage in their home.

These questions were only asked to respondents who said they read the HER. This produced a set of 18 participants from the 109 HU readers and a separate set of eight participants from among 46 LI readers. While these samples are too small for rich statistical testing, analysis suggests that hypotheses can be drawn from the results.

HER participants were also queried on whether the participants attempted to contact AEP Ohio for assistance reducing their energy bills (or use) subsequent to their receipt of the HER. Very few participants of the total HER population contacted AEP Ohio subsequent to receiving the report – of those few participants, the majority of those participants noted that they were dissatisfied with the response they received from AEP Ohio during or after the contact for help. This is attempting to understand whether there was increased or decreased satisfaction after receiving the report. An interesting note is that all those dissatisfied with the way their question or concern was handled also gave dissatisfied ratings to the HER. On the other hand, all who received a "good enough" response (meaning they were satisfied with AEP Ohio's participant contact), also gave the HER positive rating of "satisfied" or "very satisfied."

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4.4.5 HER Participants' Use of HER Energy Efficiency "Tips"

The use of HER "tips" to the consumer is a central component of the report's educational role. To test this element, participant perceptions regarding the reasonableness of the HER tips was explored, with the following results.

4.4.6 Reasonableness of HER Tips and Recommendations

Please rate the reasonableness of the recommendations on a scale of 0 to 10 where 0 equals completely unreasonable and 10 equals completely reasonable.

Those rating recommendations at 6, 7, 8, 9 or 10 were classified as accepting the tips as actionable, and 38 percent of those answering this question were in that top category. This represents a drop from 75 percent in the previous survey when the question was broadly about tips offered.

4.4.7 Taking Action on HER Tips

The current survey found approximately 40 percent of respondents stating they took action on one or more tips in 2011. Overall, the net is 35 percent of HU participants enrolled appear to remain engaged sufficiently to report taking action on "recommended tips" as a general term.

Other key findings from assessing tips in the HER include:

- From the program evaluation perspective, among HU participants, 66 percent recalled action tips. However, only a minority of those could cite specific actions taken; that is, 34 percent recalling tips reported taking action.
- Approximately 50 percent of HER participants interviewed recalled the HER and acted on tips -that is, of those mailed reports where participants recall reading the tips, approximately half could recall acting on the tips.

Table 4-6. HU Segment Response to Action Tips

Category	Count	Percent
Yes, recall tips	94	66%
Do not recall tips section	48	34%
Total respondents	**142**	**100%**

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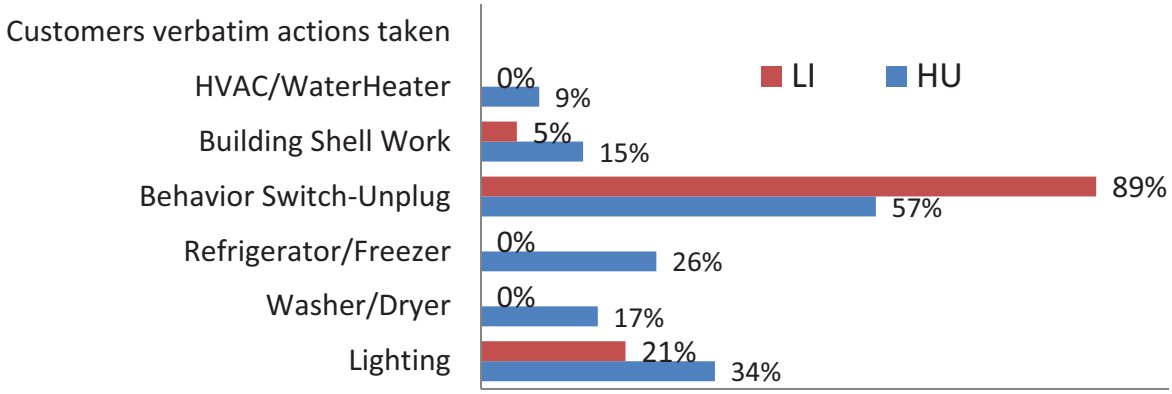
Of the HU participants, 51 percent of those that read the tip also acted on the tip. Among LI participants, 60 percent recalled action tips in their reports. However, only a minority of those could cite specific actions taken; that is, 45 percent of those recalling tips reported taking action.

Table 4-7. LI Segment response to Action Tips

Response	Count	Percent
Yes, recall tips	42	60%
Can't recall tips	28	40%
Total	**70**	**100%**
Action on tips section	19	45%
No action on tips	23	55%

Finally, participants were asked if they did recall specific tips, did they take any action to conserve energy and implement the "tip" – the results below show the findings.

Figure 4-4. Participants Stated Actions They Took



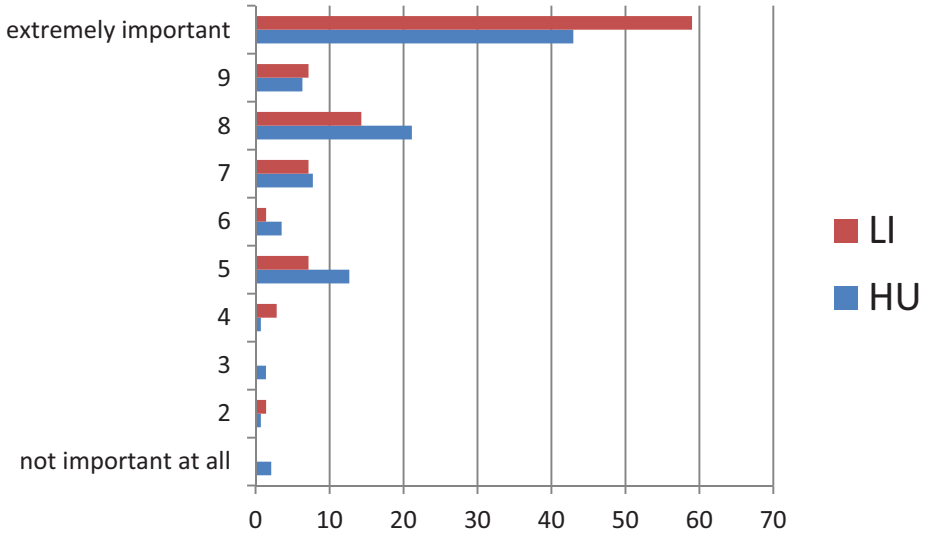
This chart indicates that the most common behavior was to turn-off or switch-off appliances or lights and adjusts the temperature of refrigerators and freezers to conserve energy and

implement the "tip". In this year's study, no effort to measure the effect of the implemented "tip" was undertaken. This should be analyzed in any future HER program analysis.

4.4.8 Importance to Participants of Reducing Electricity Use

Given that changing behavior or habits is difficult to implement, research of the level of behavior change based upon the HER[11] was pursued - the survey asked how important is it to participants to accomplish energy savings (for any benefit they might perceive). To test the reasons for changed behavior, a survey was developed to test whether it is it important to a respondent to reduce electricity use. The survey addressed these questions to both participants and control group non-participants, with ratings given in Figure 13 comparing the HU and LI segments. For both segments, a slightly greater percentage in the current survey rated electric use reductions more important than one year ago. Actual findings are shown below in Figure 4-5.

Figure 4-5. Importance of Reducing Electricity Use in Household (1-10 scale)



4.4.9 Awareness of Help to Participants to Better Manage Their Consumption

Before participants can enroll for an AEP Ohio conservation program, they have to become aware of the program. The HER is the only efficiency program that AEP Ohio participants did not ask to be enrolled - AEP Ohio publicizes its energy conservation programs in bill inserts

[11] Expectancy Value Model (Changing Behavior): Feather suggests that anyone who engages in an activity must both value the outcome and expect success at achieving it. N.T. Feather, "Expectations and Actions: Expectancy-Value Models in Psychology" . in Expectations and Actions, Hillsdale, NJ: Erlbaum, 1982, pages 109-124,

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and direct mailings, on the AEP Ohio web site, and in other types of advertising. Encouraging participants to enroll in efficiency programs is included in the HER recommendations section on a regular basis.

The current survey shows nearly three out of five (59%) participants getting the monthly HER are aware of AEP Ohio's offer to have the utility company help the participant manage their home energy use. This would include implementation of other energy efficiency programs in the home (e.g., appliance recycling, discounted CFL bulbs, etc.). In contrast, a survey of the control group(e.g., those customers who did not receive the HER) showed less than half (46%) were aware of AEP Ohio's energy efficiency program options.

4.4.10 Participation Lags Awareness and Stated Importance

Awareness of efficiency programs does not automatically mean participation. According to one sample surveyed, 46 percent of high use control group non-participants are aware of AEP programs, but only 11 percent report participating in one of the programs over last two years. Table 4-8 addresses awareness of AEP Ohio programs to help participants save energy – the findings show an overall high level of awareness by residential participants.

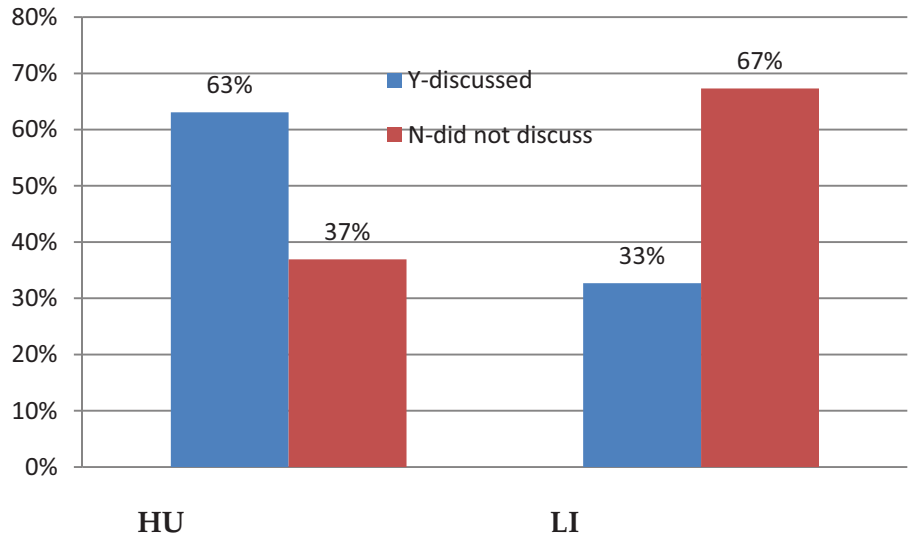
Table 4-8. Awareness of AEP Ohio Programs to Help Residential Participants Save Energy

Aware of AEP Ohio Conservation Options	HU Reader of HER	LI reader of HER	Control Group
Aware of AEP Ohio HU programs	59%	68%	46%
Participated in AEP Ohio HU program during past two years	10%	21%	11%

Additionally, HU and LI participants were asked whether other participants discussed the HER reports with neighbors, relatives or friends. The findings show that HU and LI participants are discussing HER with others. Figure 8 shows the results of the survey – HU participants tended to respond that they discussed the program with others more than LI.

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Figure 4-6. HU and LI Participants Discussing HER with Others



Clearly, a majority of HU HER participants discussed the report results with others, while LI participants did not discuss the HER with others as frequently. It is not clear from this data on this question whether communicating with others about the HER has an impact on reducing energy use within a household or in other households since those points are not tested at this time.

4.4.11 Recall Taking Action on Energy Tips in Home Energy Report

Participants are given recommendations and tips that range from upgrading appliances to enrolling in an AEP Ohio program, from adjusting the thermostat to unplugging "phantom power" appliances. As for responding to the HER energy tips (which include unplugging and switching off appliances) or other recommendation associated with the HER, some 39 percent of HU said they did act on at least one tip that was presented to them through the HER.

Other areas surveyed include a comparison of conservation behavior LI as compared to HU. The findings are as follows:

- Added to the survey were questions related to appliance unplugging habits and switch-off habits – the following results were obtained: Among HU participants, 43 percent report "more unplugging" versus 4 percent reporting "less unplugging" than previously. That leaves 53 percent practicing it at the same rate as prior years.

- Among HU participants 57 percent report more "turning off" appliances in the past year than before.

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- Among LI participants, 57 percent report more attention to unplugging and 4 percent report less attention, leaving 39 percent whose attention is not perceptively different that before.

- Among LI participants, 73 percent report more attention to "turning off" appliances in the past year than before.

Thus, for both segments there is suggestive evidence of increases in conservation behavior. Among LI, it appears that unplugging behavior has increased at a slightly greater rate than among HU participants.

4.4.12 Demography of Respondents Influences Responses

Also tested were the reactions of households with senior citizens vs. those without seniors – findings were as follows:

Table 4-9. Households with Seniors Twice as Likely To Reject "Similar Homes" Comparison

	Yes, I believe in the homes comparison		No, I can't say that I believe it	
Households with at least one person 64 or older	20	33%	41	67%
Households without seniors	65	51%	64	50%
Total	**85**	**45%**	**105**	**55%**

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5. Conclusions and Recommendations

5.1 Impact Evaluation

The total estimated energy savings for the HER program was 53.8 GWh in 2011. On a percentage basis, average program savings were 1.69 percent in 2011.

Navigant found that savings vary by energy use level: participants with high energy use save more energy than participants with low energy use. Savings also vary by participant type (AMI, HU, and LI). AMI participants (those enabled with a smart meter) had the lowest savings at 9 6 kWh per participant for 2011. HU participants had the highest estimate of program savings at 384 kWh per participant for 2011.

5.1.1 Key Findings

- The total estimated energy savings was 53.8 GWh for 2011
- On a percentage basis, average program savings were 1.69 percent for 2011
- Program savings vary with the level of energy use. Participants with a high level of energy use saved approximately 4.5 times more energy than participants with a low level of energy use
- Program savings also vary with participant type (AMI, HU, and LI). HU participants are driving total program savings accounting for 45.3 GWh in 2011. AMI participants had the lowest estimate of average program savings, accounting for 4.8 GWh of savings in 2011. LI participants accounted for 3.5 GWh in 2011.

5.1.2 Impact Recommendations

- AEP Ohio may consider a persistence study at some point in the future
- Continue the HER program as long as regularly reported electric savings remain cost-effective

5.1.3 Process Evaluation

The survey results show that both HU and LI participants are very supportive of the HER. There were a few vocal participants that took issue with the HER and voiced the concerns to AEP Ohio. The surveys also show that HU participants and LI participants acted on the HER. Changes to the HER format were noticed but not necessarily articulated by the participants when queried about HER changes.

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5.1.4 Key Findings

- HER does impact positive energy efficiency behavior changes
- LI behavior changes appear to be mostly focused on using current appliances less, as opposed to purchasing lower use appliances and CFLs
- HU behavior appears to be a mix of upgrading energy efficiency appliances to more efficient appliances and CFLs as well as changing behavior in the home
- Majority of participants are satisfied with the HER program – however, the LI participants are more satisfied with the HER than the HU participants
- LI participants typically accept HER home comparisons, while HU participants tend to contest whether HER home comparisons are accurate
- Energy tips in the HER are noted by a majority, but only acted on by a minority of HER participants (e.g., In the LI Segment, 60 percent recall reading the tip and 45 percent act on the tip; In HU the segment, 66% recall reading the tip and 51% acted on the tip)
- Energy conservation (reducing electricity use) is extremely important to both HU and LI participants, but more important overall to LI participants

5.1.5 Process Recommendations

- Depending on cost-effectiveness, given the heavy focus and appreciation of LI participants on the HER report, AEP Ohio should consider expanding enrollment to the LI segment, while retaining the current level of HER delivery to the HU segment
- Ongoing design improvements to the HER are important and are noticed by most participants
- Retain the newly-introduced opt-out option

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6. Appendices

6.1 Impact Evaluation Parameter Estimates

All parameters are included in the final model and savings calculations.

Table 6-1. Parameter Estimates

	Annual Model (First 12 Months)		Winter 2010-2011		Spring 2011	
Variable	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Post	-0.935	-22.46	-0.440	-5.35	1.408	24.36
Post*Treatment	-0.839	-16.58	-0.930	-9.26	-0.789	-11.29
AMI*Low*Post	1.164	20.64	0.917	8.69	-0.361	-4.91
AMI*Low*Post*Treatment	0.652	9.65	0.795	6.23	0.615	7.00
AMI*Middle*Post	-0.062	-0.45	-0.698	-2.73	-0.539	-2.91
AMI*Middle*Post*Treatment	0.282	1.75	0.492	1.63	0.351	1.63
AMI*High*Post	-1.003	-3.87	-3.107	-6.16	0.588	1.59
AMI*High*Post*Treatment	0.788	2.64	1.028	1.75	0.393	0.94
EE*Low*Post	0.689	7.15	0.909	4.71	0.639	5.29
EE*Low*Post*Treatment	0.481	4.05	0.504	2.11	0.504	3.35
EE*High*Post	-0.836	-11.43	-1.470	-9.37	0.941	9.00
EE*High*Post*Treatment	-0.314	-3.51	-0.473	-2.46	-0.426	-3.36
PIP*Low*Post	1.865	23.78	2.074	13.16	0.420	4.16
PIP*Low*Post*Treatment	0.555	5.27	0.811	3.76	0.551	4.14
PIP*Middle*Post	1.799	10.79	2.743	7.85	1.463	6.64
PIP*Middle*Post*Treatment	0.032	0.14	-0.277	-0.59	0.130	0.45
PIP*High*Post	1.594	7.53	1.981	4.07	3.335	12.13
PIP*High*Post*Treatment	0.066	0.23	-0.183	-0.28	0.047	0.12
	Summer 2011		Fall 2011			
Variable	Coefficient	t-statistic	Coefficient	t-statistic		
Post	-2.903	-42.73	-2.878	-45.88		
Post*Treatment	-1.093	-13.16	-0.883	-11.59		
AMI*Low*Post	2.084	23.03	2.531	30.51		
AMI*Low*Post*Treatment	0.801	7.36	0.634	6.39		
AMI*Middle*Post	0.172	0.86	0.350	1.78		
AMI*Middle*Post*Treatment	0.325	1.38	0.181	0.79		
AMI*High*Post	-1.100	-3.04	-2.529	-6.95		
AMI*High*Post*Treatment	0.903	2.20	0.842	2.01		
EE*Low*Post	1.370	9.42	0.484	3.32		
EE*Low*Post*Treatment	0.610	3.41	0.432	2.40		
EE*High*Post	-1.274	-11.77	-2.721	-25.22		
EE*High*Post*Treatment	-0.152	-1.14	-0.451	-3.43		
PIP*Low*Post	2.982	25.03	3.361	29.67		
PIP*Low*Post*Treatment	0.718	4.53	0.513	3.37		
PIP*Middle*Post	2.280	10.07	2.151	9.03		
PIP*Middle*Post*Treatment	0.049	0.16	0.272	0.86		
PIP*High*Post	1.453	5.82	0.367	1.19		
PIP*High*Post*Treatment	0.310	0.90	0.280	0.69		

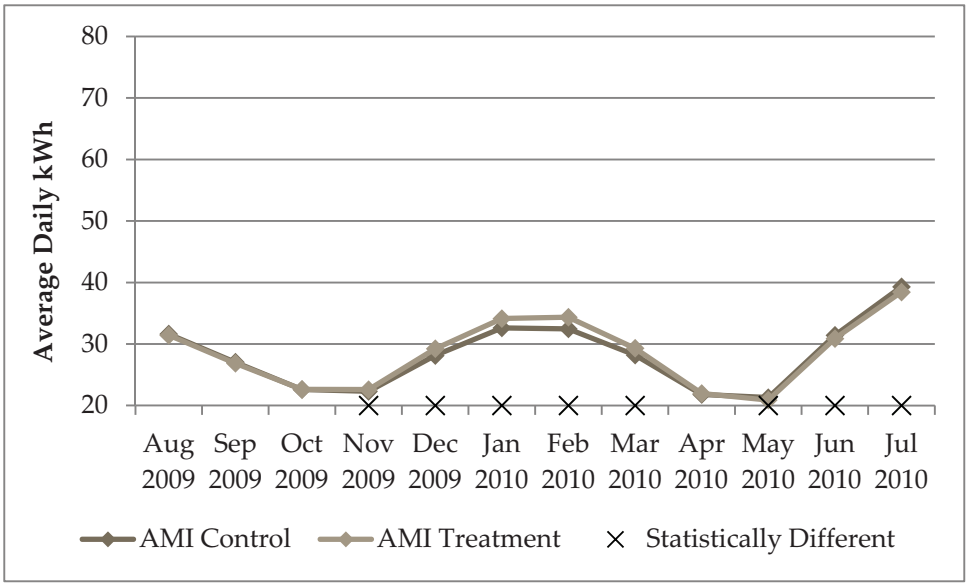
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6.2 *Verification of Control Group*

Navigant verified that the implementer contractor randomly assigned households across the treatment and control groups by comparing average use for each group in the pre-program period of August 2009 to July 2010. Figure 6-1 through Figure 6-3 show the average use for treatment and control households for each of the participant types: AMI, HU, and LI. Additionally, the figures indicate whether the differences in average use between the treatment and control households are statistically significant at the 5 percent significance level.

In general, the difference in average use for the treatment and control groups is negligible. The largest of such differences occurs for the AMI participants during winter 2009-2010. However, even in this case the difference is relatively small, about 5.5 percent. Over half of the monthly differences for the AMI and HU participants are statistically significant at the 5 percent level. This is due to the extremely large sample size for each of these groups and does *not* indicate that the Implementer assigned households in a non-random fashion. Navigant concludes that the control group created by the Implementer is valid and was created via random assignment.

Figure 6-1. AMI Average Use in the Pre-Program Period



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Figure 6-2. HU Average Use in the Pre-Program Period

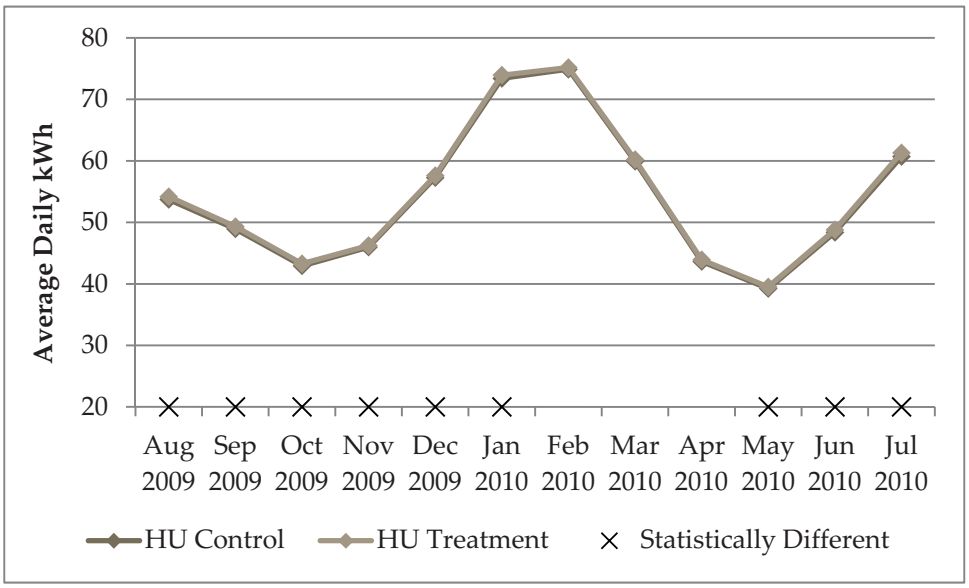
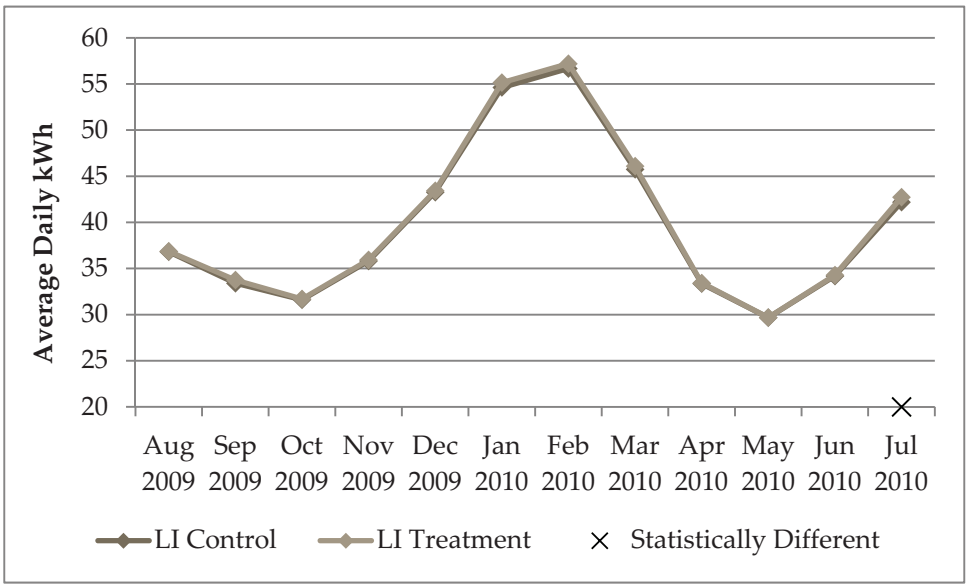


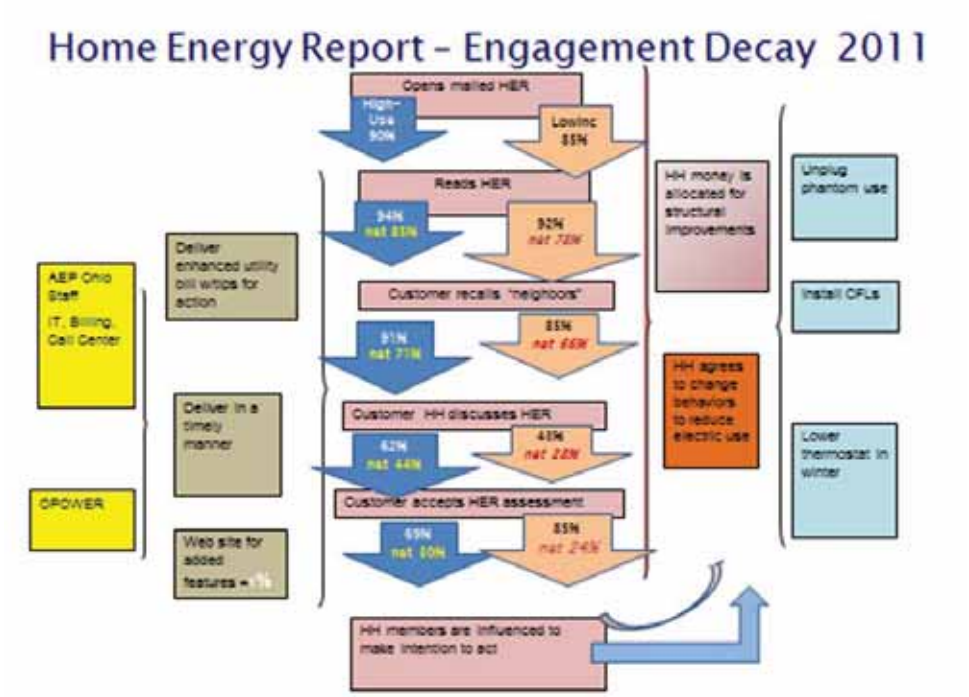
Figure 6-3. LI Average Use in the Pre-Program Period



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6.3 *Engagement Flow Diagram from Pilot Survey*

Figure 6-4. Engagement Flow Diagram from PY2 2010 for Reference



For reference, above is an engagement flow diagram from last year's survey of PY2 2010, published in May 2011.

6.4 *Data Collection Instruments*

The following guides were used to conduct the in-depth surveys with participants and control group non-participants.

AEP OHIO Home Energy Report Program Evaluation Survey 2012

Participant Households **Telephone Survey Instrument** **Questionnaire**
Interviewer Instructions Call is to be placed asking to speak to the individual named under the Contact Name column obtained from program records.

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The purpose of the introductory script and associated questions is to identify the person opening and handling the electric bill. Since the Home Energy Report format under evaluation is a direct mail printed item, the person who handles the electric bill is considered the object of study

NOTE TO INTERVIEWERS: AEP Ohio's older customers may use the names of previous companies prior to merger. AEP Ohio used to be called "Ohio Power" or "Columbus Southern Power" or "Columbus Southern Electric." AEP stands for American Electric Power.

INTRODUCTION

INTRO 0 Hello, may I speak with **[CONTACT NAME]?**

INTRO1 *ASK TO SPEAK TO CONTACT NAME. IF NOT HOME, ASK TO SPEAK TO OTHER HEAD OF HOUSEHOLD*

SCHEDULE A CALLBACK IF NEITHER PERSON IS AVAILABLE.

Hello, I'm _____ of the Blackstone Group, calling on behalf of AEP Ohio. I have just a few questions about utility service—especially about mailings you may have received from AEP. Your feedback is important and will help AEP Ohio improve its decision-making about what it mails to customers. We will not attempt to sell you anything; we've been hired solely to gather candid comments from customers. Your name and opinions will be held strictly confidential. This survey will take only a few minutes.

INTRO1A. Are you the person in the household who typically reviews your home's AEP electric bill? [**DO NOT READ LIST**]

YES..... ..... **1** [**CONTINUE**]

NO..... ..... **2** [**ASK FOR PERSON MOST FAMILIAR. IF NOT AVAILABLE, SCHEDULE CALLBACK**]

LANGUAGE BARRIER ..... **3 [TERMINATE]**

CUSTOMER SAYS THEY ARE "TOO OLD" ..... **4 [TERMINATE]**

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CUSTOMER SAYS THEY TOSS ANYTHING

IN THE MAIL EXCEPT FOR THE BILL **5**

SCHEDULE CALLBACK **6**

GENERAL CALLBACK **7**

REFUSAL ..... **TERMINATE, RECORD DETAILS**

==========

RATEA1. I'd like you to think about how important it is to your household to reduce the amount of electricity used.

On a scale of 0 to 10, please rate how important it is to your household to reduce electricity use and thereby to reduce your bills? Consider 0=not important at all important and 10 extremely important.

RATING = _____

DON'T KNOW

REFUSED

AWARE1. As I said, this call is not an attempt to persuade you to sign up for any conservation or energy efficiency program, but it would be helpful to utility managers to know if you are simply "aware" that AEP Ohio offers programs to help homeowners and renters. Are you "aware" that AEP Ohio offers energy management programs for homeowners and renters?

1. YES

2. NO

NOT SURE (PROBE AND CLARIFY) [VERBATIM BOX]

3. DON'T KNOW

4. REFUSED

SENIORS. Is anyone in this household over the age of 64?

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1. YES
2. NO
3. DON'T KNOW
4. REFUSED

SAT1. Thinking broadly, how satisfied are you with AEP Ohio's current efforts to help you save on your energy bills? Would you say you were: Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

1	VERY SATISFIED	continue
2	SOMEWHAT SATISFIED	continue
3	NEITHER SATISFIED NOR DISSATISFIED	continue
4	SOMEWHAT DISSATISFIED	continue
5	VERY DISSATISFIED	continue
88	DON'T KNOW	continue
99	REFUSED	continue

WEB1. Have you completed a survey about home efficiency programs by AEP Ohio by phone, mail or Internet? [DO NOT READ]

1. Yes, we have been surveyed
2. No
3. DON'T KNOW
4. REFUSED

SPHH. Is there more than one adult living at this address?

1. Yes
2. No
3. It's complicated
4. Refused

NAVIGANT

A. VERIFICATION OF RECEIPT

Our records indicate that starting in late summer 2010, your household was added to an AEP Ohio mailing list that sends a personalized "Home Energy Report." The Home Energy Report would have been mailed in a standard business envelope every couple months. It is a single sheet of paper printed on both sides including some bar charts. Over all of 2011, you may have received four or more of these.

A1. Do you recall **WHETHER** your household received at least one Home Energy Report in the past 12 months? [**DO NOT READ LIST**]

1 YES **[CONTINUE to SECTION A2]**

2 **YES, but I contacted AEP and asked them to stop sending it. [CONTINUE TO OPT_OUT SECTION BELOW]**

3 NO, not in the last 12 months but did get it a long time ago **[B4]**

8 REFUSED **[B4]**

OPT-OUT SECTION [ONLY USE THIS sub-battery for THOSE CHOOSING 2 IN A1.]

OPT-OUT. Do you recall how many times you received the Home Energy Report before asking that its mailing be discontinued?

1. ONCE OR TWICE
2. THREE TIMES OR MORE
3. DON'T KNOW
4. REFUSED

OPT-OUT2. Were you the primary decision-maker in your household's decision to stop mailings of the Home Energy Report, or was it a joint decision, or did someone else/others make that decision? I WAS THE PRIMARY DECISION MAKER ~~A MAJOR PARTICIPANT~~ IN MY HOUSEHOLD'S DECISION TO OPT-OUT OF GETTING THE HOME ENERGY REPORT

1. IT WAS A JOINT/GROUP DECISION INVOLVING TWO OR MORE PEOPLE
2. NO, I WAS NOT PRIMARY IN MAKING THE DECISION
3. DON'T KNOW
4. REFUSED

OPT-OUT3. Would you be willing to mention any reasons for discontinuing the mailings? Record verbatim:_____------- [VERBATIM OPEN-END] DON'T KNOW, REFUSED

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END OF OPT-OUT SUB-BATTER

==========

A2. OK, so your household has been getting the Home Energy Reports. We don't assume every customer reads everything that AEP mails: Can you tell me who in your household—if anyone- has looked at it, even if just once? [READ OPTIONS; CHECK ALL THAT APPLY]

1 I personally looked at it
1.
2.

2 [If SPHH>1, read:] others in my household looked at it (SPECIFY)
3.
4.

3 it got tossed out and no one looked at it with more than a glance.(it was considered junk mail.)

8 DON'T KNOW;

9 REFUSED

AWARENESS OF WEBSITE

A3. Were you aware that there's a special website that gives more details on your personalized Home Energy Report? [note to interviewer: if respondent asks, this question does not refer to the standard AEP Ohio website available to general public]

A. YES [CONTINUE TO A4]
B. NO [SKIP TO ~~B1~~ A5]
C. I DON'T USE THE INTERNET MUCH/DON'T HAVE ACCESS [SKIP TO ~~B1~~ A5]
D. DON'T KNOW [SKIP TO ~~B1~~ A5]
E. REFUSED [SKIP TO ~~B1~~ A5]

A4. If A3=A(YES), ASK: have you or someone else in your household visited the Home Energy Report website?

~~A.~~ YES
~~B.~~ NO
C. DON'T KNOW
D. DON'T KNOW ABOUT OTHERS, BUT I HAVE NOT
E. REFUSED

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A5. In the last two years, has your household participated in an energy efficiency programs sponsored by AEP Ohio (or its predecessors of Ohio Electric, Columbus Southern) such as the appliance recycling program?

1. YES
2. NO
3. DON'T KNOW
4. REFUSED

B. QUESTIONS FOR CUSTOMERS WHO READ THE REPORT [A2=1 or 2]

B1. To the best of your recollection, **WHEN** was the last time you or someone in your household read one of the Home Energy Reports? [DO NOT **READ LIST**]

A. Within the past couple weeks **[CONTINUE TO ITEM B2]**
B. Within the past couple months **[CONTINUE TO ITEM B2]**
C. More than a couple months ago, but sometime since the end of last summer **[CONTINUE TO ITEM B2]**
D. Before the end of last summer **[SKIP TO B3]**
E. Don't know [SKIP TO B4]
F. Refused [SKIP TO B4]

B2. Since you started receiving the reports back in 2010, have you noticed any changes in format or content of your report?

1. No, didn't notice any changes
2. Yes, noticed changes [RECORD VERBATIM ANY VOLUNTEERED COMMENTS ON CHANGES NOTICED] _____

[CONTINUE TO B3]

3. DON'T KNOW[CONTINUE TO B3]
4. REFUSED [CONTINUE TO B3]

B2b. One thing that was added this past year was a listing of what a customer should do if they want to "opt-out"—that is, get taken off the mailing list for printed reports. Before today, were you aware that you could opt-out by a simple phone call or email?

1. YES I WAS AWARE THAT I COULD OPT-OUT
2. NO, I WAS NOT AWARE THAT I COULD OPT-OUT

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3. DON'T KNOW
4. REFUSED

SATISFACTION WITH HOME ENERGY REPORT

B 3. Overall, how satisfied are you with the Home Energy Report? Would you say you were: Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

1	VERY SATISFIED
2	SOMEWHAT SATISFIED
3	NEITHER SATISFIED NOR DISSATISFIED
4	SOMEWHAT DISSATISFIED
5	VERY DISSATISFIED
88	DON'T KNOW
99	REFUSED

B2BB. During the past year, how many times have you contacted AEP Ohio with questions related to managing your home electric use?

1	ZERO, HAVE NOT CONTACTED THEM IN THE PAST YEAR	**Skip to B3.**
2	ONCE	**Continue B2b**
3	2 OR 3 TIMES	**Continue B2b**

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4	4 TIMES OR MORE	**Continue B2b**
88	DON'T KNOW	**Continue**
99	REFUSED	**Continue**

B2bBB [IF B2=2,3 or 4 ask.] How did you make contact? [CHECK ALL THAT APPLY, but continue to B3 only for first contact method mentioned]

1	PHONE	**Continue B3**
2	EMAIL OR FAX	**Continue B3**
3	LETTER	**Continue B3**
4	IN PERSON	**Continue B3**
5	[OTHER (SPECIFY)	**Continue B3**
88	DON'T KNOW	**Continue** B4
99	REFUSED	**Continue B4**

B3B. [IF B2b=1, 2,3 OR 4, ask:]. And how satisfied were you in getting your questions or concerns addressed by AEP Ohio? Would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, A Little Dissatisfied or Very Dissatisfied?

1	VERY SATISFIED	Continue to B4.
2	SOMEWHAT SATISFIED	Continue to B4.

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3	NEITHER SATISFIED NOR DISSATISFIED	Continue to B4.
4	SOMEWHAT DISSATISFIED	Continue to B3b
5	VERY DISSATISFIED	Continue to B3b
88	DON'T KNOW	Continue to B4.
99	REFUSED	Continue to B4.

B3b. [IF B3=4 OR 5, ask:]. Would you be comfortable telling me why were you dissatisfied? ANSWER: VERBATIM

B4. ELECTRICAL EQUIPMENT IN THE HOME

The next set of questions asks about appliances. AEP Ohio doesn't know which appliances any particular household owns or replaces. It helps in our communications to know, so I'd like to collect a count of new or replacement electric appliances.

1.__Yes

2.___No [IF CUSTOMER DECLINES, skip to B7]

3.___ DON'T KNOW [skip to B7]

REFUSED [SKIP TO B7]

B5. Do you regularly use a computer in your home, and if so, how many? [CLARIFICATION FOR INTERVIEWERS: THE COMPUTERS DON'T HAVE TO BE "OWNED" BY THE CUSTOMER, ONLY REGULARLY PLUGGED IN TO THE HOUSE CIRCUITS.]

YES-- ENTER NUMBER HERE:[TWO DIGITS]__#_

NO

DON'T KNOW

REFUSED

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B5AA. [If B5=yes, ask:} how many of these computers were purchased after 2008?

__[RANGE 0-9, DK,REF]

~~A. __#COUNT____ older than 2008~~

B5AAA. [If B5=yes, ask:} how many of these computers were purchased before 2008?

[RANGE 0-9, DK,REF]

Electrical Equipment

B5BB. I am going to read a list of home electric appliances. As I mention each appliance, would you please tell me how many working units are in your home has today then whether any similar units were removed from use in the last 12 months (whether recycled, disposed or given away) .

	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB1. Central air conditioning unit		
B5BB2. Room or wall air conditioning unit		
B5BB3. Electric water heater		
B5BB4. Electric clothes dryer		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB5. Ceiling or window fans		
B5BB6.. Video screen or television with screen larger than 30-inches		
B5BB7. desktop computer (not a laptop)		
B5BB8. Laptop or notebook computer		
B5BB9. Video game console [Xbox, Sony Playstation, etc.]		
B5BB10. Set-top box for satellite or cable television		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB11 Internet modem (either cable modem or DSL modem) allowing		
B5BB12 in-house cordless phone (not cell-phone)		
B5BB13 Electric furnace, boiler		
B5BB14. Refrigerators		
B5BB15. Food freezer cabinet (not part of a refrigerator)		
B5BB16. Video player for recorded movies and television shows (e.g., VCR, DVR, streaming media player, DVD)		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB17.Dehumidifier		
B5BB18.Tankless electric water heater On-demand		
B5BB19 portable electric spaceheater		
B5BB20 stereo sound system that plays CDs, tapes, vinyl records)		

B6. Did you remove any of these appliances (mentioned above in B5BB1. section above) with the expectation that utility bills might drop?

1. ___ YES
2. ____NO
3. ___ DON'T KNOW
4. REFUSED

B6A [ASK IF B6=YES] Which appliances were you most hopeful about making a difference in household electric costs? [OPEN-END VERBATIM] , DON'T KNOW, REFUSED

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B7. Thinking about the past year, would you say that you have probably been paying more attention, less attention or about the same amount of attention to unplugging appliances not needed? [DO NOT READ LIST]

A. Paying more attention
B. Paying less attention
C. Paying about the same attention
D. DON'T KNOW
E. REFUSED

B7A. Thinking about the past year, would you say that you have probably been paying more attention, less attention or about the same amount of attention to turning off appliances not needed? [DO NOT READ LIST]

A. Paying more attention
B. Paying less attention
C. Paying about the same attention
D. DON'T KNOW
E. REFUSED

[FOR READERS OF THE HOME ENERGY REPORT A2=1] B8A Were you or others in your household able to take action on any recommendation or energy tip in your Home Energy Report? [**DO NOT READ LIST**]

A. Yes, I (we) took action on one or more recommendations **[CONTINUE TO B8]**
B. No, I (we) haven't done anything yet [**SKIP TO**B10 if A2=2, else to D.

DON'T KNOW

REFUSED

[ASK IF B8A=YES] B8. Which energy tips do you recall doing to change your **electricity** use?

[OPEN-END] _____

DON'T KNOW

REFUSED

B10. [ASK IF A2=2 OTHERS IN HH READ HOME ENERGY REPORT] . You mentioned that others in your household looked at the Home Energy Report. Could you please tell me who read it? For example, did a spouse, partner, child or roommate read it? [CHECK ALL THAT APPLY]

A. I read it
B. Read by spouse
C. Read by partner

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D. Read by child
E. Read by roommate
F. Read by other [SPECIFY: _____]
G. Don't know
H. REFUSE

D. AWARENESS AND BELIEVABILITY TO RESPONDENT AND OTHERS IN HOUSEHOLD

D1. To help customers control their electric bills, the Home Energy Reports suggest two approaches: 1) that people change how much they use appliances, or 2) that they buy more efficient appliances, lighting and other efficient equipment. Do you recall tips about buying more efficient appliances-- in your personalized report? [**DO NOT READ LIST**]

1 YES, (SPECIFY TIPS) [OPEN END]
2 NO [SKIP TO SECTION E]
3 DON'T KNOW [SKIP TO SECTION E]
4 REFUSED [SKIP TO SECTIONE]

D2. Please rate the reasonableness of the recommendations on a scale of 0 to 10 where 0=completely unreasonable and 10=completely reasonable.

1 RATING = _____

2 DON'T KNOW [SKIP TO SECTION E]

3 REFUSED [SKIP TO SECTION E]

D3. Does that rating [D2] reflect your own feelings about the recommendations rather than the consensus of the household? [open-end verbatim] DON'T KNOW, REFUSED

E. SOCIAL NORM AWARENESS

E3 The Home Energy Report also provides information about how your home's electric use compares to a group of **homes in the area that are similar in size, house type and fuels used**.

E3.1 Do you recall the section in your Home Energy Report that told how your home's electric use compared to other homes of similar age and size? [**DO NOT READ LIST**]

1 YES
2 MAYBE,VAGUELY
3 NO **[SKIP TO D5]**
4 DON'T KNOW
5 REFUSE

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E3.2 Did you discuss the comparisons with your family or household members, neighbors, relatives, or people at work/school?

1 YES [IF YES, PROBE general description (e.g., my teenagers, my neighbors, co-workers) RECORD VERBATIM]_
_____
_____
2 NO
3 DON'T KNOW
4 REFUSED

E3.3 Do you have confidence in the report's comparisons—in other words, do you believe that your household is being accurately compared with similar homes?

1 YES

2 NO

3 MIXED FEELINGS; HAVE SOME DOUBTS

4 DON'T KNOW

5 REFUSED

Demographics/Home Characteristics (matches Baseline question wording)

D5. Which of the following best describes the highest level of education you have completed? **ALLOW ONE RESPONSE ONLY READ LIST**

1 Less than high school
2 Graduated high school
3 Some university/college
4 Graduated (2-yr) Community/Technical College
5 Graduated (4-yr) University or College
6 Post Graduate work (beyond 4-yr degree)
88 Don't know
99 Refused

D7. Are you currently working: READ LIST

1 Full time
2 Working part time
3 Unemployed
4 Retired or disabled

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5 DON'T KNOW
6 REFUSED

Now I'd like to ask you some questions about your home.

Demo1. Which of the following best describes your home/residence? READ LIST

01. Single-family home, detached construction [NOT A DUPLEX, TOWNHOME, OR APARTMENT; ATTACHED GARAGE IS OK]
02. Single family home, factory manufactured/modular
03. Single family, mobile home
04. Row House
05. Two or Three family attached residence—traditional structure
06. Apartment (4 + families)---traditional structure
07. Condominium---traditional structure
08. OTHER: (SPECIFY_____)
98. REFUSED
99. DON'T KNOW

BB2. Do you own or rent this residence?

1. OWN

2. RENT

8. REFUSED

9. DON'T KNOW

BB3. Approximately when was your home constructed? [DO NOT READ]

01	Before 1960	
02	1960-1969	
03	1970-1979	
04	1980-1989	
05	1990-1999	

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06	2000-2005	
07	2006 OR LATER	
88	REFUSED	
99	DON'T KNOW	

Thank you for taking time to help with our survey and the helpful information you provided. Have a great day/evening.

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AEP OHIO Home Energy Report Program Evaluation Survey 2012

NON-PARTICIPANT Households

Telephone Survey Instrument

Questionnaire

Interviewer Instructions

Call is to be placed asking to speak to the individual named under the Contact Name column obtained from program records.

The purpose of the introductory script and associated questions is to identify the person opening and handling the electric bill. Since the Home Energy Report format under evaluation is a direct mail printed item, the person who handles the electric bill is considered the object of study

NOTE TO INTERVIEWERS: AEP Ohio's older customers may use the names of previous companies prior to merger. AEP Ohio used to be called "Ohio Power" or "Columbus Southern Power" or "Columbus Southern Electric." AEP stands for American Electric Power.

INTRODUCTION

INTRO 0 Hello, may I speak with **[CONTACT NAME]?**

INTRO1 *ASK TO SPEAK TO CONTACT NAME. IF NOT HOME, ASK TO SPEAK TO OTHER HEAD OF HOUSEHOLD*

SCHEDULE A CALLBACK IF NEITHER PERSON IS AVAILABLE.

Hello, I'm _____ of the Blackstone Group, calling on behalf of AEP Ohio. I have just a few questions about utility service—especially about mailings you may have received from AEP over the past year. Your feedback is important and will help AEP Ohio decide what it mails to customers. We will not attempt to sell you anything; we've been hired solely to gather candid comments from customers. Your name and opinions will be held strictly confidential. This survey will take only a few minutes.

INTRO1A. Are you the person in the household who typically reviews your home's AEP electric bill? [**DO NOT READ LIST**]

YES.....	**1** [**CONTINUE**]
NO.....	**2** [**ASK FOR PERSON MOST FAMILIAR. IF NOT AVAILABLE, SCHEDULE CALLBACK**]

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LANGUAGE BARRIER ..... **3 [TERMINATE, BUT IMPORTANT TO NOTE FOR COMMUNICATIONS PLANNING]**

CUSTOMER SAYS THEY ARE "TOO OLD" ..... **4 [TERMINATE]**

CUSTOMER SAYS THEY TOSS ANYTHING

IN THE MAIL EXCEPT FOR THE BILL **5**

SCHEDULE CALLBACK **6**

GENERAL CALLBACK **7**

REFUSAL ..... **TERMINATE, RECORD DETAILS**

==========

RATEA1. I'd like you to think about how important is it to your household to reduce the amount of electricity used.

On a scale of 0 to 10 where 0 equals not important at all and 10 equals extremely important, how would you rate the importance of reducing your household's electricity use?

RATING = _____

DON'T KNOW

REFUSED

AWARE1. As I said, this call is not an attempt to persuade you to sign up for any conservation or energy efficiency program, but it would be helpful to utility managers to know if you are simply "aware" that AEP Ohio offers energy management help for homeowners and renters. Are you "aware" that AEP Ohio offers energy management programs for homeowners and renters?

1. YES…

2. No

3. NOT SURE (PROBE AND CLARIFY) [VERBATIM]

4. DON'T KNOW

4. REFUSED

IF AWARE1=1, ask AWARE2 In the last two years, has your household participated in any energy efficiency programs sponsored by AEP Ohio (or its predecessors the Ohio Electric and Columbus Southern) such as the appliance recycling program.

NAVIGANT

1. YES

~~2. NOT THAT I CAN RECALL~~

3. NO

4. DON'T KNOW

5. REFUSED

SAT1. Thinking broadly, how satisfied or dissatisfied are you with AEP Ohio's current efforts to help you save on your energy bills? Would you say you were: Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

1	VERY SATISFIED	continue
2	SOMEWHAT SATISFIED	continue
3	NEITHER SATISFIED NOR DISSATISFIED	continue
4	SOMEWHAT DISSATISFIED	continue
5	VERY DISSATISFIED	continue
88	DON'T KNOW	continue
99	REFUSED	continue

WEB1. Have you personally been surveyed about home efficiency programs from AEP OHIO? [DO NOT READ]

5. YES,

6. NO,

~~7.~~ DON'T KNOW

~~8.~~ REFUSED

NAVIGANT

SATISFACTION WITH HOME ENERGY REPORT

B2. During the past year, how many times have you contacted AEP Ohio with questions related to managing your home electric use?

1	ZERO, NOT IN THE PAST YEAR	**Skip to B4.**
2	ONCE	**Continue B2b**
3	2 OR 3 TIMES	**Continue B2b**
4	4 TIMES OR MORE	**Continue B2b**
88	DON'T KNOW	**SKIP to B4**
99	REFUSED	**SKIP TO B4**

B2b [IF B2=2,3 or 4 ask.] How did you make contact? [CHECK ALL THAT APPLY]

1	PHONE	**Continue B3**
2	EMAIL OR FAX	**Continue B3**
3	LETTER	**Continue B3**
4	IN PERSON	**Continue B3**

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5	[OTHER (SPECIFY)	**Continue B3**
88	DON'T KNOW	**Continue** B4
99	REFUSED	**Continue B4**

B3. [IF B2b=1, 2,3 OR 4ask only about first-mentioned contact mode:]. And how satisfied were you in getting your questions or concerns addressed by AEP Ohio? Would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	VERY SATISFIED	Continue to B4.
2	SOMEWHAT SATISFIED	Continue to B4.
3	NEITHER SATISFIED NOR DISSATISFIED	Continue to B4.
4	SOMEWHAT DISSATISFIED	Continue to B3b
5	VERY DISSATISFIED	Continue to B3b
88	DON'T KNOW	Continue to B4.
99	REFUSED	Continue to B4.

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B3b. [IF B3=4 OR 5, ask:]. Would you be comfortable telling me why were you dissatisfied?
ANSWER: VERBATIM

DON'T KNOW

REFUSED

B4. ELECTRICAL EQUIPMENT IN THE HOME

AEP Ohio cannot know which appliances any particular household owns or replaces. It helps in our communications to know, so I'd like to collect a count of new or discontinued appliances. May I proceed?

1.__Yes

2.___No [IF CUSTOMER DECLINES, skip to B7]

3.___DON'T KNOW [SKIP TO B7]

REFUSED [SKIP TO B7]

B5. How many computers do you use in your home on at least a weekly basis? [Clarification for interviewers: the computers don't have to be "owned" by the customer, only regularly plugged in to the house circuits.]

[SHOW DROPDOWN, RANGE 0-9, DON'T KNOW, REFUSED]

DON'T KNOW

REFUSED

B5AA. [If B5=1-9, ask:} how many of these computers were purchased after 2008?

A. ___#COUNT____purchased after Jan.1, 2008,

B5AB. [If B5=1-9, ask:} how many of these computers were purchased before 2008?

[RANGE 0-9, DK,REF]

Electrical Equipment

B5BB. I am going to read a list of home electric appliances. As I mention each appliance, would you please tell me how many working units are in your home today then whether any similar

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units were removed from use in the last 12 months (whether recycled, disposed or given away)
.

	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB1. Central air conditioning unit		
B5BB2. Room or wall air conditioning unit		
B5BB3. Electric water heater		
B5BB4. Electric clothes dryer		
B5BB5. Ceiling or window fans		
B5BB6.. Video screen or television with screen larger than 30-inches		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB7. desktop computer (not a laptop)		
B5BB8. Laptop or notebook computer		
B5BB9. Video game console [Xbox, Sony Playstation, etc.]		
B5BB10. Set-top box for satellite or cable television		
B5BB11 Internet modem (either cable modem or DSL modem) allowing		
B5BB12 in-house cordless phone (not cell-phone)		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB13 Electric furnace, boiler		
B5BB14. Refrigerators		
B5BB15. Food freezer cabinet (not part of a refrigerator)		
B5BB16. Video player for recorded movies and television shows (e.g., VCR, DVR, streaming media player, DVD)		
B5BB17.Dehumidifier		
B5BB18.Tankless electric water heater On-demand		
B5BB19 portable electric spaceheater		

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	COL.A Number of units in home today	COL. B # of units removed from household use
B5BB20 stereo sound system that plays CDs, tapes, vinyl records)		

B6. Did you remove any of these appliances (mentioned above in B5BB1. section above) with the expectation that utility bills might drop?

1. ___ YES
2. ____NO
3. NOT APPLICABLE
4. ___ DON'T KNOW
5. REFUSED

B6A [ASK IF B6=YES] Which appliances were you most hopeful about making a difference in household electric costs? [OPEN-END VERBATIM] , DON'T KNOW, REFUSED

B7. Thinking about the past year, would you say that you have probably been paying more attention, less attention or about the same amount of attention to unplugging appliances ~~or turning off appliances~~ not needed? [DO NOT READ LIST]

F. Paying more attention
G. Paying less attention
H. Paying about the same attention
I. DON'T KNOW
J. REFUSED

B7A. Thinking about the past year, would you say that you have probably been paying more attention, less attention or about the same amount of attention to ~~unplugging or~~ turning off appliances not needed? [DO NOT READ LIST]

F. Paying more attention
G. Paying less attention
H. Paying about the same attention
I. DON'T KNOW

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J. REFUSED

X1. Think about electricity usage as the physical amount of electricity your household uses, not the dollars you pay. . Which best describes your household's electricity usage in the last six months compared to the same period a year earlier? In the last six months your household has used … READ LIST. SINGLE PUNCH.]

1. a lot more electricity
2. somewhat more
3. about the same
4. somewhat less
5. a lot less

5. 8. DON'T KNOW

9. REFUSED

DEMOGRAPHICS

D5. Which of the following best describes the highest level of education you have completed? **ALLOW ONE RESPONSE ONLY READ LIST**

1 Less than high school
2 Graduated high school
3 Some university/college
4 Graduated (2-yr) Community/Technical College
5 Graduated (4-yr) University or College
6 Post Graduate work (beyond 4-yr degree)
88 Don't know
99 Refused

D7. Are you currently working: READ LIST

7 Full time
8 Working part time
9 Unemployed
10 Retired or disabled
11 DON'T KNOW
12 Refused

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Demographics/Home Characteristics (matches Baseline question wording)

Now I'd like to ask you some questions about your home.

Demo1. Which of the following best describes your home/residence? READ LIST

09. Single-family home, detached construction [NOT A DUPLEX, TOWNHOME, OR APARTMENT; ATTACHED GARAGE IS OK]
10. Single family home, factory manufactured/modular
11. Single family, mobile home
12. Row House
13. Two or Three family attached residence—traditional structure
14. Apartment (4 + families)---traditional structure
15. Condominium---traditional structure
16. OTHER: (SPECIFY_____)
100. REFUSED
101. DON'T KNOW

B2. Do you own or rent this residence?

1. OWN
2. RENT
8. DON'T KNOW
9. REFUSED

B3. Approximately when was your home constructed? [DO NOT READ]

01	Before 1960	
02	1960-1969	
03	1970-1979	
04	1980-1989	
05	1990-1999	
06	2000-2005	
07	2006 OR LATER	

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88	DON'T KNOW	
99	REFUSED	

Thank you for taking time to help with our survey and the helpful information you provided. Have a great day/evening.

APPENDIX I

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AEP Ohio
Energy Efficiency/Demand Response Plan
Year 3 (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report: Prescriptive Program

Presented to

AEP OHIO®
A unit of American Electric Power

May 11, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, OH 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Ryan Del Balso, Managing Consultant
608.497.2325
ryan.delbalso@navigant.com

Argene McDowell, Senior Consultant
608.497.2330
argene.mcdowell@navigant.com

Adam Knickelbein, Managing Consultant
303.728.2507
adam.knickelbein@navigant.com

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Section E. Executive Summary

This document presents a summary of the findings and results from the evaluation of the 2011 Prescriptive Program implemented by AEP Ohio for the program year January 1, 2011 through December 31, 2011 (PY 2011).[1]

The Prescriptive Program offers incentives to nonresidential customers who install eligible high-efficiency electric equipment. The program launched in mid-year 2009 as a Lighting Program in AEP Ohio's service territory. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting. In April 2010, AEP Ohio launched the 2010 Prescriptive Program by expanding the program to additional end-uses such as HVAC, motors, VFDs, and refrigeration systems, and increasing the number of eligible lighting measures. Over 200 eligible measures were introduced in the 2010 program and offered again in the 2011 program.

The Prescriptive Program provides a streamlined incentive application and quality control process intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The Prescriptive Program is marketed, administered, and delivered under by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc., in coordination with AEP Ohio.

E.1 Evaluation Objectives

The three major objectives of the evaluation are to: (1) quantify verified gross energy savings and summer peak demand reduction[2] from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost effectiveness.

[1] Program Year 2011 (PY 2011) participation is based on an implementation contractor payment request date to AEP Ohio between January 1, 2011 and December 31, 2011. December 16, 2011 was the last day in 2011 that AEP Ohio accepted applications for PY 2011.
[2] The summer on-peak period for claiming demand reduction is defined as 3 pm through 6 pm, June through August.

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E.2 Evaluation Methods

The data collected for evaluation of the PY 2011 Prescriptive Program was gathered during a number of research activities including:

- In-depth telephone interviews with program managers and with a number of KEMA staff
- In-depth telephone interviews with trade ally "Solution Providers"
- A computer-aided telephone interview (CATI) survey with participating customers
- Tracking system data review
- Documentation technical review of a sample of projects
- On-site measurement and verification at customer sites for a subset of projects sampled for technical review

Table E-1 provides a summary of these data collection activities including the targeted population, the sample frame, and timing in which the data collection occurred.

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Table E-1. Data Collection Activities for PY 2011 Evaluation

Data Collection	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Prescriptive Program projects approved for payment for the 2011 program year	AEP Ohio Tracking Database	-	All	May 2011 to April 2012
In-depth Interviews	AEP Ohio Program Staff	Contact from AEP Ohio	Business Programs Manager and Prescriptive Program Manager	2	February 2012 to March 2012
	Prescriptive Program Implementers	Contact from AEP Ohio	KEMA Program Implementation Staff	3	
In Depth Interviews	Prescriptive Program Solution Providers	Tracking database	Convenience sample of all Solution Providers	15 Across all Business Programs; 4 Non-Participants	February 2012 to March 2012
CATI Survey	Prescriptive Program Participants	Tracking Database	Census of Prescriptive Program Participants	396 unique contact names	March 2012 to April 2012
Application File Review	Tracking Database	Stratified Random Sample	117	October 2011 to April 2012	Projects in the 2011 Program
On-Site Measurement and Verification	Project Application Review Batch 1 Sample	Random Subset of Project Application File Review	40	December 2011 to April 2012	Projects in the 2011 Program

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E.3 Key Findings and Recommendations

Key Impact Findings

The impact results for the PY 2011 Prescriptive Program are shown in Table E-2.

Table E-2. Gross Savings Estimates for the PY 2011 Prescriptive Program

	Program Goals		Ex-Ante Reported Savings		Verified Gross Savings	
Program	Gross MWh	Gross MW	Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**177,348**	**55.462**	**127,375**	**26.570**	**131,634**	**28.033**

The realization rate (defined as verified gross savings / ex-ante reported savings) is **1.03** for gross energy savings, and **1.06** for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Prescriptive Program projects in the sample is ± 5 percent for the energy realization rate and ± 5 percent for the demand realization rate.

Although the program performed well when measured by realization rates, the PY 2011 verified gross savings fell short of the program goals for the year. The verified gross energy savings were 74.2 percent of 2009-2011 EE/PDR plan goal for PY 2011 and the verified gross demand savings were only 50.5 percent of 2009-2011 plan goal for PY 2011. Overall program energy savings dropped from PY 2010 while demand savings saw a slight increase. This may be an indication of barriers in the marketplace that need to be addressed, a continued reflection of the weak economy, or other program challenges.

During the in-depth interviews, KEMA indicated their goals are based on the overall Business portfolio goal and not individual program goals and they were comfortable they would meet the overall goal. It was not mentioned during the interview that the Prescriptive program would be significantly short of 2011 goals, and due to the success of the Self-Direct Program there did not seem to be a deep concern if the Prescriptive program fell a bit short. While the overall Business portfolio goal is most important, individual program goals are also an important metric to be reviewed. Moving forward AEP Ohio and KEMA may want to discuss ways to improve the Prescriptive program performance without sacrificing the success of the other Business programs.

The Prescriptive Program observations from the evaluator verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate.

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Occupancy sensors continue to be an area of difficulty. The evaluation team's review revealed that the values listed in the measure specific work papers as documented in Appendix A of KEMA's Operations Manual appear to underestimate demand savings for occupancy sensors by an order of magnitude. Upon further investigation, it appears that the algorithm included an additional, unnecessary multiplication of the coincidence factor. As a result, Navigant's estimates of occupancy sensor demand savings were generally much higher than KEMA's estimates. For some sites, this resulted in significant differences between the ex-ante demand savings estimates and ex-post estimates.

Key documentation for payment verification (invoices and equipment specification sheets) was found to be complete and clearly labeled. Pre- and post-inspection documents were adequate and contained a satisfactory level of information. However, baseline fixtures were difficult to verify on-site since most customers do not keep the replaced fixtures. Pre-inspections are often helpful to determine baseline fixture quantity and type. In some instances, the evaluation team found that information captured during the pre- and post-inspection visits by KEMA did not translate into appropriate adjustments of the ex-ante savings estimates.

Key Impact Recommendations

1. KEMA should revisit and correct the algorithm for occupancy sensors so that they do not continue to under-estimate demand savings by an order of magnitude.
2. KEMA should consider revisiting their calculation worksheets to make sure that the assumptions used to determine ex-ante savings are consistent with those from their work papers (KEMA Operations Manual Appendix A).
3. Consider increasing the rigor of the pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope of the new installation, but also the existing baseline equipment configuration. Consider increasing efforts in pre-inspections, especially for larger sites.
4. Use the pre- and post-inspection process to adjust inputs to the ex-ante savings calculations as much as possible.

Key Process Findings and Recommendations

In this section, key findings and recommendations are presented from the 2011 program evaluation in addition to a review of the actions that were taken during 2011 in response to the 2010 evaluation findings and recommendations.

1. Prescriptive Program participants continued to be satisfied with the Prescriptive Program in 2011. About three fourths of participants were satisfied with the incentive and the program overall in both years.

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2. A comparison of participant satisfaction with AEP Ohio between 2010 and 2011 showed no change in satisfaction with AEP Ohio in 2011 compared to 2010.
3. In general, Solution Providers were very pleased with the program because it increased their business.
4. The Navigant team suggests that AEP Ohio place a link to the Business Programs on the launch page of the web site to funnel business customers to the appropriate business program information more effectively.
5. The Navigant team recognizes that AEP Ohio and KEMA made important changes during the 2011 program year to improve the program. Some repeat program participants recognized the changes and responded positively to them. Other improvements have been planned for 2012, including the implementation of an online application that offers the respondent program options based on their technology choice.
6. In 2010, timeliness of application and incentive processing was an area of lower participant satisfaction relative to other program aspects and an area recommended for improvement. Key 2011 evaluation findings regarding timeliness are:
    - Customer satisfaction increased in the area of timeliness, overall program satisfaction, and communication with staff during 2011, as the program matured and as KEMA's staff became more experienced. KEMA hired additional staff to decrease processing time for the program applications and to develop the Solution Provider network.
    - Timeliness of application approval and incentive payment continues to be an area of importance, especially for large institutional clients who might have short budget deadlines; therefore KEMA should attempt to continue to improve on application and incentive processing timelines.
    - The dual application for the Custom and Prescriptive Programs was efficient for KEMA and AEP Ohio, but some customers and Solution Providers found it intimidating. AEP Ohio is developing an online application that will allow customers to access only those pages of the application that relate to their measure and program, whether Custom, Prescriptive or Self-Direct.
7. Solution Providers said that one of the barriers to program participation was lack of knowledge on the part of customers. AEP Ohio has considered a limited general advertising campaign to raise overall awareness of all Business Programs. The Navigant team agrees that a general business ad campaign, or one as a "tag-along" to the residential advertising campaigns, would be an effective way to increase program awareness.

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8. The case studies developed by AEP Ohio and KEMA were well-received by Solution Providers and customers alike. Navigant suggests that AEP Ohio continue developing more case studies to attract participation by additional customer segments.
9. AEP Ohio and KEMA continued to strive to improve communications both internally among the staff and externally with customers and program partners such as Solution Providers. One of the signs that they are 'getting the message out' to Solution Providers was the fact that almost 500 Solution Providers attended the 2012 program kick-off in late January, about double the number from 2011. Suggestions for further improvements in communications include:
    - Solution Providers recommended that the application number used by KEMA be made clearer to the customer and Solution Provider for easy reference and tracking.
    - Solution Providers also recommended that KEMA ensure the channel of communication between KEMA and each customer and Solution Provider is clear before questions arise.
10. Comments from Solution Providers and customers suggested that lack of capital is a major reason customers are not able to proceed with a planned improvement project. Program managers indicated that AEP Ohio has been negotiating with an organization that would provide funding for energy efficient projects to help overcome this participation barrier. Navigant suggests that AEP Ohio proceed with a funding option, if feasible.

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Section 1. Introduction and Purpose of the Study

The Prescriptive Program offers incentives to nonresidential customers who install eligible high-efficiency electric equipment. The program launched in mid-year 2009 as a Lighting Program in the AEP Ohio service territory. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting. In April 2010, AEP Ohio launched the 2010 Prescriptive Program by expanding the program to additional end-uses such as HVAC and refrigeration systems, and increasing the number of eligible lighting measures. Over 200 eligible measures were introduced in the 2010 program and offered again in 2011.

The Prescriptive Program provides a streamlined incentive application and quality control process intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The Prescriptive Program is marketed, administered, and delivered as a single program by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc., in coordination with AEP Ohio.

1.1 Evaluation Overview

The three major objectives of the evaluation are to: (1) quantify energy savings and summer peak demand reduction from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost effectiveness.

The evaluation sought to answer the following key research questions.

Cross Cutting Questions

1. Review progress on issues identified in 2010 evaluation.
2. Compare 2010 findings with 2011 findings.
3. Have changes made to the 2011 program been effective in increasing satisfaction and/or participation?
4. Are there segments of the population which are underrepresented in the program participation?
5. Has the program been effective in reaching its targeted market participants as stated in the Action Plan filing? Specifically, the plan indicated a targeted marketing strategy would be employed to reach market providers (wholesalers, distributors, contractors, trade allies, and retailers that market qualifying technologies), and high-impact/high-

need customer sectors (such as schools, municipal buildings, hospitals, food service and hospitality).

Impact Questions

1. Were the impacts reported by the program achieved?
2. What were the realization rates? (Defined as evaluation-verified (ex-post) savings divided by program-reported (ex-ante) savings.)
3. What are the benefits and costs and cost effectiveness of this program?

Process Questions

Marketing and Participation

1. Is the program outreach to customers through the program and program Solution Providers effective in increasing awareness of the program opportunities?
2. How did customers become aware of the program? What marketing strategies could be used to boost program awareness?

Program Characteristics and Barriers

1. What areas could the program improve to create a more effective program for customers and Solution Provider partners and help increase the energy and demand savings impacts?
2. Is the application process efficient and easy for customers to navigate? Does the process present any barriers to program participation?
3. Are customers and program partners satisfied with the aspects of program implementation in which they have been involved?

Administration and Delivery

1. Are the program administrative and delivery processes effective for smoothly providing incentives to customers?
2. What were the early program satisfaction and customer service experiences?
3. What are the verification procedures for the program? Have they been implemented in a manner consistent with design? Do they present a barrier to participation or perceived undue burden on customers?

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The PY 2011 evaluation presents findings for each of these process questions. Findings were combined for each rate zone[3] to be consistent with AEP Ohio's approach of delivering a single program statewide. Both rate zones were represented in the samples.

[3] AEP Ohio has recently gone through a merger of two regional operating companies which resulted in the program participation being distributed across two different rate zone territories.

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Section 2. Description of the Program

This evaluation report covers the Prescriptive Program element of the AEP Ohio business energy efficiency and peak demand reduction programs.

2.1 Program Description

2.1.1 Business Sector Programs

In 2007, AEP issued corporate wide directive to all operating companies to meet internal energy efficiency goals. In 2008 Ohio passed comprehensive energy legislation, which includes an advanced energy portfolio standard (AEPS) 2008 Senate Bill (SB) 221, signed into law by Governor Ted Strickland on May 1, 2008.[4] The law directs Ohio utilities to implement programs to help their customers use electricity more efficiently, and requires electric utilities to achieve energy savings of 22.2 percent of baseline electricity use by the end of 2025 through energy efficiency programs. Utilities must also implement programs to reduce peak energy demand one percent beginning in 2009, and an additional 0.75 percent per year through 2018, for a total of 7.75 percent.

AEP Ohio launched a set of EE/PDR programs for 2009-2011 under a three-year action plan with oversight by the PUCO. The 2011 Prescriptive Program was one of five energy efficiency program elements available to AEP Ohio non-residential customers, during 2011:

- The **Prescriptive Program** provides a streamlined incentive application and quality control process, and is intended to facilitate ease of participation for non-residential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting, and the application form was eligible for use in early 2010. In April 2010, AEP Ohio launched the 2010 Prescriptive Program and application form that expanded the program to additional end-uses such as HVAC, and refrigeration systems, and increased the number of eligible lighting measures. In 2011, the Prescriptive Program staff assigned more marketing resources to attracting non-lighting projects.

- The **Self-Direct Program** rewards qualifying customers who submit previously installed projects through one of two energy efficiency credit options: an energy efficiency credit payment of 75 percent of the calculated incentive amount under the Prescriptive or

[4] http://www.legislature.state.oh.us/bills.cfm?ID=127_SB_221

Custom Program; or an exemption from the EE/PDR rider for a specified number of months. The 2011 program targeted projects installed after January 1, 2008 and prior to December 31, 2010.

- The **Custom Program** offers incentives to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects.

- The **Express Install Program** provides one-stop turn-key services to small businesses (less than 200,000 kWh consumption per year) for lighting and refrigeration measure upgrades. Approved service providers recruit participants, identify savings opportunities, complete program paperwork and install measures for the program. The Express Install Program launched in November 2010. The program had limited participation in Program Year 2010, but saw broader appeal in 2011. Savings estimates are based on prescriptive formulas for simplicity and auditing purposes.

- The **New Construction Program** seeks to capture energy efficiency and peak load reduction opportunities through a comprehensive effort to influence building design and construction practices. It does so by providing incentives to new facility owners for the installation of high-efficiency lighting, HVAC, building envelope, refrigeration and other equipment and controls, and by providing design assistance to the architects and engineers that are designing new buildings. The key design assistance tool is building simulation modeling of more efficient building designs. The New Construction Program launched in March 2011.

The AEP Ohio programs are funded on an annual calendar year basis. Funding in any given program year is limited to that year's budgeted amount and, therefore, incentives are paid on a first-come, first-served basis until the program year's incentive funds are exhausted. Funds may be shifted between the multiple business program elements based on participant response and approval of the PUCO. The business sector portion of the program is based on the savings goal as follows in Table 2-1. The Prescriptive Program savings goal follow in Table 2-2.

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Table 2-1. Business Sector Programs Plan Savings Goal and Budget

Business Sector Programs (incremental annual net savings at meter)	2011
Energy Savings (GWh)	249.9
% Savings of Sector Sales	0.70%
Demand Savings (MW)	93.5
% Savings of Sector Sales	1.35%
Total Cost ($ millions)	$33.9

Source: 2009-2011 EE/PDR Plan dated November 5, 2009, approved by the PUCO, March 13, 2010.

Table 2-2. Prescriptive Program Planned Savings Goal and Budget

Prescriptive Program	2011
Energy Savings (GWh)	177.4
Demand Savings (MW)	55.5
Total Cost ($ millions)	$18.0

Source: 2009-2011 EE/PDR Plan dated November 5, 2009, approved by the PUCO, March 13, 2010

AEP Ohio retained KEMA Services Inc. (KEMA) as its program administrator responsible for day-to-day operations of the Business Programs. AEP Ohio Prescriptive, Custom, Business Express, New Construction and Self-Direct Program Coordinators report to an overall Business Program Manager. An AEP Ohio staff person supports outreach and marketing, and other AEP Ohio staff support planning, evaluation, and reporting.

2.1.2 Prescriptive Program Description

The goals of the Prescriptive Program in 2011 continue to be to exceed the kWh targets in the Plan at or below the program budget, improve customer satisfaction with the program and overall, increase outreach to customers and internally involve more customer service staff in promoting the program to assigned customers. A summary of the important aspects of Prescriptive Program follows.

Incentive Caps. Incentives are subject to project caps and yearly caps that are set per each business entity and vary by customer tariff. The project cap is $300,000 and the yearly cap is $600,000 per year for General Service tariffs 1, 2, and 3 and $600,000 overall for 2009 through 2011 for General Service tariff 4.

Incentive Limits. Project incentives cannot exceed 50 percent of the incremental project cost.

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Pre-Approval Applications. Pre-approval is strongly encouraged for all participants in order to pre-approve incentive levels and to reserve funding. A pre-approval application for prescriptive incentive applications is required for permanent lamp removal and new T8 or T5 fixture measures.

Pre-Review. KEMA reviews pre-approval applications for eligibility and completeness. KEMA contacts the customer or contractor to clarify details or obtain further information, to discuss the overall process and timelines, and to explain the process for inspections where they are required.

Pre-Inspection. Pre-inspections provide AEP Ohio with the opportunity to verify the existing conditions at the site. These site visits are performed as defined by quality assurance procedures based on the type of measures that the participant submits.

Reservation. The program reserves the project funds once the pre-inspection report and/or initial project review is approved. Projects that come in after funds are fully reserved are placed on a waiting list. In the event that a project is not completed within 90 days of the reservation and an extension has not been requested and granted, the project may be cancelled. Prior to cancellation, AEP Ohio will follow-up with the customer to work out an extension or confirm that the project should be cancelled.

Final Applications. Final applications must be submitted within 60 days of project completion and include the appropriate back-up documentation to verify the project is complete and meets the program requirements. KEMA reviews final applications for eligibility and completeness.

Final Inspection. KEMA performs final inspections as defined by quality assurance/quality control (QA/QC) procedures to verify the measures installed.

Incentive Payment. Once the program accepts a project for payment, incentives are processed and delivered within 30 days.

Cancellation. When a project either does not meet the program guidelines or is cancelled by the customer, the project is moved to the cancelled status. The project details remain in the database, but the project no longer counts towards the active program goals.

Wait List. If project applications and related funding requests reach the point where AEP Ohio determines that further funding reservations can no longer be made, the program moves projects to a waiting list. Projects on the wait list will not be reserved or paid unless sufficient funding becomes available. Wait list projects are not included in the active program totals. A wait list was not employed by the 2011 program.

Hold: Projects are placed on hold when there is poor or no documentation to process the application or when a customer with a reserved project decides not to move forward in the current program year and indicates that it may move forward with a project in the following year. Projects on hold are not included in the active program totals.

Measures and Incentives for PY 2011

The PY 2011 program application forms listing measures, eligibility criteria, and incentive levels are provided in Appendix Section 6.4.

Solution Provider Participation

AEP Ohio and KEMA launched a Solution Provider (trade ally) network of contractors in April 2010. This is a network of contractors that have been trained on the program, have applied to market the program, and are listed on the AEP Ohio website as a registered contractor for the business sector programs. Through 2011, about 345 Solution Providers have been trained or approved to market the AEP Ohio business sector programs. In addition, Solution Providers can participate in a program without registering with AEP Ohio.

2.2 Program Year 2011 Prescriptive Program Participation

The evaluation team was able to extract key program participation data from AEP Ohio's tracking database, which was provided in Excel spreadsheet format. Database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was linked by a unique project number to measure level information – one tab per measure category (Lighting, HVAC, Refrigeration, etc.). The technical basis for AEP Ohio's ex-ante reported gross savings is described in Section 3.1.1.

Table 2-3 and Figure 2-1 provide a profile of PY 2011 Prescriptive Program participation at the project level, while Table 2-4, Figure 2-2, and Table 2-5 provide participation at the end-use summary and detailed measure level.

Out of the total of 1,642 projects with unique program ID's that had Prescriptive Program measures installed during the PY 2011 program year, there were 119 projects that had both prescriptive and custom measures installed. For these combined measure type projects, the custom measures were removed from the Prescriptive Program ex-ante reported gross savings. The custom measures are evaluated through the Custom program evaluation. Likewise, the Custom program evaluation has removed Prescriptive Program measure savings from combined measure type projects being evaluated. Customer contacts were coordinated between the two program evaluations.

Participation was highest within the Industrial and Manufacturing sector, which accounted for 36 percent of reported energy savings and 31 percent of the reported demand savings. Participation was also high with Large Retail and Service customers, which accounted for 11 percent of reported energy savings and 12 percent of reported demand savings. Schools accounted for 14 percent of the project count, 8 percent of reported energy savings, and 10 percent of the reported demand savings.

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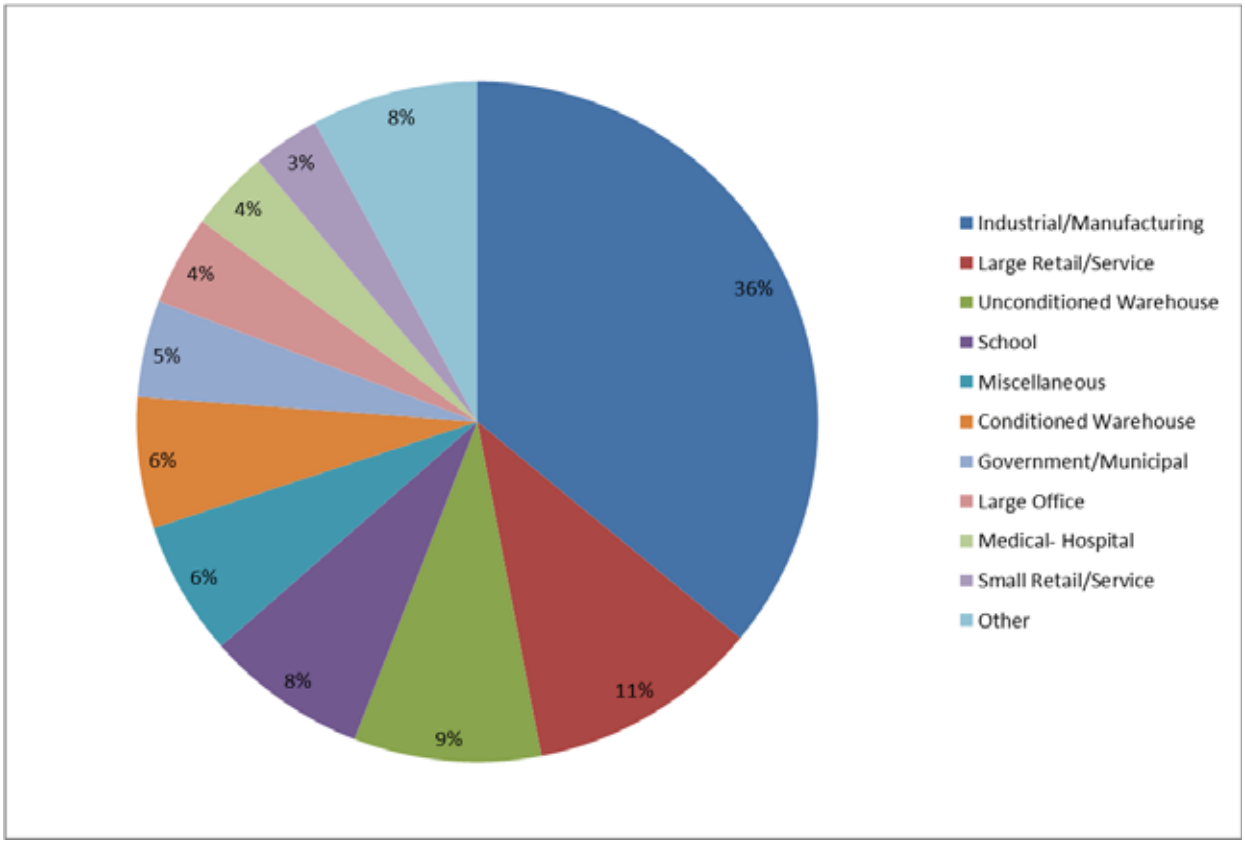
Table 2-3. PY 2011 Prescriptive Program Participation by Business Type

Business Type	Project Count		Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Industrial/Manufacturing	265	16%	45,814	36%	8.321	31%
Large Retail/Service	130	8%	14,037	11%	3.132	12%
Unconditioned Warehouse	92	6%	11,323	9%	1.885	7%
School	227	14%	9,777	8%	2.702	10%
Miscellaneous	119	7%	8,144	6%	1.417	5%
Conditioned Warehouse	48	3%	7,920	6%	1.681	6%
Government/Municipal	75	5%	5,871	5%	1.160	4%
Large Office	80	5%	5,412	4%	2.358	9%
Medical- Hospital	33	2%	4,930	4%	0.878	3%
Small Retail/Service	242	15%	4,072	3%	0.999	4%
College/University	84	5%	2,254	2%	0.599	2%
Medical- Nursing Home	18	1%	2,063	2%	0.344	1%
Small Office	99	6%	1,877	1%	0.473	2%
Grocery	51	3%	1,667	1%	0.227	1%
Assembly	38	2%	949	1%	0.204	1%
Restaurant	36	2%	622	0%	0.110	0%
Light Industry	1	0%	318	0%	0.063	0%
Hotel/Motel	3	0%	266	0%	0.009	0%
Warehouse	1	0%	58	0%	0.007	0%
TOTAL:	**1,642**	**100%**	**127,375**	**100%**	**26.570**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

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Figure 2-1. PY 2011 Prescriptive Program Ex Ante MWh Savings by Business Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

Table 2-4 and Figure 2-2 show the program participation by end-use component. Lighting dominated the impacts with more than 85 percent of the ex-ante reported savings for both energy and demand. This is down from 2010, however, in which lighting accounted for 99 percent of reported savings. The largest non-lighting end-uses were VFD's and HVAC.

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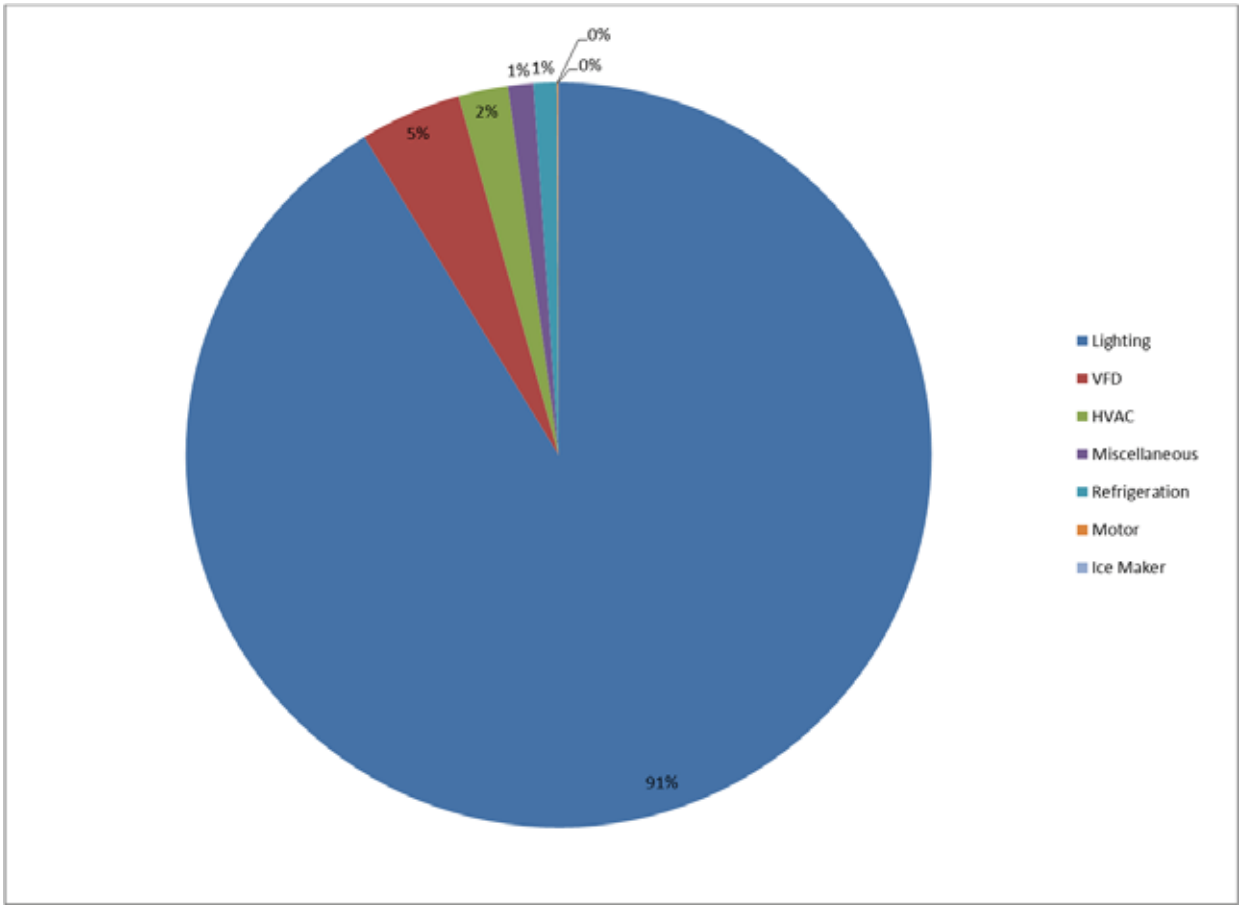
Table 2-4. PY 2011 Prescriptive Program Participation by End-Use Type

End Use Type	Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Lighting	116,260	91%	22.912	86%
VFD	5,598	4%	1.006	4%
HVAC	2,746	2%	2.479	9%
Miscellaneous	1,395	1%	0.000	0%
Refrigeration	1,273	1%	0.156	1%
Motor	79	0%	0.014	0%
Ice Maker	24	0%	0.003	0%
Total	**127,375**	**100%**	**26.570**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

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Figure 2-2. PY 2011 Prescriptive Program Ex Ante MWh Savings by Measure Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

Among lighting measures, the installation of new, interior T8 or T5 fixtures in place of older T12 or HID systems (those with a measure description of "Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast") once again dominated both energy and demand savings. Similar to 2010, this measure was primarily installed as high-bay fluorescent conversions in warehouses and industry[5]. Reduced wattage T8 lighting, delamping (aka "Interior Permanent Lamp Removal"), and interior occupancy sensors were also major measures. Among non-lighting measures, variable frequency drives on HVAC fans and pumps, as well as in non-HVAC applications, were prominent.

[5] Three-quarters of the reported energy savings for the measure "Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast" occurred in the Industrial and Warehouse sectors.

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Table 2-5. PY 2011 Prescriptive Program Participation by Measure Type

End Use Type	Measure	Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Lighting	Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast	64,280	50%	13.810	52%
Lighting	Interior Reduced-Wattage T8s	11,109	9%	2.886	11%
Lighting	Interior Permanent Lamp Removal	8,497	7%	2.016	8%
Lighting	Interior Occupancy Sensor	7,135	6%	0.054	0%
Lighting	Interior LED Lamp	6,624	5%	1.388	5%
Lighting	Interior HP T8 - 4-ft Lamp and Ballast	4,942	4%	1.219	5%
Lighting	Garage LED or Induction	2,297	2%	0.262	1%
Lighting	Interior CFL - Screw-in	2,071	2%	0.374	1%
Lighting	Exterior LED or Induction	1,643	1%	0.000	0%
Lighting	Interior LED, T-1, or Electroluminescent Exit Signs	1,206	1%	0.158	1%
Lighting	Exterior T8/T5 New Fluorescent Fixture w/Electronic Ballast	1,180	1%	0.000	0%
Lighting	Interior LED Fixture	668	1%	0.137	1%
Lighting	Exterior LED traffic lights	650	1%	0.074	0%
Lighting	Exterior Pulse Start or Ceramic	547	0%	0.000	0%
Lighting	Garage T8/T5 New Fluorescent Fixture w/Electronic Ballast	496	0%	0.057	0%
Lighting	Exterior HW CFL	466	0%	0.000	0%
Lighting	Interior HW CFL	442	0%	0.091	0%
Lighting	Interior CFL - Specialty (Downlight, Dimmable or 3-way)	355	0%	0.069	0%
Lighting	Interior Daylight Sensor Controls	290	0%	0.072	0%
Lighting	Interior 2ft/3ft T12 to T8 or T5	281	0%	0.061	0%
Lighting	Interior 4-ft U-Tube T12 to T8	273	0%	0.060	0%
Lighting	Exterior LED Channel Sign	121	0%	0.000	0%
Lighting	Exterior Specialty/High Wattage Screw-in CFLs (>31W)	107	0%	0.000	0%
Lighting	Interior Permanent Lamp Removal - BONUS	97	0%	0.032	0%

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End Use Type	Measure	Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Lighting	Garage Bi-Level Wall Pack Fixture	97	0%	0.010	0%
Lighting	Interior T12 to T5 retrofit - T5 lamps and new ballast	95	0%	0.020	0%
Lighting	Interior Induction Fixture	86	0%	0.022	0%
Lighting	Interior Pulse Start or Ceramic	47	0%	0.012	0%
Lighting	Interior HP T8 - 4-ft Lamp and Ballast - BONUS	39	0%	0.013	0%
Lighting	Exterior Controls	38	0%	0.000	0%
Lighting	Interior Cold Cathode	36	0%	0.007	0%
Lighting	Interior Bi-level Stairwell/Hall/Garage Fixture w/ integrated sensors	22	0%	0.003	0%
Lighting	Interior T12 to T5 retrofit - T5 lamps and new ballast - BONUS	9	0%	0.003	0%
Lighting	Interior 2-ft T12 to T8 or T5 - BONUS	7	0%	0.002	0%
Lighting	Interior CFL - Downlight, Dimmable or 3-way - Guest Room	4	0%	0.001	0%
Lighting	Interior 3-ft T12 to T8 or T5 - BONUS	3	0%	0.001	0%
Lighting	Interior Lighting / Controls	0	0%	0.000	0%
Lighting	Interior Lighting / Interior T8/T5 New Fluorescent Fixtures	0	0%	0.000	0%
VFD	Non HVAC VSD < 200HP	2,973	2%	0.578	2%
VFD	VFD for HVAC	2,625	2%	0.428	2%
HVAC	Chillers, Water-Cooled	1,607	1%	1.599	6%
HVAC	Chillers, Air-Cooled	1,055	1%	0.799	3%
HVAC	Unitary, Split, or Packaged Terminal AC/HP	84	0%	0.081	0%
Miscellaneous	Networked Power Management Software	1,395	1%	0.000	0%
Refrigeration	Refrigeration	1,048	1%	0.141	1%
Refrigeration	Food Service	225	0%	0.015	0%
Motor	Motor	79	0%	0.014	0%
Ice Maker	EE Ice Maker	24	0%	0.003	0%
Total		**127,375**	**100%**	**26.570**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

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Section 3. Methodology

For Prescriptive Program participants, the evaluation team conducted impact and process evaluation activities following the methodologies outlined below.

3.1 Analytical Methods

3.1.1 Impact Evaluation Methods

The objective of this element of the impact evaluation is to verify or adjust the ex-ante reported gross savings in the Prescriptive Program tracking system. Savings verification is conducted through a multi-step approach:

- **Tracking System Savings Review**, to identify potential adjustments to ex-ante reported savings for measures due to outliers, missing information, or tracking system data entry or calculation errors. Evaluation adjustments identified through the Tracking System Savings review are made to all measures in the population where the adjustment is found to be applicable.

- **Default Measure Savings Assessment**, to identify potential adjustments to ex-ante reported savings for prescriptive measures where the evaluation team recommends an alternative default value for a specific measure.

- **Application Documentation Technical Review**, to identify potential adjustments to ex-ante reported savings for measures based on review of documentation, assumptions, and engineering analysis for a sample of projects. Sampling is discussed in the following Section 3.3.1.

- **Participating Customer Telephone Interviews**. Customer responses to the CATI telephone survey were used to inform adjustments to energy savings algorithms, but ***only*** for those projects that were sampled for Application Documentation Technical Review.

- **On-site Verification and Performance Measurements.** On-site verification was conducted by the evaluation team on a subset of projects selected from the Application Documentation Technical Review sample. The evaluation team also conducted spot measurements of true power and installed data loggers as appropriate.

- **Other Adjustments to Savings**. Other adjustments to savings could include statistical or baseline adjustments to verified savings.

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The basis for AEP Ohio's ex-ante reported savings depends upon multiple factors. Measures may be submitted for the Prescriptive Program through the Prescriptive Program application process. If measures do not meet Prescriptive Program criteria, these may then be proposed as Custom Program measures. A single project may consist of both Prescriptive and Custom measures.

Reported savings for Prescriptive measures are based on an operations manual developed by KEMA. Measures submitted on the 2010 application forms had ex-ante savings estimated and tracked using KEMA's measure specific work papers as documented in Appendix A of KEMA's January 25, 2010 Operations Manual. An updated operations manual was developed by KEMA for the PY 2011 program year, dated June 16, 2011 and used for measures submitted through the 2011 application form. Custom measures rely upon customer provided data and energy savings calculations, and may be revised by KEMA upon technical review.

Application Documentation Technical Review was conducted on a sample of projects randomly selected from the participant population (see Section 3.3.1 for a detailed description of the sampling methodology). For each selected project, an in-depth review of project documentation was performed to assess the engineering methods, parameters and assumptions used to generate all ex-ante reported gross savings. When available, all measure specifications and quantities were verified by reviewing the accompanying inspection and specification documents as well as installation invoices.

For each measure in the sampled project, the evaluation team estimated verified gross savings based on the review of project documentation and engineering analysis. Adjustments to estimate verified savings were based on building-specific information, invoices, specifications sheets and other documentation to the extent it was judged more representative of the project than default measure savings assumptions. Categories of changes to ex-ante reported savings included the following:

- Building type
- Hours of use
- Coincidence factor
- Equipment quantities from invoices
- Space cooling HVAC interaction factor credit
- Baseline equipment specifications
- Post retrofit equipment specifications

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- Other changes, such as analysis methodology
- Review and application of on-site collected data

When possible, measure quantities were verified by comparing them to invoices by lighting contractors or suppliers. If a post-inspection was carried out, measure quantities and specifications from the inspection were assumed to be correct. Where it was not possible to verify measure quantities from independent documents, it was assumed that the implementer quantities were correct. When baseline and/or new equipment specifications were not available (i.e. fixture wattages), default values from the Table of Standard Wattages in Appendix C of the Pennsylvania TRM were assumed, so long as these were appropriate for the site application. The table is an extensive list of standard fixture wattages by lighting type, ballast type and configuration, and lamp quantities generally encountered in retrofit programs. Energy and demand reduction algorithms were followed to compute ex-post savings.

On-site Data Collection

Forty-four on-site surveys were planned, with sites selected at random from the application documentation review sample. During the scheduling process, nine sites declined to participate in the evaluation data collection, and an attempt was made to replace them with back-up sites selected from the application documentation review sample. The evaluation team was successful in completing four additional site visits with back-up sample points. One other site that received a site visit was later dropped from the sample due to data collection complications. In the final count, 40 sampled onsite visits were completed.

A site-specific M&V plan was developed for each project scheduled for on-site data collection. Each plan explains the general gross impact approach used (including monitoring plans), provides an analysis of the current inputs (based on the application and other available sources at that time), and identifies sources that will be used to verify data or obtain newly identified inputs for the ex-post gross impact approach. For most projects, on-site sources include interviews that are completed at the time of the on-site visit, visual inspection of the systems and equipment, spot measurements, and short-term monitoring (e.g., less than four weeks).

During the on-site audit, data identified in the analysis plan was collected, including monitoring records (such as instantaneous spot watt measurements for relevant equipment, data from equipment logs and EMS/AEP SCADA system downloads), equipment nameplate data, system operation sequences and operating schedules, and a careful description of site conditions that might contribute to baseline selection.

All field technicians and engineers who conduct audits are trained and experienced in completing inspections for related types of projects. Each carries standardized data collection forms customized for AEP Ohio and all equipment required to conduct the planned activities. The auditors check in with the site contact upon arrival at the building, and check out with that

same site contact, or a designated alternate, on departure. The on-site audit consists of a combination of interviewing and taking measurements. During the interview, the engineer meets with a building representative who is knowledgeable about the facility's equipment and operation, and asks a series of questions regarding operating schedules, location of equipment, and equipment operating practices.

Following the interview, the engineer makes a series of detailed observations and measurements of the building and equipment. If short-term monitoring was conducted, the data collection process was discussed with the site contact, and then the data gathering units were deployed. All information was recorded and checked for completeness before leaving the site.

After all of the field data is collected, including any monitoring data, annual energy and demand impacts are developed based on the on-site data, monitoring data, application information, and, in some cases, billing or interval data. Each project engineering analysis is based on calibrated engineering models that make use of hard copy application review and on-site gathered information surrounding the equipment installed through the program (and the operation of those systems).

Verification Results

Once the verified gross impacts were developed for each project in the sample, the results were reviewed first at the project- and measure-level by an experienced engineer familiar with the evaluation and second across all projects by a senior engineer looking for values outside of expected ranges. Using verified gross savings results, the evaluation team estimated a verified gross realization rate (which is the ratio of the verified gross savings to ex-ante reported gross savings) for each stratum. The stratum-level realization rates were then applied to the population of ex-ante reported gross savings by strata. The result is an ex-post estimate of verified gross savings for the program.

3.1.2 Process Evaluation Methods

The purpose of the process evaluation is to assess the effect of the program structure and program implementation on program performance and customer satisfaction. The evaluation team's process efforts provide insights and recommendations to support the continued success of the Prescriptive Program.

Central to the process evaluation for the Prescriptive Program were interviews with AEP Ohio program managers and with staff of the implementation contractor, KEMA, as well as review of relevant program tracking databases, documents, and other materials to understand how the program has evolved from the previous year. In addition, the evaluation team conducted a CATI survey with participating customers to better understand customer satisfaction and

perceptions related to the program. Finally, the evaluation team conducted several in-depth interviews with Solution Providers to identify their perspectives on the program.

The evaluation team used senior staff members to conduct in-depth qualitative interviews. Senior staff were flexible in their approach to the discussion, allowing the respondent to talk about his/her experience or perspective while still shaping the discussion toward the most important, relevant and necessary information. The team conducted the interviews by telephone in order to complete the interviews quickly and to be flexible to the respondents' schedule.

Interview guides were developed to be open-ended and allow for a free-flowing discussion between interviewer and respondent, and real time interviewing flexibility. The team developed guides which highlighted key issues, but did not require being read verbatim to offer the interviewer flexibility to delve deeply into pertinent issues based on the respondents' knowledge of and experience with the program.

The evaluation team took detailed notes during each in-depth interview and/or taped the discussion to ensure thorough documentation. For any quantitative questions, interviewers are trained to record and summarize responses to allow the evaluators to draw conclusions in the analysis.

3.2 Data Sources

The data collected for evaluation of the PY 2011 Prescriptive Program was gathered during a number of activities including:

- In-depth telephone interviews with AEP Ohio program coordinators and the implementation contractor (KEMA Services Inc.)
- In-depth telephone interviews with trade ally "Solution Providers"
- A computer-aided telephone interview (CATI) survey with participating customers
- Tracking system data review
- Documentation technical review of a sample of projects
- On-site measurement and verification at customer sites for a subset of projects sampled from the application documentation technical review

Table 3-1 provides a summary of these data collection activities including the targeted population, the sample frame, and the time frame in which the data collection occurred.

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Table 3-1. Data Collection Activities for PY 2011 Evaluation

Data Collection	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Prescriptive Program projects approved for payment for the 2011 program year	AEP Ohio Tracking Database	-	All	May 2011 to April 2012
In-depth Interviews	AEP Ohio Program Staff	Contact from AEP Ohio	Business Programs Manager and Prescriptive Program Manager	2	February 2012 to March 2012
	Prescriptive Program Implementers	Contact from AEP Ohio	KEMA Program Implementation Staff	4	
In Depth Interviews	Prescriptive Program Solution Providers	Tracking database	Convenience sample of all Solution Providers	15 – All Programs; 4 Non/Near-Participants	February 2012 to March 2012
CATI Survey	Prescriptive Program Participants	Tracking Database	Census of Prescriptive Program Participants in Batch 1 impact sample (11/1/11 database extract)	396 unique contact names; 113 completes	March 2012 to April 2012
Project Application File Review	Projects in the 2011 Program	Tracking Database	Stratified Random Sample	117	October 2011 to April 2012
On-site Measurement & Verification	Projects in the 2011 Program	Project Application Review Batch 1 Sample	Random Subset of Project Application File Review	40	December 2011 to April 2012

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Tracking Data

The Prescriptive Program evaluation team was able to extract key program participation data from AEP Ohio's tracking database, which was provided in Excel spreadsheet and SAS formats. The tracking data delivered for this evaluation was extracted from a program tracking database maintained by KEMA. Program samples for the Computer Assisted Telephone Interview (CATI) participating customer phone sample were drawn from a November 1, 2011 extract.

Database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was linked by a unique project number to measure level information – one tab per measure category (Lighting, HVAC, Refrigeration, etc.). All data was tracked separately between the two rate zones, Rate Zone 1 and Rate Zone 2.

The evaluation team conducted the tracking system review and sample design for application file review using database exports of the tracking system data from November 1, 2011 and February 28, 2012. Sample design and selection for the 2011 Prescriptive Program was done on a batch-wise basis, with one batch drawn in November 2011 from the November 1, 2011 extract, and a second and final sample batch of roughly equal size drawn after the close of the program year, using the February 28, 2012 data.

Project and Program Documentation

To support the engineering review, AEP Ohio provided project documentation in electronic format for each sampled project. Documentation included some or all of scanned files of hardcopy application forms and available supporting documentation from the applicant (invoices, measure specification sheets, vendor proposals), and KEMA calculation spreadsheets. This documentation was provided by uploading to a secure file transfer site, as well as sent via CD.

The evaluation team also reviewed program materials developed by KEMA and AEP Ohio, including: two versions of the KEMA technical reference manual documenting prescriptive savings (Appendix A of the operations manual), application forms and checklists, and program materials available from the program website (www.aepohioaepohio.com).

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Program and Implementer Staff Interviews

Several in-depth staff interviews were conducted as part of this evaluation. Two of these interviews were conducted with AEP Ohio Business Program Manager and the Prescriptive Program Coordinator. Four interviews were conducted with members of the KEMA implementation staff, with one interviewee focused on the Prescriptive Program with peripheral involvement in other programs and three of the interviewees focused on other Business programs with peripheral involvement in the Prescriptive Program. These interviews were completed in February and March 2012. The interviews with the Program Managers focused on program processes to better understand the goals of the program, how the program was implemented, the perceived effectiveness of the program, and also verified evaluation priorities. The interviews with the implementation staff explored the implementation of the program in more detail and also covered areas of data tracking and quality assurance. The interview guides used for these interviews are included in the appendices.

Solution Providers In-Depth Interviews

Nineteen in-depth interviews were conducted with participating Solution Providers to identify outreach effectiveness and barriers to participation. Fifteen of the Solution Providers were selected based on experience and willingness to answer questions from contact information provided on the application forms from the population of paid 2011 Business Program projects. Four of the in-depth interviews were conducted with trade allies with low program participation. No attempt was made to target Solution Providers by program as the 2010 evaluation showed that Solution Providers found it difficult to differentiate between the programs.

CATI Telephone Survey

A computer-assisted telephone interview (CATI) survey targeted a population of 396 unique customer contact names drawn from the Prescriptive Program November 1, 2011 tracking system extract. The survey finished with 113 completed interviews from the Prescriptive Program participants with paid projects in 2011. This survey focused on questions to estimate the program impacts and to support the process evaluation. All CATI interviews were completed in March or April 2012.

The survey supported impact verification by collecting self-reported data for end-use hours of operation and characterization of removed and installed equipment. Additional data was collected to support the process evaluation (such as questions concerning program design and implementation, program marketing and awareness, and customer satisfaction) and business demographics for the process component of the evaluation. The CATI survey instrument used for this evaluation is included in the appendices.

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3.3 Sampling Plan

3.3.1 Impact Sample

The initial sample (Batch 1) for the application documentation review of PY 2011 Prescriptive Program projects was selected from the November 1, 2011 data extract. A second sample (Batch 2) was pulled from the final reported savings data extract of February 28, 2012. The sample design and selection process was conducted separately for each rate zone[6] to *target* a relative precision of ±10 percent or better at a 90 percent level of confidence for each zone.

The program-level Prescriptive ex-ante reported gross savings data was analyzed by rate zone, measure type, project size, and number of projects by individual companies to inform sample design. After analysis, the sample design selected for the Prescriptive Program evaluation was stratified by rate zone, broad measure category[7] (Lighting vs. Non-Lighting), and project size. Project size is defined as the sum of all ex-ante kWh for measures installed within an individual project (as defined by unique project IDs assigned by KEMA; generally projects have unique premise ID's.)

After organizing projects by rate zone and measure category, they were sorted from largest to smallest kWh savings and placed into strata, generally attempting to achieve a relatively even distribution of program level energy savings between strata. Lighting-only projects were placed into one of three strata (high savings, medium savings, and low savings), while Non-lighting projects (those with any non-lighting measures) were placed into one of two strata (high savings and low savings). Stratum 1 equates to projects with the largest reported energy savings, stratum 2 to medium-sized projects, and stratum 3 to the smallest projects. Strata boundaries were set using the preliminary data set from November 1, 2011, however, the final strata distributions deviated somewhat from the desired one-third of program savings in each strata when using the final data extract of claimed projects from February 28, 2012.

The Prescriptive sample was selected to estimate verified gross savings at a *targeted* relative precision of ±10 percent at a 90 percent level of confidence for each rate zone. This approach resulted in a total sample of 110 projects to be selected for application documentation review. The evaluation team added a few sample points to each rate zone to increase the likelihood of achieving the targeted precision. In the end, the evaluation team sampled 30 percent of the reported MWh savings. Table 3-2 provides a profile of the gross impact measurement and verification (M&V) sample in comparison with the populations within each stratum.

[6] AEP Ohio has recently gone through a merger of two regional operating companies which resulted in the program participation being distributed across two different rate zone territories.
[7] During early evaluation planning, AEP Ohio expressed a desire to capture more information about the non-lighting measures installed through the Prescriptive program. The evaluation team thusly broke out projects with non-lighting measures as a separate stratum for investigation.

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Table 3-2. Profile of the Gross Impact M&V Sample by Strata

Population Summary			Sample		
Sampling Strata	Number of Projects (N)	Ex-Ante Reported Gross Savings, MWh	n	Ex-Ante MWh	Sampled % of Population
Rate Zone 1, Lighting 1	25	20,662	15	13,445	65%
Rate Zone 1, Lighting 2	78	17,383	15	3,636	21%
Rate Zone 1, Lighting 3	568	19,110	13	311	2%
Rate Zone 1, Non-Lighting 1	4	3,440	3	2,696	78%
Rate Zone 1, Non-Lighting 2	105	5,448	12	679	12%
Rate Zone 2, Lighting 1	23	18,062	16	12,196	68%
Rate Zone 2, Lighting 2	84	18,709	15	3,834	20%
Rate Zone 2, Lighting 3	648	19,576	15	544	3%
Rate Zone 2, Non-Lighting 1	3	1,083	1	572	53%
Rate Zone 2, Non-Lighting 2	104	3,902	12	498	13%
Total	**1,642**	**127,375**	**117**	**38,412**	**30%**

Source: Evaluation analysis of program tracking data

3.3.2 Process Sample

The CATI survey targeted a population of 396 unique customer contact names with paid projects in the 2011 Prescriptive Program, drawn from the Prescriptive Program November 1, 2011 tracking system extract. Past experience indicates that we would not expect responses to be statistically different between customers that submit their projects in the last two months of the program from those completed during the rest of the year. Many businesses submitted projects for multiple locations (e.g., chain stores) and listed a single contact person for all projects. These duplicates were removed from the call list.

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Profile of Participating Customer Survey Respondents

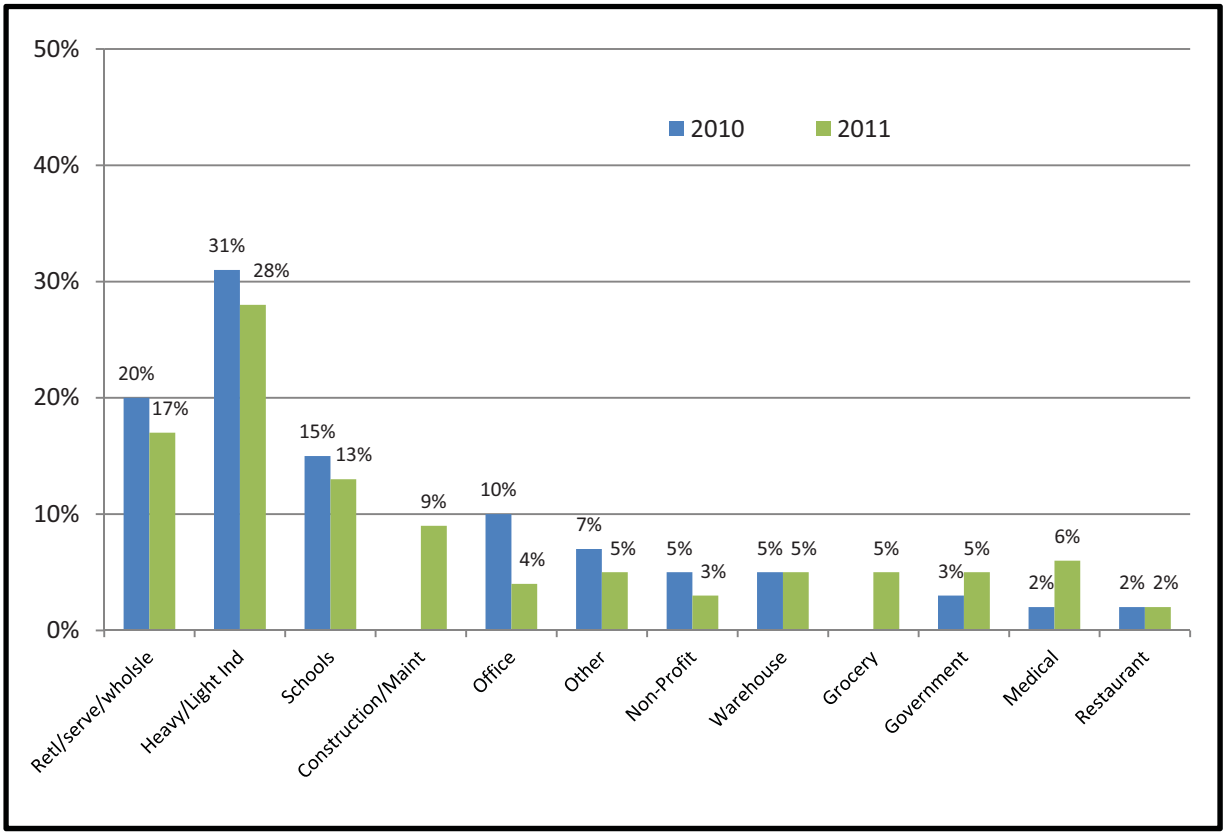
The quantitative telephone survey reached 205 participating customers although only 113 completed the survey. Of the remaining 88 customers in the survey census, in most cases, our survey house was not able to make contact with the potential respondent either because of repeated no answers or encountering an answering machine. There were ten customers who terminated or refused to complete the survey and nine wrong numbers. A 50 percent response rate for a census is acceptable.

A comparison of business sectors for survey respondents in PY 2010 and PY 2011 is provided in Figure 3-1.

Eight out of ten respondents own and occupy their facility and employ an average of about 132 full-time and part-time employees. Almost all (97%) pay their own electric bill. About one-third have only one location, roughly half have more than one location and the remaining 19 percent of the respondents are in their headquarter location. The average facility is 40 years old.

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Figure 3-1. PY 2010 and PY 2011 Prescriptive Program Phone Survey; Respondents by Business Type



Source: PY 2010 Participant Survey. Multiple responses accepted; N=119. PY 2011 Participant Survey. Multiple responses accepted; N=113.

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Section 4. Detailed Evaluation Findings

4.1 Impact Results

This section presents the results of the impact and process evaluations of the PY 2011 Prescriptive Program.

4.1.1 Findings from the Impact Verification Task

The evaluation team estimated verified gross program impacts based on application documentation review, on-site verification, and phone verification, following the methodology outlined in Section 3.1.1.

Observations from the verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate. Evaluation observations and recommendations are provided in Table 4-1.

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Table 4-1. Verification Observations and Recommendations

PY 2011 Issue/Observation	PY 2011 Recommendation
Key documentation for payment verification (invoices and equipment specification sheets) was found to be complete and clearly labeled. Pre- and post-inspection documents were adequate and contained a satisfactory level of information. However, baseline fixtures are difficult to verify on-site since most customers do not keep the replaced fixtures. Pre-inspections are often helpful to determine baseline fixture quantity and type.	Consider increasing the rigor of pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope of the new installation, but also the existing baseline equipment configuration. Consider increasing efforts in pre-inspections, especially for larger sites.
On-site verification found instances of lighting equipment that was installed in an unconditioned space, although default savings included credit for an HVAC interaction factor.	Consider adding a check box indicating if the space is conditioned or not, or removing the interaction factor based on post-inspection.
KEMA assigns one business type per project even if a project consists of multiple space usage types (office, manufacturing, etc.). Business type assignment drives default hours of use, HVAC interaction factors, and coincidence factors.	Breaking out project submittals to multiple space types could be implemented for larger projects by KEMA after the customer submits an application, if multiple space types are involved.
Some customers other than warehouse, light industry, and heavy industry checked the "24/7" or "16/5" shift information box on the application form. Evaluation verification identified projects that had extended hours as indicated by the shift check box.	Consider requesting customers to report operating hours in which KEMA can use as a guideline to apply adjustments to projects where operating hours deviate from assumptions.
In instances where billing analysis is used to calculate savings, some regression models include insignificant variables (p-value > 0.05) which could reduce predictability of the model. For example, sales data was included while the coefficient was insignificant and negative-implying that increase in sales/day would decrease energy consumption/day.	More rigorous quality control checks on regression models are suggested, including variable significance and if variables are reasonable.
In some instances, the evaluation team found that information captured during the pre- and post-inspection visits by KEMA did not translate into changes on the ex-ante savings estimates.	Use the pre- and post-inspection process to adjust inputs to the ex-ante savings calculations as much as possible

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Occupancy Sensors continue to be an area of difficulty. The evaluation team's review revealed that the values listed in the measure specific work papers as documented in Appendix A of KEMA's Operations Manual appear to underestimate demand savings for Occupancy Sensors by an order of magnitude. Upon further investigation, it appears that the algorithm included an additional, unnecessary multiplication of the coincidence factor. As a result, Navigant's estimates of occupancy sensor demand savings were generally much higher than KEMA estimates. For some sites, this resulted in significant differences between the ex-ante demand savings estimates and ex-post estimates.

Other measures that were identified as areas of potential concern included Exterior Controls, Interior 4-ft U-Tube T12 to T8 conversions, and Interior Permanent Lamp Removal. Exterior Controls in particular seems to have an error in the default assumptions as the energy savings were off by an order of magnitude. Aside from these exceptions, overall, the methodologies and savings estimates provided by KEMA for the measures were appropriate and accurate based on the data provided.

4.1.2 Program Impact Parameter Estimates

The statistical method of separate ratio estimation was used for combining individual realization rates from the sample projects into an estimate of verified gross energy savings for the population.[8] In the case of a separate ratio estimator, a separate gross energy savings realization rate is calculated for each stratum and then combined. These steps are matched to the stratified random sampling method that was used to create the sample for the program[9]. The standard error was used to estimate the error bound around the estimate of verified gross energy savings and demand reduction.

The realization rate (defined as verified gross savings / ex-ante reported savings) is 1.03 for gross energy savings, and 1.06 for gross demand reduction. In general, the realization rates across strata were loosely grouped around 1.0, with a typical range from 0.90 to 1.10. The relative precision at a 90 percent confidence level for the PY 2011 Prescriptive Program projects in the sample is ± 5 percent for the energy realization rate and ± 5 percent for the demand realization rate. The results are fully summarized in Table 4-2 and Table 4-3.

[8] A full discussion of separate ratio estimation can be found in Sampling: Design and Analysis, Lohr, 2010 2nd Edition, pp. 144-145.

[9] The Rate Zone 2 Non-Lighting 1 stratum had only three projects, and only one of these was sampled. Rather than calculate a realization rate for this stratum separately, the evaluation team combined Rate Zone 2 Non-Lighting projects into one stratum for the statistical extrapolation.

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Table 4-2. Verified Gross Energy Realization Rates and Relative Precision

Sampling Strata	Relative Precision at 90% Level of Confidence ± %	Mean Realization Rate
Rate Zone 1, Lighting 1	6.4%	0.92
Rate Zone 1, Lighting 2	21.7%	0.99
Rate Zone 1, Lighting 3	13.4%	1.08
Rate Zone 1, Non-Lighting 1	9.2%	1.09
Rate Zone 1, Non-Lighting 2	13.7%	1.19
Rate Zone 2, Lighting 1	11.9%	1.10
Rate Zone 2, Lighting 2	8.5%	0.97
Rate Zone 2, Lighting 3	12.9%	1.11
Rate Zone 2, Non-Lighting[10]	51.1%	1.02
Total Energy RR	**4.8%**	**1.03**

Source: Evaluation analysis of sample results

[10] The Rate Zone 2 Non-Lighting 1 stratum had only three projects, and only one of these was sampled. Rather than calculate a realization rate for this stratum separately, the evaluation team combined Rate Zone 2 Non-Lighting projects into one stratum for the statistical extrapolation.

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Table 4-3. Verified Gross Demand Realization Rates and Relative Precision

Sampling Strata	Relative Precision at 90% Level of Confidence ± %	Mean Realization Rate
Rate Zone 1, Lighting 1	9.7%	1.06
Rate Zone 1, Lighting 2	19.5%	1.00
Rate Zone 1, Lighting 3	15.4%	1.15
Rate Zone 1, Non-Lighting 1	4.9%	1.29
Rate Zone 1, Non-Lighting 2	13.3%	0.99
Rate Zone 2, Lighting 1	14.7%	1.04
Rate Zone 2, Lighting 2	7.3%	1.02
Rate Zone 2, Lighting 3	16.6%	1.02
Rate Zone 2, Non-Lighting[11]	9.6%	1.00
Total Demand RR	**4.8%**	**1.06**

Source: Evaluation analysis of sample results

4.1.3 Program Impact Results

Based on the impact parameter estimates described in the previous section, the evaluation team estimated the verified gross program impacts resulting from the PY 2011 Prescriptive Program, as shown in Table 4-4. No further adjustments were made to verified gross savings.

Table 4-4. Gross Savings Estimates for 2011 Prescriptive Program

Program	Quantity of Projects with Prescriptive Savings	Ex-Ante Reported Savings		Verified Gross Savings	
		Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**1,642**	**127,375**	**26.570**	**131,634**	**28.033**

[11] The Rate Zone 2 Non-Lighting 1 stratum had only three projects, and only one of these was sampled. Rather than calculate a realization rate for this stratum separately, the evaluation team combined Rate Zone 2 Non-Lighting projects into one stratum for the statistical extrapolation.

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The Prescriptive Program fell somewhat short of its 2011 goals of 177,348 MWh energy savings and of 55.462 MW demand savings. While the 2011 program year fell short, the program may already be on track to meet its PY 2012 goals. In January 2012, AEP Ohio already had a good start to the year with a large number of projects in the pipeline from 2011. The Business programs had a very strong finish in 2011 and carried over 110 GWh of savings from incomplete projects to 2012.

As requested by the statewide evaluator, Table 4-5 provides participation counts, ex-ante savings estimates, and gross savings calculated at the measure level. Due to the large number of measure types installed through the program, it was not practical to provide results by individual measure, so results were aggregated to measure end-use level. Detailed data for individual measure types is available upon request.

Table 4-5. PY 2011 Prescriptive Program Participation and Savings by Measure

Measure End-Use	Participation Count	Ex-Ante Reported Savings		Verified Gross Savings	
		Gross MWh	Gross MW	Gross MWh	Gross MW
Lighting	4,847	116,260	22.912	120,147	24.174
VFD	157	5,598	1.006	5,786	1.061
HVAC	67	2,746	2.479	2,837	2.615
Miscellaneous	1	1,395	0.000	1,442	0.000
Refrigeration	127	1,273	0.156	1,316	0.165
Motor	39	79	0.014	82	0.015
Ice Maker	5	24	0.003	24	0.003
Total	**5,243**	**127,375**	**26.570**	**131,634**	**28.033**

4.2 Process Evaluation Results

The evaluation team engaged four implementation contractor program staff, nineteen Solution Providers, and 113 program participants to explore the issues that were foremost in their minds regarding the Prescriptive Program. Program managers at both KEMA and AEP Ohio provided themes for the evaluation.

4.2.1 AEP Ohio and KEMA Process Evaluation Findings

The most important goal of the program is to meet the energy and demand savings targets set for the year; secondarily, to improve customer satisfaction by helping customers become more energy efficient; and finally, to help customers generate as many jobs as possible through the installation of equipment. All these goals should be met as cost effectively as possible.

As stated in Section 4.1.3 above, the Prescriptive Program fell somewhat short of its 2011 goals for both energy and demand savings. The program may already be on track, however, to meet its PY 2012 goals due to a very strong finish in 2011. If some of the techniques that were used at the end of 2011 to increase program participation were used earlier in the year it is possible that the Prescriptive program would have finished closer to its 2011 goals rather than being significantly short and carrying over so many project applications to PY 2012.

Changes in Program Roles

The Program Coordinator for the Prescriptive Program coordinates and manages the program and works closely with KEMA to develop a program that will reach program goals. His role has changed slightly with the expansion of the program to non-lighting measures, with more of a role with customers and Solution Providers than he had previously. Both AEP Ohio and KEMA have worked hard to engage Solution Providers, to increase their role in marketing the program and to bring more Solution Providers into the program.

The Role of the Solution Providers

According to program managers, Solution Providers have become more knowledgeable and more engaged in the programs and the program goals. They have a major role in the Prescriptive Program, as it has been mainly contractor driven – they understand it and promote it and encourage their customers to participate. KEMA can steer customers toward the program but they do not have a large role in direct program delivery. AEP Ohio provided customer education through email, bill inserts and newspaper ads, while KEMA primarily focused on trade allies.

Communication

Throughout the year KEMA and AEP Ohio partnered at various events and AEP Ohio sent representatives to KEMA program presentations. Formal communication took place at team meetings once a week where KEMA's operations manager summarized the past week's events and the progress of the business programs. Informal communications occurred as necessary via email or telephone. Both KEMA and AEP Ohio continually strive to improve communication and to ensure that everyone is "on the same page."

Lighting and Other Measures

Lighting has been the most successful measure in the Prescriptive Program. LEDs have been gaining strength in the lighting arena and some fairly large chain accounts have installed substantial amounts of LEDs.

Expansion beyond lighting measures saw limited success in 2010, but made good strides in 2011. For instance, KEMA developed new relationships with non-lighting contractors. It

continues to be a slow process for KEMA to educate non-lighting contractors on how the savings have to be verified and the requirements for determining baseline data.

Marketing and Promotion

AEP Ohio's main message to their customers was that energy efficient equipment will make their companies more viable and strengthen their business position in the marketplace; incentive are provided as icing on the cake. AEP Ohio's goal was to change the business culture by making customers more mindful of energy efficiency.

The business programs were marketed in a number of ways depending on the program:

- First quarter training with all Solution Providers
- Direct mail for customer segments
- Email newsletter
- AEP Ohio customer service messaging
- Fourth quarter mailing on lighting code and standards issues discussing the requirement to stop manufacturing of T12s
- Monthly contractor trainings on the database

In addition, AEP Ohio held seminars for industrial and commercial customers and provided onsite information and training. They have targeted health care, commercial food service and education customers with sector specific collateral materials and case studies. A direct-mail campaign informing customers about T12 lighting code and standards changes was sent to all business customers. AEP Ohio also expanded outreach to trade allies and professional groups, as well as reaching more customers through webinars.

Although the program aims to help offset the project cost of installing energy efficient equipment through incentives, capital was still hard for customers to find in 2011. AEP Ohio has been looking at financing options to package with program rebate offerings.

The Application Process

The paperwork required may be one of the reasons that some customers choose not to go through the application process. KEMA offers to pre-qualify the equipment for the program in order to reduce this barrier for customers and for vendors.

KEMA processes Prescriptive Program applications quickly, and AEP Ohio and KEMA continue to improve program processes overall. In 2012 they plan to offer an online application

that will speed up the application process. The online application should be faster, increase accuracy, and be easier for the customer to complete.

The Web Site

The AEP Ohio web site has become an important tool in the marketing and implementation of the business programs. For instance, several case studies are located on the web site. Other collateral materials such as fact sheets, program descriptions, lists of qualifying equipment and a list of Solution Providers can also be found on the website.

A review of the AEP Ohio web site revealed one concern. There does not appear to be a direct link to the business programs on the AEP Ohio main page. Customers can access the business program web pages by clicking on the residential program link where they are offered a choice of residential or commercial programs. A direct link to the business programs should be added to AEP Ohio's main web page if possible.

Changes in the Delivery of the Program from 2010 through 2012

A number of major program changes occurred in 2011 and will occur in 2012 in marketing the Prescriptive Program.

- AEP Ohio and KEMA developed a number of case studies that were used as marketing collateral in the second half of the year. KEMA developed sales training for contractors. A successful contractor from Nevada was the guest speaker. He described what his company did to help his customers in Nevada and achieve program success. He held a lot of credibility with the Solution Providers.

- KEMA will further increase the use of the Internet webinar in 2012. For instance, the 2012 kick-off meeting for all the programs was conducted as a webinar. The contractor training meetings are more effectively conducted in person as Solution Providers are presented hands-on experience with the database. Refresher courses, however, will be offered as webinars.

- Building on the success of their interactions with Solution Providers in 2011, KEMA is planning to spend more time in 2012 with the top contractors to keep them involved in the programs. They will also be continuing with the "blitz" meetings with customers. These are events that the program manager and account managers meet with large customers to present the program or evaluate a large project. The purpose of the blitz meetings is to model the sales process for account managers, teaching them how to sell the program and to attract large customers to the program.

- One big change in 2011 that will continue through 2012 was a change in staff. An experienced engineer was added to the KEMA staff in Columbus. She has been involved

in project review, peer review and setting deemed values. Additional KEMA marketing staff was hired to work on developing targeted collateral materials, thereby freeing other staff to concentrate on outreach.

- For PY 2012 KEMA would like to set the application submittal deadline to November 1, 2012. By doing this KEMA will be able to process the late applications in November rather than in December. This will allow them to plan trade ally events and develop the next program year's applications in December rather than January. This idea was put forth in response to challenges they faced in PY 2011 with the final program deadline set to December 16, 2011. AEP Ohio set the late 2011 deadline and gave a bonus incentive to Solution Providers because they were concerned they would miss their 2011 goals. KEMA was able to pay $2.828 million in incentives for all business programs in the three weeks following the deadline, but it was necessary for AEP Ohio to let the last 20 GWh of applications roll over to 2012. The application roll over led KEMA to plan for a fast start in the first quarter of 2012.

- In 2012, AEP Ohio will continue to expand their business segmentation marketing approach. They are continuing with all the tactics that worked last year in the first quarter to keep up the momentum of all the programs. They will be developing more targeted collateral materials for segments such as municipalities, schools, polymers manufacturers, data centers, water and waste water treatment facilities, pipelines and grocery stores.

- The online application tool should be a marketing opportunity when it becomes fully functional. KEMA will develop a demonstration and training seminars for the Solution Providers. KEMA cautioned that there may be some challenges with Solution Providers accepting and using the system. They said that in their experience another hurdle with an online application system will be to successfully tie it into the tracking system.

- KEMA is developing a database tool for 2012 to help Solution Providers and engineers confirm if a specific equipment model qualifies for the program. This should improve efficiency for Solution Providers, who should not have to define the specifications, and for engineers, who should not have to use resources reviewing the specifications.

- AEP Ohio staff is always looking for ways to simplify the applications. In 2012, they will insert graphics to help customers identify what fixtures qualify.

Program Strengths

A strength of the Prescriptive Program is that it provides a financial incentive to customers for being energy efficient. Other program strengths included:

- The program has provided the means for some contractors to expand their businesses and hire more staff.
- Low and mid-level participating contractors are encouraged to do more.
- The Prescriptive Program developed into a multi-faceted program; the percentage of non-lighting savings has increased as the program continues to expand its offering of non-lighting measures.

Program Challenges

KEMA staff identified a few program challenges:

- A challenge for all the business programs, including the Prescriptive Program, is that it is difficult to promote awareness of the programs.
- The amount of change that has occurred in the Business Programs in the past two years has confused some Solution Providers. Changes included: adding the Business Express Program; changes to the Self-Direct Program; and offering a different Solution Provider bonus each year. If a program is working consistently well and the trade allies are comfortable and happy with it, their participation will be more persistent. Every time a program change is made, momentum can be lost.
- Industrial process measures can be risky because they depend on the level of production, which may be highly variable over the course of a year.
- There continue to be challenges in defining the baseline for variable speed drives (VSD) on air compressor motors and other VSD projects.

Barriers to the Program

AEP Ohio and KEMA staff agree that barriers to the programs include:

- Lack of capital; customers want to make upgrades and improvements but don't have the capital available to do so
- Lack of customer understanding about energy efficiency technologies
- Connecting to the decision maker
- Training Solution Providers to sell customers on the value of energy efficiency

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Satisfaction with the Prescriptive Program

Program participants appear to be satisfied with the current rebate amounts. AEP Ohio's rebate levels are attractive and have been well received. Based on interviews with Solution Providers, they are also satisfied with the program.

Suggestions for Program Improvements

One technique that can be used to increase program awareness and customer satisfaction is to host a media event for AEP Ohio to present incentive checks to customers. Local news stations can provide invaluable public relations and the event can be an opportunity to stress that energy savings will continue every month.

The program may also benefit if AEP Ohio partners with a financial institution or bank to provide financing of projects or on-bill financing. The application for the loan should be kept as simple as possible.

4.2.2 Solution Providers Perspectives

General Solution Provider Comments

The evaluation team engaged 19 Solution Providers through in-depth interviews. Solution Provider comments about the Prescriptive Program included the following positive comments:

- The Prescriptive Program process by KEMA was very good
- The Prescriptive Program is a very good sales tool. They are selling a significant number of projects using the incentives, and completing the incentive applications for customers as an added benefit.
- The program allowed Solution Providers to go to clients with a value-added offer by reducing ROI. It was an overall valuable business proposition with no drawbacks.
- The application forms were somewhat cumbersome, but the recent changes to the spreadsheet helped.
- Application processing time and results were evaluated as 'good.' When Solution Providers had questions, they were quickly resolved by KEMA and when KEMA posed questions, they were clear. Responses were reviewed and decisions were made quickly.

Solution Provider comments about the Prescriptive Program included the following issues:

- A Solution Provider estimated he had completed 125 projects in the Prescriptive Program. He said the applications were not friendly and completing the spreadsheet the way KEMA wants was difficult.

- Another Solution Provider complained that the application does not provide a project identification number. KEMA identifies projects by a number which they assign internally. Since the applicant does not have that number or is not aware of it, it is a struggle to identify the specific project when questions arise. He has spoken with KEMA about this problem, but indicated their response was, "That is how we do things."

- Another problem mentioned by Solution Providers was that KEMA did not necessarily call the right person if they had a question. It was hard to deal with problems on a deadline if the questions were being sent all over the place. The local KEMA person has been very good however and works well with them.

- The program was only marginally helpful for certain businesses. One respondent would like to see more TV advertising.

- One Solution Provider raised the issue that he has been outbid by certified contractors in the Prescriptive Program who were undercutting project costs by "drastic" de-lamping. He thought these can be as much as 40 percent lighting reductions. In his opinion de-lamping will cause problems in the long run when customers are dissatisfied with light levels. He pays attention to lighting levels that are appropriate to tasks, as well as simple lighting reductions.

- Another Solution Provider has helped customers complete the applications, but some of these projects moved forward without AEP Ohio incentives. He hypothesized that the incentives were too little to be worth the wait.

Solution Provider Trainings and Program Understanding

Most Solution Providers attended the workshops each year and found the process was straightforward. One said: "The training has been informative and well done. I like the Solution Provider label." He had "good things to say about KEMA all the way through the process." Another said the spreadsheet for Prescriptive Program was easy to navigate. A third Solution Provider said this about the Prescriptive Program:

> *"When I signed up as a SP, KEMA did onsite training and went through program requirements. They did a good job. My activity with the programs increased after the training. I use the Solution Provider designation as a marketing tool. I include the rebate amounts into the payback analysis and help customers make timely decisions."*

Other Solution Providers faced challenges with the program. Solution Providers work with many large customers in the industrial, institutional, non-profit, municipality, school, refinery and hospital segments. One respondent said that customers were aware of the programs but, if they were large institutions, they have budget timelines. It can sometimes take months to process projects through the programs, but if projects do not get approved quickly (e.g. within

30 days) the Solution Provider may lose many of them. While lighting projects were not a problem, building automation, HVAC, windows or any building shell projects can take several months to process. In one case, a building automation system for a large customer was submitted in October 2011 and he had still not received confirmation in March 2012. As far as he knew, KEMA was still passing it along from review to review. This Solution Provider was quite sure that AEP Ohio has lost projects because of the lengthy processing time for some non-lighting projects.

Solution Providers' Satisfaction with KEMA

Active Solution Providers said they knew their KEMA contact well and spoke very highly of them, their responsiveness and the quality of their work. Their attitude toward the Solution Providers was "a breath of fresh air" compared to their interactions with another neighboring utility. Others reported that the KEMA contact for the Prescriptive Program was 'always accessible' and was very helpful and responsive. They appreciated working directly with one person. One said: "If you have questions, call KEMA and ask in advance of problems."

Rebates/Incentives

Generally, rebate levels for lighting projects and adjustable speed drives were judged reasonable by Solution Providers, especially with the added influence of the T12 availability issue on lighting. They thought that non-lighting equipment, such as HVAC equipment, suffer from conservative incentives and high efficiency levels. Projects then will not meet payback criteria.

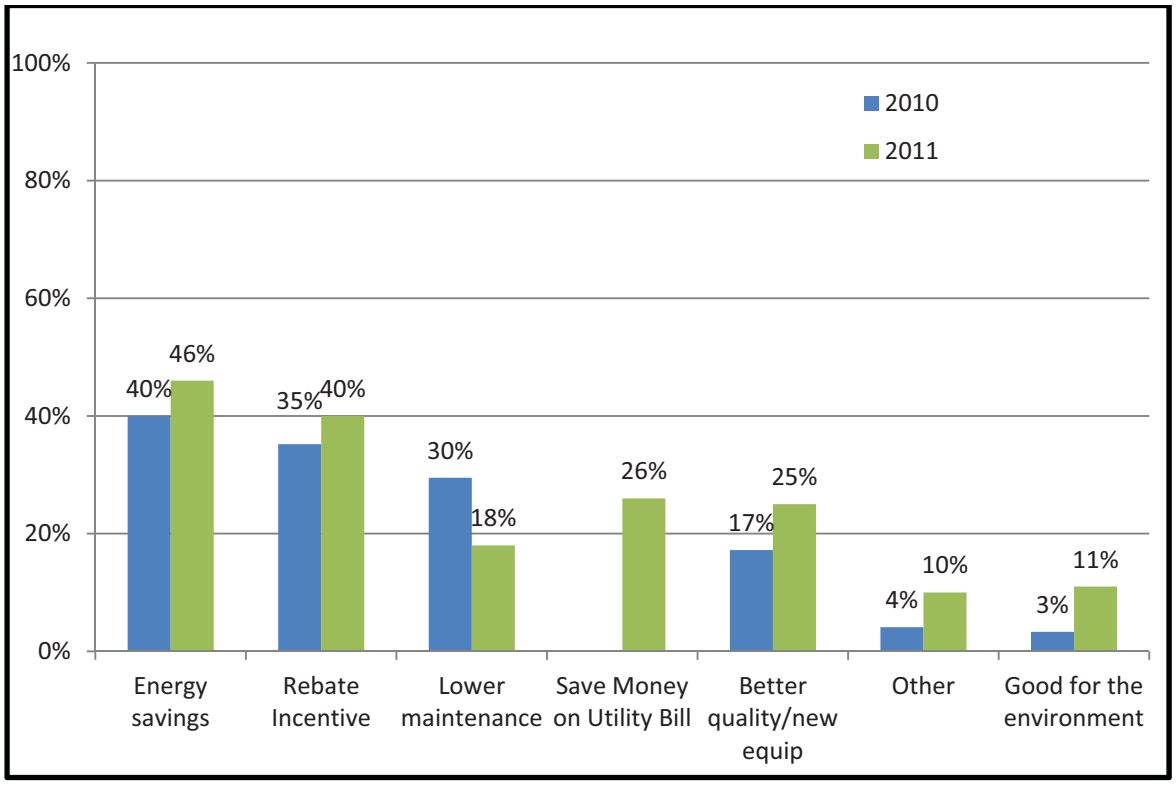
4.2.3 Customer Perspectives

Main benefits of the program

Prescriptive Program participants had financial considerations on top of their minds in both 2010 and 2011 as the main benefits of the program, as shown in Figure 4-1 below. For instance, in both years, major benefits included energy savings (40%, 46%) and the rebate incentive (35%, 40%). In 2011, survey respondents added saving money on the utility bill as another major program benefit (26%). Nonfinancial reasons included lower maintenance (30%, 18%), better quality equipment (17%, 25%) and benefits to the environment (3%, 11%).

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Figure 4-1. Participant Survey Response Comparison: Major Benefits of Program Participation



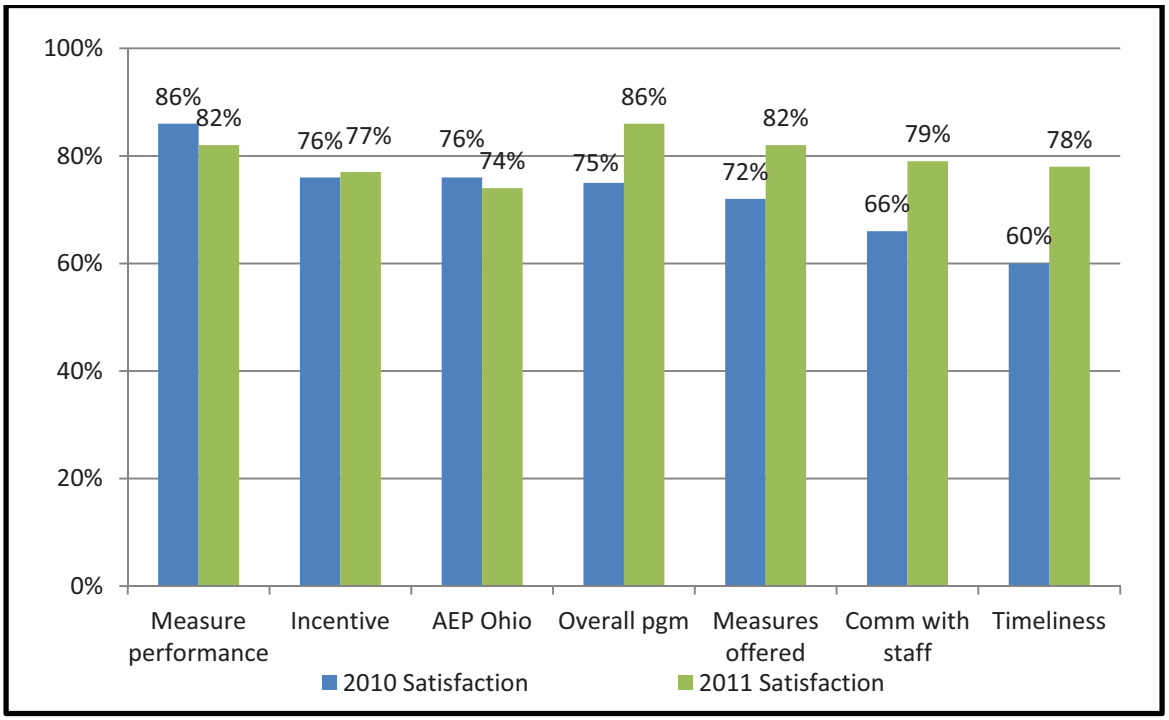
Source: PY 2010 Participant Survey. Multiple responses accepted; N=119. PY 2011 Participant Survey. Multiple responses accepted; N=113

Satisfaction with Other Program Attributes

Satisfaction with the performance of the measures, level of incentives, and with AEP Ohio remained consistent between 2010 and 2011 (Figure 4-2). Significant increases in levels of satisfaction were found for the overall program (75%, 86%), the measures offered (72%, 82%), communication with staff (66%, 79%), and timeliness of the incentive (60%, 78%). These results suggested that processes have become more efficient and routine during 2011 and should be commended.

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Figure 4-2. Participant Survey Response Comparison: Satisfaction with Program Attributes and AEP Ohio



Source: PY 2010 Participant Survey. N=119. PY 2011 Participant Survey. N=113

Customer Awareness of the Program and Application Process

Some customer survey respondents agreed that Solution Providers played a role in their program participation. Over 40 percent of survey respondents said they first heard about the program from a contractor or vendor in 2010 and 2011 and 15 percent heard about the program through word of mouth in both 2010 and 2011. In 2010, 13 percent heard about the program from an AEP Ohio representative or meeting, whereas in 2011 21 percent mentioned their representative or a meeting as a source of information.

Fewer program participants reported completing a pre-approval application in 2011 (79%) compared to 2010 (94%). Ninety percent of those completing the pre-approval application thought the materials explained the process clearly in both years.

In 2011, only 65 percent reported completing the final application themselves compared to over 75 percent of the survey respondents who reported completing the final application in 2010. On average, the final application took almost five weeks for approval in 2010, but only 3.8 weeks in 2011. Seventy two percent in 2010 and 84 percent in 2011 were satisfied with the length of time KEMA/AEP Ohio took to approve the final application.

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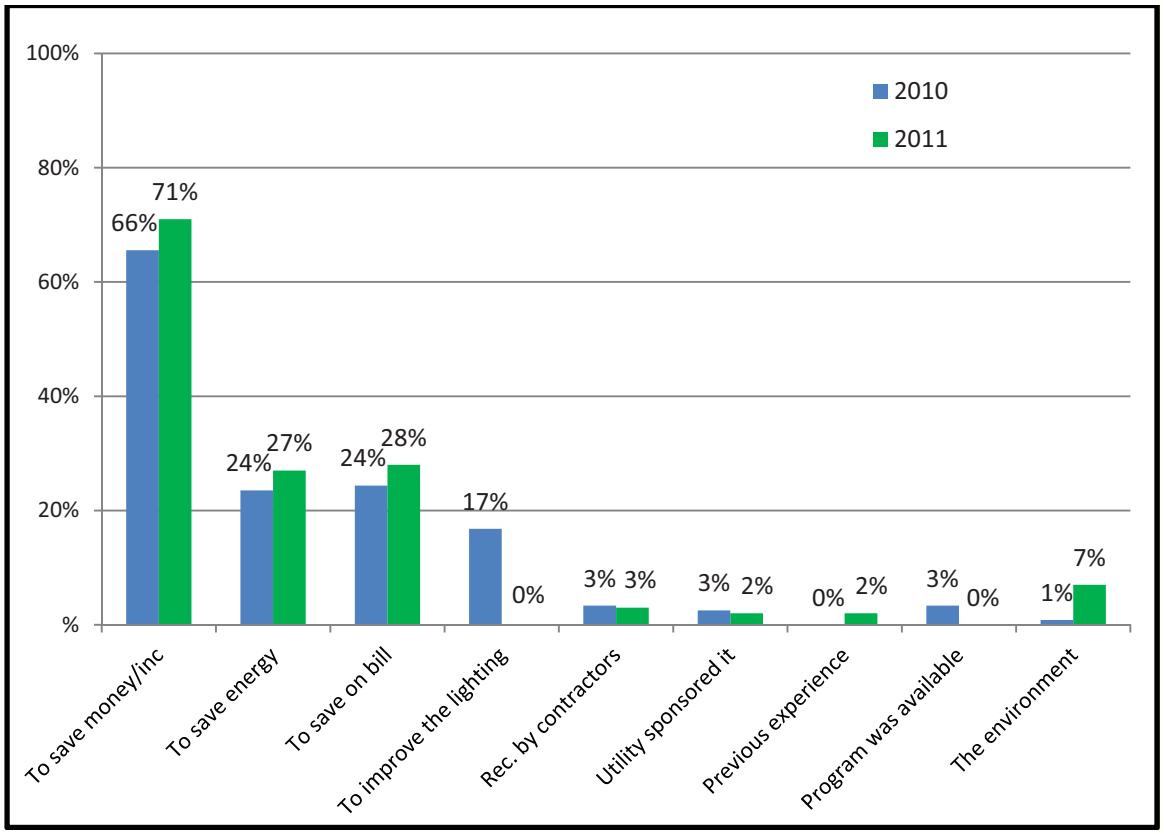
The application was most likely to be provided by the Solution Provider or trade ally (42%) or to be downloaded from the web site (45%). Almost 60 percent of the applications were completed by the respondent and over one-third (36%) were completed by the Solution Provider. Roughly 50 percent of the survey respondents who completed the application were very satisfied and another 39 percent were somewhat satisfied with the application.

About 35 percent of survey respondents reported their trade ally was affiliated with the AEP Ohio program as a Solution Provider. One hundred percent were highly satisfied (8, 9 or 10 on the satisfaction scale) with their Solution Provider's ability to meet their needs and complete the project. They would all recommend their Solution Provider to others.

As shown in Figure 4-3 below, the three major reasons for participating in the Prescriptive Program in both 2010 and 2011 were financial (including saving money or receiving the incentive) (66%, 71%), saving energy (24%, 27%), and saving on the bill (24%, 28%). In 2011 survey respondents were slightly more likely to mention the environment compared to 2010 (1%, 7%).

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Figure 4-3. Participant Survey Response Comparison: Major Reasons for Program Participation



Source: PY 2010 Participant Survey. Multiple responses accepted; N=119. PY 2011 Participant Survey. Multiple responses accepted; N=113

4.2.4 Program Adjustments and Enhancements

Solution Providers

Overall, Solution Providers found the program well-designed and well-run. However, Solution Providers would like to see some improvements in the Prescriptive Program:

- An expansion of the list of available prescriptive measures moves said measures from the custom calculation of savings to the more simplified prescriptive savings calculation and to the much simplified prescriptive application
- Improvements in the application spreadsheets, clearer identification of projects, and more attention paid by KEMA to directing their project questions to the right people in the company
- Would like a program with less paper – operated more like the Express program with simple data entry and calculations

- Eliminate the 'dead zone' in January. Many customers plan for their projects to begin in January and opportunities are missed if the program does not begin until February.

- Consider adjusting the incentives for 4-foot and 8-foot lamp and ballast combinations to better reflect the cost differences to the customer. One contractor suggested increased incentives for 8-foot lamp and ballast combinations as they are now incented at the same rate as 4-foot lamp and ballasts. The 8-foot lamps and ballasts are more expensive and should receive a higher incentive; this contractor suggested $10-$11 per lamp for the lamp and ballast combination rather than the current $7.00 per lamp.

- While discussing the Prescriptive Program, one Solution Provider said:

    - *"The turnaround on some prescriptive applications could be better. In 2012, KEMA wants projects to pre-apply before anything gets done, and then wait for the approval letter, and then do the work. This new step extends project implementation from 2 weeks to a month. We had a couple of customers reconsider during the timeframe. KEMA has not explained why they're changing the process. We are concerned that slowing things down is not the way to go."*

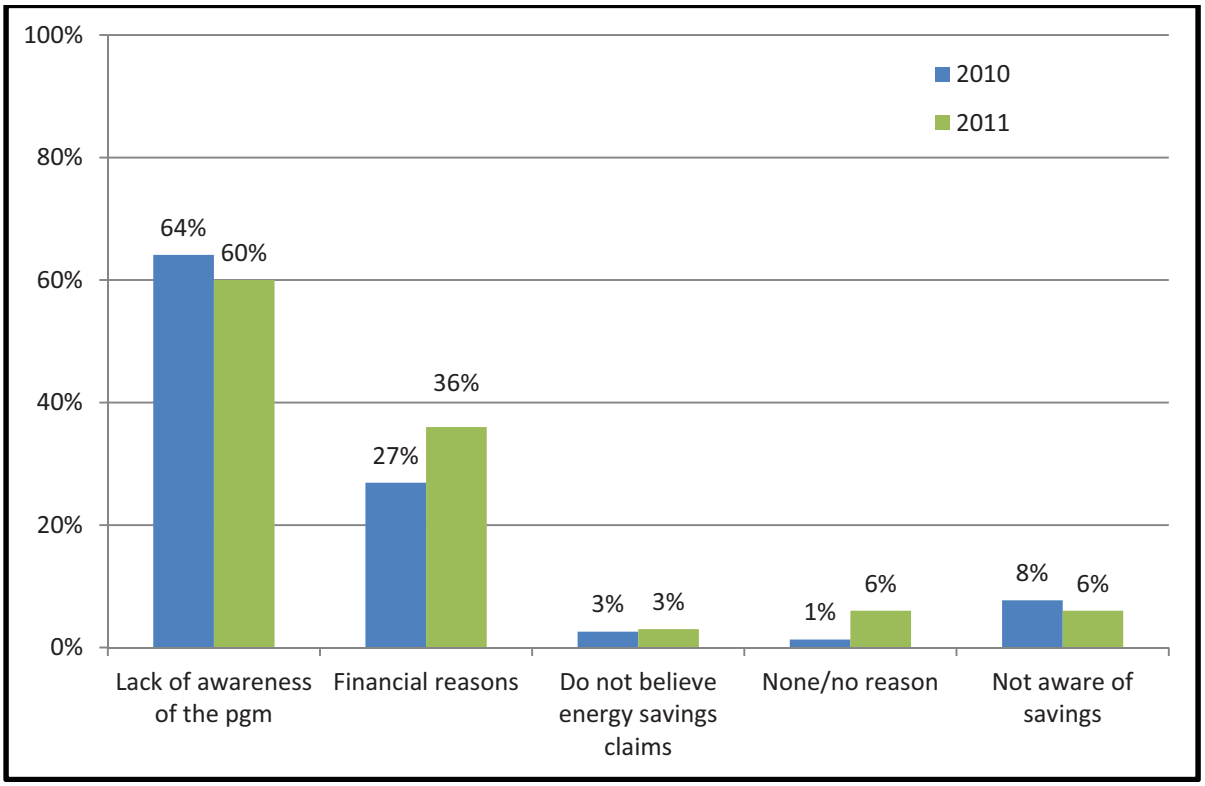
- Another suggestion came from a Solution Provider who implemented more complex projects. He requested that AEP Ohio and KEMA set application review time limits for complex projects by project type such as HVAC, lighting, building shell, etc. The program could outline what project reviews need to be done and how long each review will take. This allows the customer to set a timeline for their decisions. He thought this is really critical for more complex projects where coordination for the project alone is a big issue. The Solution Provider stated he would be happy to work with KEMA/AEP Ohio to develop the timelines he was proposing.

Program Participants

As presented in Figure 4-4 below, the reason most often mentioned by participating customers for not participating in the program was lack of awareness of the program by other customers. This was mentioned by 60 percent of the respondents in 2011 and 64 percent in 2010. The second most frequent response was financial reasons mentioned by 36 percent of the respondents in 2011 and 27 percent in 2010. Eighty-five percent of customers planned to participate in the program again.

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Figure 4-4. Participant Survey Response Comparison: Why companies like mine do not participate.

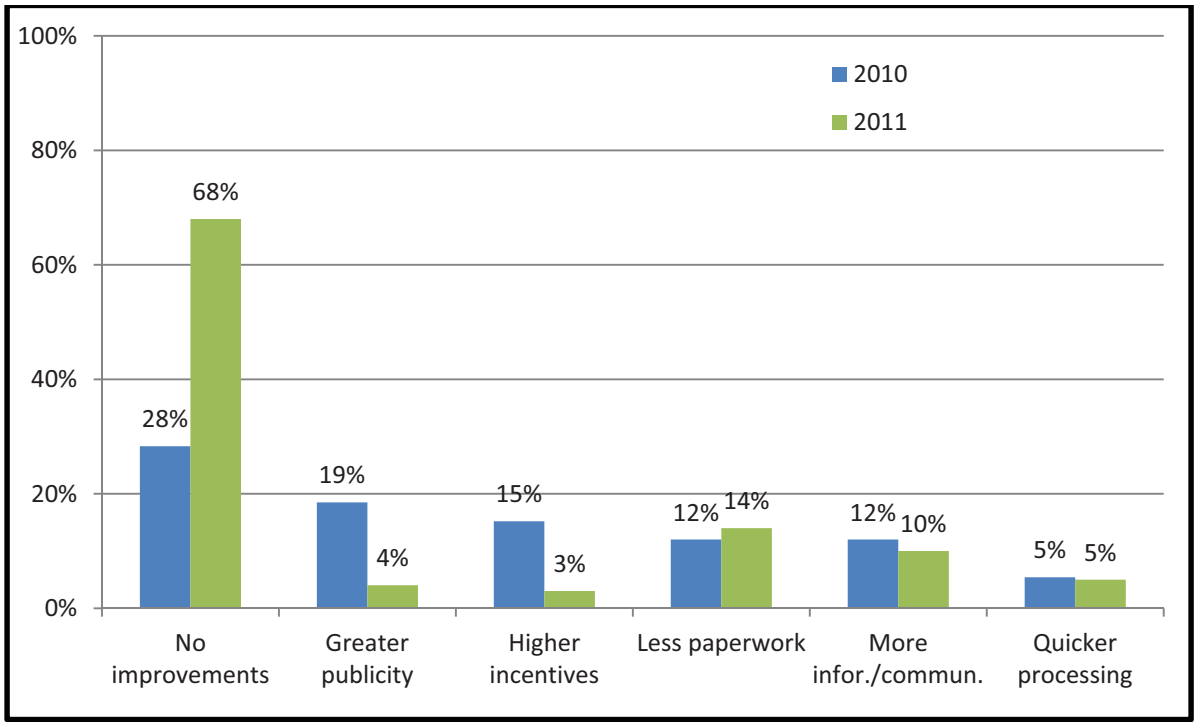


Source: PY 2010 Participant Survey. N=119. PY 2011 Participant Survey. N=113

Over 25 percent of 2010 customer survey respondents and over 65 percent in 2011 had no recommendations on how to improve the Prescriptive Program (Figure 4-5). Greater publicity and higher incentives were mentioned less often as a recommendation for improvement in 2011. Still somewhat at issue were recommendations for less paperwork, more information / communication and quicker processing.

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Figure 4-5. Participant Survey Response Comparison: Suggestions for Improving the Program



Source: PY 2010 Participant Survey. N=119. PY 2011 Participant Survey. N=113

4.3 Cost Effectiveness Review

This section addresses the cost effectiveness of the PY 2011 Prescriptive Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. Table 4-6 summarizes the unique inputs used in the TRC test.

Table 4-6. Inputs to Cost effectiveness Model for AEP Ohio Prescriptive Program

Component	PY 2011 Prescriptive Program Performance
Measure Life	11
Participants	1,523
Verified Annual Energy Savings (MWh)	131,914
Verified Coincident Peak Savings (MW)	28.069
Third Party Implementation Costs	2,984,455
Utility Administration Costs	180,877

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Component	PY 2011 Prescriptive Program Performance
Utility Incentive Costs	$10,542,190
Participant Contribution to Incremental Measure Costs	21,468,003

A clarification on participant counts is worth noting regarding Table 4-6. For tracking purposes, AEP Ohio designates participants at the project level either as Custom Program or Prescriptive Program participants, even though a small number of participants have both custom and prescriptive measures in their project. The impact evaluation was conducted at the measure-level, so all projects that had prescriptive measures were included in the Prescriptive Program evaluation. As shown in Table 2-3, there were 1,642 projects that have prescriptive measures in PY 2011. The cost effectiveness analysis is based on evaluation verified impacts. The data for "Participant Contribution to Incremental Measure Costs" were taken from the tracking system based on participant supplied project costs.

Based on these inputs, the TRC ratio is 3.9 and the program passes the TRC test for the program in its entirety. Table 4-7 summarizes the results of the cost effectiveness tests. Results are presented for the Total Resource Cost test, the Participant test, the Ratepayer Impact Measure test, and the Utility Cost test.

Table 4-7. Cost effectiveness Results for the Prescriptive Program

Test Type	PY 2011 Prescriptive Program Performance
Total Resource Cost	3.9
Participant Cost Test	5.5
Ratepayer Impact Measure	0.8
Utility Cost Test	7.0

At this time, additional benefits related to reduction of greenhouse gas emissions have not been quantified in the calculation of the TRC. These additional benefits would increase the given TRC benefit/cost ratio.

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Section 5. Evaluation Findings and Recommendations

5.1 Evaluation Findings

5.1.1 Program Impacts

1. The PY 2011 realization rate (defined as verified gross savings / ex-ante reported savings) is 1.03 for gross energy savings, and 1.06 for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Prescriptive Program projects in the sample is ± 5 percent for the energy realization rate and ± 5 percent for the demand realization rate.
2. Observations from the evaluator verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate.
3. Participation was highest within the Industrial and Manufacturing sector, which accounted for 36 percent of reported energy savings and 31 percent of the reported demand savings. Participation was also high among Large Retail and Service customers, accounting for 11 percent of reported energy savings and 12 percent of reported demand savings. Schools accounted for 14 percent of the project count and 8 percent of reported energy savings, and 10 percent of the reported demand savings.
4. Lighting dominated the overall program impacts with more than 85 percent of the ex-ante reported savings for both energy and demand. This is down from 2010, however, when lighting accounted for 99 percent of reported savings. The largest non-lighting end-uses were VFD's and HVAC.
5. Among lighting measures, the installation of new, interior T8 or T5 fixtures in place of older T12 or HID systems (those with a measure description of "Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast") once again dominated both energy and demand savings. Similar to 2010, this measure was primarily installed as high-bay fluorescent conversions in warehouses and industry[12]. Reduced wattage T8 lighting, de-lamping (aka "Interior Permanent Lamp Removal"), and interior occupancy sensors were also major measures. Among non-lighting measures, variable frequency drives on HVAC fans and pumps, as well as in non-HVAC applications, were prominent.
6. Occupancy sensors continue to be an area of difficulty. The evaluation team's review revealed that the values listed in the measure specific work papers as documented in

[12] Three-quarters of the reported energy savings for the measure "Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast" occurred in the Industrial and Warehouse sectors.

Appendix A of KEMA's Operations Manual appear to underestimate demand savings for occupancy sensors by an order of magnitude. Upon further investigation, it appears that the algorithm included an additional, unnecessary multiplication of the coincidence factor. As a result, Navigant's estimates of occupancy sensor demand savings were generally much higher than KEMA estimates. For some sites, this resulted in significant adjustments to the demand savings estimates.

7. In some cases, the algorithms and inputs used to calculate savings for a given project didn't match those from KEMA's work papers (Operations Manual Appendix A). For example, some workbooks assumed a "heavy industry" building type, which is not a DEER building type as specified by the work papers. In another example, some lighting measure savings were calculated per fixture, while others were calculated per lamp or per watt controlled (in the case of occupancy sensors). In most cases, the work papers define pre- and post-equipment at the fixture level.
8. Key documentation for payment verification (invoices and equipment specification sheets) was found to be complete and clearly labeled. Pre- and post-inspection documents were adequate and contained a satisfactory level of information. However, baseline fixtures were difficult to verify on-site since most customers do not keep the replaced fixtures. Pre-inspection are often helpful to determine baseline fixture quantity and type. On-site verification found instances of lighting equipment that was installed in an unconditioned space, although default savings included credit for an HVAC interaction factor.
9. KEMA assigns one business type per project even if a project consists of multiple space usage types (office, manufacturing, etc.). Business type assignment drives default hours of use, HVAC interaction factors, and coincidence factors. Using only one business type per project may lead to unreliable savings estimates.
10. Some customers other than warehouse, light industry, and heavy industry checked the "24/7" or "16/5" shift information box on the application form. Evaluation verification identified projects that had extended hours as indicated by the shift check box, but did not receive an adjustment of default hours to account for the extended hours.
11. In instances where billing analysis was used to calculate ex ante savings, some regression models included insignificant variables (p-value > 0.05) which could reduce the predictability of the model. For example, sales data was included while the coefficient was insignificant and negative implying that increases in sales per day would decrease energy consumption per day.
12. In some instances, the evaluation team found that information captured during the pre- and post-inspection visits by KEMA did not translate into appropriate adjustments to the default inputs in the ex-ante savings estimates.
13. KEMA indicated there are challenges in defining the baseline for variable speed drives and compressed air projects.

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5.1.2 Process Evaluation Findings

In this section, 2010 findings and recommendations are compared with the actions that were taken during 2011 or those that are planned for 2012.

1. Prescriptive Program participants continued to like the Prescriptive Program in 2011. About three fourths of participants were satisfied with the incentive and the program overall in both years.
2. A comparison of participant satisfaction with AEP Ohio between 2010 and 2011 showed no change in satisfaction with AEP Ohio compared to last year. However, it may be that participation in the Prescriptive Program is preventing lower satisfaction ratings that usually accompany rate increases.
3. In general, Solution Providers were very pleased with the program because it increased their business. When supporting a project, Solution Providers support their customers by completing all the applications, communicating with AEP Ohio or KEMA as necessary, and installing the equipment. Still, most Prescriptive Program participants reported completing the application themselves.
4. In 2010, customers suggested that AEP Ohio make use of electronic methods of filing the program application and receiving the program approvals. Email communications were preferred over regular mail. This change was implemented in 2011.
5. The Navigant team recognizes that AEP Ohio and KEMA made important changes during the 2011 program year to improve the program. The Prescriptive and Custom application form was simplified. Some repeat program participants recognized the changes and responded positively to them. Other improvements have been planned for 2012 including the implementation of an online application that offers the respondent program options based on their technology choice. Solution Providers would like to see a program with less "paper" – one operated more like the Express program with simple data entry and calculations.
6. Timeliness of application and incentive processing was an area of lower participant satisfaction relative to other program aspects and an area recommended for improvement in 2010. Key findings regarding timeliness are:
    - Customer satisfaction increased in the area of timeliness, overall program satisfaction, and communication with staff during 2011, as the program matured and as KEMA's staff became more experienced. KEMA hired additional staff to decrease processing time for the program applications and to develop the Solution Provider network.
    - Timeliness is especially important for large institutional clients who might have short budget deadlines.

- The dual application for the Custom and Prescriptive Programs was efficient for KEMA and AEP Ohio, but some customers and Solution Providers found it intimidating. AEP Ohio is developing an online application that will allow customers to access only those pages of the application that relate to their measure and program, whether Custom, Prescriptive or Self-Direct. This is especially good news for Prescriptive Program participants as many of them complete the application on their own and tend to be the smaller customers that are less likely to have engineering staff.

7. Solution Providers said that one of the barriers to program participation was lack of knowledge of the program on the part of customers.
8. The needs of the Solution Providers and AEP Ohio seemed to mesh in 2011. Solution Providers asked for more marketing support. AEP Ohio wanted to expand their marketing by targeting certain segments, such as companies with food services and schools. The case studies developed by AEP Ohio and KEMA were well-received by Solution Providers and customers alike.
9. AEP Ohio and KEMA continued to strive to improve communications both internally among the staff and externally with customers and program partners such as Solution Providers. One of the signs that they are 'getting the message out' to Solution Providers was the fact that almost 500 Solution Providers attended the 2012 program kick-off in late January, about double the number from 2011.
10. Comments from Solution Providers and customers suggested that lack of capital is a major reason customers are not able to proceed with a planned improvement project.
11. Navigant found that most Solution Providers participate in some combination of the various Business Programs and that they may not be able to differentiate between them. Rather than trying to find a sample of Solution Providers who participated in each program, we interviewed 19 Solutions Providers without controlling for program participation. This in-depth interview methodology provided useful information.

5.2 Recommendations

5.2.1 Impact Recommendations

1. KEMA should revisit and correct the algorithm for occupancy sensors so that they do not continue to under-estimate demand savings by an order of magnitude.
2. KEMA should consider revisiting their calculation worksheets to make sure that the assumptions used to determine ex-ante savings are consistent with those from their work papers (Operations Manual Appendix A).
3. Consider increasing the rigor of pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope

of the new installation, but also the existing baseline equipment configuration. Consider increasing efforts in pre-inspections especially for larger sites.

4. Consider adding a check box indicating if the space is conditioned or not, or removing the interaction factor based on post-inspection.
5. If multiple space types are involved in a project, breaking out project submittals to multiple space types could be implemented for larger projects by KEMA after the customer submits an application.
6. Consider requesting customers report operating hours which KEMA can use as a guideline to apply adjustments to projects where operating hours deviate from assumptions.
7. Consider implementing more rigorous quality control checks on regression models, including variable significance and whether or not variables are reasonable.
8. Consider using the pre- and post-inspection process to adjust inputs to the ex-ante savings calculations as much as possible.

5.2.2 Process Recommendations

1. Navigant recommends that AEP Ohio place a link to the Business Programs on the launch page of the AEP Ohio web site to funnel business customers to the appropriate business program information more effectively.
2. We recommend that AEP Ohio continue developing more case studies to attract additional customer segments.
3. KEMA should continue its work to improve on application and incentive processing.
    - A Solution Provider requested that AEP Ohio and KEMA set application review time limits for complex projects by project type such as HVAC, lighting, building shell, etc. The program could outline what project reviews need to be done and how long each review will take. This allows customers to set a timeline for their decisions. This is really critical, he thought, with more complex projects, where coordination for the project alone was a big issue.
4. Suggestions for further improvement in communications include:
    - Solution Providers recommend that the application number used by KEMA be made clearer to the customer and Solution Provider for easy reference and tracking.
    - Solution Providers also recommended that KEMA ensure the channel of communication between KEMA and each customer and Solution Provider is clear before questions arise.

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5. Program managers indicated that AEP Ohio has been negotiating with an organization that would provide financing for energy efficient projects to help overcome this participation barrier. Navigant suggests that AEP Ohio proceed with a financing option, if feasible.
6. AEP Ohio has considered a limited general advertising campaign to raise overall awareness of all Business Programs. The Navigant team agrees that a general business advertising campaign, or one as a "tag-along" to the residential advertising campaigns, would be an effective way to increase program awareness.
7. Consider adjusting the incentives for 4-foot and 8-foot lamp and ballast combinations to better reflect the cost differences to the customer. One contractor suggested increased incentives for 8-foot lamp and ballast combinations as they are now incented at the same rate as 4-foot lamp and ballasts. The 8-foot lamps and ballasts are more expensive and should receive a higher incentive; this contractor suggested $10-$11 per lamp for the lamp and ballast combination rather than the current $7.00 per lamp.
8. Program managers should consider ways to ensure that "radical" de-lamping does not occur without accounting for potential customer discomfort due to lower light levels. If a Solution Provider de-lamps without maintaining an appropriate minimum light level, customers may complain about the quality of light which may in turn reflect badly on the program.
9. We recommend KEMA continue expanding the list of prescriptive measure options to increase customer participation in the simpler Prescriptive Program.

NAVIGANT

Section 6. Appendices

6.1 Participant Telephone Survey

The following survey instrument was used to conduct the participant phone interviews.

2011 AEP OHIO BUSINESS PROGRAMS – PRESCRIPTIVE PROGRAM PARTICIPANT SURVEY

Introduction

NOTE: EVERYONE IN THIS WAVE WILL HAVE A NAME.
NOTE: Choose the largest (by savings) non lighting or lighting project for the survey.

Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. This is not a sales call. May I please speak with <**ApplicationContactName**>?

Our records show that <**OrganizationName** > purchased energy efficient <MeasureCategory>, which was installed prior to <**PaymentRequestDate**> and received an incentive of <**TotalIncentiveFinal**> from AEP Ohio. We are calling to do a follow-up study about <**OrganizationName**>'s participation in this program, which is called the "AEP Ohio gridSMART Business Prescriptive Program" (Prescriptive Program). I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. I would like to speak with the person most knowledgeable about recent changes in <MeasureCategory> equipment for your firm at this location.

[IF NEEDED] Our records show that <**OrganizationName** > purchased energy efficient <MeasureCategory>, which was installed prior to <**PaymentRequestDate**> and received an incentive of <**TotalIncentiveFinal**> from AEP Ohio. We are calling to do a follow-up study about <**OrganizationName**>'s participation in this program, which is called "AEP Ohio gridSMART Business Prescriptive Program" (Prescriptive Program). I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

NAVIGANT

SCREENING QUESTIONS

A1. Just to confirm, in 2011 did <**OrganizationName** > participate in AEP Ohio gridSMART Business Prescriptive Program at <**SERVICEADDRESS**>? (IF NEEDED: This is a program where your business received an incentive for installing one or more energy-efficient <MeasureCategory> products. You may have participated in the program with projects at more than one site. We are discussing only the facility at < **SERVICEADDRESS**>)

READ CODES 1-3

1 Yes, participated as described
2 Yes, participated but at another location
3 No, did not participate in program
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[SKIP A2 IF A1=1, 2]

A2. Is it possible that someone else dealt with the energy-efficient <MeasureCategory> installation?

DO NOT READ LIST

1 YES, SOMEONE ELSE DEALT WITH IT
2 NO
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[IF A2=1, ASK TO BE TRANSFERRED TO THAT PERSON. IF NOT AVAILABLE, THANK AND TERMINATE. IF AVAILABLE, GO BACK TO A1]

[IF A1=2, 3, 97, 98, 99: THANK AND TERMINATE AND RECORD DISPO AS "COULD NOT CONFIRM PARTICIPATION".]

Before we begin, I want to emphasize that this survey will only be about the energy efficient <MeasureCategory> you installed and received an incentive for through the AEP Ohio gridSMART Business Prescriptive Program at <SERVICEADDRESS> in 2011. This is specifically about the Prescriptive measures you installed and received an incentive for through the program.

NAVIGANT

APPLICATION AND PROGRAM Awareness

S0 How did you first hear about the Prescriptive Program?

1. AEP Ohio Account Manager (email, phone call or visit?)
2. AEP Ohio Website
3. Workshop/Green Ribbon Kickoff event
4. Contractor/Trade Ally
5. Email from AEP Ohio
6. Friend/colleague/word of mouth
7. Bill Insert
8. Webinar
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor –
12. BLANK
13. BLANK
14. Supplier –
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK

00. Other, specify
98. Don't know
99. Refused

E1 Where did you get your rebate application?

[USE LIST AS PROMPT AS NECESSARY. RECORD ONE RESPONSE.]

1. Contractor or Equipment Vendor
2. Website/on-line
3. Utility staff (e.g., account manager, program manager, customer phone line)
4. Program staff (e.g., hired program implementer?)
5. Consulting Engineer, Architect or Energy Consultant
6. Other [specify]

88. Refused
99 Don't know

E2 Who was most responsible for completing the rebate application? Was this you, someone else in your organization, a contractor or vendor, someone from the utility or working for the program, or someone else?

[READ LIST; RECORD ONE RESPONSE]

NAVIGANT

1	You	**Go to E3**
2	Someone else in your organization	**Go to first Measure Module**
3	Contractor/vendor/other trade ally	**Go to S4b**
4	Utility staff	**Go to first Measure Module**
5	Program staff	**Go to first Measure Module**
6	Other [RECORD]	**Go to first Measure Module**
88	Refused	**Go to first Measure Module**
99	Don't know	**Go to first Measure Module**

Customer Completed Application

E3 Now thinking about how easy or hard it was to complete the application, how satisfied were you with the ease of filling out the application? Would you say you were: Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	Go to first Measure Module
2	Somewhat satisfied	Go to first Measure Module
3	Neither satisfied nor dissatisfied	**Continue**
4	Somewhat dissatisfied	**Continue**
5	Very dissatisfied	**Continue**
88	Refused	Go to first Measure Module
99	Don't know	Go to first Measure Module

E4 What would have made you more satisfied?
RECORD VERBATIM

NAVIGANT

Contractor Completed Application

S4b Was the contractor who completed the application affiliated with the AEP Ohio gridSMART Prescriptive Program? (IF NEEDED: Was the contractor REGISTERED with AEP Ohio?)

1 Yes
2 No
8 Don't know
9 Refused

[ASK S5 IF S4a=1 ELSE SKIP TO PL1]

S5 How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"? [SCALE 0-10; 98=Don't know, 99=Refused]

S6a Would you recommend the contractor you worked with to others?

1 Yes
2 No
8 Don't know
9 Refused

[ASK S6b IF S6a=2]

S6b Why not?

1. They do poor quality work
2. They left a mess
3. They wouldn't answer my phone calls
00. Other, specify
98. Don't know
99. Refused

Measure Modules

Our next questions are about some of the energy efficient prescriptive measures you installed through the AEP Ohio gridSMART Business Prescriptive Program at <**SERVICEADDRESS**>.

LIGHTING MODULE

[START OF LIGHTING MEASURE LOOP; ASK IF LIGHTING =1; REPEAT FOR UP TO 3 LIGHTING SUBMEASURE CATEGORIES; ELSE GO TO NEXT MEASURE MODULE]

NAVIGANT

PL1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. (Me/respondent)
2. (Contractor)
3. (Engineer)
4. (Architect)
5. (Manufacturer)
6. (Distributor)
7. (AEP/Ohio Account Manager)
8. (Owner)
10. (Program staff implementer?)
11. (Other AEP Ohio representative)
00. (Other, specify)
98. (Don't know)
99. (Refused)

PL2 And who informed you about the availability of an incentive through the AEP Ohio gridSMART Business Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

NAVIGANT

L1 After you installed the energy efficient <MeasureCategory>, did you install additional lighting fixtures of the same type to increase the lighting level in the space? More fixtures than before?

DO NOT READ LIST

1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK L2 IF L1=1, OTHERWISE SKIP]

L2 How many of these new fixtures did you install?

[NUMERIC OPEN END, 1 TO 3000; 9998=DON'T KNOW, 9999=REFUSED]

LAMPS INTO STORAGE

[ASK IF MEASURE1 = CFL, ELSE SKIP TO INSTRUCTIONS BEFORE L7]

[IF <MEASURESUBCATEGORY> = 'Screw in Compact Fluorescent Lamps' or 'Hardwired Compact Fluorescent Fixtures' or 'Interior Lighting / Hardwired Compact Fluorescent Fixtures'.]

L4 What percentage of the CFLs for which you received an incentive was placed in storage?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

L5 What percentage was installed at another facility?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

L6 And what percentage of the CFLs have been replaced because of bulb burn out?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

REMOVED EQUIPMENT

[IF <MEASURESUBCATEGORY> = "LIGHTING OCCUPANCY SENSOR", SKIP TO OS1]
[IF <MEASURESUBCATEGORY> = 'LED Exit Signs Electronic Fixtures (Retrofit Only)', SKIP TO EX1]

I'd like to ask you a few questions about the equipment that was removed when you installed the energy efficiency <MEASURECATEGORY>…

L7 What type of lighting was removed when you installed the energy efficient equipment?

[READ LIST]
[MULTIPLE RESPONSE, UP TO 3]

1 Linear fluorescent lights
2 High-Intensity Discharge (HID) Fixtures / Metal Halide

NAVIGANT

3 Compact fluorescent lights
4 Incandescent bulbs
5 Halogen lights
6 Did not replace anything - new equipment
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[ASK L7a IF L7=1]
L7aWhat type of linear fluorescent lights were removed?
[READ LIST]
MULTIPLE RESPONSE, UP TO 3]
1 High performance T8 (1" diameter bulbs)
2 T8 fluorescent fixtures (1" diameter bulbs)
3 T10 fluorescent fixtures
4 T12 Fixtures (1.5" diameter bulbs)
5 T5 Fixtures (5/8" diameter)
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[ASK L7B IF L7A=3, 4]
L7b What types of ballasts were used on the linear fluorescent fixtures you removed?
READ LIST, MULTIPLE RESPONSE
1 Electronic Ballast
2 Magnetic Ballast
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

L9 Was the new lighting equipment installed in an air conditioned (cooled) space?
SINGLE PUNCH
1 YES
2 NO
3 SOME OF THE LIGHTING EQUIPMENT WAS AND SOME WASN'T
8 DON'T KNOW
9 REFUSED

NAVIGANT

HOURS OF USE – LIGHTING

Now we'd like to talk about the hours that your interior lighting equipment is in operation.

LH1a Are you typically open every day, Monday through Friday?
SINGLE PUNCH
1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK LH1b IF LH1a=2]
LH1b How many days typically are you CLOSED Monday through Friday?
SINGLE PUNCH
1 ONE
2 TWO
3 THREE
4 FOUR
5 FIVE
8 DON'T KNOW
9 REFUSED

[IF LH1b=5, SKIP TO LH4]
LH2 At what time do your indoor lights currently turn on during weekdays (Monday - Friday)? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON; NOON IS 1200 PM)
LH2A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH2B 1. AM
2. PM

[SKIP LH3 IF LH2=24hr or never]
LH3 At what time do your indoor lights currently turn off during weekdays (Monday - Friday)? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH3A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH3B 1. AM
2. PM

NAVIGANT

LH4 Does the lighting equipment operate on a different schedule on weekends (Saturday and Sunday)?

SINGLE PUNCH

1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK IF LH4=1, ELSE SKIP TO LH9]

LH5 On Saturdays, at what time does the indoor lighting equipment turn on? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH5A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH5B 1. AM
2. PM

[SKIP LH6 IF LH5=24hr or never]

LH6 And when does the indoor lighting equipment turn off on Saturdays? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH6A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH6B 1. AM
2. PM

LH7 And on Sundays, at what time does the indoor lighting equipment turn on? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH7A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH7B 1. AM
2. PM

[SKIP LH8 IF LH7=24hr or never]

LH8 And when does the indoor lighting equipment turn off on Sundays? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH8A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH8B 1. AM
2. PM

NAVIGANT

LH9a During hours when your business is OPEN, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH9b IF LH1a=1 AND LH2a = 2400 AND LH4 = 2]
LH9b During hours when your business is CLOSED, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

LH10a Are there any months during the year when the operating schedule for the lighting equipment differs significantly from what you just described?
SINGLE RESPONSE
1 YES
2 NO
8 (DON'T KNOW)
9 (REFUSED)

[ASK LH10b IF LH10a=1; ELSE SKIP TO INSTRUCTIONS AT END OF LIGHTING MEASURE LOOP]
LH10b How many hours per day does the indoor lighting equipment typically operate during the periods with different operating schedules?
[NUMERIC OPEN END, 0 TO 24; 98=DON'T KNOW, 99=REFUSED]

LH10c And how many days per week?
[NUMERIC OPEN END, 0 TO 7; 8=DON'T KNOW, 9=REFUSED]

LH10d How many months per year does the equipment run on the alternative schedule?
[NUMERIC OPEN END, 0 TO 12; 98=DON'T KNOW, 99=REFUSED]

LH10e During hours when your business is OPEN, on the alternative schedule, approximately what percentage of the indoor lighting is kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH10f IF LH10b = 24]
LH10f During hours when your business is CLOSED on the alternative schedule, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

[END OF LIGHTING MEASURE LOOP; REPEAT FOR NEXT LIGHTING SUBMEASURECATEGORY UP TO 3 TIMES; ELSE GO TO INSTRUCTIONS FOR OCCUPANCY SENSORS LOOP]

NAVIGANT

OCCUPANCY SENSORS

[ASK IF <MEASURESUBCATEGORY> = 'LIGHTING OCCUPANCY SENSORS', ELSE GO TO INSTRUCTIONS FOR EXIT SIGN MEASURE LOOP]

OS0 Roughly what percentage of your lights were controlled by occupancy sensors before you participated in the program?
[NUMERIC OPEN END; 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

OS1 Roughly what percentage of your lights have occupancy controls on them now?
[NUMERIC OPEN END; 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

EXIT SIGNS

[ASK IF <MEASURESUBCATEGORY > = 'LED, T-1, or Electroluminescent Exit Signs OR LED Exit Signs'; ELSE GO TO end of Lighting Module] (NOTE MUST BE CHECKED FOR EACH LIGHTING PROJECT)

EX1 What type of exit signs were removed? (READ LIST) [MULTIPLE RESPONSE, UP TO 3]

1 Incandescent exit signs
2 Compact fluorescent exit signs
3 LED exit signs
4 None – exit signs added
97 Other, specify
98 Don't know
99 Refused

[END OF LIGHTING MODULE; GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

HVAC MODULE

[ASK IF COOLING=1; ELSE GO TO NEXT MEASURE MODULE]

PC1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor

NAVIGANT

7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PC2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

HVAC MEASURE LOOP

[START OF HVAC MEASURE LOOP]

[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]
[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <MEASD1> you installed through the Prescriptive Program.

C0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.; DK, REF]
b Year [Precodes for 2009, 2010, and 2011; DK, REF]

REMOVED EQUIPMENT

C1 What type of HVAC equipment was REMOVED when you installed <MEASD1> through the Prescriptive Program? (DO NOT READ LIST)

1 Split system air conditioners (two components: compressor is separate from the supply air fan)

NAVIGANT

2 Packaged air conditioning systems (one component, for example rooftop units or unitary equipment)
3 Package Terminal A/C (e.g., Hotel/Motel units)
4 Window/Wall Air-Conditioning Units
5 Remote Condensing Unit
6 Evaporative coolers/swamp coolers
7 Water Chillers
8 Evaporative Condenser
9 Adjustable Speed Drives
10 Throttling Devices for HVAC fans or pumps (e.g. inlet vanes, bypass dampers, throttling valves)
11 Heat Pump Units
00 Other, specify
96 NOTHING, EQUIPMENT ADDED NOT REPLACED
98 Don't know
99 Refused

[SKIP C2 AND C3 IF C1=96, 98, 99]
C2 How would you describe the condition of the equipment that was removed? Was it…

1 Inoperable/broken
2 Poor condition
3 Fair condition
4 Good condition
8 Don't know
9 Refused

C3 How old was the equipment that was removed? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[END OF HVAC MEASURE LOOP; GO TO NEXT COOLING MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

REFRIGERATION MODULE

[ASK IF REFRIG=1; ELSE GO TO NEXT MEASURE MODULE]

NAVIGANT

PR1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PR2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

REFRIGERATION MEASURE LOOP

[START OF REFRIGERATION MEASURE LOOP]
[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]
[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <MEASD1> installed through the Prescriptive Program.
R0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009 and 2010]

NAVIGANT

REMOVED EQUIPMENT

R1 What type of refrigeration equipment was removed when you installed the <MEASD1> through the Prescriptive Program?

1 Old Strip curtains
2 Older Anti-sweat heat controllers
3 Standard efficiency evaporator fan motors
4 Older ice maker
5 Older controls
6 Same Equipment, just older?
00 Other, specify
96 NONE - Not a replacement
98 Don't know
99 Refused

R3 Approximately how old was the refrigeration equipment that was replaced by the new refrigeration equipment? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[ASK R4a and R4b IF MEASD1="Anti-Sweat Heater Controls"]

R4a Thinking about the previous system you had in place to reduce condensation on your refrigeration doors, was it on all the time or did you control the number of hours that it operated?

1 On all the time
2 Controlled the hours of operation
00 (Other, specify)
96 (Didn't have a previous system)
98 Don't Know
99 Refused

[ASK R4b IF R4a=2]

R4b How many hours per day was the previous system on? [NUMERIC OPEN END, 0 TO 24; 98=Don't know, 99=Refused]

[END OF REFRIGERATION MEASURE LOOP; GO TO NEXT REFRIGERATION MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

NAVIGANT

VARIABLE FREQUENCY DRIVE MODULE

[ASK IF VFSDS=1; ELSE GO TO NEXT MEASURE MODULE]

PV1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PV2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

VARIABLE SPEED DRIVES MEASURE LOOP

[START OF VARIABLE SPEED DRIVES MEASURE LOOP]
The following questions are about the <MEASD1> you installed through AEP Ohio's gridSMART Business Prescriptive Program.

NAVIGANT

V0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)
- a Month [Precodes for Jan through Dec.]
- b Year [Precodes for 2009 and 2010]

V1 Are the variable speed drives used to... (READ LIST) Accept multiples?

1	Drive a newly installed piece of equipment
2	Replace failed equipment
3	Retrofit application to existing and functioning equipment
4	Serve as a spare
00	Or for some other reason (Specify)
98	(Don't Know)
99	(Refused)

VS1 Were (any of ?) the VSDs installed as part of an HVAC system?

1	YES
2	NO
98	DON'T KNOW
99	REFUSED

[ASK VS1_2A IF VS1 = YES]

VS1_2A Was the existing HVAC system a constant volume system or a variable volume system?

1	Constant Volume
2	Variable Volume
98	DON'T KNOW
99	REFUSED

[ASK VS1_2B IF VS1_2A = 2]

VS1_2B What type of controls were used on the existing variable volume HVAC system prior to installation of the new VSDs?

1	Older VSD
2	Variable Inlet Guide Vanes
3	Vortex Dampers
4	Variable Pitch Axial Fan Blades
5	Bypass Dampers
6	Throttling Valves
00	Another type of controls (Specify)
98	DON'T KNOW
99	REFUSED

NAVIGANT

REPLACED EQUIPMENT

[ASK IF V1=2, 3; ELSE SKIP TO V2a]
I'd like to ask you a few questions about the equipment that was removed when you installed the new <MEASD1>.

V3c How would you describe the condition of the equipment that was removed or retrofit when you installed the new <MEASD1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 (Don't Know)
9 (Refused)

V3d How old was the equipment that was removed or retrofit? Would you say that most of it was…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 (Don't Know)
9 (Refused)

V2a In the past month, how many hours per day did this equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

V2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 (Don't know)
9 (Refused)

[ASK V2d-f IF V2c=1]
V2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

NAVIGANT

V2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

[END OF VARIABLE SPEED DRIVE MEASURE LOOP; GO TO NEXT VARIABLE SPEED DRIVE MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

MOTORS MODULE

[ASK IF MOTORS=1; ELSE GO TO NEXT MEASURE MODULE]

PM1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PM2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify

NAVIGANT

98. Don't know
99. Refused

MOTORS MEASURE LOOP

[START OF MOTORS MEASURE LOOP]

The following questions are about the <MEASD1> you installed through AEP Ohio's gridSMART Business Prescriptive Program.

M0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)
- a Month [Precodes for Jan through Dec.]
- b Year [Precodes for 2009 and 2010]

M1 Are the new motors used to... (READ LIST) accept multiples….

1 Drive a newly installed piece of equipment
2 Replace a failed motor
3 Replace a functioning motor
4 Serve as a spare
00 Or for some other reason (Specify)
98 (Don't Know)
99 (Refused)

[IF M1 = 2 OR 3, ASK M1A, ELSE GO TO M1B]

M1a Are the replaced motors controlled by a variable frequency drive (VFD)?

1 Yes
2 No
8 (Don't know)
9 (Refused)

M1b Are the new motors controlled by a variable frequency drive (VFD) – either new or existing?

1 Yes
2 Some are controlled and some are not
3 No
8 (Don't know)
9 (Refused)

M2a In the past month, how many hours per day did this new equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

NAVIGANT

M2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

M2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 (Don't know)
9 (Refused)

[ASK M2d-f IF M2c=1]

M2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

M2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

REPLACED EQUIPMENT

[ASK IF M1=2, 3; ELSE SKIP TO END OF MOTOR MEASURE LOOP]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <MEASD1>.

M3a Were the motors you removed…
(IF NEEDED: ""In this survey we use the term "NEMA Premium motors" to refer to very high efficiency motors that meet specific performance criteria developed by the National Electrical Manufacturers Association. We use the term "EPAct Motors" to refer to motors that meet current federal minimum efficiency standards contained in the Energy Policy Act; new motors installed in Ohio after 1997 must be, at a minimum, EPAct motors. Finally, we use the term "Standard Efficiency Motors" to refer to typically older motors that do not meet the current Federal standards.)

1 NEMA Premium motors
2 EPAct motors
3 standard efficiency motors
8 Don't Know
9 Refused

NAVIGANT

M2d How many hours per day did the replaced equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M3b Had the motors you removed been rewound?

1 Yes
2 No
8 Don't Know
9 Refused

M3c How would you describe the condition of the motors that were removed when you installed the new <MEASD1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 Don't Know
9 Refused

M3d How old were the motors that were removed? Would you say that most of them were…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't Know
9 Refused

[END OF MOTOR MEASURE LOOP; GO TO NEXT MOTOR MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

[END OF MEASURE MODULES; GO TO NET-TO-GROSS MODULE]

NET-TO-GROSS MODULE

VARIABLES FOR THE NET-TO-GROSS MODULE:
BASIC RIGOR LEVEL IS ASSUMED FOR ALL PROJECTS.

<ACCT_REP> NAME OF AEP OHIO ACCOUNT MANAGER, FROM PROGRAM TRACKING DATABASE OR PROGRAM FILES IF PRESENT)
<OTHERPTS> (VARIABLE TO BE CALCULATED BASED ON RESPONSES. EQUALS 1-MINUS RESPONSE TO N3P.)

NAVIGANT

<MSAME> (FOR PRESCRIPTIVE/STANDARD SURVEY ONLY: EQUALS 1 IF SAME CUSTOMER HAD MORE THAN ONE PROJECT OF THE SAME MEASURE TYPE; FROM PROGRAM TRACKING DATABASE)
<NSAME> (FOR PRESCRIPTIVE/STANDARD SURVEY ONLY: NUMBER OF ADDITIONAL PROJECTS OF THE SAME MEASURE TYPE IMPLEMENTED BY THE SAME CUSTOMER; FROM PROGRAM TRACKING DATABASE)
Nsame = Count number of projects under <MeasureCategory1, 2, 3> and subtract 1.

AEP ACCOUNT REP **INFORMATION**

I would like to get some information on the role your AEP account representative may have played with the implementation of this project.

V4 Did your AEP Ohio account manager assist you with the project that you implemented through Prescriptive program?
DO NOT READ LIST, SINGLE PUNCH, PROBE IF NECESSARY
IF NO, PROBE "Is that because you don't have an AEP Ohio account manager, or do you have one, but they weren't involved?"
1 YES
2 NO, DON'T HAVE AN AEP OHIO ACCOUNT MANAGER
3 NO, HAVE AN AEP OHIO ACCOUNT MANAGER BUT THEY WEREN'T INVOLVED
8 DON'T KNOW
9 REFUSED

NET-TO-GROSS BATTERY

[ONE LOOP BASED ON LARGEST MEASURE CATEGORY]

My next set of questions is about the energy efficiency <MeasureCategory> you installed through the program at [SERVICEADDRESS].

N1 When did you first learn about the Prescriptive Program? Was it BEFORE or AFTER you first began to THINK about implementing the energy efficient <MeasureCategory>? (NOTE TO INTERVIEWER: "this measure" refers to the specific energy efficient equipment installed through the program.)
DO NOT READ LIST, SINGLE PUNCH
1 BEFORE
2 AFTER
8 DON'T KNOW
9 REFUSED

[ASK N2 IF N1=2, 8, 9]

NAVIGANT

N2 Did you learn about the Program BEFORE or AFTER you DECIDED to implement the energy efficient <MEASURECategory> equipment that was installed? (NOTE TO INTERVIEWER: "the energy efficient equipment" refers to the specific energy efficient equipment installed through the program.)
DO NOT READ LIST, SINGLE PUNCH
1 BEFORE
2 AFTER
8 DON'T KNOW
9 REFUSED

N3 Next, I'm going to ask you to rate the importance of the Prescriptive Program as well as other factors that might have influenced your decision to implement the energy efficient <MeasureCategory>. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following in your decision to implement the measure at this time.

[FOR N3A-N, RECORD 0 TO 10; 96=NOT APPLICABLE; 98=DON'T KNOW; 99=REFUSED]
(If needed: How important in your DECISION to implement the project was…)

N3a. The age or condition of the old equipment

N3b. Availability of the Prescriptive Program incentive

[ASK IF <TECH_ASSIST>=1, ELSE SKIP TO N3d]
N3c. Information provided through the technical assistance you received from AEP Ohio staff

N3d. Recommendation from a vendor or contractor that helped you with the choice of the equipment

N3e. Previous experience with the energy efficient <Measure Category>

N3f. Recommendation from an AEP Ohio program staff person

N3h. Information from the Prescriptive Program or AEP Ohio marketing materials

N3j. Standard practice in your business/industry

[SKIP N3k IF V4>1]
N3k. Endorsement or recommendation by an account manager of AEP Ohio

N3l. Corporate policy or guidelines

N3m. Payback on the investment

N3n. Were there any other factors we haven't discussed that were influential in your decision to install this energy efficient <MeasureCategory>?
DO NOT READ LIST, SINGLE PUNCH
97 [RECORD VERBATIM]
96 NOTHING ELSE INFLUENTIAL
98 DON'T KNOW
99 REFUSED

[ASK N3nn IF N3n=97]
N3nn. Using the same zero to 10 scale, how would you rate the influence of this factor? [RECORD 0 TO 10; 98=DON'T KNOW; 99=REFUSED]
SHOW CHECK BOXES 0,1,2,3,4,5,6,7,8,9,10
SINGLE PUNCH

Thinking about this differently, I would like you to compare the importance of the Prescriptive Program with the importance of other factors in implementing the energy efficient <MeasureCategory> project.

[READ IF (N3A, N3D, N3E, N3I, N3J, N3L, N3M, OR N3NN)=8,9,10; ELSE SKIP TO N3p]
You just told me that the following other factors were important:
[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 OR HIGHER]
(N3A) Age or condition of old equipment,
(N3D) Equipment Vendor recommendation
(N3E) Previous experience with this measure
(N3I) Recommendation from a design or consulting engineer
(N3J) Standard practice in your business/industry
(N3L) Corporate policy or guidelines
(N3M) Payback on investment
(N3NN) Other factor

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <MEASURECATEGORY> project, and you had to divide those 100 points between: 1) the program and 2) these other factors, taken together as whole, how many points would you give to the importance of the Prescriptive Program?
POINTS GIVEN TO PROGRAM: [RECORD 0 TO 100; 998=DON'T KNOW; 999=REFUSED]

NAVIGANT

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE; IF N3p=998, 999, SET OTHERPTS=BLANK]

N3o And how many points would you give to other factors? [RECORD 0 TO 100; 998=DON'T KNOW; 999=REFUSED] [THE RESPONSE SHOULD BE <OTHERPTS> BECAUSE BOTH NUMBERS SHOULD EQUAL 100. IF RESPONSE IS NOT <OTHERPTS> ASK INC1]

INC1 The last question asked you to divide a TOTAL of 100 points between the Prescriptive Program and other factors. You just noted that you would give <N3P RESPONSE> points to the program. Does that mean you would give <OTHERPTS> points to other factors?

DO NOT READ LIST, SINGLE PUNCH

1 YES
2 NO
98 Don't Know
99 Refused

[IF INC1=2, GO BACK TO N3P]

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the utility program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the incentive from the Prescriptive Program had not been available, what is the likelihood that you would have installed exactly the same equipment? [RECORD 0 TO 10; 98=DON'T KNOW; 99=REFUSED]

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=08, 09, 10 AND N5=08, 09, 10]

N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to install. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the incentive played in your decision to install this efficient equipment?
[RECORD VERBATIM]
98 DON'T KNOW

NAVIGANT

99 REFUSED

N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would install the same equipment without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?

DO NOT READ LIST, PROBE IF NECESSARY, SINGLE PUNCH

1 CHANGE IMPORTANCE OF INCENTIVE RATING
2 CHANGE LIKELIHOOD TO INSTALL THE SAME EQUIPMENT RATING
3 CHANGE BOTH
4 NO, DON'T CHANGE
8 DON'T KNOW
9 REFUSED

[ASK IF N5b=1, 3]

N5c How important was the availability of the Prescriptive Program incentive? (IF NEEDED: in your DECISION to implement the project)
Please use a scale of 0 to 10, where 0 means not at all important and 10 means extremely important.
[98=DON'T KNOW, 99=REFUSED]

[ASK IF N5b=2, 3]

N5d If the Prescriptive program had not been available, what is the likelihood that you would have installed exactly the same equipment? Please use a scale of 0 to 10, where 0 means "Not at all likely" and 10 means "Extremely likely";
[98=DON'T KNOW, 99=REFUSED]

[ASK IF N5>0 AND <11, ELSE SKIP TO N8]

N7 You indicated earlier that there was a <N5 RESPONSE> in 10 likelihood that you would have installed the same equipment if the Prescriptive Program had not been available. Without the program, when do you think you would have installed this equipment? Would you say…?

READ LIST, SINGLE RESPONSE

1 At the same time
2 Earlier
3 Later
4 NEVER
8 DON'T KNOW
9 REFUSED

NAVIGANT

[ASK N7a IF N7=3]
N7a. How much later would you have installed this equipment? Would you say…?
READ LIST, SINGLE PUNCH
1 Within 6 months?
2 6 months to 1 year later
3 1 - 2 years later
4 2 - 3 years later
5 3 - 4 years later
6 4 or more years later
8 DON'T KNOW
9 REFUSED

[ASK N7b IF N7a=6]
N7b. Why do you think it would have been 4 or more years later?
[RECORD VERBATIM]
98 DON'T KNOW
99 REFUSED

PAYBACK BATTERY

[ASK N8-N10e IF N3m>5 AND <11]
I'd like to find out more about the payback criteria <ORGANIZATIONAME> uses for its investments.

N8 What financial calculations does <ORGANIZATIONNAME> make before proceeding with installation of an energy efficiency project like this one?
READ LIST, MULTIPLE RESPONSE
1 Simple Payback
2 Return on investment
3 Life cycle costing
4 Other (SPECIFY)
8 DON'T KNOW
9 REFUSED

NAVIGANT

[ASK N9 IF N8 = 1]

N9 What is the payback cut-off point <ORGANIZATIONNAME> uses (in months) before deciding to proceed with this type of an investment/capital improvement project? Would you say…?

READ LIST, SINGLE PUNCH

1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years
6 Over 5 years
8 DON'T KNOW
9 REFUSED

[ASK N26 IF OTHER MEASURES WERE INSTALLED]

N26 Was it a single decision to install all of the energy efficiency measures at <SERVICEADDRESS> for which you received an incentive from AEP Ohio or did each measure type (such as lighting, HVAC, refrigeration, motors) go through its own decision process?

READ LIST, SINGLE PUNCH

1 Single Decision
2 Each measure type went through its own decision process
97 OTHER, SPECIFY
98 (DON'T KNOW)
99 (REFUSED)

[ASK N27 IF MSAME=1] *(Need to create a variable based on multiple MEASURES at THE SAME address.)*

Our records show that <ORGANIZATIONNAME > also received an incentive from AEP Ohio for <NSAME> (number) other <MeasureCategory> project(s).

N27 Was it a single decision to complete all of those <MeasureCategory> projects for which you received an incentive from AEP Ohio or did each <MeasureCategory> project go through its own decision process?

READ LIST, SINGLE PUNCH

1 Single Decision
2 Each project went through its own decision process
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

NAVIGANT

[END OF NET-TO-GROSS MODULE; GO TO SPILLOVER MODULE]

SPILLOVER MODULE

Thank you for discussing the new equipment that you received incentives for through the Prescriptive Program. Next, I would like to discuss any <MEASURE> equipment your organization might have installed …

LS1Since <INSTALL DATE> has your organization purchased and installed any energy efficient <MEASURE> WITHOUT an incentive from the AEP gridSMART Business Prescriptive Program or another utility program…

a. At this facility [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]
b. At another facility owned by <COMPANY> [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]

[ASK LS1C – LS4 IF LS1B=1]

LS1c You said you installed equipment at another facility owned by <COMPANY>. Can you please give me the address? (If more than one, record "multiple")
[OPEN END]

LS2On a scale of 0 to 10, where 0 means "no influence" and 10 means "greatly influenced," how much did your experience with the Prescriptive Program influence your decision to install high efficiency <MEASURE> equipment <u>on your own</u>?
[SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

LS3Why did you purchase this <MEASURE> equipment without the financial assistance available through the AEP Ohio gridSMART Business Prescriptive Program?
DO NOT READ LIST, PROBE IF NECESSARY
[MULTIPLE RESPONSE, UP TO 3]

1	Takes too long to get approval
2	No time to participate, needed equipment immediately
3	The equipment did not qualify
4	The amount of the incentive wasn't large enough
5	Did not know the program was available
6	No program available for the facility's location
7	Had reached the maximum incentive amount
8	Project was "waitlisted"/program was oversubscribed
9	Previous experience with the equipment (have installed before)
97	OTHER, SPECIFY
98	DON'T KNOW
99	REFUSED

NAVIGANT

[ASK LS3A IF LS3=3]
LS3a Why didn't the equipment qualify? [OPEN END]

[ASK LS4 IF LS2=8, 9, 10 AND LS3 <> 3, ELSE GO TO LH1A]
LS4What type of <MEASURE> equipment was installed without an incentive? Did you install…
READ LIST
[MULTIPLE RESPONSE, UP TO 5]

1	T8 fluorescent lighting to replace T12 lighting
2	Reduced wattage T8 lamps
3	T8 or T5 high bay fixtures
4	Compact fluorescent lights (CFLs)
5	Occupancy sensors
6	LED exit signs
7	LED traffic signals
97	OTHER, SPECIFY
98	DON'T KNOW
99	REFUSED

[END OF SPILLOVER MODULE; GO TO PROCESS MODULE]

PROCESS MODULE

I'd now like to ask you a few general questions about your participation in AEP Ohio's gridSMART Business Prescriptive program.

PROGRAM PROCESSES AND SATISFACTION

S0 How did you first hear about the Prescriptive Program?
[DO NOT READ LIST, SINGLE PUNCH]

1. AEP Ohio Account Manager (email, phone call or visit?)
2. AEP Ohio Website
3. Workshop/Green Ribbon Kickoff event
4. Contractor/Trade Ally
5. Email from AEP Ohio
6. Friend/colleague/word of mouth
7. Bill Insert
8. Webinar
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor
12. BLANK
13. BLANK

NAVIGANT

14. Supplier
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK
00. Other, specify
98. Don't know
99. Refused

S0a What were the primary reasons your company participated in the Prescriptive Program?
[DO NOT READ CATEGORIES; ACCEPT MULTIPLES]

1. BECAUSE OF THE INCENTIVES/TO SAVE MONEY ON EQUIPMENT PURCHASE
2. TO SAVE ENERGY
3. TO SAVE MONEY ON ELECTRIC BILLS Don't Know
4. BECAUSE THE PROGRAM WAS SPONSORED BY A UTILITY
5. TO HELP PROTECT THE ENVIRONMENT
6. PREVIOUS EXPERIENCE WITH OTHER UTILITY PROGRAMS
7. RECOMMENDED BY UTILITY ACCOUNT REPS
8. RECOMMENDED BY CONTRACTORS
9. PRIOR PARTICIPATION IN SIMILAR PROGRAMS
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

S1 Was an initial, pre-approval application submitted for the project?
[DO NOT READ LIST, SINGLE PUNCH]

1. YES
2. NO
8. DON'T KNOW
9. REFUSED

[ASK S1b IF S1=1 ELSE SKIP TO S1e]

S1b Did the application form and supporting documents clearly explain the program requirements and how to participate?
[DO NOT READ LIST, SINGLE PUNCH]

1. YES
2. NO
3. SOMEWHAT
8. DON'T KNOW
9. REFUSED

NAVIGANT

[S2a Did YOU fill out the final application for the project?
DO NOT READ LIST, SINGLE PUNCH
1. YES
2. NO
8. DON'T KNOW
9. REFUSED
[ASK S2d IF S2A=2]

S2dWho filled out the final application for the project?
[READ LIST, SINGLE PUNCH]
1. Someone else at the facility
2. Someone else at the company
3. Trade Ally
4. Contractor
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

S1d1 Once you submitted the initial application, how many weeks would you say it took for AEP Ohio to approve it? [OPEN END NUMERIC]
[NUMERIC OPEN END, 0 TO 50; 98=DON'T KNOW, 99=REFUSED]

S1d2 How satisfied were you with the time it took for AEP Ohio to approve the initial application? Please use a scale of 0 to 10 where 0 is "very dissatisfied" and 10 is "very satisfied". [SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

S8 During the course of your participation in the program, did you place any calls to an AEP Ohio Call Center?
[DO NOT READ LIST, PROBE IF NECESSARY]
1. YES – AEP BUSINESS CALL CENTER
2. YES – KEMA AT THE PHONE NUMBER FROM THE APPLICATION FORM
3. NO, NEITHER
8. DON'T KNOW
9. REFUSED

[ASK S8a IF S8=1]
S8a On a scale of 0 to 10, where 0 is "very dissatisfied" and 10 is "very satisfied;" how would you rate your satisfaction with the Call Center's ability to answer your questions? [SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

NAVIGANT

[ASK S8b IF S8a<4]
S8b What is the primary reason you provided that low satisfaction rating? [OPEN END]

S11 On a scale of 0 to 10, where 0 is very dissatisfied and 10 is very satisfied, how would you rate your satisfaction with…

a. The incentive amount
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
a2. The time it took to receive the incentives
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
b. The communication you had with the AEP Ohio program staff
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
c. The measures offered by the program (If needed: this is the equipment that is eligible for an incentive under the program)
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
d. Satisfaction with the performance of the measure
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
e. The AEP Ohio gridSMART Business Prescriptive Program overall [SCALE 0-10; 96=not applicable, 98=Don't know, 99=Refused]
f. AEP Ohio overall
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]

[ASK S12a IF S11a<4]
S12a. You indicated some dissatisfaction with the incentive amount, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12a2 IF S11a2 < 4]
S12a2. You indicated some dissatisfaction with the time it took to receive incentives, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12b IF S11b<4]
S12b. You indicated some dissatisfaction with the communication you had with the AEP Ohio staff, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12c IF S11c<4]
S12c. You indicated some dissatisfaction with the measures offered by the Prescriptive Program, what is the primary reason for your dissatisfaction?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

NAVIGANT

[ASK S12d IF S11d<4]
S12d. You indicated some dissatisfaction with the performance of the measures installed during the program. Overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12e IF S11e<4]
S12e. You indicated some dissatisfaction with the Prescriptive Program overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12f IF S11f<4]
S12f. You indicated some dissatisfaction with AEP Ohio overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

SWE PARTICIPATION PROCESS AND PROGRAM SATISFACTION MODULE

I'd now like to ask you a few more general questions about your participation in the Prescriptive Program.

E5 How satisfied were you with the energy efficiency level required to qualify for a rebate? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E6
2	Somewhat satisfied	E6
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	E6
99	Don't know	E6

E5A What would have made you more satisfied?
RECORD VERBATIM

E6 How satisfied were you with the amount of the rebate? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	continue
2	Somewhat satisfied	continue
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**

NAVIGANT

5	Very dissatisfied	continue
88	Refused	**continue**
99	Don't know	**continue**

E7 How satisfied were you with the measures offered by the program? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E8
2	Somewhat satisfied	E8
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	E8
99	Don't know	E8

E7A What would have made you more satisfied?
RECORD VERBATIM

E8 In the course of participating in the AEP Ohio gridSMART Business Prescriptive Program, and other than sending in the rebate application, how often did you contact AEP Ohio or program staff with questions? (don't read)

1	Never	**E9**
2	Once	**continue**
3	2 or 3 times	**continue**
4	Four times or more	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E8A How did you contact them? [CHECK ALL THAT APPLY; AFTER EACH RESPONSE, ASK: Were there any other ways you contacted them?]

1	Phone	**continue**
2	Email or fax	**continue**
3	Letter	**continue**
4	In person	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E8BA Were there any other ways you contacted them? [Open Ended]
RECORD VERBATIM

NAVIGANT

E8C And overall how satisfied were you with your communications with AEP Ohio and program staff?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E9
2	Somewhat satisfied	E9
3	Neither satisfied nor dissatisfied	continue
4	Somewhat dissatisfied	continue
5	Very dissatisfied	continue
88	Refused	E9
99	Don't know	E9

E8D What would have made you more satisfied?
RECORD VERBATIM

E9 From the time you had [MEASURE_1] installed and submitted the application, about how many weeks did it take to receive your rebate? _____RECORD # of WEEKS

E9A How satisfied were you with how long it took to receive the rebate?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	continue
88	Refused	**continue**
99	Don't know	**continue**

E10Did AEP Ohio or its contractors conduct a post-installation inspection of the equipment you installed through the Prescriptive Program?

1	Yes	**continue**
2	No	**E11**
88	Refused	**E11**
99	Don't know	**E11**

E10A How satisfied were you with the inspection?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**E11**
2	Somewhat satisfied	**E11**

NAVIGANT

3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	**E11**
99	Don't know	**E11**

E10B What would have made you more satisfied with the inspection?
RECORD VERBATIM

E11Have you noticed lower electricity bills since you installed your new [MEASURE_EE]?

1	Yes	**continue**
2	No	**E12**
88	Refused	**E12**
99	Don't know	**E12**

E11A Would you say your bill savings are… [READ LIST]

1	About what you expected	**Continue**
2	More than you expected	**continue**
3	Less than you expected	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E12If you were rating your overall satisfaction with the AEP Ohio gridSMART Business Prescriptive Program, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	MK1b
99	Don't know	MK1b

E13A Why do you give it that rating?
RECORD VERBATIM

MARKETING AND OUTREACH

MK1b How useful were the program's marketing materials in providing information about the program? Would you say they were…?
[READ LIST, SINGLE PUNCH]

NAVIGANT

1. Very useful
2. Somewhat useful
3. Not very useful
4. Not at all useful
98. DON'T KNOW
99. REFUSED

[ASK MK1c IF MK1b=3, 4]

MK1c What would have made the materials more useful to you?
[READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. More detailed information (ask about what specifically)
2. Where to get additional information
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

(IF MK1C = 1 ASK MK1C_1) (OPEN END)
MK1C_1 DETAILED INFORMATION ABOUT WHAT?

MK2 In general, what is the best way of reaching companies like yours to provide information about energy efficiency opportunities like the Prescriptive Program?
[DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. Bill inserts
2. Advertisement in trade/professional publication
3. Advertisement in local newspaper
3. E-mail
4. Telephone
5. AEP Ohio Account Manager
6. Webinars/roundtables/events
7. Through trade or professional associations
8. Trade allies/contractors
9. Social networking Internet site (LinkedIn, Twitter, Facebook)
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

NAVIGANT

BENEFITS AND BARRIERS

B1aWhat do you see as the main benefits to participating in the Prescriptive Program? [DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. Energy Savings
2. Good for the Environment
3. Lower Maintenance Costs
4. Better Quality/New Equipment
5. Rebate/Incentive
6. BLANK
7. Improved Safety/Morale
8. Set Example/Industry Leader
9. Able to make improvements sooner
10. Saves money on utility bill
11. Improved business processes

00. Other, Specify
98. Don't know
99. Refused

B1b What do you see as the drawbacks to participating in the Prescriptive Program? [DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. Paperwork too burdensome
2. Incentives not high enough/not worth the effort
3. Program is too complicated
4. Cost of equipment
5. No drawbacks
6. Poor Communication
7. Time Consuming
8. Underfunded/Ran out of money

00. Other, specify
98. Don't know
99. Refused

NAVIGANT

B2 What do you think are the reasons companies like yours do not participate in this program?
[DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. LACK OF AWARENESS OF THE PROGRAM
2. FINANCIAL REASONS
3. DO NOT BELIEVE CLAIMS OF ENERGY SAVINGS
3. NONE
4. NOT AWARE OF SAVINGS/DON'T REALIZE THE SAVINGS
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

FEEDBACK AND RECOMMENDATIONS

R1 Do you plan to participate in the Prescriptive Program again in the future?
[DO NOT READ LIST, SINGLE PUNCH]

1. Yes
2. No
3. Maybe
8. Don't know
9. Refused

E14Do you have any suggestions on how the program could be improved?
[DO NOT READ, MULTIPLE RESPONSE, UP TO 4]

1. Higher incentives
2. More measures
3. Greater publicity
4. Better communication/Improve program information
5. Contact/information from Account Executives
6. Longer time period to complete project
7. Faster review of applications
8. Simplify application process
9. Electronic applications
10. More funds for the program
11. Contractor referral service
12. Blank
00. Other, specify
96. No recommendations
98. Don't know
99. Refused

NAVIGANT

E15Finally, if you were rating your overall satisfaction with AEP Ohio, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	B1
99	Don't know	B1

E15A Why do you give it that rating?
RECORD VERBATIM

FIRMOGRAPHICS

I only have a few general questions left.

B1 What is your job title or role?
1 Facilities Manager, continue
2 Building Manager, continue
3 Energy Manager, continue
4 Other facilities management/maintenance position, continue
5 Chief Financial Officer, continue
6 Other financial/administrative position, continue
7 Proprietor/Owner, continue
8 President/CEO, continue
00 Other (Specify), continue
88 Refused, continue
99 Don't know, continue
[RECORD RESPONSE]

B2 Our records describe the facility at [SITE_ADDRESS] where [COMPANY] participated in the Prescriptive Program as [BUS_TYPE]. Is this correct?
1 Yes [GO TO B4]
2 No, continue
88 Refused [GO TO B4]
99 Don't know [GO TO B4]

NAVIGANT

B3 What is the principal activity /(type of business) [COMPANY] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store?

[DO NOT READ LIST. RECORD ONE RESPONSE.]

1	Office	continue
2	Retail (non-food)	continue
3	College/university	continue
4	School	continue
5	Grocery store	continue
6	Convenience store	continue
7	Restaurant	continue
8	Health care/hospital	continue
9	Hotel or motel	continue
10	Warehouse	continue
11	Personal Service	continue
12	Community Service/ Church/ Temple/Municipality	continue
13	Industrial Electronic & Machinery	continue
14	Industrial Mining, Metals, Stone, Glass, Concrete	continue
15	Industrial Petroleum, Plastic, Rubber and Chemicals	continue
16	Other Industrial	continue
17	Agricultural	continue
18	Condo Assoc/Apartment Mgmt	continue
77	Miscellaneous [RECORD VERBATIM]	continue
88	Refused	continue
99	Don't Know	continue

B4 Does your organization own or lease the space at [SITE_ADDRESS]?

1	Own	**continue**
2	Lease	**continue**
3	Own Part and lease part	**continue**
99	Don't know	**continue**

B5 What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

#	Square Feet		
88	Refused		
99	Don't Know		

NAVIGANT

F2 Which of the following best describes the ownership of this facility?
READ LIST, SINGLE PUNCH

1. <ORGANIZATIONNAME > owns and occupies this facility
2. <ORGANIZATIONNAME> owns this facility but it is rented to someone else
3. <ORGANIZATIONNAME> rents this facility
8. DON'T KNOW
9. REFUSED

F3 Does <ORGANIZATIONNAME> pay the electric bill?
DO NOT READ LIST, SINGLE PUNCH

1. YES
2. NO
8. (DON'T KNOW)
9. (REFUSED)

F4a How old is this facility?
[NUMERIC OPEN END, 0 TO 150; 998=DON'T KNOW, 999=REFUSED]

[ASK F4b IF F4a=998]
F4bDo you know the approximate age? Would you say it is…?
READ LIST, SINGLE PUNCH

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
8. (DON'T KNOW)
9. (REFUSED)

F5aHow many employees, full plus part-time, are employed at this facility?
[NUMERIC OPEN END, 0 TO 2000; 9998=DON'T KNOW, 9999=REFUSED]

[ASK F5b IF F5a=9998]
F5bDo you know the approximate number of employees? Would you say it is…?
READ LIST, SINGLE PUNCH

1. Less than 10
2. 10-49
3. 50-99
4. 100-249
5. 250-499

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6. 500 or more
8. DON'T KNOW
9. REFUSED

F6 Which of the following best describes the facility? This facility is…
READ LIST, SINGLE PUNCH

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANZIATIONNAME> with several locations

Thank **YOU** and close.

NAVIGANT

6.2 AEP Ohio Prescriptive Program Solution Providers Interview Guide

The following guide was used to conduct the Solution Provider in-depth phone interviews.

AEP-Ohio Evaluation for the Business Custom/Prescriptive/ Self-Direct Program Trade Ally Provider Interview Guide (Program Participant)

November 8, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Number of employees: _____

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews. This guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Custom Program. We're currently in the process of conducting interviews with lighting contractors and equipment suppliers to improve our understanding of AEP-Ohio's programs.

Our records show you have been named as a lighting contractor or equipment or service provider by one or more of AEP Ohio business customers that have participated in the Business Custom/Prescriptive/Self Direct Program[?]. At this time we are interested in asking some questions of the person most experienced with the Business Custom/Prescriptive/Self Direct program. [CONFIRM THAT THIS IS THE PERSON MOST KNOWLEDGEABLE AT THEIR BUSINESS OR GET ALTERNATE NAME].

The questions will only take about half an hour. Information you provide will be kept anonymous in our reports. General observations and findings will appear in our final report, but they will not be attributed to any named person or company. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

NAVIGANT

Background

1. Can you briefly describe the company you work for and the type of business it conducts? What are your job responsibilities at your company? How long have you been in this position?

2. Which AEP Programs have you participated in during 2011? How was your firm recruited for the [Custom/Prescriptive/Self-Direct] program?

3. How would you describe your familiarity with AEP Ohio's Business [Custom/Prescriptive/Self-Direct] Program? Have you personally worked with any of your customers who have participated in this program? About how many? Who are your primary business customers?

4. What type of equipment did you install for the [Custom/Prescriptive/Self-Direct] Program?

5. About how many AEP Ohio rebate projects was your company involved with in 2011 for the [Custom/Prescriptive/Self-Direct] Programs? Is there a reason you were not involved with more projects in 2011?

6. Do you work mainly in the Ohio Power or Columbus Southern Power service area? Or both?

Solution Provider Participation

7. Was your firm recruited to participate in this program? What programs, Custom, Prescriptive, or Self Direct, have you participated in with your customers? When did you begin participating in the [Custom/Prescriptive/Self-Direct] Program?

CUSTOM	YES	NO
PRESCRIPTIVE	YES	NO
SELF DIRECT	YES	NO

****

ASK Q8-10 AS APPROPRIATE FROM ANSWERS TO Q7

8. What are the reasons your firm decided to participate in the Custom Program? What are the main benefits to your firm? What are the drawbacks to your firm?

9. What are the reasons your firm decided to participate in the Prescriptive Program? What are the main benefits to your firm? What are the drawbacks to your firm?

10. What are the reasons your firm decided to participate in the Self Direct Program? What are the main benefits to your firm? What are the drawbacks to your firm?

****

NAVIGANT

11. About how many of your lighting or equipment projects received rebates through the [Custom/Prescriptive/Self-Direct] Program in 2011? (If few) Is there a reason you have not been involved with more projects? In your opinion, has the [Custom/Prescriptive/Self-Direct] Program increased your business?

12. Can you describe the application process for program ally registration? *[Probe for qualifications or training requirements.]* What kind of training is provided as part of the registration process to become a Solution Provider? Was the training useful?

13. What is expected of Solution Providers? Are there any specific responsibilities that come with registering? Do you know of any quality control procedures in place for trade allies? (for example, removing an ally from the program if complaints are received about them)

14. Do you complete the program application for your customers? Do customers frequently need your help with program issues after the equipment is installed?

15. How satisfied are you with your experiences with the [Custom/Prescriptive/Self-Direct] Program?

Marketing and Promotion to Customers

16. How does your company become involved with projects associated with the program? Do you actively promote participation in [Custom/Prescriptive/Self-Direct] Programs or do customers bring projects they want to submit to the [Custom/Prescriptive/Self-Direct] Program?

17. How do customers find out about this program? Has your company promoted the program through its own marketing collateral? Who, outside of your company and the customer, has been influential in getting customers to participate?

18. What kind of support, if any, does AEP Ohio provide to you for marketing the program to your customers? Do you distribute utility-produced marketing materials? Have you requested any other types of support/collateral, etc. If so, what have you requested and how has AEP Ohio responded to your requests?

19. Do you think AEP Ohio's level of marketing and promotion of the [Custom/Prescriptive/Self-Direct] Program has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? If AEP is missing areas of opportunity, what are those areas?

20. Do you have suggested changes to AEP Ohio's marketing efforts for next year? If so, please describe these changes.

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Q21 - SELF DIRECT ONLY

21. Are you aware of the addition of mercantile or retail customers to the program by the Ohio Public Utility Commission (PUCO)? Has this ruling had any impact on your customers? Does the automatic approval process where the project is approved on the 61st calendar day after filing speed up your project approval? What is your opinion of the standard application template? Is it easy to use? Does it expedite the projects?

Customer Participation

22. What reasons do customers give for participating in the [Custom/Prescriptive/Self-Direct] program?

23. Do customers understand the participation process? How do you get program information to them? What improvements can be made?

24. What activities does your company perform to help customers identify opportunities to participate? Do customers need your help with the program after the equipment is installed? What type of help do they need?

25. What is the review time between completing the pre-approval application and letter of approval from AEP Ohio? Has this had any impact on your sales process?

26. Does the timing required for submitting documentation (within 60 days of project completion) present a challenge? How? Does it affect certain types of projects or customers more than others? If so, how and why?

27. Have you encountered any challenges in helping customers participate in the [Custom/Prescriptive/Self-Direct] program? If so, please describe. Have you had any challenges providing qualifying products?

28. What are the reasons that customers might not participate in the [Custom/Prescriptive/Self-Direct] program? Do customers complain about any particular aspects of the program? Do customers regularly cancel their participation or drop out of this program? If so, why?

Rebates/Incentives

29. What is your opinion of the incentives offered to [Custom/Prescriptive/Self-Direct] Program participants? Are program participants satisfied with these incentive levels?

30. Are the incentives effective at encouraging customers to pursue projects they would not have considered without the [Custom/Prescriptive/Self-Direct] program?

NAVIGANT

31. In your opinion, how can AEP Ohio increase participation in the [Custom/Prescriptive/Self-Direct] Program?

Quality Assurance and Quality Control

32. Have you had to answer questions or provide additional information as a result of a program-sponsored quality inspection to verify equipment quantities and eligibility? Has any equipment you installed been rejected for an incentive? Why?

Call Center

33. Do you know whom to contact for help with the [Custom/Prescriptive/Self-Direct] program?

34. Are customers or your company staff making use of the KEMA phone number listed on the application form? At what point during the participation process are calls usually made? What are the main issues raised and are these issues resolved to your satisfaction? Typically, how long does it take to resolve inquiries to the call center?

35. If you contacted the call center, what is your level of satisfaction with the service you received? What other areas of support would be helpful to you?

Program Adjustments and Enhancements

36. What type of information could the utility provide you to increase your familiarity and understanding of the [Custom/Prescriptive/Self-Direct] program?

37. What could be modified to make the [Custom/Prescriptive/Self-Direct] program work better (e.g., incentive levels, eligible equipment, etc)? If so, what would you recommend? Why do you think this change is needed?

38. Would more training be useful? What types?

Success and the Future of These Efforts

39. In your opinion, how successful is the [Custom/Prescriptive/Self-Direct] program? Why? What are the strengths? What are the weaknesses?

40. Do you feel that some customers would be installing the same lighting/equipment products without the incentives of the [Custom/Prescriptive/Self-Direct] Program? [Please explain.]

41. Do you think the current economic conditions are affecting program participation? If so, how?

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Other

42. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.
We might follow-up with you by phone later, if additional questions arise.

NAVIGANT

6.3 In-Depth Interview Instruments

The following guides were used to conduct the in-depth interviews.

AEP-Ohio Evaluation for Business Custom, Prescriptive and Self Direct Programs

Program Staff In-Depth Interview Guide

January 11, 2012 .

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Depth Interview Guide – Business Prescriptive Program

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Energy Efficiency programs. We're conducting interviews with program managers and key staff in order to improve our understanding of AEP-Ohio's programs. At this time we are interested in asking you some questions about the Commercial & Industrial Custom programs. The questions will only take about an hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

[READ FOR IMPLEMENTER ONLY] Ok, great. I would like to talk to you about your involvement in the custom program.

Roles and Protocols

1. Can you briefly summarize your role and responsibilities in the C&I Prescriptive program?

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2. How long have you carried these out? Has your role changed over time and if so, how?

3. Last year we talked about the roles of KEMA, AEO OHIO staff and the solution providers. Do you think there have been any substantial changes in the roles and people assigned to these programs in the past year compared to the previous program year?

4. Roughly, how many people are assigned to work on the Prescriptive program at AEP Ohio?

5. What are the formal and informal communication channels between AEP OHIO and KEMA? Do you feel information is shared in a timely manner? If not, how can this be improved?

6. Ask for updated KEMA Operations Manual. How closely was the KEMA Operations manual followed in 2011?

Prescriptive Program Only

According to the 2009 Evaluation Report, AEP Ohio was to expand the Prescriptive program to additional end-uses such as HVAC, motors, and refrigeration systems. This expansion was of limited success in 2010? How successful has it been in 2011?

Overall Goals and Objectives

7. Outside of the quantitative goals (e.g., $, $/kWh, savings and participation rates), what are the key goals and objectives of this program? Are these defined in any documents? [Record/request document.]

8. What performance metrics are you currently using to measure the performance of the program(s)? According to these metrics, are the program(s) on track to meet or have they met 2011 goals? [If necessary, probe for number of rebate applications, energy savings realized.] Why or why not?

Program Theory

ASK OF ALL

9. In your *own words, what are the market barriers addressed by the program(s), the program* intervention strategies to address these barriers, and the program delivery steps? (We are looking for cause-effect relationships between proposed intervention and actions taken for all steps in the chain of program delivery steps.)

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Marketing and Promotion

10. Please describe the program marketing campaign in your own words [If necessary:

    Do marketing activities vary by prescriptive and custom? By customer size? By market sector or business type?] How often does each activity occur?

    - Do you have a written marketing plan?
    - Who has been most influential in getting customers to participate? Who else has been influential?
    - Do you think these materials were more successful in 2011 compared to the 2010 materials?

11. In 2011, AEP Ohio planned to focus on marketing the business programs to professional groups. Did this expansion occur? How many professional groups did the AEO OHIO/KEMA team inform about the business programs during 2011?
    Do you plan to expand this effort in 2012 or keep it at about the same level?

12. KEMA marketing staff and AEP Ohio marketing staff jointly develop presentations and collateral materials. Did AEP Ohio and KEMA staff develop any new collateral materials during 2011?

13. Last year we learned that there is a need for more communications, more training seminars and more informational meetings. Trade allies and customers suggested AEP Ohio use Webinars as a communication tool. Have you increased your use of this communication tool in presenting program information?

14. Some customers indicated that the long term savings on energy costs is just as important as the rebate level in their decision to participate in the program. Does AEP Ohio use this message in collateral materials along with the rebate savings message?

15. Do the marketing and promotional efforts address all measure end-use categories (i.e., lighting, HVAC, refrigeration, motors, VSDs)? If not, why not?

16. Which end-use category marketing efforts are the most successful and the least successful? Why?

17. It is important to the success of the program that the trade ally network program be effectively marketed and fully implemented. Does the trade ally network have a significant

NAVIGANT

role in the Prescriptive Program? Was marketing to the trade ally network more successful in 2011? How many trade allies were added to the list?
How many new trade allies were trained?

18. Do you think the level of marketing and promotion of the program(s) was appropriate in 2011 to meet program goals? Do you think the level of effort and budget put into marketing and promotion of the program(s) has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? [Probe for differences between customer and trade ally target markets.]

19. Do you anticipate making any changes to marketing efforts for Program Year 3? If so, please describe these changes. Do you have documentation of these changes? If so, can you provide copies to me?

20. Can you provide me with copies of your latest marketing plan and all marketing collateral used?

Communicating the Program

21. What do customers do if they have questions about the participation process? About how many customers contact KEMA or the Call Center about the Business Programs? Is that number tracked?

22. What improvements have been made during 2011 to improve program processes? What do you think still needs to be changed going forward?

23. Last year we talked about the many ways the customers could contact the program manager, KEMA, the AEP Ohio call center. Is this process still meeting customer informational needs? What improvements can be made?

The Web Site

24. What role should the Web site play? Have you increased the use of Web site to market the C&I Programs?

25. Are the AEP Ohio programs more accessible to customers because of changes to the Web site suggested last year? For instance, program information was buried in the site. Have you considered or implemented a more direct link from the home page to program information?

26. Are customers able to download forms or complete forms online?

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27. Are they able to quickly find a solution provider in their vicinity from information available on the web site?

28. What still needs improving on the web site, in your opinion? Any other improvements in the marketing of the program?

Solution Providers

29. How successful are solution providers and ESCOs in recruiting customers for the programs they are involved in?

30. Do you have a sense of solution providers' overall satisfaction with their participation in this program this year?

31. Are solution providers meeting your expectations for the Prescriptive Program?

32. Some solution providers and many customers did not like the dual purpose application. What was the solution for this issue? Were any changes made to the application?

33. Solution providers also requested faster approval for the pre-approval process. Sometimes new programs take a while to ramp up to their peak efficiency. Was the pre-approval process more efficient in 2011 compared to 2010? Do we have days from application received to approval to measure this for both years?

34. Another suggestion was that AEP look to technology to make the program more efficient. Some of the suggestions include notifying customers by email that their project was approved and offering the application process online. Was either of these improvements made during the 2011 program year? Are they planned for the 2012 program year?

35. The program needs a base of continuity to generate continued interest for customers. Last year there was talk of cuts in the funding for the program and lack of assurances that the program would be offered in 2011 and strict timetables for applications. Did this situation continue during 2011?

36. Solution providers expressed an interest for more program training. Did AEP OHIO offer more training in 2011 to help solution providers market the program? What kind of other support, such as collateral materials, was provided?

37. Trade allies may need more direction than AEP OHIO expects. Have the expectations of solution providers changed in 2011? If so, please describe.

NAVIGANT

38. Have solution providers requested any other types of support/collateral, etc. If so, what have they requested and how are you responding to their requests? Were any changes made in 2011 to the collateral? If so, please describe and provide hard copy or electronically.

Program Participation

We are also trying to learn of any process related issues that may arise from the current design of the program.

39. How active are account managers in the Prescriptive program?
    Solution Providers or ECSO's?
    KEMA?

40. Do you have a sense of how satisfied customers are with various aspects of the program (e.g., ease of application, verification process, amount of incentive, timing of incentives)? Has the application been simplified or otherwise improved since last year? Any issues arise about the verification process?

41. Do participants complete pre approval forms? What percentage of customers who submit pre-approval forms do not complete the program (i.e., the project is canceled or discontinued)? What are the reasons that customers might not submit their final documentation or otherwise complete the program? Is there a process in place for following up with customers between issuing the pre-approval letter and receiving the final documentation?

42. Is there any system in place to track project progress? If so, please describe.

43. What is the target processing time between final documentation and payment? What percent of applications are actually processed within that amount of time? What, if anything, slows down processing time?

Barriers to Program Participation

44. What do you think are the greatest barriers to customer participation?

Quality Assurance and Quality Control

Program Managers Only

45. One of the findings from last year was that the large realization rate adjustments were caused by the simplified methods used for the ex-ante estimates. In many cases interactive effects between measures were not included in the original estimates. Was this change made to the estimation algorithm?

NAVIGANT

46. The AEP -Ohio Business Programs operations manual shows a quality step in the administration responsibilities for nearly all of the program processes – are the quality procedures documented anywhere? If so, can you provide a copy to me?
Can you provide a brief description of these quality procedures?

47. What kind of quality assurance and quality control procedures are in place to evaluate project completion? What is the process for verifying savings? Were any changes made to the QA/QC procedures?

48. Approximately what percentage of all projects are pre-inspected and post-inspected? How do you determine if a project requires inspection (both pre and post)? *[Probe for custom projects, random check guidelines (10% of $10K or less, 25% of $10K-$50K, 100% of $50K+), geographical location, contractor]*

49. Who conducts pre and post inspections and how are they documented? Last year AEP Ohio said they planned to bring the account reps back into the inspection process. Was their roles and KEMA's role clearly defined? Was there a need to adjust responsibilities mid-year because of resources issues?

50. Are inspections documented as part of the tracking data?

51. In your opinion, what can be done to improve the QA/QC process?

Rebates/Incentives

52. Are program participants satisfied with the current rebate amounts and incentive limit caps (50% of total cost)?

53. How do solution providers perceive the incentive levels and the minimum or maximum payback caps? What specific feedback have they given?

54. Are you planning any changes to incentive levels for the next program year? If yes, what is the rationale behind the change? Did you implement any changes for the 2011 program year?

The Tracking System

ASK ONCE:
55. What systems are in place for data tracking? Who captures the data and how?

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56. Can you briefly describe what data are tracked for the program(s)? Were any of the recommendations from the previous evaluation implemented? Is the information in the database accurate, current and complete?

57. How frequently is the tracking data missing?

Program Managers:

58. Are there additional types of reports or information that you would find beneficial? Is there a process for requesting additional data?

59. Did you make any changes to the tracking system based on the results from the PY2 evaluation (2010)? For instance, one suggestion from the process evaluation was for AEP Ohio and KEMA to improve the tracking system to provide customers with the information they need to track their projects, even when multiple projects are participating in the programs.

60. Was this change made? If so, please describe these changes. Do you have documentation of these changes? If so, can we arrange to obtain copies?

Program Adjustments and Enhancements

61. Based on your experience with implementing the program and communicating with customers, how did interest in the program in 2011 compare to interest in 2010? Do you expect the same result in Program Year 3? Why/Why not? What changes were made to increase program interest in 2011?

62. Have the design of the program(s) or the program processes changed since the beginning of the program? Since last year? If so, how? Why were the changes made?

63. Was the Solution Provider network expanded? How many trade allies are on the list?

64. Are there any changes planned for the program offerings in Program Year 3 (e.g., program offerings, marketing approach, targets, incentive levels, etc)? If so, please describe these additions or deletions.

65. (PRESCRIPTIVE ONLY?) Are there any measures currently in the program that will be addressed by a federal standard? How do you plan to change the program to account for these new standards? (motors or T-12 baselines)

66. One suggestion was that AEP OHIO look to technology to make the program more efficient. Some of the suggestions include notifying customers by email that their project was

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approved and offering the application process online. Was either of these improvements made during the 2011 program year? Are they planned for the 2012 program year?

67. Are there any other elements in design, structure, and/or operation that should be modified to make the program(s) work better? If so, what would you recommend? Why do you think this change is needed?

Success and the Future of These Efforts

68. In your opinion, how successful is this program(s)? Why? What are the strengths? What are the weaknesses? Do you feel that free-ridership is a major concern for the program(s)? *[Please explain.]*

69. If so, what steps can be taken to avoid free-ridership?

70. Do you think the current economic conditions are affecting the program? If so, how?

71. How could the program be improved?

Other

Program Managers Only

72. Who should we interview at KEMA? Are there any additional people with key roles that we should talk to at AEP Ohio?

    Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

We might follow-up with you by phone later, if additional questions arise.

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AEP-Ohio Evaluation for Business Prescriptive Program

Implementer (KEMA) In-Depth Interview Guide

Depth Interview Guide – Business Prescriptive Program

Roles and Protocols

1. Can you briefly summarize your role and responsibilities in the C&I Custom program? How long have you carried these out? Has your role changed over time and if so, how?

2. Last year we talked about the roles of KEMA, AEP staff and the solution providers. Do you think there have been any substantial changes in the roles and people assigned to this program in the past year compared to the previous program year?

3. What are the formal and informal communication channels between these groups (between AEP and KEMA; between AEP and OPCo/CSP; within AEP)? Do you feel information is shared in a timely manner? If not, how can this be improved? Are there common ways to identify specific projects for ease of data sharing?
4. What changes were made in the 2012 program based on results from the 2011 research?

5. We saw increase in trade allies do you think you are starting to penetrate the non-lighting trade ally market now?

6. Increase the role of the account manager in the delivery of the program was one thought last year. Has that occurred?

7. When you think about the market barriers, are there any program intervention strategies that you think might be good to introduce? I know education and information is the foundation and KEMA through the different programs has a lot of different ways to get the word out. Are there others?

Overall Goals and Objectives

8. Can you describe the goals of the program? Are these laid out in any documents? [Record/request document.]

9. What performance metrics are you currently using to measure the performance of the program(s)? According to these metrics, have the program(s) on track to meet their goals or have they met their goals? *[If necessary, probe for number of rebate applications, energy savings realized.]* Why or why not? If yes, have the goals been met on time?

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10. What changes were made in the 2011 program based on results from the 2010 research?

Program Theory

11. In your own words, what are the market barriers addressed by the program(s), the program intervention strategies to address these barriers, and the program delivery steps? (We are looking for cause-effect relationships between proposed intervention and actions taken for all steps in the chain of program delivery steps.)

Marketing and Promotion

12. Have there been any marketing and promotional efforts for the program(s) such as direct mail? Please describe the program marketing campaign in your own words [If necessary: Do marketing activities vary by prescriptive and custom? By customer size? By market sector or business type?]

13. What if you meet goal? Is there a stop?

14. Have you increased the use of Web site to market the C&I Custom Program? Program information is buried in the site. Have you considered a more direct link from the home page to program information?

15. Last year we learned that there is a need for more communications, more training seminars and more informational meetings. Trade allies and customers suggested AEP use Webinars as a communication tool. Have you any plans to increase your use of this communication tool in presenting program information?

16. How often do marketing activities occur? Have you made any changes to the marketing materials or frequency in 2011? Do you think these materials were more successful in 2011 compared to the 2010 materials?

    Can you provide me with copies of your marketing plan and all marketing collateral used? Look for last year's marketing plan.

17. Do the marketing and promotional efforts address all measure end-use categories (i.e., lighting, HVAC, refrigeration, motors, VSDs)? If not, why not? Solution providers have found some resistance from customers about the savings possible with the installation of a VSD. They are looking to AEP to be the expert in the technology arena and create a definitive collateral piece explaining the potential savings.

18. Do you think the level of effort and budget put into marketing and promotion of the program(s) has been appropriate so far? Do you think promotional efforts are successful?

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Do you think they reach the right audience? [Probe for differences between customer and trade ally target markets.]

19. Do the marketing and promotional efforts address all measure end-use categories (i.e., lighting, HVAC, refrigeration, motors, VSDs)? If not, why not?

20. Which end-use category marketing efforts are the most successful and the least successful? Why?

Program Participation

We are also trying to learn of any process related issues that may arise from the current design of the program.

21. Do you have a sense of how satisfied customers are with various aspects of the program (e.g., ease of application, verification process, amount of incentive, timing of incentives)?

22. What do customers do if they have questions about the participation process? Is there a systematic process in place for responding to customer inquiries? How quickly are their questions answered? What improvements can be made? What improvements have been made during 2010 to improve program participation? What do you think still needs to be changed going forward?

Free Ridership

23. What percentage of customers who submit pre-approval forms do not complete the program (i.e., the project is canceled or discontinued)? What are the reasons that customers might not submit their final documentation or otherwise complete the program? Is there a process in place for following up with customers between issuing the pre-approval letter and receiving the final documentation? Is there any system in place to track project progress? If so, please describe.

Quality Assurance and Quality Control

24. What is the target processing time for the technical screening and approval of pre-approval forms? What is the average processing time? What, if anything, slows down processing time? What other changes can be made to decrease processing time?

25. Who conducts pre and post inspections and how are they documented? Can you provide these documents to me?

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Solution Providers

26. Can you describe the application process for solution provider registration? Is there one staff member that oversees the program ally network? Were you successful in transferring some of the marketing and recruitment tasks to solution providers? Do you think solution providers completed a few, some, most or all of the applications for their customers?

27. What are the main benefits for the solution providers to participate? Do you have a sense of solution providers' satisfaction with their participation in this program?

28. Solution providers expressed an interest for more program training. Did AEP offer more training in 2011 to help solution providers market the program? What kind of other support, such as collateral materials, was provided?

29. Have solution providers requested any other types of support/collateral, etc. If so, what have they requested and how are you responding to their requests? Were any changes made in 2011 to the collateral? If so, please describe and provide hard copy.

Rebates/Incentives

30. Solution providers also requested faster approval for the pre-approval process. Sometimes new programs take a while to ramp up to their peak efficiency. Was the pre-approval process more efficient in 2011 compared to 2010? Do we have days from application received to approval to measure this for both years?

Data Tracking

31. Can you briefly describe the process for tracking program data? Do you feel all important information is captured and stored in a way to best support program efforts? Is the information accurate, current and complete? How frequently is the tracking data missing? Are there additional types of reports or information that you would find beneficial? Is there a process for requesting additional data?

32. (For Custom) Based on your experience with implementing the program and communicating with customers, how did interest in the program in 2010 compare to interest in 2009? Do you expect the same result in Program Year 3? Why/Why not? What changes will be made to increase program interest in 2011?

33. Are there any measures currently in the program that will be addressed by a federal standard? How do you plan to change the program to account for these new standards? (motors or T-12 baselines)

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34. Are there any other elements in design, structure, and/or operation that should be modified to make the program(s) work better? If so, what would you recommend? Why do you think this change is needed?

Success and the Future of These Efforts

35. In your opinion, how successful are the program(s)? Why? What are the strengths? What are the weaknesses? Do you feel that free-ridership is a major concern for the program(s)? [Please explain.]

36. Another suggestion was that AEP look to technology to make the program more efficient. Some of the suggestions include notifying customers my email that their project was approved and offering the application process online. Was either of these improvements made during the 2011 program year? Are they planned for the 2012 program year?

37. Any big changes that may affect participation?

38. Do you think the current economic conditions are affecting the program? If so, how?

Other

39. Do you have any other comments or suggestions for us?

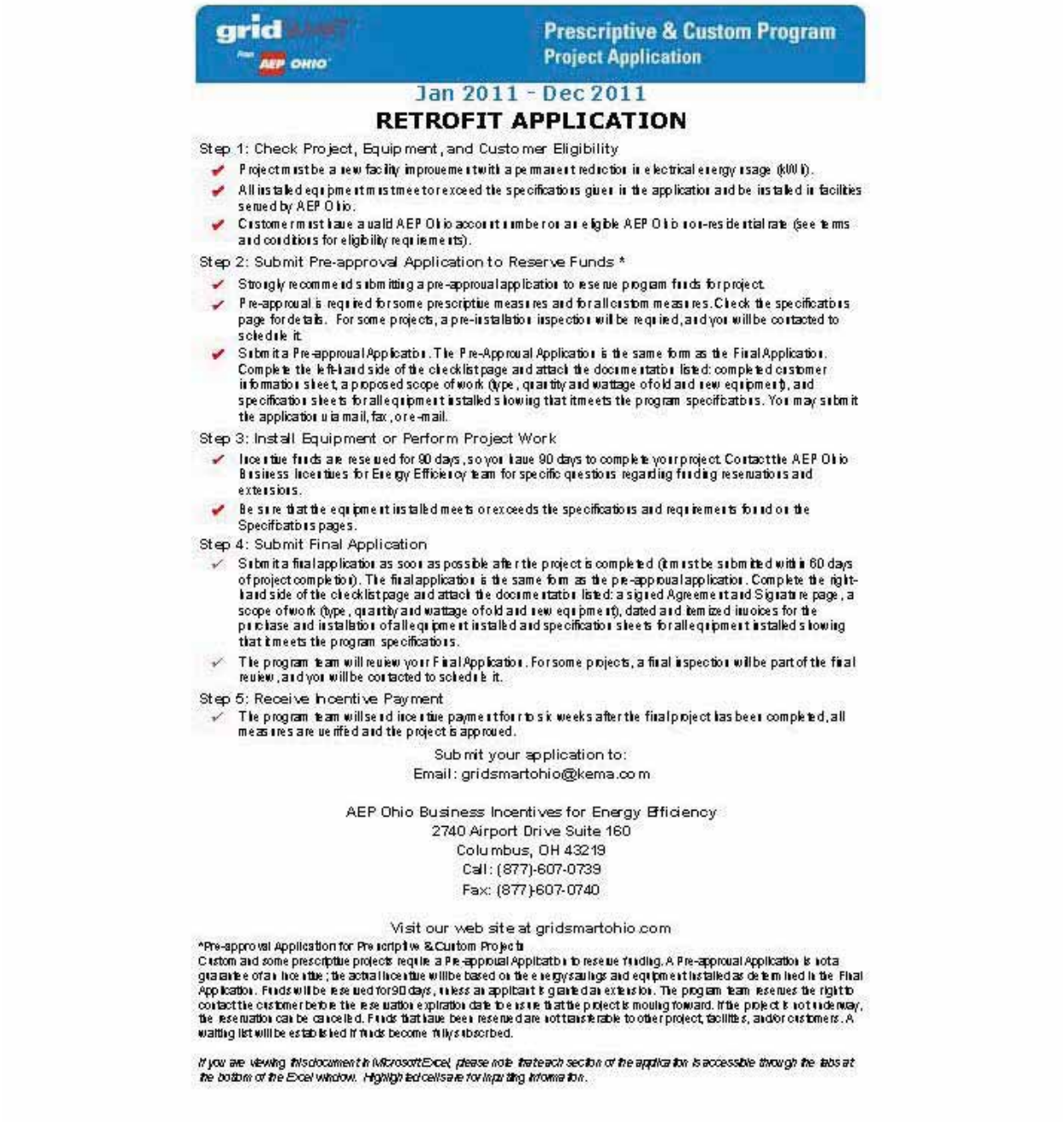
Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

We might follow-up with you by phone later, if additional questions arise.

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6.4 Prescriptive Program Application Forms

The following file is the 2011 Prescriptive Program application form.



gridSMART from AEP OHIO

Prescriptive & Custom Program Project Application

Jan 2011 - Dec 2011

RETROFIT APPLICATION

Step 1: Check Project, Equipment, and Customer Eligibility

- Project must be a new facility improvement with a permanent reduction in electrical energy usage (kWh).
- All installed equipment must meet or exceed the specifications given in the application and be installed in facilities served by AEP Ohio.
- Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential rate (see terms and conditions for eligibility requirements).

Step 2: Submit Pre-approval Application to Reserve Funds *

- Strongly recommend submitting a pre-approval application to reserve program funds for project.
- Pre-approval is required for some prescriptive measures and for all custom measures. Check the specifications page for details. For some projects, a pre-installation inspection will be required, and you will be contacted to schedule it.
- Submit a Pre-approval Application. The Pre-Approval Application is the same form as the Final Application. Complete the left-hand side of the checklist page and attach the documentation listed: completed customer information sheet, a proposed scope of work (type, quantity and wattage of old and new equipment), and specification sheets for all equipment installed showing that it meets the program specifications. You may submit the application via mail, fax, or e-mail.

Step 3: Install Equipment or Perform Project Work

- Incentive funds are reserved for 90 days, so you have 90 days to complete your project. Contact the AEP Ohio Business Incentives for Energy Efficiency team for specific questions regarding funding reservations and extensions.
- Be sure that the equipment installed meets or exceeds the specifications and requirements found on the Specifications pages.

Step 4: Submit Final Application

- Submit a final application as soon as possible after the project is completed (it must be submitted within 60 days of project completion). The final application is the same form as the pre-approval application. Complete the right-hand side of the checklist page and attach the documentation listed: a signed Agreement and Signature page, a scope of work (type, quantity and wattage of old and new equipment), dated and itemized invoices for the purchase and installation of all equipment installed and specification sheets for all equipment installed showing that it meets the program specifications.
- The program team will review your Final Application. For some projects, a final inspection will be part of the final review, and you will be contacted to schedule it.

Step 5: Receive Incentive Payment

- The program team will send incentive payment form to six weeks after the final project has been completed, all measures are verified and the project is approved.

Submit your application to:
Email: gridsmartohio@kema.com

AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219
Call: (877)-607-0739
Fax: (877)-607-0740

Visit our web site at gridsmartohio.com

*Pre-approval Application for Prescriptive & Custom Projects
Custom and some prescriptive projects require a Pre-approval Application to reserve funding. A Pre-approval Application is not a guarantee of an incentive; the actual incentive will be based on the energy savings and equipment installed as determined in the Final Application. Funds will be reserved for 90 days, unless an applicant is granted an extension. The program team reserves the right to contact the customer before the reservation expiration date to be sure that the project is moving forward. If the project is not underway, the reservation can be cancelled. Funds that have been reserved are not transferable to other projects, facilities, and/or customers. A waiting list will be established if funds become fully subscribed.

If you are viewing this document in Microsoft Excel, please note that each section of the application is accessible through the tabs at the bottom of the Excel window. Highlighted cells are for inputting information.

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Prescriptive & Custom Program
Project Application

INCENTIVE APPLICATION CHECKLIST

Self-Direct Projects require a separate SELF-DIRECT APPLICATION FORM

PRE-APPROVAL APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Incentives Requested Section of Agreement and Signature Page
- ☐ Proposed Scope of Work

Incentives Worksheets*

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration/Misc
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____
Estimated Project Cost: _____
Expected Completion Date: _____

Project funds will only be reserved for 90 days from date of reservation.
**Please complete forms for checked boxes.*

FINAL APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Incentives Requested Section of Agreement and Signature Page
- ☐ Completed Payment Release Section (if applicable)
- ☐ Itemized Invoices
- ☐ Equipment Specifications
- ☐ Updated scope if project changed

Incentive Worksheets*

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration/Misc
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____
Final Project Cost: _____
Final Completion Date: _____

Incomplete applications will delay processing and incentive payment.
**Please complete forms for checked boxes.*

Please complete below if this is a revised submittal.

SUBMITTAL DATE: _____

APPLICATION NUMBER (IF KNOWN): _____

AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219

Phone: (877)-607-0739
Fax: (877)-607-0740
gridsmartohio@kema.com
www.gridsmartohio.com

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Columbus Southern Power and Ohio Power Company are collectively known as AEP Ohio ("AEP Ohio"). AEP Ohio is offering prescriptive and custom incentives under the AEP Ohio Business Incentives for Energy Efficiency program to facilitate the implementation of cost-effective energy efficiency improvements for non-residential (commercial and industrial) customers.

Please note that funds are limited and subject to availability.

Program Effective Dates

AEP Ohio Business Incentives for Energy Efficiency program incentives are offered until approved funds are exhausted or December 31st of each program year, whichever comes first. The effective dates of the current AEP Ohio Business Incentives for Energy Efficiency program and application submittal requirements are as follows:

- Projects with a final completion date before January 1, 2011 must apply on a Self-Direct Application.
- All 2011 AEP Ohio Business Incentives for Energy Efficiency program projects must be completed and Final Applications received no later than December 16, 2011.
- Subsequent program year budgets and plans will be made available towards the end of the existing program year. AEP Ohio currently has a commitment to provide this program through the 2011 program year.

Program and Project Eligibility

The AEP Ohio Business Incentives for Energy Efficiency program offers both prescriptive incentives for some of the more common energy efficiency measures and custom incentives for those eligible improvements not included on the list of prescriptive measures. Program incentives are available under the AEP Ohio Business Incentives for Energy Efficiency program to include non-residential accounts served on AEP Ohio's regulated retail rates. Qualifying projects must be installed in a facility in AEP Ohio's electric service territory. These incentives are available to all non-residential customers who pay into the Energy Efficiency and Peak Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless which retail electric supplier the customer has chosen to purchase power. A customer may neither apply for nor receive incentives for the same product, equipment or service from more than one utility.

Custom projects must involve measures, which result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a custom incentive, except those which involve an automated control technology such as energy management system programming. The project simple payback prior to the incentive payment generally should be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive. Incentives are calculated based on first-year energy savings and peak demand reduction. Peak demand reduction is defined as the reduction in average load over the Performance Hours by the replacement of existing electrical equipment with more efficient electrical equipment. Peak Performance Hours is defined as the time between June 1st and August 31st on weekday, non-holidays, between the hours 3:00 PM and 6:00 PM Eastern Time.

Projects involving measures covered by the prescriptive incentive portion of the program are not eligible for a custom incentive. However, the applicant has the option to apply for a custom incentive for whole building integrated projects or systems, even if they include prescriptive measures. The prescriptive elements may be capped at the deemed savings and/or incentive level.

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Project requirements under the AEP Ohio Business Incentives for Energy Efficiency program include the following:

- Projects must involve a new facility improvement that results in a permanent reduction in electrical energy usage (kWh).
- Projects that are NOT eligible for an incentive include the following:
  - Fuel switching (e.g. electric to gas or gas to electric)
  - Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
  - On-site electricity generation
  - Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
  - Projects focused primarily on power factor improvement
  - Projects that involve peak-shifting (and not kWh savings)
  - Renewables
- Any measures installed at a facility must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the product, whichever is less. If the Customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the Customer may be required to return a prorated amount of incentive funds to AEP Ohio.
- Used or rebuilt equipment is generally NOT eligible for an incentive.
- All installed equipment must meet state, federal, and local codes and requirements.
- Projects must be installed on the AEP Ohio electric account served by an eligible electric rate type listed on the application.
- Equipment must be purchased, installed, and operating (or capable of operating in the case of seasonal uses) prior to submitting a final application for an incentive.
- AEP Ohio will issue incentive payments in the form of checks, not utility bill credits.
- The incentive is paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one incentive.

Further documentation requirements can be found in the Policy and Procedures Manual which can be found at the program website www.gridsmartohio.com or by calling the program hotline. Documentation indicating contract dates prior to Jan 1, 2011 may render this application ineligible.

Incentive Payment Limits

For both the Prescriptive and Custom programs, the total incentive payment shall be the lesser of: 1) The calculated incentive as approved by AEP Ohio, or 2) 50% of Total Incremental Cost. In calculating the savings and incentives please refer to the Policy and Procedures Manual for details.

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Incentive Caps

- The cap for each project is $300,000.
- The cap is by utility company (Columbus Southern Power Company and Ohio Power Company).
- A sliding scale incentive reduction will be incorporated when the calculated incentive exceeds $160,000 per project.
- The cap for each business entity (corporation, LLC, partnership, etc) is based on their tariff, indicated below.

TARIFF	LIMIT PER BUSINESS ENTITY
General Service Tariffs 1,2, & 3	$600,000 per year
General Service Tariff 4	$600,000 overall for years 2009-2011

Application Review Process

Applications are not a guarantee of program acceptance and incentive payment. AEP Ohio will review applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a complete pre-approval application and determines that the project meets the program eligibility requirements. Applicants who submit incomplete applications will be notified of deficiencies upon review of the application, and could lose their place in line in the review process until all requested information is received. Applicants are encouraged to call the program hotline if they have any questions about documentation requirements.

Please click on the below link for additional application process steps information.
http://www.aepohio.com/global/utilities/lib/docs/save/programs/Application_Steps_Incentive_Process.pdf

Pre-approval Application

- Prescriptive projects requiring Pre-approval: New T8/T5 fixtures and Delamping T8 fixtures
- All custom projects require Pre-approval

Final Application

The Final Application must be submitted within 60 days of project completion. Project documentation, such as copies of dated invoices for the purchase and installation of the measures and/or product specification sheets, is required.

The location or business name on the invoice must be consistent with the application information. Final Applications and all required supporting documentation must be received by Dec 16, 2011 to be applicable for the 2011 program year.

The invoice should provide sufficient detail to separate the project cost from the costs of other services not related to the energy efficiency project and other repairs. AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission. Requested information could include: equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, savings calculation documentation, monitoring data, warranty information, and proof of customer co-payment.

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Inspections

AEP Ohio reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include pre-installation and/or post-installation inspections, detailed lighting layout descriptions, metering, data collection, interviews, and utility bill or monitoring data analyses. The customer must allow access to project documents and the facility where the measures were installed for a period of five years after receipt of incentive payment by AEP Ohio.

Tax Liability

Incentives are taxable and, if more than $600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on your business as a result of your receipt of payment. We may require that a W-9 be provided.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for custom projects using industry-accepted engineering algorithms or simulation models. The applicant must estimate the annual electricity usage of both the existing and proposed equipment based on the current operation of the facility. Where equipment is replaced prior to the end of its rated service life in order to achieve energy savings, the existing equipment performance may be used as the baseline in the energy savings calculations. Where equipment is replaced due to failure or for other reasons (such as obsolescence or a need for more capacity), the baseline performance used in the savings calculation should be either the minimum performance that would be required by code for that equipment type and application (where a code applies) or the performance of the equipment that would have been selected as the customer's "standard practice" when a code does not apply.

The applicant must be able to clearly describe the method used to calculate the savings. The applicant must provide all assumptions used in the calculations and document the sources for these assumptions.

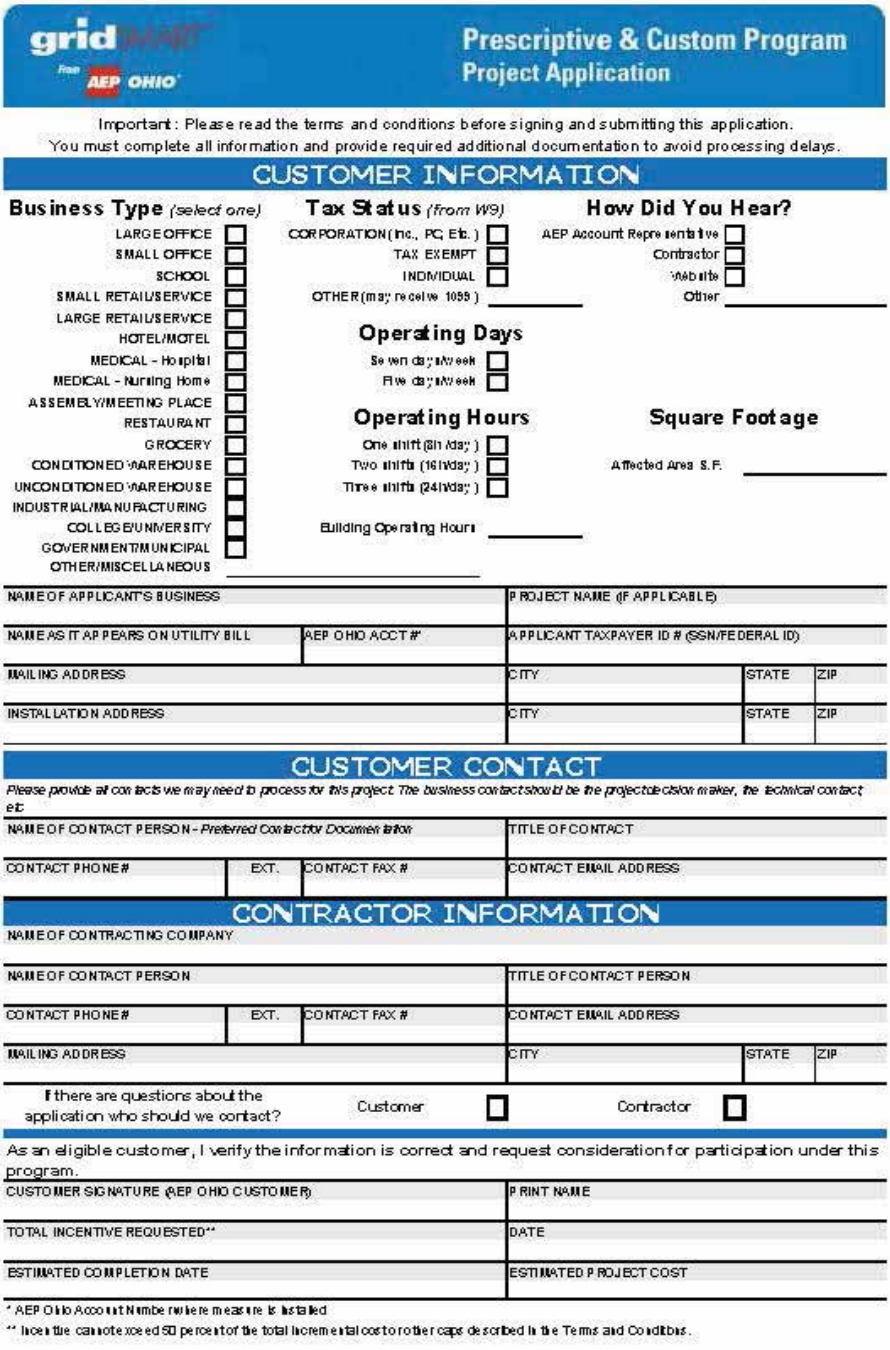
The method and assumptions used by the applicant to calculate the annual savings will be reviewed by AEP Ohio. AEP Ohio is solely responsible for the final determination of the annual energy savings and peak demand reduction to be used in calculating the incentive amount. AEP Ohio also reserves the right to require specific measurement and verification activities including monitoring both before and after the retrofit to determine the incentive.

AEP Ohio may need to conduct inspections both before and after retrofit projects to verify equipment and operating conditions. For custom projects, the applicant is required to submit a Pre-approval Application while the existing equipment is still in operation in order to allow AEP Ohio the opportunity to verify the existing equipment.

Disclaimer

AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program. AEP Ohio has no obligations regarding and does not endorse or guarantee any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures. AEP Ohio is not responsible for the proper disposal/recycling of any waste generated as a result of this project. AEP Ohio is not liable for any damage caused by the operation or malfunction of the installed equipment.

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gridSMART from AEP OHIO

Prescriptive & Custom Program
Project Application

Important: Please read the terms and conditions before signing and submitting this application.
You must complete all information and provide required additional documentation to avoid processing delays.

CUSTOMER INFORMATION

Business Type *(select one)*

- LARGE OFFICE ☐
- SMALL OFFICE ☐
- SCHOOL ☐
- SMALL RETAIL/SERVICE ☐
- LARGE RETAIL/SERVICE ☐
- HOTEL/MOTEL ☐
- MEDICAL - Hospital ☐
- MEDICAL - Nursing Home ☐
- ASSEMBLY/MEETING PLACE ☐
- RESTAURANT ☐
- GROCERY ☐
- CONDITIONED WAREHOUSE ☐
- UNCONDITIONED WAREHOUSE ☐
- INDUSTRIAL/MANUFACTURING ☐
- COLLEGE/UNIVERSITY ☐
- GOVERNMENT/MUNICIPAL ☐
- OTHER/MISCELLANEOUS _____

Tax Status *(from W9)*

- CORPORATION (Inc., PC, Etc.) ☐
- TAX EXEMPT ☐
- INDIVIDUAL ☐
- OTHER (may receive 1099) _____

Operating Days

- Seven day/week ☐
- Five day/week ☐

Operating Hours

- One shift (8h/day) ☐
- Two shifts (16h/day) ☐
- Three shifts (24h/day) ☐

Building Operating Hours _____

How Did You Hear?

- AEP Account Representative ☐
- Contractor ☐
- Website ☐
- Other _____

Square Footage

Affected Area S.F. _____

NAME OF APPLICANT'S BUSINESS		PROJECT NAME (IF APPLICABLE)		
NAME AS IT APPEARS ON UTILITY BILL	AEP OHIO ACCT #*	APPLICANT TAXPAYER ID # (SSN/FEDERAL ID)		
MAILING ADDRESS		CITY	STATE	ZIP
INSTALLATION ADDRESS		CITY	STATE	ZIP

CUSTOMER CONTACT

Please provide all contacts we may need to process for this project. The business contact should be the project decision maker, the technical contact etc.

NAME OF CONTACT PERSON - *Preferred Contact for Document Info*			TITLE OF CONTACT
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS

CONTRACTOR INFORMATION

NAME OF CONTRACTING COMPANY

NAME OF CONTACT PERSON			TITLE OF CONTACT PERSON		
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS		
MAILING ADDRESS			CITY	STATE	ZIP

If there are questions about the application who should we contact? Customer ☐ Contractor ☐

As an eligible customer, I verify the information is correct and request consideration for participation under this program.

CUSTOMER SIGNATURE (AEP OHIO CUSTOMER)	PRINT NAME
TOTAL INCENTIVE REQUESTED**	DATE
ESTIMATED COMPLETION DATE	ESTIMATED PROJECT COST

* AEP Ohio Account Number where measure is installed
** Incentive cannot exceed 50 percent of the total incremental cost or other caps described in the Terms and Conditions.

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Prescriptive & Custom Program
Project Application

FINAL APPLICATION AGREEMENT

I understand that the location or business name on the invoice must be consistent with the application information. I understand that AEP Ohio or their representatives have the right to ask for additional information at any time. AEP Ohio's Business Incentives for Energy Efficiency program will make the final determination of incentive levels for this project.

As an eligible AEP Ohio customer, I certify that decisions to acquire and install the indicated energy efficiency measures, which will be demonstrated with supporting documentation required by AEP Ohio, were made and that work was completed on this project on or after Jan 1, 2011. The energy efficiency measures are for use in my business facility and not for resale. Project documentation, including copies of dated invoices for the purchase and installation of the measures and product specification sheets, is included.

I agree to verification by the utility or their representatives of both sales transactions and equipment installation.

I understand that these incentives are available to all customers who pay into the Energy Efficiency and Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires regardless from which retail electric supplier the customer has chosen to purchase power.

I certify that the information on this application is true and correct, and that the Taxpayer ID Number and tax status are the applicant's.

I agree that if: (1) I do not install the related product(s) identified in my application, or (2) I remove the related product(s) identified in my application before a period of 5 years or the end of the product life, whichever is less, then I shall refund a prorated amount of incentive funds to AEP Ohio based on the actual period of time in which the related product(s) were installed and operating (or the full amount if the product was never installed). This is necessary to assure that the project's related energy benefits will be achieved.

I understand that the program may be modified or terminated without prior notice.

AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates Program rules and requirements. AEP Ohio is not liable for incentives promised to customers as a result of misrepresentation of the Program.

I agree to be responsible to comply with any applicable codes or ordinances.

All submissions become the property of AEP Ohio. It is recommended for you to keep to a copy for your records.

I understand that this project must involve a facility improvement that results in improved energy efficiency. I also understand that all materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with local codes and ordinances. I understand it is my responsibility to be aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at: http://www.epa.gov/osw/hazwaste.htm.

The program has a limited budget. Applications will be processed until allocated funds are reserved or spent. Final applications should be received by Dec 16, 2011 to be eligible for funding under the current program period.

I understand that AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program, and, further, that AEP Ohio has no obligations regarding promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures and does not endorse or guarantee same.

I understand that in the event the application received pre-approval and funds were reserved based upon the application, such pre-approval or reservation, including the specific dollar amount of reservation, does not represent a guarantee that such funds will be paid. Payment of incentives will be based upon the final review of the application and program terms and conditions, as well as the availability of funds.

Any and all energy savings generated by the project described in this application are hereby committed to AEP Ohio in order to count against its respective companies' benchmark requirements in S.B. 221.

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CUSTOM INCENTIVES WORKSHEET

All Custom applications require a pre-application
Please attach supporting documentation as described in the Policies and Procedures Manual.

Prior to submitting application, please contact the AEP Ohio gridSMART program staff.

CUSTOM PROGRAM INCENTIVES		
Incentive Levels	First Year kWh Savings	$0.08/first year kWh
	Peak Demand Reduction	$100/peak kW
Payback Period	Maximum	7 years
	Minimum	1 year***
Caps	% of Total Incremental Cost	50%
	Per Project	$300,000

Item 1

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 2

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 3

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback
Total Custom Project Cost:				
Total Custom Incentives:**				

* Measure Cost is the cost to implement rebated efficiency measures less all costs incurred to achieve other project benefits. The Measure Cost may be the increment required to deliver an efficiency improvement over the base case efficiency.

** Total Custom Incentives may not exceed 50% of the total incremental cost.

***The project simple payback prior to the incentive payment generally should be greater then one year and be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive.

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gridSMART from AEP OHIO

Prescriptive & Custom Program
Project Application

CUSTOM INCENTIVES WORKSHEET

All Custom applications require a pre-application
Please attach supporting documentation as described in the Policies and Procedures Manual.

Prior to submitting application, please contact the AEP Ohio gridSMART program staff.

CUSTOM PROGRAM INCENTIVES		
Incentive Levels	First Year kWh Savings	$0.08/first year kWh
	Peak Demand Reduction	$100/peak kW
Payback Period	Maximum	7 years
	Minimum	1 year***
Caps	% of Total Incremental Cost	50%
	Per Project	$300,000

Item 1

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 2

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 3

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback
Total Custom Project Cost:				
Total Custom Incentives:**				

* Measure Cost is the cost to implement rebated efficiency measures less all costs incurred to achieve other project benefits. The Measure Cost may be the increment required to deliver an efficiency improvement over the base case efficiency.

** Total Custom Incentives may not exceed 50% of the total incremental cost.

***The project simple payback prior to the incentive payment generally should be greater then one year and be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive.

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gridSMART from AEP OHIO

Prescriptive & Custom Program
Project Application

CUSTOM PROJECTS SPECIFICATIONS

All Custom Applications Require a Pre-Application

Instructions for Energy Savings Calculations for Custom Projects
Custom project incentives are based on first year kWh savings and average on-peak demand savings. Electricity savings must result from efficiency improvements. The term Peak Hours is defined as the time between June 1st and August 31st on weekday, non-holidays, between the hours of 3:00 PM and 6:00 PM. If a measure is covered under prescriptive and does not qualify for the prescriptive rebate, it can not be applied for as a custom project.

Custom applications must be accompanied by detailed engineering calculations that document the annual total energy savings and on-peak demand savings.

The following serve as guidelines for the minimum required documentation. Please see the Policy and Procedure Manual for more detail.

Energy Savings Calculations
Provide calculations documenting the predicted energy consumption of the existing (or baseline) and proposed system using appropriate analytical tools and clearly stated assumptions. Calculations may be performed by "hand," but spreadsheet analysis or more rigorous modeling is preferred. All analysis should be provided in electronic format. All assumptions such as operating hours, existing and proposed equipment operational details must be presented. Engineering algorithms and procedures from recognized technical organizations such as ASHRAE, SMACNA, ANSI, etc. must be used. Use rated performance factors tested under accepted procedures specified by recognized rating agencies such as AHRI, ANSI, ASTM, etc. Provide an explanation when equipment performance rating conditions vary from standard conditions.

In support of the calculations, extensive documentation must be provided that provides the basis for the savings estimates. The documentation must provide information on the equipment operating schedule, daily and seasonal load profile, and baseline AND energy efficient equipment performance at the operating loads. Typical documentation for custom projects often includes:

- Baseline/existing and proposed equipment make and model number including operating voltage and rated full load amps.
- Existing equipment condition and age
- Engineering or architectural drawings and "equipment schedule" sheets
- Component specification sheets that include part load efficiency or performance factors
- Spreadsheet calculations or input/output files and results from system modeling or other engineering analysis using accepted engineering algorithms and practices
- Log sheets, trend logs from a building management system, or other operating documentation that are often necessary to document operating hours and equipment loading, and used as a basis for the calculations (in some cases, short term monitoring may be required to document the load profile)
- Control sequence of operations that are necessary where controls play a part in the savings equation

Additional documentation, other than that described in the application, may be required for program participation. Larger projects may also require pre and post project sub-metering, or monitoring of loads and/or power input as part of another measurement and verification activity to demonstrate the actual energy savings realized.

Baseline for Custom Analysis
Where equipment is replaced prior to the end of its rated service life in order to achieve energy savings, the existing equipment performance may be used as the baseline in the energy savings calculations. Where equipment is replaced due to failure or for other reasons (such as obsolescence or a need for more capacity), the baseline performance used in the savings calculation should be either the minimum performance that would be required by code for that equipment type and application (where a code applies) or the performance of the equipment that would have been selected as the customer's "standard practice" when a code does not apply.

APPENDIX J

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AEP Ohio
Energy Efficiency/Demand Response Plan
Year 3 (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report: Business Custom Program

Presented to

AEP OHIO®
A unit of American Electric Power

May 10, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, OH 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Roger Hill, Managing Consultant
641.236.1511
roger.hill@navigant.com

Argene McDowell, Senior Consultant
608.497.2330
argene.mcdowell@navigant.com

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Section E. Executive Summary

This document presents a summary of the findings and results from the evaluation of the 2011 Custom Program implemented by AEP Ohio for the program year January 1, 2011 through December 31, 2011 (PY 2011).[1]

AEP Ohio offers energy efficiency incentives to business customers in its service territory through five programs: Prescriptive, Custom, Express for Small Business, New Construction Projects and Self-Direct. All five programs provide incentives to AEP Ohio customers who upgrade their facilities with energy efficient equipment. The Custom Program incentives are available to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects. Custom incentives are available based on both the project's first year kilowatt-hour (kWh) and kilowatt (kW) savings.

Eligible equipment includes lighting retrofits, HVAC measures such as VFDs, equipment controls, variable speed air compressors, coil replacement, insulation, process efficiency improvements and other miscellaneous measure installations. Some of these measure installations are "True Custom" measures in the sense that simple deemed savings and/or simple-to-apply algorithms do not already exist for this heterogeneous-measure segment of the program population. Lighting projects are also eligible for custom incentives when the hours of operation are unusual and/or when non-standard equipment is installed.

The Custom Program provides a streamlined incentive application and quality control process intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies. Relationships with trade ally "Solution Providers" are a key strategy for promoting custom incentive availability to customers. The Custom Program is marketed by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc., in coordination with AEP Ohio.

E.1 Evaluation Objectives

The three major objectives of the evaluation are to: (1) quantify verified gross energy savings and summer peak demand reduction[2] from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost effectiveness.

[1] Program Year 2011 (PY 2011) participation is based on an implementation contractor payment request date to AEP Ohio between January 1, 2011 and December 31, 2011. December 15, 2011 was the last day in 2011 that AEP Ohio accepted applications for PY 2011.
[2] The summer on-peak period for claiming demand reduction is defined as 3 pm through 6 pm, June through August.

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E.2 Evaluation Methods

The data collected for evaluation of the PY 2011 Custom Program was gathered during a number of research activities including:

- In-depth telephone interviews with program coordinators and with a number of KEMA staff
- In-depth telephone interviews with trade ally "Solution Providers"
- A computer-aided telephone interview (CATI) survey with participating customers
- Tracking system data review
- Documentation technical review of a sample of projects
- On-site measurement and verification at customer sites for a subset of projects sampled for technical review

Table E-1 provides a summary of these data collection activities including the targeted population, the sample frame, and timing in which the data collection occurred.

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Table E-1. Data Collection Activities for PY 2011 Evaluation

Data Collection	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Custom Program projects approved for payment for the 2011 program year	AEP Ohio Tracking Database	-	All	May 2011 to April 2012
In-depth Interviews	AEP Ohio Program Staff	Contact from AEP Ohio	Business Programs Manager and Custom Program Coordinator	2	February 2012 to March 2012
	Custom Program Implementers	Contact from AEP Ohio	KEMA Program Implementation Staff	5	
In Depth Interviews	Custom Program Solution Providers	Tracking database	Convenience sample of all Solution Providers	15 Across Business Programs[3]; 2 Non-Participants	February 2012 to March 2012
CATI Survey	Custom Program Participants	Tracking Database	Census of Custom Program Participants	74 unique contact names/25 Completed Surveys	March 2012 to April 2012
Application File Review	Tracking Database	Stratified Random Sample by Zone, Measure Category, Project-Level kWh (3 Strata)	Stratified Random Sample by Zone, Project-Level kWh (3 Strata)	54	December 2011 to April 2012
On-Site Measurement and Verification	Project Application Review Wave 1 Sample	Random Subset of Project Application File Review	Subset of Project Application File Review	12	March 2012

[3] Business Programs include Prescriptive Program, Self- Direct Program and Custom Program. Express Program and Commercial New Construction Solution Providers were *not* part of the interview sample frame.

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E.3 Key Findings and Recommendations

Key Impact Findings

The impact results for the PY 2011 Custom Program are shown in Table E-2.

Table E-2. Gross Savings Estimates for the PY 2011 Custom Program

	Program Goals		Ex-Ante Reported Savings		Verified Gross Savings	
Program	Gross MWh	Gross MW	Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**69,622**	**5.413**	**29,154**	**3.451**	**25,559**	**3.290**

The realization rate (defined as verified gross savings / ex-ante reported savings) is 88 percent for gross energy savings, and 95 percent for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Custom Program projects in the sample is ± 6 percent for the energy realization rate and ± 5 percent for the demand realization rate.

Although the program performed well when measured by realization rates, the PY 2011 verified gross savings fell short of the program goals for the year. The verified gross energy and demand savings were 37 percent and 61 percent of goal, respectively. Overall, both program energy and peak demand savings dropped slightly from PY 2010 ex-ante gross savings results. This change may be an indication of barriers in the marketplace that need to be addressed, a continued reflection of the weak economy, or other program challenges; or it could be reasonable given the expected and inherent variability in the program mix from year to year.

During the in-depth interviews, KEMA indicated their goals are based on the overall Business Sector goal, not individual program goals, and KEMA was comfortable it would meet the overall sector goal. It was not mentioned during the interview that the Custom program would be significantly short of 2011 goals, and due to the success of the Self-Direct Program there did not seem to be a deep concern if the Custom program fell short. While the overall Business portfolio goal is most important, individual program goals are also an important metric to be reviewed. Moving forward AEP Ohio and KEMA may want to discuss ways to improve the Custom program performance without sacrificing the success of the other Business programs.

The Custom Program observations from the evaluator verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate.

Key documentation for payment verification (invoices and equipment specification sheets) was found to be complete and clearly labeled. Pre- and post-inspection documents were adequate and contained a satisfactory level of information. However, baseline fixtures were difficult to

verify on-site since most customers do not keep the replaced fixtures. Pre-inspections are often helpful to determine baseline fixture quantity and type.

Key Impact Recommendations

1. Consider increasing the rigor of the pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope of the new installation, but also the existing baseline equipment configuration and operation data. Consider increasing efforts in pre-inspections, especially for projects with large savings.
2. For projects that include building automation installations, consider conducting pre-installation inspections and document current controls status and post-installation. Thoroughly document pre- and post-installation sequences and schedules with the sequence code or at least screen-captures of operations and schedules.
3. Consider adding default or "building-type" look-up values for HVAC interactive and peak coincidence factors to lighting measure calculation spreadsheets. Smaller lighting project ex-ante savings estimates sometimes included inappropriate or no interactive effects. These smaller projects appeared to receive less-rigorous reviews due their size, and interaction and coincidence factors were not always applied.
4. For projects where savings are based solely on billing data comparisons, consider requiring at least six months of post-installation data for the comparison before finalizing savings estimates. Ideally, the data will capture months when operating equipment is affected, for example, shoulder season and cooling months for economizers.
5. Consider applying more rigor to savings estimates submitted by vendors to ensure assumptions are accurate. Navigant found examples of inappropriate motor loading assumptions, motor and variable frequency drive efficiency, and conversion between horsepower and kW. Establish ex-ante defaults for some of these parameters when actual data are not provided in savings estimates.

Key Process Findings and Recommendations

Satisfaction with the Custom Program

1. Over 90 percent of participants were satisfied with the program overall (96%), as well as with communication with program staff (93%), payment amount (92%) and measures offered (96%). Most customers (90%) planned on participating in the program again.
2. In 2011, 88 percent of program participants reported they were very satisfied or satisfied with AEP Ohio.
3. Solution Providers support their customers by completing applications, communicating with AEP Ohio or KEMA as necessary, and installing the equipment. In general,

Solution Providers are pleased with the program because it increases their business; however, they do find that the Custom review process often takes a long time and there is potential for losing out on a project because of this.

Program Growth

4. To expand the program reach in 2011, KEMA developed technical fact sheets for process VFDs and air compressors applications. KEMA also actively worked to attract non-lighting trade allies to the program. More Solution Providers were trained at the Solution Provider workshops than in prior years.
5. Customers report the most common source of information about the program was their contractor or trade ally in both 2010 and 2011.
6. Solution Providers said that the level of marketing and promotion of the programs by AEP Ohio has been adequate; customers have been responsive to ads and have called them with projects. Solution Providers requested more direct marketing to increase participation in the Custom Program.

Marketing

7. Presentations to large customer groups were one common method of promoting the Custom Program. In 2011presentation venues included: Canton Tomorrow, a business development group; trade shows and expos. AEP Ohio also conducted a webinar with members of the Ohio Manufacturing Association and held three workshops for water/wastewater treatment customers. In addition, AEP Ohio holds seminars for customers three times a year throughout the state.
8. The Program Coordinator believes the program could be marketed more aggressively with a combination of increased outreach through county fairs and business groups, increased use of Solution Providers, and an increase in more general marketing such as bill inserts and emails. Another marketing opportunity to explore is working with an aggregator to find savings through the Custom Program.
9. Communication concerns raised in 2010 seem to have been resolved; email communication increased from the Program Administrators, as well as newsletters and seminars. Word-of-mouth was also a predominant mode whereby customers heard of the program.

Program Improvements

10. Solution Providers would improve the program with less paperwork and improvements in the application spreadsheets.
11. Solution Providers would move some equipment to the Prescriptive Program, set a time-limit for review for complex processes, increase incentives for HVAC equipment and increase the use of promotional materials.

12. One Solution Provider proposed carrying previous year's incentives into the first month of the New Year so projects can continue to be sold and implemented during January. Because new incentives are announced in February, any proposals completed in January has to be redone, thus January is a "dead time" for sales.

Money Rules

13. Customers, the Program Coordinator, and Solution Providers agreed that cash flow remains the main reason why customers might not participate in the program and money was the main reason for customers to participate in the program. With the state of the economy, many customers are willing but not able to make investments because they don't have the capital to invest. To counter this impact, AEP Ohio has considered adding program financing to the Custom Program offer.

Barriers to the Custom Program

14. Solution Providers said that custom measure engineering review may hold up a project. While prescriptive measures can be reviewed in two to three weeks, custom measure engineering review is usually required and can take many weeks.

15. AEP Ohio advertisements do not always align with the program time line. Last year, AEP Ohio had already stopped the program but they were still sending out brochures at the end of the year. One Solution Provider refused to process any more applications late in the year.

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Section 1. Introduction and Purpose of the Study

The Custom Program offers incentives to nonresidential customers who install high-efficiency electric equipment or implemented industrial process improvements and technology that reduce energy consumption and reduce peak demand. The program launched in mid-year 2009. The Custom Program complements the Prescriptive Program by encouraging non-standard and more complex energy savings projects. The Custom Program provides a streamlined incentive application and quality control process intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting the Custom Program to customers. The Custom Program is marketed by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc., in coordination with AEP Ohio.

1.1 Evaluation Overview

The three major objectives of the evaluation are to: (1) quantify energy savings and summer peak demand reduction from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost effectiveness.

The evaluation sought to answer the following key research questions.

Cross Cutting Questions

1. Review progress on issues identified in 2010 evaluation.
2. Compare 2010 findings with 2011 findings.
3. Have changes made to the 2011 program been effective in increasing satisfaction and/or participation?

Impact Questions

1. Were the impacts reported by the program achieved?
2. What were the realization rates? (Defined as evaluation-verified (ex-post) savings divided by program-reported (ex-ante) savings.)
3. What are the benefits and costs and cost effectiveness of this program?

Process Questions

The process evaluation questions for PY 2011 focused on the following key areas:

1. Program design and implementation changes in PY 2011

2. Changes to customer and trade ally program participation between PY 2010 and PY 2011
3. Effectiveness of program design and processes
4. Effectiveness of program implementation
5. Effectiveness of program marketing and outreach
6. Barriers to and benefits of participation
7. Participant satisfaction

The evaluation plan for the Business Custom Program had six main elements. For the impact evaluation Navigant planned desk review of project files and savings estimates, on-site post-installation and, if possible and warranted pre-installation inspections. Navigant planned to conduct in-depth interviews with program coordinators and program implementers and CATI surveys with program participants for the evaluation of the Custom Program. Solution Provider results will be reported in a separate report section.

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Section 2. Description of the Program

This evaluation report covers the Custom Program element of the AEP Ohio business sector energy efficiency and peak demand reduction (EE/PDR) programs.

2.1 Program Description

2.1.1 Business Sector Programs

In 2007, AEP Ohio issued corporate wide directive to all operating companies to meet internal energy efficiency goals. In 2008 Ohio passed comprehensive energy legislation, which includes an advanced energy portfolio standard (AEPS) 2008 Senate Bill (SB) 221, signed into law by Governor Ted Strickland on May 1, 2008.[4] The law directs Ohio utilities to implement programs to help their customers use electricity more efficiently, and requires electric utilities to achieve energy savings of 22.2 percent of baseline electricity use by the end of 2025 through energy efficiency programs. Utilities must also implement programs to reduce peak energy demand one percent beginning in 2009, and an additional 0.75 percent per year through 2018, for a total of 7.75 percent.

In response to the new legislative requirements, AEP Ohio launched a set of EE/PDR programs for 2009-2011 under a three-year action plan with oversight by the PUCO. The 2011 Custom Program was one of five energy efficiency program elements available to non-residential customers of AEP Ohio during 2011:

- The **Prescriptive Program** provides a streamlined incentive application and quality control process, and is intended to facilitate ease of participation for non-residential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting, and the application form was eligible for use in early 2010. In April 2010, AEP Ohio launched the 2010 Prescriptive Program and application form that expanded the program to additional end-uses such as HVAC, and refrigeration systems, and increased the number of eligible lighting measures. In 2011, the Prescriptive Program staff assigned more marketing resources to attracting non-lighting projects.

- The **Self-Direct Program** rewards qualifying customers who submit previously installed projects through one of two energy efficiency credit options: an energy efficiency credit payment of 75 percent of the calculated incentive amount under the Prescriptive or

[4] http://www.legislature.state.oh.us/bills.cfm?ID=127_SB_221

Custom Program; or an exemption from the EE/PDR rider for a specified number of months. The 2011 program targeted projects installed after January 1, 2008 and prior to December 31, 2010.

- The **Custom Program** offers incentives to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects.

- The **Express Install Program** provides one-stop turn-key services to small businesses (less than 200,000 kWh consumption per year) for lighting and refrigeration measure upgrades. Approved service providers recruit participants, identify savings opportunities, complete program paperwork and install measures for the program. The Express Install Program launched in November 2010. The program had limited participation in Program Year 2010, but saw broader appeal in 2011. Savings estimates are based on prescriptive formulas for simplicity and auditability.

- The **New Construction Program** seeks to capture energy efficiency and peak load reduction opportunities through a comprehensive effort to influence building design and construction practices. It does so by providing incentives to new facility owners for the installation of high-efficiency lighting, HVAC, building envelope, refrigeration and other equipment and controls, and by providing design assistance to the architects and engineers that are designing new buildings. The key design assistance tool is building simulation modeling of more efficient building designs. The New Construction Program launched in March 2011.

The AEP Ohio programs are funded on an annual calendar year basis. Funding in any given program year is limited to that year's budgeted amount and, therefore, incentives are paid on a first-come, first-served basis until the program year's incentive funds are exhausted. Funds may be shifted between the multiple business program elements based on participant response and approval of the PUCO. The business sector portion of the EE/PDR Action Plan is based on the savings goal as follows in Table 2-1. The 2011 Custom Program savings goal follows in Table 2-2.

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Table 2-1. Business Sector Programs Planned Savings Goals and Budget

Business Sector Programs	2011
Energy Savings (GWh)	249.9
% Savings of Sector Sales	0.70%
Demand Savings (MW)	93.5
% Savings of Sector Sales	1.35%
Total Cost ($ millions)	$33.9

Source: Volume 1: 2009 to 2011 Energy Efficiency/Peak Demand Reduction (EE/PDR) Action Plan 2009-2011, November 5, 2009.

Table 2-2. Custom Program Planned Savings Goals and Budget

Custom Program	2011
Energy Savings (GWh)	69.6
Demand Savings (MW)	5.4
Total Cost ($ millions)	$11.7

Source: Volume 1: 2009 to 2011 Energy Efficiency/Peak Demand Reduction (EE/PDR) Action Plan 2009-2011, November 5, 2009.

AEP Ohio retained KEMA Services Inc. (KEMA) as its program administrator responsible for day-to-day operations of the Business Programs. AEP Ohio Prescriptive, Custom, Business Express, New Construction and Self-Direct Program Coordinators report to an overall Business Program Coordinator. An AEP Ohio staff person supports outreach and marketing, and other AEP Ohio staff support planning, evaluation, and reporting.

2.1.2 Custom Program Description

The goals of the Custom Program in 2011 continue to be to exceed the kWh targets in the EE/PDR Action Plan at or below the program budget, improve customer satisfaction with the program and overall, increase outreach to customers, and internally involve more customer service staff in promoting the program to assigned customers. A summary of the important aspects of Custom Program follows.

Performance Incentive: Custom incentives are available based on both the project's first year kilowatt-hour (kWh) and kilowatt (kW) savings.

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Table 2-3 presents the incentive parameters of the program.

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Table 2-3. Incentive Parameters

Energy Incentive	Demand Incentive	Incentive Cap
$0.08 / kWh	$100 / kW	50% of project cost (materials + labor)

Incentive Caps. Incentives are subject to project caps and yearly caps that are set per each business entity and vary by customer tariff. The project cap is $300,000 and the yearly cap is $600,000 per year for General Service tariffs 1, 2, and 3, and $600,000 overall for 2009 through 2011 for General Service tariff 4.

Incentive Limits. Project incentives cannot exceed 50 percent of the incremental project cost.

Pre-Approval Applications. Pre-approval is strongly encouraged for all participants in order to pre-approve incentive levels and to reserve funding.

Pre-Review. KEMA reviews pre-approval applications for eligibility and completeness. KEMA contacts the customer or contractor to clarify details or obtain further information, to discuss the overall process and timelines, and to explain the process for inspections where they are required.

Pre-Inspection. Pre-inspections provide AEP Ohio with the opportunity to verify the existing conditions at the site. These site visits are performed as defined by quality assurance procedures based on the type of measures that the participant submits.

Reservation. The program reserves the project funds once the pre-inspection report and/or initial project review is approved. Projects that come in after funds are fully reserved are placed on a waiting list. In the event that a project is not completed within 90 days of the reservation and an extension has not been requested and granted, the project may be cancelled. Prior to cancellation, AEP Ohio will follow-up with the customer to work out an extension or confirm that the project should be cancelled.

Final Applications. Final applications must be submitted within 60 days of project completion and include the appropriate back-up documentation to verify the project is complete and meets the program requirements. KEMA reviews final applications for eligibility and completeness.

Final Inspection. KEMA performs final inspections as defined by quality assurance/quality control (QA/QC) procedures to verify the measures installed.

Incentive Payment. Once the program accepts a project for payment, incentives are processed and delivered within 30 days.

Cancellation. When a project either does not meet the program guidelines or is cancelled by the customer, the project is moved to the cancelled status. The project details remain in the database, but the project no longer counts towards the active program goals.

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Wait List. If project applications and related funding requests reach the point where AEP Ohio determines that further funding reservations can no longer be made, the program moves projects to a waiting list. Projects on the wait list will not be reserved or paid unless sufficient funding becomes available. Wait list projects are not included in the active program totals. A wait list was not employed by the 2011 program.

Hold: Projects are placed on hold when there is poor or no documentation to process the application or when a customer with a reserved project decides not to move forward in the current program year and indicates that it may move forward with a project in the following year. Projects on hold are not included in the active program totals.

Measures and Incentives for PY 2011

The PY 2011 program application forms listing measures, eligibility criteria, and incentive levels are provided in Appendix Section 6.5.

Eligible equipment includes lighting retrofits, HVAC measures such as VFDs, equipment controls, variable speed air compressors, coil replacement and adding pipe insulation and other miscellaneous measure installations. Most of these measure installations are "True Custom" measures, in the sense that simple deemed savings and/or simple-to-apply algorithms do not already exist for this heterogeneous segment of the program population. Lighting projects are also eligible for custom incentives when the hours of operation are unusual and/or when non-standard equipment is installed.

Solution Provider Participation

AEP Ohio and KEMA launched a Solution Provider (trade ally) network of contractors in April 2010. This is a network of contractors that have been trained on the program, have applied to market the program, and are listed on the AEP Ohio web site as a registered contractor for the business sector programs. Through 2011, about 345 Solution Providers have been trained or approved to market the AEP Ohio business sector programs. In addition, Solution Providers can participate in a program without registering with AEP Ohio.

2.2 Program Year 2011 Custom Program Participation

Navigant was able to extract key program participation data from AEP Ohio's tracking database, which was provided in Excel spreadsheet format. Database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was linked by a unique project number to a measure level table. All custom measures, regardless of end-use are tracked in this table. The technical basis for AEP Ohio's ex-ante reported gross savings is described in Section 3.1.1.

Table 2-4 and Figure 2-1 provide a profile of PY 2011 Custom Program participation at the project level, while Table 2-5 and Figure 2-22-2 provide participation at the end-use summary and detailed measure level.

Out of the total of 220 projects with unique program ID's that had Custom Program measures installed during the PY 2011 program year, there were 119 projects that had both prescriptive and custom measures installed. For these combined measure type projects, the custom measures were removed from the Prescriptive Program ex-ante reported gross savings. The custom measures are evaluated through the Custom Program evaluation. Likewise, the Custom Program evaluation has removed Prescriptive Program measure savings from combined measure type projects being evaluated. Customer contacts were coordinated between the two program evaluations to avoid contacting customers more than once on related projects for different program.

Participation was highest within the Industrial and Manufacturing sector, which accounted for 37 percent of reported energy savings and 36 percent of the reported demand savings. Participation was also high within the Large Retail / Service and Large Office segments, which accounted for 18 percent and 9 percent of energy savings and 24 percent and 11 percent of demand savings, respectively. Small retail projects account for almost 1/6 (16%) of all projects by count, but savings per project are smaller.

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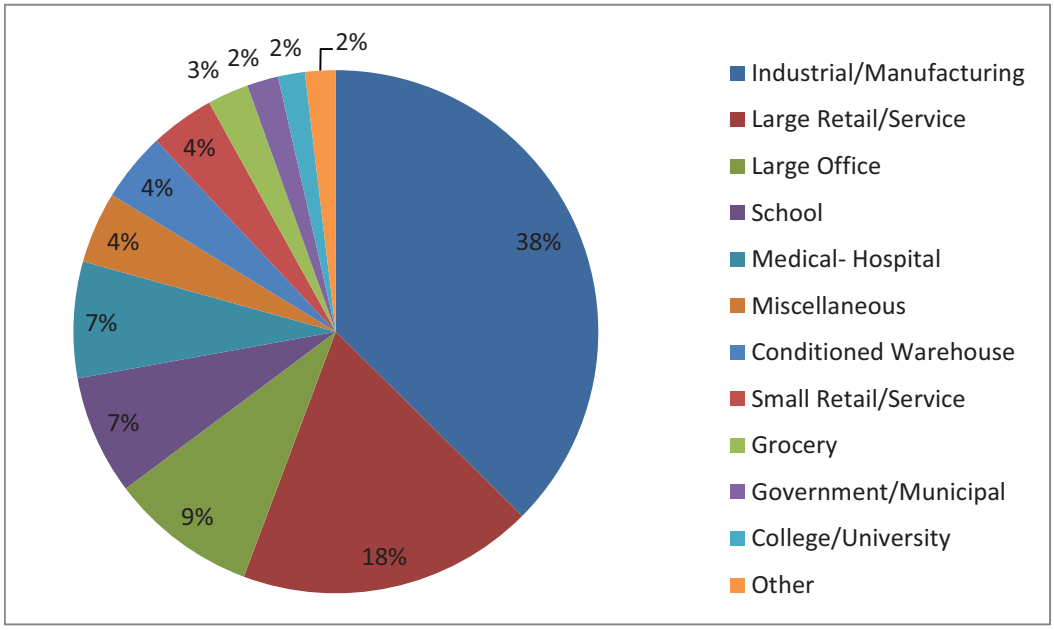
Table 2-4. PY 2011 Custom Program Participation by Business Type

Business Type	Project Count		Ex-ante Reported Savings, Gross MWh		Ex-ante Reported Savings, Gross kW	
Assembly	1	0%	28	0%	5.6	0%
College/University	10	5%	484	2%	32.3	1%
Conditioned Warehouse	5	2%	1,243	4%	179.6	5%
Government/Municipal	15	7%	563	2%	16.3	0%
Grocery	11	5%	742	3%	68.0	2%
Hotel/Motel	1	0%	30	0%	3.5	0%
Industrial/Manufacturing	38	17%	10,913	37%	1,240.1	36%
Large Office	15	7%	2,645	9%	370.6	11%
Large Retail/Service	34	15%	5,326	18%	827.3	24%
Medical- Hospital	7	3%	2,097	7%	30.8	1%
Medical- Nursing Home	2	1%	29	0%	4.0	0%
Miscellaneous	18	8%	1,290	4%	113.1	3%
Restaurant	5	2%	148	1%	2.6	0%
School	15	7%	2,149	7%	351.8	10%
Small Office	6	3%	145	0%	8.2	0%
Small Retail/Service	35	16%	1,153	4%	160.3	5%
Uncond'd. Warehouse	2	1%	169	1%	37.0	1%
Total	**220**	**100%**	**29,154**	**100%**	**3,451.1**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 7, 2012.

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Figure 2-1. PY 2011 Custom Program Ex-Ante MWh Savings by Business Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 7, 2012.

Table 2-5 and Figure 2-2 show the program participation by end-use component. Lighting contributed the most to program impacts with more than 39 percent of the ex-ante reported savings for energy and more than 52 percent of demand savings. Process VSD and Compressed Air measures save 17 percent and 14 percent of program ex-ante energy, respectively.

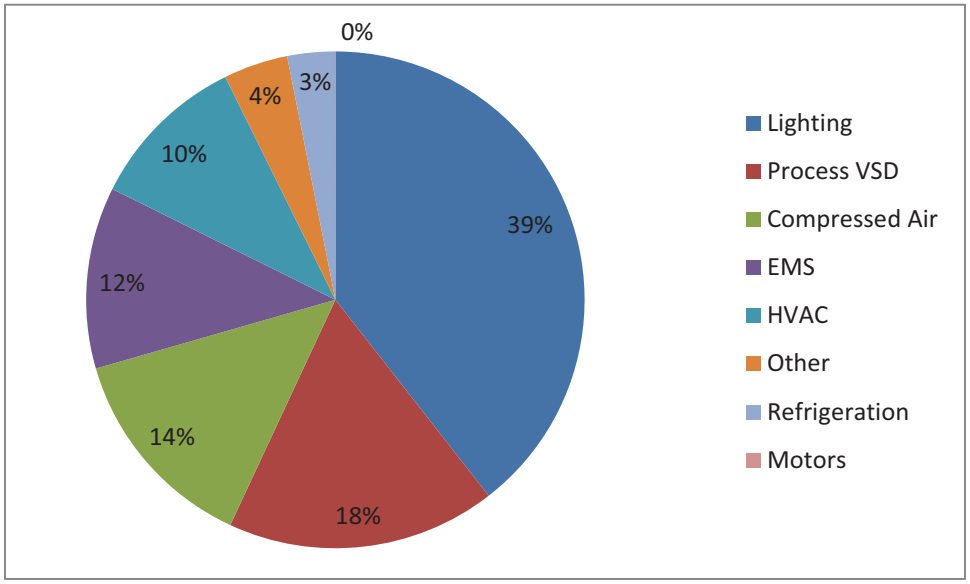
Table 2-5. PY 2011 Custom Program Participation by End-Use Type

End Use Type	Ex-ante Reported Savings, Gross MWh		Ex-ante Reported Savings, Gross kW	
Lighting	11,504	39%	1,789	52%
Process VSD	5,094	17%	614	18%
Compressed Air	3,966	14%	525	15%
EMS	3,445	12%	235	7%
HVAC	3,021	10%	72	2%
Other	1,220	4%	139	4%
Refrigeration	903	3%	77	2%
Motors	2	0%	-	0%
Total	**29,154**	**100%**	**3,451**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 7, 2012.

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Figure 2-2. PY 2011 Custom Program Ex-Ante MWh Savings by Measure Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 7, 2012.

Most lighting measures qualified for the Custom Program (rather than Prescriptive) due to unusual operating hours. Compressed air measures were mostly replacements of existing compressors with at least one compressor modulated with variable speed drives rather than inlet modulation. The program also estimated notable savings from Energy Management Systems.

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Section 3. Methodology

For Custom Program participants, Navigant conducted impact and process evaluation activities following the methodologies outlined below.

3.1 Analytical Methods

3.1.1 Impact Evaluation Methods

The objective of this element of the impact evaluation is to verify or adjust the ex-ante reported gross savings in the Custom Program tracking system. Savings verification is conducted through a multi-step approach:

- **Tracking System Savings Review**, to identify potential adjustments to ex-ante reported savings for measures due to outliers, missing information, or tracking system data entry or calculation errors. Evaluation adjustments identified through the Tracking System Savings review are made to all measures in the population where the adjustment is found to be applicable.

- **Default Measure Savings Assessment**, to identify potential adjustments to ex-ante reported savings for Custom measures where Navigant recommends an alternative default value for a specific measure.

- **Application Documentation Technical Review**, to identify potential adjustments to ex-ante reported savings for measures based on review of documentation, assumptions, and engineering analysis for a sample of projects. Sampling is discussed in the following Section 3.3.1.

- **On-site Verification and Performance Measurements.** On-site verification was conducted by Navigant on a subset of projects selected from the Application Documentation Technical Review sample. Navigant also conducted spot measurements of true power and installed data loggers as appropriate.

- **Other Adjustments to Savings**. Other adjustments to savings could include statistical or baseline adjustments to verified savings.

The basis for AEP Ohio's ex-ante reported savings depends upon multiple factors. Measures may be submitted for the Prescriptive Program through the Prescriptive Program application process. If measures do not meet Prescriptive Program criteria, these may then be proposed as

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Custom Program measures[5]. A single project may consist of both Prescriptive and Custom measures.

Reported savings for Custom measures are based on project specific calculations submitted by customers with project applications and verified by KEMA or custom calculations based on measured data and pre-installation and/or post-installation inspections performed by KEMA.

Sampling was conducted separately based on geographical zones and to ensure diversity of projects. Application Documentation Technical Review was conducted on a sample of projects randomly selected from customer participant populations (see Section 3.3.1 for a detailed description of the sampling methodology). For each selected project, an in-depth review of project documentation was performed to assess the engineering methods, parameters and assumptions used to generate all ex-ante reported gross savings. When available, all measure specifications and quantities were verified by reviewing the accompanying inspection and specification documents as well as installation invoices.

For each measure in the sampled project, Navigant estimated verified gross savings based on the review of project documentation and engineering analysis. Adjustments to estimate verified savings were based on building-specific information, invoices, specifications sheets and other documentation to the extent it was judged more representative of the project than default measure savings assumptions. Categories of changes to ex-ante reported savings included the following:

- Building type
- Hours of use
- Coincidence factor
- Equipment quantities from invoices
- Space cooling HVAC interaction factor credit
- Baseline equipment specifications
- Post retrofit equipment specifications
- Other changes, such as analysis methodology
- Review and application of on-site collected data

[5] For example custom lighting measures may include non-standard equipment or operating hours.

When possible, measure quantities were verified by comparing them to invoices from contractors or suppliers. If a post-inspection was carried out, measure quantities and specifications from the inspection were assumed to be correct. Where it was not possible to verify measure quantities from independent documents, it was assumed that the implementer quantities were correct. When baseline and/or new equipment specifications were not available (i.e. fixture wattages), default values from the Table of Standard Wattages in Appendix C of the Pennsylvania TRM were assumed, so long as these were appropriate for the site application. The table is an extensive list of standard fixture wattages by lighting type, ballast type and configuration, and lamp quantities generally encountered in retrofit programs. Energy and demand reduction algorithms were followed to compute ex-post savings.

On-Site Data Collection

In the Custom Program evaluation plan, Navigant projected sixteen on-site inspections based on 260 program participants, with sites selected from the application documentation review sample. Due to lower actual participation, Navigant conducted twelve on-site inspections, concentrating on projects with large ex-ante savings or projects that were similar at several sites.

A site-specific M&V plan was developed for each project scheduled for on-site data collection. Each plan explains the general gross impact approach used (including monitoring plans), provides an analysis of the current inputs (based on the application and other available sources at that time), and identifies sources that will be used to verify data or obtain newly identified inputs for the ex-post gross impact approach. For most projects, on-site sources include interviews that are completed at the time of the on-site visit, visual inspection of the systems and equipment, spot measurements, and short-term monitoring (e.g., less than four weeks).

During the on-site audit, data identified in the analysis plan was collected, including monitoring records (such as instantaneous spot watt measurements for relevant equipment, data from equipment logs and EMS/SCADA system downloads), equipment nameplate data, system operation sequences and operating schedules, and a careful description of site conditions that might contribute to baseline selection.

All field technicians and engineers who conduct audits are trained and experienced in completing inspections for related types of projects. The auditors check in with the site contact upon arrival at the building, and check out with that same site contact, or a designated alternate, on departure. The on-site audit consists of a combination of interviewing and taking measurements. During the interview, the engineer meets with a building representative who is knowledgeable about the facility's equipment and operation, and asks questions regarding operating schedules, location of equipment, and equipment operating practices.

Following the interview, the engineer makes a series of detailed observations and measurements of the building and equipment. If short-term monitoring was conducted, the

data collection process was discussed with the site contact, and then the data gathering units were deployed. All information was recorded and checked for completeness before leaving the site.

After all of the field data is collected, including any monitoring data, annual energy and demand impacts are developed based on the on-site data, monitoring data, application information, and, in some cases, billing or interval data. Each project engineering analysis is based on calibrated engineering models that make use of hard copy application review and on-site gathered information surrounding the equipment installed through the program (and the operation of those systems).

Verification Results

Once the verified gross impacts were developed for each project in the sample, the results were reviewed at the project-level by an experienced engineer familiar with the evaluation. Using verified gross savings results, Navigant estimated a verified gross realization rate (which is the ratio of the verified gross savings to ex-ante reported gross savings) for each stratum. The stratum-level realization rates were then applied to the population of ex-ante reported gross savings by strata. The result is an ex-post estimate of verified gross savings for the program.

3.1.2 Process Evaluation Methods

The purpose of the process evaluation is to assess the effect of the program structure and program implementation on program performance and customer satisfaction. Navigant's process efforts provide insights and recommendations to support the continued success of the Custom Program.

Central to the process evaluation for the Custom Program were interviews with AEP Ohio program coordinators and with staff of the implementation contractor, KEMA, as well as review of relevant program tracking databases, documents, and other materials to understand how the program has evolved from the previous year. In addition, Navigant conducted a CATI survey with participating customers to better understand customer satisfaction and perceptions related to the program. Finally, Navigant conducted several in-depth interviews with Solution Providers to identify their perspectives on the program.

Navigant used senior staff members to conduct in-depth qualitative interviews. Senior staff were flexible in their approach to the discussion, allowing the respondent to talk about his/her experience or perspective while still shaping the discussion toward the most important, relevant and necessary information. Navigant conducted the interviews by telephone in order to complete the interviews quickly and to be flexible to the respondents' schedule.

Interview guides were developed to be open-ended and allow for a free-flowing discussion between interviewer and respondent, and real time interviewing flexibility. Navigant

developed guides which highlighted key issues, but did not require being read verbatim to offer the interviewer flexibility to delve deeply into pertinent issues based on the respondents' knowledge of and experience with the program.

Navigant took detailed notes during each in-depth interview and/or taped the discussion to ensure thorough documentation. For any quantitative questions, interviewers are trained to record and summarize responses to allow the evaluators to draw conclusions in the analysis.

3.2 Data Sources

The data collected for evaluation of the PY 2011 Custom Program was gathered during a number of activities including:

- In-depth telephone interviews with AEP Ohio program coordinators and the implementation contractor (KEMA Services Inc.)
- In-depth telephone interviews with trade ally "Solution Providers"
- A computer-aided telephone interview (CATI) survey with participating customers
- Tracking system data review
- Documentation technical review of a sample of projects
- On-site measurement and verification at customer sites for a subset of projects sampled from the application documentation technical review

Table 3-1 provides a summary of these data collection activities including the targeted population, the sample frame, and the time frame in which the data collection occurred.

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Table 3-1. Data Collection Activities for PY 2011 Evaluation

Data Collection	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Custom Program projects approved for payment for the 2011 program year	AEP Ohio Tracking Database	-	All	May 2011 to April 2012
In-depth Interviews	AEP Ohio Program Staff	Contact from AEP Ohio	Business Programs Manager and Custom Program Coordinator	2	February 2012 to March 2012
	Custom Program Implementers	Contact from AEP Ohio	KEMA Program Implementation Staff	5	
In Depth Interviews	Custom Program Solution Providers	Tracking database	Convenience sample of all Solution Providers	15 Across Business Programs[6]; 2 Non-Participants	February 2012 to March 2012
CATI Survey	Custom Program Participants	Tracking Database	Census of Custom Program Participants	74 unique contact names/25 Completed Surveys	March 2012 to April 2012
Application File Review	Tracking Database	Stratified Random Sample by Zone, Measure Category, Project-Level kWh (3 Strata)	Stratified Random Sample by Zone, Project-Level kWh (3 Strata)	54	December 2011 to April 2012
On-Site Measurement and Verification	Project Application Review Wave 1 Sample	Random Subset of Project Application File Review	Subset of Project Application File Review	12	March 2012

Tracking Data

Navigant was able to extract key program participation data from AEP Ohio's tracking database, which was provided in Excel spreadsheet format. The tracking data delivered for this evaluation was extracted from a program tracking database maintained by KEMA. Program

[6] Business Programs include Prescriptive Program, Self- Direct Program and Custom Program. Express Program and Commercial New Construction Solution Providers were *not* part of the interview sample frame.

samples for the Computer Assisted Telephone Interview (CATI) participating customer phone sample were drawn from a November 1, 2011 extract.

Database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was linked by a unique project number to measure level information – one tab per measure category (Lighting, HVAC, Refrigeration, etc.).

Navigant conducted the tracking system review and sample design for application file review using database exports of the tracking system data from November 1, 2011 and February 7, 2012. Sample design and selection for the 2011 Custom Program was done twice with one sample drawn in November 2011 from the November 1, 2011 extract, and a second and final sample wave of roughly equal size drawn after the close of the program year, using the February 7, 2012 data.

Project and Program Documentation

To support the engineering review, AEP Ohio provided project documentation in electronic format for each sampled project. Documentation included some or all of scanned files of hardcopy application forms and available supporting documentation from the applicant (invoices, measure specification sheets, vendor proposals), and KEMA calculation spreadsheets. This documentation was provided by uploading to a secure file transfer site, as well as sent via CD.

Navigant also reviewed program materials developed by KEMA and AEP Ohio, including: two versions of the KEMA technical reference manual documenting prescriptive savings (Appendix A of the operations manual), application forms and checklists, and program materials available from the program website (www.gridsmartohio.com).

Program and Implementer Staff Interviews

Two in-depth interviews with key program representatives were conducted as part of this evaluation. The AEP Ohio Custom Program Coordinator was interviewed solely about the Custom Program. The AEP Ohio Manager, Business Programs, and members of the KEMA Services, Inc. implementation staff were interviewed for the Prescriptive and Custom Programs, combined. The interviews were completed over the phone in February and March of 2012. The interviews focused on program processes to better understand the goals of the program, how the program was implemented, the perceived effectiveness of the program, and future plans for the improving the program. The interview guide used for the interviews is included in Appendix 6-3.

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Solution Providers In-Depth Interviews

Seventeen in-depth interviews were conducted with participating Solution Providers to identify outreach effectiveness and barriers to participation. Fifteen of the Solution Providers were selected based on experience and willingness to answer questions from contact information provided on the application forms from the population of paid 2011 Business Program projects. Four of the in-depth interviews were conducted with trade allies with low program participation. No attempt was made to target Solution Providers by program as the 2010 evaluation showed that Solution Providers found it difficult to differentiate between the programs.

CATI Telephone Survey

Telephone surveys were conducted with a census of 2011 Custom Program participants. This Computer Assisted Telephone Interview (CATI) survey focused on estimating the program impacts and supporting the process evaluation. The questionnaire used for the survey is included in Appendix 6-1.

Data was collected to support the process evaluation (such as questions concerning program design and implementation, program marketing and awareness, and customer satisfaction) and business demographics for the process component of the evaluation. The CATI survey instrument used for this evaluation is included in the appendices.

3.3 Sampling Plan

3.3.1 Impact Sample

AEP Ohio has recently gone through a merger of two regional operating companies which resulted in the program participation being distributed across two different rate zone territories. The sample design and selection process was conducted separately for each rate zone to *target* a relative precision of ±10 percent at a 90 percent level of confidence for each zone. The initial sample (Wave 1) for the application documentation review of PY 2011 Custom Program projects was selected from the November 1, 2011 data extract. A second sample (Wave 2) was pulled from the final reported savings data extract of February 7, 2012. The sample design and selection process was conducted separately for two zones[7] to target a relative precision of ±10 percent or better at a 90 percent level of confidence for each zone.

The program-level Custom ex-ante reported gross savings data was analyzed by zone, measure type, project size, and number of projects to inform sample design. After analysis, the sample design selected for the Custom Program evaluation was stratified by zone and project size. Project size is defined as the sum of all ex-ante kWh for custom measures installed within an

[7] Zones were defined by boundaries of former individual operating companies.

individual project (as defined by unique project IDs assigned by AEP Ohio; generally projects have unique premise ID's.)

After organizing projects by zone, they were sorted from largest to smallest kWh savings and placed into strata, attempting to achieve a relatively even distribution of cumulative standard deviation in energy savings between strata. Stratum 1 equates to projects with the largest reported energy savings, stratum 2 to medium-sized projects, and stratum 3 to the smallest projects. Strata boundaries were different between Wave 1 and Wave 2 samples. Several projects from Wave 1 changed strata based on the final distribution of projects using the February 7, 2012 data extract of paid projects for PY 2011.

The Custom sample was selected to estimate verified gross savings at a targeted relative precision of ±10 percent at a 90 percent level of confidence for each zone. This approach resulted in a total sample of 49 projects to be selected for application documentation review. Navigant oversampled the smaller strata to include more building types and to increase the likelihood of achieving the targeted precision. In the end, Navigant sampled 62 percent of the reported MWh savings. Table 3-2 provides a profile of the gross impact measurement and verification (M&V) sample in comparison with the populations within each stratum.

Table 3-2. Profile of the Gross Impact M&V Sample by Strata

Population Summary			Sample		
Sampling Strata	Number of Projects (N)	Ex-Ante Gross Savings, MWh	n	Ex-Ante MWh	Sampled % of Population
Zone 1 large	5	6,805	5	6,805	100%
Zone 1 medium	19	4,218	7	1,510	36%
Zone 1 small	85	3,426	12	795	23%
Zone 2 large	8	6,212	5	4,604	74%
Zone 2 medium	18	4,828	11	3,767	78%
Zone 2 small	85	3,666	14	736	20%
Total	**220**	**29,154**	**54**	**18,216**	**62%**

Source: Evaluation analysis of program tracking data

3.3.2 Process Sample

The CATI survey targeted a population of seventy-four unique customer contact names with paid projects in the 2011 Custom Program, drawn from the February 7, 2012 tracking system extract. Many businesses submitted projects for multiple locations (e.g., chain stores) and listed a single contact person for all projects. These duplicates were removed from the call list.

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Section 4. Detailed Evaluation Findings

4.1 Impact Results

This section presents the results of the impact and process evaluations of the PY 2011 Custom Program.

4.1.1 Findings from the Impact Verification Task

Navigant estimated verified gross program impacts based on application documentation review, on-site verification, and phone verification, following the methodology outlined in Section 5.1.1.

Observations from the verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate. Navigant found that most of the recommendations from the PY 2010 impact evaluation have been addressed in the PY 2011 program.

Table 4-1. PY 2010 Recommendations and Status

PY 2010 Recommendations	Status
Interactive effects between lighting and HVAC and between display case loads and refrigeration compressors were frequenting not included in *Ex-Ante* estimates	In most reviewed lighting projects, HVAC interactive effects were included. Small lighting projects are most likely to omit interactions in PY 2011. Projects with multiple space or building types confound interaction analysis.
Air compressor replacement project baselines not well-defined.	Air compressor measures generally well defined. Savings estimates clear and accurately formulated.
Improve peak demand savings estimates	Demand savings is being calculated consistently and accurately among diverse measure types. Most custom projects have no or minor climate dependency.
Several projects mis-categorized by measure type	Only measures with blank category type were changed for the evaluation reporting. All other categorization was accurate.

Further improvements refinements to these recommendations and PY 2011 Evaluation observations and recommendations are provided in Table 4-2.

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Table 4-2. PY 2011 Verification Observations and Recommendations

PY 2011 Issue/Observation	PY 2011 Recommendation
Baseline conditions for custom measures were not always fully documented, for example air compressor staging and air consumption. Pre- and post-installation comparisons are only valid when the only influence for savings is the installed measure.	Consider increasing the rigor of pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope of the new installation, but also the existing baseline equipment configuration. Consider increasing efforts in pre-inspections, especially for projects with large savings.
KEMA assigns one business type per project even if a project consists of multiple space usage types (office, manufacturing, *etc.*). Business type assignment drives HVAC interaction factors, and coincidence factors.	Breaking out project submittals to multiple space types could be implemented for larger projects by KEMA after the customer submits an application, if multiple space types are involved.
In instances where building simulation models were used to estimate ex-ante savings the documentation was frequently inadequate to verify inputs to the models for pre- and post-installation model runs. This concern occurred mostly with Energy Management System installations.	Require more details regarding model inputs, up to requiring the models themselves for projects submitted with model-based savings estimates. Model baselines should be demonstrated – for example equipment on/off schedules. Where possible, the proposed control sequences and/or scheduled should be demonstrated with screen captures and/or trend logs.
In instances where billing comparison is used to calculate savings, there were some instances where insufficient data were available for the post-installation period, and the program implementer accepted vendor estimates of savings. Additional post-installation data available for the evaluation were used to modify project savings	The implementation contractor should finalize savings for those projects based on billing comparison only after sufficient post-installation data are available – at least 6 months for a single-site billing comparison.
Savings calculations performed by KEMA were mostly accurate and supported by nameplate or measure data. Some savings estimates were based solely on vendor calculations. These calculations did not always apply appropriate factors for loading and/or efficiency.	Apply more scrutiny to calculations made by vendors. Establish default values to use when vendor data are incomplete, for example, average motor loading, motor efficiency and drive efficiency.

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4.1.2 Program Impact Parameter Estimates

The statistical method of separate ratio estimation was used for combining individual realization rates from the sample projects into an estimate of verified gross energy savings for the population.[8] In the case of a separate ratio estimator, a separate gross energy savings realization rate is calculated for each stratum and then combined. These steps are matched to the stratified random sampling method that was used to create the sample for the program[9]. The standard error was used to estimate the error bound around the estimate of verified gross energy savings and demand reduction.

The realization rate (defined as verified gross savings / ex-ante reported savings) is 88 percent for gross energy savings, and 95 percent for gross demand reduction. In general, the realization rates across strata were loosely grouped around 0.95. Exceptions were instances where a facility had closed and no ex-post savings were attributed to the installed equipment. In addition, a couple of energy management system (EMS) installations showed less savings in billing data than projected in the application. On-site research for the EMS installations revealed that some planned equipment scheduling (turning of HVAC equipment at night) had been disabled due to occupant needs, and in other cases, the building night set-back temperature controls forced air-source heat pumps to run electric resistance heaters more during morning recovery, thus off-setting most of the measure savings other parts of the year.

The relative precision at a 90 percent confidence level for the PY 2011 Custom Program projects in the sample is ± 6 percent for the energy realization rate and ± 5 percent for the demand realization rate.

4.1.3 Program Impact Results

Based on the impact parameter estimates described in the previous section, Navigant estimated the verified gross program impacts resulting from the PY 2011 Custom Program, as shown in Table 4-3. No further adjustments were made to verified gross savings.

Table 4-3. Gross Savings Estimates for PY 2011 Custom Program

Program	*Ex-Ante* Reported Savings		Verified Gross Savings	
	Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**29,154**	**3.451**	**25,559**	**3.290**

[8] A full discussion of separate ratio estimation can be found in Sampling: Design and Analysis, Lohr, 2010 2nd Edition, pp. 144-145.

[9] The Zone 1 Non-Lighting 1 stratum had only three projects, and only one of these was sampled. Rather than calculate a realization rate for this stratum separately, Navigant combined Zone 1 Non-Lighting projects into one stratum for the statistical extrapolation.

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The Custom Program fell well short of its 2011 goals of 69,622 MWh energy savings and of 5.413 MW demand savings. The Business programs as a whole had a very strong finish in 2011 and carried over 110 GWh of savings from incomplete projects to 2012.

As requested by the statewide evaluator, Table 4-4 provides participation counts, ex-ante savings estimates at the measure level. Due to the diverse measure types installed through the Custom Program, it is not practical to provide results by individual measure, so results were aggregated to measure end-use level. The verification sample was not designed based on end-use; therefore, Navigant does not report verified savings at the measure end-use level.

Table 4-4. PY 2011 Custom Program Participation and Savings by Measure

Measure End-Use	Participation Count	Ex- Ante Reported Savings	
		Gross MWh	Gross MW
Lighting	231	11,504	1.789
Process VSD	5	5,094	0.614
Compressed Air	15	3,966	0.525
EMS	32	3,445	0.235
HVAC	15	3,021	0.072
Other	19	1,220	0.139
Refrigeration	9	903	0.077
Motors	1	2	0.000
Total	**327**	**29,154**	**3.451**

Source: Program tracking database, February 7, 2012. Measure participation is greater than program participants (220) because participants can install more than one measure of the same or different end-use for each application.

4.2 Process Evaluation Results

AEP Ohio's 2011 Custom Program offers incentives designed to encourage implementation of energy-efficiency measures including lighting, compressed air, motors, non-HVAC variable-speed drives, and other non-standard equipment. The non-lighting measures were added to the program menu during PY2010. The program is administered jointly by AEP Ohio and KEMA, the program implementer. The two organizations work closely together to develop collateral materials, attend outreach seminars and meetings with customers and Solution Providers, monitor the progress of the program and, occasionally, to attend customer visits or inspections.

The process evaluation of the AEP Ohio Custom Program focuses on the following researchable questions:

- Effectiveness of program implementation
- Effectiveness of program design and processes
- Customer and program partner experience and satisfaction with the program
- Opportunities for program improvement

4.2.1 Program Awareness and Potential Market Effects

The full list of researchable questions can be found in the Evaluation Plan.

4.2.2 Process Themes

There are many themes to explore during a process evaluation. Navigant interviewed fifteen Solution Provider participants to explore the issues that were foremost in their minds, interviewed two AEP Ohio program coordinators, three KEMA staff and conducted telephone interviews with twenty-five program participants. Several common themes emerged such as:

- Marketing and outreach practices
- The role of the Solution Provider
- Program incentives
- The application process
- Customer satisfaction with program components
- Challenges to program participation
- Customer and Solution Provider suggestions for improving the program
- The Firmographics of the sample

4.2.3 Marketing and Outreach Practices

The program coordinators plan to work with the Marketing Department to develop a new marketing approach for the Custom Program. In 2011, they introduced a number of methods to market all the programs. Those most helpful in marketing the Custom Program include:

- The Solution Provider Network was expanded. More Solution Providers were trained at the Solution Provider workshops.

- AEP Ohio began the Customer blitz, a week-long geographic- based partnership with account managers.

- AEP Ohio conducted audits for data centers, a group of customers identified as a fertile market that had been consistently under represented. This effort was successful and AEP Ohio established relationships with customers who were uninformed about the energy efficiency programs. They are currently launching a program customized for data centers.

- The bonus rebate encouraged customer participation toward the end of the year.

Presentations to large customer groups were one common method of promoting the Custom program and included the following efforts.

- In 2011, AEP Ohio worked with KEMA to expand their group presentations to more business groups such as Canton Tomorrow, a business development group. They persuaded this group to include program information in their new business development literature. In 2012, AEP Ohio wants to expand this effort to other business groups.

- Program Coordinators and KEMA staff presented program information at trade shows/expos/seminars. AEP Ohio holds seminars three times a year throughout the state. AEP Ohio and KEMA sometimes go on customer visits together. Toward the end of 2011, AEP Ohio began to work more with Solution Providers.

- AEP Ohio conducted a webinar with members of the Ohio Manufacturing Association. The webinar was very well received and AEP Ohio was asked to provide future presentations.

The Program Coordinator pointed out the need for a marketing plan for ESCO's[10]. While lighting Solution Providers tend to be more interested in the prescriptive program, ESCO's are more likely to implement large, custom projects with an ethanol plant as a current example. Generally, an ESCO approaches the AEP with a project after it has been developed. AEP Ohio thinks it will be important to have a proactive marketing plan developed specifically for the ESCO business model.

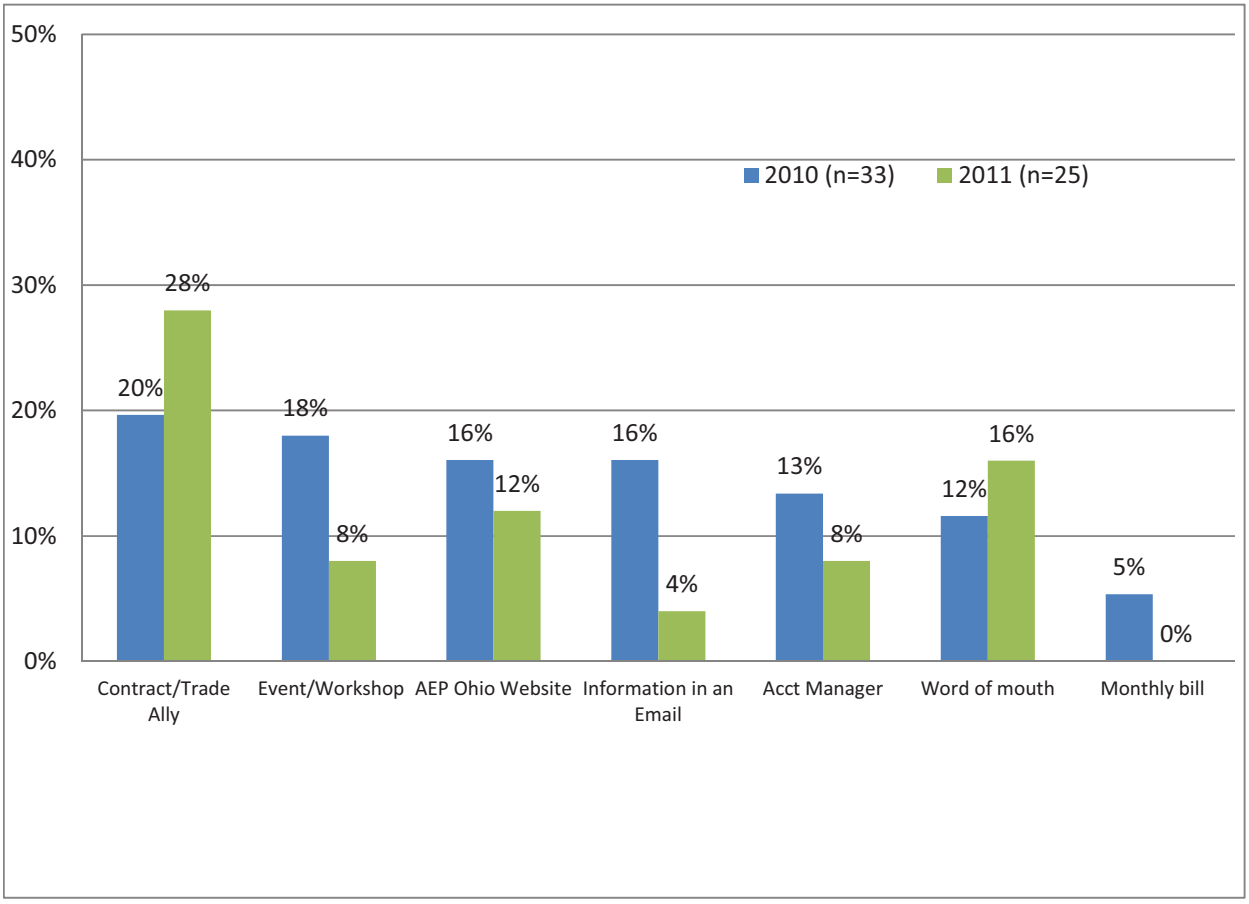
[10] Energy Services Company.

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The prescriptive, custom and self-direct programs are all growing from a basic lighting program to include more sophisticated equipment such as variable speed drives and compressed air systems. In 2011, KEMA developed technical fact sheets for these two applications. KEMA was also actively working to attract non-lighting trade allies to the Solution Provider database.

Customers mentioned the contractor or trade ally the most as a source of information in both 2010 and 2011. They were also more likely to say word of mouth was more important in 2011 compared to 2010.

Figure 4-1. Source of Information about the Program



2010 Custom Program Survey Data n=33; 2011 Custom Program Survey Data n=25

Over 40 percent of customers said that they have not contacted the utility or program staff (44%) after they completed the application. Most of the other customers contacted the utility or program staff four or more times (36%). Customers tended to contact the utility via phone (37%), through email (44%) or in person (19%).

Solution Providers said that the level of marketing and promotion of the programs by AEP Ohio has been adequate; customers have responded to ads and have called Solution Providers

with projects. Solution Providers mentioned a recent marketing mailer sent by AEP Ohio that produced a significant number of customer responses; Solution Providers find this level of marketing very effective. However, a Solution Provider said that AEP Ohio advertisements do not always align with the program time line. He claimed that last year, AEP Ohio had already stopped the program for 2011, but were still sending out brochures; the Solution Provider had to refuse to complete the applications. Solution Providers would like AEP Ohio to increase participation in the programs by marketing directly to customers through radio advertising and trade publications

Some respondents attended Solution Provider workshops while KEMA conducted onsite training for others. Solution Providers said the training was informative and professional. After attending the training, most Solution Providers were able to increase their level of program activity. When asked whether more training would be useful, one respondent said that training on new material and new spreadsheets help, but written instructions or conference calls work as well.

4.2.4 Role of the Solution Provider

Contractors played an integral and growing role in the Custom Program but customers rarely know if their contractor is a Solution Provider. Out of the 11 customers who answered the question, only one customer knew their contractor was a registered AEP Ohio Solution Provider. Most of the customers (56%) did not know the status of their contractor. The remaining thirty-six percent of customers said the contactor was not affiliated with AEP Ohio.

Solution Providers said it was harder to know what qualifies in the Custom Program than in the Prescriptive Program; from their perspective, it was better for AEP Ohio to move measures to the Prescriptive Program. One company said they would like their measures to be part of the Prescriptive Program rather than the Custom Program because the Prescriptive Program was easier to market. Solution Providers also complained that the application processing takes much longer for a Custom Program review. Some Solution Providers said they lost projects because customers decided against the project while waiting for the application to be approved by the Custom Program.

Solution Providers' participated in the Custom Program in order to attract more projects to expand their business. They particularly welcomed the customer-initiated program participation. As they explained, Solution Provider status helps sell projects to customers.

From the viewpoint of the AEP Ohio Program Coordinator, Solution Providers appeared happy with the Custom Program. One Solution Provider reported his best year in sales in 2011 because of the program.

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4.2.5 Program Incentives

During 2009, 2010 and 2011, the maximum incentive rate for custom projects was $0.08/kWh plus $100 per peak kW. Incentives are also capped at 50 percent of the total project costs.

Solution Providers were split on the effectiveness of incentives to encourage customers to pursue projects they would not have considered without the program. While incentives tended to be the tipping point for lighting measures, for HVAC measures incentives were perceived as too low to be a real factor in decision-making. Solution Providers said that most customers had already decided to make the HVAC investment and then learned about the incentives and pursued them.

Table 4-4 presents information on the time to process incentives. Customers reported that rebate processing can take a long time. Over twenty percent of respondents (24%) received their incentive in 4 weeks or less. Most of the customers, 60 percent, received the incentive in 26 weeks or less. One survey respondent said the incentive took 52 weeks. A plurality of customers (36%) did not remember how long it took for their incentive to arrive. Ninety percent of customers said they are satisfied with the incentive amount.

Table 4-4. Number of Weeks to Process the Incentive

Number of weeks to receive incentive	Frequency	Percent
Four weeks or less	6	24%
Five to eight weeks	4	16%
Nine weeks to 26 weeks	5	20%
Fifty-two weeks	1	4%
Don't know	9	36%
Total	25	100%

In the fourth quarter of 2011 AEP Ohio offered bonus rebates of 25 percent to help the program meet goal. Customers responded enthusiastically to the offer. The number of applications caused a processing backup at year end.

4.2.6 The Application Process

The application process for the Custom Program appears to be working quite smoothly from the Program Coordinator's view. He said that the approval process was much improved in 2011 because KEMA hired more people. AEP Ohio is continuing to develop ways to streamline the application and the approval process.

Generally, AEP Ohio sent project approvals back to the customer within 60 days, according to Solution Providers; however, sometimes approvals are not sent to the right person. Post inspections could take anywhere from three to nine months. Solution Providers did not consider this an issue as the post inspection does not interfere with the implementation of the project. While Solution Providers believe incentives were paid to customers quickly, they said they usually learn about payment from their customer, not AEP Ohio.

Customers reported that they were most influential in the decision to install the energy efficient equipment (36%). Over one-quarter (28%) listed the Solution Provider as most influential. Other influencers included the engineer (16%), the AEP Ohio representative (8%), and the distributor (4%).

Forty percent of customers completed the application themselves and 16 percent had someone else in their organization complete the application. The contractor filled out the application for the other remaining customers. Only one customer who completed the application rated it difficult to complete.

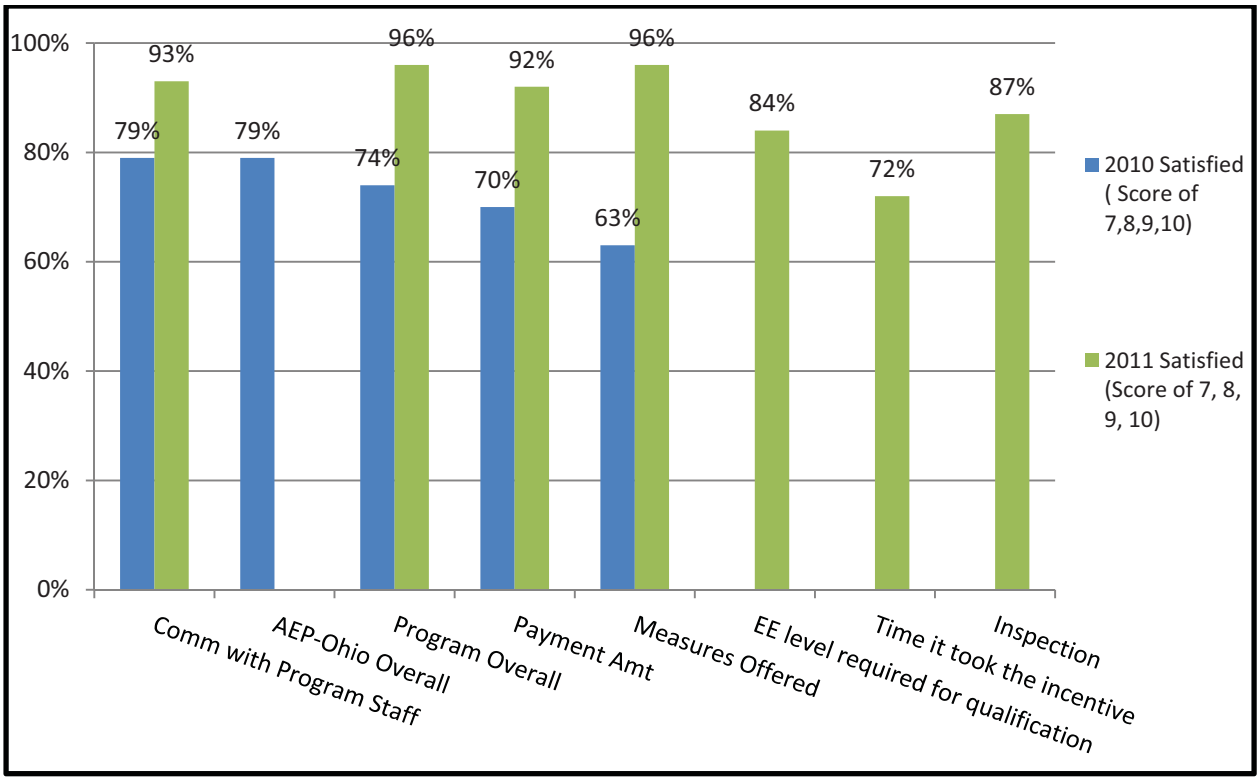
4.2.7 Customer Satisfaction

Customers that the Program Coordinator has talked to, for the most part, are pleasantly surprised on how much incentive money is available to them and have been very satisfied with the program.

Customer survey participants rated several metrics of customer satisfaction on the 0 to 10 satisfaction scale. To compare satisfaction scores across metrics, Navigant looked at the percentage that rated their satisfaction level 7, 8, 9, or 10 as satisfied. In Figure 4-2, 2010 satisfaction scores are compared with 2011 satisfaction scores. Over 90 percent of program participants in the survey were satisfied with the program overall (96%) , as well as with communication with program staff (93%), the payment amount (92%) and the measures offered (96%). Customers also rated their satisfaction with the inspection (87%) high. The lowest satisfaction was with the time it took to receive the incentive, at 72 percent. All satisfaction scores increased from 2010 to 2011 for all questions asked in both years.

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Figure 4-2. 2010 and 2011 Custom Survey Satisfaction Scores



2010 Custom Program Survey Data n=33; 2011 Custom Program Survey Data n=25

The format of the satisfaction with AEP Ohio metric changed between 2010 and 2011. The respondent options were very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied. In 2011, 88 percent of program participants reported they were very satisfied or satisfied with AEP Ohio. Only one respondent was somewhat dissatisfied.

Based on multiple responses, survey respondents' main reasons for participating in the Custom Program were financial.

- Thirty one percent cited energy savings as a reason for participating.
    - Twenty-six percent cited the program incentive.
- Eleven percent cited lower maintenance costs, better quality/new equipment and saving money on the utility bill.
- Nine percent says the program was good for the environment and 2 percent would like to set a good example/be an industry leader.

Nearly 90 percent of survey respondents planned to participate in the program again and an additional 8 percent said they might participate in the program again.

When asked about bill savings, 60 percent of respondents said they noticed lower electricity bills since they installed the energy efficient equipment, 12 percent have not noticed lower bills and 28 percent say they do not know. Of those who noticed lower bills, seventy-three percent said their bill savings were about what they expected, 20 percent said it was less than expected and 7 percent did not know.

4.2.8 Challenges to Custom Program Participation

Solution Providers did not discuss major challenges in participating in the Custom Program, but reported a few minor ones. Cash flow was listed as the main reason why customers might not participate in the program. The Program Coordinator agreed by saying that, with the state of the economy, customers are not willing to make investments, even with a reasonable payback, because they don't have the capital to invest. According to the Program Coordinator, AEP Ohio has considered program financing to counter the effect of the economy, but has not found a partner at this time.

Another challenge for Solution Providers was the length of the review process. AEP Ohio might be losing attributable projects because of the long review process, although it is unclear how wide spread this problem is. Custom projects were most likely to be reviewed or peer reviewed, especially HVAC or process improvement projects. KEMA engineering staff may have to develop a methodology to calculate savings or meter the equipment for a custom project. These tasks take time and slow the application process.

However, almost 74 percent of the 25 survey respondents who answered the question did not mention any drawbacks to the program. The major drawbacks mentioned by customers were that the program was too time consuming (13%), the paperwork was too burdensome (4%), incentives were not high enough (4%), and the equipment was too costly (4%).

4.2.9 Suggestions for Improving the Program

The Program Coordinator believes the program could accomplish more through marketing the program more aggressively:

- AEP Ohio could attend more county fairs and reach more farmers and generate agriculture sector projects.
- They could work with more Chambers of Commerce.
- AEP Ohio could contract with an aggregator and challenge him/her to find the savings through the Custom Program.

- They could encourage Solution Providers to spread the word.
- AEP Ohio could send out more bill inserts and emails.

Solution Providers also noted a number of ways they think the program could be improved.

- Less paperwork and more improvements in the application spreadsheets.
- One respondent would like to see more Custom measures moved to the Prescriptive Program to simplify the application process because some custom reviews are not necessary.
- One Solution Provider would like AEP Ohio to provide a time-limited review for complex measures. The utility could provide customers and Solution Providers with a time estimate for the review activities. This would give customers some certainty about the process that they don't have now. The timing on the review process was really critical for more complex projects.
- Incentives could be increased. One respondent explained that he/she does not think that HVAC incentives are large enough to spend the money. Most customers already decided to make investments and then learned about incentives and pursued them.
- More promotional materials. Not all Solution Providers were aware of the promotional materials already available from AEP Ohio.
- Carrying previous year's incentives into the first month of the New Year so projects can continue to be sold and implemented based on prior year's criteria. Because new incentives are announced in February, any proposals completed in January must be redone, thus there is a "dead time".

Participants also provided ideas for improving the program. These included:

- Simplify the application process (5 mentions)
- Higher Incentives (4 mentions)
- Contact, information and assistance from AEP Ohio account executives (including help with the forms) (1 mention)
- Greater publicity (1 mention)
- Electronic applications (1 mention)

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4.2.10 Future Plans for Improving the Program

One of the changes planned for PY 2012 is the addition of a Solution Provider incentive to help offset the incremental costs and to help Solution Providers keep their focus on the program.

4.2.11 Description of the Process Evaluation Customer Sample

Most of the business customers in our 2011 sample of Custom Program participants own their own facility (88%) compared to only 68 percent in 2010. The average age of their facilities is 40 years old with a range of 10 to 120 years in 2011. A similar range, four to ninety years, was found in 2010 but the average age was lower at 25 years.

Twenty five percent of the facilities are less than 10,000 square feet, 40 percent are between 11,000 and 150,000 square feet, 25 percent are between 160,000 and 500,000 square feet, and 10 percent are over 500,000 square feet.

Sixteen percent of program participants have less than 10 employees, 40 percent have between 11-100 employees, and 36 percent have over 100 employees. Customers in the sample are involved in a broad range of businesses ranging from office, retail, university, restaurant, health care, convenience store, and various industrial applications.

4.3 Cost Effectiveness Review

This section addresses the cost effectiveness of the PY 2011 Custom Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. Table 4-5 summarizes the unique inputs used in the TRC test.

Table 4-5. Inputs to Cost Effectiveness Model for AEP Ohio Custom Program

Item	PY 2011
Average Measure Life	10
Participants	1,642
Verified Annual Energy Savings (MWh)	131,914
Verified Coincident Peak Savings (MW)	28.069
Third Party Implementation Costs	$1,067,038
Utility Administration Costs	$245,153
Utility Incentive Costs	$1,748,956
Participant Contribution to Incremental Measure Costs	$6,069,157,

A clarification on participant counts is worth noting regarding Table 4-5. For tracking purposes, AEP Ohio designates participants at the project level either as Custom Program or Prescriptive Program participants, even though a small number of participants have both custom and prescriptive measures in their project. The impact evaluation was conducted at the measure-

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level, so all projects that had prescriptive measures were included in the Prescriptive Program evaluation. As shown in

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Table 2-4, there were 1,642 projects that have prescriptive measures in PY 2011. The cost effectiveness analysis is based on evaluation verified impacts. The data for "Participant Contribution to Incremental Measure Costs" were taken from the tracking system based on participant supplied project costs.

Based on these inputs, the TRC ratio is 1.3 and the program passes the TRC test for the program in its entirety. Table 4-6 summarizes the results of the cost effectiveness tests. Results are presented for the Total Resource Cost test, the Participant test, the Ratepayer Impact Measure test, and the Utility Cost test.

Table 4-6. Cost effectiveness Results for the Custom Program

Test Results for Custom Program	PY 2011
Total Resource Cost	4.1
Participant Cost Test	5.2
Ratepayer Impact Measure	0.9
Utility Cost Test	9.9

At this time, additional benefits related to reduction of greenhouse gas emissions have not been quantified in the calculation of the TRC. These additional benefits would increase the given TRC benefit/cost ratio.

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Section 5. Evaluation Findings and Recommendations

5.1 Evaluation Findings

5.1.1 Program Impacts

1. The PY 2011 realization rate (defined as verified gross savings / ex-ante reported savings) is 0.88 for gross energy savings, and 0.95 for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Custom Program projects in the sample is ± 6 percent for the energy realization rate and ± 5 percent for the demand realization rate.
2. Observations from the evaluator verification experience were that KEMA and AEP Ohio have a quality control approach that appears sufficient to prevent inaccuracies, ensure that energy savings are realized, process applications in a fair and timely manner, and ensure that rebate payments are appropriate.
3. A wide-diversity of business types participate in the program indicating its potential for broad appeal. Participation was highest within the Industrial and Manufacturing sector, which accounted for 37 percent of reported energy savings and 36 percent of the reported demand savings. Participation was also high within the Large Retail / Service and Large Office segments, which accounted for 18 percent and 9 percent of energy savings and 24 percent and 11 percent of demand savings, respectively. Small retail projects account for almost 1/6 (16%) of all projects by count, but savings per project are smaller.
4. Lighting contributed the most to program impacts with more than 39 percent of the ex-ante reported savings for energy and more than 52 percent of demand savings. Process VSD and Compressed Air measures save 17 percent and 14 percent of program ex-ante energy, respectively.
5. For site verified projects several issues contributed to lower realization rates. One facility was completely closed down, thus no savings are attributed to it. It may restart at a later date if business picks up. One EMS project disabled some planned equipment on/off scheduling due to occupant needs. Another EMS project saves less energy because aggressive night set-backs forced the air-source heat pumps to use electric resistance heat more often during morning recovery than before the controls were installed.
6. Generally, key documentation for payment verification (invoices and equipment specification sheets) was found to be complete and clearly labeled. Pre- and post-inspection documents were usually adequate and contained a satisfactory level of information. Energy management system measures are the exception to this claim. For EMS installations, better documentation of pre-installation and post-installation conditions is needed with clear calculations for estimated savings.

7. KEMA assigns one business type per project even if a project consists of multiple space usage types (office, manufacturing, *etc.*). Business type assignment drives default HVAC interaction factors, and coincidence factors. Using only one business type per project may lead to unreliable savings estimates.
8. Where billing data comparison is used to determine savings, some projects were finalized with inadequate post-installation data. This will happen more frequently at the end of the program cycle. Projects based on billing data comparisons should have at least 6 months of data before being finalized.

5.1.2 Process Evaluation Findings

Satisfaction with the Custom Program

1. Over 90 percent of participants were satisfied with the program overall (96%), as well as with communication with program staff (93%), payment amount (92%) and measures offered (96%). Most customers (90%) planned on participating in the program again.
2. In 2011, 88 percent of program participants reported they were very satisfied or satisfied with AEP Ohio.
3. Solution Providers supported their customers by completing applications, communicating with AEP Ohio or KEMA as necessary, and installing the equipment. In general, Solution Providers are pleased with the program because it increases their business; however, they do find that the Custom review process often takes a long time and there was potential for losing projects because of the delays.

Program Growth

4. The most common source of information about the program was the contractor or trade ally in both 2010 and 2011.
5. Solution Providers said that the level of marketing and promotion of the programs by AEP Ohio has been adequate; customers have been responsive to ads and have called Solution Providers with projects. Solution Providers requested more direct marketing to increase participation in the Custom Program.

Marketing

6. Large customer group presentations were one common method of promoting the Custom program and included presenting to a business development group, trade shows, expos and seminars. AEP Ohio conducted a webinar with members of the Ohio Manufacturing Association. In addition, AEP Ohio holds seminars for customers three times a year throughout the state.
7. The Program Coordinator believes the program could be marketed more aggressively with a combination of increased outreach through county fairs and business groups, an increase in the use of Solution Providers, and an increase in more general marketing

using bill inserts and emails. Another way would be to contract with an aggregator and challenge him/her to find savings through the Custom Program.

8. Communication issues, which presented a problem in 2010, seem to have been resolved; email communication increased, as well as newsletters and seminars. Word of mouth was also one of the most predominant methods customers heard about the program.

Program Improvements

9. Solution Providers would improve the program with less paperwork and more improvements in the application spreadsheets.
10. They would move equipment to the Prescriptive Program, set a time-limited review for complex processes, increase incentives for HVAC equipment and increase the use of promotional materials.
11. One Solution Provider proposed carrying previous year's incentives into the first month of the New Year so projects could continue to be sold and implemented during January. Because new incentives are announced in February, any proposals completed in January have to be redone, thus January is a "dead time" for sales.

Money Rules

12. Customers, the Program Coordinator, and Solution Providers agreed that cash flow remains the main reason why customers might not participate in the program and money was the main reason for customers to participate in the program. With the state of the economy, many customers are willing but not able to make investments, because they don't have the capital to invest. To counter this impact, AEP Ohio has considered adding program financing to the Custom Program offer.

Barriers to the Custom Program

13. Solution Providers said that custom measure engineering review may hold up a project. While prescriptive measures can be reviewed in two to three weeks, custom measure engineering review was usually required and can take many weeks.
14. A majority of Solution Providers thought incentive levels were reasonable for lighting, and tended to be the tipping point for lighting measures. HVAC incentives were said to be conservative on several measures and efficiency levels were very high for chillers. For HVAC measures, incentives were not a real factor in decision making. Solution Providers thought program incentives encouraged customers to pursue lighting projects they would not have considered without the program, but not HVAC projects.

15. Solution Providers reported that AEP Ohio advertisements did not always align with the program time line. Last year, AEP Ohio had stopped the program for the year, but they were still sending out brochures. This Solution Provider refused to process any more applications.

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5.2 Recommendations

5.2.1 Impact Recommendations

1. Consider increasing the rigor of the pre- and post-inspection process and documentation. Specifically, for pre-inspection reports, it would be useful to confirm not only the scope of the new installation, but also the existing baseline equipment configuration and operation data. Consider increasing efforts in pre-inspections, especially for projects with large savings.
2. For projects that include building automation installations, consider conducting pre-installation inspections and document current controls status and post-installation. Thoroughly document pre- and post-installation sequences and schedules with the sequence code or at least screen-captures of operations and schedules.
3. Consider adding default or "building-type" look-up values for HVAC interactive and peak coincidence factors to lighting measure calculation spreadsheets. Smaller lighting projects often included inappropriate or no interactive effects. These smaller projects appeared to receive less-rigorous reviews due their size, and interaction and coincidence factors were not always applied.
4. For projects where savings are based solely on billing data comparisons, consider requiring at least six months of post-installation data for the comparison before finalizing savings estimates. Ideally the data will capture months when operating equipment is affected, for example shoulder season and cooling months for economizers.
5. Consider applying more rigor to savings estimates submitted by vendors to ensure assumptions are accurate. Navigant found examples of in appropriate motor-loading assumptions, motor and variable frequency drive efficiency and conversion between horsepower and kW. Establish ex-ante defaults for some of these parameters when actual data are not provided in savings estimates.

5.2.2 Process Recommendations

The Process Evaluation has identified the following recommendations:

1. In general, Solution Providers and customers are satisfied with the implementation of the AEP Ohio Custom Program. However, Solution Providers find that the Custom review process often takes longer and that they may risk losing projects because of these delays. AEP Ohio should consider how to manage customer and Solution Provider expectations for complex projects.

2. The Custom Program has matured in 2011 from mainly addressing lighting opportunities to include more sophisticated equipment such as variable speed drives and compressed air systems. The Solution Provider network was one of the main drivers

of customer information about the program. In 2011, KEMA developed technical fact sheets for these two applications and was also actively working to attract non-lighting trade allies to the Solution Provider database but more work needs to be done to attract Solution Providers. Consider expanding this effort to include more measures.

3. The most common source of information about the program was the contractor or trade ally in both 2010 and 2011. AEP Ohio appears to be on the right track with Solution Providers in terms of level of marketing support. Of course, Solution Providers would appreciate the benefits of more direct marketing to increase program participation and would welcome a small incentive to compensate for the time spent completing applications.

4. Reports that HVAC applications are made only after customers have decided to make HVAC investments indicates that AEP should consider more HVAC marketing efforts pitched to customers, or AEP should encourage HVAC Solution Providers to introduce the Custom Program earlier.

5. AEP Ohio has been successful in using large customer group presentations, one-on-one marketing, trade shows, webinars and seminars, and email messaging to market the Custom Program and should continue with these efforts. Rebranding the programs from 'gridSMART' to 'AEP Ohio' presents an opportunity for AEP Ohio to create a multi-media marketing campaign that includes television, radio or newsprint to generate increased general program knowledge.

5. Navigant agrees with the AEP Ohio Program Coordinator who suggested that another way to market the program would be to contract with an aggregator and challenge him/her to find savings through the Custom Program.

6. Solution Providers value simplicity in program paperwork and program participation. Therefore, they would prefer to move equipment to the Prescriptive Program where the application is simpler and the time frame considerably quicker, even though the rebates are lower.

7. Solution Providers said that new incentives are announced in February and any proposals completed in January have to be redone. Thus, January is a "dead time" for program sales. Navigant suggests there are a number of ways to solve this problem including beginning the new program on January 1. Customers, the Program Coordinator, and Solution Providers agreed that cash flow remains the main reason why customers did not participate in the program and money was the main reason for customers to participate in the program. With the state of the economy, many customers were willing but not able to make investments, because they don't have the capital to invest. To counter this impact, AEP Ohio should seriously explore adding program financing to the Custom Program offer.

NAVIGANT

9. A majority of Solution Providers thought incentive levels were reasonable for lighting, and tended to be the tipping point for the installation of lighting measures. HVAC incentives were said to be conservative on several measures and efficiency levels were very high for chillers. Therefore, incentives are not a real factor in HVAC decision making. AEP Ohio should review the incentive structure to confirm that the value of incentive levels for non-lighting measures is comparable to the value of lighting incentives.

NAVIGANT

Section 6. Appendices

6.1 Participant Telephone Survey

The following survey instrument was used to conduct the participant phone interviews.

2011 AEP OHIO BUSINESS PROGRAMS – PRESCRIPTIVE PROGRAM PARTICIPANT SURVEY

Introduction

NOTE: EVERYONE IN THIS WAVE WILL HAVE A NAME.
NOTE: Choose the largest (by savings) non lighting or lighting project for the survey.

Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. This is not a sales call. May I please speak with <**ApplicationContactName**>?

Our records show that <**OrganizationName** > purchased energy efficient <MeasureCategory>, which was installed prior to <**PaymentRequestDate**> and received an incentive of <**TotalIncentiveFinal**> from AEP Ohio. We are calling to do a follow-up study about <**OrganizationName**>'s participation in this program, which is called the "AEP Ohio gridSMART Business Prescriptive Program" (Prescriptive Program). I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. I would like to speak with the person most knowledgeable about recent changes in <MeasureCategory> equipment for your firm at this location.

[IF NEEDED] Our records show that <**OrganizationName** > purchased energy efficient <MeasureCategory>, which was installed prior to <**PaymentRequestDate**> and received an incentive of <**TotalIncentiveFinal**> from AEP Ohio. We are calling to do a follow-up study about <**OrganizationName**>'s participation in this program, which is called "AEP Ohio gridSMART Business Prescriptive Program" (Prescriptive Program). I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

NAVIGANT

SCREENING QUESTIONS

A1. Just to confirm, in 2011 did <**OrganizationName** > participate in AEP Ohio gridSMART Business Prescriptive Program at <**SERVICEADDRESS**>? (IF NEEDED: This is a program where your business received an incentive for installing one or more energy-efficient <MeasureCategory> products. You may have participated in the program with projects at more than one site. We are discussing only the facility at < **SERVICEADDRESS**>)

READ CODES 1-3

1 Yes, participated as described
2 Yes, participated but at another location
3 No, did not participate in program
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[SKIP A2 IF A1=1, 2]

A2. Is it possible that someone else dealt with the energy-efficient <MeasureCategory> installation?

DO NOT READ LIST

1 YES, SOMEONE ELSE DEALT WITH IT
2 NO
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[IF A2=1, ASK TO BE TRANSFERRED TO THAT PERSON. IF NOT AVAILABLE, THANK AND TERMINATE. IF AVAILABLE, GO BACK TO A1]

[IF A1=2, 3, 97, 98, 99: THANK AND TERMINATE AND RECORD DISPO AS "COULD NOT CONFIRM PARTICIPATION".]

Before we begin, I want to emphasize that this survey will only be about the energy efficient <MeasureCategory> you installed and received an incentive for through the AEP Ohio gridSMART Business Prescriptive Program at <SERVICEADDRESS> in 2011. This is specifically about the Prescriptive measures you installed and received an incentive for through the program.

NAVIGANT

APPLICATION AND PROGRAM AWARENESS

S0 How did you first hear about the Prescriptive Program?

1. AEP Ohio Account Manager (email, phone call or visit?)
2. AEP Ohio Website
3. Workshop/Green Ribbon Kickoff event
4. Contractor/Trade Ally
5. Email from AEP Ohio
6. Friend/colleague/word of mouth
7. Bill Insert
8. Webinar
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor –
12. BLANK
13. BLANK
14. Supplier –
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK

00. Other, specify
98. Don't know
99. Refused

E1 Where did you get your rebate application?

[USE LIST AS PROMPT AS NECESSARY. RECORD ONE RESPONSE.]

1. Contractor or Equipment Vendor
2. Website/on-line
3. Utility staff (e.g., account manager, program manager, customer phone line)
4. Program staff (e.g., hired program implementer?)
5. Consulting Engineer, Architect or Energy Consultant
6. Other [specify]

88. Refused
99 Don't know

E2 Who was most responsible for completing the rebate application? Was this you, someone else in your organization, a contractor or vendor, someone from the utility or working for the program, or someone else?

[READ LIST; RECORD ONE RESPONSE]

NAVIGANT

1	You	**Go to E3**
2	Someone else in your organization	**Go to first Measure Module**
3	Contractor/vendor/other trade ally	**Go to S4b**
4	Utility staff	**Go to first Measure Module**
5	Program staff	**Go to first Measure Module**
6	Other [RECORD]	**Go to first Measure Module**
88	Refused	**Go to first Measure Module**
99	Don't know	**Go to first Measure Module**

Customer Completed Application

E3 Now thinking about how easy or hard it was to complete the application, how satisfied were you with the ease of filling out the application? Would you say you were: Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	Go to first Measure Module
2	Somewhat satisfied	Go to first Measure Module
3	Neither satisfied nor dissatisfied	**Continue**
4	Somewhat dissatisfied	**Continue**
5	Very dissatisfied	**Continue**
88	Refused	Go to first Measure Module
99	Don't know	Go to first Measure Module

E4 What would have made you more satisfied?
RECORD VERBATIM

NAVIGANT

Contractor Completed Application

S4b Was the contractor who completed the application affiliated with the AEP Ohio gridSMART Prescriptive Program? (IF NEEDED: Was the contractor REGISTERED with AEP Ohio?)

1 Yes
2 No
8 Don't know
9 Refused

[ASK S5 IF S4a=1 ELSE SKIP TO PL1]

S5 How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"? [SCALE 0-10; 98=Don't know, 99=Refused]

S6a Would you recommend the contractor you worked with to others?

1 Yes
2 No
8 Don't know
9 Refused

[ASK S6b IF S6a=2]

S6b Why not?

1. They do poor quality work
2. They left a mess
3. They wouldn't answer my phone calls
00. Other, specify
98. Don't know
99. Refused

Measure Modules

Our next questions are about some of the energy efficient prescriptive measures you installed through the AEP Ohio gridSMART Business Prescriptive Program at <**SERVICEADDRESS**>.

LIGHTING MODULE

[START OF LIGHTING MEASURE LOOP; ASK IF LIGHTING =1; REPEAT FOR UP TO 3 LIGHTING SUBMEASURE CATEGORIES; ELSE GO TO NEXT MEASURE MODULE]

NAVIGANT

PL1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. (Me/respondent)
2. (Contractor)
3. (Engineer)
4. (Architect)
5. (Manufacturer)
6. (Distributor)
7. (AEP/Ohio Account Manager)
8. (Owner)
10. (Program staff implementer?)
11. (Other AEP Ohio representative)
00. (Other, specify)
98. (Don't know)
99. (Refused)

PL2 And who informed you about the availability of an incentive through the AEP Ohio gridSMART Business Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

NAVIGANT

L1 After you installed the energy efficient <MeasureCategory>, did you install additional lighting fixtures of the same type to increase the lighting level in the space? More fixtures than before?

DO NOT READ LIST

1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK L2 IF L1=1, OTHERWISE SKIP]

L2 How many of these new fixtures did you install?

[NUMERIC OPEN END, 1 TO 3000; 9998=DON'T KNOW, 9999=REFUSED]

LAMPS INTO STORAGE

[ASK IF MEASURE1 = CFL, ELSE SKIP TO INSTRUCTIONS BEFORE L7]

[IF <MEASURESUBCATEGORY> = 'Screw in Compact Fluorescent Lamps' or 'Hardwired Compact Fluorescent Fixtures' or 'Interior Lighting / Hardwired Compact Fluorescent Fixtures'.]

L4 What percentage of the CFLs for which you received an incentive was placed in storage?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

L5 What percentage was installed at another facility?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

L6 And what percentage of the CFLs have been replaced because of bulb burn out?

[NUMERIC OPEN END, 0 TO 10,000; 99998=DON'T KNOW, 99999=REFUSED]

REMOVED EQUIPMENT

[IF <MEASURESUBCATEGORY> = "LIGHTING OCCUPANCY SENSOR", SKIP TO OS1]
[IF <MEASURESUBCATEGORY> = 'LED Exit Signs Electronic Fixtures (Retrofit Only)', SKIP TO EX1]

I'd like to ask you a few questions about the equipment that was removed when you installed the energy efficiency <MEASURECATEGORY>…

L7 What type of lighting was removed when you installed the energy efficient equipment?

[READ LIST]
[MULTIPLE RESPONSE, UP TO 3]

1 Linear fluorescent lights
2 High-Intensity Discharge (HID) Fixtures / Metal Halide

NAVIGANT

3 Compact fluorescent lights
4 Incandescent bulbs
5 Halogen lights
6 Did not replace anything - new equipment
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[ASK L7a IF L7=1]
L7aWhat type of linear fluorescent lights were removed?
[READ LIST]
MULTIPLE RESPONSE, UP TO 3]
1 High performance T8 (1" diameter bulbs)
2 T8 fluorescent fixtures (1″ diameter bulbs)
3 T10 fluorescent fixtures
4 T12 Fixtures (1.5″ diameter bulbs)
5 T5 Fixtures (5/8″ diameter)
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

[ASK L7B IF L7A=3, 4]
L7b What types of ballasts were used on the linear fluorescent fixtures you removed?
READ LIST, MULTIPLE RESPONSE
1 Electronic Ballast
2 Magnetic Ballast
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

NAVIGANT

L9 Was the new lighting equipment installed in an air conditioned (cooled) space?
SINGLE PUNCH
1 YES
2 NO
3 SOME OF THE LIGHTING EQUIPMENT WAS AND SOME WASN'T
8 DON'T KNOW
9 REFUSED

HOURS OF USE – LIGHTING

Now we'd like to talk about the hours that your interior lighting equipment is in operation.

LH1a Are you typically open every day, Monday through Friday?
SINGLE PUNCH
1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK LH1b IF LH1a=2]
LH1b How many days typically are you CLOSED Monday through Friday?
SINGLE PUNCH
1 ONE
2 TWO
3 THREE
4 FOUR
5 FIVE
8 DON'T KNOW
9 REFUSED

[IF LH1b=5, SKIP TO LH4]
LH2 At what time do your indoor lights currently turn on during weekdays (Monday - Friday)? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON; NOON IS 1200 PM)
LH2A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH2B 1. AM
2. PM

NAVIGANT

[SKIP LH3 IF LH2=24hr or never]

LH3 At what time do your indoor lights currently turn off during weekdays (Monday - Friday)? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH3A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH3B 1. AM
2. PM

LH4 Does the lighting equipment operate on a different schedule on weekends (Saturday and Sunday)?
SINGLE PUNCH
1 YES
2 NO
8 DON'T KNOW
9 REFUSED

[ASK IF LH4=1, ELSE SKIP TO LH9]

LH5 On Saturdays, at what time does the indoor lighting equipment turn on? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH5A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH5B 1. AM
2. PM

[SKIP LH6 IF LH5=24hr or never]

LH6 And when does the indoor lighting equipment turn off on Saturdays? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH6A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH6B 1. AM
2. PM

LH7 And on Sundays, at what time does the indoor lighting equipment turn on? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH7A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH7B 1. AM
2. PM

[SKIP LH8 IF LH7=24hr or never]

NAVIGANT

LH8 And when does the indoor lighting equipment turn off on Sundays? (ENTER 2400 FOR 24-HOUR OPERATION, ENTER 0 FOR NEVER ON)
LH8A ENTER HOURS AND MINUTES, E.G., 0530 FOR 5:30
FORCE XXXX FORMAT
LH8B 1. AM
2. PM

LH9a During hours when your business is OPEN, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH9b IF LH1a=1 AND LH2a = 2400 AND LH4 = 2]
LH9b During hours when your business is CLOSED, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

LH10a Are there any months during the year when the operating schedule for the lighting equipment differs significantly from what you just described?
SINGLE RESPONSE
1 YES
2 NO
8 (DON'T KNOW)
9 (REFUSED)

[ASK LH10b IF LH10a=1; ELSE SKIP TO INSTRUCTIONS AT END OF LIGHTING MEASURE LOOP]
LH10b How many hours per day does the indoor lighting equipment typically operate during the periods with different operating schedules?
[NUMERIC OPEN END, 0 TO 24; 98=DON'T KNOW, 99=REFUSED]

LH10c And how many days per week?
[NUMERIC OPEN END, 0 TO 7; 8=DON'T KNOW, 9=REFUSED]

LH10d How many months per year does the equipment run on the alternative schedule?
[NUMERIC OPEN END, 0 TO 12; 98=DON'T KNOW, 99=REFUSED]

LH10e During hours when your business is OPEN, on the alternative schedule, approximately what percentage of the indoor lighting is kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH10f IF LH10b = 24]

NAVIGANT

LH10f During hours when your business is CLOSED on the alternative schedule, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

[END OF LIGHTING MEASURE LOOP; REPEAT FOR NEXT LIGHTING SUBMEASURECATEGORY UP TO 3 TIMES; ELSE GO TO INSTRUCTIONS FOR OCCUPANCY SENSORS LOOP]

OCCUPANCY SENSORS

[ASK IF <MEASURESUBCATEGORY> = 'LIGHTING OCCUPANCY SENSORS', ELSE GO TO INSTRUCTIONS FOR EXIT SIGN MEASURE LOOP]

OS0 Roughly what percentage of your lights were controlled by occupancy sensors before you participated in the program?
[NUMERIC OPEN END; 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

OS1 Roughly what percentage of your lights have occupancy controls on them now?
[NUMERIC OPEN END; 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

EXIT SIGNS

[ASK IF <MEASURESUBCATEGORY > = 'LED, T-1, or Electroluminescent Exit Signs OR LED Exit Signs'; ELSE GO TO end of Lighting Module] (NOTE MUST BE CHECKED FOR EACH LIGHTING PROJECT)

EX1 What type of exit signs were removed? (READ LIST) [MULTIPLE RESPONSE, UP TO 3]

1 Incandescent exit signs
2 Compact fluorescent exit signs
3 LED exit signs
4 None – exit signs added
97 Other, specify
98 Don't know
99 Refused

[END OF LIGHTING MODULE; GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

NAVIGANT

HVAC MODULE

[ASK IF COOLING=1; ELSE GO TO NEXT MEASURE MODULE]

PC1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PC2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

HVAC MEASURE LOOP

[START OF HVAC MEASURE LOOP]

[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]
[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

NAVIGANT

The following questions are about the <MEASD1> you installed through the Prescriptive Program.

C0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.; DK, REF]

b Year [Precodes for 2009, 2010, and 2011; DK, REF]

REMOVED EQUIPMENT

C1 What type of HVAC equipment was REMOVED when you installed <MEASD1> through the Prescriptive Program? (DO NOT READ LIST)

1 Split system air conditioners (two components: compressor is separate from the supply air fan)
2 Packaged air conditioning systems (one component, for example rooftop units or unitary equipment)
3 Package Terminal A/C (e.g., Hotel/Motel units)
4 Window/Wall Air-Conditioning Units
5 Remote Condensing Unit
6 Evaporative coolers/swamp coolers
7 Water Chillers
8 Evaporative Condenser
9 Adjustable Speed Drives
10 Throttling Devices for HVAC fans or pumps (e.g. inlet vanes, bypass dampers, throttling valves)
11 Heat Pump Units
00 Other, specify
96 NOTHING, EQUIPMENT ADDED NOT REPLACED
98 Don't know
99 Refused

[SKIP C2 AND C3 IF C1=96, 98, 99]

C2 How would you describe the condition of the equipment that was removed? Was it…

1 Inoperable/broken
2 Poor condition
3 Fair condition
4 Good condition
8 Don't know
9 Refused

NAVIGANT

C3 How old was the equipment that was removed? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[END OF HVAC MEASURE LOOP; GO TO NEXT COOLING MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

REFRIGERATION MODULE

[ASK IF REFRIG=1; ELSE GO TO NEXT MEASURE MODULE]

PR1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

NAVIGANT

PR2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

REFRIGERATION MEASURE LOOP

[START OF REFRIGERATION MEASURE LOOP]
[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]
[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <MEASD1> installed through the Prescriptive Program.
R0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009 and 2010]

REMOVED EQUIPMENT

R1 What type of refrigeration equipment was removed when you installed the <MEASD1> through the Prescriptive Program?

1 Old Strip curtains
2 Older Anti-sweat heat controllers
3 Standard efficiency evaporator fan motors
4 Older ice maker
5 Older controls
6 Same Equipment, just older?
00 Other, specify
96 NONE - Not a replacement
98 Don't know
99 Refused

NAVIGANT

R3 Approximately how old was the refrigeration equipment that was replaced by the new refrigeration equipment? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[ASK R4a and R4b IF MEASD1="Anti-Sweat Heater Controls"]

R4a Thinking about the previous system you had in place to reduce condensation on your refrigeration doors, was it on all the time or did you control the number of hours that it operated?

1 On all the time
2 Controlled the hours of operation
00 (Other, specify)
96 (Didn't have a previous system)
98 Don't Know
99 Refused

[ASK R4b IF R4a=2]

R4b How many hours per day was the previous system on? [NUMERIC OPEN END, 0 TO 24; 98=Don't know, 99=Refused]

[END OF REFRIGERATION MEASURE LOOP; GO TO NEXT REFRIGERATION MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

VARIABLE FREQUENCY DRIVE MODULE

[ASK IF VFSDS=1; ELSE GO TO NEXT MEASURE MODULE]

PV1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor

NAVIGANT

7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PV2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

VARIABLE SPEED DRIVES MEASURE LOOP

[START OF VARIABLE SPEED DRIVES MEASURE LOOP]
The following questions are about the <MEASD1> you installed through AEP Ohio's gridSMART Business Prescriptive Program.

V0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009 and 2010]

V1 Are the variable speed drives used to... (READ LIST) Accept multiples?

1 Drive a newly installed piece of equipment
2 Replace failed equipment
3 Retrofit application to existing and functioning equipment
4 Serve as a spare
00 Or for some other reason (Specify)
98 (Don't Know)
99 (Refused)

NAVIGANT

VS1 Were (any of ?) the VSDs installed as part of an HVAC system?

1 YES
2 NO
98 DON'T KNOW
99 REFUSED

[ASK VS1_2A IF VS1 = YES]

VS1_2A Was the existing HVAC system a constant volume system or a variable volume system?

1 Constant Volume
2 Variable Volume
98 DON'T KNOW
99 REFUSED

[ASK VS1_2B IF VS1_2A = 2]

VS1_2B What type of controls were used on the existing variable volume HVAC system prior to installation of the new VSDs?

1 Older VSD
2 Variable Inlet Guide Vanes
3 Vortex Dampers
4 Variable Pitch Axial Fan Blades
5 Bypass Dampers
6 Throttling Valves
00 Another type of controls (Specify)
98 DON'T KNOW
99 REFUSED

REPLACED EQUIPMENT

[ASK IF V1=2, 3; ELSE SKIP TO V2a]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <MEASD1>.

V3c How would you describe the condition of the equipment that was removed or retrofit when you installed the new <MEASD1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 (Don't Know)
9 (Refused)

NAVIGANT

V3d How old was the equipment that was removed or retrofit? Would you say that most of it was…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 (Don't Know)
9 (Refused)

V2a In the past month, how many hours per day did this equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

V2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 (Don't know)
9 (Refused)

[ASK V2d-f IF V2c=1]

V2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

V2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

[END OF VARIABLE SPEED DRIVE MEASURE LOOP; GO TO NEXT VARIABLE SPEED DRIVE MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

NAVIGANT

MOTORS MODULE

[ASK IF MOTORS=1; ELSE GO TO NEXT MEASURE MODULE]

PM1 Who was most influential in identifying and recommending the <ENDUSE> project you completed through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

PM2 And who informed you about the availability of an incentive through the Prescriptive Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. AEP/Ohio Account Manager
8. Owner/developer
9. Project manager
10. Program Staff implementer?
11. Other AEP Ohio representative
00. Other, specify
98. Don't know
99. Refused

NAVIGANT

MOTORS MEASURE LOOP

[START OF MOTORS MEASURE LOOP]

The following questions are about the <MEASD1> you installed through AEP Ohio's gridSMART Business Prescriptive Program.

M0 When did you install the <MEASD1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009 and 2010]

M1 Are the new motors used to... (READ LIST) accept multiples….

1 Drive a newly installed piece of equipment
2 Replace a failed motor
3 Replace a functioning motor
4 Serve as a spare
00 Or for some other reason (Specify)
98 (Don't Know)
99 (Refused)

[IF M1 = 2 OR 3, ASK M1A, ELSE GO TO M1B]

M1a Are the replaced motors controlled by a variable frequency drive (VFD)?

1 Yes
2 No
8 (Don't know)
9 (Refused)

M1b Are the new motors controlled by a variable frequency drive (VFD) – either new or existing?

1 Yes
2 Some are controlled and some are not
3 No
8 (Don't know)
9 (Refused)

M2a In the past month, how many hours per day did this new equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

NAVIGANT

M2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 (Don't know)
9 (Refused)

[ASK M2d-f IF M2c=1]

M2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

M2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

REPLACED EQUIPMENT

[ASK IF M1=2, 3; ELSE SKIP TO END OF MOTOR MEASURE LOOP]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <MEASD1>.

M3a Were the motors you removed…
(IF NEEDED: "“In this survey we use the term “NEMA Premium motors” to refer to very high efficiency motors that meet specific performance criteria developed by the National Electrical Manufacturers Association. We use the term “EPAct Motors” to refer to motors that meet current federal minimum efficiency standards contained in the Energy Policy Act; new motors installed in Ohio after 1997 must be, at a minimum, EPAct motors. Finally, we use the term “Standard Efficiency Motors” to refer to typically older motors that do not meet the current Federal standards.)

1 NEMA Premium motors
2 EPAct motors
3 standard efficiency motors
8 Don't Know
9 Refused

M2d How many hours per day did the replaced equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

NAVIGANT

M3b Had the motors you removed been rewound?

1 Yes
2 No
8 Don't Know
9 Refused

M3c How would you describe the condition of the motors that were removed when you installed the new <MEASD1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 Don't Know
9 Refused

M3d How old were the motors that were removed? Would you say that most of them were…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't Know
9 Refused

[END OF MOTOR MEASURE LOOP; GO TO NEXT MOTOR MEASURE; ELSE, GO TO INSTRUCTIONS FOR NEXT MEASURE MODULE]

[END OF MEASURE MODULES; GO TO NET-TO-GROSS MODULE]

NET-TO-GROSS MODULE

VARIABLES FOR THE NET-TO-GROSS MODULE:
BASIC RIGOR LEVEL IS ASSUMED FOR ALL PROJECTS.

<ACCT_REP> NAME OF AEP OHIO ACCOUNT MANAGER, FROM PROGRAM TRACKING DATABASE OR PROGRAM FILES IF PRESENT)
<OTHERPTS> (VARIABLE TO BE CALCULATED BASED ON RESPONSES. EQUALS 1-MINUS RESPONSE TO N3P.)
<MSAME> (FOR PRESCRIPTIVE/STANDARD SURVEY ONLY: EQUALS 1 IF SAME CUSTOMER HAD MORE THAN ONE PROJECT OF THE SAME MEASURE TYPE; FROM PROGRAM TRACKING DATABASE)

NAVIGANT

<NSAME> (FOR PRESCRIPTIVE/STANDARD SURVEY ONLY: NUMBER OF ADDITIONAL PROJECTS OF THE SAME MEASURE TYPE IMPLEMENTED BY THE SAME CUSTOMER; FROM PROGRAM TRACKING DATABASE)
Nsame = Count number of projects under <MeasureCategory1, 2, 3> and subtract 1.

AEP ACCOUNT REP **INFORMATION**

I would like to get some information on the role your AEP account representative may have played with the implementation of this project.

V4 Did your AEP Ohio account manager assist you with the project that you implemented through Prescriptive program?
DO NOT READ LIST, SINGLE PUNCH, PROBE IF NECESSARY
IF NO, PROBE "Is that because you don't have an AEP Ohio account manager, or do you have one, but they weren't involved?"
1 YES
2 NO, DON'T HAVE AN AEP OHIO ACCOUNT MANAGER
3 NO, HAVE AN AEP OHIO ACCOUNT MANAGER BUT THEY WEREN'T INVOLVED
8 DON'T KNOW
9 REFUSED

NET-TO-GROSS BATTERY

[ONE LOOP BASED ON LARGEST MEASURE CATEGORY]

My next set of questions is about the energy efficiency <MeasureCategory> you installed through the program at [SERVICEADDRESS].

N1 When did you first learn about the Prescriptive Program? Was it BEFORE or AFTER you first began to THINK about implementing the energy efficient <MeasureCategory>? (NOTE TO INTERVIEWER: "this measure" refers to the specific energy efficient equipment installed through the program.)
DO NOT READ LIST, SINGLE PUNCH
1 BEFORE
2 AFTER
8 DON'T KNOW
9 REFUSED

[ASK N2 IF N1=2, 8, 9]
N2 Did you learn about the Program BEFORE or AFTER you DECIDED to implement the energy efficient <MEASURECategory> equipment that was installed? (NOTE TO

NAVIGANT

INTERVIEWER: "the energy efficient equipment" refers to the specific energy efficient equipment installed through the program.)
DO NOT READ LIST, SINGLE PUNCH
1 BEFORE
2 AFTER
8 DON'T KNOW
9 REFUSED

N3 Next, I'm going to ask you to rate the importance of the Prescriptive Program as well as other factors that might have influenced your decision to implement the energy efficient <MeasureCategory>. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following in your decision to implement the measure at this time.

[FOR N3A-N, RECORD 0 TO 10; 96=NOT APPLICABLE; 98=DON'T KNOW; 99=REFUSED]
(If needed: How important in your DECISION to implement the project was…)

N3a. The age or condition of the old equipment

N3b. Availability of the Prescriptive Program incentive

[ASK IF <TECH_ASSIST>=1, ELSE SKIP TO N3d]
N3c. Information provided through the technical assistance you received from AEP Ohio staff

N3d. Recommendation from a vendor or contractor that helped you with the choice of the equipment

N3e. Previous experience with the energy efficient <Measure Category>

N3f. Recommendation from an AEP Ohio program staff person

N3h. Information from the Prescriptive Program or AEP Ohio marketing materials

N3j. Standard practice in your business/industry

[SKIP N3k IF V4>1]
N3k. Endorsement or recommendation by an account manager of AEP Ohio

N3l. Corporate policy or guidelines

NAVIGANT

N3m. Payback on the investment

N3n. Were there any other factors we haven't discussed that were influential in your decision to install this energy efficient <MeasureCategory>?
DO NOT READ LIST, SINGLE PUNCH
97 [RECORD VERBATIM]
96 NOTHING ELSE INFLUENTIAL
98 DON'T KNOW
99 REFUSED

[ASK N3nn IF N3n=97]
N3nn. Using the same zero to 10 scale, how would you rate the influence of this factor? [RECORD 0 TO 10; 98=DON'T KNOW; 99=REFUSED]
SHOW CHECK BOXES 0,1,2,3,4,5,6,7,8,9,10
SINGLE PUNCH

Thinking about this differently, I would like you to compare the importance of the Prescriptive Program with the importance of other factors in implementing the energy efficient <MeasureCategory> project.

[READ IF (N3A, N3D, N3E, N3I, N3J, N3L, N3M, OR N3NN)=8,9,10; ELSE SKIP TO N3p]
You just told me that the following other factors were important:
[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 OR HIGHER]
(N3A) Age or condition of old equipment,
(N3D) Equipment Vendor recommendation
(N3E) Previous experience with this measure
(N3I) Recommendation from a design or consulting engineer
(N3J) Standard practice in your business/industry
(N3L) Corporate policy or guidelines
(N3M) Payback on investment
(N3NN) Other factor

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <MEASURECATEGORY> project, and you had to divide those 100 points between: 1) the program and 2) these other factors, taken together as whole, how many points would you give to the importance of the Prescriptive Program?
POINTS GIVEN TO PROGRAM: [RECORD 0 TO 100; 998=DON'T KNOW; 999=REFUSED]

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE; IF N3p=998, 999, SET OTHERPTS=BLANK]

N3o And how many points would you give to other factors? [RECORD 0 TO 100; 998=DON'T KNOW; 999=REFUSED] [THE RESPONSE SHOULD BE <OTHERPTS> BECAUSE BOTH NUMBERS SHOULD EQUAL 100. IF RESPONSE IS NOT <OTHERPTS> ASK INC1]

INC1 The last question asked you to divide a TOTAL of 100 points between the Prescriptive Program and other factors. You just noted that you would give <N3P RESPONSE> points to the program. Does that mean you would give <OTHERPTS> points to other factors?

DO NOT READ LIST, SINGLE PUNCH

1 YES
2 NO
98 Don't Know
99 Refused

[IF INC1=2, GO BACK TO N3P]

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the utility program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the incentive from the Prescriptive Program had not been available, what is the likelihood that you would have installed exactly the same equipment? [RECORD 0 TO 10; 98=DON'T KNOW; 99=REFUSED]

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=08, 09, 10 AND N5=08, 09, 10]

N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to install. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the incentive played in your decision to install this efficient equipment?
[RECORD VERBATIM]
98 DON'T KNOW
99 REFUSED

NAVIGANT

N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would install the same equipment without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?

DO NOT READ LIST, PROBE IF NECESSARY, SINGLE PUNCH

1 CHANGE IMPORTANCE OF INCENTIVE RATING
2 CHANGE LIKELIHOOD TO INSTALL THE SAME EQUIPMENT RATING
3 CHANGE BOTH
4 NO, DON'T CHANGE
8 DON'T KNOW
9 REFUSED

[ASK IF N5b=1, 3]

N5c How important was the availability of the Prescriptive Program incentive? (IF NEEDED: in your DECISION to implement the project)
Please use a scale of 0 to 10, where 0 means not at all important and 10 means extremely important.
[98=DON'T KNOW, 99=REFUSED]

[ASK IF N5b=2, 3]

N5d If the Prescriptive program had not been available, what is the likelihood that you would have installed exactly the same equipment? Please use a scale of 0 to 10, where 0 means "Not at all likely" and 10 means "Extremely likely";
[98=DON'T KNOW, 99=REFUSED]

[ASK IF N5>0 AND <11, ELSE SKIP TO N8]

N7 You indicated earlier that there was a <N5 RESPONSE> in 10 likelihood that you would have installed the same equipment if the Prescriptive Program had not been available. Without the program, when do you think you would have installed this equipment? Would you say…?

READ LIST, SINGLE RESPONSE

1 At the same time
2 Earlier
3 Later
4 NEVER
8 DON'T KNOW
9 REFUSED

NAVIGANT

[ASK N7a IF N7=3]
N7a. How much later would you have installed this equipment? Would you say…?
READ LIST, SINGLE PUNCH
1 Within 6 months?
2 6 months to 1 year later
3 1 - 2 years later
4 2 - 3 years later
5 3 - 4 years later
6 4 or more years later
8 DON'T KNOW
9 REFUSED

[ASK N7b IF N7a=6]
N7b. Why do you think it would have been 4 or more years later?
[RECORD VERBATIM]
98 DON'T KNOW
99 REFUSED

PAYBACK BATTERY

[ASK N8-N10e IF N3m>5 AND <11]
I'd like to find out more about the payback criteria <ORGANIZATIONAME> uses for its investments.

N8 What financial calculations does <ORGANIZATIONNAME> make before proceeding with installation of an energy efficiency project like this one?
READ LIST, MULTIPLE RESPONSE
1 Simple Payback
2 Return on investment
3 Life cycle costing
4 Other (SPECIFY)
8 DON'T KNOW
9 REFUSED

NAVIGANT

[ASK N9 IF N8 = 1]

N9 What is the payback cut-off point <ORGANIZATIONNAME> uses (in months) before deciding to proceed with this type of an investment/capital improvement project? Would you say…?

READ LIST, SINGLE PUNCH

1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years
6 Over 5 years
8 DON'T KNOW
9 REFUSED

[ASK N26 IF OTHER MEASURES WERE INSTALLED]

N26 Was it a single decision to install all of the energy efficiency measures at <SERVICEADDRESS> for which you received an incentive from AEP Ohio or did each measure type (such as lighting, HVAC, refrigeration, motors) go through its own decision process?

READ LIST, SINGLE PUNCH

1 Single Decision
2 Each measure type went through its own decision process
97 OTHER, SPECIFY
98 (DON'T KNOW)
99 (REFUSED)

[ASK N27 IF MSAME=1] *(Need to create a variable based on multiple MEASURES at THE SAME address.)*

Our records show that <ORGANIZATIONNAME > also received an incentive from AEP Ohio for <NSAME> (number) other <MeasureCategory> project(s).

N27 Was it a single decision to complete all of those <MeasureCategory> projects for which you received an incentive from AEP Ohio or did each <MeasureCategory> project go through its own decision process?

READ LIST, SINGLE PUNCH

1 Single Decision
2 Each project went through its own decision process
97 OTHER, SPECIFY
98 DON'T KNOW
99 REFUSED

NAVIGANT

[END OF NET-TO-GROSS MODULE; GO TO SPILLOVER MODULE]

SPILLOVER MODULE

Thank you for discussing the new equipment that you received incentives for through the Prescriptive Program. Next, I would like to discuss any <MEASURE> equipment your organization might have installed …

LS1Since <INSTALL DATE> has your organization purchased and installed any energy efficient <MEASURE> WITHOUT an incentive from the AEP gridSMART Business Prescriptive Program or another utility program…

a. At this facility [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]
b. At another facility owned by <COMPANY> [1=YES, 2=NO, 8=DON'T KNOW, 9=REFUSED]

[ASK LS1C – LS4 IF LS1B=1]

LS1c You said you installed equipment at another facility owned by <COMPANY>. Can you please give me the address? (If more than one, record "multiple")
[OPEN END]

LS2On a scale of 0 to 10, where 0 means "no influence" and 10 means "greatly influenced," how much did your experience with the Prescriptive Program influence your decision to install high efficiency <MEASURE> equipment <u>on your own</u>?
[SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

LS3Why did you purchase this <MEASURE> equipment without the financial assistance available through the AEP Ohio gridSMART Business Prescriptive Program?
DO NOT READ LIST, PROBE IF NECESSARY
[MULTIPLE RESPONSE, UP TO 3]

1	Takes too long to get approval
2	No time to participate, needed equipment immediately
3	The equipment did not qualify
4	The amount of the incentive wasn't large enough
5	Did not know the program was available
6	No program available for the facility's location
7	Had reached the maximum incentive amount
8	Project was "waitlisted"/program was oversubscribed
9	Previous experience with the equipment (have installed before)
97	OTHER, SPECIFY
98	DON'T KNOW
99	REFUSED

NAVIGANT

[ASK LS3A IF LS3=3]
LS3a Why didn't the equipment qualify? [OPEN END]

[ASK LS4 IF LS2=8, 9, 10 AND LS3 <> 3, ELSE GO TO LH1A]
LS4What type of <MEASURE> equipment was installed without an incentive? Did you install…
READ LIST
[MULTIPLE RESPONSE, UP TO 5]

1	T8 fluorescent lighting to replace T12 lighting
2	Reduced wattage T8 lamps
3	T8 or T5 high bay fixtures
4	Compact fluorescent lights (CFLs)
5	Occupancy sensors
6	LED exit signs
7	LED traffic signals
97	OTHER, SPECIFY
98	DON'T KNOW
99	REFUSED

[END OF SPILLOVER MODULE; GO TO PROCESS MODULE]

PROCESS MODULE

I'd now like to ask you a few general questions about your participation in AEP Ohio's gridSMART Business Prescriptive program.

PROGRAM PROCESSES AND SATISFACTION

S0 How did you first hear about the Prescriptive Program?
[DO NOT READ LIST, SINGLE PUNCH]

1. AEP Ohio Account Manager (email, phone call or visit?)
2. AEP Ohio Website
3. Workshop/Green Ribbon Kickoff event
4. Contractor/Trade Ally
5. Email from AEP Ohio
6. Friend/colleague/word of mouth
7. Bill Insert
8. Webinar
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor
12. BLANK
13. BLANK

NAVIGANT

14. Supplier
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK
00. Other, specify
98. Don't know
99. Refused

S0a What were the primary reasons your company participated in the Prescriptive Program?
[DO NOT READ CATEGORIES; ACCEPT MULTIPLES]

1. BECAUSE OF THE INCENTIVES/TO SAVE MONEY ON EQUIPMENT PURCHASE
2. TO SAVE ENERGY
3. TO SAVE MONEY ON ELECTRIC BILLS Don't Know
4. BECAUSE THE PROGRAM WAS SPONSORED BY A UTILITY
5. TO HELP PROTECT THE ENVIRONMENT
6. PREVIOUS EXPERIENCE WITH OTHER UTILITY PROGRAMS
7. RECOMMENDED BY UTILITY ACCOUNT REPS
8. RECOMMENDED BY CONTRACTORS
9. PRIOR PARTICIPATION IN SIMILAR PROGRAMS
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

S1 Was an initial, pre-approval application submitted for the project?
[DO NOT READ LIST, SINGLE PUNCH]

1. YES
2. NO
8. DON'T KNOW
9. REFUSED

[ASK S1b IF S1=1 ELSE SKIP TO S1e]

S1b Did the application form and supporting documents clearly explain the program requirements and how to participate?
[DO NOT READ LIST, SINGLE PUNCH]

1. YES
2. NO
3. SOMEWHAT
8. DON'T KNOW
9. REFUSED

NAVIGANT

[S2a Did YOU fill out the final application for the project?
DO NOT READ LIST, SINGLE PUNCH
1. YES
2. NO
8. DON'T KNOW
9. REFUSED
[ASK S2d IF S2A=2]

S2dWho filled out the final application for the project?
[READ LIST, SINGLE PUNCH]
1. Someone else at the facility
2. Someone else at the company
3. Trade Ally
4. Contractor
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

S1d1 Once you submitted the initial application, how many weeks would you say it took for AEP Ohio to approve it? [OPEN END NUMERIC]
[NUMERIC OPEN END, 0 TO 50; 98=DON'T KNOW, 99=REFUSED]

S1d2 How satisfied were you with the time it took for AEP Ohio to approve the initial application? Please use a scale of 0 to 10 where 0 is "very dissatisfied" and 10 is "very satisfied". [SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

S8 During the course of your participation in the program, did you place any calls to an AEP Ohio Call Center?
[DO NOT READ LIST, PROBE IF NECESSARY]
1. YES – AEP BUSINESS CALL CENTER
2. YES – KEMA AT THE PHONE NUMBER FROM THE APPLICATION FORM
3. NO, NEITHER
8. DON'T KNOW
9. REFUSED

[ASK S8a IF S8=1]
S8a On a scale of 0 to 10, where 0 is "very dissatisfied" and 10 is "very satisfied;" how would you rate your satisfaction with the Call Center's ability to answer your questions? [SCALE 0-10; 98=DON'T KNOW, 99=REFUSED]

NAVIGANT

[ASK S8b IF S8a<4]
S8b What is the primary reason you provided that low satisfaction rating? [OPEN END]

S11 On a scale of 0 to 10, where 0 is very dissatisfied and 10 is very satisfied, how would you rate your satisfaction with…

a. The incentive amount
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
a2. The time it took to receive the incentives
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
b. The communication you had with the AEP Ohio program staff
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
c. The measures offered by the program (If needed: this is the equipment that is eligible for an incentive under the program)
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
d. Satisfaction with the performance of the measure
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]
e. The AEP Ohio gridSMART Business Prescriptive Program overall [SCALE 0-10; 96=not applicable, 98=Don't know, 99=Refused]
f. AEP Ohio overall
[SCALE 0-10; 96=NOT APPLICABLE, 98=DON'T KNOW, 99=REFUSED]

[ASK S12a IF S11a<4]
S12a. You indicated some dissatisfaction with the incentive amount, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12a2 IF S11a2 < 4]
S12a2. You indicated some dissatisfaction with the time it took to receive incentives, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12b IF S11b<4]
S12b. You indicated some dissatisfaction with the communication you had with the AEP Ohio staff, why did you rate it this way?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12c IF S11c<4]
S12c. You indicated some dissatisfaction with the measures offered by the Prescriptive Program, what is the primary reason for your dissatisfaction?
[OPEN END; 98=DON'T KNOW, 99=REFUSED]

NAVIGANT

[ASK S12d IF S11d<4]
S12d. You indicated some dissatisfaction with the performance of the measures installed during the program. Overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12e IF S11e<4]
S12e. You indicated some dissatisfaction with the Prescriptive Program overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

[ASK S12f IF S11f<4]
S12f. You indicated some dissatisfaction with AEP Ohio overall, what is the primary reason for your dissatisfaction? [OPEN END; 98=DON'T KNOW, 99=REFUSED]

SWE PARTICIPATION PROCESS AND PROGRAM SATISFACTION MODULE

I'd now like to ask you a few more general questions about your participation in the Prescriptive Program.

E5 How satisfied were you with the energy efficiency level required to qualify for a rebate? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E6
2	Somewhat satisfied	E6
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	E6
99	Don't know	E6

E5A What would have made you more satisfied?
RECORD VERBATIM

E6 How satisfied were you with the amount of the rebate? Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	continue
2	Somewhat satisfied	continue
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**

NAVIGANT

5	Very dissatisfied	continue
88	Refused	**continue**
99	Don't know	**continue**

E7 How satisfied were you with the measures offered by the program?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E8
2	Somewhat satisfied	E8
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	E8
99	Don't know	E8

E7A What would have made you more satisfied?
RECORD VERBATIM

E8 In the course of participating in the AEP Ohio gridSMART Business Prescriptive Program, and other than sending in the rebate application, how often did you contact AEP Ohio or program staff with questions? (don't read)

1	Never	**E9**
2	Once	**continue**
3	2 or 3 times	**continue**
4	Four times or more	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E8A How did you contact them? [CHECK ALL THAT APPLY; AFTER EACH RESPONSE, ASK: Were there any other ways you contacted them?]

1	Phone	**continue**
2	Email or fax	**continue**
3	Letter	**continue**
4	In person	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E8BA Were there any other ways you contacted them? [Open Ended]
RECORD VERBATIM

NAVIGANT

E8C And overall how satisfied were you with your communications with AEP Ohio and program staff?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	E9
2	Somewhat satisfied	E9
3	Neither satisfied nor dissatisfied	continue
4	Somewhat dissatisfied	continue
5	Very dissatisfied	continue
88	Refused	E9
99	Don't know	E9

E8D What would have made you more satisfied?
RECORD VERBATIM

E9 From the time you had [MEASURE_1] installed and submitted the application, about how many weeks did it take to receive your rebate? _____RECORD # of WEEKS

E9A How satisfied were you with how long it took to receive the rebate?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	continue
88	Refused	**continue**
99	Don't know	**continue**

E10Did AEP Ohio or its contractors conduct a post-installation inspection of the equipment you installed through the Prescriptive Program?

1	Yes	**continue**
2	No	**E11**
88	Refused	**E11**
99	Don't know	**E11**

E10A How satisfied were you with the inspection?
Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**E11**
2	Somewhat satisfied	**E11**

NAVIGANT

3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	**E11**
99	Don't know	**E11**

E10B What would have made you more satisfied with the inspection?
RECORD VERBATIM

E11Have you noticed lower electricity bills since you installed your new [MEASURE_EE]?

1	Yes	**continue**
2	No	**E12**
88	Refused	**E12**
99	Don't know	**E12**

E11A Would you say your bill savings are… [READ LIST]

1	About what you expected	**Continue**
2	More than you expected	**continue**
3	Less than you expected	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E12If you were rating your overall satisfaction with the AEP Ohio gridSMART Business Prescriptive Program, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	MK1b
99	Don't know	MK1b

E13A Why do you give it that rating?
RECORD VERBATIM

NAVIGANT

MARKETING AND OUTREACH

MK1b How useful were the program's marketing materials in providing information about the program? Would you say they were…?
[READ LIST, SINGLE PUNCH]
1. Very useful
2. Somewhat useful
3. Not very useful
4. Not at all useful
98. DON'T KNOW
99. REFUSED

[ASK MK1c IF MK1b=3, 4]
MK1c What would have made the materials more useful to you?
[READ LIST; MULTIPLE RESPONSE, UP TO 3]
1. More detailed information (ask about what specifically)
2. Where to get additional information
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

(IF MK1C = 1 ASK MK1C_1) (OPEN END)
MK1C_1 DETAILED INFORMATION ABOUT WHAT?

MK2 In general, what is the best way of reaching companies like yours to provide information about energy efficiency opportunities like the Prescriptive Program?
[DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]
1. Bill inserts
2. Advertisement in trade/professional publication
3. Advertisement in local newspaper
3. E-mail
4. Telephone
5. AEP Ohio Account Manager
6. Webinars/roundtables/events
7. Through trade or professional associations
8. Trade allies/contractors
9. Social networking Internet site (LinkedIn, Twitter, Facebook)
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

NAVIGANT

BENEFITS AND BARRIERS

B1aWhat do you see as the main benefits to participating in the Prescriptive Program? [DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. Energy Savings
2. Good for the Environment
3. Lower Maintenance Costs
4. Better Quality/New Equipment
5. Rebate/Incentive
6. BLANK
7. Improved Safety/Morale
8. Set Example/Industry Leader
9. Able to make improvements sooner
10. Saves money on utility bill
11. Improved business processes

00. Other, Specify
98. Don't know
99. Refused

B1b What do you see as the drawbacks to participating in the Prescriptive Program? [DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. Paperwork too burdensome
2. Incentives not high enough/not worth the effort
3. Program is too complicated
4. Cost of equipment
5. No drawbacks
6. Poor Communication
7. Time Consuming
8. Underfunded/Ran out of money

00. Other, specify
98. Don't know
99. Refused

NAVIGANT

B2 What do you think are the reasons companies like yours do not participate in this program?
[DO NOT READ LIST; MULTIPLE RESPONSE, UP TO 3]

1. LACK OF AWARENESS OF THE PROGRAM
2. FINANCIAL REASONS
3. DO NOT BELIEVE CLAIMS OF ENERGY SAVINGS
3. NONE
4. NOT AWARE OF SAVINGS/DON'T REALIZE THE SAVINGS
97. OTHER, SPECIFY
98. DON'T KNOW
99. REFUSED

FEEDBACK AND RECOMMENDATIONS

R1 Do you plan to participate in the Prescriptive Program again in the future?
[DO NOT READ LIST, SINGLE PUNCH]

1. Yes
2. No
3. Maybe
8. Don't know
9. Refused

E14Do you have any suggestions on how the program could be improved?
[DO NOT READ, MULTIPLE RESPONSE, UP TO 4]

1. Higher incentives
2. More measures
3. Greater publicity
4. Better communication/Improve program information
5. Contact/information from Account Executives
6. Longer time period to complete project
7. Faster review of applications
8. Simplify application process
9. Electronic applications
10. More funds for the program
11. Contractor referral service
12. Blank
00. Other, specify
96. No recommendations
98. Don't know
99. Refused

NAVIGANT

E15Finally, if you were rating your overall satisfaction with AEP Ohio, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	B1
99	Don't know	B1

E15A Why do you give it that rating?
RECORD VERBATIM

FIRMOGRAPHICS

I only have a few general questions left.

B1 What is your job title or role?
1 Facilities Manager, continue
2 Building Manager, continue
3 Energy Manager, continue
4 Other facilities management/maintenance position, continue
5 Chief Financial Officer, continue
6 Other financial/administrative position, continue
7 Proprietor/Owner, continue
8 President/CEO, continue
00 Other (Specify), continue
88 Refused, continue
99 Don't know, continue
[RECORD RESPONSE]

B2 Our records describe the facility at [SITE_ADDRESS] where [COMPANY] participated in the Prescriptive Program as [BUS_TYPE]. Is this correct?
1 Yes [GO TO B4]
2 No, continue
88 Refused [GO TO B4]
99 Don't know [GO TO B4]

NAVIGANT

B3 What is the principal activity /(type of business) [COMPANY] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store?

[DO NOT READ LIST. RECORD ONE RESPONSE.]

1	Office	continue
2	Retail (non-food)	continue
3	College/university	continue
4	School	continue
5	Grocery store	continue
6	Convenience store	continue
7	Restaurant	continue
8	Health care/hospital	continue
9	Hotel or motel	continue
10	Warehouse	continue
11	Personal Service	continue
12	Community Service/ Church/ Temple/Municipality	continue
13	Industrial Electronic & Machinery	continue
14	Industrial Mining, Metals, Stone, Glass, Concrete	continue
15	Industrial Petroleum, Plastic, Rubber and Chemicals	continue
16	Other Industrial	continue
17	Agricultural	continue
18	Condo Assoc/Apartment Mgmt	continue
77	Miscellaneous [RECORD VERBATIM]	continue
88	Refused	continue
99	Don't Know	continue

B4 Does your organization own or lease the space at [SITE_ADDRESS]?

1	Own	**continue**
2	Lease	**continue**
3	Own Part and lease part	**continue**
99	Don't know	**continue**

B5 What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

#	Square Feet		
88	Refused		
99	Don't Know		

NAVIGANT

F2 Which of the following best describes the ownership of this facility?
READ LIST, SINGLE PUNCH

1. <ORGANIZATIONNAME > owns and occupies this facility
2. <ORGANIZATIONNAME> owns this facility but it is rented to someone else
3. <ORGANIZATIONNAME> rents this facility
8. DON'T KNOW
9. REFUSED

F3 Does <ORGANIZATIONNAME> pay the electric bill?
DO NOT READ LIST, SINGLE PUNCH

1. YES
2. NO
8. (DON'T KNOW)
9. (REFUSED)

F4a How old is this facility?
[NUMERIC OPEN END, 0 TO 150; 998=DON'T KNOW, 999=REFUSED]

[ASK F4b IF F4a=998]
F4bDo you know the approximate age? Would you say it is…?
READ LIST, SINGLE PUNCH

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
8. (DON'T KNOW)
9. (REFUSED)

F5aHow many employees, full plus part-time, are employed at this facility?
[NUMERIC OPEN END, 0 TO 2000; 9998=DON'T KNOW, 9999=REFUSED]

[ASK F5b IF F5a=9998]
F5bDo you know the approximate number of employees? Would you say it is…?
READ LIST, SINGLE PUNCH

1. Less than 10
2. 10-49
3. 50-99
4. 100-249
5. 250-499

NAVIGANT

6. 500 or more
8. DON'T KNOW
9. REFUSED

F6 Which of the following best describes the facility? This facility is…
READ LIST, SINGLE PUNCH

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANZIATIONNAME> with several locations

Thank **YOU** and close.

NAVIGANT

6.2 AEP Ohio Custom Program Solution Providers Interview Guide

The following guide was used to conduct the Solution Provider in-depth phone interviews.

AEP-Ohio Evaluation for the Business Custom/Prescriptive/ Self-Direct Program Trade Ally Provider Interview Guide (Program Participant)

November 8, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Number of employees: _____

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews. This guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Custom Program. We're currently in the process of conducting interviews with lighting contractors and equipment suppliers to improve our understanding of AEP-Ohio's programs.

Our records show you have been named as a lighting contractor or equipment or service provider by one or more of AEP Ohio business customers that have participated in the Business Custom/Prescriptive/Self Direct Program[?]. At this time we are interested in asking some questions of the person most experienced with the Business Custom/Prescriptive/Self Direct program. [CONFIRM THAT THIS IS THE PERSON MOST KNOWLEDGEABLE AT THEIR BUSINESS OR GET ALTERNATE NAME].

The questions will only take about half an hour. Information you provide will be kept anonymous in our reports. General observations and findings will appear in our final report,

NAVIGANT

but they will not be attributed to any named person or company. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

Background

1. Can you briefly describe the company you work for and the type of business it conducts? What are your job responsibilities at your company? How long have you been in this position?

2. Which AEP Programs have you participated in during 2011? How was your firm recruited for the [Custom/Prescriptive/Self-Direct] program?

3. How would you describe your familiarity with AEP Ohio's Business [Custom/Prescriptive/Self-Direct] Program? Have you personally worked with any of your customers who have participated in this program? About how many? Who are your primary business customers?

4. What type of equipment did you install for the [Custom/Prescriptive/Self-Direct] Program?

5. About how many AEP Ohio rebate projects was your company involved with in 2011 for the [Custom/Prescriptive/Self-Direct] Programs? Is there a reason you were not involved with more projects in 2011?

6. Do you work mainly in the Ohio Power or Columbus Southern Power service area? Or both?

Solution Provider Participation

7. Was your firm recruited to participate in this program? What programs, Custom, Prescriptive, or Self Direct, have you participated in with your customers? When did you begin participating in the [Custom/Prescriptive/Self-Direct] Program?

CUSTOM	YES	NO
PRESCRIPTIVE	YES	NO
SELF DIRECT	YES	NO

****

ASK Q8-10 AS APPROPRIATE FROM ANSWERS TO Q7

8. What are the reasons your firm decided to participate in the Custom Program? What are the main benefits to your firm? What are the drawbacks to your firm?

9. What are the reasons your firm decided to participate in the Prescriptive Program? What are the main benefits to your firm? What are the drawbacks to your firm?

NAVIGANT

10. What are the reasons your firm decided to participate in the Self Direct Program? What are the main benefits to your firm? What are the drawbacks to your firm?

****

11. About how many of your lighting or equipment projects received rebates through the [Custom/Prescriptive/Self-Direct] Program in 2011? (If few) Is there a reason you have not been involved with more projects? In your opinion, has the [Custom/Prescriptive/Self-Direct] Program increased your business?

12. Can you describe the application process for program ally registration? *[Probe for qualifications or training requirements.]* What kind of training is provided as part of the registration process to become a Solution Provider? Was the training useful?

13. What is expected of Solution Providers? Are there any specific responsibilities that come with registering? Do you know of any quality control procedures in place for trade allies? (for example, removing an ally from the program if complaints are received about them)

14. Do you complete the program application for your customers? Do customers frequently need your help with program issues after the equipment is installed?

15. How satisfied are you with your experiences with the [Custom/Prescriptive/Self-Direct] Program?

Marketing and Promotion to Customers

16. How does your company become involved with projects associated with the program? Do you actively promote participation in [Custom/Prescriptive/Self-Direct] Programs or do customers bring projects they want to submit to the [Custom/Prescriptive/Self-Direct] Program?

17. How do customers find out about this program? Has your company promoted the program through its own marketing collateral? Who, outside of your company and the customer, has been influential in getting customers to participate?

18. What kind of support, if any, does AEP Ohio provide to you for marketing the program to your customers? Do you distribute utility-produced marketing materials? Have you requested any other types of support/collateral, etc. If so, what have you requested and how has AEP Ohio responded to your requests?

19. Do you think AEP Ohio's level of marketing and promotion of the [Custom/Prescriptive/Self-Direct] Program has been appropriate so far? Do you think

promotional efforts are successful? Do you think they reach the right audience? If AEP is missing areas of opportunity, what are those areas?

20. Do you have suggested changes to AEP Ohio's marketing efforts for next year? If so, please describe these changes.

Q21 - SELF DIRECT ONLY

21. Are you aware of the addition of mercantile or retail customers to the program by the Ohio Public Utility Commission (PUCO)? Has this ruling had any impact on your customers? Does the automatic approval process where the project is approved on the 61st calendar day after filing speed up your project approval? What is your opinion of the standard application template? Is it easy to use? Does it expedite the projects?

Customer Participation

22. What reasons do customers give for participating in the [Custom/Prescriptive/Self-Direct] program?

23. Do customers understand the participation process? How do you get program information to them? What improvements can be made?

24. What activities does your company perform to help customers identify opportunities to participate? Do customers need your help with the program after the equipment is installed? What type of help do they need?

25. What is the review time between completing the pre-approval application and letter of approval from AEP Ohio? Has this had any impact on your sales process?

26. Does the timing required for submitting documentation (within 60 days of project completion) present a challenge? How? Does it affect certain types of projects or customers more than others? If so, how and why?

27. Have you encountered any challenges in helping customers participate in the [Custom/Prescriptive/Self-Direct] program? If so, please describe. Have you had any challenges providing qualifying products?

28. What are the reasons that customers might not participate in the [Custom/Prescriptive/Self-Direct] program? Do customers complain about any particular aspects of the program? Do customers regularly cancel their participation or drop out of this program? If so, why?

NAVIGANT

Rebates/Incentives

29. What is your opinion of the incentives offered to [Custom/Prescriptive/Self-Direct] Program participants? Are program participants satisfied with these incentive levels?

30. Are the incentives effective at encouraging customers to pursue projects they would not have considered without the [Custom/Prescriptive/Self-Direct] program?

31. In your opinion, how can AEP Ohio increase participation in the [Custom/Prescriptive/Self-Direct] Program?

Quality Assurance and Quality Control

32. Have you had to answer questions or provide additional information as a result of a program-sponsored quality inspection to verify equipment quantities and eligibility? Has any equipment you installed been rejected for an incentive? Why?

Call Center

33. Do you know whom to contact for help with the [Custom/Prescriptive/Self-Direct] program?

34. Are customers or your company staff making use of the KEMA phone number listed on the application form? At what point during the participation process are calls usually made? What are the main issues raised and are these issues resolved to your satisfaction? Typically, how long does it take to resolve inquiries to the call center?

35. If you contacted the call center, what is your level of satisfaction with the service you received? What other areas of support would be helpful to you?

Program Adjustments and Enhancements

36. What type of information could the utility provide you to increase your familiarity and understanding of the [Custom/Prescriptive/Self-Direct] program?

37. What could be modified to make the [Custom/Prescriptive/Self-Direct] program work better (e.g., incentive levels, eligible equipment, etc)? If so, what would you recommend? Why do you think this change is needed?

38. Would more training be useful? What types?

Success and the Future of These Efforts

39. In your opinion, how successful is the [Custom/Prescriptive/Self-Direct] program? Why? What are the strengths? What are the weaknesses?

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40. Do you feel that some customers would be installing the same lighting/equipment products without the incentives of the [Custom/Prescriptive/Self-Direct] Program? [Please explain.]

41. Do you think the current economic conditions are affecting program participation? If so, how?

Other

42. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.
We might follow-up with you by phone later, if additional questions arise.

NAVIGANT

6.3 In-Depth Interview Instruments

The following guides were used to conduct the in-depth interviews.

2011 AEP OHIO BUSINESS PROGRAMS – CUSTOM PROGRAM PARTICIPANT SURVEY

ALL COMMENTS FROM AEP AND ROGER HILL

Introduction

Note: Choose the largest <SubcategoryDescription 1> (measure type: Lighting, HVAC, Motors, and Refrigeration). Ask about a maximum of three measures (ex: 50 HP motor; 100 HP Motor, Variable speed drive). NTG and Spillover module only gets asked once per SubcategoryDescription 1 (ie: respondent).

INTRODUCTION

[READ IF CONTACT=1]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. This is not a sales call. May I please speak with <**APPLICATIONCONTACTNAME**>?
Our records show that <**ORGANIZATIONNAME**> purchased <**SUBCATEGORYDESCRIPTION** 1>, which was installed <**ActualProjectCompletionDate** > and received an incentive of <**PAYMENT AMOUNT**> from AEP Ohio. We are calling to do a follow-up study about <**ORGANIZATIONNAME**>'s participation in this program, which is called the AEP Ohio Business Custom Program. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]
This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. I would like to speak with the person most knowledgeable about recent changes in cooling, lighting or other energy-related equipment for your firm at this location.
[IF NEEDED] Our records show that <**ORGANIZATIONNAME**> purchased <**SUBCATEGORYDESCRIPTION** 1>, which was installed

NAVIGANT

<**ActualProjectCompletionDate**> and received an incentive of <**PAYMENT AMOUNT**> from AEP Ohio. We are calling to do a follow-up study about your firm's participation in this program, which is called the Business Custom Program. I was told you're the person most knowledgeable about this project. Is that correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]
SCREENING QUESTIONS

A1. Just to confirm, during 2011 did <**ORGANIZATIONNAME**> receive an incentive from AEP Ohio's Business Custom Program at <**SERVICEADDRESS**>? (IF NEEDED: This is a program where your business received an incentive for installing <MeasureSubcategory1>).

1	Yes, participated as described
2	Yes, participated but at another location
3	NO, did NOT participate in program
00	Other, specify
98	Don't know
99	Refused

[SKIP A2 IF A1=1, 2]

A2. Is it possible that someone else dealt with the energy-efficient product installation?

1	Yes, someone else dealt with it
2	No
00	Other, specify
98	Don't know
99	Refused

[IF A2=1, ask to be transferred to that person and/or get contact name and phone number. If not available, thank and terminate. If available, go back to A1]

[IF A1=2, 3, 00, 98, 99: Thank and terminate. Record disposition as "Could not confirm participation".]

Before we begin, I want to emphasize that this survey will only be about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the AEP Ohio Custom Program at <**SERVICEADDRESS**>.

NAVIGANT

A3. I'd like to confirm some information in AEP Ohio's database. Our records show that you implemented <**SUBCATEGORYDESCRIPTION** 1> project through the Business Custom Program. Is this correct?

1 Yes (Continue to A3a)
3 No, did not install
8 Don't know
9 Refused

A3_1. Is it possible that someone else dealt with the energy-efficient product installation?

1 Yes, someone else dealt with it (Ask for transfer and/or contact name and number and GO BACK TO A2)
2 No (Terminate)
00 Other, (specify)
98 Don't know (Terminate)
99 Refused (Terminate)

Note: the <**ProjectDescription**> Field may help the interviewer and respondent confirm the correct project.

A3a Our records indicate that you installed a <**SUBCATEGORYDESCRIPTION** 1> measures. How many < **SUBCATEGORYDESCRIPTION** 1> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

A3b I see that you also installed <**SUBCATEGORYDESCRIPTION2**>. How many <**SUBCATEGORYDESCRIPTION2**> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

A3c I see that you also installed a third measure. How many <**SUBCATEGORYDESCRIPTION3**> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

IF A3a =0 AND A3b=0 AND A3c=0: Thank and Terminate, Record Disposition as "Could Not Confirm Measures"

HEARD ABOUT PROGRAM AND COMPLETED THE APPLICATION

S0 How did you first hear about the Business Custom program?

1. AEP Ohio Account Manager

NAVIGANT

2. AEP Ohio Website
3. Workshop/Green Ribbon Kickoff event
4. Contractor/Trade Ally
5. Email
6. Friend/colleague/word of mouth
7. Bill Insert
8. Webinar
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor
12. BLANK
13. BLANK
14. Supplier
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK
00. Other, specify
98. Don't know
99. Refused

PL1 Who was the most influential in identifying and recommending that you install the <**SUBCATEGORYDESCRIPTION** 1> project you completed through the Custom Program?

1. Me/respondent
2. Contractor
3. Engineer
4. Architect
5. Manufacturer
6. Distributor
7. Owner
8. Supplier
9. AEP Ohio representative/program staff
00. Other, specify
98. Don't know
99. Refused

NAVIGANT

E 1. Where did you get your incentive application?

[USE LIST AS PROMPT AS NECESSARY. RECORD ONE RESPONSE.]
7. Contractor or Equipment Vendor
8. Website/on-line
9. Utility
10. Program staff
11. Consulting Engineer, Architect or Energy Consultant
12. Other [specify]
89. Refused
100 Don't know

E 2. Who was most responsible for completing the rebate application? Was this you, someone else in your organization, a contractor or vendor, someone from the utility or working for the program, or someone else?

[READ LIST. RECORD ONE RESPONSE.]

1	You	**GOTO E3**
2	Someone else in your organization	**GOTO L0 Lighting Module**
3	Contractor/vendor/other trade ally	**Continue with S4b**
4	Program or utility staff	**GOTO L0 Lighting Module**
5	Other [RECORD]	**GOTO L0 Lighting Module**
88	Refused	**GOTO L0 Lighting Module**
99	Don't know	**GOTO L0 Lighting Module**

Contractor Completed Application Module

S4b Was the contractor who completed the application affiliated with the AEP Ohio Business Custom program? (IF NEEDED: Was the contractor REGISTERED with the Custom program?)

1 Yes
2 No
8 Don't know
9 Refused

NAVIGANT

[ASK S5 IF S4a=1 ELSE SKIP TO E3]

S5 How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"? [SCALE 0-10; 98=Don't know, 99=Refused]

S6a Would you recommend the contractor you worked with to others?

1 Yes
2 No
8 Don't know
9 Refused

[ASK S6b IF S6a=2]

S6b Why not?

1. Too small
00. Other, specify
98. Don't know
99. Refused

Customer Completed Application Module

Now thinking about how easy or hard it was to complete the application, how satisfied were you with the ease of filling out the application?

E 3. Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]?

E 4. What would have made you more satisfied with completing the application?

RECORD VERBATIM

LIGHTING MODULE

[ASK IF <**LIGHT**>=1, ELSE SKIP TO HVAC MODULE]

Measure Modules

[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <**SUBCATEGORYDESCRIPTION**_1> you installed through the Custom Program.

NAVIGANT

L0 When did you implement (install) this project (IF NECESSARY, PROBE FOR BEST GUESS)
- a Month [Precodes for Jan through Dec., DK, REF]
- b Year [Precodes for 2009, 2010 and 2011, DK, REF]

L1 Please Briefly describe the Lighting project installed through the Custom Program. [Circle all that apply.]

1. Custom linear fluorescents
2. Custom LED lighting
3. Custom HID lighting
4. Custom Exterior lighting
5. Custom display or specialty lighting
6. Custom lighting controls
7. Other [describe verbatim]
8. Don't know
9. Refused

L2 Was the new lighting equipment installed in an air conditioned (cooled) space?

1. Yes
2. No
3. Some of the lighting was and some wasn't
8. Don't know
9. Refused

LIGHTING CONTROLS

[ASK IF L1 = 6; ELSE GO TO L5]

L3 Before Lighting Controls were installed, about how many hours per day were the lights in operation? [NUMERIC OPEN END; 0 TO 24; 98=Don't know, 99=Refused]

L4 After controls were installed, about how many hours per day were the lights in operation? [NUMERIC OPEN END; 0 TO 24; 98=Don't know, 99=Refused]

L5 Why was this lighting project submitted through the Custom Program rather than the Prescriptive Program?

1. Special lighting technology installed
2. Blank

NAVIGANT

2. Prescriptive Program over-subscribed
4. Integrated lighting and controls
7. Other [describe verbatim]
8. Don't know
9. Refused

EQUIPMENT INTO STORAGE

L6 Was any of the rebated lighting equipment placed into inventory or installed at another facility?

1. Yes
2. No
8. Don't know
9. Refused

[SKIP L6a AND L6b IF L6<>1]

L6a What percentage of the rebated lighting equipment was placed in inventory? [NUMERIC OPEN END, 0 TO 100; 998=Don't know, 999=Refused]

L6b And what percentage was installed at another facility? [NUMERIC OPEN END, 0 TO 100; 998=Don't know, 999=Refused]

[End of Measure Loop; GO TO NEXT MEASURE OR **PY3** NET-TO-GROSS MODULE]

HVAC MODULE

[ASK IF COOLING=1, ELSE SKIP TO REFRIGERATION MODULE]

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the Business Custom Program.

C0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.; DK, REF]
b Year [Precodes for 2009, 2010 and 2011; DK, REF]

REMOVED EQUIPMENT

C1 What type of HVAC equipment was REMOVED when you installed <**SUBCATEGORYDESCRIPTION** 1> through the Business Custom Program? (DO NOT READ LIST)

NAVIGANT

1 Split system air conditioners (two components: compressor is separate from the supply air fan)
2 Packaged air conditioning systems (one component, for example rooftop units or unitary equipment)
3 Package Terminal A/C (e.g., Hotel/Motel units)
4 Window/Wall Air-Conditioning Units
5 Remote Condensing Unit
6 Evaporative coolers/swamp coolers
7 Water Chillers
8 Evaporative Condenser
9 Adjustable Speed Drives
10 Throttling Devices for HVAC fans or pumps (e.g. inlet vanes, bypass dampers, throttling valves)
11 Heat Pump Units
00 Other, specify
96 NOTHING, EQUIPMENT ADDED NOT REPLACED [End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]
98 Don't know
99 Refused

[SKIP C2 AND C3 IF C1=96, 98, 99]

C2 How would you describe the condition of the equipment that was removed? Was it…

1 Inoperable/broken
2 Poor condition
3 Fair condition
4 Good condition
8 Don't know
9 Refused

C3 How old was the equipment that was removed? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

NAVIGANT

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

REFRIGERATION MODULE

Measure Loop

[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]

[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> installed through the Business Custom Program.

R0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]

b Year [Precodes for 2009, 2010 and 2011]

REMOVED EQUIPMENT

R1 What type of refrigeration equipment was replaced when you installed the <**SUBCATEGORYDESCRIPTION** 1> through the Custom Business Program?

1 Old Strip curtains
2 Older Anti-sweat heat controllers
3 Standard efficiency evaporator fan motors
4 Older ice maker
5 Older controls
6 Older compressor
7 Older condenser
8 Older display cases or walk-in evaporator
9 Case lighting upgrade
10 Same Equipment, just newer
00 Other, specify
96 NONE - Not a replacement [End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]
98 Don't know
99 Refused

R2 Approximately how old was the refrigeration equipment that was removed by the new refrigeration equipment? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old

NAVIGANT

3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

VARIABLE FREQUENCY DRIVE MODULE

[ASK IF VFD=1]

MEASURE LOOP

V0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS?)
A Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009, 2010 and 2011]

V1 Are the variable speed drives used to... (READ LIST)

1 Drive a newly installed piece of equipment
2 Replace failed equipment
3 Retrofit application to existing and functioning equipment
4 Serve as a spare
00 Or for some other reason (Specify)
98 Don't Know
99 Refused

V2a In the past month, how many hours per day did this equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

V2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 Don't know
9 Refused

NAVIGANT

[ASK V2d-f IF V2c=1]

V2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

V2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

V2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

REPLACED EQUIPMENT

[ASK IF V1=2, 3, ELSE SKIP TO NEXT MEASURE MODULE OR PY3 NET-TO-GROSS MODULE]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <**SUBCATEGORYDESCRIPTION** 1>.

V3a How would you describe the condition of the equipment that was removed or retrofitted when you installed the new <**SUBCATEGORYDESCRIPTION** 1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 Don't Know
9 Refused

V3b How old was the equipment that was removed or retrofit? Would you say that most of it was …?

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 More than 20 years old
8 Don't Know
9 Refused

[End of Measure Loop; GO TO NEXT MEASURE OR PY2 NET-TO-GROSS MODULE]

NAVIGANT

MOTORS MODULE

[ASK IF MOTORS=1]

MOTORS MEASURE LOOP

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the AEP Ohio Business Custom Program.

M0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009, 2010 and 2011]

M1 Are the new motors used to... (READ LIST)

1 Drive a newly installed piece of equipment
2 Replace a failed motor
3 Replace a functioning motor
4 Serve as a spare
5 Or for some other reason (Specify)
8 Don't Know
9 Refused

M1a Are the new motors controlled by a variable frequency drive (VFD) – either new or existing?

1 Yes
2 No
8 Don't know
9 Refused

M2a In the past month, how many hours per day did this equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

M2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No

NAVIGANT

8 Don't know
9 Refused

[ASK M2d-f IF M2c=1]

M2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

M2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

REPLACED EQUIPMENT

[ASK IF M1=2, 3, ELSE SKIP TO NTG MODULE]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <**SUBCATEGORYDESCRIPTION** 1>.

M3a Were the motors you removed…
(IF NEEDED: ""In this survey we use the term "NEMA Premium motors" to refer to very high efficiency motors that meet specific performance criteria developed by the National Electrical Manufacturers Association. We use the term "EPAct Motors" to refer to motors that meet current federal minimum efficiency standards contained in the Energy Policy Act; new motors installed in OHIO after 1997 must be, at a minimum, EPAct motors. Finally, we use the term "Standard Efficiency Motors" to refer to typically older motors that do not meet the current Federal standards.)

1 NEMA Premium motors
2 EPAct motors
3 Standard efficiency motors
8 Don't Know
9 Refused

M3b How many hours per day did the replaced equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

M3c Had the motors you removed been rewound?

NAVIGANT

1 Yes
2 No
8 Don't Know
9 Refused

M3d How would you describe the condition of the motors that were removed when you installed the new <**SUBCATEGORYDESCRIPTION** 1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 Don't Know
9 Refused

M3e How old were the motors that were removed? Would you say that most of them were…?

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't Know
9 Refused

M4 What has been done with the removed motors? Would you say that most of them were…?

1 Scrapped for salvage
2 Rewound within 3 months
3 Stored for future rewind
4 Stored for future installation as is
5. Moved and installed elsewhere
6. Removed from site permanently by motor vendor.
8 (Don't Know)
9 (Refused)

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

EMS MODULE

NAVIGANT

[ASK IF EMS=1, ELSE SKIP TO NEXT MODULE]

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the Business Custom Program.

EM0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.; DK, REF]

b Year [Precodes for 2009, 2010 and 2011; DK, REF]

EM1 How comprehensive is the <**SUBCATEGORYDESCRIPTION** 1> installed through the Business Custom Program? [Read from list. Record all that apply]

1 Scheduling and start / stop of major equipment
2 Full air-handler temperature and ventilation control (staging and resets)
3 Minimum air-handler control
4 Cooling system control and optimization (staging and resets)
5 Cooling Tower control and optimization (staging and resets)
6 Heating / boiler control and optimization (staging and resets)
7 Lighting on/off
8 Lighting dimming
9 Active load shedding or demand response
10 Night (unoccupied set points)
00 Other, specify
98 Don't know
99 Refused

REMOVED EQUIPMENT

EM2 What type of EMS equipment was REMOVED when you installed a new <**SUBCATEGORYDESCRIPTION** 1> through the Business Custom Program? (READ LIST. Record all that apply)

1 An older generation direct digital control (DDC) system
2 A pneumatic control system
3 Digital controls with pneumatic components (actuators for example)
4 Time clocks – multiple stand-alone
5 Equipment Stand-alone controls
00 Other, specify
96 NOTHING, EQUIPMENT ADDED NOT REPLACED [End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]
98 Don't know

NAVIGANT

99 Refused

[SKIP EM3 AND EM4 IF EM2=96, 98, 99]

EM3 How would you describe the condition of the equipment that was removed? Was it…

1 Inoperable/broken
2 Poor condition
3 Fair condition
4 Good condition
8 Don't know
9 Refused

EM4 How old was the equipment that was removed? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

COMPRESSED AIR MODULE

[ASK IF COMPAIR=1]

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the AEP Ohio Custom Program.

CA0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.]
b Year [Precodes for 2009, 2010 and 2011]

CA1 Are the air compressor(s) used to... (READ LIST)

1 Provide air service to a newly installed equipment
2 Replace failed equipment
3 Upgrade to existing and functioning equipment

NAVIGANT

4 Serve as a spare
00 Or for some other reason (Specify)
98 Don't Know
99 Refused

CA2a In the past month, how many hours per day did this equipment typically operate? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

CA2b And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

CA2c Are there any months during the year when the operating schedule for this equipment differs significantly from what you just described?

1 Yes
2 No
8 Don't know
9 Refused

[ASK CA2d-f IF CA2c=1]

CA2d How many hours per day does the equipment typically operate during the periods with different operating schedules? [NUMERIC OPEN END, 0 to 24; 98=Don't know, 99=Refused]

CA2e And how many days per week? [NUMERIC OPEN END, 0 to 7; 8=Don't know, 9=Refused]

CA2f How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 to 12; 98=Don't know, 99=Refused]

REPLACED EQUIPMENT

[ASK IF CA1=2, 3, ELSE SKIP TO NTG MODULE]

I'd like to ask you a few questions about the equipment that was removed when you installed the new <**SUBCATEGORYDESCRIPTION** 1>.

CA3a How would you describe the condition of the equipment that was displaced from service when you installed the new <**SUBCATEGORYDESCRIPTION** 1>? Were they…

1 The same size (HP)
2 Smaller HP (replacement increased capacity)

NAVIGANT

3 Larger HP (replacement decreased capacity)
8 Don't Know
9 Refused

CA3b How would you describe the condition of the equipment that was displaced from service when you installed the new <**SUBCATEGORYDESCRIPTION** 1>? Were they…

1 Inoperable (broken)
2 Poor condition
3 Fair condition
4 Good condition
8 Don't Know
9 Refused

CA3c How old was the equipment that was displaced from service? Would you say that it was…?

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't Know
9 Refused

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

Other MODULE

[ASK IF OTHER=1, ELSE SKIP TO PY3 NET-TO-GROSS MODULE]

The following questions are about the <**SUBCATEGORYDESCRIPTION** 1> category equipment you installed through the Business Custom Program.

OT0 When did you install the <**SUBCATEGORYDESCRIPTION** 1> (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec.; DK, REF]
b Year [Precodes for 2009, 2010 and 2011; DK, REF]

REMOVED EQUIPMENT

OT1 What type of OTHER equipment was REMOVED when you installed a new <**SUBCATEGORYDESCRIPTION** 1> through the Business Custom Program? (READ LIST. Record all that apply)

NAVIGANT

1 Older version of the same
2 Obsolete technology for the same task
3
4
5
6
00 Other, specify
96 NOTHING, EQUIPMENT ADDED NOT REPLACED [End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]
98 Don't know
99 Refused

[SKIP OT2 AND OT3 IF OT1=96, 98, 99]

OT2 How would you describe the condition of the equipment that was removed? Was it…

1 Inoperable/broken
2 Poor condition
3 Fair condition
4 Good condition
8 Don't know
9 Refused

OT3 How old was the equipment that was removed? Was it…

1 Less than 5 years old
2 Between 5 and 10 years old
3 10 to 20 years old
4 more than 20 years old
8 Don't know
9 Refused

[End of Measure Loop; GO TO NEXT MEASURE OR PY3 NET-TO-GROSS MODULE]

PY3 NET-TO-GROSS MODULE

Variables for the net-to-gross module:
<**UTILITY**> (Ohio Power (OPCo) and Columbus Southern Power (CSP))
<**SUBCATEGORYDESCRIPTION** 1> (Type of measure installed; from program tracking dataset)

NAVIGANT

<**ACCT_REP**> (Name of utility account manager, from program tracking database or program files if present)

<**OTHERPTS**> (Variable to be calculated based on responses. Equals 1- minus response to N3p.)

<**FINCRIT1**> (Variable to be calculated based on responses. Equals 1 if payback period WITHOUT incentive is shorter than <OrganizationName> requirement. See instructions below.)

<**FINCRIT2**> (Variable to be calculated based on responses. Equals 1 if payback period WITH incentive is shorter than <**OrganizationName**> requirement. See instructions below.)

<**MSAME**> (Equals 1 if same customer had more than one project of the same measure type; from program tracking database)

<**NSAME**> (Number of additional projects of the same measure type implemented by the same customer; from program tracking database)

<**FSAME**> (Number of additional projects of the same measure type implemented by the same customer at a different address)

NET-TO-GROSS BATTERY

My next set of questions is about the <SUBCATEGORYDESCRIPTION 1> you installed through the program.

N1 When did you first learn about AEP Ohio's Program? Was it BEFORE or AFTER you first began to THINK about implementing the <**SUBCATEGORYDESCRIPTION 1**>? (NOTE TO INTERVIEWER: "this measure" refers to the specific energy efficient equipment installed through the program.)

DO NOT READ LIST, SINGLE PUNCH

1 Before
2 After
8 Don't know
9 Refused

[ASK N2 IF N1=2, 8, 9]

N2 Did you learn about AEP Ohio's Program BEFORE or AFTER you DECIDED to implement the <**SUBCATEGORYDESCRIPTION 1**> that was installed? (NOTE TO INTERVIEWER: "the measure" refers to the specific energy efficient equipment installed through the program.)

DO NOT READ LIST, SINGLE PUNCH

1 Before

NAVIGANT

2 After
8 Don't know
9 Refused

N3 Next, I'm going to ask you to rate the importance of the program as well as other factors that might have influenced your decision to implement the <**SUBCATEGORYDESCRIPTION 1>.** Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following in your decision to implement the measure at this time.

[FOR N3a-n, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]

(If needed: How important in your DECISION to implement the project was…)

N3a. The age or condition of the old equipment
N3b. Availability of the PROGRAM incentive
N3d. Recommendation from a vendor or contractor that helped you with the choice of the equipment
N3e. Previous experience with the <**SUBCATEGORYDESCRIPTION 1**>
N3f. Recommendation from an AEP Ohio program staff person
N3h. Information from AEP Ohio Business Custom Program or AEP Ohio marketing materials
N3j. Standard practice in your business/industry
N3k. Recommendation by an account manager of AEP Ohio
N3l. Corporate policy or guidelines
N3m. Payback on the investment

N3n. Were there any other factors we haven't discussed that were influential in your decision to install this <**SUBCATEGORYDESCRIPTION 1**>?
DO NOT READ LIST, SINGLE PUNCH

97 [Record verbatim]
96 Nothing else influential
98 Don't Know
99 Refused

Thinking about this differently, I would like you to compare the importance of the PROGRAM with the importance of other factors in implementing the <**SUBCATEGORYDESCRIPTION 1**> project.

NAVIGANT

[READ IF (N3A, N3D, N3E, N3I, N3J, N3L, N3M, OR N3N)=8,9,10; ELSE SKIP TO N3p]
You just told me that the following other factors were important:
[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 or higher]
(N3A) Age or condition of old equipment,
(N3D) Equipment Vendor recommendation
(N3E) Previous experience with this measure
(N3I) Recommendation from a design or consulting engineer
(N3J) Standard practice in your business/industry
(N3L) Corporate policy or guidelines
(N3M) Payback on investment.
(N3N) Other factor (READ VERBATIM)

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <subcategorydescription1> project, and you had to divide those 100 points between: 1) the program and 2) these other factors, taken together as whole, how many points would you give to the importance of the PROGRAM?
Points given to program: [RECORD 0 to 100; 998=Don't Know; 999=Refused]

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE; IF N3p=998, 999, SET OTHERPTS=BLANK]

N3o And how many points would you give to other factors? [RECORD 0 to 100; 998=Don't Know; 999=Refused] [The response should be <**OTHERPTS**> because both numbers should equal 100. If response is not <**OTHERPTS**> ask INC1]

INC1 The last question asked you to divide a TOTAL of 100 points between the program and other factors. You just noted that you would give <N3P RESPONSE> points to the program. Does that mean you would give <**OTHERPTS**> points to other factors?
DO NOT READ LIST, SINGLE PUNCH

1 Yes
2 No
98 Don't know
99 Refused

[If INC1=2, go back to N3p]

CONSISTENCY CHECK ON PROGRAM IMPORTANCE SCORE

NAVIGANT

[SKIP TO N5 IF N3p=998, 999 OR IF N3p<80 OR IF (N3p>=80 AND ANY ONE OF (N3b, N3c, N3f, N3h, AND N3k)>3 AND <11)]

N4 You just gave <N3p RESPONSE> points to the importance of the program, I would interpret that to mean that the program was quite important to your decision to install this equipment. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were not that important to you. Just to make sure I have recorded this properly, I have a couple questions to ask you.

[SKIP N4a IF N3b>3]

N4a When asked about THE AVAILABILITY OF THE PROGRAM INCENTIVE, you gave a rating of ...<N3B RESPONSE> ... out of ten, indicating that the program incentive was not that important to you. Can you tell me why the incentive was not that important?

[Record VERBATIM]
98 Don't know
99 Refused

[SKIP N4c IF N3f>3]

N4c When I asked you about THE RECOMMENDATION FROM AN AEP OHIO PROGRAM STAFF PERSON, you gave a rating of ...<N3F RESPONSE> ... out of ten, indicating that the information provided was not that important to you. Can you tell me why the information provided was not that important?

[Record VERBATIM]
98 Don't know
99 Refused

[SKIP N4d IF N3h>3]

N4d When asked about THE INFORMATION from the AEP Ohio Business Custom Program or AEP Ohio MARKETING MATERIALS, you gave a rating of ...<N3H RESPONSE> ... out of ten, indicating that this information from the program or utility marketing materials was not that important to you. Can you tell me why this information was not that important?

[Record VERBATIM]
98 Don't know
99 Refused

[SKIP N4e IF N3k>3]

N4e When asked about the endorsement or recommendation by your AEP Ohio account manager, you gave a rating of <N3K RESPONSE> ... out of ten,

NAVIGANT

indicating that this Account manager endorsement was not that important to you. Can you tell me why this endorsement was not that important? [Record VERBATIM]

98 Don't know
99 Refused

COUNTER FACTUAL QUESTIONS

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the utility program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the incentive from the utility program had not been available, what is the likelihood that you would have installed exactly the same piece of energy efficient equipment?
[RECORD 0 to 10; 98=Don't know; 99=Refused]

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=08, 09, 10 AND N5=08, 09, 10]

N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to install. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the incentive played in your decision to install this efficient equipment?
[Record VERBATIM]

98 Don't know
99 Refused

N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would install the same equipment without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?
DO NOT READ LIST, PROBE IF NECESSARY, SINGLE PUNCH

NAVIGANT

[ASK IF N5b=1, 3]

N5c How important was… availability of the PROGRAM incentive? (IF NEEDED: in your DECISION to implement the project)
Please use a scale of 0 to 10, where 0 means not at all important and 10 means extremely important.
[98=Don't know, 99=Refused]

[ASK IF N5b=2, 3]

N5d If the AEP Ohio program had not been available, what is the likelihood that you would have installed exactly the same equipment? Please use a scale of 0 to 10, where 0 means "Not at all likely" and 10 means "Extremely likely";
[98=Don't know, 99=Refused]

[ASK IF N3j=08, 09, 10, ELSE SKIP TO N7]

N6 In an earlier question, you rated the importance of STANDARD PRACTICE in your industry very highly in your decision making. Could you please rate the importance of the PROGRAM, relative to this standard industry practice, in influencing your decision to install this [<measure description>]? Would you say the program was much more important, somewhat more important, equally important, somewhat less important, or much less important than the standard practice or policy?

DO NOT READ LIST, SINGLE PUNCH

1 Much more important
2 Somewhat more important
3 Equally important
4 Somewhat less important
5 Much less important
8 Don't know
9 Refused

[ASK IF N5>0 AND <11, ELSE SKIP TO N8]

N7 You indicated earlier that there was a <N5 RESPONSE> in 10 likelihood that you would have installed the same equipment if the program had not been available. Without the program, when do you think you would have installed this equipment? Would you say…?

READ LIST, SINGLE RESPONSE

1 At the same time

NAVIGANT

2 Earlier
3 Later
4 (Never)
8 (Don't know)
9 (Refused)

[ASK N7a IF N7=3]

N7a. How much later would you have installed this equipment? Would you say…?
READ LIST, SINGLE PUNCH

1 Within 6 months?
2 6 months to 1 year later
3 1 - 2 years later
4 2 - 3 years later
5 3 - 4 years later
6 4 or more years later
8 Don't know
9 Refused

[ASK N7b IF N7a=6]

N7b. Why do you think it would have been 4 or more years later?
[Record VERBATIM]

98 Don't know
99 Refused

PAYBACK BATTERY

[ASK N8-N10e IF N3m>5]

I'd like to find out more about the payback criteria <ORGANIZATIONNAME> uses for its investments.

N8 What financial calculation does <ORGANIZATIONNAME> make before proceeding with installation of a MEASURE like this one?
[Record VERBATIM]

98 Don't know
99 Refused

NAVIGANT

N9 What is the payback cut-off point <ORGANIZATIONNAME> uses (in months or years) before deciding to proceed with an investment? Would you say…?

1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years
6 Over 5 years
8 Don't know
9 Refused

N10a What was the estimated payback period for the new <SUBCATEGORYDESCRIPTION 1>, in months, WITH the incentive from the Custom PROGRAM?

00 [NUMERIC OPEN END, UP TO 240]
998 Don't know
999 Refused

N10b And what was the estimated payback period for the <SUBCATEGORYDESCRIPTION 1>, in months, WITHOUT the incentive from the Custom PROGRAM?

00 [NUMERIC OPEN END, UP TO 240]

998 Don't know
999 Refused

[CREATE VARIABLE FINCRIT1. SET FINCRIT1 = BLANK IF: N9=8, 9 OR N10b=998,999. SET FINCRIT1 = 1 IF: (N9=1 AND N10b<7) OR (N9=2 AND N10b<13) OR (N9=3 AND N10b<25) OR (N9=4 AND N10b<37) OR (N9=5 AND N10b<61) OR (N9=6). ELSE, SET FINCRIT1 = 0.]

[ASK N10c IF FINCRIT1=1]

N10c Even without the incentive, the <SUBCATEGORYDESCRIPTION 1> project met <ORGANIZATIONNAME>'s financial criteria. Would you have gone ahead with it even without the incentive?

1 Yes
2 No
3 Maybe

NAVIGANT

8 Don't know
9 Refused

[CREATE VARIABLE FINCRIT2. SET FINCRIT2 = BLANK IF: N9=8, 9 OR N10a=998,999. SET FINCRIT2 = 1 IF: (N9=1 AND N10a<7) OR (N9=2 AND N10a<13) OR (N9=3 AND N10a<25) OR (N9=4 AND N10a<37) OR (N9=5 AND N10a<61) OR (N9=6). ELSE, SET FINCRIT2 = 0.

[ASK N10d IF FINCRIT2=1 AND FINCRIT1=0 AND N3b<5]
N10d The incentive seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the incentive didn't have much effect on your decision, why is that?
00 [Record VERBATIM]

98 Don't know
99 Refused

[ASK N10e IF FINCRIT2=0 AND N3b>7]
N10e. The incentive didn't cause this <SUBCATEGORYDESCRIPTION 1> project to meet <ORGANIZATIONNAME>'s financial criteria, but you said that the incentive had an impact on the decision to install the <SUBCATEGORYDESCRIPTION 1>. Why did it have an impact?
00 [Record VERBATIM]

98 Don't know
99 Refused

CORPORATE POLICY BATTERY

[ASK N11-N17 IF N3L>5]

N11 Does your organization have a corporate environmental policy to reduce environmental emissions or energy use? Some examples would be to "buy green" or use sustainable approaches to business investments.

1 Yes
2 No
8 Don't know
9 Refused

[ASK N12-N17 IF N11=1]

N12 What specific corporate policy influenced your decision to adopt or install the <SUBCATEGORYDESCRIPTION 1> through the <UTILITY> program?
00 [RECORD VERBATIM]

98 Don't know
99 Refused

N13 Had that policy caused you to adopt energy efficient <SUBCATEGORYDESCRIPTION 1> at this facility before participating in the <UTILITY> program?

1 Yes
2 No
8 Don't know
9 Refused

N14 Had that policy caused you to adopt energy efficient <SUBCATEGORYDESCRIPTION 1> at other facilities before participating in the <UTILITY> Program?

1 Yes
2 No
8 Don't know
9 Refused

[ASK N15-N16 IF N13=1 OR N14=1]
N15 Did you receive an incentive for a previous installation of <SUBCATEGORYDESCRIPTION 1>?

1 Yes
2 No
8 Don't know
9 Refused

[ASK N16 IF N15=1]
N16 To the best of your ability, please describe…. [Record VERBATIM; 98=Don't know; 99=Refused]

a. the amount of incentive received
b. the approximate timing
c. the name of the program that provided the incentive

NAVIGANT

[ASK N17 IF N13=1 OR N14=1]

N17 If I understand you correctly, you said that <ORGANIZATIONNAME>'s corporate policy has caused you to install energy efficient <SUBCATEGORYDESCRIPTION 1> previously at this and/or other facilities. I want to make sure I fully understand how this corporate policy influenced your decision versus the <UTILITY> program. Can you please clarify that?

00 [Record VERBATIM]

98 Don't know
99 Refused

STANDARD PRACTICE BATTERY

[ASK N18-N22 IF N3j>5]

N18 Approximately, how long has use of energy efficient <SUBCATEGORYDESCRIPTION 1> been standard practice in your industry?

M [00 Record Number of Months; 98=don't know, 99=Refused]
Y [00 Record Number of Years; 98=don't know, 99=Refused]

N19 Does <ORGANIZATIONNAME> ever deviate from the standard practice?

1 Yes
2 No
8 Don't know
9 Refused

[ASK IF N19=1]

N19a Please describe the conditions under which <ORGANIZATIONNAME> deviates from this standard practice.

00 [Record VERBATIM]
98 Don't know
99 Refused

N20 How did this standard practice influence your decision to install the <SUBCATEGORYDESCRIPTION 1> through the <PROGRAM>?

00 [Record VERBATIM]
98 Don't know
99 Refused

NAVIGANT

N20a Could you please rate the importance of the <PROGRAM>, versus this standard industry practice in influencing your decision to install the <SUBCATEGORYDESCRIPTION 1>? Would you say the <PROGRAM> was…?

1 Much more important
2 Somewhat more important
3 Equally important
4 Somewhat less important
5 Much less important
8 Don't know
9 Refused

N21 What industry group or trade organization do you consult to establish standard practice for your industry?
00 [Record VERBATIM]

98 Don't know
99 Refused

N22 How do you and other firms in your industry receive information on updates in standard practice?
00 [Record VERBATIM]

98 Don't know
99 Refused

OTHER INFLUENCES BATTERY

[ASK N23-N25 IF N3nn>5]

N25 Please state any other factors that influenced your decision to go ahead on this energy efficiency project?
00 [Record VERBATIM]

98 Don't know
99 Refused

[ASK N26 IF MSAME=1]
Our records show that <ORGANIZATIONNAME> also received an incentive from <UTILITY> for <NSAME> other <SUBCATEGORYDESCRIPTION 1> project(s) at this facility.

N26 Was it a single decision to complete all of those <SUBCATEGORYDESCRIPTION 1> projects for which you received an incentive from <UTILITY> or did each project go through its own decision process?

1 Single Decision
2 Each project went through its own decision process
00 Other, specify
98 Don't know
99 Refused

NOTE; DIFFERENT TYPES OF PROJECT AT DIFFERENT SERVICEADDRESS
[ASK N27 IF FSAME=1 ELSE SKIP TO SPILLOVER MODULE]
Our records show that <ORGANIZATIONNAME> also received an incentive from <UTILITY> for <FSAME> energy efficient project(s) at other facilities.

N27 Was the decision making process for the <FDESC> project the same as for the <SUBCATEGORYDESCRIPTION 1> project we have been talking about?

1 Same decision making process
2 Different decision making process
00 Other, specify
98 Don't know
99 Refused

PY3 SPILLOVER MODULE

Thank you for discussing the new <**SUBCATEGORYDESCRIPTION 1**> that you installed through the <PROGRAM>. Next, I would like to discuss any energy efficient equipment you might have installed OUTSIDE of the program.

SP1Since your participation in the <**UTILITY**> program, did you implement any ADDITIONAL energy efficiency measures at this facility or at your other facilities within AEP Ohio's service territory that did NOT receive incentives through any utility or government program?

1 Yes
2 No
8 Don't know
9 Refused

NAVIGANT

[ASK SP2-SP5i IF SP1=1, ELSE SKIP TO CC1a]

SP2What was the first measure that you implemented? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)

1 Lighting: T8 lamps
2 Lighting: T5 lamps
3 Lighting: Highbay Fixture Replacement
4 Lighting: CFLs
5 Lighting: Controls / Occupancy sensors
6 Lighting: LED lamps
7 Cooling: Unitary/Split Air Conditioning System
8 Cooling: chillers
9 Cooling: Variable Frequency Drives (VFD/VSD) on HVAC Motors
10 VFD: retrofit or new process motor VFD
11 VFD: VFD retrofit on air-compressor motor
12 VFD: VFD retrofit on refrigeration system motor
13 Motors: Efficient motors
14 Refrigeration: Strip curtains
15 Refrigeration: Anti-sweat controls
16 Refrigeration: EC motor for WALK-IN cooler/freezer
17 Refrigeration: EC motor for REACH-IN cooler/freezer
18 Compressed Air: air compressor
19 Compressed Air: air distribution system improvements
20 Compressed Air: compressor controls
21 Compressed Air: air dryer
00 Other, specify
96 Didn't implement any measures
98 Don't know
99 Refused

[SKIP TO S0 IF SP2=96, 98, 99]

SP3What was the second measure? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)

1 Lighting: T8 lamps
2 Lighting: T5 lamps
3 Lighting: Highbay Fixture Replacement
4 Lighting: CFLs
5 Lighting: Controls / Occupancy sensors

NAVIGANT

6 Lighting: LED lamps
7 Cooling: Unitary/Split Air Conditioning System
8 Cooling: chillers
9 Cooling: Variable Frequency Drives (VFD/VSD) on HVAC Motors
10 VFD: retrofit or new process motor VFD
11 VFD: VFD retrofit on air-compressor motor
12 VFD: VFD retrofit on refrigeration system motor
13 Motors: Efficient motors
14 Refrigeration: Strip curtains
15 Refrigeration: Anti-sweat controls
16 Refrigeration: EC motor for WALK-IN cooler/freezer
17 Refrigeration: EC motor for REACH-IN cooler/freezer
18 Compressed Air: air compressor
19 Compressed Air: air distribution system improvements
20 Compressed Air: compressor controls
21 Compressed Air: air dryer
00 Other, specify
96 Didn't implement any measures
98 Don't know
99 Refused

[SKIP SP4 IF SP3=96, 98, 99]

SP4What was the third measure? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)

1 Lighting: T8 lamps
2 Lighting: T5 lamps
3 Lighting: Highbay Fixture Replacement
4 Lighting: CFLs
5 Lighting: Controls / Occupancy sensors
6 Lighting: LED lamps
7 Cooling: Unitary/Split Air Conditioning System
8 Cooling: chillers
9 Cooling: Variable Frequency Drives (VFD/VSD) on HVAC Motors
10 VFD: retrofit or new process motor VFD
11 VFD: VFD retrofit on air-compressor motor
12 VFD: VFD retrofit on refrigeration system motor
13 Motors: Efficient motors
14 Refrigeration: Strip curtains
15 Refrigeration: Anti-sweat controls

NAVIGANT

16 Refrigeration: EC motor for WALK-IN cooler/freezer
17 Refrigeration: EC motor for REACH-IN cooler/freezer
18 Compressed Air: air compressor
19 Compressed Air: air distribution system improvements
20 Compressed Air: compressor controls
21 Compressed Air: air dryer
00 Other, specify
96 Didn't implement any measures
98 Don't know
99 Refused

FIRST SPILLOVER MEASURE

SP5I have a few questions about the FIRST measure that you installed. (If needed, read back measure: <SP2 RESPONSE>) [OPEN END]

a. Why did you not receive an incentive for this measure?
b. Why did you not install this measure through the <UTILITY> Program?
c. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
d. Please describe the EFFICIENCY of this measure.
e. How many of this measure did you install?

SP5f. Was this measure specifically recommended by a program related audit, report or program technical specialist?

1 Yes
2 No
8 Don't know
9 Refused

SP5g. How significant was your experience in the <UTILITY> Program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant? [SCALE 0-10; 98=Don't Know; 99=Refused]

[SKIP SP5h IF SP5g = 98, 99]
SP5h. Why do you give it this rating? [OPEN END]

SP5i. If you had not participated in the <UTILITY> program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure

NAVIGANT

and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

CONSISTENCY CHECKS FOR MEASURE 1

[ASK CC1a IF SP5g<4 AND SP5i <4]

CC1a When you answered ...<SP5g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was not very important to your decision. However, when you answered the previous question, it sounds like it was not very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?

00 [Record VERBATIM]

98 Don't know
99 Refused

[ASK CC1b IF SP5g>7 AND SP5i >7]

CC1b When you answered ...<SP5g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was quite important to your decision. However, when you answered the previous question, it sounds like it was very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?

00 [Record VERBATIM]

98 Don't know
99 Refused

SECOND SPILLOVER MEASURE

[SKIP SP6-SP7i IF SP3=96, 98, 99]

SP6I have a few questions about the SECOND measure that you installed. (If needed, read back measure: <SP3 RESPONSE>) [OPEN END]

a. Why did you not receive an incentive for this measure?
b. Why did you not install this measure through the <UTILITY> Program?
c. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
d. Please describe the EFFICIENCY of this measure.

NAVIGANT

e. How many of this measure did you install?

SP6f. Was this measure specifically recommended by a program related audit, report or program technical specialist?

1 Yes
2 No
8 Don't know
9 Refused

SP6g. Using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant, how significant was your experience in the <UTILITY> Program in your decision to implement this Measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

[SKIP SP6h IF SP6g = 98, 99]
SP6h. Why do you give it this rating? [OPEN END]

SP6i. If you had not participated in the <UTILITY> program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

CONSISTENCY CHECKS ON SECOND SPILLOVER MEASURE

[ASK CC2a IF SP6g<4 AND SP6i <4]
CC2a When you answered ...<SP6g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was not very important to your decision. However, when you answered the previous question, it sounds like it was not very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?
00 [Record VERBATIM]

98 Don't know
99 Refused

[ASK CC2b IF SP6g>7 AND SP6i >7]

NAVIGANT

CC2b When you answered ...<SP6g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was quite important to your decision. However, when you answered the previous question, it sounds like it was very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?
[Record VERBATIM]

98 Don't know
99 Refused

THIRD SPILLOVER MEASURE

[SKIP SP7 – SP7i IF SP4=96, 98, 99]
SP7I have a few questions about the THIRD measure that you installed. (If needed, read back measure: <SP3 RESPONSE>) [OPEN END]

a. Why did you not receive an incentive for this measure?
b. Why did you not install this measure through the <UTILITY> Program?
c. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
d. Please describe the EFFICIENCY of this measure.
e. How many of this measure did you install?

SP7f. Was this measure specifically recommended by a program related audit, report or program technical specialist?

1 Yes
2 No
8 Don't know
9 Refused

SP7g. How significant was your experience in the <UTILITY> Program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant? [SCALE 0-10; 98=Don't Know; 99=Refused]

[SKIP SP7h IF SP7g = 98, 99]
SP7h. Why do you give it this rating? [OPEN END]

NAVIGANT

SP7i. If you had not participated in the <UTILITY> program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

CONSISTENCY CHECKS ON THIRD SPILLOVER MEASURE

[ASK CC3a IF SP7g<4 AND SP7i <4]

CC3a When you answered ...<SP7g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was not very important to your decision. However, when you answered the previous question, it sounds like it was not very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?

00 [Record VERBATIM]

98 Don't know

99 Refused

[ASK CC3b IF SP7g>7 AND SP7i >7]

CC3b When you answered ...<SP7g RESPONSE> ... for the question about the influence of the <UTILITY> Program on your decision to install this measure, I would interpret that to mean the Program was quite important to your decision. However, when you answered the previous question, it sounds like it was very likely that you would have installed this measure had you not participated in the <UTILITY> Program. Can you please explain the role the program made in your decision to implement this measure?

00 [Record VERBATIM]

98 Don't know

99 Refused

AEP OHIO SATISFACTION QUESTION

SAT1: Using the 0 to 10 satisfaction scale, how would you rate your satisfaction with the <UTILITY> Incentive Program? [SCALE 0-10; 98=Don't know, 99=Refused]

SAT2: Why do you give it that rating?

RECORD VERBATIM

NAVIGANT

State-Wide Evaluator Non-Residential Participation Process and Program Satisfaction Module

I'd now like to ask you a few more general questions about your participation in the Business Custom program.

E 5. How satisfied were you with the energy efficiency level required to qualify for an incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 6. What would have made you more satisfied?

RECORD VERBATIM

E 7. How satisfied were you with the amount of the incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 8. How satisfied were you with the measures offered by the program? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 9. What would have made you more satisfied with the measures?

RECORD VERBATIM

E 10. In the course of participating in the <UTILITY> program, and other than sending in the incentive application, how often did you contact <UTILITY> or program staff with questions? (don't read)

1	Never	**E 14**
2	Once	**continue**
3	2 or 3 times	**continue**
4	Four times or more	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E 11. How did you contact them? [CHECK ALL THAT APPLY; AFTER EACH RESPONSE, ASK: Were there any other ways you contacted them?]

NAVIGANT

1	Phone	**continue**
2	Email or fax	**continue**
3	Letter	**continue**
4	In person	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E11A. Were there any other ways you contacted them? [Open Ended]

RECORD VERBATIM

E 12. And overall how satisfied were you with your communications with <UTILITY> and program staff? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 13. What would have made you more satisfied?

RECORD VERBATIM

E 14. From the time you had [MEASURE_1] installed and submitted the application, about how many weeks did it take to receive your incentive? _____RECORD # of WEEKS

E 15. How satisfied were you with how long it took to receive the incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 16. Did <UTILITY> or its contractors conduct a post-installation inspection of the equipment you installed through the incentive Program?

1	Yes	**continue**
2	No	**Go to E19**
88	Refused	**Go to E19**
99	Don't know	**Go to E19**

E 17. How satisfied were you with the inspection? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 18. What would have made you more satisfied with the inspection?

RECORD VERBATIM

NAVIGANT

E 19. Have you noticed lower electricity bills since you installed your new energy efficient equipment?

1	Yes	**continue**
2	No	**E 21.**
88	Refused	**continue**
99	Don't know	**continue**

E 20. Would you say your bill savings are…[READ LIST]

1	About what you expected	**continue**
2	More than you expected	**continue**
3	Less than you expected	**continue**
88	Refused	**continue**
99	Don't know	**continue**

E 21. If you were rating your overall satisfaction with the <UTILITY> Incentive Program, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	**B1a**
99	Don't know	**B1a**

E 22. Why do you give it that rating?

RECORD VERBATIM

Benefits and Barriers

B1a What do you see as the main benefits to participating in the Business Custom Program? [MULTIPLE RESPONSE, UP TO 3]

1. Energy Savings
2. Good for the Environment

NAVIGANT

3. Lower Maintenance Costs
4. Better Quality/New Equipment
5. Rebate/Incentive
6. BLANK
7. Improved Safety/Morale
8. Set Example/Industry Leader
9. Able to make improvements sooner
10. Saves money on utility bill
00. Other, Specify
98. Don't know
99. Refused

B1b What do you see as the drawbacks to participating in the program? [MULTIPLE RESPONSE, UP TO 3]

1. Paperwork too burdensome
2. Incentives not high enough/not worth the effort
3. Program is too complicated
4. Cost of equipment
5. No drawbacks
6. Poor Communication
7. Time Consuming
8. Underfunded/Ran out of money
00. Other, specify
98. Don't know
99. Refused

Feedback and Recommendations

R1 Do you plan to participate in the program again in the future?

1. Yes
2. No
3. Maybe
8. Don't know
9. Refused

E23. Do you have any suggestions on how the program could be improved? [MULTIPLE RESPONSE, UP TO 4]

1. Higher incentives
2. More measures
3. Greater publicity

NAVIGANT

4. Better communication/Improve program information
5. Contact/information from Account Executives
6. Longer time period to complete project
7. Better review of applications
8. Simplify application process
9. Electronic applications
10. More funds for the program
11. BLANK
00. Other, specify
96. No recommendations
98. Don't know
99. Refused

E21. Finally, if you were rating your overall satisfaction with the <UTILITY>, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	F 1
99	Don't know	F 1

E22. Why do you give it that rating?
RECORD VERBATIM

Firmographics

Finally, I'd like to ask you few general questions about your company, specifically at [SITE_ADDRESS].

What is your job title or role?

1	Facilities Manager	continue
2	Building Manager	continue
3	Energy Manager	continue
4	Other facilities management/maintenance position	continue
5	Chief Financial Officer	continue
6	Other financial/administrative position	continue
7	Proprietor/Owner	continue
8	President/CEO	continue
00	(Other (Specify) _ __)	continue

NAVIGANT

88	Refused	continue
99	Don't know	continue

[RECORD RESPONSE]

What is the principal activity /(type of business) [COMPANY] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store?

[DO NOT READ LIST. RECORD ONE RESPONSE.]

1	Office	continue
2	Retail (non-food)	continue
3	College/university	continue
4	School	continue
5	Grocery store	continue
6	Convenience store	continue
7	Restaurant	continue
8	Health care/hospital	continue
9	Hotel or motel	continue
10	Warehouse	continue
11	Personal Service	continue
12	Community Service/ Church/ Temple/Municipality	continue
13	Industrial Electronic & Machinery	continue
14	Industrial Mining, Metals, Stone, Glass, Concrete	continue
15	Industrial Petroleum, Plastic, Rubber and Chemicals	continue
16	Other Industrial	continue
17	Agricultural	continue
18	Condo Assoc/Apartment Mgmt	continue
77	Miscellaneous [RECORD VERBATIM]	continue
88	Refused	continue
99	Don't Know	continue

Does your organization own or lease the space at [SITE_ADDRESS]?

1	Own	**continue**
2	Lease	**continue**
3	Own Part and lease part	**continue**
99	Don't know	**continue**

What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

	Square Feet		

NAVIGANT

	Refused		
	Don't Know		

F4a How old is this facility? [NUMERIC OPEN END, 0 TO 150; 998=Don't know, 999=Refused]

[ASK F4b IF F4a=998]

F4bDo you know the approximate age of the building? Would you say it is…?

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
8. Don't know
9. Refused

F6 Which of the following best describes the facility? This facility is…

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANIZATIONNAME> with several locations

B 7. About how many full-time equivalent employees work at the facility at [SITE_ADDRESS]?

1 Less than 10
2 11 to 25
3 26 to 40
4 41 to 75
5 76 to 100
6 More than 100
88 Refused
99 Don't Know

Thank you and closing.

NAVIGANT

6.4 In-Depth Interview Instruments

The following guides were **used** to conduct the in-depth interviews.

AEP-Ohio Evaluation for Business Custom Program

Program Staff and Implementer In-Depth Interview Guide

October 5, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Depth Interview Guide – Business Custom Program

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Energy Efficiency programs. We're conducting interviews with program managers and key staff in order to improve our understanding of AEP-Ohio's programs. At this time we are interested in asking you some questions about the Commercial & Industrial Custom programs. The questions will only take about an hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

[READ FOR IMPLEMENTER ONLY] Ok, great. I would like to talk to you about your involvement in the custom program.

NAVIGANT

Roles and Protocols

1. Can you briefly summarize your role and responsibilities in the C&I Custom program? How long have you carried these out? Has your role changed over time and if so, how?

2. Last year we talked about the roles of KEMA, AEP staff and the solution providers. Do you think there have been any substantial changes in the roles and people assigned to this program in the past year compared to the previous program year?

3. What are the formal and informal communication channels between these groups (between AEP and KEMA; between AEP and OPCo/CSP; within AEP)? Do you feel information is shared in a timely manner? If not, how can this be improved? Are there common ways to identify specific projects for ease of data sharing?

Overall Goals and Objectives

4. Can you describe the goals of the program? Are these laid out in any documents? [Record/request document.]

5. What performance metrics are you currently using to measure the performance of the program(s)? According to these metrics, have the program(s) on track to meet their goals or have they met their goals? *[If necessary, probe for number of rebate applications, energy savings realized.]* Why or why not? If yes, have the goals been met on time?

6. What changes were made in the 2011 program based on results from the 2010 research?

7. Increase the role of the account manager in the delivery of the program was one thought last year. Has that occurred?

Program Theory

8. In your own words, what are the market barriers addressed by the program(s), the program intervention strategies to address these barriers, and the program delivery steps? (We are looking for cause-effect relationships between proposed intervention and actions taken for all steps in the chain of program delivery steps.)

Marketing and Promotion

9. Have there been any marketing and promotional efforts for the program(s) such as direct mail? Please describe the program marketing campaign in your own words [If necessary: Do marketing activities vary by prescriptive and custom? By customer size? By market sector or business type?]

NAVIGANT

10. Have you increased the use of Web site to market the C&I Custom Program? Program information is buried in the site. Have you considered a more direct link from the home page to program information?

11. Last year we learned that there is a need for more communications, more training seminars and more informational meetings. Trade allies and customers suggested AEP use Webinars as a communication tool. Have you any plans to increase your use of this communication tool in presenting program information?

12. Some customers indicated that the long term savings on energy costs is just as important as the rebate level in their decision to participate in the program. Does AEP use this message in collateral materials along with the rebate savings message?

13. How often do marketing activities occur? Have you made any changes to the marketing materials or frequency in 2011? Do you think these materials were more successful in 2011 compared to the 2010 materials?

14. Can you provide me with copies of your marketing plan and all marketing collateral used?

15. Do the marketing and promotional efforts address all measure end-use categories (i.e., lighting, HVAC, refrigeration, motors, VSDs)? If not, why not? Solution providers have found some resistance from customers about the savings possible with the installation of a VSD. They are looking to AEP to be the expert in the technology arena and create a definitive collateral piece explaining the potential savings.

16. Which end-use category marketing efforts are the most successful and the least successful? Why?

17. Do you think the level of effort and budget put into marketing and promotion of the program(s) has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? *[Probe for differences between customer and trade ally target markets.]*

18. Do you anticipate making any changes to marketing efforts for Program Year 3? If so, please describe these changes. Do you have documentation of these changes? If so, can you provide copies to me?

NAVIGANT

Program Participation

We are also trying to learn of any process related issues that may arise from the current design of the program.

19. Could you briefly describe how customers participated in the program?

20. Do you have a sense of how satisfied customers are with various aspects of the program (e.g., ease of application, verification process, amount of incentive, timing of incentives)?

21. What do customers do if they have questions about the participation process? Is there a systematic process in place for responding to customer inquiries? How quickly are their questions answered? What improvements can be made? What improvements have been made during 2010 to improve program participation? What do you think still needs to be changed going forward?

22. What is the target processing time for the technical screening and approval of pre-approval forms? What is the average processing time? What, if anything, slows down processing time? What other changes can be made to decrease processing time?

23. What percentage of customers who submit pre-approval forms do not complete the program (i.e., the project is canceled or discontinued)? What are the reasons that customers might not submit their final documentation or otherwise complete the program? Is there a process in place for following up with customers between issuing the pre-approval letter and receiving the final documentation? Is there any system in place to track project progress? If so, please describe.

24. What is the target processing time between final documentation and payment? What percent of applications are actually processed within that amount of time? What, if anything, slows down processing time? How can KEMA or AEP Ohio staff speed up the processing time of the payments?

Quality Assurance and Quality Control

25. One of the findings from last year was that the large realization rate adjustments were caused by the simplified methods used for the ex-ante estimates. In many cases interactive effects between measures were not included in the original estimates. Was this change made to the estimation algorithm?

26. The AEP-Ohio Business Programs operations manual shows a quality step in the administration responsibilities for nearly all of the program processes – are the quality

procedures documented anywhere? If so, can you provide a copy to me? Can you provide a brief description of these quality procedures?

27. What kind of quality assurance and quality control procedures are in place to evaluate project completion? What is the process for verifying savings? Were any changes made to the QA/QC procedures?

28. Approximately what percentage of all projects are pre-inspected and post-inspected? How do you determine if a project requires inspection (both pre and post)? *[Probe for custom projects, random check guidelines (10% of $10K or less, 25% of $10K-$50K, 100% of $50K+), geographical location, contractor]*

29. Who conducts pre and post inspections and how are they documented? Can you provide these documents to me?

30. Are inspections documented as part of the tracking data?

31. When are on-site measurements conducted as part of the pre and post verification? Which measures and business types? Can you provide documentation of measurement results to me?

32. We will likely have more questions about Quality Assurance and Quality Control procedures once we've had the chance to review the documented quality procedures. Who is the appropriate person (or persons) to contact with future questions?

Solution Providers

33. Can you describe the application process for solution provider registration? Is there one staff member that oversees the program ally network? Were you successful in transferring some of the marketing and recruitment tasks to solution providers? Do you think solution providers completed a few, some, most or all of the applications for their customers?

34. What are the main benefits for the solution providers to participate? Do you have a sense of solution providers' satisfaction with their participation in this program?

35. Some solution providers and many customers did not like the dual purpose application. What was the solution for this issue? Were any changes made to the application?

36. Solution providers also requested faster approval for the pre-approval process. Sometimes new programs take a while to ramp up to their peak efficiency. Was the pre-approval process more efficient in 2011 compared to 2010? Do we have days from application received to approval to measure this for both years?

NAVIGANT

37. Another suggestion was that AEP look to technology to make the program more efficient. Some of the suggestions include notifying customers my email that their project was approved and offering the application process online. Was either of these improvements made during the 2011 program year? Are they planned for the 2012 program year?

38. The program needs a base of continuity to generate continued interest for customers. Last year there was talk of cuts in the funding for the program and lack of assurances that the program would be offered in 2011 and strict timetables for applications. Did this situation continue at the end of 2010?

39. Solution providers expressed an interest for more program training. Did AEP offer more training in 2011 to help solution providers market the program? What kind of other support, such as collateral materials, was provided?

40. Does AEP communicate what is expected of solution providers? Are there any specific responsibilities or expectations that are requested when a trade ally registers? Trade allies may need more direction than AEP expects. Have the expectations of solution providers changed in 2011? If so, please describe. Are solution providers meeting expectations? Why or why not?

41. Have solution providers requested any other types of support/collateral, etc. If so, what have they requested and how are you responding to their requests? Were any changes made in 2011 to the collateral? If so, please describe and provide hard cop.

Rebates/Incentives

42. Are program participants satisfied with the current rebate amounts and incentive limit caps (50% of total cost)? Are the incentive limit caps being checked for all projects?

43. How do solution providers perceive the incentive levels and the minimum or maximum payback caps? What specific feedback have they given?

44. Are you planning any changes to incentive levels for the next program year? If yes, what is the rationale behind the change? Did you implement any changes for the 2011 program year?

Call Center

45. Are customers/contractors making use of the phone number listed in the application form? *[Probe for call volume.]* What are the main issues raised by customers/ contractors to the call center?

NAVIGANT

46. How are these issues resolved?

Data Tracking

47. Can you briefly describe the process for tracking program data? Do you feel all important information is captured and stored in a way to best support program efforts? Is the information accurate, current and complete? How frequently is the tracking data missing? Are there additional types of reports or information that you would find beneficial? Is there a process for requesting additional data?

48. Does application information get tracked in the same database as installation information and inspection information? Or can it easily be merged?

49. Is the system used for data tracking linked with any other systems such as databases with customer account information or ones that track marketing activities?

Program Adjustments and Enhancements

50. (For Custom) Based on your experience with implementing the program and communicating with customers, how did interest in the program in 2010 compare to interest in 2009? Do you expect the same result in Program Year 3? Why/Why not? What changes will be made to increase program interest in 2011?

51. Have the design of the program(s) or the program processes changed since last year? If so, how? Why were the changes made? Do you have documentation of the program design or processes before and after the changes? If so, can you provide these documents to me?

52. Will there be any changes made to the program offerings in Program Year 3 (e.g., program offerings, marketing approach, targets, incentive levels, etc)? If so, please describe these additions or deletions.

53. Are there any measures currently in the program that will be addressed by a federal standard? How do you plan to change the program to account for these new standards? (motors or T-12 baselines)

54. Are there any other elements in design, structure, and/or operation that should be modified to make the program(s) work better? If so, what would you recommend? Why do you think this change is needed?

NAVIGANT

55. From your perspective, is staffing adequate for this program to meet its goals? (If not): What areas/functions do you feel are not adequately staffed?

Success and the Future of These Efforts

56. In your opinion, how successful are the program(s)? Why? What are the strengths? What are the weaknesses? Do you feel that free-ridership is a major concern for the program(s)? *[Please explain.]*

57. If so, what steps can be taken to avoid free-ridership?

58. Do you think the current economic conditions are affecting the program? If so, how?

Other

59. Who should we interview at KEMA? Are there any additional people with key roles that we should talk to at AEP?

60. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

We might follow-up with you by phone later, if additional questions arise.

NAVIGANT

AEP-Ohio Evaluation for the Business Custom/Prescriptive/ Self-Direct Program Trade Ally Provider Interview Guide (Program Participant)

November 8, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Number of employees: _____

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews. This guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Custom Program. We're currently in the process of conducting interviews with lighting contractors and equipment suppliers to improve our understanding of AEP-Ohio's programs.

Our records show you have been named as a lighting contractor or equipment or service provider by one or more of AEP Ohio business customers that have participated in the Business Custom/Prescriptive/Self Direct Program[?]. At this time we are interested in asking some questions of the person most experienced with the Business Custom/Prescriptive/Self Direct program. [CONFIRM THAT THIS IS THE PERSON MOST KNOWLEDGEABLE AT THEIR BUSINESS OR GET ALTERNATE NAME].

The questions will only take about half an hour. Information you provide will be kept anonymous in our reports. General observations and findings will appear in our final report, but they will not be attributed to any named person or company. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

NAVIGANT

Background

1. Can you briefly describe the company you work for and the type of business it conducts? What are your job responsibilities at your company? How long have you been in this position?

2. Which AEP Programs have you participated in during 2011? How was your firm recruited for the [Custom/Prescriptive/Self-Direct] program?

3. How would you describe your familiarity with AEP Ohio's Business [Custom/Prescriptive/Self-Direct] Program? Have you personally worked with any of your customers who have participated in this program? About how many? Who are your primary business customers?

4. What type of equipment did you install for the [Custom/Prescriptive/Self-Direct] Program?

5. About how many AEP Ohio rebate projects was your company involved with in 2011 for the [Custom/Prescriptive/Self-Direct] Programs? Is there a reason you were not involved with more projects in 2011?

6. Do you work mainly in the Ohio Power or Columbus Southern Power service area? Or both?

Solution Provider Participation

7. Was your firm recruited to participate in this program? What programs, Custom, Prescriptive, or Self Direct, have you participated in with your customers? When did you begin participating in the [Custom/Prescriptive/Self-Direct] Program?

CUSTOM	YES	NO
PRESCRIPTIVE	YES	NO
SELF DIRECT	YES	NO

****

ASK Q8-10 AS APPROPRIATE FROM ANSWERS TO Q7

8. What are the reasons your firm decided to participate in the Custom Program? What are the main benefits to your firm? What are the drawbacks to your firm?

9. What are the reasons your firm decided to participate in the Prescriptive Program? What are the main benefits to your firm? What are the drawbacks to your firm?

10. What are the reasons your firm decided to participate in the Self Direct Program? What are the main benefits to your firm? What are the drawbacks to your firm?

****

NAVIGANT

11. About how many of your lighting or equipment projects received rebates through the [Custom/Prescriptive/Self-Direct] Program in 2011? (If few) Is there a reason you have not been involved with more projects? In your opinion, has the [Custom/Prescriptive/Self-Direct] Program increased your business?

12. Can you describe the application process for program ally registration? *[Probe for qualifications or training requirements.]* What kind of training is provided as part of the registration process to become a Solution Provider? Was the training useful?

13. What is expected of Solution Providers? Are there any specific responsibilities that come with registering? Do you know of any quality control procedures in place for trade allies? (for example, removing an ally from the program if complaints are received about them)

14. Do you complete the program application for your customers? Do customers frequently need your help with program issues after the equipment is installed?

15. How satisfied are you with your experiences with the [Custom/Prescriptive/Self-Direct] Program?

Marketing and Promotion to Customers

16. How does your company become involved with projects associated with the program? Do you actively promote participation in [Custom/Prescriptive/Self-Direct] Programs or do customers bring projects they want to submit to the [Custom/Prescriptive/Self-Direct] Program?

17. How do customers find out about this program? Has your company promoted the program through its own marketing collateral? Who, outside of your company and the customer, has been influential in getting customers to participate?

18. What kind of support, if any, does AEP Ohio provide to you for marketing the program to your customers? Do you distribute utility-produced marketing materials? Have you requested any other types of support/collateral, etc. If so, what have you requested and how has AEP Ohio responded to your requests?

19. Do you think AEP Ohio's level of marketing and promotion of the [Custom/Prescriptive/Self-Direct] Program has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? If AEP is missing areas of opportunity, what are those areas?

20. Do you have suggested changes to AEP Ohio's marketing efforts for next year? If so, please describe these changes.

NAVIGANT

Q21 - SELF DIRECT ONLY

21. Are you aware of the addition of mercantile or retail customers to the program by the Ohio Public Utility Commission (PUCO)? Has this ruling had any impact on your customers? Does the automatic approval process where the project is approved on the 61st calendar day after filing speed up your project approval? What is your opinion of the standard application template? Is it easy to use? Does it expedite the projects?

Customer Participation

22. What reasons do customers give for participating in the [Custom/Prescriptive/Self-Direct] program?

23. Do customers understand the participation process? How do you get program information to them? What improvements can be made?

24. What activities does your company perform to help customers identify opportunities to participate? Do customers need your help with the program after the equipment is installed? What type of help do they need?

25. What is the review time between completing the pre-approval application and letter of approval from AEP Ohio? Has this had any impact on your sales process?

26. Does the timing required for submitting documentation (within 60 days of project completion) present a challenge? How? Does it affect certain types of projects or customers more than others? If so, how and why?

27. Have you encountered any challenges in helping customers participate in the [Custom/Prescriptive/Self-Direct] program? If so, please describe. Have you had any challenges providing qualifying products?

28. What are the reasons that customers might not participate in the [Custom/Prescriptive/Self-Direct] program? Do customers complain about any particular aspects of the program? Do customers regularly cancel their participation or drop out of this program? If so, why?

Rebates/Incentives

29. What is your opinion of the incentives offered to [Custom/Prescriptive/Self-Direct] Program participants? Are program participants satisfied with these incentive levels?

30. Are the incentives effective at encouraging customers to pursue projects they would not have considered without the [Custom/Prescriptive/Self-Direct] program?

NAVIGANT

31. In your opinion, how can AEP Ohio increase participation in the [Custom/Prescriptive/Self-Direct] Program?

Quality Assurance and Quality Control

32. Have you had to answer questions or provide additional information as a result of a program-sponsored quality inspection to verify equipment quantities and eligibility? Has any equipment you installed been rejected for an incentive? Why?

Call Center

33. Do you know whom to contact for help with the [Custom/Prescriptive/Self-Direct] program?

34. Are customers or your company staff making use of the KEMA phone number listed on the application form? At what point during the participation process are calls usually made? What are the main issues raised and are these issues resolved to your satisfaction? Typically, how long does it take to resolve inquiries to the call center?

35. If you contacted the call center, what is your level of satisfaction with the service you received? What other areas of support would be helpful to you?

Program Adjustments and Enhancements

36. What type of information could the utility provide you to increase your familiarity and understanding of the [Custom/Prescriptive/Self-Direct] program?

37. What could be modified to make the [Custom/Prescriptive/Self-Direct] program work better (e.g., incentive levels, eligible equipment, etc)? If so, what would you recommend? Why do you think this change is needed?

38. Would more training be useful? What types?

Success and the Future of These Efforts

39. In your opinion, how successful is the [Custom/Prescriptive/Self-Direct] program? Why? What are the strengths? What are the weaknesses?

40. Do you feel that some customers would be installing the same lighting/equipment products without the incentives of the [Custom/Prescriptive/Self-Direct] Program? [Please explain.]

41. Do you think the current economic conditions are affecting program participation? If so, how?

NAVIGANT

Other

42. Do you have any other comments or suggestions for us?

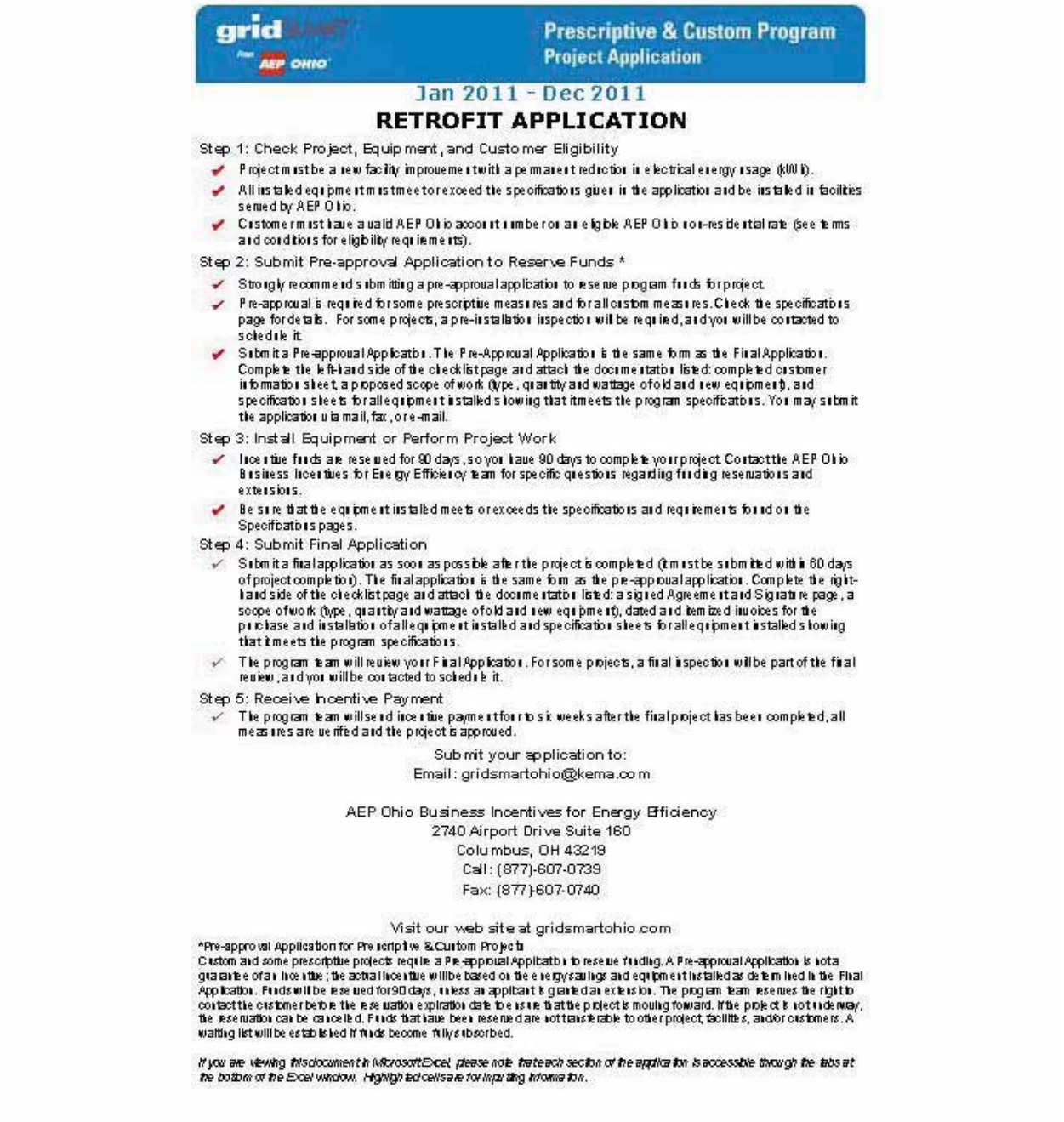
Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

We might follow-up with you by phone later, if additional questions arise.

NAVIGANT

6.5 Custom Program Application Forms

The following file is the 2011 Custom Program application form. The Prescriptive Program and the Custom Program use the same application.



gridSMART from AEP OHIO

Prescriptive & Custom Program Project Application

Jan 2011 - Dec 2011

RETROFIT APPLICATION

Step 1: Check Project, Equipment, and Customer Eligibility

- ✔ Project must be a new facility improvement with a permanent reduction in electrical energy usage (kWh).
- ✔ All installed equipment must meet or exceed the specifications given in the application and be installed in facilities served by AEP Ohio.
- ✔ Customer must have a valid AEP Ohio account number on an eligible AEP Ohio non-residential rate (see terms and conditions for eligibility requirements).

Step 2: Submit Pre-approval Application to Reserve Funds *

- ✔ Strongly recommend submitting a pre-approval application to reserve program funds for project.
- ✔ Pre-approval is required for some prescriptive measures and for all custom measures. Check the specifications page for details. For some projects, a pre-installation inspection will be required, and you will be contacted to schedule it.
- ✔ Submit a Pre-approval Application. The Pre-Approval Application is the same form as the Final Application. Complete the left-hand side of the checklist page and attach the documentation listed: completed customer information sheet, a proposed scope of work (type, quantity and wattage of old and new equipment), and specification sheets for all equipment installed showing that it meets the program specifications. You may submit the application via mail, fax, or e-mail.

Step 3: Install Equipment or Perform Project Work

- ✔ Incentive funds are reserved for 90 days, so you have 90 days to complete your project. Contact the AEP Ohio Business Incentives for Energy Efficiency team for specific questions regarding funding reservations and extensions.
- ✔ Be sure that the equipment installed meets or exceeds the specifications and requirements found on the Specifications pages.

Step 4: Submit Final Application

- ✔ Submit a final application as soon as possible after the project is completed (it must be submitted within 60 days of project completion). The final application is the same form as the pre-approval application. Complete the right-hand side of the checklist page and attach the documentation listed: a signed Agreement and Signature page, a scope of work (type, quantity and wattage of old and new equipment), dated and itemized invoices for the purchase and installation of all equipment installed and specification sheets for all equipment installed showing that it meets the program specifications.
- ✔ The program team will review your Final Application. For some projects, a final inspection will be part of the final review, and you will be contacted to schedule it.

Step 5: Receive Incentive Payment

- ✔ The program team will send incentive payment form to six weeks after the final project has been completed, all measures are verified and the project is approved.

Submit your application to:
Email: gridsmartohio@kema.com

AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219
Call: (877)-607-0739
Fax: (877)-607-0740

Visit our web site at gridsmartohio.com

*Pre-approval Application for Prescriptive & Custom Projects
Custom and some prescriptive projects require a Pre-approval Application to reserve funding. A Pre-approval Application is not a guarantee of an incentive; the actual incentive will be based on the energy savings and equipment installed as determined in the Final Application. Funds will be reserved for 90 days, unless an applicant is granted an extension. The program team reserves the right to contact the customer before the reservation expiration date to be sure that the project is moving forward. If the project is not underway, the reservation can be cancelled. Funds that have been reserved are not transferable to other projects, facilities, and/or customers. A waiting list will be established if funds become fully subscribed.

If you are viewing this document in Microsoft Excel, please note that each section of the application is accessible through the tabs at the bottom of the Excel window. Highlighted cells are for inputting information.

NAVIGANT

gridSMART from AEP OHIO

Prescriptive & Custom Program
Project Application

INCENTIVE APPLICATION CHECKLIST

Self-Direct Projects require a separate SELF-DIRECT APPLICATION FORM

PRE-APPROVAL APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Incentives Requested Section of Agreement and Signature Page
- ☐ Proposed Scope of Work

Incentives Worksheets*

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration/Misc
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____
Estimated Project Cost: _____
Expected Completion Date: _____

Project funds will only be reserved for 90 days from date of reservation.
**Please complete forms for checked boxes.*

FINAL APPLICATION

Required Attachments

- ☐ Customer/Contractor Information
- ☐ Completed Incentives Requested Section of Agreement and Signature Page
- ☐ Completed Payment Release Section (if applicable)
- ☐ Itemized Invoices
- ☐ Equipment Specifications
- ☐ Updated scope if project changed

Incentive Worksheets*

- ☐ Lighting
- ☐ HVAC
- ☐ Refrigeration/Misc
- ☐ Motors and VFD
- ☐ Custom

Application Date: _____
Final Project Cost: _____
Final Completion Date: _____

Incomplete applications will delay processing and incentive payment.
**Please complete forms for checked boxes.*

Please complete below if this is a revised submittal.

SUBMITTAL DATE: _____

APPLICATION NUMBER (IF KNOWN): _____

AEP Ohio Business Incentives for Energy Efficiency
2740 Airport Drive Suite 160
Columbus, OH 43219

Phone: (877)-607-0739
Fax: (877)-607-0740
gridsmartohio@kema.com
www.gridsmartohio.com

NAVIGANT

gridSMART from AEP OHIO

Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Columbus Southern Power and Ohio Power Company are collectively known as AEP Ohio ("AEP Ohio"). AEP Ohio is offering prescriptive and custom incentives under the AEP Ohio Business Incentives for Energy Efficiency program to facilitate the implementation of cost-effective energy efficiency improvements for non-residential (commercial and industrial) customers.

Please note that funds are limited and subject to availability.

Program Effective Dates

AEP Ohio Business Incentives for Energy Efficiency program incentives are offered until approved funds are exhausted or December 31st of each program year, whichever comes first. The effective dates of the current AEP Ohio Business Incentives for Energy Efficiency program and application submittal requirements are as follows:

- Projects with a final completion date before January 1, 2011 must apply on a Self-Direct Application.
- All 2011 AEP Ohio Business Incentives for Energy Efficiency program projects must be completed and Final Applications received no later than December 16, 2011.
- Subsequent program year budgets and plans will be made available towards the end of the existing program year. AEP Ohio currently has a commitment to provide this program through the 2011 program year.

Program and Project Eligibility

The AEP Ohio Business Incentives for Energy Efficiency program offers both prescriptive incentives for some of the more common energy efficiency measures and custom incentives for those eligible improvements not included on the list of prescriptive measures. Program incentives are available under the AEP Ohio Business Incentives for Energy Efficiency program to include non-residential accounts served on AEP Ohio's regulated retail rates. Qualifying projects must be installed in a facility in AEP Ohio's electric service territory. These incentives are available to all non-residential customers who pay into the Energy Efficiency and Peak Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires, regardless which retail electric supplier the customer has chosen to purchase power. A customer may neither apply for nor receive incentives for the same product, equipment or service from more than one utility.

Custom projects must involve measures, which result in a reduction in electric energy usage due to an improvement in system efficiency. Projects that result in reduced energy consumption without an improvement in system efficiency are not eligible for a custom incentive, except those which involve an automated control technology such as energy management system programming. The project simple payback prior to the incentive payment generally should be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive. Incentives are calculated based on first-year energy savings and peak demand reduction. Peak demand reduction is defined as the reduction in average load over the Performance Hours by the replacement of existing electrical equipment with more efficient electrical equipment. Peak Performance Hours is defined as the time between June 1st and August 31st on weekday, non-holidays, between the hours 3:00 PM and 6:00 PM Eastern Time.

Projects involving measures covered by the prescriptive incentive portion of the program are not eligible for a custom incentive. However, the applicant has the option to apply for a custom incentive for whole building integrated projects or systems, even if they include prescriptive measures. The prescriptive elements may be capped at the deemed savings and/or incentive level.

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Project requirements under the AEP Ohio Business Incentives for Energy Efficiency program include the following:

- Projects must involve a new facility improvement that results in a permanent reduction in electrical energy usage (kWh).
- Projects that are NOT eligible for an incentive include the following:
  - Fuel switching (e.g. electric to gas or gas to electric)
  - Changes in operational and/or maintenance practices or simple control modifications not involving capital costs
  - On-site electricity generation
  - Projects involving gas-driven equipment in place of or to replace electric equipment (such as a chiller)
  - Projects focused primarily on power factor improvement
  - Projects that involve peak-shifting (and not kWh savings)
  - Renewables
- Any measures installed at a facility must be sustainable and provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the product, whichever is less. If the Customer ceases to be a delivery service customer of AEP Ohio or removes the equipment or systems at any time during the 5-year period or the life of the product, the Customer may be required to return a prorated amount of incentive funds to AEP Ohio.
- Used or rebuilt equipment is generally NOT eligible for an incentive.
- All installed equipment must meet state, federal, and local codes and requirements.
- Projects must be installed on the AEP Ohio electric account served by an eligible electric rate type listed on the application.
- Equipment must be purchased, installed, and operating (or capable of operating in the case of seasonal uses) prior to submitting a final application for an incentive.
- AEP Ohio will issue incentive payments in the form of checks, not utility bill credits.
- The incentive is paid as a one-time, one-program offer and cannot be combined with incentive payments from other AEP Ohio programs. The customer may be eligible to participate in other programs offered by AEP Ohio, as long as no project receives more than one incentive.

Further documentation requirements can be found in the Policy and Procedures Manual which can be found at the program website www.gridsmartohio.com or by calling the program hotline. Documentation indicating contract dates prior to Jan 1, 2011 may render this application ineligible.

Incentive Payment Limits

For both the Prescriptive and Custom programs, the total incentive payment shall be the lesser of: 1) The calculated incentive as approved by AEP Ohio, or 2) 50% of Total Incremental Cost. In calculating the savings and incentives please refer to the Policy and Procedures Manual for details.

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Project Application

TERMS AND CONDITIONS

Incentive Caps

- The cap for each project is $300,000.
- The cap is by utility company (Columbus Southern Power Company and Ohio Power Company).
- A sliding scale incentive reduction will be incorporated when the calculated incentive exceeds $160,000 per project.
- The cap for each business entity (corporation, LLC, partnership, etc) is based on their tariff, indicated below.

TARIFF	LIMIT PER BUSINESS ENTITY
General Service Tariffs 1,2, & 3	$600,000 per year
General Service Tariff 4	$600,000 overall for years 2009-2011

Application Review Process

Applications are not a guarantee of program acceptance and incentive payment. AEP Ohio will review applications for eligibility and completeness. Completed applications will be reviewed in the order received. Funds are reserved for the project when AEP Ohio receives a complete pre-approval application and determines that the project meets the program eligibility requirements. Applicants who submit incomplete applications will be notified of deficiencies upon review of the application, and could lose their place in line in the review process until all requested information is received. Applicants are encouraged to call the program hotline if they have any questions about documentation requirements.

Please click on the below link for additional application process steps information.
http://www.aepohio.com/global/utilities/lib/docs/save/programs/Application_Steps_Incentive_Process.pdf

Pre-approval Application

- Prescriptive projects requiring Pre-approval: New T8/T5 fixtures and Delamping T8 fixtures
- All custom projects require Pre-approval

Final Application

The Final Application must be submitted within 60 days of project completion. Project documentation, such as copies of dated invoices for the purchase and installation of the measures and/or product specification sheets, is required.

The location or business name on the invoice must be consistent with the application information. Final Applications and all required supporting documentation must be received by Dec 16, 2011 to be applicable for the 2011 program year.

The invoice should provide sufficient detail to separate the project cost from the costs of other services not related to the energy efficiency project and other repairs. AEP Ohio reserves the right to request additional supporting documentation as deemed necessary to ensure measure eligibility and verify that the expected energy savings will occur. Confidential information contained in any documents associated with this application will be protected from public filings. However, this information may be disclosed to the Public Utilities Commission. Requested information could include: equipment purchase dates, installation dates, proof that the equipment is operational, manufacturer specifications, savings calculation documentation, monitoring data, warranty information, and proof of customer co-payment.

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Prescriptive & Custom Program
Project Application

TERMS AND CONDITIONS

Inspections

AEP Ohio reserves the right to inspect all projects to verify compliance with the program rules and verify the accuracy of project documentation. This may include pre-installation and/or post-installation inspections, detailed lighting layout descriptions, metering, data collection, interviews, and utility bill or monitoring data analyses. The customer must allow access to project documents and the facility where the measures were installed for a period of five years after receipt of incentive payment by AEP Ohio.

Tax Liability

Incentives are taxable and, if more than $600, will be reported to the IRS unless the customer is exempt. AEP Ohio is not responsible for any taxes that may be imposed on your business as a result of your receipt of payment. We may require that a W-9 be provided.

Requirements for Custom Project Electricity Savings Calculation

The annual electricity savings must be calculated for custom projects using industry-accepted engineering algorithms or simulation models. The applicant must estimate the annual electricity usage of both the existing and proposed equipment based on the current operation of the facility. Where equipment is replaced prior to the end of its rated service life in order to achieve energy savings, the existing equipment performance may be used as the baseline in the energy savings calculations. Where equipment is replaced due to failure or for other reasons (such as obsolescence or a need for more capacity), the baseline performance used in the savings calculation should be either the minimum performance that would be required by code for that equipment type and application (where a code applies) or the performance of the equipment that would have been selected as the customer's "standard practice" when a code does not apply.

The applicant must be able to clearly describe the method used to calculate the savings. The applicant must provide all assumptions used in the calculations and document the sources for these assumptions.

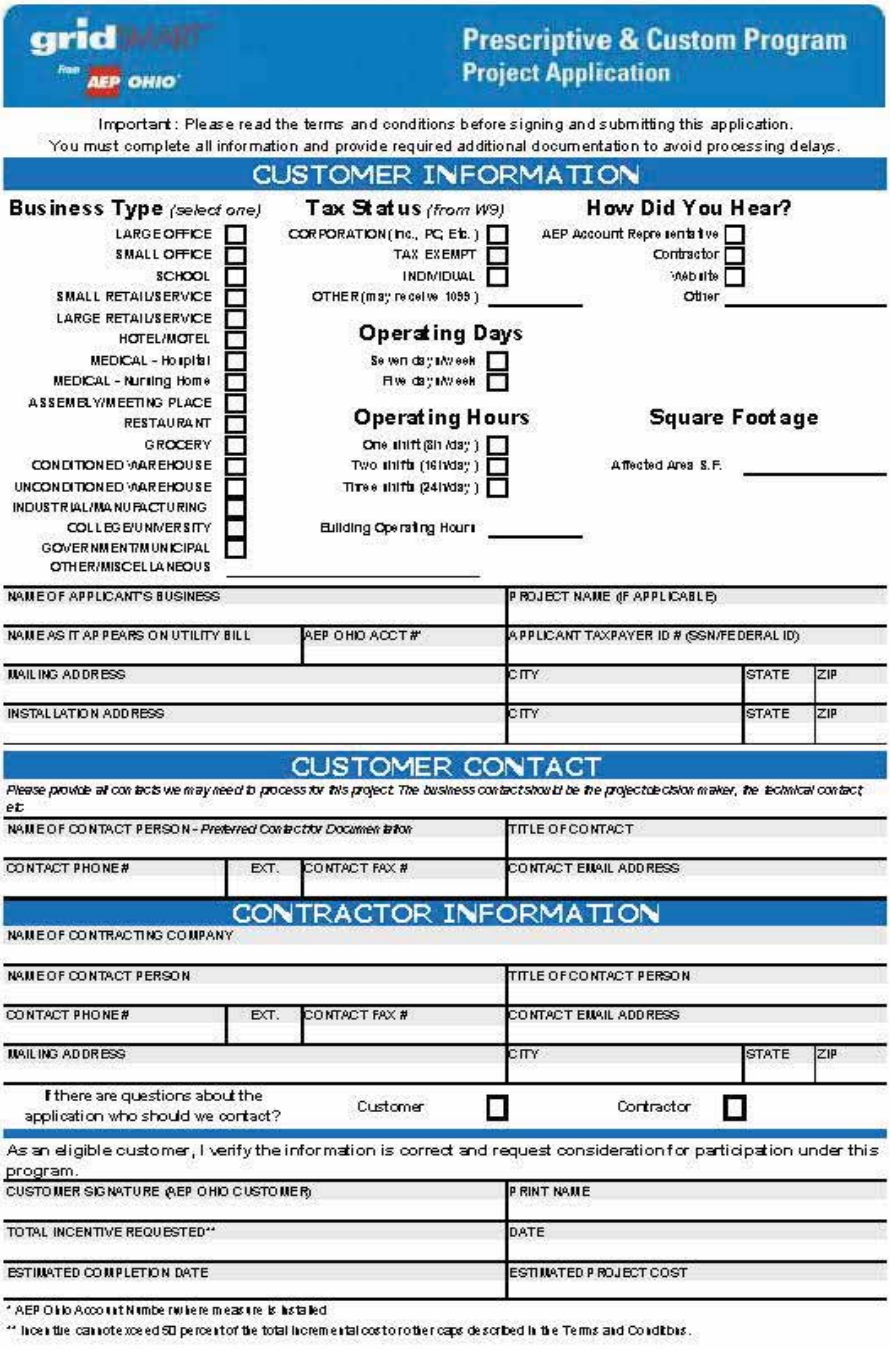
The method and assumptions used by the applicant to calculate the annual savings will be reviewed by AEP Ohio. AEP Ohio is solely responsible for the final determination of the annual energy savings and peak demand reduction to be used in calculating the incentive amount. AEP Ohio also reserves the right to require specific measurement and verification activities including monitoring both before and after the retrofit to determine the incentive.

AEP Ohio may need to conduct inspections both before and after retrofit projects to verify equipment and operating conditions. For custom projects, the applicant is required to submit a Pre-approval Application while the existing equipment is still in operation in order to allow AEP Ohio the opportunity to verify the existing equipment.

Disclaimer

AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program. AEP Ohio has no obligations regarding and does not endorse or guarantee any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures. AEP Ohio is not responsible for the proper disposal/recycling of any waste generated as a result of this project. AEP Ohio is not liable for any damage caused by the operation or malfunction of the installed equipment.

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Prescriptive & Custom Program
Project Application

Important: Please read the terms and conditions before signing and submitting this application.
You must complete all information and provide required additional documentation to avoid processing delays.

CUSTOMER INFORMATION

Business Type *(select one)*

- LARGE OFFICE ☐
- SMALL OFFICE ☐
- SCHOOL ☐
- SMALL RETAIL/SERVICE ☐
- LARGE RETAIL/SERVICE ☐
- HOTEL/MOTEL ☐
- MEDICAL - Hospital ☐
- MEDICAL - Nursing Home ☐
- ASSEMBLY/MEETING PLACE ☐
- RESTAURANT ☐
- GROCERY ☐
- CONDITIONED WAREHOUSE ☐
- UNCONDITIONED WAREHOUSE ☐
- INDUSTRIAL/MANUFACTURING ☐
- COLLEGE/UNIVERSITY ☐
- GOVERNMENT/MUNICIPAL ☐
- OTHER/MISCELLANEOUS _____

Tax Status *(from W9)*

- CORPORATION (Inc., PC, Etc.) ☐
- TAX EXEMPT ☐
- INDIVIDUAL ☐
- OTHER (may receive 1099) _____

Operating Days

- Seven day/week ☐
- Five day/week ☐

Operating Hours

- One shift (8h/day) ☐
- Two shifts (16h/day) ☐
- Three shifts (24h/day) ☐

Building Operating Hours _____

How Did You Hear?

- AEP Account Representative ☐
- Contractor ☐
- Website ☐
- Other _____

Square Footage

Affected Area S.F. _____

NAME OF APPLICANT'S BUSINESS		PROJECT NAME (IF APPLICABLE)		
NAME AS IT APPEARS ON UTILITY BILL	AEP OHIO ACCT #*	APPLICANT TAXPAYER ID # (SSN/FEDERAL ID)		
MAILING ADDRESS		CITY	STATE	ZIP
INSTALLATION ADDRESS		CITY	STATE	ZIP

CUSTOMER CONTACT

Please provide all contacts we may need to process for this project. The business contact should be the project decision maker, the technical contact etc.

NAME OF CONTACT PERSON - *Preferred Contact for Documentation*			TITLE OF CONTACT
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS

CONTRACTOR INFORMATION

NAME OF CONTRACTING COMPANY

NAME OF CONTACT PERSON			TITLE OF CONTACT PERSON		
CONTACT PHONE #	EXT.	CONTACT FAX #	CONTACT EMAIL ADDRESS		
MAILING ADDRESS			CITY	STATE	ZIP

If there are questions about the application who should we contact? Customer ☐ Contractor ☐

As an eligible customer, I verify the information is correct and request consideration for participation under this program.

CUSTOMER SIGNATURE (AEP OHIO CUSTOMER)	PRINT NAME
TOTAL INCENTIVE REQUESTED**	DATE
ESTIMATED COMPLETION DATE	ESTIMATED PROJECT COST

* AEP Ohio Account Number where measure is installed
** Incentive cannot exceed 50 percent of the total incremental cost or other caps described in the Terms and Conditions.

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FINAL APPLICATION AGREEMENT

I understand that the location or business name on the invoice must be consistent with the application information. I understand that AEP Ohio or their representatives have the right to ask for additional information at any time. AEP Ohio's Business Incentives for Energy Efficiency program will make the final determination of incentive levels for this project.

As an eligible AEP Ohio customer, I certify that decisions to acquire and install the indicated energy efficiency measures, which will be demonstrated with supporting documentation required by AEP Ohio, were made and that work was completed on this project on or after Jan 1, 2011. The energy efficiency measures are for use in my business facility and not for resale. Project documentation, including copies of dated invoices for the purchase and installation of the measures and product specification sheets, is included.

I agree to verification by the utility or their representatives of both sales transactions and equipment installation.

I understand that these incentives are available to all customers who pay into the Energy Efficiency and Demand Response (EE/PDR) rider and receive their electricity over AEP Ohio wires regardless from which retail electric supplier the customer has chosen to purchase power.

I certify that the information on this application is true and correct, and that the Taxpayer ID Number and tax status are the applicant's.

I agree that if: (1) I do not install the related product(s) identified in my application, or (2) I remove the related product(s) identified in my application before a period of 5 years or the end of the product life, whichever is less, then I shall refund a prorated amount of incentive funds to AEP Ohio based on the actual period of time in which the related product(s) were installed and operating (or the full amount if the product was never installed). This is necessary to assure that the project's related energy benefits will be achieved.

I understand that the program may be modified or terminated without prior notice.

AEP Ohio reserves the right to refuse payment and participation if the customer or contractor violates Program rules and requirements. AEP Ohio is not liable for incentives promised to customers as a result of misrepresentation of the Program.

I agree to be responsible to comply with any applicable codes or ordinances.

All submissions become the property of AEP Ohio. It is recommended for you to keep to a copy for your records.

I understand that this project must involve a facility improvement that results in improved energy efficiency. I also understand that all materials removed, including lamps and PCB ballasts, must be permanently taken out of service and disposed of in accordance with local codes and ordinances. I understand it is my responsibility to be aware of any applicable codes or ordinances. Information about hazardous waste disposal can be found at: http://www.epa.gov/osw/hazwaste.htm.

The program has a limited budget. Applications will be processed until allocated funds are reserved or spent. Final applications should be received by Dec 16, 2011 to be eligible for funding under the current program period.

I understand that AEP Ohio does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program, and, further, that AEP Ohio has no obligations regarding promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures and does not endorse or guarantee same.

I understand that in the event the application received pre-approval and funds were reserved based upon the application, such pre-approval or reservation, including the specific dollar amount of reservation, does not represent a guarantee that such funds will be paid. Payment of incentives will be based upon the final review of the application and program terms and conditions, as well as the availability of funds.

Any and all energy savings generated by the project described in this application are hereby committed to AEP Ohio in order to count against its respective companies' benchmark requirements in S.B. 221.

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CUSTOM INCENTIVES WORKSHEET

All Custom applications require a pre-application
Please attach supporting documentation as described in the Policies and Procedures Manual.

Prior to submitting application, please contact the AEP Ohio gridSMART program staff.

CUSTOM PROGRAM INCENTIVES		
Incentive Levels	First Year kWh Savings	$0.08/first year kWh
	Peak Demand Reduction	$100/peak kW
Payback Period	Maximum	7 years
	Minimum	1 year***
Caps	% of Total Incremental Cost	50%
	Per Project	$300,000

Item 1

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 2

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 3

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback
Total Custom Project Cost:				
Total Custom Incentives:**				

* Measure Cost is the cost to implement rebated efficiency measures less all costs incurred to achieve other project benefits. The Measure Cost may be the increment required to deliver an efficiency improvement over the base case efficiency.

** Total Custom Incentives may not exceed 50% of the total incremental cost.

***The project simple payback prior to the incentive payment generally should be greater then one year and be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive.

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CUSTOM INCENTIVES WORKSHEET

All Custom applications require a pre-application
Please attach supporting documentation as described in the Policies and Procedures Manual.

Prior to submitting application, please contact the AEP Ohio gridSMART program staff.

CUSTOM PROGRAM INCENTIVES		
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Item 1

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Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 2

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback

Item 3

System Description		kWh Savings	$/kWh	Subtotal
Measure Category:				
Before Retrofit	After Retrofit	On-Peak kW Savings	$0.08	
		Measure Cost*		Customer's Cost per kWh
		Measure Life	On-Peak $/kW	
		Annual Oper. Hrs	$100.00	Simple Payback
Total Custom Project Cost:				
Total Custom Incentives:**				

* Measure Cost is the cost to implement rebated efficiency measures less all costs incurred to achieve other project benefits. The Measure Cost may be the increment required to deliver an efficiency improvement over the base case efficiency.

** Total Custom Incentives may not exceed 50% of the total incremental cost.

***The project simple payback prior to the incentive payment generally should be greater then one year and be less than seven years, or pass cost effectiveness test(s) determined by AEP Ohio to qualify for an incentive.

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Project Application

CUSTOM PROJECTS SPECIFICATIONS

All Custom Applications Require a Pre-Application

Instructions for Energy Savings Calculations for Custom Projects
Custom project incentives are based on first year kWh savings and average on-peak demand savings. Electricity savings must result from efficiency improvements. The term Peak Hours is defined as the time between June 1st and August 31st on weekday, non-holidays, between the hours of 3:00 PM and 6:00 PM. If a measure is covered under prescriptive and does not qualify for the prescriptive rebate, it can not be applied for as a custom project.

Custom applications must be accompanied by detailed engineering calculations that document the annual total energy savings and on-peak demand savings.

The following serve as guidelines for the minimum required documentation. Please see the Policy and Procedure Manual for more detail.

Energy Savings Calculations
Provide calculations documenting the predicted energy consumption of the existing (or baseline) and proposed system using appropriate analytical tools and clearly stated assumptions. Calculations may be performed by "hand," but spreadsheet analysis or more rigorous modeling is preferred. All analysis should be provided in electronic format. All assumptions such as operating hours, existing and proposed equipment operational details must be presented. Engineering algorithms and procedures from recognized technical organizations such as ASHRAE, SMACNA, ANSI, etc. must be used. Use rated performance factors tested under accepted procedures specified by recognized rating agencies such as AHRI, ANSI, ASTM, etc. Provide an explanation when equipment performance rating conditions vary from standard conditions.

In support of the calculations, extensive documentation must be provided that provides the basis for the savings estimates. The documentation must provide information on the equipment operating schedule, daily and seasonal load profile, and baseline AND energy efficient equipment performance at the operating loads. Typical documentation for custom projects often includes:

- Baseline/existing and proposed equipment make and model number including operating voltage and rated full load amps.
- Existing equipment condition and age
- Engineering or architectural drawings and "equipment schedule" sheets
- Component specification sheets that include part load efficiency or performance factors
- Spreadsheet calculations or input/output files and results from system modeling or other engineering analysis using accepted engineering algorithms and practices
- Log sheets, trend logs from a building management system, or other operating documentation that are often necessary to document operating hours and equipment loading, and used as a basis for the calculations (in some cases, short term monitoring may be required to document the load profile)
- Control sequence of operations that are necessary where controls play a part in the savings equation

Additional documentation, other than that described in the application, may be required for program participation. Larger projects may also require pre and post project sub-metering, or monitoring of loads and/or power input as part of another measurement and verification activity to demonstrate the actual energy savings realized.

Baseline for Custom Analysis
Where equipment is replaced prior to the end of its rated service life in order to achieve energy savings, the existing equipment performance may be used as the baseline in the energy savings calculations. Where equipment is replaced due to failure or for other reasons (such as obsolescence or a need for more capacity), the baseline performance used in the savings calculation should be either the minimum performance that would be required by code for that equipment type and application (where a code applies) or the performance of the equipment that would have been selected as the customer's "standard practice" when a code does not apply.

APPENDIX K

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AEP Ohio
Energy Efficiency/
Peak Demand Reduction Plan
Year (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report:
Self-Direct Program

Presented to

AEP OHIO®
A unit of American Electric Power

May 11, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, Ohio 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Ryan Del Balso, Managing Consultant
608.497.2325
ryan.delbalso@navigant.com

Argene McDowell, Senior Consultant
608.497.2330
argene.mcdowell@navigant.com

Adam Knickelbein, Managing Consultant
303.728.2507
adam.knickelbein@navigant.com

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Section E. Executive Summary

This document presents a summary of the findings and results from the evaluation of the 2011 Self-Direct Program implemented by AEP Ohio for the program year January 1, 2011 through December 31, 2011 (PY 2011).[1]

The purpose of the Self-Direct Program is to allow qualifying business customers to commit their already completed energy efficiency and summer peak demand reduction resources to AEP Ohio. Resources are committed on a case-by-case basis and approved by the Public Utility Commission of Ohio (PUCO) through a special arrangement. The 2011 program targeted projects installed after January 1, 2008 and prior to the date of acceptance into the program (within the preceding three years). Customer payments are made following PUCO approval which may occur after the program end date. The 2009 program did not make incentive payments until 2010 and a few in 2011, and the 2010 program also made incentive payments in 2011.

The Self-Direct Program is marketed, administered, and delivered by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc. (KEMA), in coordination with AEP Ohio.

E.1 Evaluation Objectives

The three major objectives of the evaluation are to: (1) quantify verified gross energy savings and summer peak demand reduction[2] from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost-effectiveness.

E.2 Evaluation Methods

The data collected for evaluation of the PY 2011 Self-Direct Program were gathered during a number of activities, including in-depth telephone interviews with program managers and the implementation contractor (KEMA), in-depth telephone interviews with participating customers and trade ally "Solution Providers," tracking system data review, and technical

[1] Program Year 2011 (PY 2011) began January 1, 2011 and ended December 31, 2011. The 2011 Self-Direct Program targeted projects installed after January 1, 2008 and prior to December 31, 2010, although the program also accepted projects completed prior to December 16, 2011.
[2] The summer on-peak period for claiming demand reduction is defined as non-holiday weekdays from 3 pm through 6 pm, June 1st through August 31st.

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review of a sample of projects. Table E-1 provides a summary of these data collection activities including the targeted population, the sample frame, and timing in which the data collection occurred.

Table E-1. Data Collection Activities for PY 2011 Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	2011 Self-Direct projects submitted to PUCO by 12/31/2011	AEP Ohio Tracking Database	-	All	September 2011 through February 2012
In-depth Interviews	Program staff at AEP Ohio and the implementation support contractor	Contacts from AEP Ohio	-	5 KEMA staff; 1 AEP Ohio Staff	February 2012 through March 2012
In Depth Interviews	2011 program customer participants	Application Form Input Tracking Database	Selected by Availability and Business Type	14	December 2011 through March 2012
In Depth Interviews	Solution Providers to the 2011 program and non-participating Solution Providers	Application Form Input Tracking Database	Random selection	15	December 2011 through February 2012
Project Application File Review	Projects in the 2011 Program	AEP Ohio Tracking Database	Stratified Random Sample	57	December 2011-March 2012
Onsite Data Collection	Projects in the 2011 Program	AEP Ohio Tracking Database	Random Subset of Project Application File Review	27	December 2011-April 2012

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E.3 Key Findings and Recommendations

The impact results for the PY 2011 Self-Direct Program are shown in Table E-2.

Table E-2. Gross Savings Estimates for PY 2011 Self-Direct Prescriptive Program

Program	Program Goals		Ex-Ante Reported Savings		Verified Gross Savings	
	Gross MWh	Gross MW	Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**NA**	**NA**	**86,991**	**13.831**	**98,325**	**14.450**

The realization rate (defined as verified gross savings/ex-ante reported savings) is 1.13 for gross energy savings, and 1.04 for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Self-Direct projects in the sample is ± 8 percent for the energy realization rate and ± 16 percent for the demand realization rate.

Key Impact Recommendations

1. AEP Ohio should consider increasing targeted outreach efforts to underrepresented business sectors in 2012. There were only a few warehouse projects in 2011, but these represented a large portion of program savings. This may be an under developed sector for the program. The Office Sector was underrepresented in the program and could offer additional opportunities.

2. The default demand savings for Occupancy Sensors should be reviewed. The KEMA Appendix A workpapers show a demand savings of only 0.01 Watt per connected Watt. This appears to be an order of magnitude low and should be adjusted. Several sampled projects included occupancy sensors which had a significant impact on the project realization rates.

3. An analysis of the verified measure level data shows a few measure types that seem to consistently differ significantly from the evaluation findings. KEMA should review the default savings assumptions for Interior Occupancy Sensors, Exterior Controls, Interior 4-ft U-Tube T12 to T8, and Interior Permanent Lamp Removal. Of these measures, the largest concern is with the Occupancy Sensors and Exterior Controls.

4. KEMA should try to ensure that all projects are entered into the database on a timely basis. In particular the largest project (five times larger than the next largest project) in the program had only the energy savings entered into the database, but not the demand savings. To calculate the overall program realization rates, it was necessary for Navigant to

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enter in the ex-ante demand savings manually, otherwise, it would have had a significant impact on the program level realization rates.

5. KEMA should consider scrutinizing savings for all large projects. The evaluation sampled one large project and found a simple math error in the customer supplied savings calculations that greatly overestimated savings. This was carried over into the claimed savings resulting in a low realization rate for the project.

6. For all projects based on billing analysis, care should be taken when claiming savings that cannot be statistically supported when based upon a poorly fitting regression curve. If the regression curve is not reliable, the savings estimates based on that curve will not be reliable either. In these cases it is recommended to, either revise the regression analysis and look for ways to improve its reliability, or use a different methodology to estimate savings for that project.

7. For custom measures installed through the Self-Direct Program, Navigant recommends that the Self-Direct Submittal spreadsheet include a separate tab that shows the calculation of the demand and energy savings, including sources for all assumptions.

Key Process Recommendations

1. AEP Ohio and KEMA should consider continuing to focus marketing resources on special customer segments or measures to maximize the value of the marketing dollar.

2. The Business Programs should have a direct link listed on the AEPOhio.com home page. During 2011, there was only a direct link to the Residential Program page and not the Business Program page.

3. KEMA should consider other methods to communicate the project tracking number. Currently, customers and Solution Providers that complete applications for their customers are informed of the unique identification number assigned to each project. However, the communication of the tracking number appears to be frequently missed by both customers and Solution Providers as they report they have no way to identify a project.

4. The Self-Direct Program had a successful year in 2011 and planned improvements for 2012 promise to continue this success in 2012. The path of engaging Solution Providers in large groups and one-on-one as needed should be continued.

5. AEP Ohio and KEMA should consider changing the program operations to eliminate the January 'dead zone'. It restricts the momentum of the program by forcing interested

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customers and Solution Providers to wait until February to access the program even though they are eager to move forward in January and may become resentful of any delay.

6. Plans are currently underway to offer an online application and make other modifications to the website to better position the business programs. Navigant suggests that AEP Ohio conduct usability testing on these changes to confirm they are successful.

7. AEP Ohio and KEMA should consider planning a phase-in of the online application to provide customers time to adjust to the new system. They might consider also accepting the offline applications to accommodate customers who may not able or willing to accept a web-based application.

8. AEP Ohio and KEMA should consider brainstorming ways to process applications in a more timely manner. The multiple reviews conducted by three separate organizations (KEMA, AEP Ohio, and the Commission) tend to slow the processing of complex projects.

9. The 'customer blitz', while an innovative way to teach customer representatives how to sell the program, may not be sustainable in the long run given the amount of additional effort required by AEP Ohio staff and program staff beyond their normal responsibilities.

10. AEP Ohio and KEMA should continue to focus marketing resources on special customer segments or measures to maximize the value of the marketing dollar.

11. Solution Providers' interest in all the business programs is at an all-time high. It is unclear how AEP Ohio will be able to sustain this high level of interest over the long term. It is likely that new 'innovative' ideas may need to be developed on a regular basis if AEP Ohio wishes to sustain this level of activity.

12. KEMA should consider improving methods for tracking a project. Each application is assigned a unique number that is used in the KEMA database and is linked to that paper application. The tracking number should be shared with the customer in a more memorable way for ease in communicating or answering questions later in the process. Customers with multiple projects become very frustrated when the correct project cannot be identified.

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Section 1. Introduction and Purpose of the Study

The purpose of the Self-Direct Program is to allow qualifying business customers to commit their already completed energy efficiency and summer peak demand reduction resources to AEP Ohio. Resources are committed on a case-by-case basis and approved by the Public Utility Commission of Ohio (PUCO) through a special arrangement. Eligible customers are non-residential customers with energy consumption over 700,000 kWh per year from AEP Ohio, or are part of a national account involving multiple facilities in one or more states. Customers must be accepted into the program by AEP Ohio and the PUCO and must sign a participation agreement.

The program launched in mid-2009 and experienced strong participation in the first year. Participation dropped substantially in year 2 (2010), but has picked up again in year 3 (2011), although still less than in the 2009 program year.

The Self-Direct Program rewards qualifying customers who submit previously installed projects through one of two energy efficiency credit options: an energy efficiency credit payment of 75 percent of the calculated incentive amount under the Prescriptive or Custom Program; or an exemption from the Energy Efficiency/Peak Demand Reduction (EE/PDR) rider for a specified number of months. The 2011 program targeted projects installed after January 1, 2008 and prior to the date of acceptance into the program (within the preceding three years). Customer payments are made following PUCO approval which may occur after the annual program end date. The 2009 program did not make incentive payments until 2010 and 2011, and the 2010 program also made some incentive payments in 2011. The Self-Direct Program was marketed, administered, and delivered by AEP Ohio.

1.1 Evaluation Overview

The three major objectives of the evaluation are to: (1) quantify energy savings and summer peak demand reduction from the program during program year (PY) 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) provide data to determine program cost-effectiveness.

The evaluation will seek to answer the following key research questions.

1.1.1 Cross Cutting Questions

1. Review progress on issues identified in 2010 evaluation.

2. Compare 2010 findings with 2011 findings.

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3. Have changes made to the 2011 program been effective in increasing satisfaction and/or participation?

4. Are customers using the Self-Direct Program as seed money to implement other energy efficiency projects through the Custom or Prescriptive Programs? If not, for what purpose is the incentive being used? Do customers have other energy efficiency projects planned for next year that will depend on incentive dollars from an AEP program? Are customers using the incentive to implement construction projects that do not qualify for an incentive?

1.1.2 Impact Questions

1. Were the impacts reported by the program achieved?

2. What were the realization rates? (Defined as evaluation-verified (ex-post) savings divided by program-reported (ex-ante) savings.)

3. What are the benefits and costs and cost effectiveness of this program?

1.1.3 Process Questions

Marketing and Participation

1. Is the program outreach to customers through the program and program Solution Providers effective in increasing awareness of the program opportunities?

2. How did customers become aware of the program? What marketing strategies could be used to boost program awareness?

Program Characteristics and Barriers

1. What areas could the program improve to create a more effective program for customers and Solution Providers partners and help increase the energy and demand impacts?

2. Is the application process efficient and easy for customers to navigate? Does the process present any barriers to program participation?

3. Are customers and program partners satisfied with the aspects of program implementation in which they have been involved?

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Administration and Delivery

1. Are the program administrative and delivery processes effective for smoothly providing incentives to customers?

2. What were the program satisfaction and customer service experiences?

3. Are the communication processes with participants effective?

4. What are the verification procedures for the program? Have they been implemented in a manner consistent with design? Do they present a barrier to participation or perceived undue burden on customers?

The PY 2011 evaluation presents findings for each of these process questions. Findings were combined for each rate zone[3] to be consistent AEP Ohio's approach of delivering a single program statewide. Customers from both rate zones were represented in the samples.

[3] AEP Ohio has recently gone through a merger of two regional operating companies which resulted in the program participation being distributed across two different rate zone territories.

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Section 2. Description of the Program

This evaluation report covers the Self-Direct Program element of the AEP Ohio business energy efficiency and peak demand reduction programs.

2.1 Program Description

2.1.1 Business Sector Programs

In 2008 Ohio passed comprehensive energy legislation, which includes an advanced energy portfolio standard (AEPS) 2008 Senate Bill (SB) 221, signed into law by Governor Ted Strickland on May 1, 2008.[4] The law directs Ohio utilities to implement programs to help their customers use electricity more efficiently, and requires electric utilities to achieve energy savings of 22.2 percent of baseline electricity use by the end of 2025 through energy efficiency programs. Utilities must also implement programs to reduce peak energy demand one percent beginning in 2009, and an additional 0.75 percent per year through 2018, for a total of 7.75 percent.

AEP Ohio launched a set of EE/PDR programs for 2009-2011 under a three-year action plan with oversight by the PUCO. The 2011 Self-Direct Program was one of five energy efficiency program elements available to AEP Ohio non-residential customers during 2011:

- The **Self-Direct Program** rewards qualifying customers who submit previously installed projects through one of two energy efficiency credit options: an energy efficiency credit payment of 75 percent of the calculated incentive amount under the Prescriptive or Custom Program; or an exemption from the EE/PDR rider for a specified number of months. The 2011 program targeted projects installed after January 1, 2008 and prior to December 31, 2010.
- The **Prescriptive Program** provides a streamlined incentive application and quality control process, and is intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting, and the application form was eligible for use in early 2010. In April 2010, AEP Ohio launched the 2010 Prescriptive Program and application form that expanded the program to additional end-uses such as HVAC, and refrigeration systems, and increased the number of eligible

[4] http://www.legislature.state.oh.us/bills.cfm?ID=127_SB_221

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lighting measures. In 2011, the Prescriptive Program staff assigned more marketing resources to attracting non-lighting projects.

- The **Custom Program** offers incentives to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects.
- The **Express Install Program** provides one-stop turn-key services to small businesses (less than 200,000 kWh consumption per year) for lighting and refrigeration measure upgrades. Approved service providers recruit participants, identify savings opportunities, complete program paperwork and install measures for the program. The Express Install Program launched in November 2010. The program had limited participation in Program Year 2010, but saw broader appeal in 2011. Savings estimates are based on prescriptive formulas for simplicity and auditing purposes.
- The **New Construction Program** seeks to capture energy efficiency and peak load reduction opportunities through a comprehensive effort to influence building design and construction practices. It does so by providing incentives to new facility owners for the installation of high-efficiency lighting, HVAC, building envelope, refrigeration and other equipment and controls, and by providing design assistance to the architects and engineers that are designing new buildings. The key design assistance tool is building simulation modeling of more efficient building designs. The New Construction Program launched in March 2011.

The AEP Ohio programs are funded on an annual calendar year basis. Funding in any given program year is limited to that year's budgeted amount and, therefore, incentives are paid on a first-come, first-served basis until the program year's incentive funds are exhausted. Funds may be shifted between the multiple business program elements based on participant response and approval of the PUCO. The 2011 business sector portion of the EE/PDR Action Plan is based on the savings goals as follows in Table 2-1.

Table 2-1. Business Sector Programs Plan Savings Goals and Budgets

Business Sector Programs (incremental annual net savings at meter)	2011
Energy Savings (GWh)	249.9
% Savings of Sector Sales	0.70%
Demand Savings (MW)	93.5
% Savings of Sector Sales	1.35%
Total Cost ($ millions)	$33.9

Source: 2009-2011 EE/PDR Plan dated November 5, 2009, approved by the PUCO, March 13, 2010.

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AEP Ohio retained KEMA Services Inc. (KEMA) as its program administrator responsible for day-to-day operations of the Business Programs. AEP Ohio Prescriptive, Custom, Business Express, New Construction and Self-Direct Program Coordinators report to an overall Business Program Manager. An AEP Ohio staff person supports outreach and marketing, and other AEP Ohio staff support planning, evaluation, and reporting.

2.1.2 Self-Direct Program Description

AEP Ohio business customers in the state of Ohio with annual electricity usage greater than 700,000 kWh or who are part of a national or regional account with multiple facilities in one or more states are eligible to apply to the Self-Direct Program. Projects are accepted into the Self-Direct Program by AEP Ohio and the PUCO on a case-by-case basis. Projects must have an installation date within three years of the date of acceptance into the program. Projects are required to produce verifiable and persistent energy savings (kWh) and/or peak demand reduction (kW) for at least five years from the date of installation. Projects are also required to have a payback period between one and seven years without the incentive applied, or pass cost-effectiveness tests determined by AEP Ohio.

Customers have a choice of two incentive plans for receiving an energy efficiency credit, and may choose an incentive payment or the EE/PDR Rider Exemption. The EE/PDR rider is an additional fee based on usage that is added to all customer bills for recovery of EE/PDR program implementation costs. Customers choosing the incentive payment would:

- Receive a payment of 75 percent of the calculated incentive under the Prescriptive Program or Custom Program (kWh only)
- Stay in the EE/PDR rider and would be eligible to participate in other energy efficiency programs offered by AEP Ohio
- Be encouraged to use energy efficiency credit payments to help fund future energy efficiency and demand reduction projects

Customers choosing the EE/PDR exemption would:

- Receive an exemption from the EE/PDR rider for a specified number of months
- Not be eligible to participate in any other energy efficiency programs offered by AEP Ohio during the period of exemption

Most customers choose the reduced incentive rather than the EE/PDR rider exemption.

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The Self-Direct Program[5] is unusual in that the program offers energy efficiency incentives to qualified business customers for energy efficiency projects completed in the last three years that resulted in energy savings and peak demand reduction and is provided for in the law. The goal of the Self-Direct Program is to educate non-residential customers on all of the AEP Ohio programs, and to provide start-up funds for medium to large customers to participate in other AEP Ohio programs. The Self-Direct Program opens the door to customers who have implemented energy efficiency improvements in the past three years. In addition, it provides a vehicle to promote energy efficiency with customers and support employment in the State of Ohio. The Self-Direct incentives are a way to 'prime the market' for more energy efficiency participation by providing start-up funds for the next project that qualifies for the Custom or Prescriptive Programs, and to preempt customer complaints that they are not receiving a return on their required payments into the EE/PDR fund.

One might theorize that the Self-Direct Program would experience declining participation over time as customers become aware of the Custom and Prescriptive Programs and elect to receive 100 percent of the calculated incentive rather than accept the 75 percent rebate offered through the Self-Direct Program. However, the proportion of customers that do not complete the application in time, are too busy to complete the application, or who are not aware of their other program options appears to be holding comparatively steady. AEP Ohio encourages Solution Providers to complete the application for the customer at the time of sale when they have easy access to the necessary information from the invoice.

Implementation Strategy

KEMA and AEP Ohio program coordinators and Customer Service staff share responsibility for promoting the Self-Direct Program. For instance, KEMA and AEP Ohio staff partner to present informational presentations at trade shows/expos/seminars and to community groups such as the Chamber of Commerce. In 2011 they expanded their marketing focus to special interest segments such as variable speed drives for motor trade allies, and efficiency projects for customers with data centers, a group of customers identified as a fertile market for the program that had consistently under performed. AEP Ohio is currently launching a Business Program tailored for data centers.

Another joint marketing effort in 2011 used AEP Ohio customer account representatives and was called the 'customer blitz'. In this effort, program coordinators and KEMA staff joined account representatives to present the details of all the business programs to large, non-participating customers. They targeted these customers in a specific geographic area. In addition to identifying opportunities for these large customers to participate in the Self-Direct,

[5] Information obtained from the Self-Direct Fact Sheet 0210.

Custom or Prescriptive Programs, program coordinators and KEMA program managers used the 'customer blitz' to model the sales process for account representatives.

Roles of the Implementation Contractor

KEMA is responsible for program implementation on a day-to-day basis. KEMA collects the applications, track the data, prepare the documents for filing with the commission and provide the engineering staff for the custom projects. KEMA provides the first level of application review and processing, and calculates the incentive. They may conduct a peer engineering review of more complex projects. AEP Ohio reviews the applications a second time and handles all submission of Self-Direct projects to the PUCO. KEMA prepares the documents for PUCO submittal and AEP Legal files the joint application on the PUCO's public docket. Once the PUCO approves the application, KEMA releases the project for payment and mails the incentive check. The PUCO has 60 days to approve the incentive payment. If no objection is raised within that time, the project is considered approved.

KEMA provides the project and measure tracking system, conducts pre- and post-site metering and inspections and issues checks after the project received PUCO approval. KEMA handles customer communication regarding application processing and approvals, sometimes working through the AEP Ohio Customer Service Representatives. KEMA created a database to track the status of projects.

In addition, KEMA has a large role in marketing the program by providing informational presentations at AEP Ohio sponsored seminars and meetings and also at trade organization meetings and events. KEMA hired marketing managers to create new program fliers in consultation with AEP staff. The AEP Corporate Communications Group hired a firm to review and edit the new case studies. These are posted on the web site and are handed out to customers.

Both KEMA and AEP Ohio agreed that they work collaboratively on the Self-Direct Program. Program managers and AEP coordinators may discuss details of the program numerous times a day. Team meetings are held weekly to coordinate and decide program issues. KEMA participates in AEP Ohio Business Program quarterly seminars for customers and/or Solution Providers. In 2011, KEMA and AEP Ohio made an effort to convince various Solution Providers that the program should be added to their tool box to strengthen their relationship with customers. Their outreach has been successful. In January 2012, over 500 Solution Providers attended Program seminars, more than double the attendance in 2011.

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Program Timeline

- June 1, 2009 – The 2009 program targeted projects installed after January 1, 2006 and prior to December 31, 2009. 2009 Self-Direct projects were submitted to PUCO by 12/31/2009. No projects were approved by PUCO in 2009; hence no incentives were paid to program participants in 2009. During 2009, improvements were made to the application form in response to customer feedback.
- December 31, 2009 – The 2009 Self-Direct Program officially ended, however, a few unfiled projects from 2006 were filed in early 2010
- January 1, 2010 - The 2010 program targeted projects installed after January 1, 2007 and prior to December 31, 2010
- February 11, 2010 – First 2009 program projects approved by PUCO and incentive payment made on February 26, 2010
- April, 2010 – Launched Solution Provider network and the 2010 Prescriptive-Custom Application Form which expanded prescriptive lighting measures and added prescriptive rebates for HVAC equipment, refrigeration, and other measures.
- September 15, 2010 - AEP Ohio withholds applications from PUCO until the program requirements are finalized
- December 8, 2010 - First batch of 2010 projects delivered to PUCO
- December 31, 2010 – The 2010 Self-Direct Program ended, projects from 2007 were filed in early 2011
- February 1, 2011 – Self-Direct program re-launched for 2011
- February 2, 2011 - Final batch of 2010 projects delivered to PUCO
- October 1, 2011 – December 15, 2011 – Solution Provider Bonus was offered

» December 15, 2011 – The 2011 Self-Direct Program closed to new applications

Program Delivery Mechanisms and Marketing Strategy

The AEP Ohio Customer Services Group manages customer relationships. The Self-Direct Program leveraged the close relationships Customer Services account managers have with managed accounts (those accounts with an account manager specifically assigned to the customer) to identify projects that would qualify for the program. While program staff is

currently marketing the Business programs to individual customers through account managers and Solution Providers, staff also expressed a need to do more general outreach as the program matures and goals get harder to meet.

In 2009, AEP Ohio began educating lighting contractors about the Self-Direct, Custom and Prescriptive Programs. This process has expanded with the development of the Solution Provider Network. AEP Ohio EE/PDR staff is also involved in a collaborative of business and customer advocate associations such as the Ohio Manufacturing Association, Ohio Hospital Association, Chamber of Commerce, the Industrial Energy Users, the Ohio Energy Group, Association of Independent Colleges and Universities and other statewide groups that work with large customers. These organizations help promote the program to their members. In 2010, AEP Ohio began reaching out to architects and consulting engineers.

Throughout the program, KEMA marketing staff and AEP Ohio marketing staff have jointly developed presentations and collateral materials. In 2011, AEP Ohio focused on working with professional groups to market the business programs. KEMA also provided outreach to civic and professional organizations to promote the program. As part of this effort, AEP Ohio presented a webinar to customers through the Ohio Manufacturers Association.

Solution Provider Participation

AEP Ohio and KEMA launched a Solution Provider/trade ally network of contractors in April of 2010. This is a network of contractors that have been trained on the program, have applied to market the program, and are listed on the AEP Ohio web site as a registered contractor for business sector programs. However, Solution Providers can participate in a program without registering with AEP Ohio. Through 2011, about 345 Solution Providers have been trained or approved to market the AEP Ohio business sector programs.

KEMA continues to deliver a newsletter for Solution Providers and holds meetings each year to inform and recruit Solution Providers. Solution Provider trainings were held at the end of January, 2011 at a number of sites around the service area. During the program year additional trainings were conducted as needed.

The Self-Direct Program is a way for customers to receive an incentive for work they have already done and use that money for additional energy efficiency projects. When AEP Ohio hears that customers don't have the money for Prescriptive or Custom Projects, they encourage Solution Providers to find projects that have already been completed and submit them to the Self-Direct program to help fund future projects.

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2.2 2011 Self-Direct Program Participation

Navigant was able to extract key program participation data from AEP Ohio's tracking database, which was provided in both SAS data sets and Excel spreadsheet format. Database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was linked by a unique project number to measure level information – one tab per measure category (Lighting, Custom, HVAC, etc.). The technical basis for AEP Ohio's ex-ante reported gross savings is described in Section 3.1.1.

Table 2-2 and Figure 2-1 provide a profile of 2011 program year Self-Direct participation at the project level, while Table 2-3 provides detailed measure level breakouts.

Participation was highest within the Industrial and Manufacturing sector, which combined for 62 percent of reported energy savings. Participation was also high within the schools segment, which accounted for the highest percentage of individual project applications at 23 percent (74 project applications). The Government/Municipal sector accounted for 11 percent of project applications, but only 2 percent of reported energy savings.

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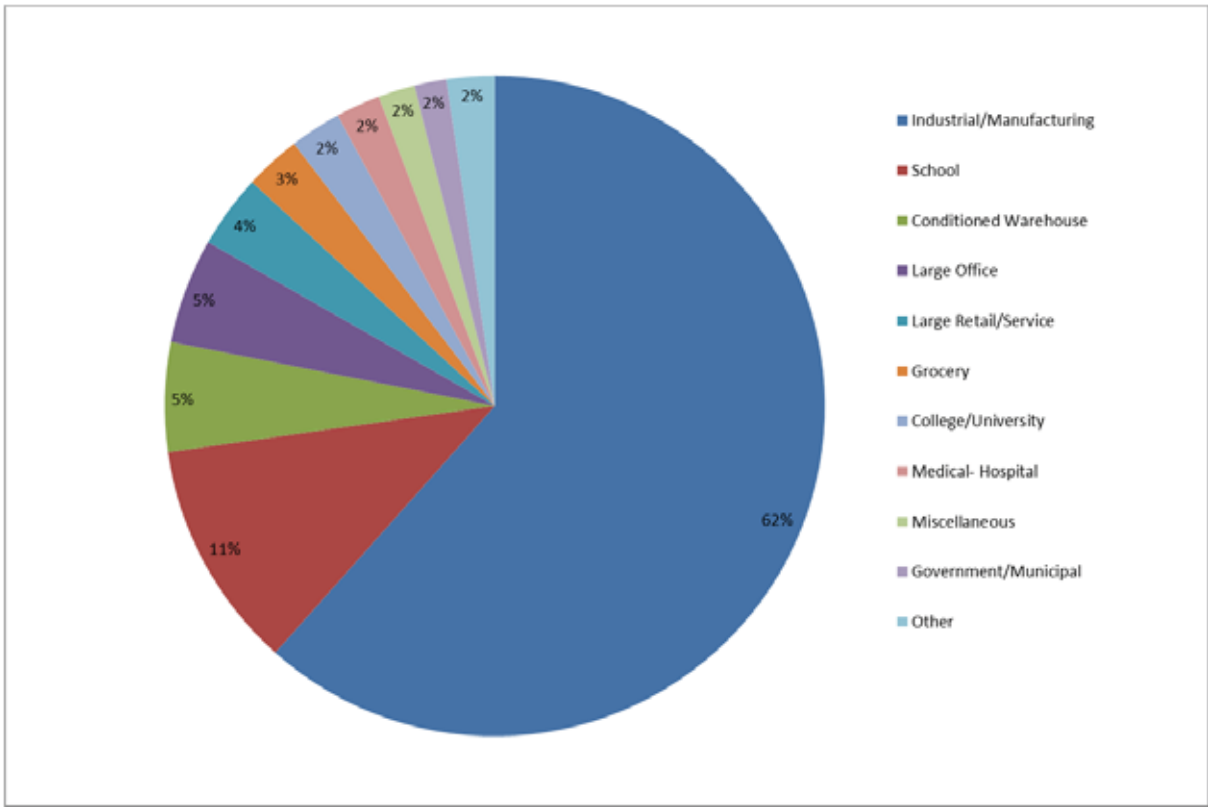
Table 2-2. PY 2011 Self-Direct Program Participation by Business Type

Business Type	Project Count		Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Assembly	1	0%	52	0%	0.012	0%
College/University	22	7%	2,178	3%	0.558	4%
Conditioned Warehouse	8	3%	4,636	5%	1.089	8%
Government/Municipal	34	11%	1,372	2%	0.510	4%
Grocery	14	4%	2,391	3%	0.385	3%
Hotel/Motel	1	0%	506	1%	0.120	1%
Industrial/Manufacturing	58	18%	53,570	62%	4.744	34%
Large Office	18	6%	4,484	5%	1.323	10%
Large Retail/Service	26	8%	3,125	4%	0.490	4%
Medical- Hospital	15	5%	1,899	2%	0.390	3%
Medical- Nursing Home	1	0%	15	0%	0.011	0%
Miscellaneous	13	4%	1,563	2%	0.283	2%
Restaurant	16	5%	562	1%	0.064	0%
School	74	23%	9,736	11%	3.459	25%
Small Office	3	1%	524	1%	0.279	2%
Small Retail/Service	7	2%	95	0%	0.026	0%
Unconditioned Warehouse	4	1%	284	0%	0.088	1%
Total	**315**	**100%**	**86,991**	**100%**	**13.831**	**100%**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from January February 28, 2012.

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Figure 2-1. PY 2011 Self-Direct Program MWh Savings by Business Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from January February 28, 2012.

Overall, custom measures were the largest program contributor to reported savings at the end use level where they provided 49 percent of reported energy savings. Lighting made up the next highest percentage of reported energy savings at 40 percent.

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Table 2-3. PY 2011 Self-Direct Program Participation by Measure Type

End Use Type	Measure	Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Custom	Custom	42,905	49%	3.334	24%
HVAC	Chillers, Air-Cooled	1,486	2%	2.046	15%
HVAC	Chillers, Water-Cooled	800	1%	0.673	5%
HVAC	Unitary, Split, or Packaged Terminal AC/HP	129	0%	0.122	1%
Ice Maker	EE Ice Maker	5	0%	0.001	0%
Lighting	Exterior Controls	42	0%	0.000	0%
Lighting	Exterior LED or Induction	15	0%	0.000	0%
Lighting	Exterior LED traffic lights	76	0%	0.009	0%
Lighting	Exterior Pulse Start or Ceramic	14	0%	0.000	0%
Lighting	Exterior Specialty/High Wattage Screw-in CFLs (>31W)	56	0%	0.000	0%
Lighting	Interior 2ft/3ft T12 to T8 or T5	32	0%	0.007	0%
Lighting	Interior 4-ft U-Tube T12 to T8	37	0%	0.007	0%
Lighting	Interior CFL - Screw-in	579	1%	0.125	1%
Lighting	Interior CFL - Specialty (Downlight, Dimmable or 3-way)	77	0%	0.017	0%
Lighting	Interior Cold Cathode	2	0%	0.000	0%
Lighting	Interior Daylight Sensor Controls	144	0%	0.035	0%
Lighting	Interior HP T8 - 4-ft Lamp and Ballast	2,065	2%	0.395	3%
Lighting	Interior HW CFL	44	0%	0.011	0%
Lighting	Interior LED Lamp	16	0%	0.003	0%
Lighting	Interior LED, T-1, or Electroluminescent Exit Signs	309	0%	0.040	0%
Lighting	Interior Occupancy Sensor	3,408	4%	0.029	0%

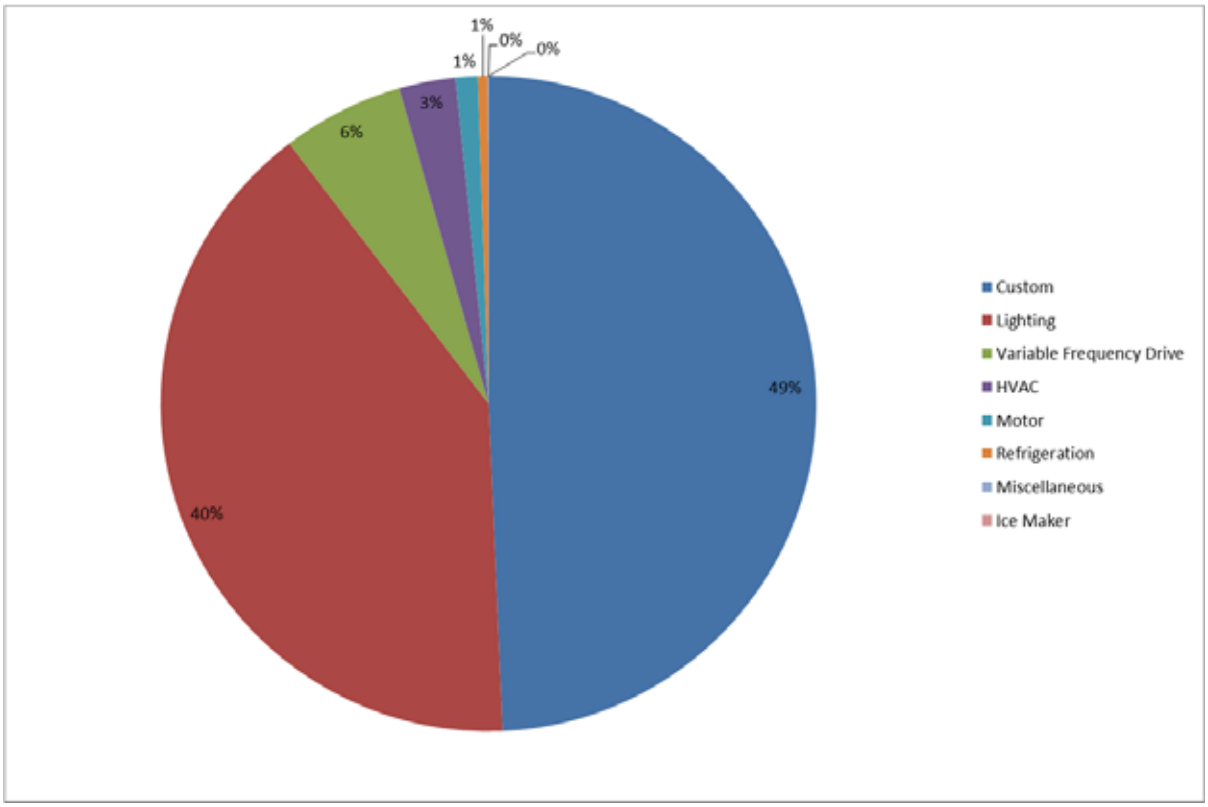
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End Use Type	Measure	Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Lighting	Interior Permanent Lamp Removal	238	0%	0.055	0%
Lighting	Interior Pulse Start or Ceramic	2	0%	0.001	0%
Lighting	Interior Reduced-Wattage T8s	973	1%	0.261	2%
Lighting	Interior T12 to T5 retrofit - T5 lamps and new ballast	25	0%	0.005	0%
Lighting	Interior T8/T5 New Fluorescent Fixture w/Electronic Ballast	22,881	26%	4.391	32%
Lighting	LPD	4,008	5%	1.048	8%
Miscellaneous	Networked Power Management Software	30	0%	0.000	0%
Motor	Motor	950	1%	0.154	1%
Refrigeration	Food Service	196	0%	0.038	0%
Refrigeration	Refrigeration	222	0%	0.027	0%
VFD	Non HVAC VSD < 200HP	2,029	2%	0.424	3%
VFD	VFD for HVAC	3,201	4%	0.575	4%
		86,998	**100%**	**13.831**	**100 %**

Source: Evaluation analysis of tracking data from AEP Ohio database exports from January February 28, 2012.

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Figure 2-2. PY 2011 Self-Direct Program MWh Savings by Measure Type



Source: Evaluation analysis of tracking data from AEP Ohio database exports from February 28, 2012.

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Section 3. Methodology

For Self-Direct Program participants, Navigant conducted impact and process evaluation activities following the methodologies outlined below.

3.1 Analytical Methods

3.1.1 Impact Evaluation Methods

The objective of the impact evaluation was to verify the ex-ante reported gross savings in the Self-Direct Program tracking system. Savings verification was conducted through a multi-step approach:

- **Tracking System Savings Review**: to identify potential adjustments to ex-ante reported savings for measures due to outliers, missing information, or tracking system data entry or calculation errors. Evaluation adjustments identified through the Tracking System Savings review were made to all measures in the population where the adjustment was found to be applicable.

- **Default Measure Savings Assessment**: to identify potential adjustments to ex-ante reported savings for prescriptive measures where Navigant recommends an alternative default value for a specific measure.

- **Application Documentation Review**: to identify potential adjustments to ex-ante reported savings for measures based on review of documentation, assumptions, engineering analysis for a sample of projects. Sampling is discussed in the following Section 3.3.1.

- **On-site Verification**: Navigant conducted onsite verification of measure installations for 16 projects for Rate Zone 2, and 13 projects for Rate Zone 1.

- **Other Adjustments to Savings**: other adjustments to savings could include statistical or baseline adjustments to verified savings.

The basis for AEP Ohio's ex-ante reported savings depends upon multiple factors. Measures may be submitted to the Self-Direct Program through the Prescriptive Program application process, or if measures do not meet Prescriptive criteria they may be proposed as Custom Program measures. A single project may consist of both Prescriptive and Custom measures.

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Reported savings for Prescriptive measures are based on an operations manual developed by KEMA. Measures submitted on the 2010 application forms had ex-ante savings estimated and tracked using KEMA's measure specific work papers as documented in Appendix A of KEMA's January 25, 2010 Operations Manual. An updated operations manual was developed by KEMA for the PY 2011 program year, dated June 16, 2011 and used for measures submitted through the 2011 application form. Custom measures rely upon customer provided data and energy savings calculations, and may be revised by KEMA upon technical review.

Application documentation review was conducted on a sample of projects randomly selected from the participant population. For each selected project, an in-depth review of project documentation was performed to assess the engineering methods, parameters and assumptions used to generate all ex-ante reported gross savings. When available, all measure specifications and quantities were verified by reviewing the accompanying specification documents as well as installation invoices. For each measure in the sampled project, the evaluation reviewer estimated verified gross savings based on the review of project documentation and engineering analysis. Adjustments to estimated verified savings were based on building-specific information, invoices, specifications sheets and other documentation to the extent it was judged more representative of the project than the default measure savings assumptions.

Categories of changes to ex-ante reported savings included the following:

- Building type
- Hours of use
- Coincidence factor
- Equipment quantities from invoices
- Space cooling HVAC interaction factor credit
- Baseline equipment specifications
- Post retrofit equipment specifications
- Other changes, such as analysis methodology for custom measures

Billing data were available for several of the custom sites. When applicable, energy savings were computed by subtracting post-measure energy consumption from pre-measure consumption. In general, the implementer performed regression analysis on the weather data to ensure that pre and post-measure billing data were comparable. If the available data did not

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span an entire year, the data were scaled to reflect annual consumption so that annual savings could be calculated.

In addition to conducting a detailed engineering review of sampled projects, Navigant conducted onsite visits for a subset of the overall sample. The intent of the onsite visits was to verify the adjustments made by Navigant during the engineering and file review. A site-specific M&V plan was created for each project that received an onsite visit. Each plan was informed by the results of the engineering file review so that field staff could verify the assumptions identified in the file review. Adjustments to the file-reviewed savings based on the onsite verification visits included adjustments to post-retrofit and baseline quantities, post-retrofit and baseline equipment specifications, building types, operating hours, coincidence factors, and HVAC interactions. For those projects in the onsite sample the savings determined through the onsite data analysis were used as the verified savings; for those projects not receiving an onsite visit the engineering review savings estimates were used as the verified savings.

Once the verified gross impacts were developed for each project in the sample, Navigant estimated verified gross realization rate (which is the ratio of the verified gross savings to ex-ante reported gross savings) by stratum. The stratum-level realization rates were then applied to the population of ex-ante reported gross savings by strata, and summed up to the population using the strata weights. The result is an ex-post estimate of verified gross savings for the program.

3.1.2 Process Evaluation Methods

The purpose of the process evaluation is to assess the effect of the program structure and implementation on program performance and customer satisfaction. Navigant's process efforts provide insights and recommendations to support the continued success of the Self-Direct Program.

Central to the process evaluation for the Self-Direct Program were interviews with program coordinators and KEMA staff and review of relevant program tracking databases, documents, and other materials to understand how the program has evolved from the previous year. In addition, Navigant interviewed participating customers to better understand customer satisfaction and perceptions related to the program. Finally, Navigant conducted several interviews with Solution Providers to identify their perspectives on the program.

Navigant used senior staff members to conduct the in-depth qualitative interviews. Senior staff were flexible in their approach to the discussion, allowing the respondent to talk about his/her experience or perspective while still shaping the discussion toward the most important, relevant

and necessary information. Navigant conducted the interviews by telephone in order to complete the interviews quickly and to be flexible to the respondents' schedule.

Interview guides were developed to be open-ended and to allow for a free-flowing discussion between interviewer and respondent and real time interviewing flexibility. Navigant developed guides which highlighted the key issues, but did not require being read verbatim to offer the interviewer the flexibility to delve deeply into pertinent issues based on the respondents' knowledge of and experience with the program.

Navigant took detailed notes during each in-depth interview and/or taped the discussion to ensure thorough documentation of each interview. For any quantitative questions, interviewers are trained to record and summarize responses to allow the evaluators to draw conclusions in the analysis.

3.2 Data Sources

The data collected for evaluation of the PY 2011 Self-Direct Program was gathered during a number of activities, including in-depth telephone interviews with program managers and the implementation contractor (KEMA), in-depth telephone interviews with participating customers and Solution Providers, tracking system data review, onsite data collection, and technical review of a sample of projects. Table 3-1 provides a summary of these data collection activities, including the targeted population, the sample frame, and the timeframe in which the data collection occurred.

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Table 3-1. Data Collection Activities for PY 2011 Self-Direct Program Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	2011 Self-Direct projects submitted to PUCO by 12/31/2011	AEP Ohio Tracking Database	-	All	September 2011 through February 2012
In-depth Interviews	Program staff at AEP Ohio and the implementation support contractor	Contacts from AEP Ohio	-	5 utility and contractor staff	February through March 2012
In Depth Interviews	2011 program customer participants	Application Form Input Tracking Database	Selected by Availability and Business Type	99)	February through March, 2012
In Depth Interviews	Solution Providers to the 2011 program	Application Form Input Tracking Database	Random selection	3	February through March, 2012
Project Application File Review	Projects in the 2011 Program	Tracking Database	Stratified Random Sample	57	December 2011-March 2012
Onsite Data Collection	Projects in the 2011 Program	AEP Ohio Tracking Database	Random Subset of Project Application File Review	36	December 2011-April 2012

Tracking Data

Navigant was able to extract key program participation data from AEP Ohio's tracking database, which was provided by AEP Ohio staff in SAS data sets and Excel spreadsheet format. The tracking data delivered for this evaluation was extracted from a program tracking database maintained by KEMA, using extracts dated November 1, 2011, January 24, 2012 and February 28, 2012.

The database spreadsheet tabs included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data was

linked by a unique project number to measure level information – one tab per measure category (Lighting, Custom, HVAC, etc.).

Project and Program Documentation

To support the engineering review, AEP Ohio provided project documentation in electronic format for each sampled project. Documentation included some or all of scanned files of hardcopy application forms and available supporting documentation from the applicant (invoices, measure specification sheets, vendor proposals, photos, etc.), KEMA calculation spreadsheets, and PUCO submittal packages. This documentation was provided by uploading to a secure file transfer site, as well as sent via CD.

Navigant also reviewed program materials developed by KEMA and AEP Ohio, including: two versions of the KEMA measure work papers documenting prescriptive savings (Appendix A of the operations manual), application forms, PUCO submittal forms, checklists, and program materials available from the program web site (www.aepohio.com).

Program and Implementer Staff Interviews
The interviews with the program managers focused on program processes to better understand the goals of the program, the roles of the program coordinators, the implementer and Solution Providers, how the program was implemented and marketed, customer outreach methods, the perceived effectiveness of the program, customer satisfaction, how to improve the program, and evaluation priorities. The interviews with the implementation staff explored the implementation of the program in more detail and also covered areas of outreach and data quality assurance.

Participating Customer and Solution Provider In-Depth Interviews

In-depth interviews with participating customers and Solution Providers were conducted as part of this evaluation to assess program effectiveness and barriers to participation. Navigant attempted to contact all of the unique participants listed in the November 1, 2011 database extract using contact information provided on the application forms from the population of 2011 projects. Sixty-one Self-Direct customers out of 70 unique participants were contacted with twelve agreeing to interviews, and eighteen interviews with Self-Direct active and non-active solution providers were completed.

3.3 Sampling Plan

3.3.1 Impact Sample

The initial sample for the application documentation review of PY 2011 Self-Direct Program projects was selected from the November 1, 2011 data extract. A second sample was pulled from the final reported savings data extract of February 28, 2012. The sample design and selection

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process was conducted separately for each rate zone[6] to *target* a relative precision of ±10 percent at a 90 percent level of confidence for each zone.

The program-level Self-Direct ex-ante reported gross savings data was analyzed by rate zone by measure type, project size, and number of projects by individual companies to inform sample design. After analysis, the sample design selected for the Self-Direct evaluation was stratified by project size, where project size is defined as the sum of all ex-ante energy savings for measures installed within an individual project (as defined by unique project IDs assigned by KEMA; generally projects have unique premise ID's.) Projects were sorted from largest to smallest energy savings and placed into one of three strata for each rate zone, generally attempting to achieve a relatively even distribution of program level energy savings between strata. As shown below, stratum 1 equates to projects with the largest reported energy savings, stratum 2 to medium-sized projects, and stratum 3 to the smallest projects. Strata boundaries were set using the preliminary data set from November 1, 2011, however, the final strata distributions deviated somewhat from the desired one-third of program savings in each strata when using the final data extract of claimed projects from February 28, 2012. This was especially pronounced Rate Zone 2 due to one large industrial project which dominated the large stratum.

The Self-Direct sample was selected to estimate verified gross savings at a *targeted* relative precision of ±10 percent at a 90 percent level of confidence for each rate zone.. This approach resulted in a total sample of 53 projects to be selected for application documentation review. Navigant added a few sample points to increase the likelihood of achieving the targeted precision. In the end, Navigant sampled 62% of the reported MWh savings. Table 3-2 provides a profile of the gross impact measurement and verification (M&V) sample in comparison with the populations within each stratum.

[6] AEP Ohio has recently gone through a merger of two regional operating companies which resulted in the program participation being distributed across two different rate zone territories.

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Table 3-2. Profile of the Gross Impact M&V Sample by Strata

Population Summary			Sample		
Sampling Strata	Number of Project (N)	Ex-Ante Reported Gross Savings, MWh	n	Sampled Ex-Ante Gross Savings, MWh	Sampled % of Population
Rate Zone 1, Stratum 1	5	9,534	5	9,534	100%
Rate Zone 1, Stratum 2	16	11,595	12	9,210	79%
Rate Zone 1, Stratum 3	138	12,241	13	1,763	14%
Rate Zone 2, Stratum 1	10	35,149	6	26,203	75%
Rate Zone 2, Stratum 2	14	9,049	11	6,561	73%
Rate Zone 2, Stratum 3	132	9,423	10	415	4%
Total	**315**	**86,991**	**57**	**53,687**	**62%**

3.3.2 Process Sample

Table 3-3**Error! Reference source not found.** shows the in-depth interviews planned for the PY2011 evaluation and the number of actual interviews. Navigant planned to interview four program staff, two from AEP Ohio and two from KEMA. The actual 2011 evaluation included interviews with six program staff through three interviews: (1) the AEP Ohio EE/PDR Program Coordinator; (2) the KEMA Self-Direct Program Manager, (3) the KEMA Lead Engineer, and (4) the KEMA Director; (5) the KEMA Principal, and (6) the KEMA Outreach Manager.

The evaluation planned in-depth interviews for up to 16 participating customers and up to six participating Solution Providers. The completed in-depth interviews are shown in Table 3-3**Error! Reference source not found.**. Participating customers were chosen based on availability and business type. Business types for the sample of Self-Direct customers included a university, schools (3), municipality, hospital, industrial company (2), and a warehouse. Respondents represented a number of position titles including Chief Engineer, Facility Manager, Transportation and Maintenance Supervisor, City Engineer, Partner, Director of Administration and Finance. Table 3-3 summarizes the sample for the participant interviews.

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Table 3-3. In-Depth Interview Sample

What	Who	Plan	Completed	When
In-depth interviews	Program staff at AEP Ohio and KEMA, the implementation support contractor	4	6 utility and contractor staff	February through March 2012
In-depth process interview	Participants from each rate zone	Up to 16 (8 for each rate zone)	9 (3 for rate zone 1, 6 for rate zone 2)	December 2010 through February 2011
In-depth process interview	Solution Providers	Up to 6	3	December 2010 through February 2011

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Section 4. Detailed Evaluation Findings

4.1 Impact Results

This section presents the results of the impact and process evaluations of the Self-Direct Program.

4.1.1 Findings from the Application Document Review Task

Navigant estimated verified gross program impacts based on application documentation review for each of the sampled projects from 2011 Self-Direct participants, following the methodology outlined in Section 3.1.1. Observations from the file review experience were that project tracking, documentation, and file management systems are generally well organized and contain sufficient documentation. The observations are provided in Table 4-1.

Table 4-1. Progress on Resolving Application Processing Issues Identified in the PY 2010 Evaluation

PY 2010 Issue	PY 2011 Observation
Check box indicating if the space is conditioned or not.	Not implemented, still recommended.
Require measures to be broken down by space type. Some projects included office space, warehouse space and manufacturing space. All the measures should be detailed separately for each space type because they each have different interactive effects on the kWh savings and kW savings.	Not implemented, still recommended. In some cases, KEMA used information gleaned from the customer outside of the application to disaggregate measures by space type. These projects were particularly helpful for the evaluation.
On some projects, detailed data on before and after fixture types, wattages, quantities, and operating hours was internally conflicting and inconsistent with invoices or executive summary sheets and the calculation spreadsheet filled out by the customer.	Improved forms and reviewer notes reduced but do not eliminate the issue. In some cases, KEMA could improve its documentation to justify differences between values reported in the customer application versus values KEMA ultimately used in the ex-ante calculations.

For custom measures installed through the Self-Direct program, Navigant found that savings methodologies and documentation were not always clear without additional explanation from the program implementer. In the future, Navigant recommends that the Self-Direct Submittal

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spreadsheet include a separate tab that shows the calculation of the demand and energy savings, including sources for all assumptions.

Occupancy Sensors continue to be an area of difficulty. Navigant's review revealed that the values listed in the operations manual Appendix A appear to underrepresent demand savings for Occupancy Sensors by an order of magnitude. For some sites, this resulted in significant adjustments to the savings estimates.

Other measures that were identified as areas of potential concern included Exterior Controls, Interior 4-ft U-Tube T12 to T8, and Interior Permanent Lamp Removal. Exterior Controls in particular seems to have an error in the default assumptions as the energy savings were off by an order of magnitude. Aside from these exceptions, overall, the methodologies and savings estimates provided by the implementer for the measures were appropriate and accurate based on the data provided.

4.1.2 Program Impact Parameter Estimates

The statistical method of separate ratio estimation was used for combining individual realization rates from the sample projects into an estimate of verified gross energy savings for the population.[7] In the case of a separate ratio estimator, a separate gross energy savings realization rate is calculated for each stratum and then combined. These steps are matched to the stratified random sampling method that was used to create the sample for the program. The standard error was used to estimate the error bound around the estimate of verified gross energy savings and demand reduction.

The results are summarized in Table 4-2 and
Table 4-3. The high energy realization rate (2.22) in Rate Zone 2, stratum 3 is driven primarily by a large lighting project where the onsite-verified operating hours were 8,760, while the ex-ante assumption was 3,441 hours. The high demand realization rate (1.37) in the same stratum is driven by a separate project in which occupancy sensors accounted for the vast majority of savings. Since the ex-ante estimate of savings for occupancy sensors is incorrect by an order of magnitude, the high verified savings for this project had a significant impact on the realization rate in this stratum.

More sample points were used for the 2011 evaluation than for the 2010 evaluation, and due to the characteristics of the sampled projects the overall relative precision was a higher than the findings from the 2010 evaluation. In 2010 the analyses were done separately for each utility only. There is not a combined result to compare to so we must look at the results understanding

[7] A full discussion of separate ratio estimation can be found in Sampling Techniques, Cochran, 1977, pp. 164-169.

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this difference. The combined 2011 energy realization rate is slightly higher than for Rate Zone 2's 2010 energy RR, and very close to Rate Zone 1's 2010 energy RR. The combined 2011 demand realization rate is slightly higher than both Rate Zone 2's 2010 demand RR and Rate Zone 1's 2010 demand RR. Both the overall 2011 energy and demand realization rates are quite good.

Table 4-2. Verified Gross Energy Realization Rates and Relative Precision

Sampling Strata	Relative Precision at 90% Level of Confidence ± %	Mean Realization Rate
Rate Zone 1, Stratum 1	0.0%	1.01
Rate Zone 1, Stratum 2	5.8%	0.87
Rate Zone 1, Stratum 3	32.5%	1.07
Rate Zone 2, Stratum 1	5.3%	0.99
Rate Zone 2, Stratum 2	12.0%	1.07
Rate Zone 2, Stratum 3	34.5%	2.22
Total Energy RR	**8.1%**	**1.13**

Table 4-3. Verified Gross Demand Realization Rates and Relative Precision

Sampling Strata	Relative Precision at 90% Level of Confidence ± %	Mean Realization Rate
Rate Zone 1, Stratum 1	0.0%	0.92
Rate Zone 1, Stratum 2	3.2%	1.02
Rate Zone 1, Stratum 3	63.5%	0.89
Rate Zone 2, Stratum 1	4.0%	0.99
Rate Zone 2, Stratum 2	8.0%	1.09
Rate Zone 2, Stratum 3	22.5%	1.37
Total Demand RR	**15.7%**	**1.04**

4.1.3 Program Impact Results

Based on the impact parameter estimates described in the previous section, Navigant estimated the verified gross program impacts resulting from the PY 2011 Self-Direct Program, shown in

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Table 4-4. No further adjustments were made to verified gross savings.

Table 4-4. Gross Savings Estimates for 2011 Self-Direct Program

Program	Project Quantity	Ex-Ante Reported Savings		Verified Gross Savings	
		Gross MWh	Gross MW	Gross MWh	Gross MW
Total	**315**	**86,991**	**13.831**	**98,325**	**14.450**

As requested by the statewide evaluator, Table 4-5 provides participation counts, ex-ante savings estimates, and gross savings calculated at the measure level. Due to the large number of measure types installed through the program, it was not practical to provide results by individual measure, so results were aggregated to measure end-use level. Detailed data for individual measure types is available.

Table 4-5. PY 2011 Self-Direct Program Participation and Savings by Measure

Measure End-Use	Participation Count	Ex-Ante Reported Savings		Verified Gross Savings	
		Gross MWh	Gross MW	Gross MWh	Gross MW
Lighting	681	35,043	6.437	39,609	6.725
Motor	112	950	0.154	1,074	0.161
VFD	171	5,230	0.999	5,912	1.044
Custom	93	42,905	3.334	48,496	3.483
HVAC	77	2,415	2.841	2,730	2.968
Refrigeration	27	419	0.065	473	0.068
Ice Maker	3	5	0.001	6	0.001
Miscellaneous	1	30	0.000	34	0.000
Total	**1,165**	**86,998**[8]	**13.831**	**98,334**	**14.450**

[8] The total reported MWh when summing measure savings is slightly different from that when summing project savings.

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4.2 *Process Evaluation Results*

4.2.1 Program Observations

There are many topics to explore during a process evaluation. The primary paths Navigant used to explore the program was through the in-depth interviews with (3) Self-Direct Solution Providers, (9) program participants, and (6) program management staff, as well as the review of program materials. These activities were used to explore the issues that were foremost in the interview participants' minds. The findings from all these sources are combined into common areas and summarized below.

2011 Self-Direct Program Changes
Significant administrative, delivery and staffing program changes were made by KEMA and AEP Ohio in 2011 and are continuing into 2012. One big change was to the staff. In late August a senior engineer from another KEMA office moved to Columbus. Her responsibilities include file review, peer review and setting deemed savings values, with the move enabling KEMA to do more peer reviews compared to last year. The peer review is a second, internal staff review to make sure the project incentive is consistent with projects from the past. Most large or custom projects are candidates for a peer review.

In addition, last year KEMA increased their outreach staff. KEMA now has outreach throughout the service area. Outreach is a very important function in commercial program delivery.

To facilitate the application and approval process, for some projects AEP Ohio also invites KEMA engineers to a customer meeting when the project calculations are complicated. This also may occur when a custom calculation methodology needs to be developed, or when KEMA needs to install meters or monitor the equipment.

During the last quarter of 2011, AEP Ohio offered a one cent per kWh bonus for Solution Providers who installed energy efficient equipment. The incentive was very successful as Solution Providers were racing to get their applications in by the end of the year. In 2012 AEP Ohio plans to decrease the incentive to one half cent per kWh.

Some customer comments about the program included:

- The program keeps "moving around and changing." The customer's example was one day they couldn't have a chiller, the next day they could. Then KEMA/AEP Ohio wanted a simulation for a project that was already done. The customers did not think this made any sense. Then he found an error in the spreadsheet that allowed him $100,000 more in incentives.

- The next customer said they spent a lot of money in the last couple of years on new machinery, new lines and overhauling lines. The customer generally also installs electronic controls and discards the analog or mechanical controllers. He does not know if any of these projects qualify for the program.

As most of the changes to the program in 2011 were internal staff and changes affecting the Solution Providers, it is difficult to determine if there was any correlation with customer satisfaction from the changes. Trade allies would be more likely to notice the increased level of customer service and have also responded positively to the solution provider bonus offered in the last quarter of the year.

Program Administration
In 2011 KEMA added staff, including a new Operations Manager, and reorganized. The AEP Ohio Program Coordinator, who had full management responsibility for the program from January 1, 2011, altered the role from an emphasis on paperwork and administrative tasks to an emphasis on outreach activities such as helping to complete applications. Toward the end of 2011 AEP Ohio began to work more closely with Solution Providers by presenting the program to larger groups such as Rotary Clubs, customer seminars, the Chamber of Commerce, etc.

In 2011 KEMA added an additional step to the application processing. After customers submit a program application it is sent to KEMA. KEMA staff then review the application and calculate the incentive. Complex projects also receive a peer review by a senior engineer at this time. One of the purposes of this new review step is to ensure consistency across the projects. The application is then sent to AEP Ohio for review. After AEP Ohio reviews and approves the Self-Direct application, it is sent to the AEP Ohio Legal Department where it is packaged and sent to the PUCO for approval. The new process provided by the PUCO is that they have 60 days to review the project and communicate any objections. If the PUCO or other parties do not object within that time frame, the project is considered approved for payment. KEMA then issues a check to the customer for the incentive. Some customers and Solution Providers feel the length of time taken for the KEMA, AEP Ohio and PUCO reviews, while much improved, is still too long. Solution providers claimed that as a result of processing delays, some customers lost interest in the program or moved ahead with their project(s) without the program to keep within their construction time table.

Communication
KEMA believes communications with AEP Ohio are working well and AEP Ohio agreed. They have weekly meetings with the engineering staff and monthly strategy meetings on marketing issues. The AEP Ohio program coordinator and KEMA staff communicate almost daily about the details of administering the program. In addition, AEP Ohio receives weekly and monthly tracking reports to help them stay abreast of the status of the program. KEMA and AEP Ohio

also partner to market the program at various events, and AEP Ohio sends representatives to KEMA program presentations.

Program Marketing and Outreach
In 2011, the 'blitz' helped because it brought the program managers and the account representative in front of the customer as a team. The program managers were able to model how to talk to customers about the programs and teach account representative how to sell the program on their own. Customers were able to build on the relationship with AEP Ohio staff and felt more comfortable asking questions or asking for information.

AEP Ohio developed case studies that were used as marketing pieces in the second half of the year. Most of the collateral materials produced in 2011 and going forward will be more targeted to groups such as municipalities, schools, industrial polymers, data centers, water and waste water treatment facilities, pipelines and grocery stores. KEMA works with AEP Ohio staff across the program to develop targeted fliers to promote different technologies such as Variable Frequency Drives.

At the end of last year, AEP Ohio held a significant number of one–on-one meetings with Solution Providers to talk about the bonus and to encourage them to complete the program applications in 2011.

Customer Service
Interviewed customers provided positive feedback on the program. Most customers in our sample praised KEMA for their level of customer service, saying they were "awesome," responsive to emails and voice mails, and that they were flexible. However, that was not everyone's experience. One customer said he "dealt with at least four administrative people and six engineers reviewing it (his project). It took eight months to get the stuff through." A few customers on the other hand mentioned the help they received from KEMA was "responsive and helpful."

Some customers go to AEP Ohio for support for their projects. Some prefer to call their contact at KEMA for support. Others mentioned that if they had a third party (e.g., their project contractor or rebate analyzer) complete the application, the third party handled questions for them. Most customers in our sample praised KEMA for their level of customer service, saying they were awesome, responsive to emails and voicemails, and were flexible. However, this was not everyone's experience. One customer said he "dealt with at least four administrative people and 6 engineers reviewing it. It took eight months to get the stuff through." AEP Ohio and KEMA should develop a process to address customer inquiries and concerns that include employee follow up contact with the customer. Response directly from the AEP Ohio contact could prevent similar scenarios as the above customer experienced.

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Application Forms
Based on customer feedback that the application was hard to understand and difficult to complete, it has been simplified over time. Engineers or more sophisticated Solution Providers do not find the application a burden, although some customers (especially those without engineering staff) and Solution Providers still find the application a challenge. AEP Ohio staff and KEMA are encouraging the Solution Providers to complete applications for the customers for all the business programs. Because some Solution Providers still find the applications difficult to fill out, some additional training may be appropriate.

Most of the customers don't see how the application process could be made easier. The level of involvement from the customer with the application ranged from only adding a signature to the forms, to splitting the task with a paid consultant, to having primary responsibility for the entire project including the complete application.

Customers' descriptions of the application ranged from 'clear and straightforward' to 'convoluted, confusing and too difficult to complete on one's own.' Three customer comments may be of interest on this topic:

- One respondent was an architectural firm that charges a small fee for completing the application. They stated that they take extra care to make sure the client is getting the most out of every project.
- One respondent was a professional engineer. He thought they provided detailed documentation of their project and is of the opinion that the process changed too much along the way and that it could be much simpler than it is. He also claims to have found an error in one of the spreadsheets.
- Another respondent agreed that although he completed the whole application, there seemed to be a lot of "red tape at AEP Ohio."

Customers were asked if it was clear what they needed to submit with the application. One customer said there was a checklist with the application and they just followed the checklist. One customer thinks 'help screens' on the application would help for custom projects. Another customer would like the process changed to include the Solution Provider on the notice that the customer will be receiving a check. Other customers thought it became easier after the first one, but a couple customers still needed outside help to complete the application.

Three of the customers said the application was easier this year. One of them noticed that this had been achieved by moving some measures from the custom list to the prescriptive list where they received less incentive. The architect said the most difficult task for them was getting

access to the itemized invoices and other necessary information needed to complete the application. One customer said their documentation was of excellent quality because they installed their own product.

One customer in referencing the application said: "I want to do a lighting project not build a power plant." He asked his AEP Ohio representative to walk him through the application. Customers who experienced difficulties with their program participation or completing the application found support from AEP Ohio staff or KEMA staff.

The Audit Visit
All of the customers received an audit visit. Sometimes it was short and easy and other times it was not, but most customers were satisfied with the verification audit. However, one customer noted the following about the verification process:

> "Yes, KEMA verified the work! Frustrating is too strong of a word but Navigant is the fifth organization to contact us about this project. We have talked to AEP Ohio, KEMA, Heapy, Michaels Engineering and Navigant. Two facility audits were a bit obnoxious, but we would do it again."

The Incentive
The amount of the incentive for the Self-Direct Program was termed a "win-win" by one customer. All of the interviewed customers choose the option of receiving an incentive check rather than the rider exemption, although they were generally unclear about why they choose the check or indicated that they did not understand all the ramifications of the decision. Some felt it may have been in their interest to choose the rider exemption, but they were not sure.

Customers felt the incentives for the Self-Direct Program were processed in a timely manner this year. They found KEMA and AEP Ohio to be responsive when asked about the status of their incentive check. A few customers had experiences with the old process when projects were not approved by the Commission in a timely manner; one customer indicated his project incentive took a year to be issued. The September 15, 2010 process established by the PUCO, which includes a 60 day waiting period, has increased customer and Solution Provider satisfaction with the Self-Direct Program.

Another customer from a school complained that even though he did all the work, the money couldn't be used for the next project because it was put into the "general fund." Some schools are likely to want to use the money to invest in energy efficient products as a matter of policy, but may be hampered by their current accounting structures. A different customer asked for a special program for schools with higher incentives because of the "poor shape" education is in right now.

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Solution Provider Bonus
During the last quarter of 2011, AEP Ohio offered a one cent per kWh bonus for Solution Providers who installed energy efficient equipment. This incentive program was very successful as Solution Providers were racing to get their applications in by the end of the year. Near the end of last year, AEP Ohio held a significant number of one-on-one meetings with Solution Providers to talk about the bonus and to encourage them to complete the applications. The result of this activity was that AEP Ohio had roughly 20,000 MWh in the pipeline in January 2012 – enough to meet the entire 2012 goal.

The Web Site

Participating customers who visited the Business Program website in 2011 generally did so to download the latest version of the application, to use the spreadsheet calculator or to confirm that their project qualified. A couple of customers mentioned the web site was easy to use. The web site currently includes:

- A list of Solution Providers
- Program information
- Case studies
- The application
- The spread sheet calculator

During the 2011 program year the AEP Ohio website was lacking a direct link to the Business Programs from AEP Ohio's homepage. The Business Programs should have a direct and obvious link on AEP Ohio's homepage. Through 2011 only the Residential Programs had a direct link. To get to the Business programs one had to click on the Residential Program link which then brought them to the Business Program page with links to both programs.

Barriers to the Program
The main barrier to participation in the program was a lack of awareness of the program.

Firmographics
Business types for our sample of Self-Direct customers include a university, schools (3), municipality, hospital, industrial company (2), and a warehouse. All of the facilities paid their own electric bill. The range of employees for the facilities represented in the sample was from 120 to 800. The average was slightly over 300 employees. One site was a new construction project so the number of employees was unknown.

Participant respondents represented a number of employment titles including Chief Engineer, Facility Manager, Transportation and Maintenance Supervisor, City Engineer, Partner, Director of Administration and Finance. A few did not provide their position title.

Use of Self-Direct Incentives as Seed Money for Other Projects

During 2011 AEP Ohio conducted a survey with 77 self-direct customers to find out how customers were using the funds. So as not to duplicate efforts, the 2011 Self-Direct Program evaluation did not directly address the question of whether the incentive was used for other projects.

The evaluation did, however, show that Solution Providers were encouraged to find projects that were complete and qualify them for the program so customers will have the seed money to implement the second phase of energy efficient projects. School and university representatives reported that their incentives were routinely placed in the 'general fund' with no chance of applying the funds to another project and so this intent is clearly not effective across all customer segments.

> One-third of AEP Ohio's survey respondents indicated that 80% or more of the funds had or would be applied toward their next energy efficiency project. Most of the funds had been directed toward lighting projects.[9] Based on this study, Navigant estimates that, overall, about 27% of self-direct incentives are reinvested in energy efficiency projects.

4.3 Cost Effectiveness Review

This section addresses the cost effectiveness of the PY 2011 Self-Direct Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. Table 4-6 summarizes the unique inputs used in the TRC test.

[9] AEP OH Self-Direct Program-Participant Questionnaire Results, June 6, 2011; Prepared by AEP Marketing Group.

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Table 4-6. Inputs to Cost-Effectiveness Model for AEP Ohio Self-Direct Program

Component	Self-Direct Program Performance
Average Measure Life	6
Participants	315
Annual Energy Savings (MWh)	18,147
Coincident Peak Savings (MW	2.041
Third Party Implementation Costs	$971,191
Utility Administration Costs	$219,758
Utility Incentive Costs	$3,723,442
Participant Contribution to Incremental Measure Costs	$12,429,792

Based on these inputs, the TRC ratio for the 2011 Self-Direct Program is 2.4, and the program passes the TRC test. Table 4-7 summarizes the results of the cost-effectiveness tests. Results are presented for the Total Resource Cost test, the Participant TRC test, the Ratepayer Impact Measure test, and the Utility Cost test.

Table 4-7. Cost-Effectiveness Results for the Self-Direct Program

Test Type	Self-Direct Program Performance
Total Resource Cost	2.4
Participant Cost Test	5.4
Ratepayer Impact Measure	0.5
Utility Cost Test	6.5

At this time, additional benefits related to reduction of greenhouse gas emissions have not been quantified in the calculation of the TRC. These additional benefits would increase the given TRC benefit/cost ratio.

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Section 5. Conclusions and Recommendations

5.1 Conclusions

5.1.1 Program Impacts

1. The realization rate (defined as verified gross savings/ex-ante reported savings) is 1.13 for gross energy savings, and 1.04 for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Self-Direct projects in the sample is ± 8 percent for the energy realization rate and ± 16 percent for the demand realization rate.

2. With a few exceptions, overall, the methodologies and savings estimates provided by the implementer for the measures were appropriate and accurate based on the data provided. Observations from Navigant's file review experience were that the improvements that KEMA and AEP Ohio made in the 2010 program year carried over into the 2011 year as well.

3. Occupancy sensors continue to be an issue in the 2011 program year. The evaluation findings showed that the Appendix A of the KEMA Operations Manual seems to underestimate demand savings from occupancy sensors by an order of magnitude. This had a real effect on the overall program realization rates.

4. Participation was highest within the Industrial and Manufacturing sector, which combined for 62 percent of reported energy savings. Participation was also high within the schools segment, which accounted for the highest percentage of individual project applications at 2 percent (74 project applications). The Government/Municipal sector accounted for 11 percent of project applications, but only 2 percent of reported energy savings.

5. "Miscellaneous" customers accounted for a much lower percentage of participation in 2011 than in 2010, mostly reflecting the greater use of additional business type categories in 2011 which were previously lumped into miscellaneous.

6. The prevalence of participation by schools, colleges and government continues as an anomalous characteristic of the Self-Direct Program, compared with business Prescriptive and Custom programs offered in Ohio and elsewhere. Barriers to participation by the government and non-profit sector such as capital constraints and slow decision-making are not an issue for the retrospective Self-Direct Program. Another

traditional program barrier – government bidding and project auditing requirements – probably helps ensure retention of detailed bids and invoicing.

5.1.2 Program Processes

1. The Business Programs should have a link on the AEPOhio.com home page. During 2011 customers had to click on the residential programs link to access the business programs pages.

2. Some customers still find the application a challenge. The new online application will solve some issues, but custom measures will still be an issue for customers without engineering staff. One customer said: "I want to do a lighting project not build a power plant."

3. Custom projects may still be taking too long to review for the Self-Direct Program. These projects are most likely to be peer reviewed, and, while peer review has many positive quality control benefits, it may increase the review time that also includes AEP Ohio and the Ohio Public Utilities Commission (with a 60 day wait period before automatic approval).

4. The 'customer blitz' was an innovative way for AEP Ohio program staff and KEMA staff to partner with customer representatives to sell the program to large customers, model the sales process for customer representatives, and increase the comfort level of both to ask questions about the program. The 'customer blitz' was a unique idea that increased customers' knowledge of the program while providing an opportunity for Program Coordinators and KEMA staff to model the sales process for account representatives and provide them with an avenue for questions about the program.

5. Solution Providers are increasingly interested in the program. KEMA staff revealed that almost 500 Solution Providers attended the program kickoff seminars in January 2012.

6. KEMA should consider other methods to communicate the project tracking number. Currently, customers and Solution Providers that complete applications for their customers are informed of the unique identification number assigned to each project. However, the communication of the tracking number appears to be frequently missed by both customers and Solution Providers as they report they have no way to identify a project.

7. The 2011 Solution Provider bonus, the program seminars and the one-on-one meetings with Solution Providers combined to produce enough projects in the pipeline in January, 2012 to meet the 2012 goal.

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8. The success of the year-end bonus Solution Provider and the mid-December program close meant that AEP Ohio and KEMA had a hectic scramble at the end of the year to try to get all the applications processed in 2011. In 2012, the Solution Provider bonus is offered at the beginning of the year to forestall another year-end stampede and to keep the momentum moving.

9. One Solution Provider asked that AEP Ohio remove the program 'dead zone' that he encounters every January. Just as his customers are getting their plans together for the year and are eager to begin new projects, the program disappears. KEMA would also like to eliminate the 'dead zone' by closing the program in November and using December to gear up for an early January launch.

10. Customers have been providing positive feedback on the program. They are more likely than in the past to ask for a big check ceremony and to publicize the event with a press release. This year AEP Ohio is awarding participants and Solution Providers who have participated in the program with certificates.

11. One respondent (an architect) said the biggest program barrier was getting access to the itemized invoices and other necessary information needed to complete the application.

12. AEP Ohio, KEMA and Solution Providers marketed the Self-Direct program to groups of customers and solution providers through training offerings throughout the year. Some customers heard about the program through word of mouth. Generally, however, customers have learned of the Self-Direct Program through one-on-one contact with individual customers. For instance, at the end of last year, AEP Ohio held a significant number of one-on-one meetings with Solution Providers to talk about the bonus and to encourage them to complete the applications. Increased marketing efforts to the business community directly as a whole will be necessary to take program awareness and customer participation rates to the next level where customers contact AEP Ohio proactively just in case they qualify for the program.

13. Marketing and outreach efforts matured in 2011 with the KEMA reorganization, additional positions and increased program experience and with the marketing innovations implemented by AEP Ohio staff.

14. Based on AEP Ohio's own investigation, Navigant estimates that, overall about 27% of Self-Direct incentives are reinvested in energy efficiency projects.

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5.2 *Recommendations*

5.2.1 Impact Recommendations

1. AEP Ohio should consider increasing targeted outreach efforts to underrepresented business sectors in 2012. There were only a few warehouse projects in 2011, but they represented a large portion of program savings. This may be an under developed sector for the program. The Office sector was underrepresented and could offer additional opportunities for the program.

2. Navigant recommends reviewing the default demand savings for Occupancy Sensors. The KEMA Appendix A workpapers show demand savings of only 0.01 Watt per connected Watt. This appears to be an order of magnitude too low and should be adjusted. Several sampled projects included occupancy sensors, which had a significant impact on the project realization rates.

3. An analysis of the verified measure level data shows a few measure types that seem to consistently differ greatly from the evaluation findings. KEMA should review the default savings assumptions for Interior Occupancy Sensors, Exterior Controls, Interior HP T8 - 4-ft Lamp and Ballast, and Interior Reduced-Wattage T8s. Of these measures the largest concerns are with the Occupancy Sensors and Controls.

4. KEMA should attempt to ensure that all projects are entered into the database on a timely basis. In particular the largest project (five times larger than the next largest project) in the program had only the energy savings entered into the database, but not the demand savings. To calculate the overall program realization rates it was necessary for Navigant to enter in the ex-ante demand savings manually, otherwise, it would have had a significant impact on the program level realization rates.

5. KEMA should consider scrutinizing savings for all large projects. The evaluation sampled one large project and found a simple math error in the customer supplied savings calculations that greatly overestimated savings. This was carried over into the claimed savings resulting in a low realization rate for the project.

6. For all projects based on billing analysis, care should be taken when claiming savings that cannot be statistically supported when based upon a poorly fitting regression curve. If the regression curve is not reliable, the savings estimates based on that curve will not be reliable either. In these cases it is recommended to, either revise the regression analysis and look for ways to improve its reliability, or use a different methodology to estimate savings for that project.

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7. For custom measures installed through the Self-Direct program, Navigant found that savings methodologies and documentation were not always clear without additional explanation from the program implementer. In the future, Navigant recommends that the Self-Direct Submittal spreadsheet include a separate tab that shows the calculation of the demand and energy savings, including sources for all assumptions.

5.2.2 Process Recommendations

1. The Self-Direct Program had a successful year in 2011 and planned improvements for 2012 promise to continue this success in 2012. The path of engaging Solution Providers in large groups and one-on-one as needed should be continued.

2. AEP Ohio and KEMA should consider changing the program operations to eliminate the January 'dead zone'. It restricts the momentum of the program by forcing interested customers and Solution Providers to wait until February to access the program when they are eager to move forward in January and become resentful of any delay.

3. Plans are currently underway to offer an online application and make other modifications to the web site to better position business programs. Navigant suggests that AEP Ohio conduct usability testing on these changes to confirm they are successful.

4. We recommend AEP Ohio and KEMA plan a phase-in of the online application to provide customers time to adjust to the online application. They might consider also accepting applications to accommodate customer who are not able to accept a web-based technological advance.

5. AEP Ohio and KEMA should consider brainstorming ways to process applications in a more timely manner. The issue appears to be the multiple reviews conducted by three organizations (KEMA, AEP Ohio, and the Commission), which slows the processing of complex projects.

6. The 'customer blitz', while an innovative way to teach customer representatives how to sell the program, may not be sustainable in the long run given the amount of additional effort required by AEP Ohio staff and program staff beyond their normal responsibilities.

7. AEP Ohio and KEMA should continue to focus marketing resources on special customer segments or measures to maximize the value of the marketing dollar.

8. Solution Provider interest in all the business programs is at an all-time high. It is unclear how AEP Ohio will be able to sustain this high level of interest over the long term.

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9. KEMA should consider improving methods for tracking a project. Each application is assigned a unique number that is used in the KEMA database and is linked to that paper application. The tracking number should also be shared with the customer in a more memorable way for ease in communicating or answering questions later in the process. Customers with multiple projects become very frustrated when the correct project cannot be identified.

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Section 6. Appendices

The following guides were used to conduct the in-depth interviews.

6.1 AEP Ohio Self-Direct Customer Participant In-Depth Interview Guide

AEP Ohio Evaluation for the Self-Direct Program

Customer Participant In-Depth Interview Guide

November 29, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Interviewer: _____ Project Number: _____

Depth Interview Guide – Self-Direct Program Participant

The interviews will be audio taped and transcribed.

Identify Appropriate Respondent

1. Hello, this is <INTERVIEWER NAME> calling from Navigant Consulting on behalf of AEP Ohio. This is not a sales call. May I please speak with <CONTACT> ?

[IF NEEDED]: my understanding is that <CONTACT> is responsible for making energy-related decisions for your firm at <SERVICE ADDRESS> and was listed as the primary contact when <Company> participated in AEP OHIO Ohio's Self-Direct Program. May I please speak with him/her?

1 No, this person no longer works here → Is there someone else that is involved with facility improvements or building operations that might be familiar with <company>'s participation in AEP OHIO Ohio's Self-Direct program? [Repeat introduction with new contact]

2 No, this person is not available right now [Ask when available or leave message.] CALL BACK LATER

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3 Yes – SKIP to Q2

97 No, other reason (THANK & TERMINATE)

2. Hello, my name is <INTERVIEWER NAME> calling from Navigant Consulting on behalf of AEP Ohio. We're calling to do a follow-up survey about your firm's participation in the Self-Direct program. Do you recall participating in the Self-Direct Program on or about <PROGRAM DATE>?

1 Yes → continue to Q3

2 No → [Describe program and ask if they were involved. If still no recall → Can I speak with someone who is likely to be responsible for facility improvements?]

3 There is no one here with information on that address/wrong address – THANK & TERMINATE

[IF NEEDED] Navigant is an independent consulting firm hired by AEP Ohio to learn about customer experiences with its Self-Direct program and to help AEP Ohio improve its programs for the future.

[IF NEEDED] This is a very important fact-finding survey with companies that have recently participated in an energy efficiency program sponsored by AEP Ohio. We are NOT interested in selling anything, and we are primarily interested in gaining your feedback on the Self-Direct program to help AEP Ohio improve the services it provides to its customers in the future. Your responses will not be connected with your firm in any way and will be summarized with responses we get from other businesses that we talk with.

3. Great. Are you the person responsible or were you involved with your company's decision to participate in the program, or were you the main point of contact with AEP Ohio?

1 Yes → Great. We would like to ask you some questions about this program, which should only take about 15 to 20 minutes. Is now a good time, or is there a time we can call you back tomorrow?

2 No → Ask for contact name and repeat introduction in Q2.

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Now I'd like to ask you about the project you submitted.

4. Do you remember how you first learned about the financial incentives available through the Self-Direct program?

a. Since then, have you heard about the program from other sources such as a solution provider/contractor? What type of solution provider/contractor told you about the program?

b. Was he/she supportive of the program? What role did the solution provider play in your decision to participate in the program?

5. What were the circumstances surrounding your decision to participate? Did you participate in the Self-Direct Program in previous program years? 2009? 2010?

[PROBES: Who was first involved in the decision to move forward with this project and submit an application?]

6. Can you spend just a few minutes and describe the process that you went through to complete and submit the required application(s)? I'm particularly interested in who took the lead in the project, the ease/difficulty you experienced in completing the required forms, what resources were utilized to complete the application, etc.

7. Who was primarily responsible for preparing the incentive application (including the required supporting documentation)? Previous research indicates that either the account executive or a KEMA representative were responsible for marketing the Self-Direct Program directly to the customers. Which one completed or helped complete the application?

PROBE: If not the respondent, ask if person was employed by the company, was it a solution provider? If so, who completed the application (name: _____,

8. **Were the incentive application forms changed from 2010 to 2011?** Were the incentive application forms easy to understand? Was it clear to you what you needed to submit?

a. Did you consult any resources such as the AEP Ohio website, program materials, the spreadsheet calculator, or an account representative to complete the application?

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b. Were any changes made to the website? If respondent visited the AEP Ohio website, what task was accomplished there? Last year most respondents went to download the application. Is this still true? They found the website difficult to use.

c. Some customers found the application difficult. Did [you/they] experience any difficulties in preparing/submitting the incentive application? What was the source of difficulty/delay? What level of support, if any, was provided by AEP Ohio?

d. Could this process be made easier for you? If so, how?

9. Was an eligible project easy to select? When did you install the energy efficient project you have chosen for the Self-Direct Program? Are there additional projects at this site that might qualify for this program? Do you plan to participate in the program again? Have you submitted these projects to the program for additional incentives? Why not?

10. The program offers your company the option to receive a direct incentive payment or an exemption from the EE/PDR rider. Which option has your organization selected? Who was primarily responsible for choosing the option?

a. PROBES: Why was that option chosen?

b. Previously the PUC did not approve payments in a timely manner. AEP OHIO asked that applications are automatically approved after 6 months. Was this implemented? Have you received your incentive from participating in the program in 2010? 2011? When do you expect to receive your incentive? How long did it take to receive your incentive? Was that a reasonable amount of time? If not, what held up payment of the incentive?

c. Are you satisfied with the amount of incentives offered through the Self-Direct program? Will the incentive payment be used to conduct future energy efficiency projects?

11. Were any changes made to the application between 2010 and 2011? Was the application easier to complete in 2011 than in 2010?

12. Was the level of support from AEP Ohio the same/higher or lower in 2011 than in 2010?

Communications

13. How would you describe communications between your organization and AEP Ohio

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during your program participation? Were you informed that final payment required approval by the PUCO, which would delay your incentive payment?

14. How would you describe communications between your organization and the program implementer, KEMA, during your program participation? Did the program implementer keep you informed on the progress of your projects? Previous research indicates that customers are frustrated when KEMA is not able to identify the correct project because of a lack of a common id number known by both parties.

15. Were there any issues with the program implementer? If so, please describe. How could these issues be improved in the future?

16. Has a representative from KEMA or AEP Ohio visited to verify the installation of energy efficient equipment? How did that process work? Was any equipment installed to measure the usage of the equipment? Were you satisfied with this process? If not, what could be improved?

Program Improvements

17. Overall, how satisfied are you with the Self-Direct Program?

18. How do you think the program can be improved?

PROBES: Are there elements in the program that should be modified to make the Self-Direct program work better? If so, what would you recommend? Why do you think this change is needed? Are you satisfied with the response time of the program?

19. Are the current economic conditions affecting the program? If so, how?

Awareness of Other EE Programs

20. Aside from the Self-Direct Program that we have been discussing today, are you aware of other programs or resources that are designed to promote energy efficiency for businesses like yours?

21. What types of programs or resources can you recall?

PROBES: Do you know what organization/company administers that program? After each response prompt with "Can you recall any others?"

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Have you participated in any of these programs? Which ones?

22. IF CUSTOMER HAS NOT PARTICIPATED IN AEP OHIO BUSINESS LIGHTING PROGRAM OR CUSTOM PROGRAM AND DID NOT MENTION THE PROGRAMS ABOVE IN 21.

a. Are you aware of AEP Ohio's Business Prescriptive Rebate Program? [PROBE – describe program if necessary.] Description of program:

AEP Ohio's Prescriptive Incentive Program offers businesses set financial incentives for the implementation of energy-efficient improvements and technologies that reduce energy consumption.

b. Are you aware of AEP Ohio's Business Custom Rebate Program? [PROBE – describe program if necessary.] Description of program:

The Custom Program is designed to address any cost-effective electricity saving measure not addressed or offered yet through other AEP Ohio programs, including prescriptive incentives. Projects in the Custom Program are more complex and address a system or process most often requiring unique design and technology solutions for each participant, so specific savings and incentives are determined when the project is specified.

Customer Background

We are almost finished. I'd just like to get some general background information about <COMPANY> and your responsibilities there.

23. Can you briefly summarize your role at your company? What are your main responsibilities?

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24. What is <COMPANY>'s primary business activity at this particular facility (<SERVICE ADDRESS>)? [RECORD ONE]

1 Office
2 Retail (non-food)
3 College/University
4 School
5 Grocery Store
6 Restaurant
7 Health Care
8 Hospital
9 Hotel or Motel
10 Warehouse/Distribution
11 Construction
12 Community Service/Church/Temple/ Municipality
13 Industrial Process/ Manufacturing/ Assembly – type?
14 Condo Assoc./Apartment Mgmt.
15 Other (Please specify) _____
98 Refused
99 Don't Know

25. About how many full-time employees work at this location?

&EMP # of employees
98 Refused
99 Don't Know

26. Does <COMPANY> own or lease this facility?

1 Own
2 Lease
98 Refused
99 Don't Know

IF THE COMPANY LEASES THE FACILITY:

27. Do you pay the electric bill?

28. Is the company headquarters in Ohio or elsewhere?

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1 HQ in Ohio
2 HQ elsewhere, outside of OH
98 Refused
99 Don't Know

29. Do you have any other comments or suggestions for us?

That's all of the questions I have for you today. Thank you so much for your time, your insights are extremely valuable to AEP Ohio. Have a great day!

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

6.2 AEP Ohio Self-Direct Solution Providers Interview Guide)

AEP-Ohio Evaluation for the Business Custom/Prescriptive/ Self-Direct Program Trade Ally Provider Interview Guide (Program Participant)

November 8, 2011

Name of Interviewee: _____ Date: _____

Title: _____ Company: _____

Number of employees: _____

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews. This guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Custom Program. We're currently in

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the process of conducting interviews with lighting contractors and equipment suppliers to improve our understanding of AEP-Ohio's programs.

Our records show you have been named as a lighting contractor or equipment or service provider by one or more of AEP Ohio business customers that have participated in the Business Custom/Prescriptive/Self-Direct Program[?]. At this time we are interested in asking some questions of the person most experienced with the Business Custom/Prescriptive/Self-Direct program. [CONFIRM THAT THIS IS THE PERSON MOST KNOWLEDGEABLE AT THEIR BUSINESS OR GET ALTERNATE NAME]. The questions will only take about half an hour. Information you provide will be kept anonymous in our reports. General observations and findings will appear in our final report, but they will not be attributed to any named person or company. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

Background

1. Can you briefly describe the company you work for and the type of business it conducts? What are your job responsibilities at your company? How long have you been in this position?

2. Which AEP Programs have you participated in during 2011? How was your firm recruited for the [Custom/Prescriptive/Self-Direct] program?

3. How would you describe your familiarity with AEP Ohio's Business [Custom/Prescriptive/Self-Direct] Program? Have you personally worked with any of your customers who have participated in this program? About how many? Who are your primary business customers?

4. What type of equipment did you install for the [Custom/Prescriptive/Self-Direct] Program?

5. About how many AEP Ohio rebate projects was your company involved with in 2011 for the [Custom/Prescriptive/Self-Direct] Programs? Is there a reason you were not involved with more projects in 2011?

6. Do you work mainly in the Ohio Power or Columbus Southern Power service area? Or both?

Solution Provider Participation

7. Was your firm recruited to participate in this program? What programs, Custom, Prescriptive, or Self-Direct, have you participated in with your customers? When did you begin participating in the [Custom/Prescriptive/Self-Direct] Program?

CUSTOM	YES	NO
PRESCRIPTIVE	YES	NO
SELF-DIRECT	YES	NO

****

ASK Q8-10 AS APPROPRIATE FROM ANSWERS TO Q7

8. What are the reasons your firm decided to participate in the Custom Program? What are the main benefits to your firm? What are the drawbacks to your firm?

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9. What are the reasons your firm decided to participate in the Prescriptive Program? What are the main benefits to your firm? What are the drawbacks to your firm?

10. What are the reasons your firm decided to participate in the Self-Direct Program? What are the main benefits to your firm? What are the drawbacks to your firm?

****

11. About how many of your lighting or equipment projects received rebates through the [Custom/Prescriptive/Self-Direct] Program in 2011? (If few) Is there a reason you have not been involved with more projects? In your opinion, has the [Custom/Prescriptive/Self-Direct] Program increased your business?

12. Can you describe the application process for program ally registration? *[Probe for qualifications or training requirements.]* What kind of training is provided as part of the registration process to become a Solution Provider? Was the training useful?

13. What is expected of Solution Providers? Are there any specific responsibilities that come with registering? Do you know of any quality control procedures in place for trade allies? (for example, removing an ally from the program if complaints are received about them)

14. Do you complete the program application for your customers? Do customers frequently need your help with program issues after the equipment is installed?

15. How satisfied are you with your experiences with the [Custom/Prescriptive/Self-Direct] Program?

Marketing and Promotion to Customers

16. How does your company become involved with projects associated with the program? Do you actively promote participation in [Custom/Prescriptive/Self-Direct] Programs or do customers bring projects they want to submit to the [Custom/Prescriptive/Self-Direct] Program?

17. How do customers find out about this program? Has your company promoted the program through its own marketing collateral? Who, outside of your company and the customer, has been influential in getting customers to participate?

18. What kind of support, if any, does AEP Ohio provide to you for marketing the program to your customers? Do you distribute utility-produced marketing materials? Have you requested any other types of support/collateral, etc. If so, what have you requested and how has AEP Ohio responded to your requests?

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19. Do you think AEP Ohio's level of marketing and promotion of the [Custom/Prescriptive/Self-Direct] Program has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? If AEP is missing areas of opportunity, what are those areas?

20. Do you have suggested changes to AEP Ohio's marketing efforts for next year? If so, please describe these changes.

Q21 - SELF-DIRECT ONLY

21. Are you aware of the addition of mercantile or retail customers to the program by the Ohio Public Utility Commission (PUCO)? Has this ruling had any impact on your customers? Does the automatic approval process where the project is approved on the 61st calendar day after filing speed up your project approval? What is your opinion of the standard application template? Is it easy to use? Does it expedite the projects?

Customer Participation

22. What reasons do customers give for participating in the [Custom/Prescriptive/Self-Direct] program?

23. Do customers understand the participation process? How do you get program information to them? What improvements can be made?

24. What activities does your company perform to help customers identify opportunities to participate? Do customers need your help with the program after the equipment is installed? What type of help do they need?

25. What is the review time between completing the pre-approval application and letter of approval from AEP Ohio? Has this had any impact on your sales process?

26. Does the timing required for submitting documentation (within 60 days of project completion) present a challenge? How? Does it affect certain types of projects or customers more than others? If so, how and why?

27. Have you encountered any challenges in helping customers participate in the [Custom/Prescriptive/Self-Direct] program? If so, please describe. Have you had any challenges providing qualifying products?

28. What are the reasons that customers might not participate in the [Custom/Prescriptive/Self-Direct] program? Do customers complain about any particular aspects of the program? Do customers regularly cancel their participation or drop out of this program? If so, why?

Rebates/Incentives

29. What is your opinion of the incentives offered to [Custom/Prescriptive/Self-Direct] Program participants? Are program participants satisfied with these incentive levels?

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30. Are the incentives effective at encouraging customers to pursue projects they would not have considered without the [Custom/Prescriptive/Self-Direct] program?

31. In your opinion, how can AEP Ohio increase participation in the [Custom/Prescriptive/Self-Direct] Program?

Quality Assurance and Quality Control

32. Have you had to answer questions or provide additional information as a result of a program-sponsored quality inspection to verify equipment quantities and eligibility? Has any equipment you installed been rejected for an incentive? Why?

Call Center

33. Do you know whom to contact for help with the [Custom/Prescriptive/Self-Direct] program?

34. Are customers or your company staff making use of the KEMA phone number listed on the application form? At what point during the participation process are calls usually made? What are the main issues raised and are these issues resolved to your satisfaction? Typically, how long does it take to resolve inquiries to the call center?

35. If you contacted the call center, what is your level of satisfaction with the service you received? What other areas of support would be helpful to you?

Program Adjustments and Enhancements

36. What type of information could the utility provide you to increase your familiarity and understanding of the [Custom/Prescriptive/Self-Direct] program?

37. What could be modified to make the [Custom/Prescriptive/Self-Direct] program work better (e.g., incentive levels, eligible equipment, etc)? If so, what would you recommend? Why do you think this change is needed?

38. Would more training be useful? What types?

Success and the Future of These Efforts

39. In your opinion, how successful is the [Custom/Prescriptive/Self-Direct] program? Why? What are the strengths? What are the weaknesses?

40. Do you feel that some customers would be installing the same lighting/equipment products without the incentives of the [Custom/Prescriptive/Self-Direct] Program? [Please explain.]

41. Do you think the current economic conditions are affecting program participation? If so, how?

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Other

42. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.
We might follow-up with you by phone later, if additional questions arise.

6.3 AEP Ohio Self-Direct Program Staff and Program Implementer In-Depth Interview Guide)

AEP Ohio Evaluation for the Self-Direct Program (Prescriptive and Custom)

Program Staff and Program Implementer In-Depth Interview Guide

October 7, 2011

Name of Interviewee: ___Michelle Cross_____ Date: _____

Title: _____ Company: _____

Note: Interviewed with Ron

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP-Ohio's gridSmart Business Energy Efficiency programs. We're conducting interviews with program managers and key staff in order to improve our understanding of AEP-Ohio's programs. At this time we are interested in asking you some questions about the Self-Direct program. The questions will only take about an hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

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Ok, great. If you don't mind, I would like to do a voice recording our conversation to speed up the note taking. Is that OK? I'm going to switch you to speaker phone. I am in an enclosed, private office.

Roles and Responsibilities

1. Briefly, what is your role and responsibilities in the Self-Direct program?

   For how long have you carried these out?

   Has your role changed over time?

2. Can you explain the roles of others involved in implementing the Self-Direct Program? *[Probe for all significant actors with responsibility in program delivery including implementer, **account managers**, and program allies.]*

3. One of the changes planned for this year in the Self-Direct Program was to transfer increased responsibilities to the account executives. I believe the plan was for the account executives to conduct on-site verification inspections in place of KEMA. Was this change implemented and how did it work out?

4. Roughly, how many people are assigned to work on this program at AEP Ohio?

5. What are the formal and informal communication channels between AEP OHIO and KEMA?

6. Do you feel information is shared in a timely manner?

Overall Goals and Objectives

7. Outside of the quantitative goals (e.g., $, $/kWh, savings and participation rates), in your own words, what are the key goals and objectives of this program?

8. What performance metrics are you currently using to measure the performance of the program?

   According to these metrics, has the program met 2010 goals? *[If necessary, probe for number of rebate applications, energy savings realized.]*

   Why or why not? If yes, have the goals been met on time?

Marketing and Promotion

Marketing Activities

9. Please describe your program marketing campaign in your own words *[If necessary: Do marketing activities vary by prescriptive and custom? By customer size?]* Is there a marketing plan?
   - How often does each activity occur?

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- Who is in charge of developing materials?
- Who is in charge of marketing activities?
- Do you have a written marketing plan?
- Who has been most influential in getting customers to participate? Who else has been influential?

10. In 2011, AEP Ohio planned to focus on marketing the business programs to professional groups. Did this expansion occur? How many professional groups did the AEP OHIO/KEMA team inform about the business program during 2011? Do you plan to expand this effort in 2012 or keep it at about the same level?

11. KEMA also provides outreach to civic and professional organizations to promote the program. Did AEP OHIO and KEMA jointly market the business programs to the professional and civic organizations?

12. KEMA marketing staff and AEP Ohio marketing staff jointly develop presentations and collateral materials. Did AEP Ohio and KEMA staff develop any collateral materials during 2011? Did the team develop a marketing plan that was used in 2011 for the business programs? Do you plan to develop a marketing plan for 2012?

13. Do you have any plans to use social media or Internet advertising to market the Self-Direct Program? How would that work?

14. Do you think the level of marketing and promotion of the program(s) was appropriate in 2011 to meet program goals?

The Web Site

15. What role should the Web site play? Are the AEP OHIO programs more accessible to customers because of changes to the Web site suggested last year?

16. Are customers able to download forms or complete forms online?

17. Are they able to quickly find a solution provider in their neighborhood from information available on the web site?

18. Were any changes made to the website? What still needs improving on the web site, in your opinion? Any other improvements in the marketing of the program?

19. Did you make any changes to the tracking system based on the results from the PY2 evaluation (2010)? For instance, one suggestion from the process evaluation was for AEP OHIO and KEMA to improve the tracking system to provide customers with the information they need to track their projects, even when multiple projects are participating in the program. Was this change made?

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If so, please describe these changes.

Do you have documentation of these changes?

If so, can we arrange to obtain copies?

Program Participation

We are also trying to learn of any process related issues that may be planned from the current design of the program(s).

20. How active are account managers in the program?
Solution Providers or ECSO's?
?KEMA?

21. Do you have a sense of how satisfied customers are with various aspects of the program (e.g., ease of application, verification process)?

Has the application been simplified or otherwise improved since last year? **Were the incentive application forms changed from 2010 to 2011?** Some customers found the application difficult.

Any issues arise about the verification process?

Barriers to Program Participation

22. What do you think are the greatest barriers to customer participation?

Communicating the Program

23. What do customers do if they have questions about the participation process? About how many customers contact KEMA or the Call Center about the Business Programs? Is that number tracked?

24. Do you track what questions are asked about the Self-Direct Program?

25. Previously the PUC did not approve payments in a timely manner. AEP OHIO asked that applications are automatically approved after 6 months. Was this implemented? Are customers still waiting for months or more than a year for their incentive?

26. Last year we talked about the many ways the customers could contact the program manager, KEMA, the AEP OHIO call center. Is this process still meeting customer informational needs?

27. What improvements can be made?

Solution Providers (Trade Allies)

28. Have successful are solution providers and ESCOs in recruiting customers for the program?

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29. Last year solution providers were satisfied with the program but had a few issues such as the long time for payment and the resources it takes to complete the application. Some solution providers would like payment for completing the program application. Is this a program change AEP OHIO would consider for the Self-Direct Program?

30. Do you have a sense of solution providers' overall satisfaction with their participation in this program?

31. Are solution providers meeting your expectations for the Self-Direct Program?

Mercantile Pilot Program

32. What impact has the PUCO ruling establishing the Mercantile Pilot Program had on participation in this program? What is the situation with the timing of the incentives? Was the waiver approved? Has the PUC been able to meet the deadlines for automatic approval?

33. Has the implementation of the program with mercantile customers proceeded more quickly with the use of the standard application template?

34. How did the program change to meet the needs of customers?

35. Does the automatic approval process where the project is approved on the 61st calendar day after filing speed up your projects?

36. What is your opinion of the standard application template? Is it easy to use? Does it expedite the projects?

Rebates/Incentives

37. What do you perceive to be the level of satisfaction among program participants with the incentive payment and exemption options?

Last year we found that most customers choose the incentive payment? Is that still true this year?

38. Are program participants satisfied with the current rebate amounts (75% of regular program) and incentive limit caps (50% of total cost, 1 to 7 year payback window)?

Are these limits being checked for all projects? (Ask KEMA)

Call Center

39. Are customers making use of the phone number listed on the application form? *[Probe for call volume.]*

What are the main issues raised by customers/contractors?

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How are these issues resolved?

Data Tracking

40. What systems are in place for data tracking?

    Who captures the data and how?

41. Can you briefly describe what data are tracked for the program(s)?

    Were any of the recommendations from the previous evaluation implemented? Previous research indicates that customers are frustrated when KEMA is not able to identify the correct project because of a lack of a common id number known by both parties.

42. Do you feel all important information is captured and stored in a way to best support program efforts?

    Is the information accurate, current and complete?

    Are there additional types of reports or information that you would find beneficial?

    Is there a process for requesting additional data?

Quality Assurance and Quality Control

43. Are the quality procedures documented in the KEMA operations manual followed closely? Why not?

44. Can you provide a brief description of your quality procedures?

    What kind of quality procedures are in place to verify equipment quantities and eligibility?

    To verify project completion?

    What is the process for verifying savings?

45. Approximately what percentage of all projects are pre-inspected and post-inspected? How do you determine if a project requires inspection (both pre and post)? *[Probe for random check guidelines (10% of $10K or less, 25% of $10K-$50K, 100% of $50K+), geographical location, contractor]*

46. Who conducts pre and post inspections and how are they documented? Last year AEP OHIO said they planned to bring the account reps back into the inspection process. Was their roles and KEMA's role clearly defined? Was there a need to adjust responsibilities mid-year because of resources issues?

47. In your opinion, what can be done to improve the QA/QC process?

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48. Do you have a sense of customer satisfaction with the verification process?

Program Adjustments and Enhancements

49. Have the design of the program(s) or the program processes changed since the beginning of the program? Since last year? If so, how?

    Why were the changes made?

    Was the Solution Provider network expanded? How many trade allies are on the list?

50. Will there be any changes made to program offerings in Program Year 2011 (e.g., program offerings, marketing approach, targets, incentive levels, etc)? If so, please describe these additions or deletions.

51. Are there elements in design, structure, and/or operation that should be modified to make the program(s) work better?

    If so, what would you recommend?

    Why do you think this change is needed?

52. From your perspective, is staffing adequate for this program to meet its goal? (If not): What areas/functions do you feel are not adequately staffed? Is the program fully staffed at this time? (One finding from last year was to keep the program fully staffed to keep the momentum up).

Success and the Future of These Efforts

53. Do you think the current economic conditions are affecting the program? If so, how?

54. In your opinion, how successful is the program? Why?
    What are the Self-Direct Program strengths?

    What are the Program weaknesses?

    How could the program be improved?

55. Do you have any other comments or suggestions for us?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.
We might follow-up with you by phone later, if additional questions arise.



APPENDIX L

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AEP Ohio
Energy Efficiency/
Peak Demand Reduction Plan
Year (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report:
Express Program for Small Business

Presented to

AEP OHIO®
A unit of American Electric Power

May 10, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, Ohio 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Roger Hill, Managing Consultant
641.236.1511
roger.hill@navigant.com

Argene McDowell, Senior Consultant
608.497.2330
argene.mcdowell@navigant.com

Bethany Glinsmann, Senior Consultant
608.497.2331
bethany.vittetoeglinsmann@navigant.com

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Section E. Executive Summary

This document presents a summary of the findings and results from the evaluation of the Express Program for Small Business (Express Program) implemented by AEP Ohio for the program year January 1, 2011 through December 31, 2011 (PY 2011).[1] The Express Program was a Pilot during PY 2010 with three projects completed. While several projects were in the pipeline at the start of PY 2011, this evaluation represents the first full year of the program.

The Express Program for Small Business provides a one-stop, turn-key service to small businesses (less than 200,000 kWh annual consumption) for lighting, HVAC and refrigeration measure upgrades. Savings estimates are based on prescriptive formulas for simplicity and audit-ability. Equipment installation contractors serve as the contact point for the program to simplify the participation process for small business with limited resources and energy efficiency expertise.

The Express Program is marketed, administered, and delivered by AEP Ohio. The program is administered by an implementation contractor, KEMA Services Inc. (KEMA), in coordination with AEP Ohio.

E.1 Evaluation Objectives

The three major objectives of the evaluation are to:

(1) Quantify verified gross energy savings and summer peak demand reduction[2] from the program during PY 2011;

(2) Determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and

(3) Provide data to determine program cost-effectiveness.

E.2 Evaluation Methods

The data collected for the evaluation of the PY 2011 Express Program were gathered by several means, including:

[1] Program Year 2011 (PY 2011) began January 1, 2011 and ended December 31, 2011. The 2011 Express Program.
[2] The summer on-peak period for claiming demand reduction is defined as non-holiday weekdays from 3 pm through 6 pm, June 1st through August 31st.

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- In-depth phone interviews with program managers and the implementation contractor (KEMA)
- In-depth interviews with trade allies or "Registered Express Contractors (contractors)"
- Technical review of a sample of projects
- Computer-Assisted Telephone Interview (CATI) surveys with customers
- Tracking system data review
- Analysis of billing data provided by AEP Ohio

Table E-1 provides a summary of these data collection activities, including the targeted population, the sample frame, and timing in which the data collection occurred.

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Table E-1. Data Collection Activities for PY 2011 Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	2011 Express projects	AEP Ohio Express Program Tracking Database	-	All	September 2011 through February 2012
In-depth Interviews	Program staff at AEP Ohio and the implementation support contractor	Contacts from AEP Ohio	-	1 KEMA staff; 1 AEP Ohio Staff	January 2012
In Depth Interviews	2011 Express Program customer Participants and Non-Participants	Express Program Tracking Database	Census	69 part 26 non-part	December 2011 through March 2012
In Depth Interviews	Active Registered Express Contractors	Express Program Tracking Database	Census	10	December 2011 through February 2012
Billing Data	PY 2011 Participants & Pipeline PY 2012 Participants	AEP Ohio Customer Information System	Census	520	February 2012-March 2012
Project Application File Review	Projects in the 2011 Program	Express Program Tracking Database	Random Sample	12	October 2011-January 2012
Onsite Data Verification	Projects in the 2011 Program	Express Program Tracking Database	Random Sample around Columbus locations	10	March 2012

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E.3 Key Findings and Recommendations

The impact results for the PY 2011 Express Program are shown in Table E-2.

Table E-2. Gross Savings Estimates for PY 2011 Express Program

Program	Program Goals		Ex-Ante Reported Savings		Verified Gross Savings	
	Gross MWh	Gross MW	Gross MWh	Gross MW	Gross MWh	Gross MW
Express Program	NA	NA	**7,616**	**1.485**	**2,946**	**1.485**

For AEP Ohio, the realization rate (defined as verified gross savings/ex-ante reported savings) is 39 percent for gross energy savings, and 100 percent for gross demand reduction. The relative precision at a 90 percent confidence level for the 2011 Express projects in the sample is ± 22 percent for the energy realization rate and better than ± 10 percent for the demand realization rate.

Key Impact Recommendations

1. KEMA and AEP Ohio should re-assess some of the baseline fixture wattages used for ex-ante savings estimates. Over-estimating existing fixture power will inflate ex-ante savings. Focus on the most common baseline systems: linear fluorescent lamps and incandescent lamps rated for >120V.

2. Ex-ante demand and energy savings estimates should include minimum burn-out estimates for sites that do not exceed the 10 percent threshold required to track lamp burn-out. Navigant suggests a minimum burnout estimate between 3 percent and 8 percent.

3. Operating hours should be more site-specific and precise. Hour ranges appear to create a tendency for over-estimating operating hours and ex-ante savings. Absent more specific data, operating hours could be based on:

    - Actual business hours, plus one to two hours per day for pre-and post-occupancy usage.
    - A fifty-week year assuming holiday closures, or
    - Deemed estimated hours by business type

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Key Process Recommendations

1. The Business Express Program should have a link on the AEPOhio.com home page. Though customers can gain access to the program web-page through several links, the path is not always clear. At one point, customers click on the residential programs link to find the Business Express Program.

2. AEP Ohio should encourage contractors to include their office staff in the software training if they are going to be heavily involved in organizing and inputting the data into the database. Educating the staff might reduce the time from the first visit to the delivery of the assessment to the customer and increase the speed of program delivery.

3. To increase participation, AEP Ohio should consider:

   - Increasing the number of Registered Express Contractors, who deliver the program to customers

   - Discussing marketing strategies, such as modifying the bonus program that would encourage Registered Express Contractors to resist the tendency to focus only on "larger" small businesses.

4. AEP Ohio and KEMA should continue to focus marketing resources on targeted customer segments or measures to maximize the value of the marketing dollar.

5. The outreach staff should re-evaluate the wisdom of using the phrase 'up to 100 percent incentive' to sell this program. The research shows that customers are interpreting this claim literally and the resulting disappointment causes a negative backlash to AEP Ohio.

6. Lack of capital is one of the major issues with the program even though the sums involved are frequently small. Navigant suggests that AEP Ohio continues to explore financing options to fold into the program offer.

7. Lack of information about the program and the benefits of energy-efficient equipment are also major barriers to the program. AEP Ohio should explore how to get information to these low information customers and should consider whether a general information/education campaign is needed.

8. Program participants plan to participate again when the opportunity presents itself. AEP Ohio should develop campaigns designed to attract the attention of smaller customers to other programs or to a second round with the Express Program.

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9. Rather than seen as a disruption, most program participants think the inspections add value by confirming the equipment was properly installed. KEMA is planning to reduce the number of inspections to concentrate on contractors with low numbers of installations. AEP Ohio will need to plan carefully to allocate pre-and post-installation inspections across all customer types.

10. The program has successfully created jobs for program contractors in some cases. Contractors do not see any obstacles to participating in the program with renewed energy. The number of program-induced jobs can be expected to increase in the next few years of the program before leveling off.

11. Navigant suggests that AEP Ohio use all communication methods to inform customers of the program rules about contractually binding the contractor to the costs as approved by AEP Ohio. Contractors should also be fully aware of the consequences of their actions.

12. Some contractors have limited their marketing to their customer base while others used innovative marketing methods to grow their business. AEP Ohio should find ways to spotlight the most successful contractors and transfer to others the methods used to become successful.

13. In a similar situation, on average, contractors convert about 50 percent of the customers who receive an energy assessment to the second stage of the program. Navigant should contact contractors with higher than average conversion rates to determine contractor best practices.

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Section 1. Introduction and Purpose of the Study

The Small Business Express Program is one of several energy efficiency programs for the commercial market sector offered by AEP Ohio to meet corporate goals and fulfill legislatively mandated energy efficiency and demand reduction goals. The Express Program targets small businesses that typically do not participate in other program offerings due to various market barriers: lack of capital, inadequate energy expertise or insufficient personnel to explore energy efficiency options. To address these market barriers the program offers higher incentives, and is marketed and delivered through Registered Express Contractors who are trained in energy efficiency and Express Program procedures and reporting.

Registered Express Contractors (Contractors) survey customers' sites, propose retrofits, and install customer-approved equipment within a prescribed period of time. AEP Ohio pays the equipment incentives to the contractor to reduce the administrative burden on the customer and simplify the participation process. The contractor includes the incentive credit in their work proposal to show how the incentives reduce the simple-payback of the project to the customer.

The program launched in mid-2010 as a pilot program. Only three projects were completed prior to the end of PY 2010, though several projects were "in the pipeline" for completion early in 2011. Continuing from the pilot phase, participation has shown steady growth. However, overall savings and participation goals were not achieved in PY 2011.

The Express Program was marketed, administered, and delivered by AEP Ohio through its implementation subcontractor, KEMA, Inc.

1.1 Evaluation Overview

The three major objectives of the evaluation are to:

(1) Quantify energy savings and summer peak demand reduction from the program during program year (PY) 2011

(2) Determine key process-related program strengths and weaknesses and identify ways in which the program can be improved

(3) Provide data to determine program cost-effectiveness.

The evaluation will seek to answer the following key research questions.

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1.1.1 Cross Cutting Questions

1. Do customers have other energy efficiency projects planned for next year that will depend on incentive dollars from an AEP program?

1.1.2 Impact Questions

1. Were the impacts reported by the program achieved?

2. What were the realization rates? (Defined as evaluation-verified (ex-post) savings divided by program-reported (ex-ante) savings.)

3. What are the benefits and costs and cost effectiveness of this program?

The PY 2011 evaluation provides AEP combined quantitative results for these three impact questions.

1.1.3 Process Questions

Marketing and Participation

1. Is the program outreach to customers through the program and Contractors effective in increasing awareness of the program opportunities?

2. How did customers become aware of the program? What marketing strategies could be used to boost program awareness?

Program Characteristics and Barriers

1. What areas could the program improve to create a more effective program for customers and Registered Contractor partners and help increase the energy and demand impacts?

2. Is the application process efficient and easy for customers to navigate? Does the process present any barriers to program participation?

3. Are customers and program partners satisfied with the aspects of program implementation in which they have been involved?

Administration and Delivery

1. Are the program administrative and delivery processes effective for smoothly providing incentives to customers?

2. What were the program satisfaction and customer service experiences?

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3. Are the communication processes with participants effective?

4. What are the verification procedures for the program? Have they been implemented in a manner consistent with design? Do they present a barrier to participation or perceived undue burden on customers?

The PY 2011 evaluation presents findings for each of these process questions.

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Section 2. Description of the Program

This evaluation report covers the Express Program element of the AEP Ohio's business energy efficiency and peak demand reduction (EE/PDR) program.

2.1 Program Description

2.1.1 Business Sector Programs

In 2007, AEP corporate launched an energy efficiency initiative. Energy and demand savings targets were established for each operating company in the AEP system. In 2008, Ohio passed comprehensive energy legislation, which includes an advanced energy portfolio standard (AEPS) 2008 Senate Bill (SB) 221, signed into law by Governor Ted Strickland on May 1, 2008.[3] The law directs Ohio utilities to implement programs to help their customers use electricity more efficiently, and requires electric utilities to achieve energy savings of 22.2 percent of baseline electricity use by the end of 2025 through energy efficiency programs. Utilities must also implement programs to reduce peak energy demand one percent beginning in 2009, and an additional 0.75 percent per year through 2018, for a total of 7.75 percent.

AEP Ohio launched a set of EE/PDR programs for 2009-2011 under a three-year action plan with oversight by the Public Utilities Commission of Ohio (PUCO). The Express Program was one of five energy efficiency program elements available to non-residential customers of AEP Ohio in 2011:

- The **Self-Direct Program** rewards qualifying customers who submit previously installed projects through one of two energy efficiency credit options: an energy efficiency credit payment of 75 percent of the calculated incentive amount under the Prescriptive or Custom Program; or an exemption from the EE/PDR rider for a specified number of months. The 2011 program targeted projects installed after January 1, 2008 and prior to December 31, 2010.
- The **Prescriptive Program** provides a streamlined incentive application and quality control process, and is intended to facilitate ease of participation for nonresidential customers interested in purchasing efficient technologies from a pre-qualified list. Relationships with trade ally "Solution Providers" are a key strategy for promoting prescriptive incentive availability to customers. The 2009 program targeted discrete new construction, retrofit, and replacement opportunities in lighting, and the application form was eligible for use in early 2010. In April 2010, AEP Ohio launched the 2010

[3] http://www.legislature.state.oh.us/bills.cfm?ID=127_SB_221.

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Prescriptive Program and application form that expanded the program to additional end-uses such as HVAC, and refrigeration systems, and increased the number of eligible lighting measures. In 2011, the Prescriptive Program staff assigned more marketing resources to attracting non-lighting projects.

- The **Custom Program** offers incentives to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects.
- The **Express Program** provides one-stop turn-key services to small businesses (defined as customers with less than 200,000 kWh's consumption per year) for lighting, HVAC and refrigeration measure upgrades. Approved service providers recruit participants, identify savings opportunities, complete program paperwork and install measures for the program. The Express Program launched in November 2010. Savings estimates are based on prescriptive formulas for simplicity and auditability.
- The **New Construction Program** seeks to capture energy efficiency and peak load reduction opportunities through a comprehensive effort to influence building design and construction practices. It does so by providing incentives to new facility owners for the installation of high-efficiency lighting, HVAC, building envelope, refrigeration and other equipment and controls, and by providing design assistance to the architects and engineers that are designing new buildings. The key design assistance tool is building simulation modeling of more efficient building designs. The New Construction Program launched in March 2011.

The AEP Ohio programs are funded on an annual calendar year basis. Funding in any given program year is limited to that year's budgeted amount and, therefore, incentives are paid on a first-come, first-served basis until the program year's incentive funds are exhausted. Funds may be shifted between the multiple business program elements based on participant response and approval of the PUCO. The 2011 business sector portion of the EE/PDR Action Plan goal follows in Table 2-1.

Table 2-1. Business Sector Programs Planned Savings Goals and Budgets

Business Sector Programs	2011
Energy Savings (GWh)	249.9
% Savings of Sector Sales	0.70%
Demand Savings (MW)	93.5
% Savings of Sector Sales	1.35%
Total Cost ($ millions)	$33.9

Source: 2009 to 2011 Energy Efficiency/Peak Demand Reduction (EE/PDR) Action Plan, November 5, 2009. p. 2

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AEP Ohio retained KEMA Services Inc. (KEMA) as its program administrator responsible for day-to-day operations of the Business Programs. AEP Ohio Prescriptive, Custom, Self-Direct, New Construction and Express Program Coordinators report to an overall Business Program Manager. An AEP Ohio staff person supports outreach and marketing, and other AEP Ohio staff support planning, evaluation, and reporting.

2.1.2 Express Program Description

The Express Program for Small Business targets businesses who typically do not participate in efficiency programs due to various market barriers such as: lack of capital, inadequate energy efficiency expertise, or insufficient personnel to explore efficiency options. AEP Ohio business customers, with annual consumption below 200,000[4] kWh, can participate in the Express Program. To address market barriers the program has higher equipment incentives, and is marketed and delivered though Registered Express Contractors. AEP Ohio pays incentives *to the contractor* to reduce the administrative burden on the customer and simplify the participation process.

In addition to the annual consumption restriction, participants must be AEP Ohio customers and they cannot be mercantile or managed national account customers. These other criteria presume that these other customer groups have adequate access to capital and energy efficiency expertise and support at the corporate level.

Participating Express Program participants receive[5]:

- A free facility assessment to identify potential energy-saving opportunities
- A proposal that includes a list of recommendations and estimates of energy savings, project cost and payback period
- Incentives paid directly to the contractor, up to 100 percent of the project cost
- Installation of approved energy-savings equipment by a local, trained contractor
- Pre- and post-installation inspections to assure quality and to verify energy savings

Eligible equipment includes indoor and outdoor lighting retrofits, occupancy sensors, refrigeration controls, HVAC equipment and other proven technologies. However, most of the

[4] By applying rules-of-thumb, the consumption restriction limits participants to about 10,000 square feet of office or retail space. Higher energy users, such as convenience stores or small manufacturing, generally will be smaller to comply with the consumption restriction. Unconditioned warehouses can be much larger.
[5] Information obtained from the Express Program Fact Sheet 1210.

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2011 participation consists of lighting measures. Incentives vary based on equipment type and the estimated energy saved.

Implementation Strategy
KEMA, AEP Ohio staff and local Registered Express Contractors (contractor) share responsibility for promoting the Express Program. KEMA and AEP Ohio staff partner to deliver informational presentations at trade shows and to community groups such as the Chambers of Commerce. The Contractors, however, do most of the one-on-one marketing to customers. The program is designed to make their standard service offering more appealing, thus an assertive contractor could develop its business around the Express Program. One of the secondary goals of the program is to induce more employment among local contractors.

Roles of the Implementation Contractor
KEMA is responsible for day-to-day program implementation. KEMA collects the electronically submitted applications, qualifies potential participants with the AEP Ohio billing database, approves applications or sends them back for modification, conducts pre-installation and post-installation inspections, and maintains communication among participants, contractors and AEP Ohio. KEMA created and maintains a database to track the status of projects.

Each step in the participation process is on a schedule to move the projects rapidly to completion. For example, KEMA is tasked with verifying customer eligibility within two days and conducting pre-installation inspections within ten days of verifying customer eligibility.

KEMA is also responsible for recruiting and training Registered Express Contractors to deliver the program to participants. A two-day training is held regularly for contractors to cover the program details and use of the survey and proposal generation software. KEMA also handles disputes with contractors and has the authority to expel contractors from the program for professional misconduct. Both KEMA and AEP Ohio work collaboratively on the Express Program. Team meetings are mostly held weekly to coordinate and decide program issues.

Program Delivery Mechanisms and Marketing Strategy
The Express Program leverages the relationship between local contractors and small businesses. These customers seldom have time to attend seminars or presentations, thus their contractors are their point of contact for ideas for reducing energy costs. By teaming with the contractors and training them on the Express Program procedures, AEP Ohio uses contractors to market the Express Program to their customers in a one-on-one setting. In return, AEP Ohio confers a "stamp of approval" on the contractor by certifying it with the program and conducting quality control steps during pre-installation and post-installation inspections.

In 2010, AEP Ohio began training local contractors on the Express Program. By the conclusion of PY 2011, seventy-eight contractors were registered with the program, though only thirty-

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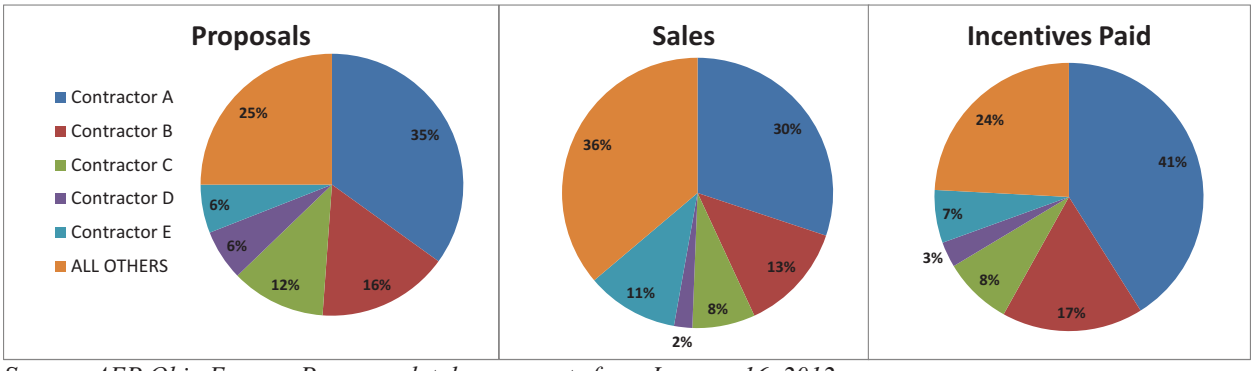
eight submitted projects during the program year. Contractor approaches to the program vary and successful contractors may have a couple of approaches. Contractor interviews and tracking data show that contractors will target a specific street and/or strip mall and market to all eligible customers in that business neighborhood. When a contractor finds a receptive participant, it then targets related facilities, for example, a restaurant or dry cleaner with multiple locations. Other contractors market the program only as part of their business-as-usual marketing, and thus, may have fewer projects among diverse sites and addresses.

In addition to training, AEP Ohio provides the contractors with marketing materials promoting the program by highlighting case studies. Throughout the program, KEMA marketing staff and AEP Ohio marketing staff have jointly developed these collateral materials.

Solution Provider Participation

AEP Ohio and KEMA launched the Registered Express Contractor network of contractors in the third quarter of 2010. This is a network of contractors that have been trained on the program, have applied to market the program, and are listed on the AEP Ohio website as a registered contractor for business sector programs. Additionally RECs must supply proof of insurance, agree to honor all warrantees and provide letters of reference. As of March 2012, 78 Contractors were listed on the Express Program website.[6] Among these contractors only 38 were active in PY 2011, and only five accounted for 75 percent of approved proposals, 64 percent of sales through the program, and 76 percent of the incentives paid by AEP Ohio. The other thirty-three contractors have only 25 percent of the proposals and most completed only one or two projects in PY 2011.

Figure 2-1. PY 2011 Contractor Metric



Source: AEP Ohio Express Program database exports from January 16, 2012.

[6] https://aepohio.com/save/programs/Express/Default.aspx?ctype=b

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In aggregate, the charts in Figure 2-1 suggest that Contractors A, B, C and D conduct less selective marketing to eligible customers, while others are focusing their efforts on potential projects with higher sales per proposal.

2.2 2011 Express Program Participation

In general, the Express Program is still in its ramp-up phase. Almost 54 percent of PY 2011 projects were completed in the fourth quarter of PY 2011. Program managers report that pipeline projects in January 2012 already account for 50 percent of 2012 program goals.

Navigant extracted key program participation data from AEP Ohio's Express Program database. The database includes two tables: project-level data and measure-level data. The project table consists of project total impacts, application submittal and status data, customer and contractor contact information and internal approval information. Project data is linked by a unique proposal number to measure-level information. The technical basis for AEP Ohio's ex-ante reported gross savings is described in Section 0.

Table 2-2 provides a profile of 2011 program year Express Program participation at the market segment level. Figures 2-2 through 2-6 show other attributes of the PY 2011 participants. Table 2-3 and Figure 2-7 provides measure level breakouts.

The small retail and small office segments have a majority of the proposals and energy savings, an indication that the program is reaching these historically under-representative groups. Low savings per proposal in the restaurant and assembly segments is likely a reflection of the lighting types employed in these spaces and the size of these spaces. Restaurants tend to be smaller than retail spaces and might employ more specialty lighting. In general, energy and demand savings are roughly proportional to the number of proposals generated for each market segment. The few school projects do have higher savings per proposal as shown in Figure 2-3. Overall, the average ex-ante savings per proposal is 21,636 kWh.

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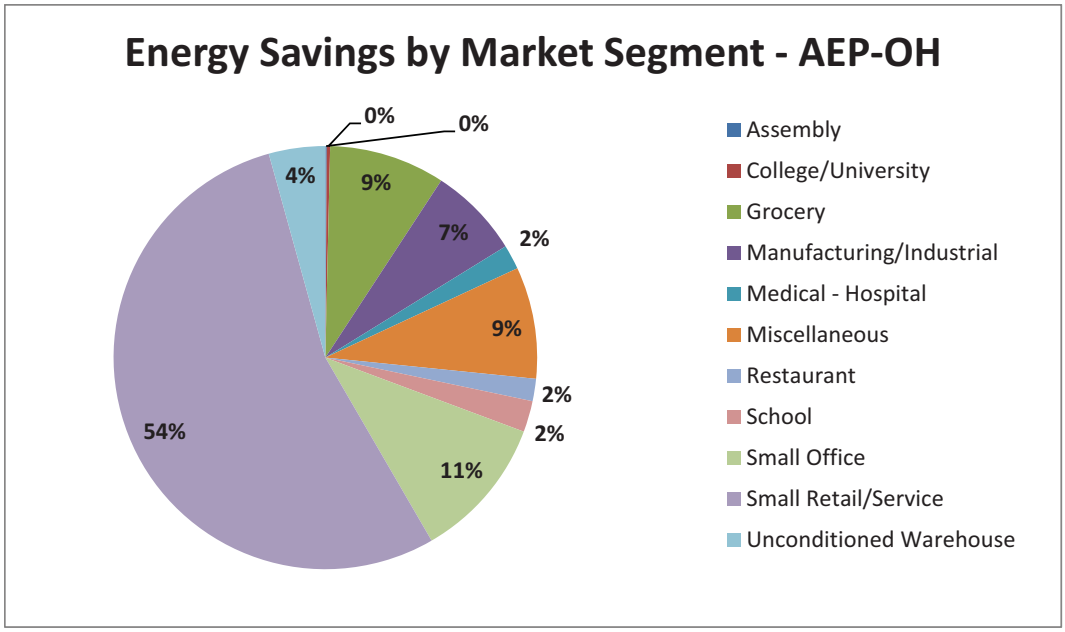
Table 2-2. PY 2011 AEP Ohio Express Program Participation by Business Type

Business Type	Project Count		Ex-Ante Reported Savings, Gross MWh		Ex-Ante Reported Savings, Gross MW	
Assembly	1	0%	8	0%	2	0%
College/University	1	0%	19	0%	4	0%
Grocery	36	10%	674	9%	78	5%
Manufacturing/Industrial	20	6%	531	7%	123	8%
Medical – Hospital	6	2%	142	2%	29	2%
Miscellaneous	20	6%	650	9%	103	7%
Restaurant	11	3%	130	2%	21	1%
School	4	1%	181	2%	42	3%
Small Office	39	11%	834	11%	149	10%
Small Retail/Service	204	58%	4,117	54%	877	59%
Unconditioned Warehouse	10	3%	329	4%	56	4%
Total	352	100%	7,616	100%	1,485	100%

Source: AEP Ohio Express Program database exports from January 16, 2012.

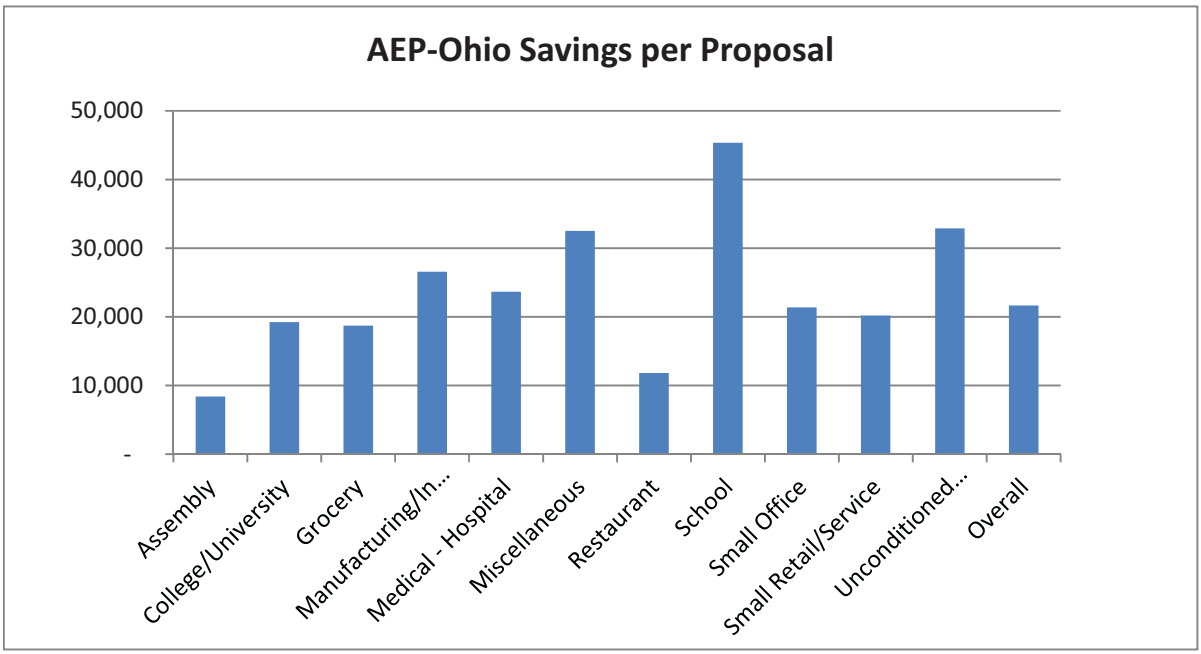
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Figure 2-2. PY 2011 AEP Ohio Express Program MWh Savings by Business Type



Source: AEP Ohio Express Program database exports from January 16, 2012.

Figure 2-3. PY 2011 AEP Ohio Express Program Average MWh Savings by Business Type

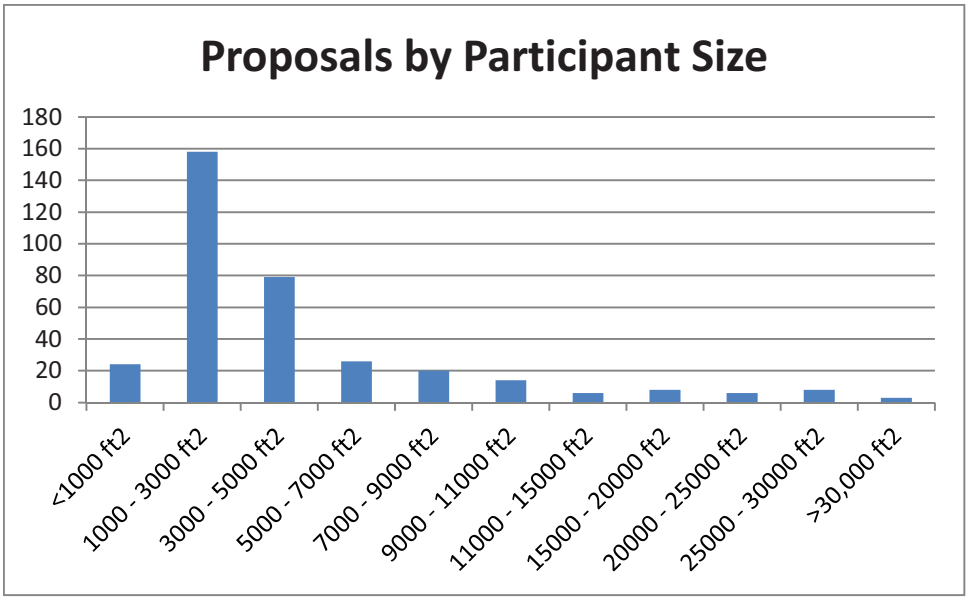


Source: AEP Ohio Express Program database exports from January 16, 2012.

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Figure 2-4 and Figure 2-5 show the distribution of proposals and savings by reported floor area size. The program appears to be successful enrolling typical small business. More than two-thirds of participants are between 1,000 ft2 and 5,000 ft2, and more than 50 percent of program ex-ante savings are attributed to the smallest customers. Figure 2-6 shows the average participant size by business type. As expected, the assembly, industrial, schools and warehouse segments are the largest facilities in the program. Restaurants and small groceries (convenience stores) are the smallest participants by floor area.

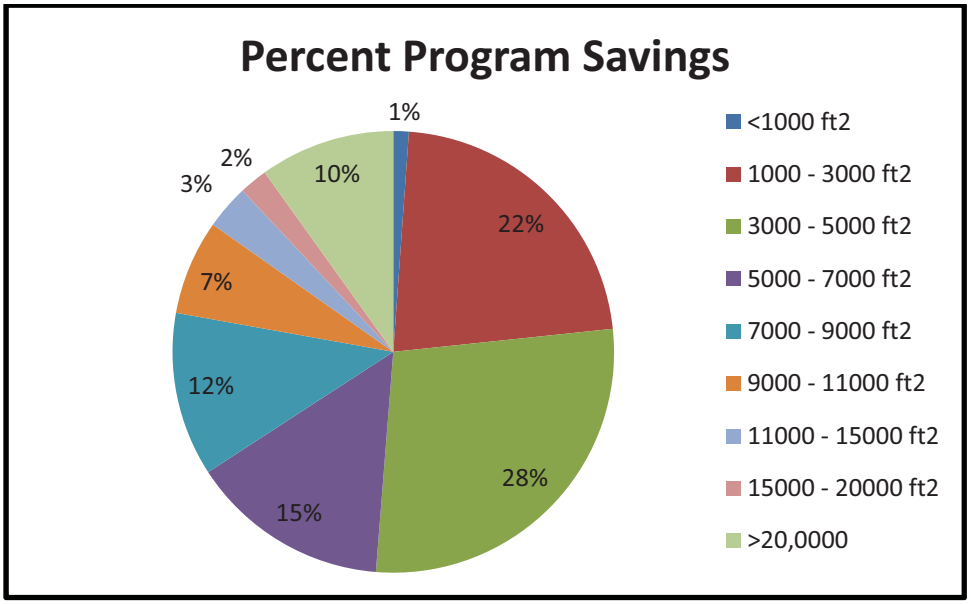
Figure 2-4. PY 2011 AEP Ohio Express Program Proposals by Participant Size



Source: AEP Ohio Express Program database exports from January 16, 2012.

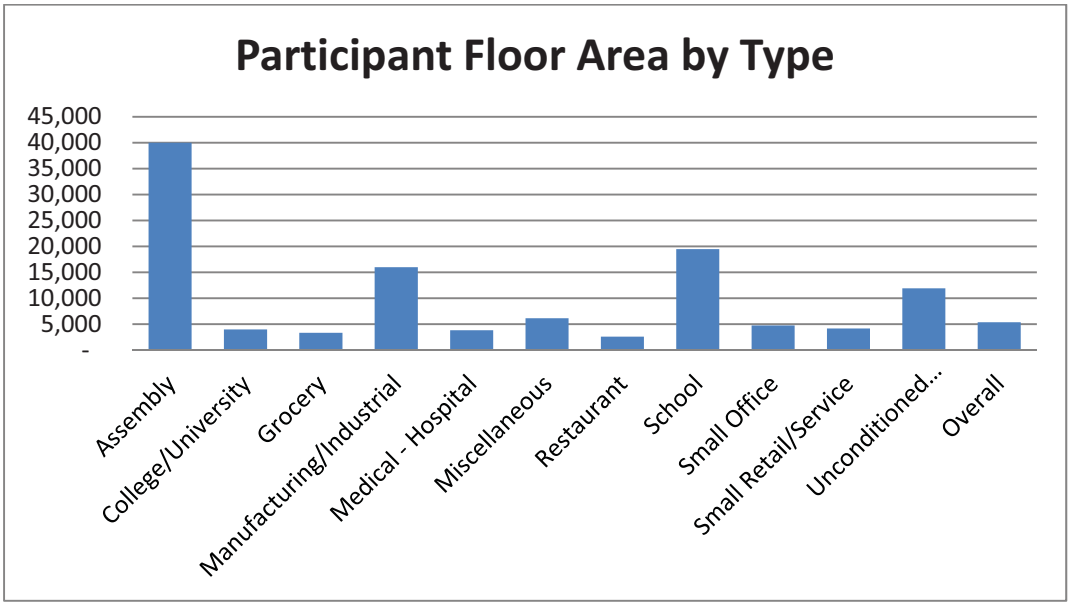
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Figure 2-5. PY 2011 AEP Ohio Express Program MWh Savings by Participant Size



Source: AEP Ohio Express Program database exports from January 16, 2012.

Figure 2-6. Participant Size (average) by Business Type



Source: AEP Ohio Express Program database exports from January 16, 2012.

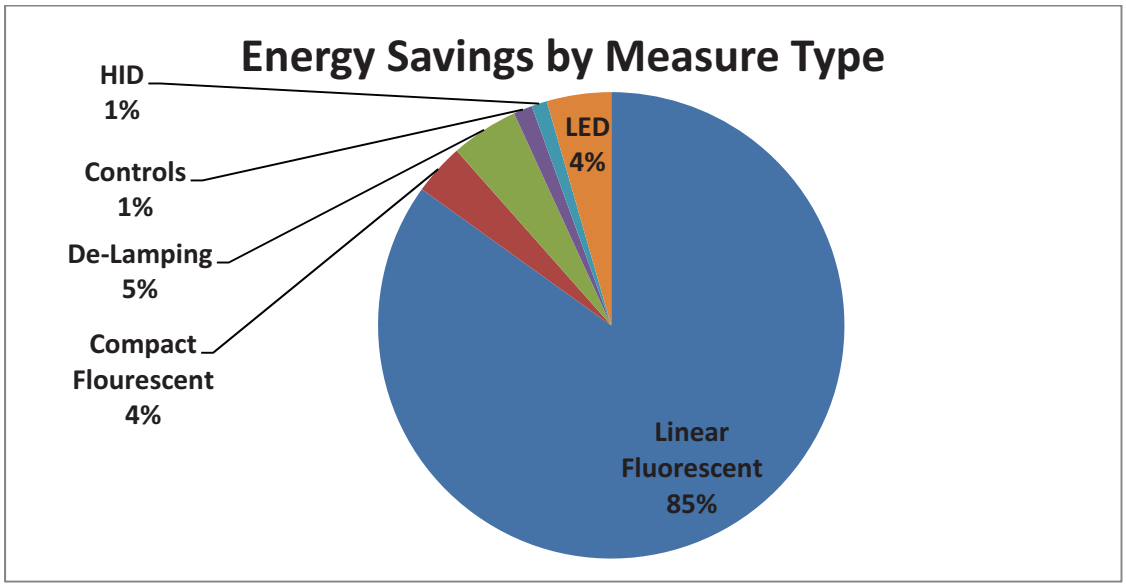
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Table 2-3. PY 2011 AEP Ohio Express Program Savings by Measure Type

Measure Type	Example Systems	Ex-Ante Savings, Gross MWh	Ex-Ante Savings, Gross kW
Linear Fluorescent	All configurations of T5 and T8 system, excluding delamping	6,467	1,299.7
Compact Fluorescent	All configurations of screw-in and hard-wired CFLs	271	54.9
De-Lamping	Removal of lamps from linear fluorescent systems	357	80.6
Controls	Occupancy sensors (wall/switch/ceiling) and photocells	99	0.0
HID	Pulse-start metal halides	82	10.4
LED	Exit Signs and other hard-wired or screw-in lamps	340	39.7
Total		**7,616**	**1485.3**

Source: AEP Ohio Express Program database exports from January 16, 2012.

Figure 2-7. PY 2011 AEP Ohio Express Program MWh Savings by Measure Type



Source: AEP Ohio Express Program database exports from January 16, 2012.

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Section 3. Methodology

For Express Program participants, Navigant conducted impact and process evaluation activities following the methodologies outlined below.

3.1 Analytical Methods

3.1.1 Impact Evaluation Methods

The objective of this element of the impact evaluation was to verify the ex-ante reported gross savings in the Express Program tracking system. Savings verification was conducted by a multiple methods:

- **Billing analysis** of PY 2011 participants and pipeline participants served as the basis for determining program savings. The fixed effects analysis method employed uses participants as their own controls for savings. Pre- and post-installation periods are determined on a project-by-project basis. Use of pipeline participants as a comparison group incorporates free-ridership and other exogenous effects such as the on-going economic recovery.

- **Tracking System Savings Review**: to identify potential adjustments to ex-ante reported savings for measures due to outliers, missing information, or tracking system data entry or calculation errors.

- **Default Measure Savings Assessment**: to identify potential adjustments to ex-ante reported savings for measures where Navigant recommends an alternative default value for a specific measure.

- **Application Documentation Review**: to identify potential adjustments to ex-ante reported savings for measures based on review of documentation, assumptions, engineering analysis for a selection of projects.

- **On-site Verification**: Navigant conducted onsite verification of measure installations and hours of operation for ten projects in the Columbus area.

In PY 2011 the Express Program only installed lighting-related measures including, linear fluorescent systems, high-bay retrofits, compact fluorescent lamps, controls, and de-lamping. The basis for AEP Ohio's ex-ante reported savings are driven by the first four main factors:

1. Estimated power used by existing fixtures

2. Prescriptive power estimates for new equipment
3. Burn-out ratios for existing lamps
4. Self-reported hours of use
5. Secondary effects from HVAC equipment

Reported savings for lighting measures are based on a technical reference spreadsheet (TRS) developed by KEMA and customer-reported hours of operation in bin of hours. Custom measures rely upon contractor provided data and may be revised by KEMA upon technical review.

3.1.2 Process Evaluation Methods

The purpose of the process evaluation is to assess the effect of the program structure and implementation on program performance and customer satisfaction. Navigant's process efforts provide insights and recommendations to support the continued success of the Express Program.

Central to the process evaluation for the Express Program were interviews with AEP Ohio program coordinators and KEMA staff and review of relevant program tracking databases, documents, and other materials to understand how the program has evolved from the previous year. In addition, a survey house interviewed participating customers to collect data on customer satisfaction and perceptions related to the program. Finally, Navigant conducted in-depth interviews with Registered Express Contractors to identify their perspectives on the program.

Navigant used senior staff members to conduct the in-depth qualitative interviews. Senior staff were flexible in their approach to the discussion, allowing the respondent to talk about his/her experience or perspective while still shaping the discussion toward the most important, relevant and necessary information. The team conducted the interviews by telephone in order to complete the interviews quickly and to be flexible to the respondents' schedule.

Interview guides were developed to be open-ended and to allow for a free-flowing discussion between interviewer and respondent and real time interviewing flexibility. The team developed guides which highlighted the key issues, but did not require being read verbatim to offer the interviewer the flexibility to delve deeply into pertinent issues based on the respondents' knowledge of and experience with the program.

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Navigant took detailed notes during each in-depth interview and/or taped the discussion to ensure thorough documentation of each interview. For any quantitative questions, interviewers are trained to record and summarize responses to allow the evaluators to draw conclusions in the analysis.

3.2 Data Sources

The data collected for evaluation of the PY 2011 Business Express Program was gathered through a number of activities. Navigant conducted in-depth phone interviews with program managers and the implementation contractor (IC), KEMA, in-depth phone interviews Registered Express Contractors, and a CATI survey with participating customers. Navigant reviewed tracking system data, performed onsite verification, and technical review of a sample of projects. Finally, the team performed a billing analysis of participants to determine ex-post savings.**Error! Reference source not found.** Table 3-1 provides a summary of these data collection activities, including the targeted population, the sample frame, and the timeframe in which the data collection occurred.

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Table 3-1. Data Collection Activities for PY 2011 Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	2011 Express projects	AEP Ohio Express Program Tracking Database	-	All	September 2011 through February 2012
In-depth Interviews	AEP Ohio Program staff & IC	Contacts from AEP Ohio	-	1 KEMA staff; 1 AEP Ohio Staff	January 2012
In Depth Interviews	2011 Express Program Participants and Non-Participants	Express Program Tracking Database	Census	69 part 26 non-part	December 2011 through March 2012
In Depth Interviews	Active Registered Express Contractors	Express Program Tracking Database	Census	10	December 2011 through February 2012
Billing Data	PY 2011 Participants & Pipeline PY 2012 Participants	AEP Ohio Customer Information System	Census	520	February 2012-March 2012
Project Application File Review	Projects in the 2011 Program	Express Program Tracking Database	Random Sample	12	October 2011-January 2012
Onsite Data Verification	Projects in the 2011 Program	Express Program Tracking Database	Random Sample Columbus locations	10	March 2012

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3.3 Tracking Data

Navigant was able to extract most key program participation data from AEP Ohio's Express Program tracking database, which was provided by AEP Ohio staff in MS Access format. The tracking data used for this evaluation were extracted January 16, 2012.

Database tables included a project level dataset with project total impacts, application submittal and status data, and internal approval information. Project data is linked by a unique proposal number to measure level information. In general, Navigant found the data and tracking system adequate for program processes and evaluation purposes. In the course of the evaluation, AEP Ohio identified 51 measures associated with 17 projects that had demand savings through typical retrofits, but no associated energy savings. While the quantities and savings involved are small, this situation indicates that data validation in the database would be useful. In addition, the tracking database does not contain the measure life by measure.

Project and Program Documentation

For the engineering review, Navigant downloaded project files in electronic format for a selection of projects. Documentation in the files included: scanned files of available supporting documentation from the Registered Express Contractor (invoices, measure specification sheets, photos, etc.) and savings calculations from the Express Program proposal tool.

Navigant also reviewed program materials developed by KEMA and AEP Ohio, including, the KEMA technical reference spreadsheets documenting prescriptive savings, the Express Program 2011 Policies and Procedures Manual, contractor training materials, and program materials available from the program Web site (www.gridsmartohio.com).

Program and Implementer Staff Interviews

The interviews with the program managers focused on program processes to better understand the goals of the program, the roles of the program coordinators, the implementer and Solution Providers, how the program was implemented and marketed, customer outreach methods, the perceived effectiveness of the program, customer satisfaction, how to improve the program, and evaluation priorities. The interview with the implementation staff explored the implementation of the program in more detail and also covered areas of outreach and data quality assurance.

Registered Express Contractors In-Depth Interviews

In-depth interviews with participating customers and Registered Express Contractors were conducted as part of this evaluation to assess program effectiveness and barriers to participation. Registered Express Contractors with high levels of participation were targeted as were contractors who were no longer participating in the program. Interviews were conducted with ten contractors with high levels of program participation and with two registered contractors who did not participate in PY 2011.

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Participating Customer Survey

Navigant conducted a survey with 69 program participants and 26 non-participants. The surveys were fielded by a survey house and data was collected during March and April 2012. Sampling for participants and contractors targeted a relative precision of ±5 percent at a 95 percent level of confidence. The number of completed contractor surveys among 38 active contractors delivers a relative precision of ±28 percent at a 95 percent level of confidence. The participant survey provides for a relative precision of ±8 percent at a 95 percent level of confidence.

3.3 Sampling Plan

3.3.1 Impact Sample

The Impact Evaluation for savings was based on a billing analysis of an attempted census of PY 2011 participants and an attempted census of pipeline participants for PY 2012, to-date, as a comparison group. The billing analysis model is a fixed-effects method that also uses participants as their own controls. Individual projects were dropped from the analysis due to insufficient data with the same customer – either pre-installation *or* post-installation. The attempted census achieves our impact goal of a relative precision of ±10 percent at a 90 percent level of confidence.

Other impact questions were researched with less rigor since these data were only used to provide context for the billing analysis and the ex-ante savings and incentive calculations. Navigant reviewed a sample of 12 project files pulled from the AEP Ohio SharePoint site hosted by KEMA. This review served to verify equations used to calculate savings and incentives and to verify the application of valid fixture power, hours of use and HVAC interaction factors. Navigant also performed site visits for ten sites to verify equipment installation. These sites were selected from the tracking database due to proximity with other on-site work performed for the AEP Ohio Business Program evaluations. On-site tasks only included verification of retrofit equipment and hours of operation based on facility hours. Since the program operations protocol called for pre-installation and post-installation inspections by the Implementation Contractor, Navigant did not sample sites for statistical validity.

3.3.2 Process Sample

Table 3-2 list the disposition of the participant and non-participant surveys. The data confirms the difficulties experienced while attempting to contact small businesses. The completion rates were 38 percent for participants and 17 percent for non-participants. Over one-fourth of participants and one-fifth of non-participants were disqualified for lack of knowledge about the program. Table 3-33 shows the in-depth interviews planned for the PY2011 evaluation and the

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number of actual completed interviews. Navigant planned to interview two program staff, one each from AEP Ohio and KEMA.

Table 3-2. Disposition of Interviewer Calls

	Participants		Non-Participants	
Completes	69	38%	26	17%
Disqualified	50	27%	32	21%
No answer/disconnected	39	21%	44	29%
Answering machine	34	19%	14	9%
Other	30	16%	33	22%
Callbacks (general and scheduled)	29	16%	29	19%
Refusal	12	7%	30	20%
Total	182	100%	152	100%

2011 Business Express Survey House Disposition Report

Based on final tallies of customer and contractor participation, Navigant planned CATI interviews for up to 153 participating customers and up to 35 participating Registered Express Contractors. The completed in-depth interviews are shown in Table 3-3. Participating customers were chosen based on availability. Respondents represented a number of position titles including business owners and store managers.

Table 3-3. Interview Sample

What	Who	Plan	Completed	When
In-depth interviews	AEP Ohio Program staff and the implementation contractor	4	2	January 2012
CATI process interview	Participants and non-participants	226 (113 per utility)	69 participants and 26 non-participants	February –April 2012
In-depth process interview	Registered Express Contractors	Census	10 participating Contractors and 2 non-participating contractors	February –April 2012

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Section 4. Detailed Evaluation Findings

4.1 Impact Results

This section presents the results of the impact evaluation of the Express Program for Small Businesses. Evaluated impacts are based on a billing analysis of PY 2011 participants and PY 2012 pipeline participants.

4.1.1 Findings from the Documentation Review Task

Navigant reviewed documentation for 12 projects to verify methodologies and equations for estimating savings and incentives. The reviews represented eight different Express Contractors. Observations from the file review experience were that project tracking, documentation, and file management systems are generally well organized and contain sufficient documentation. Contact information for both the customer and contractor is clearly presented; existing equipment and retrofits are adequately described to estimate savings and the incentive; and proposed equipment documentation is generally included.

4.1.2 Program Impact Parameter Estimates

Energy and demand savings are calculated per measure with the following equations:

$$\text{kW saved} = \left[(kW_{ex} \times (1 - out_{ex}) - kW_{prop} \times (1 - out_{prop})\right] \times CF \times HVAC_d$$

$$\text{kWh saved} = \left[(kW_{ex} \times (1 - out_{ex}) - kW_{prop} \times (1 - out_{prop})\right] \times HVAC_e \times hours$$

Where

kW_{ex} = connected kW of the existing system fixture (fixture kW x quantity of fixtures)
kW_{prop} = connected kW of the proposed system fixture (fixture kW x quantity of fixtures)
out_{ex} = burn-out ratio of lamps in the existing system (assumed = 0% if less than 10%)
out_{prop} = burn-out ratio of lamps in the proposed system (presumed = 0)
CF = coincidence factor of the probability that the lighting systems installed for the program are in use during the peak hours
$HVAC_d$ = HVAC interaction factor - demand
$HVAC_e$ = HVAC interaction factor - energy
Hours = operating hours are binned and equal 20, 40, 80, 120 or 160 hours per week for 52 weeks per year

Navigant reviewed the impact parameters to determine whether they were reasonable and acceptable or required revision.

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Navigant reviewed inputs for fixture power, hours of operation and interactive effects. Individually, the team judged that most of these parameters are reasonable or acceptable, but when our internal estimates did not agree with some values, the team found that the discrepancy more often resulted in over-estimated savings.

Lighting Power
In general, Navigant agreed with estimated fixture power listed in the technical reference spreadsheet. However, most borderline fixture wattage tended to estimate existing equipment at a higher wattage than Navigant normally estimates, thus increasing estimated savings.

- Existing 4-foot, T12, 2-lamp systems were listed at 77W. Navigant's estimate was 72-75W for the same system based on 2001 ballasts catalog from Advance Transformers (72W) and a mixture of older, less-efficient ballasts.

- Incandescent lamps were listed at their rated wattage. Navigant estimates that many incandescent lamps in commercial settings are actually "long-life" bulbs which are rated at higher voltages and thus consume less power when operating at 120V nominal. This practice is common because it increases bulb life by two to five times[7] and reduces bulb maintenance frequency and lamp and labor costs.

Navigant recommends more research in the estimates for fixture power for the most common existing and retrofit systems.

Hours of Operation
Many small offices and retail shops[8] are occupied or open 50-60 hours per week, corresponding to ten hours per weekday plus one shorter weekend day or 3,000 hours per year, assuming no occupancy on holidays. Table 4-1 shows the KEMA Technical Reference Manual[9] values for operating hours for different business types. in order to include the diversity of lighting equipment and systems found in the diverse small business sector. These values were not used for the Express Program. Navigant has added the PY 2011 participation distribution for the Express Program for reference.

[7] GE Lighting Incandescent Lamp Characteristics 2/92.
[8] These two segments comprise more than 65% of Express Program participants and electricity savings.
[9] The file KEMA Presc Prog TRM Appendix A 110616.doc is the basis for Business Prescriptive Program savings.

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Table 4-1. Annual Operating Hours by Building Type[10]

Building Type	Non-CFL	CFL	PY 2011 Express Participants
Small Office	2,594	3,082	11%
School	2,245	2,442	1%
Small Retail/Service	3,253	3,721	58%
Medical - Nursing Home	4,260	3,576	2%
Restaurant	4,825	4,825	3%
Grocery	4,886	3,876	10%
Unconditioned Warehouse	3,441	2,780	3%
Manufacturing – Light Industrial (1 shift)	2,857	2,857	6%
Manufacturing – Light Industrial (2 shift)	4,730	4,730	
Manufacturing – Light Industrial (3 shift)	6,631	6,631	
Government/Municipal	2,547	2,719	NA
Assembly	2,443	2,286	0%
Miscellaneous	3,802	3,485	6%

Source: AEP Ohio Express Program database exports from January 16, 2012.

The lighting hours of operation for an Express Program project is an estimate based on *a range of hours*. Navigant conducted on-site inspections at ten sites and looked at the business hours. In all cases, the business hours plus one hour per day put the hours of operation within two hours of the recorded hours of operation bin. Navigant judged these estimates acceptable at the time. Due to the range of hours approach, though, small changes in the hours can have large effects on savings and the incentive. For example, if a system operates 26-59 hours per week, the program and customer proposal assume 40 hours, but if it operates 60-100 hours, the program and customer proposal assumes 80 hours. Savings and incentives are proportional to hours. In borderline situations, 60 hours of operation earns the proposal twice as much incentive as 59 hours of operation weekly. Weekly hours of operation are extrapolated to a full year based on 52 weeks of operation. This estimate may not accurately reflect a small business' treatment of holidays. Navigant reviewed each of the measures installed and found a preponderance of measures with hours of operation in the 80 hours/week bin implying 4,160 annual operating hours.

[10] Based on DEER 2008 as the basis of the draft Ohio Technical Reference (TRM). Manufacturing/Industrial, Garage hours are taken from the Ohio TRM. Exterior operating hours are from Vermont Energy Investment Corporation's replies to the Ohio Utilities joint objections, dated Nov 15, 2010 and filed with the PUCO, 09-512-GE-UNC.

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Table 4-2. Distribution of Installed Measures and Savings by Hours Bins

Hours Range	Hours/week	Measures		Savings		Annual Hours
		Count	Percent	Sum MWh	Percent	
1 to 25 hours	20	199	9%	34	0%	1040
26 to 59 hours	40	311	14%	424	6%	2080
60 to 100 hours	80	1160	53%	5,231	69%	4160
101 to 150 hours	120	168	8%	766	10%	6240
151 to 168 hours	160	350	16%	1,137	15%	8320
Totals (weighted)		2188	100%	7,616	100%	4862

Source: AEP Ohio Express Program database exports from January 16, 2012.

The savings weighted average operating hours is 4,862 hours. This metric contrasts with the weighted average 3,528 hours calculated from data in from Table 4-1. This comparison is not *strictly* accurate due to different lighting types and retrofits involved, but it is illustrative of an over-estimate of operating hours.

Navigant recommends a more rigorous treatment of hours of operation.

1. If hour ranges are desired, these should be based on distributions of actual hours of operation, perhaps calibrated to site-specific business hours. Holiday hours should be considered since small businesses are more likely to shut down for holidays.

2. Bins should be smaller so that the incentive to inflate hours on the margin does not result in radical changes to the incentives.

Interactive Effects

Direct savings from more efficient lighting in conditioned spaces receives interaction multipliers for total impacts in the Express Program, depending on the type of heating and/or air-conditioning equipment used. The interaction multiplier for electric demand also includes the coincidence factor. Navigant found interaction multipliers acceptable.

As-Found Lamp Burn-out

Existing power and energy depends on the number of lamps burning at the time of the contractor's survey. Because lamps are most often replaced when a sufficient number have failed to affect illumination or aesthetics, some burnt-out lamps are expected in the baseline case in most businesses. New equipment presumably does not burn out within the first year, with most replacements having a rated lamp life of 8,000 hours for CFLs, 18,000 hours for linear fluorescent lamps and 50,000+ hours for LED exit signs. The Express Program accounts for burn-outs when these are excessive (greater than 10 percent of a facility or system) by

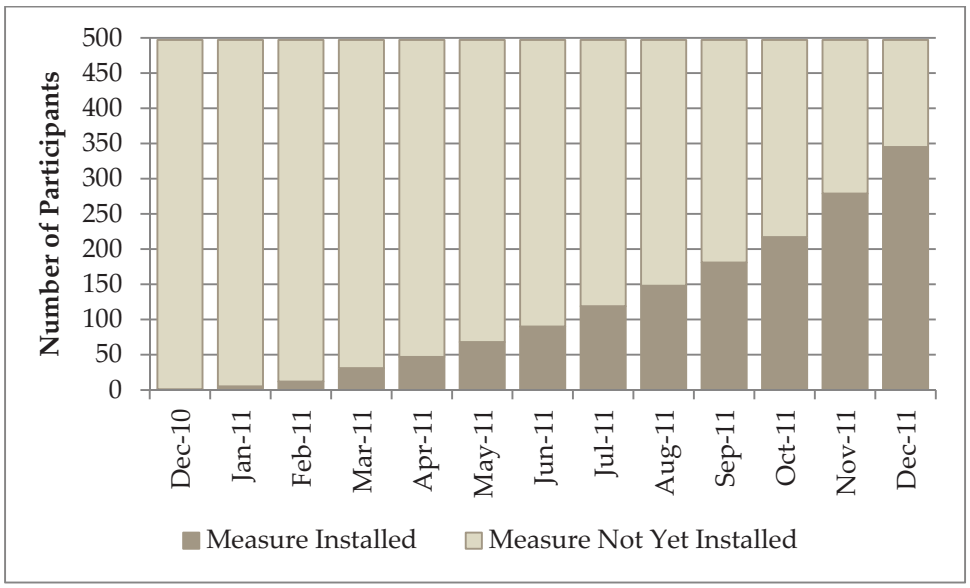
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proportionally reducing savings by the ratio of burnt-out lamps. Lower degrees of lamp burn-out are ignored. From a practical stand-point, Navigant agrees with this treatment of lamp burn-out. However, the practice does introduce an inherent over-estimate of savings between 0 and 10 percent whenever burn-out is not factored in.

4.1.3 Program Impact Billing Analysis Ex-Post Energy Savings

The billing analysis uses monthly billing data from 497 premises: 345 PY 2011 participating premises[11] and 152 pipeline premises. Navigant takes advantage of the fact that program participation is rolling (see Figure 4-1) by using pipeline participants and participants that enter the program later in the year as controls for participants that enter the program earlier in the year. Navigant estimated a fixed effects regression model in which each premise is assigned its own constant term, implicitly controlling for characteristics that affect energy usage but do not change over time, such as square footage of the premise. For a detailed description of the regression model and results see Appendix A, Section 6.

Figure 4-1. Rollout of Express Program Participation



Source: AEP Ohio Express Program database exports from January 16, 2012.

Navigant estimates average annual program savings of 8,489 kWh per premise. With average annual energy usage of 61,807 kWh, the savings represent a 13.7 percent reduction in site energy usage due to the Express Program. The 90 percent confidence interval around this estimate is 6,634 kWh to 10,344 kWh per premise, with a relative precision of 22 percent.

[11] Five premises implemented projects on two separate proposals, one site had bad billing data and a final site had insufficient data; thus only 345 participant *premises* were analyzed.

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Repeating the billing analysis in one year's time will result in a tighter precision value, due to increased numbers of participants as well as longer post-periods for participants who entered the program in 2011.

Total PY 2011 program savings are calculated as the average program savings times 347, the number of participating premises in 2011. Total PY 2011 savings from the Express Program are 2,946 MWh.

Demand Savings
Billing analysis does not estimate electric demand savings. Demand savings for lighting is calculated by the following equation with data from the tracking system.

$$\text{kW saved} = \left[(kW_{ex} \times (1 - out_{ex}) - kW_{prop} \times (1 - out_{prop})\right] \times CF \times HVAC_d$$

Where

kW_{ex} = connected kW of the existing system fixture (fixture kW x quantity of fixtures)
kW_{prop} = connected kW of the proposed system fixture (fixture kW x quantity of fixtures)
out_{ex} = burn-out ratio of lamps in the existing system (assumed = 0% if less than 10%)
out_{prop} = burn-out ratio of lamps in the proposed system (presumed = 0)
CF = coincidence factor of the probability that the lighting systems installed for the program are in use during the peak hours
$HVAC_d$ = HVAC interaction factor - demand

As noted earlier, Navigant identified a tendency to slightly over-estimate the existing fixture kW and under-estimate the burn-out ratio. Both of these items will over-estimate savings. The coincidence factor and HVAC interaction factors are documented in the draft Ohio Technical Resource Manual and are supported by simulations with Ohio weather and coincidence studies in other jurisdictions. Navigant confirmed these factors were accurately applied to Express Program projects.

At this point, Navigant does not have sufficient information to make adjustments to the ex-ante demand savings. Considering all of these factors, Navigant recommends adjusting future ex-ante demand savings by adding a nominal burn-out ratio to projects that are not already adjusted for burn-outs.

4.1.4 Program Impact Results

Based on the Billing Analysis described in the previous section, Navigant estimated the verified gross program energy and demand impacts resulting from the PY 2011 Express Program, shown in

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Table 4-3. No further adjustments were made to verified gross kWh savings.

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Table 4-3. Gross Savings Estimates for 2011 Express Program

Program	Ex-Ante Reported Savings		Verified Gross Savings		Realization Rates	
	Gross MWh	Gross MW	Gross MWh	Gross MW	MWh	Gross MW
AEP Express Program	7,616	1.485	2,946	1.485	38.9%	100%

Source: AEP Ohio Express Program database exports from January 16, 2012.

The low realization rates for energy are striking and deserve further consideration. In the evaluation plan for the Express Program, Navigant suggested a billing analysis due to the relative homogeneity of the participants, consistent savings of lighting efficiency and the magnitude of the savings that would make improvements observable above the regular noise of monthly variations. Our initial estimates assumed that lighting comprises about 30-40 percent of electricity consumption (gas heated facilities) and the predominant retrofits for linear fluorescent systems typically save 30-40 percent of lighting energy. Combined, ex-ante expected savings will be between 9 percent and 16 percent versus the prior year's consumption, if *ALL* lighting is retrofit. Factoring in interactive effects would increase this to between 10 to 18 percent. Billing analysis is most effective when savings is greater than five percent of the total to differentiate the savings from background noise in the data.

For the Express Program the average annual consumption is about 61,800 kWh and the average ex-ante savings among the projects is 21,600 or 35 percent, roughly two to three times expectations. Furthermore, not all lighting systems were changed[12]. Therefore, the full lighting savings potential was not installed.

Navigant reviewed data from the *Buildings Energy Databook 2007*[13] to validate lighting energy use. Based on data by market segment for hours of operation and lighting energy per square foot, the team would estimate about 13,000,000 kWh of electricity consumed by lighting among program participants[14]. If savings potential is about 35 percent of this baseline, the program savings would be 4,550 MWh - if all of that potential were realized - rather than 7,616 MWh. The *Databook* estimate results in a 60 percent realization rate versus ex-ante savings. The

[12] Most Express Program proposals contain details on lighting systems that were already efficient, did not have proposed alternatives or were declined by the customer.
[13] *Buildings Energy Databook 2007.* Section 7.4 Typical Commercial Buildings. US Department of Energy, Sept. 2007.
[14] Section 7.4 of the *Buildings Energy Databook 2007* includes average operating hours and lighting power density (kW/sqft) for different small business segments. By market segment Navigant multiplied total participant floor area by lighting power density and typical hours of operation, We then summed the lighting energy estimate across all business segments.

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programs targeted customers up to 100 kW or slightly larger than the AEP Express Program. Lighting savings per site was between 7,000 and 10,000 kWh per participant.[15],[16] Navigant's estimate with billing analysis is 8,489 kWh.

Therefore, Navigant concludes that the ex-ante estimates for the AEP Express Program are not reasonable. Navigant's further research shows that the billing analysis is consistent with performance of similar programs.

As requested by the statewide evaluator, Table 4-4 provides participation counts, ex-ante savings estimates, and gross savings calculated at the measure end-use level. Detailed data for individual measure types is available.

Table 4-4. PY 2011 AEP Express Program Participation and Savings by End-Use

Measure End-Use	Participation Count	Ex-Ante Reported Savings		Verified Gross Savings	
		Gross MWh	Gross MW	Gross MWh	Gross MW
Lighting	347	7,616	1.485	2,946	1.485
HVAC	0	0	0	0	0
Refrigeration	0	0	0	0	0
Total	**347**	**7,616**	**1.485**	**2,946**	**1.485**

Source: AEP Ohio Express Program database exports from January 16, 2012.

4.2 Process Evaluation Results

4.2.1 Program Implementation

There are many topics to explore during a process evaluation. The primary path Navigant used to explore the program was through in-depth interviews with ten Registered Express Contractors, two non-participating contractors, and program management staff, as well as the review of program materials. In addition, Navigant surveyed a census of program participants and non-participants[17]. These activities were used to explore the issues that were foremost in the interview participants' minds. The findings from all these sources are combined into common topics and summarized below.

[15] "Long Beach and Energy Efficiency Local Governments Business Energy Service Team Program Evaluation". Prepared for KEMA, Inc. Quantec. October 2006.
[16] "Evaluation, Measurement & Verification of the 2004-2005 Business Energy Services Team Program of the Sad Diego Regional Energy Office". Nexant, Inc. August 2006.
[17] Non-participants are defined as customers who received an assessment but failed to implement any of the proposed work.

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4.2.2 Program Implementation

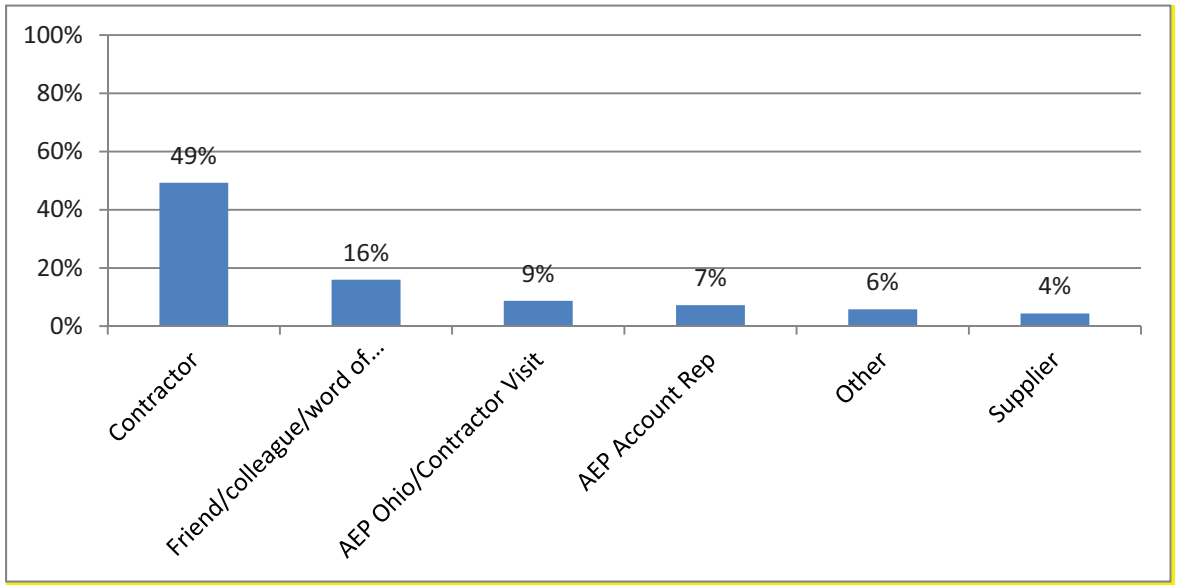
2011 Express Program Changes

The program has been modified from the original program plan. When AEP Ohio first planned the Express Program, it set the maximum yearly usage at 100,000 kWh. However, early experience showed that the 100,000 kWh per year criteria excluded too many customers. In October 2010, AEP Ohio increased the limit to 200,000 kWh per year. At first, to exclude, mercantile customers from the program, AEP Ohio required that a participating customer have only one account. This requirement has since been expanded to a maximum of six accounts in one customer's name, as long as each account has less than 200,000 annual kWh usage. An example is a local dry cleaner with multiple sites. Alternatively, the customer may have more than one account (i.e. meter) on a site. These basic changes significantly increased the number of customers who qualified for the program.

Source of Program Information

Almost half of the program participants in the survey (49%) first heard about the program from a Registered Express Contractor. The next most mentioned source of information about the program (16%) was a friend, colleague or other word-of-mouth source. Another source of program information was a personal visit from an AEP Ohio account executive, or a visit from a contractor who was not identified with the Express Program. These results accurately reflect the fact that the Business Express Program was marketed mainly by the Registered Express Contractors.

Figure 4-2. 2011 Where Customers First Heard About the Program



2011 Business Express Survey Data n=69

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Program Administration

The AEP Ohio goal for the Business Express in 2011 was 10 GWh of energy savings, but AEP Ohio only achieved 7.6 GWh ex-ante. In 2011, there was no pipeline and only three customers participated the previous year. In comparison, in 2012 AEP Ohio has a pipeline of 5 GWh. While approximately 90 contractors have signed up[18], only four or five did the majority of the work in PY 2011. Half of the Contractors did not complete a project in 2011.

According to the Program Manager, besides saving energy and demand, a goal of the Express Program is to create jobs and to serve the small business segment of commercial accounts. The program is designed to concentrate on the 'mom and pop' organizations, not the national accounts.

Most (98% or 99%) of the sites were pre- and post-inspected. However, contractors who have completed numerous projects may be exempted in the future. The intent of the program planners was to inspect 100 percent of projects from new contractors and to inspect a proportion of facilities served by contractors who have extensive experience with the Express Program.

One problem raised by contractors was that they cannot easily qualify the customer for the program. Contractors need to ask for a copy of the customers' utility bill or contact KEMA to verify the eligibility of the customer. Only then is the Contractor able to proceed with the Express Program proposal.

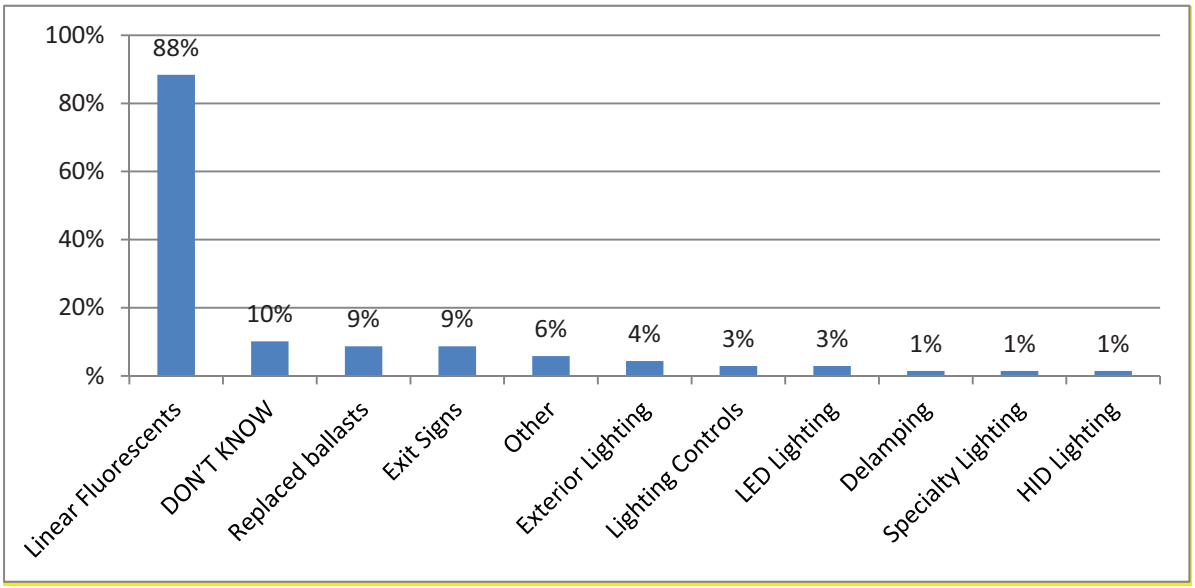
Types of Measures Installed

In the 2011 survey of customers, 88 percent of program participants reported installing linear fluorescent lamps. Few program participants installed other types of lighting, installed controls or delamped an area.

[18] As of February 2012.

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Figure 4-3. 2011 Types of Measures Installed



2011 Business Express Survey Data n=69 multiple responses accepted

Influences on the Customers Decision to Participate

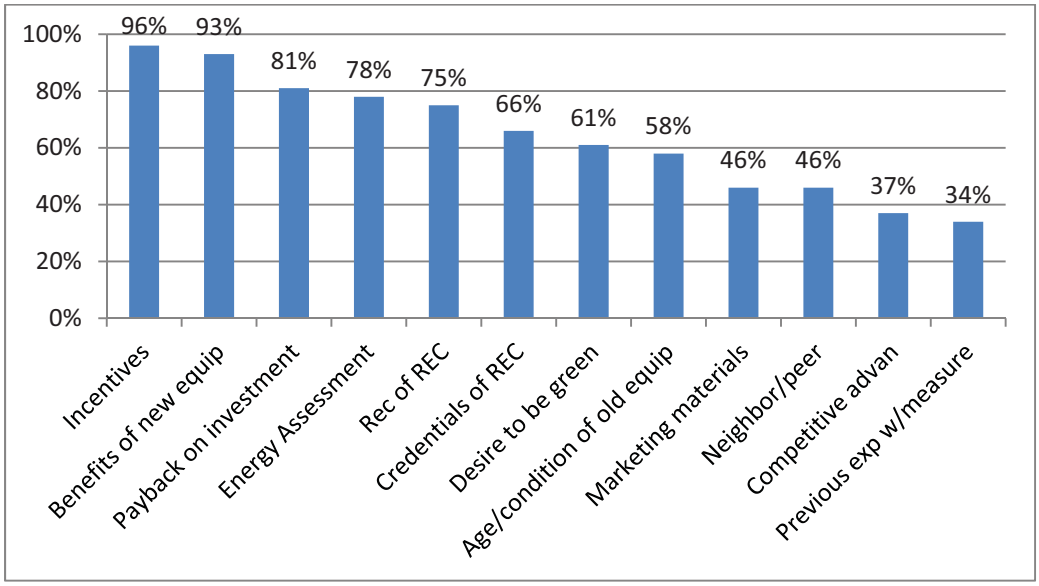
The top five major influences on the customers' decision to participate in the Business Express Program according to the customers were:

- Program incentives (96%)
- Benefits of the new equipment (93%)
- Payback (81%)
- Energy assessment (78%)
- Recommendation of the Registered Energy Contractor (75%)

A majority of survey respondents also indicated that the credentials of the Contractor, the desire to be green, and the condition of the old equipment were major influences on the decision to participation.

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Figure 4-4. 2011 Major Influences on the Decision to Participate in the Business Express Program



2011 Business Express Survey Data n=69 multiple responses accepted

4.2.3 Contractor Issues

Customer Uptake Rates for the Program

AEP Ohio staff reported the number of customers who agree to the assessment depends on the contractor. Active contractors are about 50 percent successful or higher, according to AEP Ohio. Successful contractors do more to qualify their customer and improve as they gain experience with the program.

Contractors reported their response record was much higher than 50 percent. Nine of the ten contractor respondents claimed that between 90 percent and 100 percent of their customers agreed to the free assessment offer. The contractor that hired a company to generate business for the Express and Prescriptive Programs estimated that about 50 percent of its customers took advantage of the free assessment offer.

Contractors in our study did not agree on how many customers took the next step. Contractors estimated that from 10 percent to 100 percent of their customers agreed to install the rebated measures. On average, about 54 percent of customers who agreed to an assessment also agreed to install energy efficient measures.

One concern from AEP Ohio's perspective was how to increase the coverage of the service area, which they described as 'disappointing.' The AEP Ohio service area is spread out with many

rural co-ops and municipal utilities interspersed. If a contractor was doing well in one area, it was unlikely to travel to another area which might not be served by AEP Ohio. Four or five contractors did very well with the Express Program.

There was an effort by KEMA to recruit more contractors in areas not currently covered. KEMA attempted to jumpstart the program using a new marketing technique. KEMA conducted a few canvassing events door-to-door with AEP representatives and program contractors. The team viewed the site, told customers about the program, introduced the contractor, and did a brief energy assessment, if the allowed by the customer. The assessment was completed on-site so the contractor could start working right away. It is not known how aggressively new contractors will promote the program.

The Influence of Current Economic Conditions

KEMA and AEP Ohio staff both thought the economy was improving in Ohio with some segments improving more than others. New construction seems to be experiencing some growth; fewer people are losing their jobs. Some businesses are investing in energy efficiency now because they believe they will be too busy in the near future. All of those indicators are positive signs for the economy.

Influence on Contractor's Business

All but two of the participating contractors thought their revenue increased because of the program. Estimates of increased revenue ranged from 5-7 percent to 35-40 percent. Two contractors indicated the program was currently responsible for 80 percent or 100 percent of their lighting business and a third said its revenues were still down, but the program provided the business with some work. Only one of the ten participating contractors has not seen revenues grow from the Business Express Program and, in fact, he thought the program had cost him money and resources.

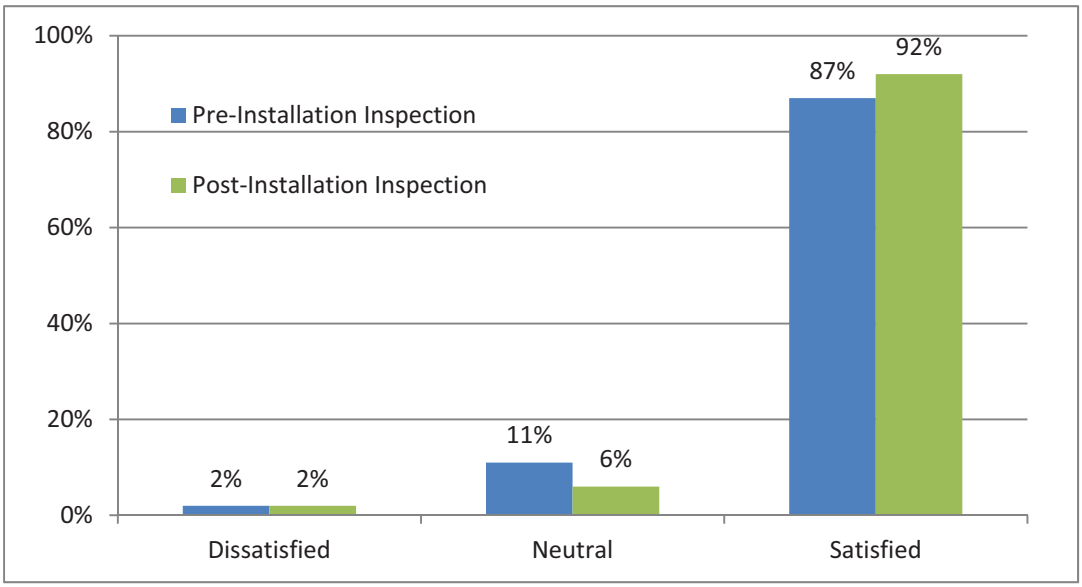
Two of the contractors have been able to hire one additional staff member because of the work generated from the Express Program and the Prescriptive Program. Two more contractors have hired sub-contractors to help with the work load. Another Business Express contractor estimated that the program covered one-half of the salary for a current employee; and one contractor said he would consider hiring more staff if more work was generated from the program.

The Pre and Post-Installation Inspection

The Program Manager does not think the inspection procedure presents an implementation barrier. He said that it builds confidence with the customer and that it was only a barrier for the contractor if it was not obeying the rules. According to AEP Ohio, the inspections are not a deal breaker and are not causing customers to leave the program.

The review of the survey data validates that the pre and post-installation inspections generally are not barriers for contractors or customers. Customers were satisfied with the pre- and post-installation inspections. About 90 percent of Business Express customers gave their satisfaction level as 8, 9 or 10 on the 0 to 10-point scale.

Figure 4-5. 2011 Customer Satisfaction with the Pre-Installation and Post-Installation Inspection



2011 Business Express Survey Data n=69

Business Express Contractor Training

According to program staff, many contractors are not entering the customer data on-site. Contractors gather the information, return to their offices to enter the data and then return with the proposal. Program implementation is often delayed when the process could be done on-site in real time and, with the appropriate technology, delivered to the customer immediately.

Contractor's in our sample agreed that they did not provide the customer with the proposal at the time of the assessment. Some contractors reported that they were not very computer literate with the database. These Contractors bring back notes and someone else on staff enters the data or, alternatively, they may bring a staff member on-site to enter the data for them. Contractors submit the proposal to customers within a couple of days to a week for small projects and from a week to two weeks for more complex projects.

In an effort to support contractors who may be intimidated by the technology, KEMA contacts approved contractors who have not completed a project. KEMA offers to help enter the customer's information into the database if that is a hurdle to its participation.

The training prepares most contractors adequately if the contractor is already computer savvy. However, it may not be adequate for those who are not knowledgeable about computers. All but one of the contractors said the training was adequate or that they learned how to successfully enter projects into the database. However, one contractor didn't think too much of the training program. He thought that the software program was poorly designed and could be more user-friendly. He also thought the same information had to be entered multiple times. One contractor would have liked to have seen an actual installation as part of the training.

4.2.4 Program Outreach Methods

AEP Ohio Program Marketing and Outreach

Opinions differed within AEP Ohio as to whether it is more productive to market to the Contractors or to the customers directly to increase awareness of the program. The Program Manager was concerned that coverage was needed in specific areas in the service area. Better coverage of the service area means increased success for the program. AEP Ohio indicated that KEMA has been slow to acquire contractors in outlying areas, possibly because it is easier to recruit in the populated areas.

For instance, the Program Coordinator gathered a list of all the licensed contractors in the state and targeted the contractors who lived in counties in the AEP Ohio service are with emails, direct mail and phone calls. This resulted in picking up only four or five new contractors from that effort.

AEP Ohio and KEMA train contractors to identify certain factors that will lead to higher incentives. One of the most important predictors of a higher incentive is longer operating hours. For example, a convenience store that is open 24 hours a day will receive a larger incentive than a small church with lighting that is generally not used during peak hours. While AEP Ohio would like the contractors to sell the program to all the customers on the whole street, Contractors may target one profitable customer and move on. Sometimes Contractors advise customers to participate in the Prescriptive Program when it was in the customer's best interests to do so.

The Business Express Program will be featured in a bill insert during 2012. Originally, the program was not even on the web site when it was launched.

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Contractors Program Market and Outreach
Contractors revealed two methods for marketing the Express Program. In what might be called the passive approach, most contractors start by contacting current and past customers. Customers who hear about the program may contact their contractor or may choose a contractor from the online list.

In the active approach, the contractors sell the program directly to customers. Contractors had a number of ways of implementing a direct sales model. One contractor looked for T12s as they are being phased out. He then introduced the program to the customer as a solution to the phase out. Another started with cold calling and progressed to hiring a marketing firm to develop a small-scale program to generate Express and Prescriptive Program leads. It has created a promotional flyer and has dedicated staff to follow up on leads. In addition, this contractor purchased a list of companies and contacts to have an idea of what customers in its area were under the 200,000 kWh limit for the Express Program.

4.2.5 Satisfaction with the Program

Customer Satisfaction

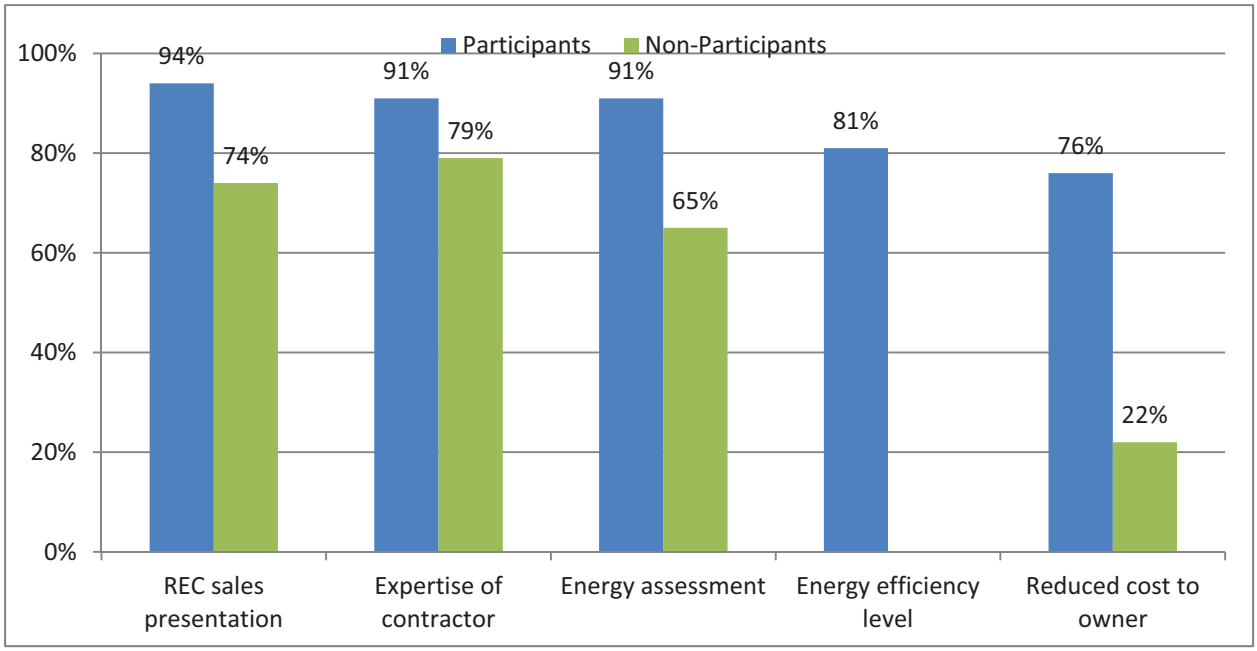
The AEP Ohio Program Coordinator gave presentations about the program to get customers interested in the program. The general idea was to encourage word-of-mouth 'buzz' about the program. The effort may have contributed to the number of projects in the pipeline now. The last quarter of 2011, more customers participated in the Business Express Program than the other three quarters combined, as the program picked up momentum.

The majority of the customers the Program Coordinator talked to about the Program liked it. Many of them were going to do the lighting replacements anyway and welcomed the rebate. Some non-participating contractors heard about the program and called AEP Ohio for more information on how to become a registered contractor.

Customers also reported that they were satisfied with the program. Over 90 percent of program participants were satisfied with the contractor's sales presentation (94%), the expertise of the contractor (91%) and the energy assessment (91%). Substantial proportions of customers, 81 percent and 76 percent, were satisfied with the energy efficiency level of the measures and the reduced costs to customers. Non-participants were less satisfied with all aspects of the program. The largest differences between participants and nonparticipants were found for the energy assessment (91%, 65%) and the reduced cost to the owner (76%, 22%). The latter is the major reason that the non-participants rejected the program. Non-participants evaluated the cost of the program to the customer as much higher than participants did.

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Figure 4-6. 2011 Customer Satisfaction with Attributes of the Business Express Program

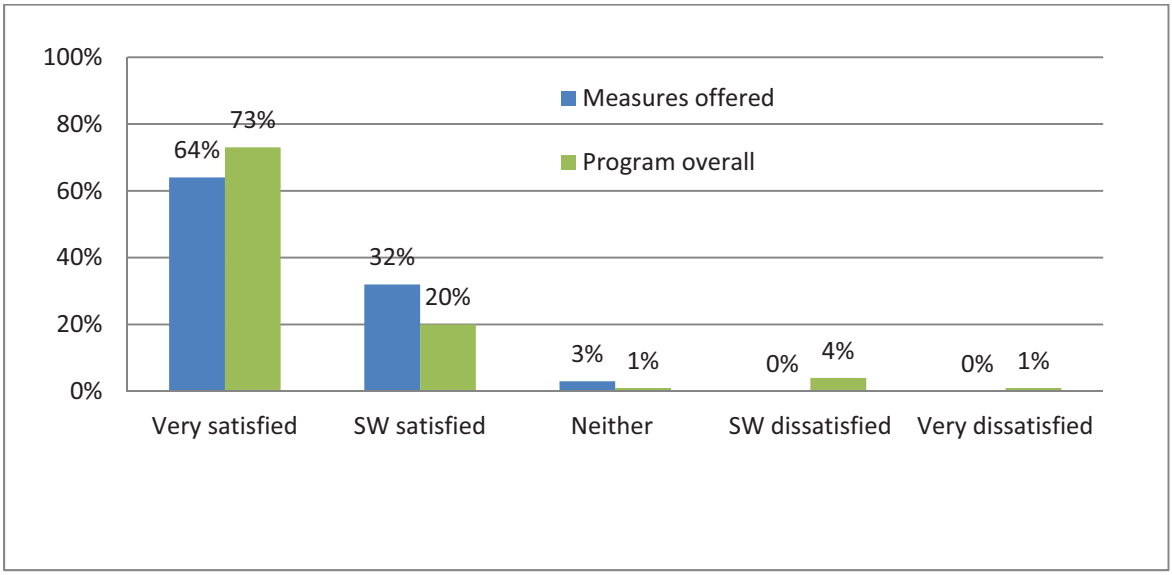


2011 Business Express Survey Data; Participants n=69 multiple responses accepted; Non-participants n=26 multiple responses accepted.

In the next set of questions survey respondents were asked if they were satisfied with the measures and with the AEP Program itself. Answer choices to this set of questions were very satisfied, somewhat satisfied, neutral, somewhat dissatisfied or very dissatisfied. Most respondents said they were very satisfied with the measures offered (64%) and with the Business Express Program (73%). Altogether, over 90 percent revealed they were very or somewhat satisfied with the measures offered and the Business Express Program.

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Figure 4-7. 2011 Customer Satisfaction with the Measures Offered and Overall Satisfaction with the Express Program



2011 Business Express Survey Data; Participants n=69 multiple responses accepted; Non-participants n=26 multiple responses accepted.

Contractors tended to agree that customers are satisfied or extremely satisfied with the program. They also said that customers know whom to contact for help with the Express Program.

Contractors said that the incentive levels did encourage customers to install energy efficient equipment. However, some incentive levels were not adequate. One contractor said he would 'literally walk by' the 8-foot fixtures because standard retrofits do not save much energy over the existing systems (thus incentives were low), and it was not cost effective for the customer to address them. Contractors estimate that from 90 percent to 99 percent of customers would not have installed any of the equipment without the program.

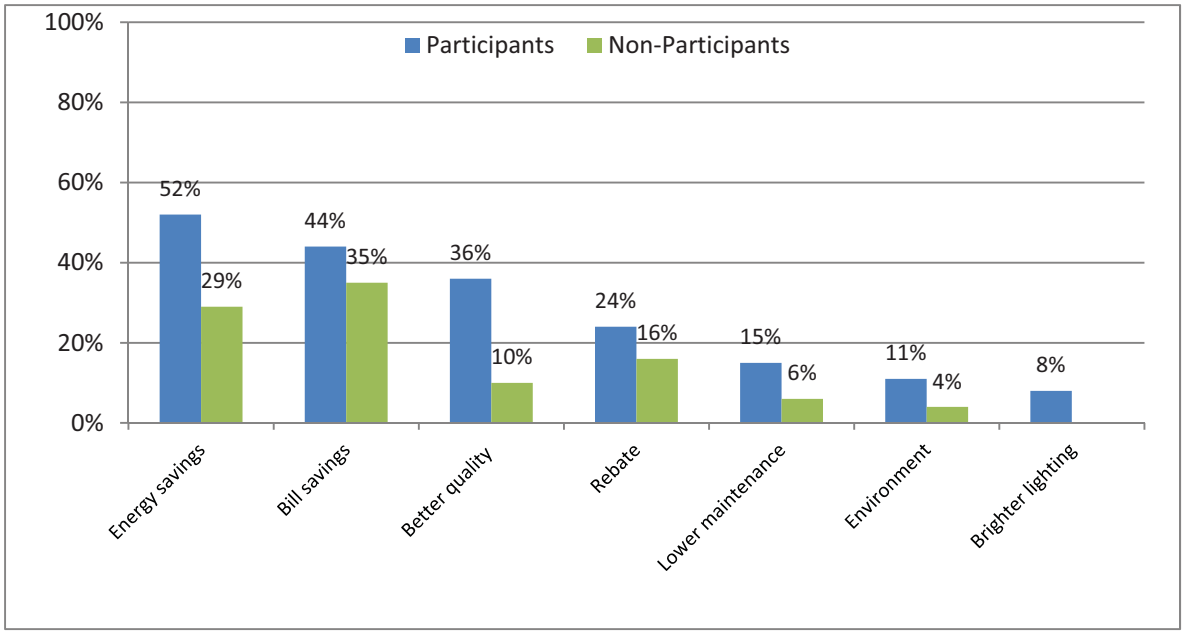
Contractors were also satisfied with the program; most do not see any barriers to increasing their participation in the program. However, one contractor indicated the paperwork made the Express jobs time consuming and another thought the program could be put together a 'whole lot better.'

Program Benefits

Program participants mentioned the three most important program benefits were energy savings (52%), bill savings (44%) and better quality lighting (36%) (See Graph 4.7). Non-participants mentioned bill savings (35%) and energy savings (29%) and then the rebate (16%). They undervalued each of these benefits compared to program participants.

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Figure 4-8. 2011 Business Express Program Benefits



2011 Business Express Survey Data; Participants n=69 multiple responses accepted; Non-participants n=26 multiple responses accepted.

Influence of Express Program on Future Program Participation

Over 60 percent of program participants planned to participate in other AEP Ohio programs in the future. Another 29 percent indicated that they might participate in other programs in the future. The program helps small business customers move toward future program participation through education and a positive, low effort experience with an energy efficiency program. However, one of the major barriers to program participation for the small customer is cash flow. The Business Express Program reduced the investment dollars for the current project, but does not place any extra dollars in the hands of the customer to facilitate the next energy efficient project.

Twelve of the 69 survey respondents (14%) installed additional energy-efficient equipment in their facility or facilities. Following is a list of the technologies that the survey respondents reported installing:

- Lighting fixtures
- Lighting controls
- Cooling

- Air compressors
- Compressor
- Lighting, refrigeration
- New ceiling
- Printing plate maker
- Programmable thermostats
- Roofing
- Weather insulation.

The most mentioned reason for not applying for a rebate for and energy efficient measure was that the respondent did not think the equipment qualified, especially if the technology was not lighting. The second reason mentioned was that they tried but were unable to qualify for a rebate. One respondent explained it this way:

> I don't think there's any available. I didn't see anything in the literature. It was for HVAC, it wasn't for lighting. And I asked the HVAC contractor and he didn't know.

4.2.6 Program Drawback and Barriers

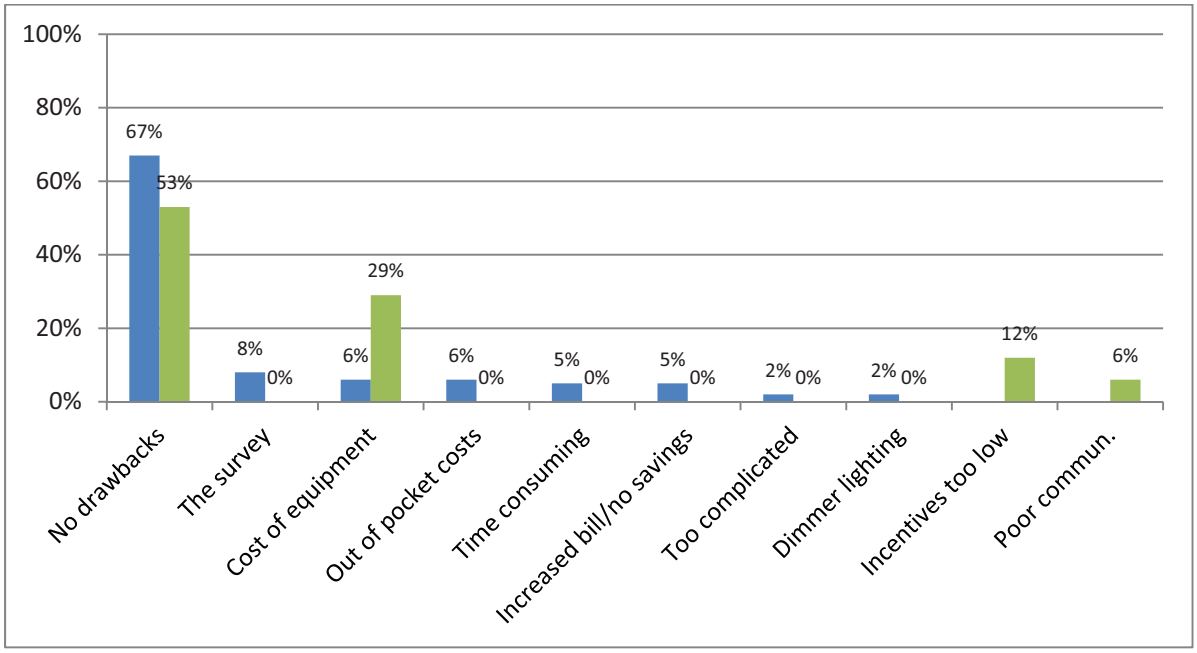
Program Drawbacks

Two-thirds of program participants and over 50 percent of non-participants could not think of a drawback to the Business Express program (67%, 53%). The most mentioned drawback by program participants was the energy assessment survey, which was described as too long or too bothersome. Few program participants mentioned any one program drawback – the out-of-pocket costs were mentioned the most. Non-participants were also very concerned about finances – 29 percent of them mentioned the cost of the equipment and 12 percent said the rebates were too low.

Contractors agreed that most customers did not install the recommended energy-efficient equipment because they didn't have the money. One contractor said that some customers misinterpret the marketing materials and thought the program was free. He suggests that contractors have access to the marketing materials to ensure they know what customers are being told about the program.

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Figure 4-9. 2011 Business Express Program Drawbacks



2011 Business Express Survey Data; Participants n=69 multiple responses accepted; Non-participants n=26 multiple responses accepted.

Contractor Drop Outs

Two contractors who dropped out of the program were also briefly interviewed as to why they left the program. The first contractor reported that he has experienced hardship associated with AEP' Ohio's claim that the Business Express Program offers to pay up to 100 percent of the customer's cost. This contractor indicated that he has lost clients and experienced significant personal frustration with clients expecting to receive a high margin from AEP Ohio when they are often offered less than half. He thinks that the 'up to 100 percent back claim' was false advertising. When he contacted AEP about the issue, he was told that since customers have received 100 percent rebates in the past, it is not false advertising. The second contractor thought that providing three letters of recommendation was a burden so he decided not to reapply.

Barriers to the Program – Identified by Program Staff

According to the program coordinator, the main barrier to Contractor participation was lack of program knowledge and understanding. And not all contractors will be attracted to the Business Express Program.

According to staff, barriers to the program can also include:

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- Lack of capital
- Lack of understanding about energy efficiency technologies
- Issues with connecting to the decision maker
- Training Solution Providers to sell customers on the value of energy efficiency
- Issue with municipalities where the project implementers were not in charge of approving the financing. These projects are multi-year, multi-phase and complicated. These projects could have been directed to the Prescriptive or Custom Programs

Program Barriers – Identified by Contractors
Registered Contractors were asked about barriers that AEP could help with and those that AEP can't control. Some of the barriers that AEP could help with are:

- Allowing customers who are only slightly over the kWh maximum to participate in the program
- Creating a funding option, especially if the loan was paid back on the bill
- Educating customers about the T-12 phase out.

AEP Ohio could not help resolve other barriers for customers such as:

- Future business concerns
- Fear of change
- Unwillingness to adapt to new equipment
- Customers waiting for LEDs to become more affordable so they only have to change their lighting once.

4.2.7 Program Improvement Ideas

Several areas for improvement identified by program manager included:

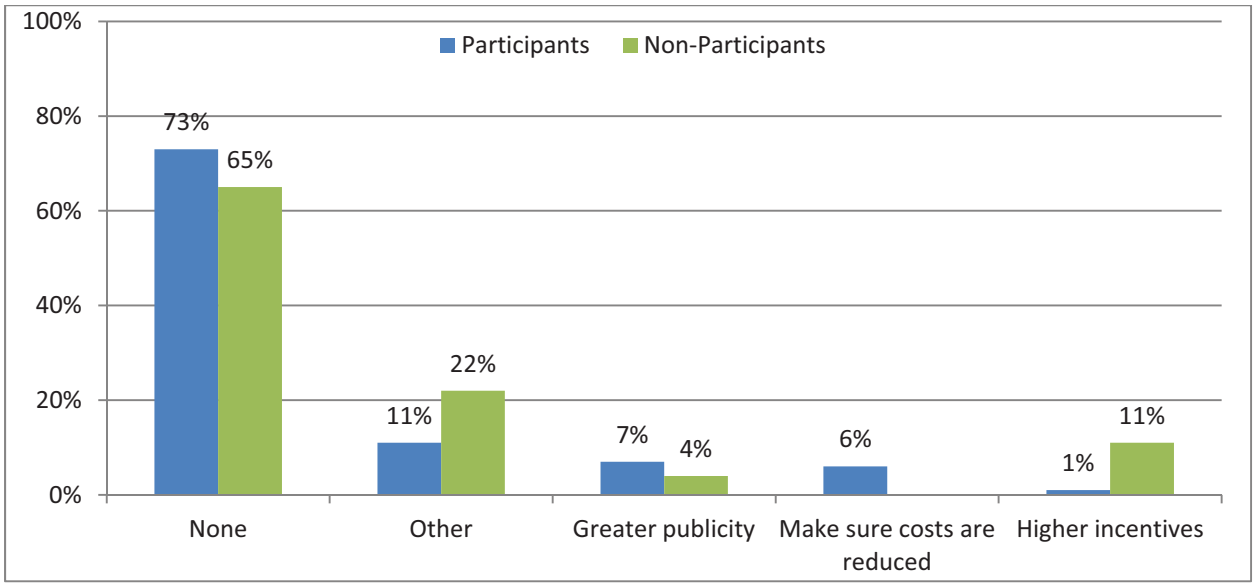
- Streamlining the contractors' proposal. If the contractor had a laptop or tablet computer they could print the proposal and deliver the proposal onsite. The customer may change his mind later.
- Reducing the time frame from proposal to implementation.

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- Getting the quote quickly. Maybe someone could professionally acquire the work and then bring in the contractor. It would get people to the area where AEP Ohio wants them and it would be easier to control where the audits were done.

Customers offered few ideas for improving the program. Over 70 percent of program participants and 65 percent of non-participants were not able to offer any ideas for improving the program. Participants who answered the question said the program could be improved by including greater publicity (7%) and making sure costs are reduced for program participants (6%). Non-participants were more likely to say the program could be improved with higher incentives. (11%).

Figure 4-10. 2011 Ideas for Improving the Program



2011 Business Express Survey Data; Participants n=69 multiple responses accepted; Non-participants n=26 multiple responses accepted.

Contractors were also asked to provide their ideas for improving the Business Express Program. They said:

- The program would be improved with an increase in incentives.
- The program could also be improved for contractors if AEP Ohio provided them with lists of qualifying businesses.
- Program processing takes too long and contractors invest too much developing the proposals and waiting for approval. Submitted proposals take up to one week for

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simpler jobs and longer for more complex jobs. Another said that processing takes about two weeks and usually includes one round of revisions with the client.

- One contractor thinks the database system was somewhat limited in scope. There were measures that he would like to implement (LEDs) that were defined as 'a custom measure', which became a bureaucratic problem for him.
- The program guidelines requiring less than 200,000 kWh of annual usage and a limiting the customer to six accounts in one name limit eligibility.

The program could also be improved by making these changes:

- Increasing incentive levels to make the jobs more financially appealing to customers
- The Business Express Program could be marketed by AEP Ohio more aggressively
- The KEMA Outreach Coordinator was sometimes too busy to process work orders in a timely manner
- The program kick-off meeting distracts resources from program implementation
- Rebate LEDs in the Business Express Program
- Contractors find that, on average, the incentive pays about 30 percent of the project cost[19], not the up to 100 percent claimed by AEP Ohio. This 100 percent value sets up expectations and makes it more difficult to sell jobs and promotes confusion.

Firmographics

The majority of business types for our participant sample of Express customers were small retail or service firms (54%). The next mentioned participant business types were manufacturing/ industrial (13%), small offices (7%) and unconditioned warehouses (6%). The distribution of sample business types surveyed is similar to the participant distribution. The reported square footage for the sample buildings ranged from 500 square feet to 50,000 square feet with an average of almost 8,000 square feet. The building ages ranged from five to 150 years old with an average age of about 43 years. Over half of the participating businesses had fewer than five employees.

[19] The program tracking data shows the actual out-of-pocket cost for the customers averaged 36% of the total project costs.

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The majority of business types for our sample of twenty six non-participating Business Express customers were also small retail or service firms (53%). The next mentioned non-participant business types were church/municipalities (12%) and unconditioned warehouses (12%). The square footage for the buildings ranged from 3,000 square feet to 63,000 square feet with an average of almost 13,000 square feet, slightly larger than participant buildings. The building ages ranged from nine to 126 years old with an average age of about 40.6 years, slightly newer than program participants. Sixty five percent of the non-participating businesses had fewer than ten employees.

4.3 Cost Effectiveness Review

This section addresses the cost effectiveness of the PY 2011 Express Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. **Error! Reference source not found.** summarizes the unique inputs used in the TRC test.

Table 4-5. Inputs to Cost-Effectiveness Model for AEP Ohio Express Program

Item	
Average Measure Life	11
Participants	352
Annual Energy Savings	2,970,077
Coincident Peak Savings	1,485
Third Party Implementation Costs	673,881
Utility Administration Costs	78,809
Utility Incentive Costs	921,704
Participant Contribution to Incremental Measure Costs	

AEP Ohio May 3, 2012.

Based on these inputs, the TRC ratio for AEP Ohio is 1.3, and the program passes the TRC test for the program. **Error! Reference source not found.** summarizes the results of the cost-effectiveness tests. Results are presented for the test, the Participant TRC test, the Ratepayer Impact Measure test, and the Utility Cost test.

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Table 4-6. Cost-Effectiveness Results for the Express Program

Test Results for Express Program	
Total Resource Cost	1.3
Participant Cost Test	3.6
Ratepayer Impact Measure	0.5
Utility Cost Test	1.7

AEP Ohio May 3, 2012.

At this time, additional benefits related to reduction of greenhouse gas emissions have not been quantified in the calculation of the TRC. These additional benefits would increase the given TRC benefit/cost ratio.

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Section 5. Conclusions and Recommendations

5.1 Conclusions

5.1.1 Program Impacts

1. In many respects the Express Program for Small Business is very successful.

    a. Hard-to-reach customers are the primary participants in the program. Most program participants are businesses with facilities smaller than 5000 square feet.

    b. All small business sectors are represented in rough proportion to national averages.

    c. The average participant uses less than 65,000 kWh per year prior to participation.

    d. Customers save about 14 percent of their electric bill with a projected simple payback of 1.9 years based on ex-post savings estimates and customer payments for upgrades.

2. Program tracking is good. Our checks of savings calculations found no errors in algorithms. Data are mostly complete with rare, though important, exceptions. Pre-installation system descriptions were found missing for 3 percent of measures and measure life is not tracked at all in the database.

3. Only lighting measures were installed in PY 2011. No HVAC or refrigeration measures were installed.

4. The program did not meet goals mostly due to low participation. In the PY 2010 evaluation memo, Navigant estimated that almost twenty-five hundred participants would be needed to achieve the goals. Assuming two projects per month, per installation team/contractor, at least 80 contractors would need to be enrolled and active. Only five contractors were adequately active and 352 projects were completed in PY 2011.

5. For the AEP Ohio Express Program for Small Business, the realization rate (defined as verified gross savings / ex-ante reported savings) is 0.39 for gross energy savings, and 1.00 for gross demand reduction. The relative precision at a 90 percent confidence level

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for the 2011 Express program is ± 22 percent for the energy realization rate and better than ± 10 percent for the demand realization rate. The reasons for low realization are several and compounding:

a. Assumed existing fixture Watts for common fixtures were slightly high with a tendency to over-estimate savings

b. Burnt-out lamps in existing systems were underestimated

c. Hours of operation were over-estimated

6. A billing analysis is the most reliable method to determine savings in a program of this type.

5.1.2 Program Processes

1. The Business Express Program is not delivered as designed. Most contractors are not computer literate enough to generate the proposal on-site during the first customer visit. It may take the contractor a day to two weeks to return with the proposal.

2. Customers are misinterpreting the phrase 'may provide up to 100 percent in rebates' to 'will provide 100 percent in rebates'. This type of misunderstanding makes it more difficult for the contractor to sell the program and may reduce trust for AEP Ohio among small businesses.

3. Some of the small customers find even the small amount of capital difficult to contribute with the current economy. Both customers and contractors acknowledge lack of capital as one of the major difficulties.

4. Lack of information about the program and lack of information about the benefits of energy efficient equipment are two issues mentioned by both customers and contractors as barriers to participation.

5. Many program participants plan to participate in a program from AEP Ohio should the opportunity present itself.

6. Both contractors and customers are very satisfied with the Business Express Program. Contractors reported that very few customers would have installed the equipment without the program. However, some evidence can be found that a few small customers were looking for help with the replacement of their T12s.

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7. Almost half the program participants said they heard about the program from the contractor.

8. Contractors provided some evidence that the program did create a few jobs. Two of the contractors reported hiring because of the program and all but two reported their business increased from 5 percent to 40 percent because of the program. One company in particular developed a marketing plan and hired a sub-contractor to sell the program, while their staff concentrates on installation. Most contractors do not see a barrier to increasing their participation in the program.

9. Most of the sites have been pre- and post- inspected by KEMA. The inspections are not a barrier to participation as customers were very satisfied with the inspections. Customers say the inspection provides confidence in the quality of the work.

10. One contractor made a comment that suggested that he increased the cost of the proposal after it was approved by AEP Ohio to better reflect his 'actual' costs. This suggests two issues that need attention: 1. How widespread is this practice with other contractors and how can AEP stop it? 2. Are the incentive levels set too low compared to contractor costs to reduce project costs sufficiently for customers?

11. Contractors defined two models for selling the program. The first one is to contact current and past customers and offer the program. The other is to aggressively market the program by geography, by targeting businesses with longer operating hours, by cold calling or by hiring a company to market the program for you.

12. Contractors estimate that from 90 percent to 100 percent of their customers agree to accept the free assessment. About half of those who receive the assessment agree to install energy efficient equipment.

13. Non-participants did not find the arguments for the program compelling and were not convinced that the program would save them money or provide better quality lighting.

5.2 Recommendations

5.2.1 Impact Recommendations

1. KEMA and AEP Ohio should re-assess some of the baseline fixture wattages used for ex-ante savings estimates. Over-estimating existing fixture power will inflate ex-ante savings. Focus on the most common baseline systems: linear fluorescent lamps and incandescent lamps rated for >120V.

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2. Ex-ante demand and energy savings estimates should include minimum burn-out estimates for sites that do not exceed the 10 percent threshold required to track lamp burn-out. Navigant suggests a minimum burnout estimate between 3 percent and 8 percent.

3. Operating hours should be more site-specific and precise. Hour ranges appear to create a tendency for over-estimating operating hours and ex-ante savings. Absent more specific data, operating hours could be based on:

    - Actual business hours, plus one to two hours per day for pre-and post-occupancy usage.
    - A fifty-week year assuming holiday closures, or
    - Deemed estimated hours by business type

5.2.2 Key Process Recommendations

1. The Business Express Program should have a link on the AEPOhio.com home page. Though customers can gain access to the program web-page through several links, the path is not always clear. At one point, customers would click on the residential programs link to find the Business Express Program.

2. AEP Ohio should encourage contractors to include their office staff in the software training if they are going to be heavily involved in organizing and inputting the data into the database. Educating the staff might reduce the time from the first visit to the delivery of the assessment to the customer and increase the speed of program delivery.

3. To increase participation, AEP Ohio should consider:

    - Increasing the number of Registered Express Contractors, who deliver the program to customers
    - Discussing marketing strategies, such as modifying the bonus program that would encourage Registered Express Contractors to resist the tendency to focus only on "larger" small businesses.

4. AEP Ohio and KEMA should continue to focus marketing resources on targeted customer segments or measures to maximize the value of the marketing dollar.

5. The outreach staff should re-evaluate the wisdom of using the phrase 'up to 100 percent incentive' to sell this program. The research shows that customers are interpreting this claim literally and the resulting disappointment causes a negative backlash to AEP Ohio.

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6. Lack of capital is one of the major issues with the program even though the sums involved are frequently small. Navigant suggests that AEP Ohio continues to explore financing options to fold into the program offer.

7. Lack of information about the program and the benefits of energy-efficient equipment are also major barriers to the program. AEP Ohio should explore how to get information to these low information customers and should consider whether a general information/education campaign is needed.

8. Program participants plan to participate again when the opportunity presents itself. AEP Ohio should develop campaigns designed to attract the attention of smaller customers to other programs or to a second round with the Express Program.

9. Rather than seen as a disruption, most program participants think the inspections add value by confirming the equipment was properly installed. KEMA is planning to reduce the number of inspections to concentrate on contractors with low numbers of installations. AEP Ohio will need to plan carefully to allocate pre-and post-installation inspections across all customer types.

10. The program has successfully created jobs for program contractors in some cases. Contractors do not see any obstacles to participating in the program with renewed energy. The number of program-induced jobs can be expected to increase in the next few years of the program before leveling off.

11. Navigant suggests that AEP Ohio use all communication methods to inform customers of the program rules about contractually binding the contractor to the costs as approved by AEP Ohio. Contractors should also be fully aware of the consequences of their actions.

12. In a related step, Navigant suggests that AEP Ohio analyze the market to confirm that the rebate levels are set to ensure that all contractors are able to make a profit within the program.

13. Some contractors have limited their marketing to their customer base while others used innovative marketing methods to grow their business. AEP Ohio should find ways to spotlight the most successful contractors and transfer to others the methods used to become successful.

14. In a similar situation, on average, contractors convert about 50 percent of the customers who receive an energy assessment to the second stage of the program. Navigant

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suggests that AEP Ohio contact contractors with higher than average conversion rates to determine their best practices.

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Section 6. Appendices

APPENDIX A – Fixed Effect Regression Model

6.1 AEP Ohio Express Program Billing Analysis Detailed Description

Navigant estimated a fixed effects regression model in which pipeline participants and participants that enter the program later in the year serve as controls for participants that enter earlier in the year. We expect slight seasonal variation of savings due to the interaction effects between lighting and the HVAC system. Since the fall and winter months of 2011 have the most participants, a single savings parameter would be weighted towards savings in the fall and winter months. To more accurately estimate annual savings, Navigant interacted the post-installation variable with binary indicators for the four seasons. The fixed effects regression equation is given by:

Equation 1

$$ADU_{it} = \alpha_i + \beta_1 * Winter_t + \beta_2 * Summer_t + \beta_3 * Fall_t + \gamma_1 * Post_{it} + \gamma_2 * Post_{it} * Winter_t + \gamma_3 * Post_{it} * Summer_t + \gamma_4 * Post_{it} * Fall_t + \epsilon_{it}$$

Where,

- ADU_{it} = Average daily usage (kWh) for premise i in period t
- α_i = The constant term ("fixed effect") for premise i
- $Winter_t$ = A binary variable taking a value of 1 if period t is a winter month
- $Summer_t$ = A binary variable taking a value of 1 if period t is a summer month
- $Fall_t$ = A binary variable taking a value of 1 if period t is a fall month
- $Post_{it}$ = A binary variable taking a value of 1 if the measure has been installed at premise i prior to period t
- $\beta_1, \beta_2, \beta_3, \gamma_1, \gamma_2, \gamma_3, \gamma_4$ = Model parameters

Note that spring is the baseline season. Seasons are defined by the following cut-off dates:

Winter	December 21 – March 20
Spring	March 21 – June 20
Summer	June 21 – September 20
Fall	September 21 – December 20

The parameters on the seasonal variables capture the change in energy consumption for the premises that have not yet entered the program. The parameters on the interactions between the seasonal variables and the post variable capture the *incremental* seasonal change in energy consumption for the participants that have entered the program. Said differently, the

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parameters on the interaction terms capture the difference in energy consumption between premises that have entered the program and those that have not yet entered the program. This difference is the direct impact of the Express Program. Seasonal savings are given by:

Spring	γ_1
Summer	$\gamma_1 + \gamma_3$
Fall	$\gamma_1 + \gamma_4$
Winter	$\gamma_1 + \gamma_2$

Annual savings are calculated as the weighted sum of the seasonal savings, where the weights are the number of days in each season (92, 92, 91, 90, respectively).

Parameter estimates are given in Table 6-1. Note that the four parameters involving post are negative, as expected; being in the post period reduces energy consumption. The relatively large standard errors on the parameters involving post result from the fact there were relatively few observations from the post period, since many participants entered the program in the fall and winter months. Repeating the billing analysis in one year's time will result in a tighter precision value, due to increased numbers of participants as well as longer post-periods for participants who entered the program in 2011.

Table 6-1. Regression Analysis Parameter Estimates

Variable	Coefficient	Standard Error	T-statistic
Winter	0.705	1.900	0.37
Summer	45.441	2.380	19.10
Fall	-2.661	0.966	-2.76
Post	-15.230	5.867	-2.60
Post*Winter	-12.245	5.856	-2.09
Post*Summer	-10.629	6.724	-1.58
Post*Fall	-9.345	5.720	-1.63

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APPENDIX B – Interview Guides
The following guides were used to conduct the in-depth interviews.

6.2 AEP Ohio Express Program Customer Participant Process and Impact Survey

2011 AEP OHIO BUSINESS PROGRAMS – EXPRESS INSTALL PROGRAM PARTICIPANT SURVEY

THIS MAY NOT APPLY: Note: Choose the largest <SubcategoryDescription 1> (measure type: Lighting,
HVAC and Refrigeration). Ask about a maximum of three measures (ex: display lighting, general ambient
lighting, HVAC, refrigeration). NTG and Spillover module only gets asked once per SubcategoryDescription 1 (ie: respondent).

INTRODUCTION

[READ IF CONTACT=1]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. This is not a sales call.
May I please speak with <**APPLICATIONCONTACTNAME**>?

Our records show that <**ORGANIZATIONNAME**> purchased
<**SUBCATEGORYDESCRIPTION** 1>, which was
installed by **<RegExpsCont>** on or about <**ActualProjectCompletionDate** >. The cost of the work was
reduced by incentives from AEP Ohio to the contractor. We are calling to do a follow-up study about
<**ORGANIZATIONNAME**>'s participation in this program, which is called the AEP Ohio Express Install
Program. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT,
ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]
This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]
Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. I would like to speak

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with the person most knowledgeable about recent changes in cooling, lighting or other energy-related
equipment for your business.

[IF NEEDED] Our records show that <**ORGANIZATIONNAME**> purchased <**SUBCATEGORYDESCRIPTION**
1>, which was installed by **<RegExpsCont>** on or about <**ActualProjectCompletionDate**>. The cost of
the work was reduced by an incentive paid to the contractor from AEP Ohio. We are calling to do a follow-up study about your firm's participation in this program, which is called the Express Install Program. I was told you're the person most knowledgeable about this project. Is that correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 30 minutes. Is now a good time? [If no, schedule call-back]

SCREENING QUESTIONS
A1. Just to confirm, during 2011 did <**ORGANIZATIONNAME**> install energy efficient equipment through AEP Ohio's Express Install Program at <**SERVICEADDRESS**>? (IF NEEDED: This is a program where a contractor, **<RegExpsCont>,** did a survey of your lighting and other equipment and proposed a scope of work for energy efficient equipment and later installed this equipment at your business. Our records show you replaced <**ExistingEquipment**> with <**ProposedEquipment**>, (among other measures.)
1 Yes, participated as described
2 Yes, participated but at another location
3 NO, did NOT participate in program
00 Other, specify
98 Don't know
99 Refused

[SKIP A2 IF A1=1, 2]
A2. Is it possible that someone else dealt with the energy-efficient product installation?

1 Yes, someone else dealt with it
2 No
00 Other, specify
98 Don't know
99 Refused

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[IF A2=1, ask to be transferred to that person and/or get contact name and phone number. If not available, thank and terminate. If available, go back to A1]

[IF A1=2, 3, 00, 98, 99: Thank and terminate. Record disposition as "Could not confirm participation".]

Before we begin, I want to emphasize that this survey will only be about the <**SUBCATEGORYDESCRIPTION** 1> you installed through the AEP Ohio Express Install Program at <**SERVICEADDRESS**>.

A3. I'd like to confirm some information in AEP Ohio's database. Our records show that you implemented <**SUBCATEGORYDESCRIPTION** 1> project through the Express Install Program. Is this correct? *Bring in <PROJECTDESCRIPTION>,<ExistingEquipment> and <ProposedEquipment> if more detail is needed.*

1 Yes (Continue to A3a)
3 No, did not install
8 Don't know
9 Refused

A3_1. Is it possible that someone else dealt with the energy-efficient product installation?

1 Yes, someone else dealt with it (Ask for transfer and/or contact name and number and GO BACK TO A2)
2 No (Terminate)
00 Other, (specify)
98 Don't know (Terminate)
99 Refused (Terminate)

Note: the <**ProjectDescription**> Field may help the interviewer and respondent confirm the correct project.

A3a Our records indicate that you installed <**SUBCATEGORYDESCRIPTION** 1> measures. How many < **SUBCATEGORYDESCRIPTION** 1> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

A3b I see that you also installed <**SUBCATEGORYDESCRIPTION2**>. How many <**SUBCATEGORYDESCRIPTION2**> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

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A3c I see that you also installed a third measure. How many <**SUBCATEGORYDESCRIPTION3**> equipment units were installed? [NUMERIC OPEN END; RANGE 1-3000, DK, REF]

IF A3a =0 AND A3b=0 AND A3c=0: Thank and Terminate, Record Disposition as "Could Not Confirm Measures"

HEARD ABOUT PROGRAM

S0 How did you first hear about the Express Install program?
1. Registered Express Contractor
2. AEP Ohio Website
3. Workshop/training
4. BLANK
5. Email
6. Friend/colleague/word of mouth
7. Bill Insert
8. ~~Webinar~~
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor
12. AEP Ohio/Contractor Visit
13. BLANK
14. Supplier
15. BLANK
16. BLANK
17. AEP Account Representative
18. BLANK
00. Other, specify
98. Don't know
99. Refused

The Contractor and the Proposal Module

S1 How would you rate your satisfaction with the energy efficiency assessment conducted by the contractor at your business site? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

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S2 How would you rate your satisfaction with the proposal prepared by the express program contractor? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

S3 How would you rate the contractor's ability to f implement the proposed project? Please use a scale from 0 to 10, where 0 is "not at all able to implement" and 10 is "completely able to implement"? [SCALE 0-10; 98=Don't know, 99=Refused]

S4a Was the contractor's proposal clear about the scope of work to be performed?
1 Yes
2 No
8 Don't know
9 Refused
[ASK S4b IF S4a=2]

S4b Why not?
1. too much detail (explain _____)
2. too little detail (explain _____)
3. cost unclear
4. responsibilities not clear
00. Other, specify
98. Don't know
99. Refused

S5 Was the contractor's proposal clear about your share of the project's final cost?
1 Yes
2 No
8 Don't know
9 Refused

S5 Was the amount in the proposal the same amount on the contractor's invoice for the work?
1 Yes
2 No
8 Don't know
9 Refused

S6a Would you recommend the contractor you worked with to others?
1 Yes
2 No

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8 Don't know
9 Refused
[ASK S6b IF S6a=2]

S6b Why not?
1. Too small
2. Not knowledgeable
3. Poor work quality
4. Poor timeliness/didn't show up when scheduled
5. Poor equipment selection
6. Scheduling problems
7. Left a mess
00. Other, specify
98. Don't know
99. Refused

Role of AEP

B1 Was a pre-installation inspection performed by an AEP/KEMA inspector?
1 Yes
2 No
8 Don't know
9 Refused

B2 If B1 = 1 How would you rate your satisfaction with the pre-installation inspection? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

B3 Was a post-installation inspection performed by an AEP/KEMA inspector?
1 Yes
2 No
8 Don't know
9 Refused

B4 IF B3 = 1 How would you rate your satisfaction with the post-installation inspection? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 1. What would have made you more satisfied with the inspection?

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LIGHTING MODULE

[ASK IF <**LIGHT**>=1, ELSE SKIP TO HVAC MODULE]

Measure Modules

[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <**SUBCATEGORYDESCRIPTION**_1> you installed through the Express Install Program.

L0 When did you implement (install) this project (IF NECESSARY, PROBE FOR BEST GUESS)

a Month [Precodes for Jan through Dec., DK, REF]
b Year [Precodes for 2009, 2010 and 2011, DK, REF]

L1 Please briefly describe the Lighting project installed through the Express Install Program. [Circle all that apply.]

1. Linear fluorescents
2. LED lighting
3. HID lighting
4. Exterior lighting
5. Custom display or specialty lighting
6. Lighting controls
7. Exit Signs
8. DELAMPING
9. Other [describe verbatim]
98. Don't know
99. Refused

L2 Was the new lighting equipment installed in an air conditioned (cooled) space?

1. Yes
2. No
3. Some of the lighting was and some wasn't
8. Don't know
9. Refused

LIGHTING CONTROLS

[ASK IF L1 = 6; ELSE GO TO L5]

L3 Before Lighting Controls were installed, about how many hours per day were the lights in operation? [NUMERIC OPEN END; 0 TO 24; 98=Don't know, 99=Refused]

NAVIGANT

L4 After controls were installed, about how many hours per day were the lights in operation? [NUMERIC OPEN END; 0 TO 24; 98=Don't know, 99=Refused]

L4a What percentage of **outdoor** lights received new controls?
1 None – controls all interior
2 between 0% and 25%
3 between 25 and 50%
4 More than 50% but less than 100%
5 All exterior lights (100%)
8. Don't know
9. Refused

L4a What percentage of **interior** lights received new controls
1 None – controls all exterior
2 between 0% and 25%
3 between 25 and 50%
4 More than 50% but less than 100%
5 All interior lights (100%)
8. Don't know
9. Refused

DELAMPING

L5 Did any of your new fixtures have fewer bulbs per fixture than your old fixtures? i.e., did you delamp? [IF NEEDED] Delamping occurs when you replace your T12 fixtures with T8s and reduce the number of lamps per fixture.
1. Yes
2. No
3. Some of the lighting was and some wasn't
8. Don't know
9. Refused

If L5 = 2 , 8 or 0 skip to PY3 NTG Module

L6 After you completed delamping the fixtures, did you install additional lighting fixtures in that same space at a later time to increase the amount of lighting?
1. Yes
2. No
3. Some of the lighting was replaced and some wasn't replaced
8. Don't know
9. Refused

NAVIGANT

L7 If L6 = 1 (or 3?) How many of these additional new fixtures did you install?
8888 IS REFUSED....9999 IS DON'T KNOW

PY3 NET-TO-GROSS MODULE

Variables for the net-to-gross module: ()
<**NTG**> (B=Basic rigor level, S= Standard rigor level. All questions here are asked if the standard rigor level is designated. Basic rigor level is designated through skip patterns)
<**UTILITY**> (Ohio Power (OPCo) and Columbus Southern Power (CSP))
<**PROGRAM**> (Name of energy efficiency program)
<**SUBCATEGORYDESCRIPTION** 1> (Type of measure installed; from program tracking dataset)
<**VEND1**> (Contractor who installed new equipment, from program tracking dataset)
<**ACCT_REP**> (Name of utility account manager, from program tracking database or program files if present)
<**OTHERPTS**> (Variable to be calculated based on responses. Equals 1- minus response to N3p.)
<**FINCRIT1**> (Variable to be calculated based on responses. Equals 1 if payback period WITHOUT incentive is shorter than <OrganizationName> requirement. See instructions below.)
<**FINCRIT2**> (Variable to be calculated based on responses. Equals 1 if payback period WITH incentive is shorter than <**OrganizationName**> requirement. See instructions below.)
<**MSAME**> (Equals 1 if same customer had more than one project of the same measure type; from program tracking database)
<**NSAME**> (Number of additional projects of the same measure type implemented by the same customer; from program tracking database)
<**FSAME**> (Number of additional projects of the same measure type implemented by the same customer at a different address)

NET-TO-GROSS BATTERY

My next set of questions is about the <SUBCATEGORYDESCRIPTION 1> you installed through the program.

N1 When did you first learn about AEP Ohio's Express Program? Was it BEFORE or AFTER you first began to THINK about implementing the <**SUBCATEGORYDESCRIPTION 1**>? (NOTE TO INTERVIEWER: "this measure" refers to the specific energy efficient equipment installed by the registered express contractor.)

NAVIGANT

DO NOT READ LIST, SINGLE PUNCH
1 Before
2 After
8 Don't know
9 Refused

[ASK N2 IF N1=2, 8, 9]

N2 Did you learn about AEP Ohio's Program BEFORE or AFTER you DECIDED to implement the <**SUBCATEGORYDESCRIPTION 1**> that was installed? (NOTE TO INTERVIEWER: "the measure" refers to the specific energy efficient equipment installed through the program.)

DO NOT READ LIST, SINGLE PUNCH
1 Before
2 After
8 Don't know
9 Refused

N3 Next, I'm going to ask you to rate the importance of the program as well as other factors that might have influenced your decision to implement the <**SUBCATEGORYDESCRIPTION 1>.** Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following in your decision to implement the measure at this time.

[FOR N3a-n, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]

(If needed: How important in your DECISION to implement the project was…)

N3a. The age or condition of the old equipment
N3b. The reduced cost due to the PROGRAM incentives
N3c. Energy assessment
N3d. Recommendation from a Registered Express Contractor that helped you with the choice of the equipment
N3e. Previous experience with the <**SUBCATEGORYDESCRIPTION 1**>
N3f. Credentials and affiliation of the contractor representing the AEP Ohio program
N3g. The benefits of the new equipment
N3h. Information from AEP Ohio Express Install Program or AEP Ohio marketing materials
N3i. Desire to be 'green'
N3j. ~~Standard practice in your business/industry~~
N3k. Maintain or create competitive advantage among peer companies
N3m. Payback on the investment

NAVIGANT

N3n. Recommendation of peer or neighboring business

N3n. Were there any other factors we haven't discussed that were influential in your decision to install this <**SUBCATEGORYDESCRIPTION 1**>?

DO NOT READ LIST, SINGLE PUNCH

97 [Record verbatim]
96 Nothing else influential
98 Don't Know
99 Refused

Thinking about this differently, I would like you to compare the importance of the PROGRAM with the importance of other factors in implementing the <**SUBCATEGORYDESCRIPTION 1**> project.

[READ IF (N3A, N3D, N3E, N3M, OR N3N)=8,9,10; ELSE SKIP TO N3p]
You just told me that the following other factors were important:
[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 or higher]

(N3A) Age or condition of old equipment,
(N3D) Equipment Vendor recommendation
(N3E) Previous experience with this measure
(N3I) ~~Recommendation from a design or consulting engineer~~
(N3J~~) Standard practice in your business/industry~~
(N3L~~) Corporate policy or guidelines~~
(N3M) Payback on investment.
(N3N) Other factor (RECORD VERBATIM)

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <subcategorydescription1> project, and you had to divide those 100 points between: 1) the program and 2) these other factors, taken together as whole, how many points would you give to the importance of the PROGRAM?
Points given to program: [RECORD 0 to 100; 998=Don't Know; 999=Refused]

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE; IF N3p=998, 999, SET OTHERPTS=BLANK]

N3o And how many points would you give to other factors? [RECORD 0 to 100; 998=Don't Know; 999=Refused] [The response should be <**OTHERPTS**> because both numbers should equal 100. If response is not <**OTHERPTS**> ask INC1]

NAVIGANT

INC1 The last question asked you to divide a TOTAL of 100 points between the program and other factors. You just noted that you would give <N3P RESPONSE> points to the program. Does that mean you would give <**OTHERPTS**> points to other factors?

DO NOT READ LIST, SINGLE PUNCH

1 Yes
2 No
98 Don't know
99 Refused

[If INC1=2, go back to N3p]

CONSISTENCY CHECK ON PROGRAM IMPORTANCE SCORE

[SKIP TO N5 IF N3p=998, 999 OR IF N3p<80 OR IF (N3p>=80 AND ANY ONE OF (N3b, N3c, N3f, N3h, AND N3k)>3 AND <11)]

N4 You just gave <N3p RESPONSE> points to the importance of the program, I would interpret that to mean that the program was quite important to your decision to install this equipment. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were not that important to you. Just to make sure I have recorded this properly, I have a couple questions to ask you.

N4a When asked about reduced cost due to THE PROGRAM INCENTIVE, you gave a rating of ...<N3B RESPONSE> ... out of ten, indicating that the program incentive was not that important to you. Can you tell me why the incentive was not that important?

[Record VERBATIM]

98 Don't know
99 Refused

N4c When I asked you about THE RECOMMENDATION of the Register Express Program Contractor, you gave a rating of ...<N3F RESPONSE> ... out of ten, indicating that the information provided was not that important to you. Can you tell me why the information provided was not that important?

[Record VERBATIM]

98 Don't know
99 Refused

N4d When asked about THE INFORMATION from the AEP Ohio Express Install Program or AEP Ohio MARKETING MATERIALS, you gave a rating of ...<N3H RESPONSE> ... out of ten, indicating that this information from the program or utility marketing materials was not that important to you. Can you tell me why this information was not that important?

NAVIGANT

[Record VERBATIM]
98 Don't know
99 Refused
[SKIP N4e IF V4>1]

COUNTER FACTUAL QUESTIONS

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the utility program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the incentive from the utility program had not been available, what is the likelihood that you would have installed exactly the same energy efficient equipment?
[RECORD 0 to 10; 98=Don't know; 99=Refused]

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=08, 09, 10 AND N5=08, 09, 10]
N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to install. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the incentive played in your decision to install this efficient equipment?
[Record VERBATIM]
98 Don't know
99 Refused
N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would install the same equipment without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?
DO NOT READ LIST, PROBE IF NECESSARY, SINGLE PUNCH

[ASK IF N5b=1, 3]
N5c How important was… availability of the PROGRAM incentive? (IF NEEDED: in your DECISION to implement the project)

NAVIGANT

Please use a scale of 0 to 10, where 0 means not at all important and 10 means extremely important.
[98=Don't know, 99=Refused]

[ASK IF N5b=2, 3]
N5d If the AEP Ohio program had not been available, what is the likelihood that you would have installed exactly the same equipment? Please use a scale of 0 to 10, where 0 means "Not at all likely" and 10 means "Extremely likely";
[98=Don't know, 99=Refused]

[ASK IF N5>0 AND <11, ELSE SKIP TO N8]
N7 You indicated earlier that there was a <N5 RESPONSE> in 10 likelihood that you would have installed the same equipment if the program had not been available. Without the program, when do you think you would have installed this equipment? Would you say…? READ LIST, SINGLE RESPONSE

1 At the same time
2 Earlier
3 Later
4 (Never)
8 (Don't know)
9 (Refused)

[ASK N7a IF N7=3]
N7a. How much later would you have installed this equipment? Would you say…? READ LIST, SINGLE PUNCH

1 Within 6 months?
2 6 months to 1 year later
3 1 - 2 years later
4 2 - 3 years later
5 3 - 4 years later
6 4 or more years later

8 Don't know
9 Refused

[ASK N7b IF N7a=6]
N7b. Why do you think it would have been 4 or more years later?
[Record VERBATIM]

98 Don't know
99 Refused

NAVIGANT

PAYBACK BATTERY

[ASK N8-N10e IF N3m>5]

I'd like to find out more about the payback criteria <ORGANIZATIONNAME> uses for its investments.

N8 What financial calculations does <ORGANIZATIONNAME> make before proceeding with installation of a MEASURE like this one?
00 [Record VERBATIM]
98 Don't know
99 Refused

N9 What is the payback cut-off point you use (in months or years) before deciding to proceed with an investment? Would you say…?
1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years
6 Over 5 years
8 Don't know
9 Refused

OTHER INFLUENCES BATTERY

[ASK N23-N25 IF N3nn>5]

N25 Please state any other factors that influenced your decision to go ahead on this energy efficiency project?
00 [Record VERBATIM]
98 Don't know
99 Refused

PY3 SPILLOVER MODULE

Thank you for discussing the new <**SUBCATEGORYDESCRIPTION 1**> that you installed through the <PROGRAM>. Next, I would like to discuss any energy efficient equipment you might have installed OUTSIDE of the program.

NAVIGANT

SP1 Since your participation in the <**UTILITY**> program, did you implement any ADDITIONAL energy efficiency measures at this facility or at your other facilities within AEP Ohio's service territory that did NOT receive incentives through any utility or government program?

1 Yes
2 No
8 Don't know
9 Refused

[ASK SP2-SP7i IF SP1=1, ELSE SKIP TO S0]

SP2 What was the additional measure that you implemented? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)

1 Lighting
2 Lighting controls
3 Cooling
4 Non-commercial refrigeration
5 Office equipment
10 Other_____

SP5 I have a few questions about the measure that you installed. (If needed, read back measure: <SP2 RESPONSE>) [OPEN END]

a. Why did you not receive an incentive for this measure?
b. Why did you not install this measure through the <UTILITY> Program?
c. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
d. Please describe the EFFICIENCY of this measure.
e. How many of this measure did you install?

SP5f. Was this measure specifically recommended by the Small Business Express Assessment?

1 Yes
2 No
8 Don't know
9 Refused

SP5g. How significant was your experience in the <UTILITY> Program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant? [SCALE 0-10; 98=Don't Know; 99=Refused]

[SKIP SP5h IF SP5g = 98, 99]

NAVIGANT

SP5h. Why do you give it this rating? [OPEN END]

SP5i. If you had not participated in the Small Business Express Install program, how likely is it that you would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

State-Wide Evaluator Non-Residential Participation Process and Program Satisfaction Module
I'd now like to ask you a few more general questions about your participation in the Express Install program.

S1a. How satisfied were you with the reduced cost to the business owner? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

S1b. How satisfied were you with the expertise of the contractor? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

S1c. How satisfied were you with the Sales presentation by the REC**? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]**

S1d. How satisfied were you with the free energy assessment? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

S1e.

E 2. How satisfied were you with the energy efficiency level required to qualify for an incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E 3. (ask only if 7 or lower?) What would have made you more satisfied?
RECORD VERBATIM

E 4. How satisfied were you with the measures offered by the program? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

NAVIGANT

E 5. Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**Error! Reference source not found.**
2	Somewhat satisfied	**Error! Reference source not found.**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	**Error! Reference source not found.**
99	Don't know	**Error! Reference source not found.**

E 6. What would have made you more satisfied with the measures?
RECORD VERBATIM

E 7. Have you noticed lower electricity bills since you installed your new [MEASURE_EE]?

1	Yes	**continue**
2	No	**E 21.**
88	Refused	**continue**
99	Don't know	**continue**

E 8. Would you say your bill savings are…[READ LIST]

1	About what you expected	**continue**
2	More than you expected	**continue**
3	Less than you expected	**continue**
88	Refused	**continue**

NAVIGANT

99	Don't know	**continue**

E14a. If you were rating your overall satisfaction with the <UTILITY> Incentive Program, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	F 1
99	Don't know	F 1

E 9. Why do you give it that rating?
RECORD VERBATIM

Benefits and Barriers

B1a What do you see as the main benefits to participating in the Express Install Program? [MULTIPLE RESPONSE, UP TO 3]

1. Energy Savings
2. Good for the Environment
3. Lower Maintenance Costs
4. Better Quality/New Equipment
5. Rebate/Incentive
6. BLANK
7. Improved Safety/Morale
8. Set Example/Industry Leader
9. Able to make improvements sooner
10. Saves money on utility bill
00. Other, Specify
98. Don't know
99. Refused

B1b What do you see as the drawbacks to participating in the program? [MULTIPLE RESPONSE, UP TO 3]

1. No drawbacks
2. Incentives not high enough/not worth the effort
3. Program is too complicated

NAVIGANT

4. Cost of equipment
5. BLANK
6. Poor Communication
7. Time Consuming
8. BLANK
00. Other, specify
98. Don't know
99. Refused

Feedback and Recommendations

R1 Do you plan to participate in the other AEP Ohio programs in the future?
1. Yes
2. No
3. Maybe
8. Don't know
9. Refused

E23. Do you have any suggestions on how the Express Program could be improved? [MULTIPLE RESPONSE, UP TO 4]
1. Higher incentives
2. More measures
3. Greater publicity
4. Better communication/Improve program information
5. Contact/information from Account Executives
6. Longer time period to complete project
7. Better review of applications
8. Simplify application process
9. Electronic applications
10. More funds for the program
11. BLANK
00. Other, specify
96. No recommendations
98. Don't know
99. Refused

E21. Finally, if you were rating your overall satisfaction with <UTILITY>, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**

NAVIGANT

2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	F 1
99	Don't know	F 1

E22. Why do you give it that rating?
RECORD VERBATIM

Firmographics

Finally, I'd like to ask you few general questions about your company, specifically at [SITE_ADDRESS].

What is your job title or role? (Do not read list)

1 Proprietor/Owner
2 President/CEO
3 Facilities Manager
4 Building / Store Manager
5 Energy Manager
6 Facilities management/maintenance position
7 Chief Financial Officer
8 Other financial/administrative position
9 Sales Staff
10 Lessor
00 Other (Specify), continue
88 Refused
99 Don't know

[RECORD RESPONSE]

Our records describe the facility at [SITE_ADDRESS] where [COMPANY] participated in the [PROGRAM] as [BUS_TYPE]. Is this correct?

1 Yes **0**
2 No **continue**
88 Refused **0**
99 Don't know **0**

NAVIGANT

What is the principal activity /(type of business) [COMPANY] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store?

[DO NOT READ LIST. RECORD ONE RESPONSE.]

1	Office	continue
2	Retail (non-food)	continue
3	College/university	continue
4	School	continue
5	Grocery store	continue
6	Convenience store	continue
7	Restaurant	continue
8	Health care/hospital	continue
9	Hotel or motel	continue
10	Warehouse	continue
11	Personal Service	continue
12	Community Service/ Church/ Temple/Municipality	continue
13	Industrial Electronic & Machinery	continue
14	Industrial Mining, Metals, Stone, Glass, Concrete	continue
15	Industrial Petroleum, Plastic, Rubber and Chemicals	continue
16	Other Industrial	continue
17	Agricultural	continue
18	Condo Assoc/Apartment Mgmt	continue
77	Miscellaneous [RECORD VERBATIM]	continue
88	Refused	continue
99	Don't Know	continue

Does your organization own or lease the space at [SITE_ADDRESS]?

1	Own	**continue**
2	Lease	**continue**
3	Own Part and lease part	**continue**
99	Don't know	**continue**

What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

	Square Feet		
	Refused		
	Don't Know		

NAVIGANT

F4a How old is this facility? [NUMERIC OPEN END, 0 TO 150; 998=Don't know, 999=Refused]

[ASK F4b IF F4a=998]

F4b Do you know the approximate age of the building? Would you say it is…?

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
8. Don't know
9. Refused

F6 Which of the following best describes the facility? This facility is…

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANIZATIONNAME> with several locations

B 7. About how many full-time equivalent employees work at the facility at [SITE_ADDRESS]?

1 Less than 5
2 6 to 25
3 26 to 40
4 Over 40
88 Refused
99 Don't Know

Thank you and closing.

6.3 AEP Ohio Express Program Non-Participant Survey

2011 AEP OHIO BUSINESS EXPRESS PROGRAMS – EXPRESS INSTALL NEAR PARTICIPANT SURVEY

NAVIGANT

Introduction

THIS MAY NOT APPLY: Note: Choose the largest <SubcategoryDescription 1> (measure type: Lighting, HVAC and Refrigeration). Ask about a maximum of three measures (ex: display lighting,general ambient lighting, HVAC, refrigeration). NTG and Spillover module only gets asked once per SubcategoryDescription 1 (ie: respondent).

INTRODUCTION

[READ IF CONTACT=1]

Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. This is not a sales call. May I please speak with <**APPLICATIONCONTACTNAME**>?

Our records show that <**ORGANIZATIONNAME**> consulted with **<RegExpsCont>** on or about <**ProposalGeneratedDate** > about energy efficiency upgrades at <**ORGANIZATIONNAME**>. The cost of the work was to be reduced by incentives from AEP Ohio to the contractor. We are calling to do a follow-up study about your firm's decision to NOT participate in this program, which is called the AEP Ohio Express Install Program. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 15 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]

Hello, this is _____ from Data Prompt International calling on behalf of AEP Ohio. I would like to speak with the person most knowledgeable about a recent proposal to change the lighting, cooling or other energy-related equipment for your business.

[IF NEEDED] Our records show that <**ORGANIZATIONNAME**> talked with **<RegExpsCont>** on or about <**ProposalGeneratedDate** >. The cost of the work would have been reduced by an incentive paid to the contractor from AEP Ohio. We are calling to do a follow-up study about your firm's decision to NOT participate in this program. I was told you're the person most knowledgeable about your energy usage. Is that correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 15 minutes. Is now a good time? [If no, schedule call-back] SCREENING QUESTIONS

A1. Just to confirm, during 2011 did **<RegExpsCont>** do an assessment of your lighting and other equipment and propose a scope of work for energy efficient equipment?

NAVIGANT

1 Yes
2 Yes, someone else dealt with it – WHO?
3 No - TERMINATE
98 Don't know - TERMINATE
99 Refused - TERMINATE

[IF A2=1, ask to be transferred to that person and/or get contact name and phone number. If not available, thank and terminate. If available, go back to A1]

[IF A1=2, 3, 00, 98, 99: Thank and terminate. Record disposition as "Could not confirm participation".]

Our records show that you choose not to install the recommended energy efficient equipment.

HEARD ABOUT PROGRAM AND COMPLETED THE APPLICATION

S0 How did you first hear about the Express Install program?

2. AEP Ohio Website
3. Workshop/training
4. Registered Express Contractor
5. Email
6. Friend/colleague/word of mouth
7. Bill Insert
9. Speaker/Presentation at an event
10. Newsletter
11. Vendor
12. AEP Account Manager
13. BLANK
14. Supplier
15. BLANK
16. BLANK
17. Sales Representative
18. BLANK
00. Other, specify
98. Don't know
99. Refused

Contractor Completed Application Module

S4b Did the contractor complete a walk through assessment of your facility to identify potential
replacement equipment?

NAVIGANT

1 Yes
2 No
8 Don't know
9 Refused

S4b Did the contractor complete a proposal to install energy efficient equipment in your facility?

1 Yes
2 No
8 Don't know
9 Refused

S5 Did you have a relationship with the contractor before he contacted you about the Business
Express Install Program?

1 Yes
2 No
8 Don't know
9 Refused

S6a Was the contractor's proposal clear about the scope of work to be performed?

1 Yes
2 No
8 Don't know
9 Refused

[ASK S6b IF S6a=2]
S6b Why not?

1. too much detail (explain _____)
2. too little detail (explain _____)
3. cost unclear
00. Other, specify
98. Don't know
99. Refused

S7 Was the contractor's proposal clear about the incentives that AEP-Ohio contributed to the project's final
cost?

1 Yes

NAVIGANT

2 No
3 No incentives were contributed by AEP
8 Don't know
9 Refused

S8a Would you recommend the contractor you worked with to others?

1 Yes
2 No
8 Don't know
9 Refused

[ASK S8b IF S8a=2] S8b Why not?

1. Too small
2. Not knowledgeable
3. Poor work quality
4. Poor timeliness
5. Poor equipment selection
00. Other, specify

PLANS FOR PROGRAM PARTICIPATION

The following questions are about the measures you planned to install through the Express Install Program.

L0 Did the proposal include installation of a:

1. Lighting Project (ASK L1)
2. Lighting Control Project (Ask L2)
3. HVAC (Heating, cooling or ventilation) Project (Ask L3)
4. Refrigeration Project (Ask L4)
5. Other
98. Don't know
99. Refused

L1 Please Briefly describe the Lighting project proposed through the Express Install Program. [Circle all that apply.]

1. Linear fluorescents
2. LED lighting

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3. HID lighting
4. Exterior lighting
5. Custom display or specialty lighting
6. Lighting controls
7. Exit Signs
8. DELAMPING
9. Other [describe verbatim]
98. Don't know
99. Refused

L2 Please Briefly describe the Lighting control project proposed through the Express Install Program. [Circle all that apply.]

1. Photocell controls
2. Occupancy (motion) controls
3. Dimming fluorescents
4. Exterior lighting
5. Custom display or specialty lighting
6. Other [describe verbatim]
98. Don't know
99. Refused

L3 Please briefly describe the HVAC project proposed through the Express Install Program. [Circle all that apply.]

1. New Condensing (outdoor) unit
2. New Packaged / unitary equipment
3. New indoor fan and/or coils
4. Economizer or free cooling
5. Controls (programmable thermostat or timer)
6. Air balancing
7. Duct repairs or insulation
9. Other [describe verbatim]
98. Don't know
99. Refused

L4 Please briefly describe the refrigeration project proposed through the Express Install Program. [Circle all that apply.]

1. LED case lighting
2. Night Covers
3. Strip curtains
4. Case Doors
5. Electronically commutated motors (ECMs)

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6. Anti-sweat heater controls
9. Other [describe verbatim]
98. Don't know
99. Refused

NET-TO-GROSS BATTERY

N1 When did you first learn about AEP Ohio's Program? Was it BEFORE or AFTER you first began to THINK about implementing the <**ANSWER(S) TO L1**>? DO NOT READ LIST, SINGLE PUNCH

1 Before
2 After
8 Don't know
9 Refused

W1 Did you install ANY energy efficient equipment without incentives – direct or indirect –from AEP Ohio?

Open ended - answer. Record verbatim.

W2. Why did you decide to <u>not</u> participate in the Business Express Program? (DO NOT READ-
CODE ANSWERS)

1. The old equipment was still working
2. The application was too confusing
3. I didn't trust the contractor to complete the work
4. It seemed like too much of a hassle
5. Payback wasn't there; the incentive was too low.
6. Still too expensive for the business-owners share
7. Uncertain economic conditions
8. Proposed equipment/work did not meet my needs
9. Other (record verbatim)
98. Don't know
99. Refused

N4c What role did the Registered Express Program Contractor play in your original decision to get a
proposal through the Business Express Install
Program? [Record VERBATIM]

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98 Don't know
99 Refused

N4d NOT What role did the Registered Express Program Contractor play in your final decision to participate in the Business Express Install Program? [Record VERBATIM]

98 Don't know
99 Refused

N7a. Do you plan to install this equipment at a later date? Would you say...?
READ LIST, SINGLE PUNCH

1 Within 6 months?
2 6 months to 1 year later
3 1 - 2 years later
4 2 - 3 years later
5 3 - 4 years later
6 4 or more years later
8 Don't know
9 Refused

PAYBACK BATTERY

I'd like to find out more about the payback criteria <ORGANIZATIONNAME> generally uses for its investments.

N8 What financial calculation does <ORGANIZATIONNAME> make before proceeding with installation of a MEASURE like this one?
00 [Record VERBATIM]

98 Don't know
99 Refused

N9 What is the payback cut-off point you use (in months or years) before deciding to proceed with an investment? Would you say...?

1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years

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6 Over 5 years
8 Don't know
9 Refused

N10a

OTHER INFLUENCES BATTERY [ASK N23-N25 IF N3nn>5]

N25 Please state any other factors that influenced your decision to NOT go ahead with this energy efficiency project?
00 [Record VERBATIM]

98 Don't know
99 Refused

SP5i. If you had not started participation in the Small Business Express Install program, how likely is it that you would still have implemented the same measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure? [SCALE 0-10; 98=Don't Know; 99=Refused]

State-Wide Evaluator Non-Residential Participation Process and Program Satisfaction Module

I'd now like to ask you a few more general questions about your experience with the Express Install program.

S1a. How satisfied were you with the reduced cost to the business owner? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

S1b. How satisfied were you with the expertise of the contractor? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

S1c. How satisfied were you with the Sales presentation by the contractor? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

S1d. How satisfied were you with the energy assessment? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

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S1e. How satisfied were you with the equipment offered? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

E 1. How satisfied were you with the energy efficiency level required to qualify for the program? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

E 2. What would have made you more

satisfied? RECORD VERBATIM

E 3. How satisfied were you with the reduced cost of the measures? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

E 4. How satisfied were you with the measures offered by the program? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? **[SCALE 0-10; 98=Don't know, 99=Refused]**

E 5. What would have made you more satisfied with the measures?

RECORD VERBATIM

Benefits and Barriers

B1a What do you see as the main benefits to future participation in the Express Install Program?

[MULTIPLE RESPONSE, UP TO 3]

1. Energy Savings
2. Good for the Environment
3. Lower Maintenance Costs
4. Better Quality/New Equipment
5. Rebate/Incentive
6. BLANK
7. Improved Safety/Morale
8. Set Example/Industry Leader
9. Able to make improvements sooner
10. Saves money on utility bill

00. Other, Specify
98. Don't know
99. Refused

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B1b What do you see as the drawbacks to future participation in the program? [MULTIPLE
RESPONSE, UP TO 3]

1. Paperwork too burdensome
2. Incentives not high enough/not worth the effort
3. Program is too complicated
4. Cost of equipment
5. No drawbacks
6. Poor Communication
7. Time Consuming
8.
00. Other, specify
98. Don't know
99. Refused

Feedback and Recommendations

R1 Do you plan to participate in this AEP Ohio program in the future?

1. Yes
2. No
3. Maybe
8. Don't know
9. Refused

E23. Do you have any suggestions on how the program could be improved? [MULTIPLE RESPONSE, UP TO 4]

1. Higher incentives
2. More measures
3. Greater publicity
4. Better communication/Improve program information
5. Contact/information from Account Executives
6. Longer time period to complete project
7. Better review of applications
8. Simplify application process
9. Electronic applications
10. More funds for the program
11. BLANK
00. Other, specify
96. No recommendations
98. Don't know
99. Refused

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E21. Finally, if you were rating your overall satisfaction with <UTILITY>, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

1	Very satisfied	**continue**
2	Somewhat satisfied	**continue**
3	Neither satisfied nor dissatisfied	**continue**
4	Somewhat dissatisfied	**continue**
5	Very dissatisfied	**continue**
88	Refused	F 1
99	Don't know	F 1

E22. Why do you give it that rating? RECORD VERBATIM

Firmographics

Finally, I'd like to ask you few general questions about your company, specifically at [SITE_ADDRESS].

B 1. What is your job title or role?

1 Proprietor/Owner
2 President/CEO
3 Facilities Manager
4 Building / Store Manager
5 Energy Manager
6 Facilities management/maintenance position
7 Chief Financial Officer
8 Other financial/administrative position
9 Sales Staff
10 Lessor
00 Other (Specify), continue
88 Refused
99 Don't know

[RECORD RESPONSE]

B 2. Our records describe the facility at [SITE_ADDRESS] where [COMPANY] participated in the [PROGRAM] as [BUS_TYPE]. Is this correct?

1 Yes
.
2 No
88 Refused
.

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99 Don't know

B 3. What is the principal activity /(type of business) [COMPANY] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store?

[DO NOT READ LIST. RECORD ONE

1	Office	continue
2	Retail (non-food)	continue
3	College/university	continue
4	School	continue
5	Grocery store	continue
6	Convenience store	continue
7	Restaurant	continue
8	Health care/hospital	continue
9	Hotel or motel	continue
10	Warehouse	continue
11	Personal Service	continue
12	Community Service/ Church/ Temple/Municipality	continue
13	Industrial Electronic & Machinery	continue
14	Industrial Mining, Metals, Stone, Glass, Concrete	continue
15	Industrial Petroleum, Plastic, Rubber and Chemicals	continue
16	Other Industrial	continue
17	Agricultural	continue
18	Condo Assoc/Apartment Mgmt	continue
77	Miscellaneous [RECORD VERBATIM]	continue
88	Refused	continue
99	Don't Know	continue

B 4. Does your organization own or lease the space at [SITE_ADDRESS]?

1	Own	**continue**
2	Lease	**continue**
3	Own Part and lease part	**continue**
99	Don't know	**continue**

B 5. What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

	Square Feet		

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	Refused		
	Don't Know		

F4a How old is this facility? [NUMERIC OPEN END, 0 TO 150; 998=Don't know, 999=Refused]

[ASK F4b IF F4a=998]

F4b Do you know the approximate age of the building? Would you say it is...?

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
8. Don't know
9. Refused

F6 Which of the following best describes the facility? This facility is...

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANIZATIONNAME> with several locations

B 7. About how many full-time equivalent employees work at the facility at [SITE_ADDRESS]?

1 Less than 5
2 6 to 25
3 26 to 40
4 Over 40
88 Refused
99 Don't Know

Thank you Closing

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6.4 AEP Ohio Express Program Registered Express Contractor (Contractor) Interview Guide

AEP-Ohio Evaluation for the Business Express Program
Registered Express Contractor In-Depth Interview Guide

Respondent name:	
Respondent phone number:	
Respondent title:	
Respondent Company	
Date:	
Status:	

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

(Note: the interviewer should change the introduction to match his/her own interviewing style.)

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP Ohio's Business Express Program. We're conducting interviews with Registered Express Contractors in order to improve our understanding of AEP-Ohio's programs. At this time we are interested in asking you some questions about the Business Express program. The questions will only take about a half hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

Background

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1. Can you briefly describe the company you work for and the type of business it conducts? How many are employed at the company? Who are your primary business customers? What type of equipment did you install for the Business Express Program?

2. Can you briefly summarize your roles and responsibilities at your company? For how long have you carried these out?

3. How would you describe your familiarity with AEP Ohio's Business Express Program? Have you personally worked with any of your customers who have participated in this program?

Marketing and Participation

1. How did you (the contractor) become aware of the program? What other ways can AEP use to boost program awareness with contractors?

2. Are you aware of other AEP Programs? Have you referred any customers to other AEP business programs? Do you have any materials that you can leave with customers describing the full range of AEP Programs?

3. What kind of support, if any, does AEP Ohio provide to you for marketing the program to your customers? Do you distribute utility-produced marketing materials? For the Business Express Program

4. Do you think AEP Ohio's level of marketing and promotion of the Business Express Program has been appropriate so far? Do you think promotional efforts are successful? Do you think they reach the right audience? If AEP is missing areas of opportunity, what are those areas?

5. Have you noticed any spontaneous word of mouth marketing among AEP customers? For example, customers know of other participating business before your contact them?

Program Characteristics and Barriers

4. What areas could the program improve to create a more effective program for customers and program partners and help increase the energy impacts?

5. Does the application/enrollment process present any barriers to program participation?

Administration and Delivery

5. How do you decide which AEP customers to contact about the program? Are these customers current customers of yours? Do you target specific geographic areas?

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6. About what percentage of the customers you talk to about the program agree to an assessment of their energy use?

7. Of those who agree to an assessment of the site, about what percentage agree to install the recommended measures?

8. On average, how long does it take to generate a proposal for the customer? Do you deliver the proposal in person, email it to the customer or send it via snail mail? Do you input the data, generate and deliver the proposal on the first visit?

9. Why reasons do customers give you for deciding to not install the energy efficiency equipment you recommended? Do customers suggest alternatives to you or are you their main source of expertise.

10. After the customer agrees to install the recommended equipment, how long does it take to schedule the equipment installed?

    How long does it take to process your payment after installation? Is this an acceptable amount of time?

11. Do you know whom to contact for help with this program?

12. What could be modified to make the program work better (e.g., incentive levels, eligible equipment, etc.)? If so, what would you recommend? Why do you think this change is needed?

13. Would more training be useful? What types?

Satisfaction with the SBES Program

1. Are customers satisfied with the program?

2. Are the incentives levels effective at encouraging customers to pursue projects they would not have considered without the program? About what percentage of your customers were planning to do the project without the incentive?

3. What barriers besides funding prevent customers from participating in the program? Can AEP help you overcome these barriers?

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4. How useful is the program training run by KEMA? What topics are covered? What topics need more information, i.e. did you feel prepared to represent the program and enroll participants from your first day out?

5. How useful was the database training? Do you have any issues with how the information is input into the database? What could AEP do to make the data input easier?

6. KEMA conducts pre and post inspections of the installations. Are these inspections conducted quickly? Do they present a barrier to participation or are they a burden on customers? Do the pre-inspections unnecessarily delay installations? Do the post-inspections unnecessarily delay incentive payments?

7. Are you satisfied with the program? What barriers prevent you from participating in the program more frequently? How could AEP Ohio improve the program?

8. Has your business revenues grown in the past year (Y/N)? If yes would you attribute any of that growth to the Business Express Program? About what % (+/- 10%)

9. Have you hired more employees because of work generated through the Business Express Program? How many? In the next year will you hire more employees to handle increased work generated by the program? About how many?

Thank you and closing.

6.5 AEP Ohio Express Program Staff and Program Implementer In-Depth Interview Guide

AEP-Ohio Evaluation for the Business Express Program
Program Staff and Implementer In-Depth Interview Guide

[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff and implementation contractors. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The depth of the exploration with any particular respondent will be

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guided by the role that individual played in the program's design and operation, i.e., where they have significant experiences for meaningful responses. The interviews will be audio taped and transcribed.

Introduction

Hi, may I please speak with [NAME]?

My name is ___ and I'm calling from Navigant Consulting, we are part of the team hired to conduct an evaluation of AEP Ohio's gridSmart Business Express Program. We're conducting interviews with program managers and key staff in order to improve our understanding of AEP-Ohio's programs. At this time we are interested in asking you some questions about the Business Express program. The questions will only take about a half hour. Is this a good time to talk? [IF NOT, SCHEDULE A CALL BACK.]

Ok, great. If you don't mind, I would like to do a voice recording our conversation to speed up the note taking. Is that OK? I'm going to switch you to speaker phone. I am in an enclosed, private office.

Roles and Responsibilities

1. Briefly summarize your role in the Business Express Program. What are your main responsibilities?

2. Please explain who is involved in the program implementation, and what their roles are? *[Probe for all significant actors with responsibility in program delivery including implementer, the Registered Express Contractors and solution providers.]*

3. Roughly, how many people are assigned to work on this program?

4. What are the formal and informal communication channels between AEP Ohio and KEMA? Do you feel information is shared in a timely manner on this program?

5. Are there any documents that outline the roles and responsibilities of program staff and the Registered Express Contractors (RECs) for the Business Express Program? May I review a copy of this document?

Overall Goals and Objectives

6. What is the first year goal for the Business Express Program? Participation? Savings?

7. Outside of the quantitative goals (e.g., $, $/kWh, savings and participation rates), in your own words, what are the key objectives of this program?

8. According to these metrics, did the program meet the 2011 goals? Why or why not?

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Marketing and Participation

9. Could you briefly describe the process for participation in the program from the customer perspective?

10. Is the marketing effort sufficient to meet current and future program participation goals?

11. What type of support is the program providing to program partners, the Registered Express Contractors (RECs)? Is it sufficient? Do they need more training?

12. What is the feedback on the training they receive now?

13. How thoroughly do RECs cover the AEP Ohio service territory? What customer market segments participate in the program? Do you collect data on customer market segments on the application? Why not?

14. How many customers agree, on average, to the walk through audit? How many customers agree to implement the energy saving equipment?

15. Is the program outreach to RECs or customers effectively increasing awareness of the program opportunities?
    a. What is the format of the outreach? Does it differ for each REC?
    b. How often does the outreach occur?
    c. Are the messages within the outreach clear and actionable?

16. Are you considering using social media or Internet advertising to market this program?

Program Characteristics and Barriers

17. Overall, do you have a sense of how satisfied program participants are with various aspects of the program?

18. How do participants perceive the incentives and costs related to this program?
    a. Are customers satisfied with the program incentives to sustain participation goals?
    b. Should the budget allocation between incentive spending and marketing spending be adjusted to meet participation and savings goals?
    c. Are there particular program characteristics that could be changed to improve customer satisfaction while maintaining program effectiveness?

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19. What are key barriers to participation in the program for eligible customers who do not participate, and how can these be addressed by the program?

20. What are key barriers to REC participation in the program, and how can these be addressed by the program? My understanding is that there was a cap of 20 on the RECs. Is this still true? Are there plans to expand REC participation in 2012?

21. Are drop-outs an issue? When do participants drop out? What causes participants to drop out of the program? Do you consider a customer that does not implement the proposed EE equipment a partial dropout?

Administration and Delivery

22. Has the program, as implemented, changed from the original plan? If so, how, why, and was this an advantageous change?

23. Approximately what percent of all projects are pre-inspected and post-inspected? Who determines if a project requires inspection? How?

24. Who conducts pre and post inspections and how are they documented? Have these been implemented in a manner consistent with program design? Do these procedures present their own implementation barrier? (KEMA?)

25. Who initiates the program participation? Does the customer approach the REC or does the REC approach the customer?

26. Are the program processes effective for smoothly providing incentives to customers and motivating the RECs to participate?
    a. Program tracking and data management
    b. Training for on-line data system – feedback?
    c. Internal program communications
    d. Program staffing

27. What determines how much of the project cost is incented? Does the customer get an estimate of how much his share will be before he decides to participate in the program?

Program Improvement

28. What are the opportunities for program improvement?

29. Do you have any other comments or suggestions for us?

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Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process.

We might follow-up with you by phone later, if additional questions arise.

APPENDIX M

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AEP Ohio
Energy Efficiency/Demand Response Plan
Year 3 (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report
Business New Construction Program

Presented to

AEP OHIO®
A unit of American Electric Power

May 10, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigant.com



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NAVIGANT

Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, Ohio 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigant.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigant.com

Prepared by:

Keith Downes, Managing Consultant
802.526.5103
keith.downes@navigant.com

Glen J. Wood, Associate Director
647-288-5210
glen.wood@navigant.com

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Section E. Executive Summary

E.1 Program Summary

The Business New Construction (BNC) Program provides an approach for customers building a new facility or undergoing a major renovation to emphasize energy efficiency in the building design. The program is divided into three streams, Prescriptive, Custom, and Whole Building, which are intended to meet the needs of buildings of varying size and complexity. The Prescriptive and Custom Streams are similar to the Existing Building Prescriptive and Custom Programs, with the exception that lighting measures are based off of Lighting Power Density calculations relative to ASHRAE 90.1-2004 allowances. The Whole Building Stream is a comprehensive approach utilizing building energy modeling simulations for customers with large complex buildings that want to maximize the energy efficiency of their new building. The program is delivered by KEMA, an implementation contractor, on behalf of AEP Ohio.

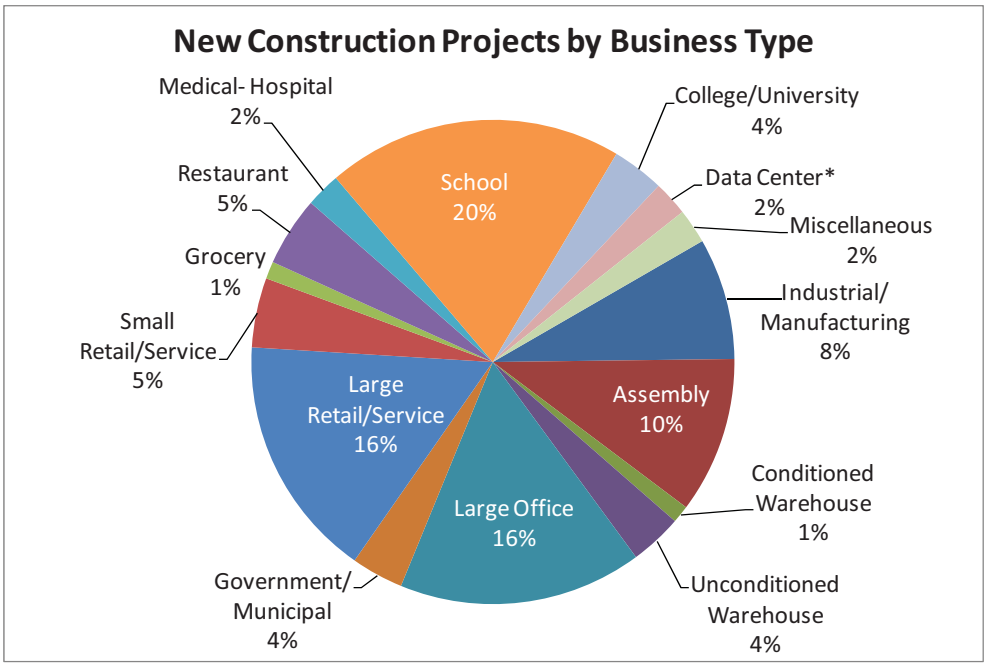
A total of 86 projects were completed under the New Construction program in 2011; an impressive amount for the first year of operation. Noting the program is still getting established, it is not surprising that of the projects completed, few (five percent) followed the Custom Stream. Only four projects completed in 2011 used custom or "non-prescriptive" incentives, and of those, one project used a combination of prescriptive and non-prescriptive incentives. However the Whole Building Stream was widely used, predominately on larger projects. With fifteen reported projects, or 17 percent of the total projects following this stream, the Whole Building projects totaled 69 percent of the reported first year energy savings. Overall, 81 percent of the projects completed in 2011 were for new buildings, while 19 percent involved major building renovations.

As shown in Figure E-1 and Figure E-2, the majority of projects came from schools (20%), large offices (16%), and retailers (16%); whereas the bulk of energy savings came from one large Data Center project (40%) and schools, which accounted for 24 percent of reported energy savings.

The types of measures completed under the program were only recorded for prescriptive projects. The majority (57%) of measures completed in the first year of the program involved lighting upgrades, followed by heating, ventilation and air conditioning (HVAC) efficiency improvements (18%) and variable speed drives (10%).

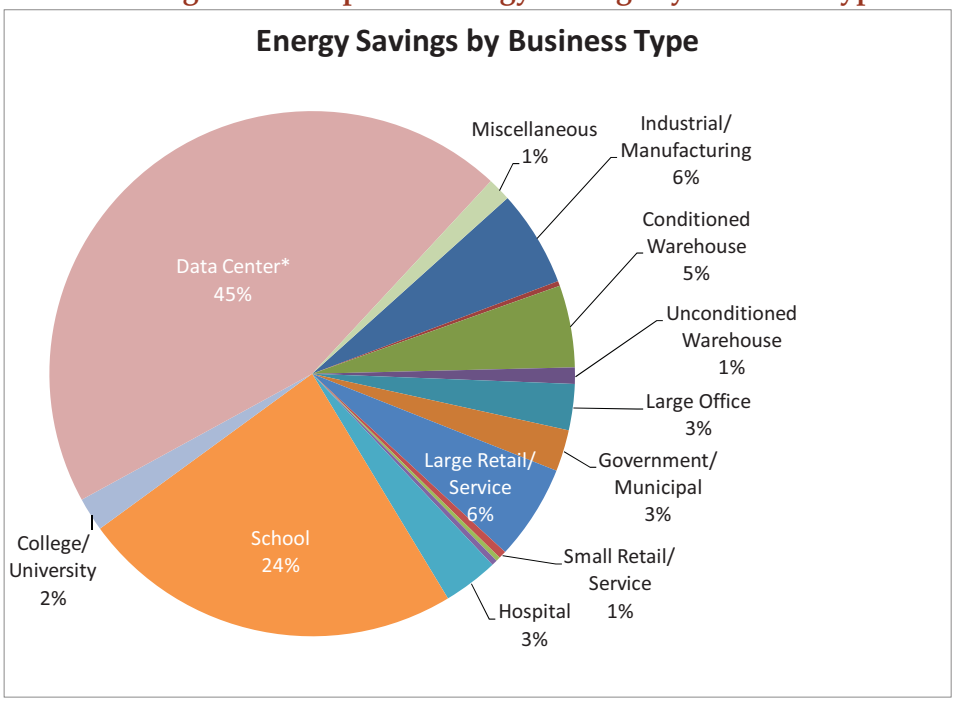
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Figure E-1. Number of Projects by Type of Business



* Data Center was classified as Miscellaneous in the tracking database, but Navigant Consulting, Inc. (Navigant) recommends re-classifying it due to the large savings potential of these types of buildings.

Figure E-2. Reported Energy Savings by Business Type



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E.2 Key Impact Findings

As summarized in Table E-1, the verified energy savings exceeded the PY 3 2011 target of ten GWh. Realization rates were lower than optimal, but reasonable for a first year New Construction Program. The reduction in annual energy realization rate was driven by a baseline error in the data center project, comprising 40 percent of the reported program savings. The low summer coincident peak realization rate was primarily due to several large projects in the Whole Building Stream reporting site peak reduction rather than summer coincident reduction.

Table E-1. Overall Evaluation Results

Metric	Reported Gross Savings	Verified Gross Savings	Gross Realization Rate	Overall Relative Precision to a 90% Confidence
Annual Energy Savings (kWh)	15,150,474	12,066,204	0.80	6.2%
Summer Coincident Peak Reduction (kW)	4,967	1,664	0.34	21.7%

Given the strong energy savings and cost-effectiveness performance of this program, it is advisable to continue the program as planned. Realization rates can be improved by implementing recommendations contained in this report.

E.3 Key Process Findings

The process component of the evaluation generally found that program processes appear effective. Program participants were overwhelmingly satisfied with the various aspects of the program; with almost 90 percent indicating they would participate in the program in future.

Information obtained from AEP Ohio and KEMA indicates a quite proactive effort was made to identify and reach out to key market segments and market actors. Approximately 41 events were held with 35 different industry groups to communicate information about the New Construction Program. These efforts reached out to professional associations, trade allies, business groups, and facility managers in the private and public sector, as well as the industrial and agricultural sectors. KEMA reports that it held some 300 face-to-face meetings with Solutions Providers and approximately half that number with end use customers of AEP Ohio.

A review of marketing materials, collateral, and applications forms identified some areas for improvement, but overall found the forms to be reasonably complete and clear in conveying program requirements.

Overall satisfaction with the New Construction Program was reported to be quite high. Survey respondents rated their overall satisfaction at 8.4 on a scale of 1-10.

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- Respondents indicated that they were satisfied with most of the elements of the program and offered relatively few proposed changes to the program. None of the respondents indicated that participating has caused any delay to their building projects.

- The survey of participants indicated that the main perceived benefit and the main driver for participating in the program were the incentives, followed by energy savings or improved equipment.

- Incentives significantly outweighed technical assistance as the reported reason for participation, though this might change if higher levels of technical support were provided.

- Perceived drawbacks to participating in the program included paperwork requirements, program complexity, and the time required to participate.

- Participants rated the program's influence on their decision to incorporate energy efficiency measures in their building projects as 6.2 (on a scale of 1-10). Of the 19 respondents, three indicated the program had zero influence, while eight (42%) rated the influence as above 7 out of 10; four of these rated the program's influence as 10 out of 10.

In reviewing tracking data for the program, Navigant identified a number of areas where documentation could be improved, and where improved tracking information could assist in future program reviews or evaluations.

No significant issues were found with respect to the application review and approval process, or the timing of incentive payments, with the exception of project cost inaccuracies. Navigant believes that there are additional opportunities for the program to influence energy design decisions as part of the interaction which occurs with participants during the review and approval stage.

A summary of recommendations with respect to the Process Evaluation is presented in Section 4.2.

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Section 1. Introduction and Purpose of Study

1.1 Program Overview

The Business New Construction (BNC) Program provides an approach for customers building a new facility or undergoing a major renovation to emphasize energy efficiency in the building design. The program is divided into three streams, Prescriptive, Custom, and Whole Building, which are intended to meet the needs of buildings of varying size and complexity. The Prescriptive and Custom Streams are similar to the Existing Building Prescriptive and Custom Programs with the exception that lighting measures are based off of Lighting Power Density calculations relative to ASHRAE 90.1-2004 allowances. The Whole Building Stream is a comprehensive approach utilizing building energy modeling simulations for customers with large complex buildings that want to maximize the energy efficiency of their new building. The program is delivered by KEMA, an implementation contractor, on behalf of AEP Ohio.

1.2 Evaluation Objectives

This report presents the findings from the impact and process evaluations of the AEP Ohio BNC Program for Program Year 3 (PY 2011). The objectives of the evaluation were to: (1) quantify gross energy and summer peak demand savings impacts at the meter from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved and; (3) determine program cost-effectiveness. Specific evaluation questions are summarized in Section 3.3.

1.3 Evaluation Methods

For this report, program impacts for the BNC Program were evaluated in terms of energy and demand savings. A portion of the completed project population was sampled with the intension of achieving 90 percent confidence and a 10 percent precision on both the program energy and demand savings.

The ex-post gross energy and demand savings of the sampled projects were determined by engineering review of the project files, engineering review of the ex-ante savings analysis, inspection of the building energy models and/or site verification of the installed components of the Demand Side Management – Energy Efficiency (DSM-EE) package designed for the subject buildings. Summer coincident peak savings is determined by engineering analysis of the savings potential during the peak period or by adjusted gross demand savings with a published coincidence factor for summer peak demand.

Data collection activities are summarized in Table 1-1. Primary data collection efforts included in-depth telephone interviews with program staff at AEP Ohio and the program implementer, KEMA. A telephone survey was conducted with the program participants who were willing to participate.

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A program logic model was not developed by AEP Ohio or KEMA during the development of the BNC Program. Navigant interviewed staff from AEP Ohio and KEMA, reviewed program materials and strategy documents to gain a fuller understanding of program logic, expected inputs, outputs and outcomes for the program.

Table 1-1. Summary of Data Collection Activities

Data Collection Type	Targeted Population	Supported Evaluation Activities
Review of Program Documentation	Program documentation and marketing materials new for 2011	Process Evaluation
Secondary Literature Review	Publicly-available evaluations of other utility business new construction programs; reports of construction practices in absence of utility programs	Impact and Process Evaluation
In-depth Telephone Interviews	AEP Ohio Program staff	Process Evaluation
	KEMA staff	Process Evaluation
Telephone Surveys	Program Participants	Impact and Process Evaluation
Project File Review	Sample of completed projects	Impact and Process Evaluation
On-site Verification	Sample of completed projects	Impact and Process Evaluation
Tracking Data Review	All program participants	Impact and Process Evaluation

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Section 2. Methodology

This section describes the methodology used to complete the process and impact evaluations. First, a high-level overview of the steps taken to collect and analyze the data for this evaluation is described. This is followed by a list of the research questions that guided the evaluation. Next is a description of the tracking data review, the review of marketing activities and participation, and the primary data collection tasks. Finally, the methods used to analyze the impact and process data are discussed.

2.1 Overview of Approach

This evaluation was driven by three overarching objectives: (1) quantify energy and summer peak demand savings impacts from the program during PY 2011; (2) determine key process-related program strengths and weaknesses and identify ways in which the program can be improved; and (3) determine program cost-effectiveness. To meet these objectives, the evaluation team undertook the following activities.

1. **Evaluation Questions.** Established key evaluation questions from the development of the 2011 evaluation plan with AEP Ohio staff.

2. **Tracking Data Review.** Reviewed the program tracking data collected by KEMA and provided to the evaluation team by AEP Ohio.

3. **Review of Marketing Activities.** Reviewed the overall marketing activities and approach as implemented by KEMA.

4. **Review of Participation**. Reviewed program participation by building type, program stream, completion date, and geographic location.

5. **Primary Data Collection.** Performed primary data collection, including: in-depth interviews with program staff, the implementation team, telephone surveys of program participants, file review for a subset of randomly selected projects, and on-site verification for a randomly selected subset of the file reviewed projects.

6. **Methods Used to Analyze Impact Data.** Quantified energy and demand reduction savings by reviewing project files. File reviews included verifying engineering calculation and building model simulations. On-site visits included verification of equipment and quantities for a subset of randomly selected projects.

7. **Methods Used to Analyze Process Data.** Assessed the effectiveness of the program processes by analyzing program documents, the results of in-depth interview with program staff at AEP and KEMA, program tracking data, and participant survey data.

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2.2 *Evaluation Questions*

The key research and evaluation questions identified in the Evaluation Plan for the program follow, along with a description of the information sources used to address each of these questions.

Table 2-1. Key Research and Evaluation Questions

			Interviews & Surveys			
	Engineering Review/ On-sites	Review Program Info / Tracking Dbase, etc.	AEP / KEMA	A&E	Solutions Providers	Participants
Impact Questions						
Note: Quantitative results to be reported for Columbus Southern Power and Ohio Power Company						
1) Were the impacts reported by the program achieved?	X					
2) What were the realization rates? (Defined as evaluation-verified (*ex post*) savings divided by program-reported (ex-ante) savings.)	X					
3) What are the benefits and costs and cost effectiveness of this program?	X	X	X	X	X	X
4) Has the program stimulated direct job creation among participating Solution Providers participating in the program.		X		X	X	
Process Questions						
Marketing and Participation						
1) Is the marketing effort sufficient to meet current and future program participation goals?			X	X	X	X
2) What type of support is KEMA providing to the building design and construction community? Is it sufficient?			X	X	X	X
3) How thoroughly does KEMA cover the AEP Ohio service territory and what customer market segments participate in the program?			X	X	X	X
4) Is the program outreach to customers effectively increasing awareness of the program opportunities?				X	X	X
a. What is the format of the outreach?			X			
b. How often does the outreach occur?			X			

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		Dbase, etc.	Interviews & Surveys			
c. Are the messages within the outreach clear and actionable?			X	X	X	X
Program Characteristics and Barriers						
5) How do participants perceive the program streams available to them?				X	X	X
6) Is there enough flexibility in the various streams to meet their needs?				X	X	X
7) Are expectations and requirements clearly explained?				X	X	X
8) Is the incentive structure for the Whole Building Stream sufficient?	X	X			X	X
9) Are new construction projects in the Prescriptive Stream achieving comprehensive savings and receiving the support they need?	X	X				X
10) Is the Custom Stream process clear and incentive levels sensible?	X	X			X	X
11) How do participants perceive the incentives and costs related to this program?						X
a. Do participants perceive the incentives between the different streams to be fair and equitable?						X
b. Are building owners satisfied with the program incentives to sustain participation goals?						X
c. Are the design teams satisfied with the program incentives to sustain participation goals?					X	
d. Should the budget allocation between incentive spending and marketing spending be adjusted to meet participation and savings goals? (*Conclusion based on assessment of above).*		X				
e. Should the budget allocation between incentives for building owners and incentives for design teams be adjusted to meet participation and savings goals? *(Assessment based on input/review)*	X	X	X		X	X
f. Are there particular program characteristics that could be changed to improve customer satisfaction while maintaining program effectiveness?					X	X
12) What are the key barriers to participation in the program for eligible customers who do not participate, and how can these be addressed by the program?						X
13) Are drop-outs an issue? If so, what causes participants to drop out of the program?		X	X			

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		Tracking Dbase, etc.	Interviews & Surveys			
Administration and Delivery						
14) Has the program, as implemented, changed from the original plan? If so, how, why, and was this an advantageous change?		X	X			
15) Are the program processes effective for smoothly providing incentives to participants and motivating design teams to participate?			X		X	X
a. Program tracking and data management		X				
b. Required forms		X				
c. Impact to timeline		X				
d. Ease of use		X				
e. Program staffing		X				
16) What are the verification procedures for the program? Have these been implemented in a manner consistent with the program design? Do these procedures present their own implementation barrier?		X	X			
17) What are the opportunities for program improvement?			X	X	X	X

2.3 *Tracking Data Review*

Program tracking data is critical for determining the impacts of the New Construction Program. A copy of the program tracking data collected by KEMA was provided by AEP Ohio and reviewed by the evaluation team.

- The evaluation team reviewed all of the fields recorded on the application forms and cross checked the collected data fields against the fields recorded in the tracking database and identified data fields essential for consideration in the impact and process evaluations.
- Key data fields in the database were reviewed to identify missing, incomplete, or inconsistent data.
- The data collected was also reviewed to identify any additional information that would be helpful in evaluating program performance.

2.4 *Review of Marketing Activities*

Marketing collateral, application forms and other materials available from the AEP Ohio website were reviewed and additional marketing material was requested from AEP Ohio and the program implementer (KEMA). Information on marketing, communications and outreach efforts was also obtained from both AEP Ohio and KEMA.

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2.5 *Review of Participation*

The evaluation team used the program tracking data to analyze participation by a number of key factors including building type, completion date, and program track (Whole Building, Prescriptive and Custom). Each analysis focused on metrics such as number of participants and impact results. The results of this analysis are presented, in part, in the discussion of program activity in Section 3.

2.6 *Primary Data Collection*

Primary data collection included in-depth interviews with program actors, surveys of program participants and review of program tracking data, marketing activities and collateral and application forms and other program inputs.

In-depth qualitative interviews were completed with AEP Ohio and KEMA staff involved in the development and operation of the program. Telephone surveys were also conducted with participating customers to better understand customer satisfaction and perceptions related to the BNC Program. The interviews and surveys were informed by prior review of relevant program tracking databases, documents, and other materials to understand how the program worked and how it has been marketed for the 2011 program year.

The in-depth interview guides were developed as open-ended guides to allow for a free-flowing discussion between interviewer and respondent and real time interviewing flexibility. Staff experienced in new building programs and program evaluations were used to conduct the interviews. Interviews were conducted by telephone in order to provide flexibility to the respondents' schedules.

The participant surveys were developed with a combination of short answer questions and open-ended discussions to allow for quantitative analysis and qualitative impressions of the program. Blackstone Group conducted the survey with executive interviews capable of asking follow-up questions depending on the direction of the survey. Interviews were conducted by telephone in order to provide flexibility to the respondents' schedules.

2.6.1 Population and Sampling

As discussed in Section 3.1 below, a total of 86 projects were completed during the 2011 program year. All unique participant contacts, a total of 51 unique participants, were solicited for response. In the case of one contact responsible for multiple BNC projects, the participant was questioned only on the largest project from a first year energy savings perspective. Nineteen participants responded to the survey.

The participant survey was used to attribute the effects of the BNC Program on the projects under the purview of the respondent. It also supported the process analysis for this program.

The respondent of the survey was identified as the decision maker who is the most knowledgeable about the customer's decision to participate and their interaction with the program. That person was not always the application contact person listed from the program records, but instead may be the customer's designated developer, architect/engineering design firm or other organization.

Survey data was analyzed to determine the number and proportion of responses to each question or possible response. Verbatim responses were also reviewed to obtain an overall sense of participant perceptions of the program and to identify feedback or suggestions that were not anticipated in closed questions. The survey instrument is provided in Section 5.1.

2.6.2 Sampling Error/Expected Precision

In selecting the sample for the survey, participants with multiple projects were only added to the sample once. As a result, each unique participant might represent multiple projects. The number of responses obtained from participants in the survey represents a 37 percent response rate from these selected 'unique' participants. This sample size provides a +/-15 percent margin of error at a confidence level of 90 percent.

2.7 *Methods Used to Analyze Impact Data*

Completed projects were divided into four size strata based on ex-ante first year energy savings. A random sample was selected from each stratum to be analyzed. Desk reviews were conducted on all sampled projects which included engineering calculations of energy savings claims and verification of baseline and as-built assumptions. Energy modeled projects were reviewed for model inputs on the baseline and as-built models. Additionally, a further random sample of desk reviewed projects was conducted to determine which projects would receive site verification. Site visits inspected equipment models and quantity, verified hours of operation and answered any outstanding questions. Results of on-site and desk reviews were statistically applied to the entire population to determine ex-post savings.

2.7.1 Ex-Post Gross Energy Savings Calculation

Energy savings calculations were conducted in accordance with accepted methodologies as appropriate. Energy modeled buildings were evaluated in accordance to ASHRAE 90.1 – Appendix G. The baseline was determined using the International Energy Conservation Code (IECC) 2006. The code update to IECC 2009 did not affect buildings constructed in 2011 due to design beginning before the recent energy code update.

Lighting was analyzed via lighting power density calculations using the whole building method. Standard approaches were taken with HVAC, shell, appliances, and other equipment. Prescriptive and custom projects used coincidence factor from Northeast TRMs to determine summer coincident peak, adjusting for the peak period definition. Modeled projects were analyzed for run hours during the peak period.

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2.7.2 Realization Rates Calculation Method

Realization rates for each stratum were calculated with the following equation:

$$RR = \frac{\sum_{sampled} E_{ex-post}}{\sum_{sampled} E_{ex-ante}}$$

where E is the energy savings or demand reduction for each project in the stratum.

Realization rates in each stratum were applied to the project population of that stratum with the following equation:

$$E_{i,ex-post} = RR_{stratum} * E_{i,ex-ante}$$

The above equations were used with the claimed savings as the ex-ante values and the desk reviews as the ex-post values to determine desk verified savings. The desk verified savings then became the initial values for the site verification, with the site verified savings as ex-post values. The process was repeated to determine overall verified savings.

2.8 Methods Used to Analyze Process Data

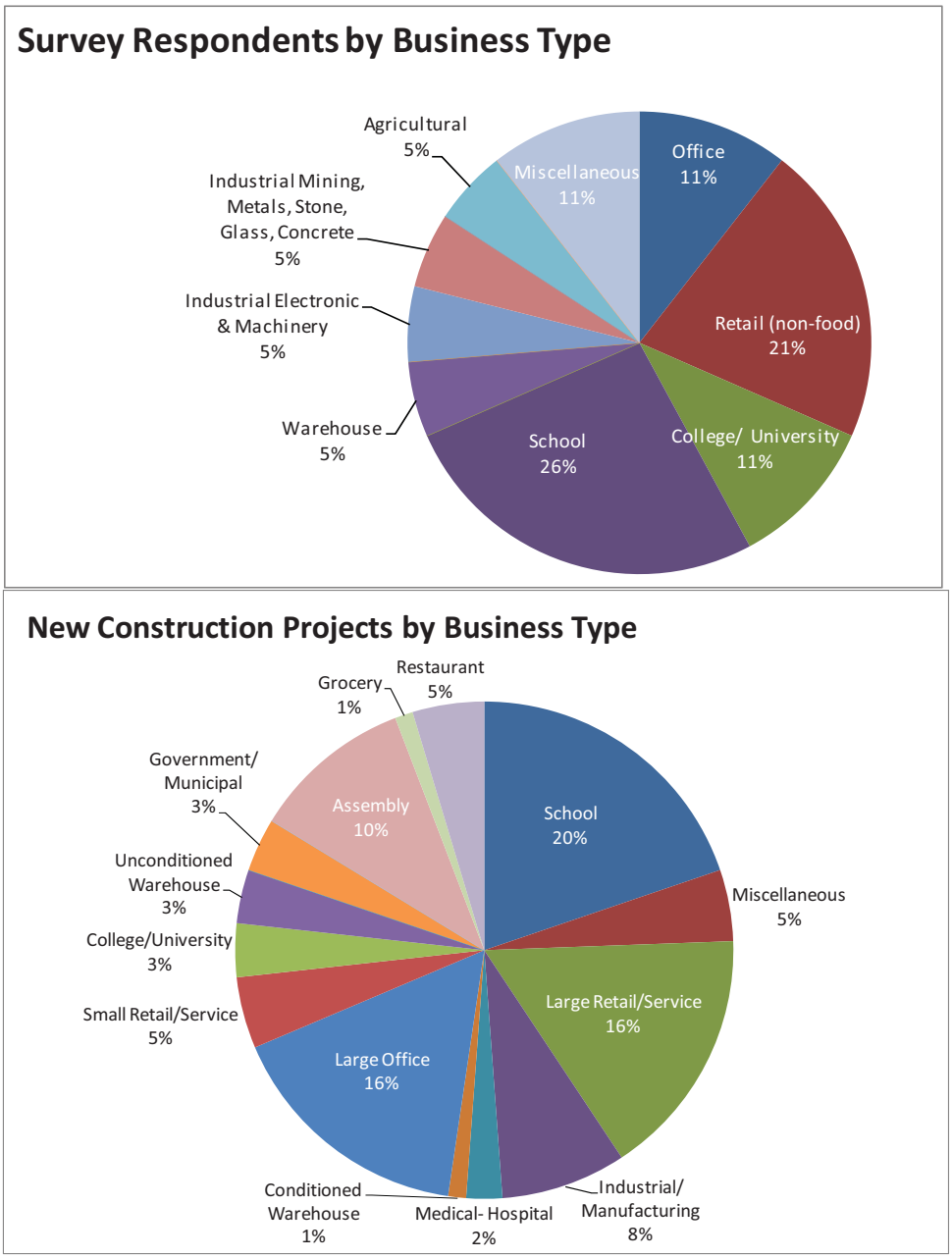
In addition to estimating the level of confidence associated with the survey results, Navigant compared the characteristics of the respondent with the demographics of the population of projects in the 2011 program year. A number of the survey respondents were responsible for multiple projects under the program. Overall, the survey respondents represented projects that accounted for approximately 88 percent of the ex-ante program savings.

The estimated average floor area for the population of projects included in the 2011 program was about 53,000 square feet. The estimated average size of projects for respondents to the survey was closer to 95,000. Eighty–five percent of those responding to the survey indicated that they own their building.

As illustrates, the sample population slightly over-represents schools, retail buildings, and colleges and universities, while slightly under-representing large offices.

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Figure 2-1. Program Participation vs. Survey Participation



Given the relatively small number of projects included in the sample, the difference in responses is not surprising, but does imply that the projects included in the survey were somewhat skewed to larger projects.

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Section 3. Detailed Evaluation Findings

3.1 *Program Activity*

A total of 86 projects were completed under the New Construction Program in 2011. This strong performance is notable for a first year new construction program and is outpacing other regional new construction programs. AEP Ohio program managers and KEMA implementers have been effective in gaining community support of this program.

Given that this was the first year of operation for the program, it is not surprising that few (five percent) of the projects completed followed the Custom Stream. Only four projects completed in 2011 used custom or "non-prescriptive" incentives and of those, one project used a combination of prescriptive and non-prescriptive incentives. However, the Whole Building Stream was widely used, predominately on larger projects, totaling fifteen reported projects or 17 percent of the total projects. Note that of the 31 projects sampled, two were found to have savings based on the building energy models as if in the Whole Building Program Stream. One was labeled as Custom and one as Prescriptive, but these were treated as Whole Building participants in the impact results.

Table 3-1. Summary of Completed Projects

	Calculated Values from Tracking Database		
	No. of Projects	**Energy Savings (kWh)**	**Demand Savings (kW)**
Construction Type			
New Construction	70	13,611,592	3,774
Major Renovation	16	1,765,535	1,193
Total -	***86***	***15,377,127***	***4,967***
Business Type			
Industrial/Manufacturing	7	912,521	161
Assembly	9	45,663	4
Conditioned Warehouse	1	776,767	96
Unconditioned Warehouse	3	154,674	27
Large Office	14	436,427	325
Government/Municipal	3	394,172	182
Large Retail/Service	14	900,523	269
Small Retail/Service	4	72,766	23
Grocery	1	41,190	7
Restaurant	4	54,131	13
Medical- Hospital	2	519,691	58
School	17	3,629,965	3,253
College/University	3	318,639	100
Data Center*	2	6,900,046	415
Miscellaneous	2	219,952	33
Total -	***86***	***15,377,127***	***4,967***

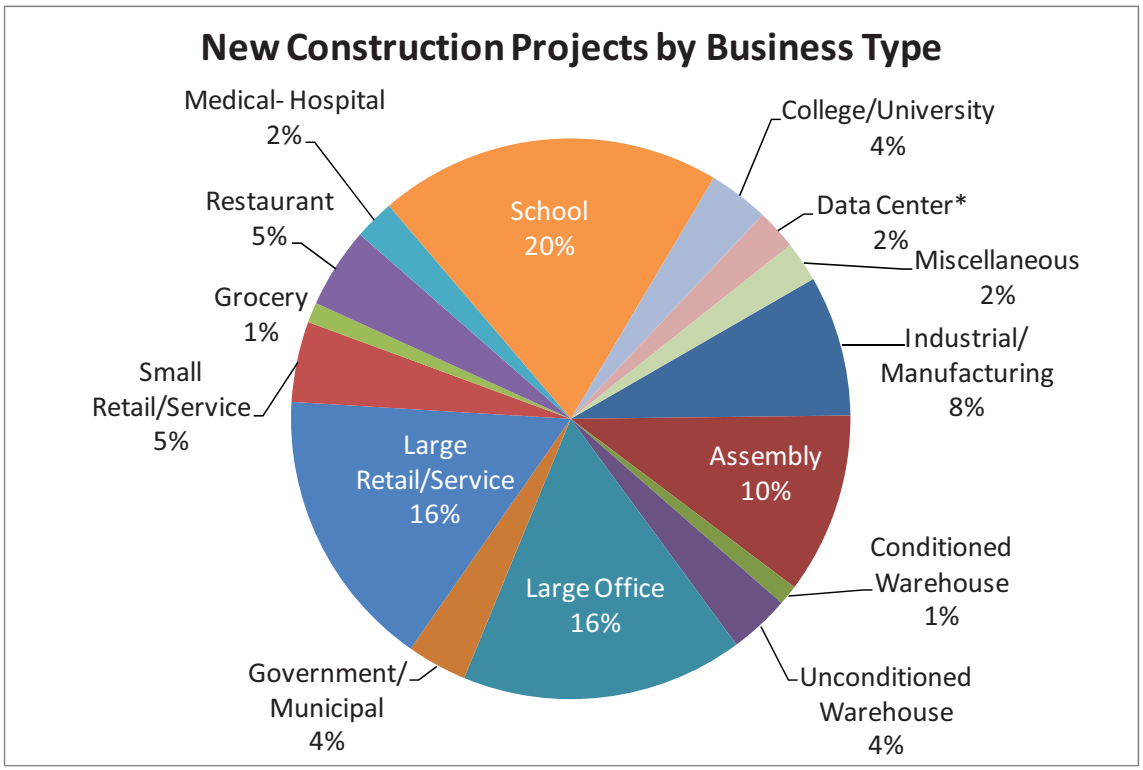
* Data Center was classified as Miscellaneous in the tracking database, but Navigant recommends re-classifying it due to the large savings potential of these types of buildings.

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As Table 3-1 shows, 81 percent of the completed projects involved new buildings, while only 19 percent involved major building renovations. Overall about 29 percent of the projects came from the institutional sector (education, hospitals and government), 13 percent involved industrial warehousing facilities with the balance coming from the service sector. The three sectors which contributed most projects were schools (20%), large offices and retailers (16% each).

On an energy savings basis, the picture is quite different. One large data center project contributed over 40 percent of reported energy savings. The second largest contribution came from schools; which accounted for 24 percent of reported energy savings.

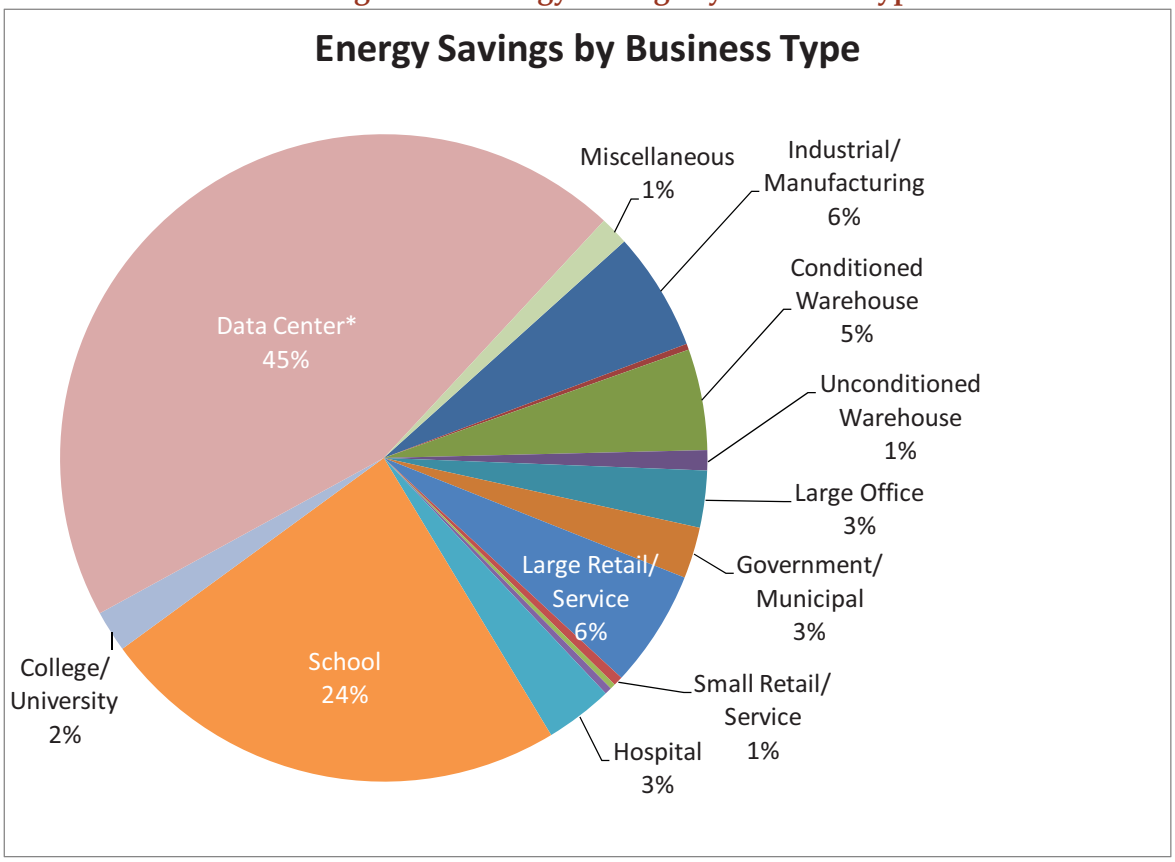
Figure 3-1. No. of Projects by Type of Business



* Data Center was classified as Miscellaneous in the tracking database, but Navigant recommends re-classifying it due to the large savings potential of these types of buildings.

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Figure 3-2. Energy Savings by Business Type



Removing the effects of the large data center project, kWh savings showed a similar distribution. Eight of the nine assembly projects were from a single participant and thirteen office buildings were from a single participant. A significantly higher number of large retail/ service and industrial/manufacturing projects were completed without repeat participants.

The type of measures undertaken was recorded for prescriptive projects. The type of measure was not recorded for projects participating in the Custom or Whole Building Process Stream. As Table 3-2 shows, the majority (57%) of measures completed in the first year of the program was lighting upgrades, followed by heating, ventilation and air conditioning (HVAC) efficiency improvements (18%), and variable speed drives (10%). Note that the table shows all the categories of measures included in projects completed under the program. As a result, the total number of measure types shown exceeds the total number of projects shown in the earlier tables.

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Table 3-2. Prescriptive Measures & Custom Projects

	Project with Measure Category*		First Year Energy Savings		
Measure Category	No.	% of Total	kWh	%	kW Savings
Lighting	61	66%	3,576,966	59%	742
Variable Speed Drives	6	6%	684,345	6%	59
Refrigeration	7	8%	78,214	7%	11
HVAC	14	15%	262,617	14%	257
Ice Making	5	5%	31,246	5%	4
Custom	10	N/A	213,781	10%	-

Note: Some projects involved more than one measure category.

The type or category of project measure was not recorded for Custom or Whole Building projects.

3.2 *Impact Findings*

This section includes a summary and discussion of the evaluation-calculated energy and demand savings for 2011 the BNC Program. Gross annual electricity savings were calculated using the data collected through document reviews and field visits for the sample of sites.

3.2.1 Summary of Impact Findings

The ex-post gross first year energy and summer coincident demand savings for 2011 were 12,066 MWh and 1.65 MW, respectively. This exceeded the 2011 goal of 10,000 MWh, in terms of the annual first year savings. This performance was strong in the face of a recovering economy and slow construction market.

Table 3-3. Impact Savings, Realization Rate and Precision of Sample

Metric	Reported Gross Savings	Verified Gross Savings	Gross Realization Rate	Overall Relative Precision to a 90% Confidence
Annual Energy Savings (kWh)	15,150,474	12,066,204	0.80	6.2%
Summer Coincident Peak reduction (kW)	4,967	1,664	0.34	21.7%

3.2.2 Driving Factors of Realization Rate

In analyzing the data certain factors are driving the realization rate between claimed savings and verified savings. Annual, first year gross energy savings and demand savings will be discussed individually.

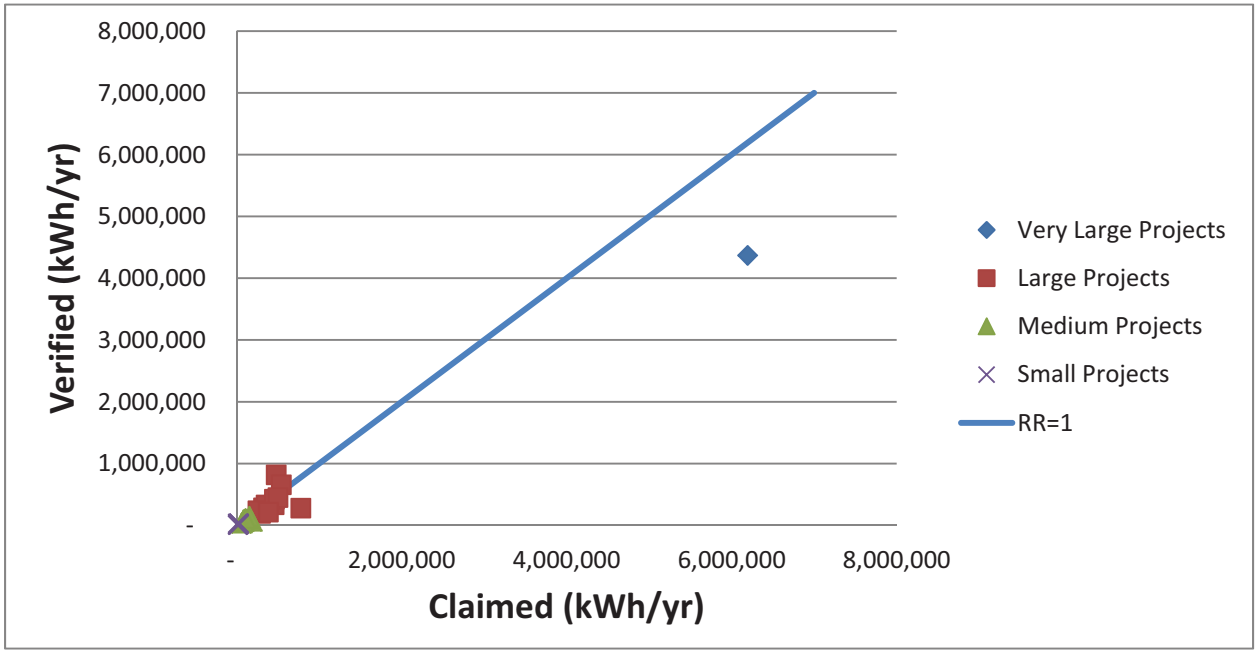
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3.2.2.1 Energy Considerations

Organizing the data by the size of the energy savings claim, one data center project was classified as Very Large and accounted for 41 percent of the energy savings claim. The Very Large Project had a realization rate of 0.71, otherwise the realization rate exceeded 0.9.

The Very Large data center project was part of the Whole Building Stream and was therefore modeled to determine ex-ante savings. The modeler of the building had chosen to divide the building into office and server spaces, and applied two separate baselines for the HVAC system, which drove the energy savings model. However, correct modeling as defined by ASHRAE 90.1, Appendix G, specifies that the predominant building type shall determine the baseline HVAC system for the entire building. The baseline error accounts for the low realization on this one project.

Figure 3-3. Claimed vs. Verified Gross Energy Savings

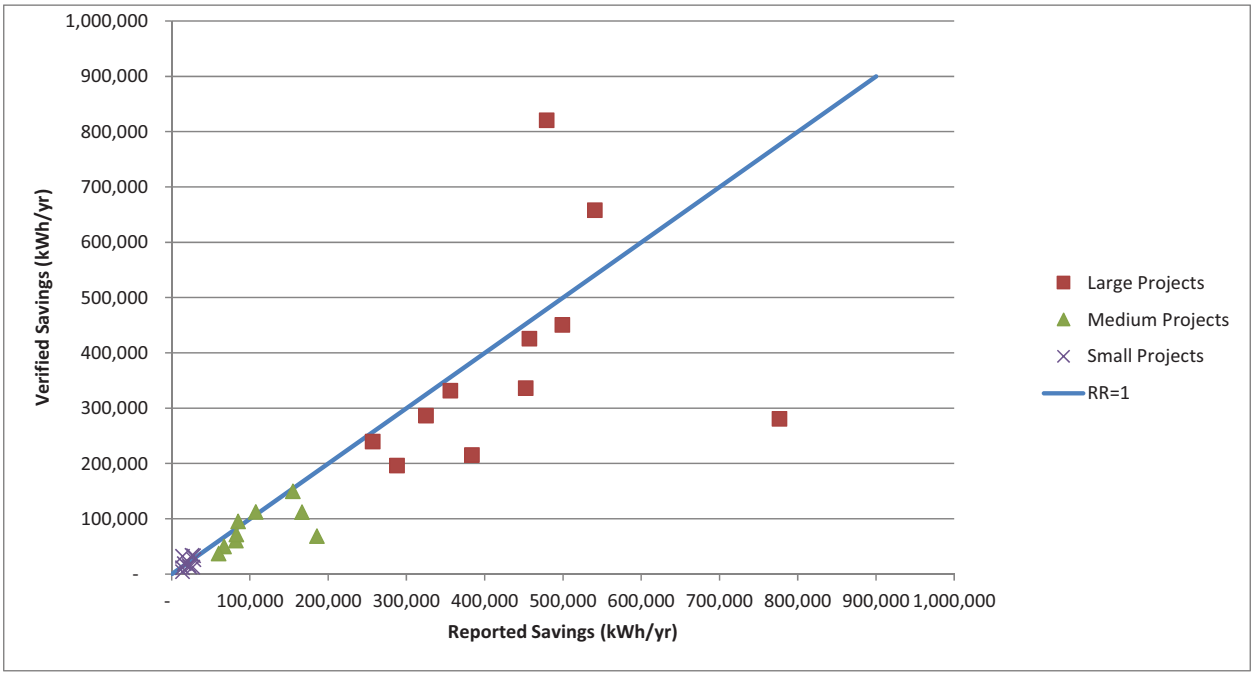


Modeling baseline errors were not found to be systemic, but projects of this size do warrant extra scrutiny. Figure 3-3 contains a blue line which represents the ideal realization rate of one. The scatter plot illustrates where the sampled projects in the impact analysis fell with regard to realization. Points in the lower right half have realization rate less than one, while the upper left represents the opposite.

Enlarging the area of Figure 3-3 where the Small through Large Projects are represented results in Figure 3-4. One project was the other data center project, which was also modeled. The model underestimated ex-ante savings with a data entry error in the CRAC system. One of the fan powers was entered with an order of magnitude mistake.

Another project was a prescriptive lighting project in a warehouse. Over estimation of ex-ante savings included claims for occupancy sensors, which are required by code, as well as mistakes in the number of fixtures. Additionally the as-built light fixtures claimed slightly lower fixture wattage than specified on manufacturer spec sheets.

Figure 3-4. Claimed vs. Verified Gross Energy Savings without the Very Large Project



3.2.2.1 Demand Considerations

Figure 3-5 illustrates the relationship of ex ante demand reduction relative to the ideal realization rate of one for the sampled projects. As before, the projects are categorized by the magnitude of energy savings rather than demand reduction for consistency with the prior section. The figure also clearly demonstrates the low realization rate, 0.34, and the low precision result.

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Figure 3-5. Claimed vs. Verified Gross Summer Coincident Demand Reduction

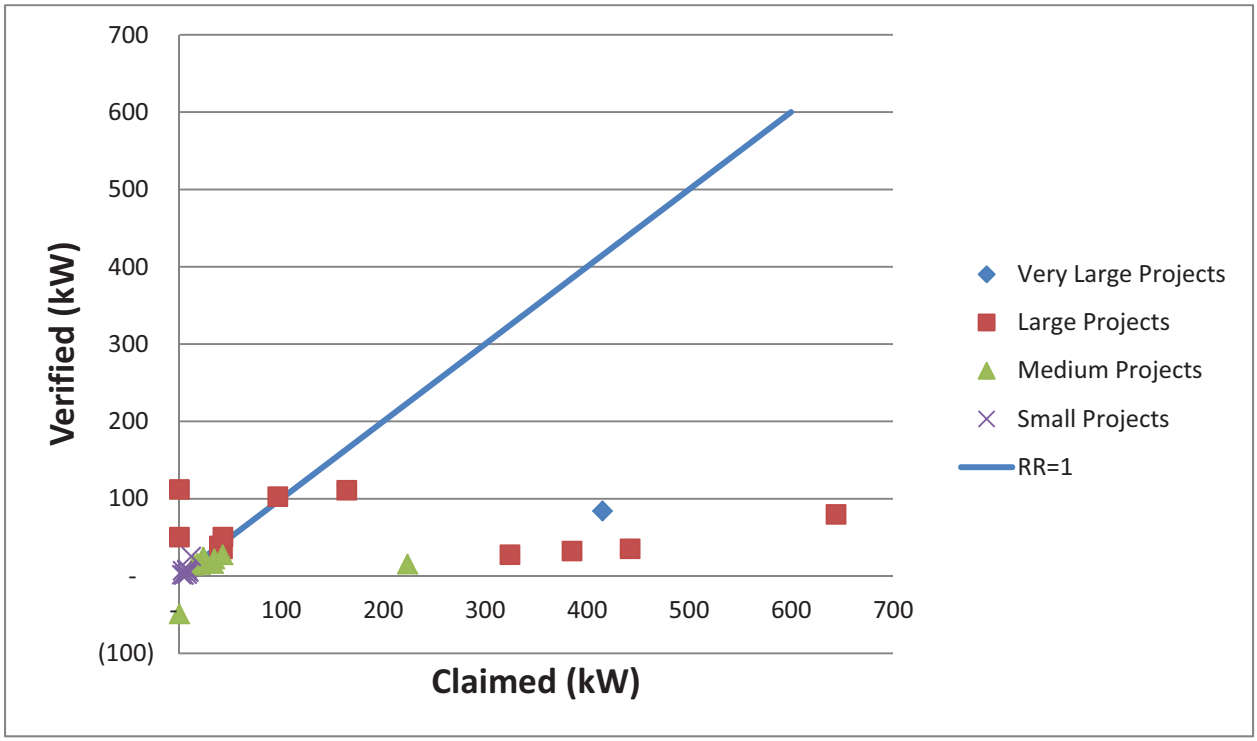
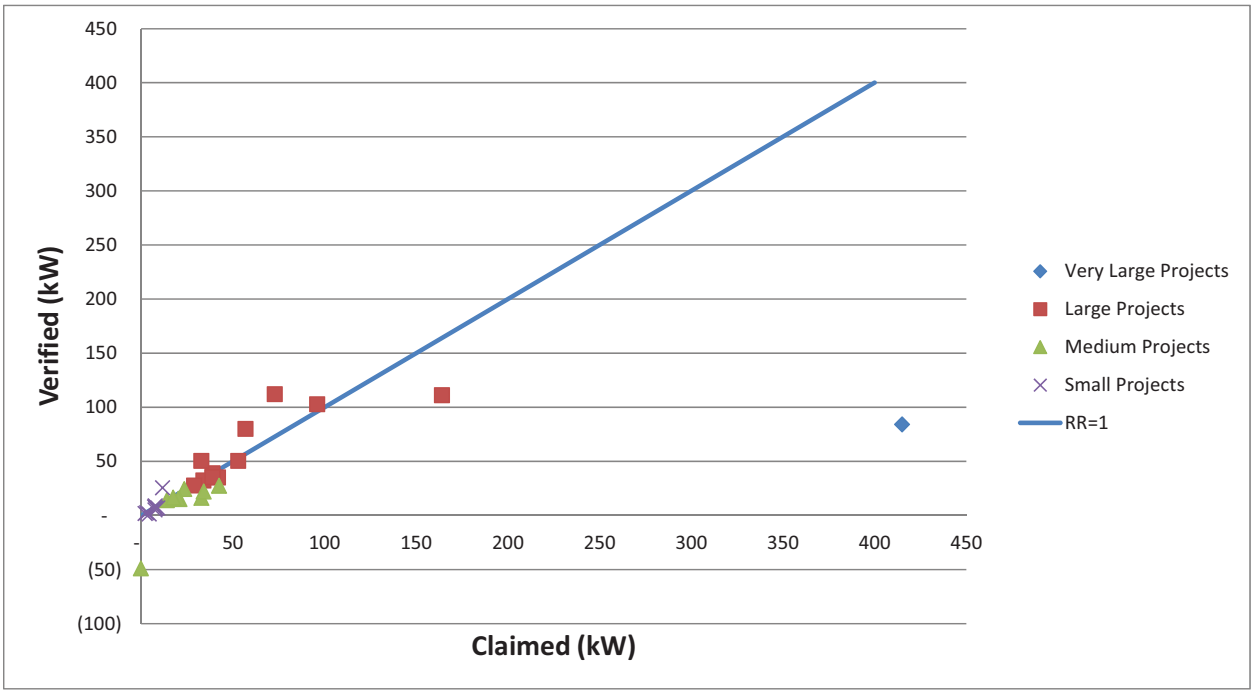


Figure 3-6. Corrected Claimed vs. Verified Gross Summer Coincident Demand Reduction



Further inspection of the tracking data as compared to project files found several of the Large Projects had incorrectly reported the project peak demand reduction, rather than the summer

coincident demand reduction. This caused the ex-ante demand savings claim to be overstated and skewed the results. Figure 3-6 restates the sampled projects with the claimed savings corrected to the project file summer coincident demand savings.

Once more, the Very Large Project, which is an energy modeled data center, is affecting the program realization rate. The project is also a good example of the sensitivity of small changes to modeled HVAC demand reduction. The ex-ante claim had a ten percent reduction in coincident peak demand. The ex-post demand reduction only showed a two percent difference between baseline and as-built models, recalling that this project had the baseline incorrectly modeled. Even though the baseline change only increased the baseline summer peak demand by eight percent, it resulted in a 0.20 demand savings realization rate for this project.

The third project is a college art history museum and its demand reduction is calculated using energy modeling. While the model showed significant energy savings, during the peak period, demand was predicted by the model to increase. The tracking system showed a zero demand reduction rather than the model prediction. Navigant asserts the increase to summer peak demand should be accounted as a negative demand savings in the program.

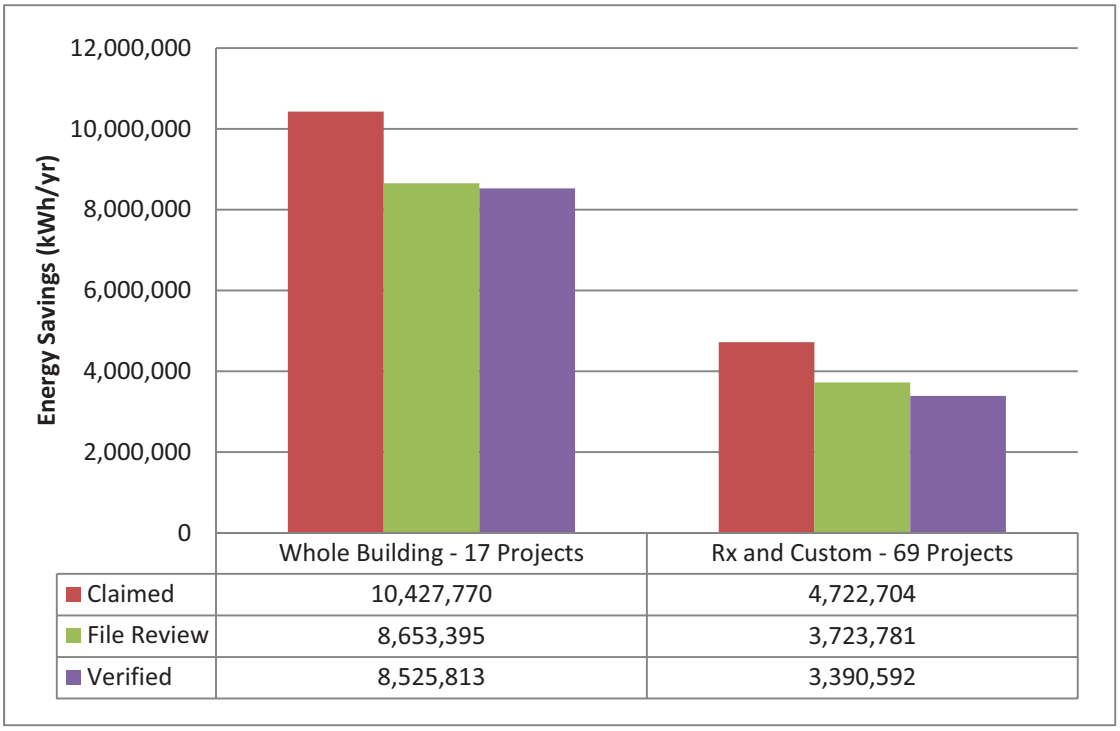
3.2.3 Project Stream Savings Analysis

By inspecting the impact results by program stream, certain characteristics were different between the projects that were energy modeled, i.e., projects in the Whole Building Stream, versus projects whose savings were determined by engineering calculations. Not surprisingly, the buildings that were energy modeled tended to be larger buildings with greater energy savings. Average ex-ante savings claim for buildings in the Whole Building Stream were roughly nine times larger than the average savings claim for Prescriptive or Custom Streams. Additionally there were differences in the realization rates of the impact studies due to the very different approach of calculating savings between the different process streams.

Figure 3-8**Error! Reference source not found.** compares the savings claims to the verified results to the preliminary file review to the final site verified result. While the buildings in the Whole Building Stream had a relatively significant savings reduction from the file review, this was almost entirely due to the one Very Large Project with a baseline error. On completing the site verifications, there was little found that would adjust the final verified number. The realization rate between the file review savings and site verified savings was 0.99, which shows that projects with this level of design scrutiny did not have differences between the information on file and the actual building. However buildings completing the Prescriptive or Custom Streams saw significant reductions in energy savings as the files were verified and the buildings were inspected.

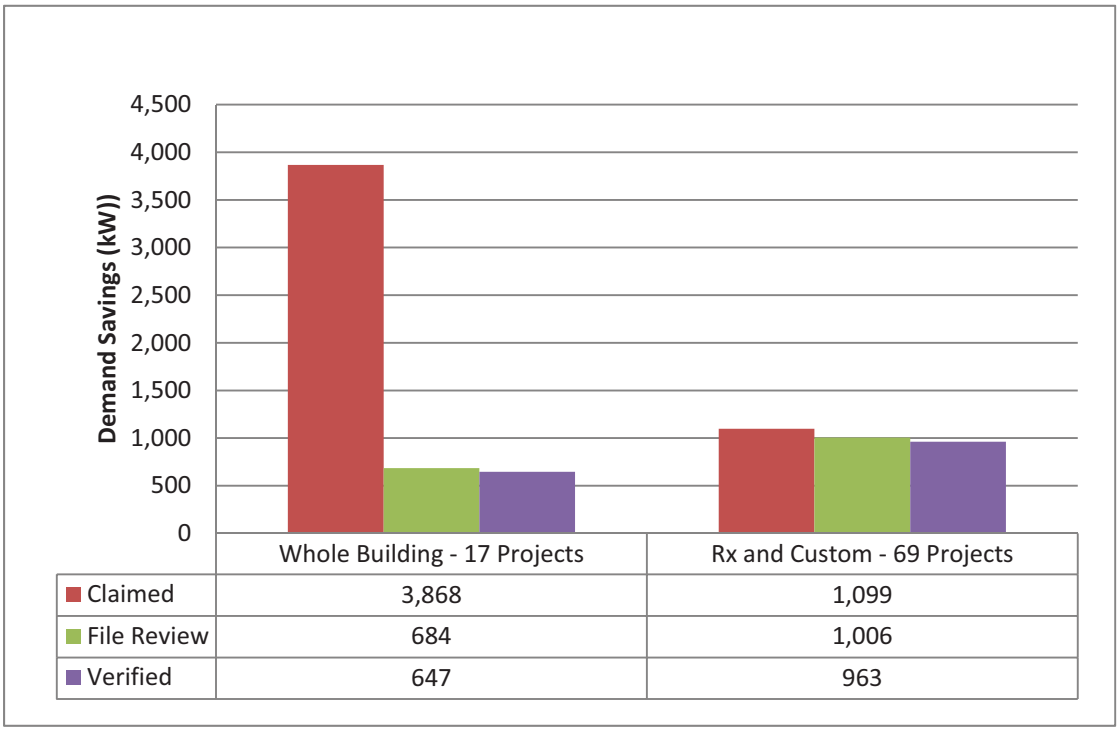
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Figure 3-7. Energy Savings by Program Stream



	Whole Building - 17 Projects	Rx and Custom - 69 Projects
Claimed	10,427,770	4,722,704
File Review	8,653,395	3,723,781
Verified	8,525,813	3,390,592

Figure 3-8. Summer Coincident Demand Reduction by Program Stream



	Whole Building - 17 Projects	Rx and Custom - 69 Projects
Claimed	3,868	1,099
File Review	684	1,006
Verified	647	963

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Error! Reference source not found. presents the results of the impact study by program stream for coincident demand reduction. All of the projects where the building demand reduction was reported in the tracking database rather than the summer coincident peak reduction were in the Whole Building Stream. This may indicate a disconnection between the BNC Program and building modelers as to which demand reduction should be reported. Roughly two-thirds of the discrepancy between the claimed savings and the file reviewed savings was due to the difference between building peak reduction and summer coincident peak reduction. The remaining difference is attributable to the one Very Large project previously discussed in Section 3.2.4. Outside of these errors, there was very little demand savings adjustments that needed to be made for any of the program streams.

3.2.4 Discussion of Errors in Claimed Savings

As mentioned in Sections 3.2.2 and 3.2.3, one time errors were found in baseline selection for modeled projects. There was an order of magnitude error for data entry in one modeled project, and there were a few modeled projects where the site peak demand reduction was reported rather than the coincident peak demand reduction.

Beyond these errors, there was a systematic error in prescriptive and custom projects of not accounting for the baseline code requirement of light reduction controls. Per the energy code baseline, most spaces require either a method of uniformly reducing light levels by at least 50 percent or having occupancy control. These controls would have reduced the annual energy consumed by the baseline and for the as-built building, resulting in a lower energy savings claim for lighting power density. Also, spaces with occupancy control were originally credited with energy savings when the occupancy control was only meeting the code baseline. Unless the spaces had light reduction and occupancy control in a space, there should not be an energy savings claim.

3.2.5 Suggestions for Improving New Construction Evaluations

This section provides insights into existing difficulties in evaluating the 2011 BNC Program. The purpose is to reveal opportunities for future and continuous improvement.

3.2.5.1 Project File Materials

In reviewing the current project files provided to Navigant, critical pieces of information were at times missing, including precise documentation of the installed equipment. For all buildings there should be a general drawing that lets the reviewer know the size, configuration and use of the buildings.

All projects should have the application included in the file and there should be notes describing any changes from the application. There were four sampled project without an application and two projects with applications that did not match the building.

When there are lighting measures claimed, a lighting layout drawing should be a requirement of the program so that Lighting Power Density can be accurately calculated and verified. Of the thirty-one projects sampled, six did not contain this information. File documents in general were well documented with regard to fixture selection with options circled or highlighted, however, roughly half of the prescriptive projects did not specify the ballast selection. Additionally, line voltage should be specified as it can slightly affect energy consumption.

For projects with HVAC or motor measures, a mechanical equipment drawing should be included along with specifications. While there were not too many prescriptive HVAC measures, there were a few instances where equipment was not specified or there were no invoices to verify the purchase.

On the modeled projects, i.e. projects on the Whole Building Stream, an executable copy of the baseline and as-built building should be a requirement of the program. Of the ten modeled projects Navigant sampled, four did not have executable models. It is also suggested that model platforms be limited to one or two programs. As EQuest continues to gain popularity for energy modeling of commercial buildings, it should be recommended. However Trane Trace and HAP continue to be used, especially Trane Trace. It is recommended that, modelers in the Whole Building Stream be limited to EQuest and Trane Trace.

At times the project files included ComCheck™ documents used to demonstrate energy code compliance. This information was very helpful in the evaluation, and the implementation contractor should continue to include them in the project files when they receive them.

3.2.5.2 Project File Documentation

It is suggested that all project files include a summary sheet that briefly states what happened over the course of the design and construction of the building, which may span multiple years. Frequently it is difficult to determine which files in the project are the latest without a summary sheet that references the supporting documents in the file. In general, without this summary sheet, Navigant found the assumptions unclear in those projects.

The summary sheet should clearly document how hours of operation were determined for lighting systems. Operation hours in the files were inconsistent and did not always follow the KEMA lookup table for deemed hours. The evaluator should be given an explanation if a custom approach to operation hours is taken. Additionally, information should be provided as to the presence or lack of light reduction controls as required by code. In most cases, it was impossible to tell if light reduction controls were part of the design, and this resulted in a reduction to the desk reviewed numbers.

Cost information was severely lacking on all projects and was very difficult to verify. A clear statement as to how cost was determined needs to be provided. This information should be sufficient to determine the incremental cost of adding efficient equipment beyond the cost of baseline equipment.

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Coincidence factors to determine summer coincident peak were not provided, which would be helpful to determine how original demand reduction claims were calculated. Also, any interactive factors considered should be summarized.

3.2.5.3 Current Practices that Assist the Evaluation Process

Navigant found the standard analysis approach on Prescriptive and Custom projects especially helpful and encourages the implementation contractor to continue this practice. Additionally, the summary sheets on the Whole Building projects were useful to review.

3.3 Process Findings

The process component of the evaluation generally found that program processes appear effective. Program participants were very satisfied with the various aspects of the program; with almost 90 percent indicating they would participate in the program in future.

The remainder of this section presents these findings in more detail. The section begins by discussing participant satisfaction with various aspects of the program. This is followed by a discussion of the effectiveness of various aspects of the program processes, beginning with marketing, and continuing through the incentive payments:

- Marketing Efforts and Program Awareness
- Participation by Service Territory
- Customer Enrollment Process
- Incentive Payment Process

Following this, the following aspects of the program processes are examined in further detail:

- Customer behavior in absence of the program
- Customer Experience and Barriers
- Review of Program Tracking Data
- Verification and Due Diligence

3.3.1 Participant Satisfaction

Overall satisfaction with the New Construction Program was reported to be quite high. Survey respondents rated their overall satisfaction at 8.4 on a scale of 1-10. Respondents also indicated that they were satisfied with most of the elements of the program and offered relatively few proposed changes to the program. All 19 respondents indicated that their participation in the New Construction Program did not result in any delay to their building project.

The level of incentives offered and the level of energy efficiency required to qualify for those incentives was perceived to be reasonable by program participants; with respondents rating their satisfaction with the level required at 8.6 out of 10 and their satisfaction with the amount of the incentive at 8.2 out of 10.

The overall satisfaction with the program is also indicated by the fact that 89 percent of respondents indicated that they plan to participate in the program again in future. The high level of satisfaction with the program is reflected in overall satisfaction with service from AEP Ohio. Ninety-five percent of respondents indicated that they were somewhat or very satisfied with the utility and the balance indicating their feeling was neutral (neither satisfied nor dissatisfied).

3.3.2 Participant Motivations

Not surprisingly, the survey of participants indicated that the main perceived benefits to participating in the program were the incentives (37%), followed by energy savings (32%). Fifteen percent of respondents also indicated that the decision led to better quality equipment.

Almost half of respondents (47%) felt that there were no drawbacks to participating in the program. Those who indicated that there were some drawbacks referred to the paperwork required (21% or four respondents), time required for the process (11% or two respondents) or their feeling that the program was too complicated (also 11%). Comments from participants in the Prescriptive Stream were relatively evenly split between concerns over paperwork, the level of incentives and the time required; though about half indicated that they felt there were no barriers to participation. The two comments received from participants in the Whole Building Stream related to paperwork requirements and the wish for higher incentives, while one respondent felt there were no barriers to participation.

The availability of incentives was the main driver for program participation according to 69 percent of respondents. Almost 20 percent reported that energy savings were the most important factor in their decision. Only 4 percent (one respondent of the three who participated in the Whole Building Stream) referred to the design or modeling assistance as the most important factor in their decision. When asked to score the relative value of incentives and technical assistance, the financial incentives again dominated, with respondents on average indicating that 80 percent of the value came from the incentives while 20 percent of the value arose from the technical assistance provided.

When asked to rate the importance of the program in influencing their decision to incorporate energy efficiency measures in their building project, responds gave an overall rating of 6.2 (on a scale of 1-10). Of the 19 respondents, three indicated the program had zero influence, while eight (42%) rated the influence as above 7 out of 10; four of these rated the program's influence as 10 out of 10.

Only 26 percent of respondents indicated that they have noticed that electricity bills are lower than they would have expected without the program. An equal number indicated that they either don't know or that not enough time has passed to make such an assessment (26% each). Of the five reporting that they have noted savings, four (80%) indicated that the savings were about what they had expected.

The demographics of the survey respondents was compared to known characteristics of the population of 2011 program participants as a whole as discussed in Section 2.8 above. It is noteworthy that 85 percent of those responding to the survey indicated that they own their building and that 74 percent indicated that their organization operates multiple locations.

3.3.3 Marketing Efforts and Program Awareness

Information obtained from AEP Ohio and KEMA indicate a quite proactive effort to identify and reach out to key market segments and market actors. Approximately 41 events were held with 35 different industry groups to communicate information about the New Construction program. These efforts reached out to professional associations, trade allies, business groups, and facility managers in the private and public sector as well as the industrial and agricultural sectors. KEMA reports that it held some 300 face-to-face meetings with Solutions Providers and approximately half that number with end use customers of AEP Ohio.

Marketing materials for the program have been made available on-line from the AEP Ohio Business New Construction web site. Overall, the materials provide a clear overview of the program, eligibility rules and the application process. In reviewing the materials, some areas for improvement were noted. Navigant recommends that AEP Ohio and the program implementer:

- Review all of the forms both on-line and when printed. In reviewing the application forms, Navigant found that the header or form title overlaps and obscures part of the text on several of the forms. For example, the table showing the level of program incentives prints over top of "*Terms and Conditions*" page on the Final Application form.

- Clarify the eligibility of major renovations under the program. The form describing the "Whole Building Performance" Stream states that renovation programs must involve "*the removal and redesign of at least two major building systems*". The eligibility rules for renovations is not included in the application form for the other program streams, though the forms used for Prescriptive Measures ask the applicant to indicate if the project is for a new or existing building.

- Consider streamlining and clarifying the discussion of eligibility in the application form. For example, on the "Terms and Conditions" page, some of the eligibility criteria are repeated several times or stated in different ways. A description of general terms and conditions followed by a bullet point description of the specific terms and conditions for each program stream might provide a clearer and simpler description. For example, the general eligibility criteria could be stated as:

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- The application must be for a non-residential account
- The existing/proposed account must be served under AEP Ohio regulated retail rates and pay into the Energy Efficiency and Peak Demand Response (EE/PDR) rider
- The facility must receive power over AEP Ohio wires, regardless of the retail electric supplier the customer has chosen
- For existing facilities, the renovation project must include the removal and redesign of at least two major building systems

The survey of program participants gives some insights into how program participants interacted with the program.

- About 40 percent of participants reported that they had learned of the program through program staff, while a further 20 percent learned of the program from a contractor. Twelve percent heard of the program from a friend or colleague, while six percent heard from an Architecture or Engineering firm and six percent more learned of the program from the AEP Ohio web site.
- Program staff expressed some concern that it became involved in projects later than desired in the first year of the program. Two-thirds of respondents to the survey, however, indicated that they learned of the program in the pre-design stage, and 20 percent at the design stage.
- There are some indications that customers still do not fully understand the program. When asked why they chose to participate in the program stream used, 39 percent of respondents indicated that they were unaware that there were other choices. Other reasons for the choice of program stream were that the stream provided the largest incentive, offered the least paperwork, or was the option recommended by their contractor (17% each).
- Overall, however, 95 percent of respondents felt that the program was clearly explained by program staff, solutions providers or through program materials.

3.3.4 Customer Enrollment Process

As previously discussed, program application forms are available on-line and may be made available to potential applicants by program staff, contractors, architects, engineers, or other market allies. There may be several stages to the application depending on the program stream followed and the nature and duration of the project.

As program implementer, KEMA receives the pre-application form from the program applicant, reviews the application and any associated information (plans, drawings, schedules), as well as

any engineering calculations or modeling submitted for custom or whole building projects. KEMA works with the applicant or modeling firm to refine modeling to give the applicant the best possible idea of what the incentives for the project will be. No indication was given that KEMA drives comprehensive savings by suggesting design enhancements or modifications that would improve savings beyond what was already designed. This is consistent with the findings of the impact study that showed buildings without comprehensive savings.

The actual completion of the building may not occur for 12 to 18 months after the pre-application is received. During that time KEMA staff indicated that it works to stay in communication with the applicant.

Projects are deemed to be completed when a certificate of occupancy is issued and a final application is submitted. In most instances, under the Whole Building Stream, the modeling is updated at that time to reflect changes between the initial design and the "as built" design. If no changes have been made then an updated version of the modeling is not required.

Applications are submitted to different levels of review depending on the type and scale of the project. Most projects are subject to an initial review by a KEMA reviewer and a second "peer-review" process. Where the incentives for a project exceed $25,000, AEP Ohio staff also review the application. Site visits are not normally conducted by KEMA except in a few instances that where determined necessary.

The perception of staff at AEP Ohio, and the program implementer, KEMA, was that the majority of applications to the New Construction Program were driven by Solutions Providers. Program effectiveness would have been enhanced if KEMA drove Solution Providers to improve energy efficiency from the original project design. This approach would have improved the depth of savings, education of contractors, and market transformation.

In the majority of cases, the sense of solution providers was that the engineering or architectural firm working for the project developer drove the application process and submitted the program application on behalf of the owner or ultimate customer of AEP Ohio. Solution Providers indicated that the engineering firm would often review the project and determine whether the project should apply under the prescriptive or whole building application process. Engineering firms also provided building energy modeling services in most cases under the Whole Building Stream.

The survey of program participants confirmed this view; with over half of the respondents (53%) indicating that a vendor or other trade ally was most responsible for completing the application, while 42 percent indicated that their organization was most responsible for the application. Overall, 46 percent of respondents had obtained their program application on-line, while the balance obtained the application from a contractor or equipment vendor (26%), architect or engineer (16%), or program staff (11%).

Almost 80 percent of program participants indicated that they had contacted the utility during the application process. Of these, 46 percent reported having made two or more contacts. About 95 percent of these contacts were by phone (58%), or e-mail or fax (38%). As previously indicated, participants reported a high level of satisfaction with their interactions with the program.

3.3.5 Incentive Payment Process

Navigant reviewed the application and the payment process as described by KEMA and AEP Ohio. The level of review for a particular project is determined based on the type of project and the level of incentive provided. No issues with regards to program tracking or payment processing were identified.

Incentives under the program are "tiered", with a higher incentive per kWh and per kW provided for a higher level of performance relative to the building code baseline. Incentives cannot exceed 50 percent of the incremental cost of efficiency measures. The level of incentive is also reduced for a given customer as the the amount of the incentive received by that customer increases, and the available incentives are capped per project and per business entity in a given calendar year.

As discussed above, participants surveyed indicated a high level of satisfaction with both the program as a whole and the level of incentives provided. Respondents indicated that on average, it took 8.7 weeks to receive their incentive from the time that the equipment was installed and a final application form was submitted. When asked how satisfied they were with the time required to obtain their incentive, respondents rated their satisfaction at 8.9 on a scale of 1-10.

3.3.6 Actions Absent the Program

As of November 2011, the building energy code in effect in the territory served by AEP Ohio requires compliance with IECC 2009/ASHRAE 90.1-2007. When the program was initiated, the energy code in effect required compliance with IECC 2006/ASHRAE 90.1-2004. Recently, the program baseline was adjusted when the Ohio Building Code requirements changed. Given the time required to complete a building project, the 2004 baseline was applied to all of the projects completed in the 2011 program year.

Navigant notes that projects which were initiated when the prior baseline was in effect may be completed in future program years, however, and suggest that tracking data for the program explicitly track which building code and baseline should apply to a given project.

No information was available from AEP Ohio or KEMA on the effective level of code enforcement. The general perception was that the code is reasonably well enforced, implying that absent the program, most buildings would be built to at least the level of energy efficiency implied in the code.

On the other hand, some proportion of new construction projects are known to exceed the energy efficiency requirements in the Ohio Building Code. No firm information was available on the proportion of buildings which would have exceeded code requirements absent the program; however, the general sense was that buildings seeking LEED certification, including public buildings such as schools and some offices, were building to a higher level of energy efficiency. Best practice would have included leveraging these participants to a high degree of comprehensive savings, but no indication was given that this practice is part of the current program.

Interviews with program staff indicate that in some instances, program staff has been able to recommend improvements for projects under the Whole Building Stream. In most instances, however, it appears that an initial or revised 'as-built' modeling of the project is accepted from the applicant. Experience in similar programs has indicated that the modeling process can be helpful in demonstrating the value of energy efficiency options to the project developer. Navigant recommends that project applicants be encouraged to use the design process and modeling to test the value of alternative building system improvements. For example, we have seen builders in other programs change decisions, such as shifting funds away from demand controlled ventilation to improve lighting efficiency, after modeling showed the energy cost of such a decision. This encouragement can take the form of KEMA recommending specific improvements during the design stage (best practice), as well as general education on the benefits of energy efficiency relative to the small incremental cost.

3.3.7 Customer Experience/Barriers

Feedback obtained from the program management staff interviews indicated no significant barriers to program participation. To this point, documentation requirements or other eligibility requirements have not been reported as problematic.

Based on experience in other jurisdictions, Navigant questioned the alignment of program requirements with those for LEED or other certification processes. The program appears to have achieved reasonable alignment with LEED requirements and program staff reported that it has worked to accommodate any minor differences in order to avoid duplication for program applicants.

Participants surveyed judged most of the processes required to participate in the program to be relatively easy (see below); rating all but one of the individual elements as above 7 on a 1 to 10 scale, where 10 was defined as "very easy". The element judged to be more difficult was the process of estimating the costs and savings, a common concern in custom new construction programs.

	Average Rating
• Verifying eligibility	7.2
• Identifying equipment efficiency upgrades	7.1
• Estimating costs and savings of proposed measures	6.4
• Completing program application forms	7.6
• Incentive payment	8.7

Sixty-five percent of respondents indicated that there were no major barriers to participating in the program, confirming the impression held by program management staff. Program participants reporting barriers mentioned the time required to navigate the process (three respondents), lack of program knowledge of design staff or contractors (two respondents), technical complexity (one respondent), and difficulty meeting the seven-year payback requirement (one respondent). Note that some respondents provided multiple responses.

When asked to suggest improvements to the program, 55 percent of respondents had no suggestions. Suggestions offered included better communications or more publicity (four), higher incentives (two), more information from or contact with Account Executives (one), and simplifying the application process (one). One respondent also suggested that information about new programs should be made available sooner, indicating that it sometimes takes "a long period for new programs to start".

3.3.8 Program Tracking Data Review

As discussed in the section on methodology, the tracking database was reviewed to identify any issues or possible improvements. Navigant notes that the same Excel spreadsheet is used to track program results for multiple programs. Navigant is currently working with AEP Ohio to develop a single, consistent tracking database that can be used across all of its programs.

In reviewing the tracking database, Navigant identified a number of issues that could be improved in the new, combined platform:

- Careful labeling is required to prevent confusion where the same term is used in different contexts. For example, the same term (Custom) is used as a business program name and as a specific stream within the New Construction Program
- Fields in the column labeled "Project Total Cost" were inconsistent. It appears this is to represent the incremental cost of the efficiency upgrade, but at times, the entire building cost was entered. This is an order of magnitude error.
- The database identified projects which were part of the "New Construction" program did not specifically identify the program stream within the NC program. As a result, there was no clear indication of which projects were 'custom', which were 'prescriptive' and which were 'whole building'.
- Fields in the column labeled "Measure Category" were left blank for 'custom' new construction projects. As a result, no information was available on the type of measures that had been included in Custom New Construction projects.
- No information is provided in the tracking spreadsheet to explain column headings or acronyms. For example:
    - LPD is used to refer to "Lighting Power Density" within the list of measures.

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- Some contact information was recorded in the database, but it was unclear which contact information was recorded.

- Some fields were found to be entered inconsistently.

A number of fields collected as part of the application process were also not found in the tracking database. Section 5.1 in the Appendices lists all of the fields found on the Application Forms and indicates which are represented in the tracking database. Based on our database review, Navigant offers the following recommendations:

- Consider adding a folder documenting the database; with an explanation of column headers, any acronyms used as field values, and any protocols with respect to how the data is reported. If different spreadsheets are used for different program streams, explanations of how these spreadsheets differ and where to locate other tracking data should be included.

- Consider adding a column specifically identifying program stream.

- Attempt to ensure that all contact information is listed in the spreadsheet or can be easily linked to the spreadsheet in order to facilitate follow up and evaluation. Navigant also recommends that the application form and tracking database be revised to include the positions of key contacts, such as architect, mechanical designer, electrical designer and building modeler. Experience with similar programs indicates that this can be very helpful as the specific individuals involved in the project may change over the life of the project.

- Use pull down menus where possible in entering data to ensure that fields are entered consistently (i.e. ensuring the same spelling of an organization's name if the organization undertakes multiple projects).

- Review the information gathered as part of the Application to determine whether it should be added to the tracking database. For example, it would be useful to know what proportion of projects was also seeking LEED certification. This information is reported on the application form but was not found in the tracking database.

- Consider adding the capability of tracking what baseline is applicable (IECC 2006/ASHRAE 90.1-2004 or IECC 2009/90.1-2007) for a particular project.

3.3.9 Verification and Due Diligence

The level of verification carried out differs depending on the type and size of the project. All projects are reviewed by a technical reviewer and most projects also go through a peer review process. Projects that involve incentives over $25,000 are also reviewed by AEP Ohio staff.

- Reviews for the Prescriptive and Custom Stream program are relatively simple. Staff reviews the application and supporting documentation to determine compliance with program rules and determines the level of incentives. For the Custom Stream, engineering calculations are also reviewed.

- In the Whole Building stream, applicants submit model inputs and outputs. Program staff reviews the model, project documentation and drawings to determine whether the energy simulation model properly represents the building design. KEMA reviewers work with the modelers representing the applicant to ensure that the model is accurate and gives the applicant the best possible idea of what incentives will be available under the program. In rare instances, the reviewers have adjusted the model for the applicant, but in an estimated 98 percent of cases, the reviewers provide comments to the modelers who then adjust the model.

Navigant recommends that the program requirements be revised to require applicants to the Whole Building Program Stream to submit the model used to calculate project savings. The current practice of requiring only model inputs and outputs leaves open the potential for mis-interpretation or inaccuracies.

Some models allow the modeler to change model logic in order to accommodate unusual systems or approaches. While valuable to the modeler, these changes can significantly alter model outputs (affecting incentive levels), but can be very difficult for an evaluator/reviewer to identify. Navigant suggests that applicants be required to document any changes made to the algorithms/logic of the model and identify these changes in model summaries/reports.

Navigant also notes that AEP Ohio and KEMA do not have a formal Dispute Resolution process in place for the program. While disputes to date have been resolved between the applicant and program staff conducting the reviews, Navigant recommends that a formal dispute resolution process be established.

3.4 Cost Effectiveness Review

This section addresses the cost effectiveness of the PY 2011 BNC Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. Table 3-4**Error! Reference source not found.** summarizes the unique inputs used in the TRC test.

Table 3-4. Inputs to Cost-Effectiveness Model for AEP Ohio BNC Program

Item	
Average Measure Life	12
Participants	48
Ex Post Annual Energy Savings (MWh)	8,869
Ex Post Coincident Peak Savings (MW)	0.96
Third Party Implementation Costs	$245,862

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Utility Administration Costs	$61,738
Utility Incentive Costs	$1,405,017
Participant Contribution to Incremental Measure Cost	$1,800,060

Based on these inputs, the TRC ratio was 4.8 for the program. Table 3-5 summarizes the results of the cost-effectiveness tests. Results are presented for the Total Resource Cost test, the Participant test, the Ratepayer Impact Measure test, and the Utility Cost test.

Table 3-5. Cost effectiveness Results for the New Construction Program

Test Results for New Construction Program	PY 2011
Total Resource Cost	4.8
Participant Cost Test	6.7
Ratepayer Impact Measure	0.9
Utility Cost Test	5.9

At this time, additional benefits related to reduction of greenhouse gas emissions have not been quantified in the calculation of the TRC. These additional benefits would increase the given TRC benefit/cost ratio.

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Section 4. Conclusions and Recommendations

4.1 Conclusions from PY 2011

4.1.1 Program Impacts

The ex-post gross first year energy and summer coincident demand savings for 2011 were 12,066 MWh and 1.65 MW, respectively. This exceeded the 2011 goal of 10,000 MWh. This performance was strong in the face of a recovering economy and slow construction market.

4.1.2 Realization Rates

The realization rates of the program were 0.80 for first year energy savings and 0.34 for coincident peak demand reduction. The very low demand realization was due primarily to site peak reduction being reported as summer coincident peak reduction on multiple modeled projects. The realization rate on annual, first year energy savings would have been above 0.9 if more scrutiny was applied to projects over 1 GWH in annual savings, but also would have been improved by removal of systematic errors, such as requiring the baseline to include light reduction controls.

4.1.3 Marketing and Program Awareness

AEP Ohio and KEMA have been quite proactive in identifying and reaching out to key market segments and market actors to build awareness of the New Construction Program. Program staff have attended a wide range of industry events and supplemented these efforts with hundreds of face-to-face meetings. The program has been communicated through a number of different channels, including the AEP Ohio web site, account executives, customer service contacts, and solutions providers. While it is difficult to assess the level of awareness or the understanding achieved in the market, the outreach activities seem to have been effective as the program has exceeded its targets.

There are some indications that program participants do not fully understand the program. For example, when asked why the selected the program stream they had used, 39 percent of respondents indicated that they were unaware that there were other choices. This indicates that there may be some opportunities to more fully inform program participants about program options and perhaps move some to participation in a whole building approach. Navigant notes, however, that this may also reflect some participant's reliance on their solution providers in deciding which stream is optimal for their project.

4.1.4 Program Participation and Barriers

Feedback obtained from the program management staff interviews indicated no significant barriers to program participation. To this point, documentation requirements or other eligibility requirements have not been reported as problematic. The program also appears to have achieved reasonable alignment with LEED requirements.

Almost two-thirds of participants who responded to the survey indicated that there were no major barriers to their participation. The one-third of respondents who felt there were barriers focused on the time required to navigate the process, lack of program knowledge of design staff or contractors, technical complexity, and difficulty meeting the payback requirement.

4.1.5 Overall Program Design and Administration

Market feedback with respect to program design and administration was quite positive. Program outreach efforts have been quite proactive and appear to have been reasonably successful, both in obtaining program participation and in obtaining early involvement in a number of projects. While we have made a number of recommendations with respect to improving program materials and the project tracking database, participants did not note any significant issues in these areas. Project verification procedures appear to be reasonable, though Navigant recommends that procedures be changed to require the submission of the simulation model for projects participating in the Whole Building Stream.

In reviewing the Whole Building Stream, we noted that in most instances it appears that the program accepts the building design as submitted. There is an opportunity for program staff to increase its interaction with building designers to encourage the consideration or incorporation of higher levels of energy efficiency in the building design. This can be particularly true in buildings which are pursuing LEED or similar certification, where additional energy benefits may be obtained through alternate design approaches while still attaining the points required for certification.

4.1.6 Current Program Challenges

The New Construction Program has been successful in meeting and exceeding energy and demand reduction targets established for its first year of operation. Participating customers indicate a very high level of satisfaction with the program and expressed very few concerns regarding barriers to participation or suggestions for program improvements. As with many new programs, Navigant believes one of the key challenges for the program lies in building awareness and understanding of the program.

In addition to building awareness of the program we suggest that staff should continue to work to ensure early involvement in new construction projects and that they should use that early involvement to encourage that higher levels of energy efficiency be incorporated in the project design.

4.2 Recommendations for Program Improvements

Navigant offers the following recommendations to further improve the continued operation of the New Construction Program.

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4.2.1 Process Recommendations

Consideration of these process recommendations may improve savings achieved and simplify the verification process.

- Improve documentation by adding an overview or summary sheet that clarifies high level actions and which supporting documents are most current.
- Review all program materials both on-line and when printed to verify the printed materials used by program applicants are complete and legible.
- Clarify the descriptions of eligibility with respect to major renovations under the program. At present the requirements with respect to major renovations are described in the "Whole Building Performance" application form, but are not included in information for the other program streams.
- Suggest that the applications clearly define what is meant by project cost.
- Consider streamlining and clarifying the discussion of eligibility in the application forms; perhaps by first offering a description of general terms and conditions, followed by a bullet point description of the specific terms and conditions for each program stream.
- Encourage project applicants to use the design process and modeling to test the value of alternative building system improvements. This encouragement can take the form of KEMA recommending specific improvements during the design stage (best practice), and general education on the benefits of energy efficiency relative to the small incremental cost.
- Consider recommending a comprehensive design that leverages lighting controls, HVAC, thermal shell, commercial kitchen, and other equipment efficiency opportunities.
- Add a business category for Data Centers.

With respect to the Project Tracking Database, Navigant offers the following recommendations:

- Consider improving documentation of the tracking database by adding a folder documenting the database.
- Try to ensure that all contact information is listed in the spreadsheet or can be easily linked to the spreadsheet in order to facilitate follow up and evaluation. Navigant also recommend that the application form and tracking database be revised to include the positions of key contacts, such as architect, mechanical designer, electrical designer and building modeler. Experience with similar programs indicates that this can be very

helpful as the specific individuals involved in the project may change over the life of the project.

- Where possible, use pull down menus in entering data to ensure that fields are entered consistently (i.e., ensuring the same spelling of an organization's name if the organization undertakes multiple projects).
- Review the need for multiple, similar fields (for example, business type and business segment, or District and Region).
- Review the information gathered as part of the application to determine whether it should be added to the tracking database. For example, it would be useful to know what proportion of projects was also seeking LEED certification. This information is reported on the application form but was not found in the tracking database.
- Add the capability of tracking what baseline is applicable (IECC 2006/ASHRE 90.1-2004 or IECC 2009/ASHRAE 90.1-2007) for a particular project.

Finally, Navigant notes that AEP Ohio and KEMA do not have a formal Dispute Resolution process in place for the program. While disputes to-date have been resolved between the applicant and program staff conducting the reviews, we recommend that a formal dispute resolution process be established.

4.2.1 Impact Recommendations

These recommendations are specific to increasing realization rate and streamlining the impact verification:

- All projects claiming lighting power density savings should be required to submit a lighting layout and fixture specifications complete with ballast and lamp selection.
- Insure that modeled projects are using the correct baseline as described in the IECC and ASHRAE 90.1 – Appendix G.
- The hours of operation and method to determine should be clarified.
- Clearly state whether manual light reduction controls are employed on lighting fixtures and whether or not the fixture is on occupancy control. Also document whether or not code requires manual light reduction.
- Coincidence factors used and sources of coincidence factor should be defined.
- Cost information of both as-built and baseline equipment should be documented. Alternatively, incremental cost difference may be provided if sources are referenced. KEMA should screen for inaccurate project costs.

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- Where the KEMA calculator does not agree with the draft Ohio TRM, the referenced source should be provided.

- Check that summer coincident peak reduction is being entered in the tracking database, especially on modeled projects.

The Whole Building Stream offers perhaps the largest opportunity for the New Construction Program to impact energy use. Navigant recommends that the program requirements be revised to require applicants to the Whole Building Stream to submit the model used to calculate project savings. The building should be modeled in an approved model format; Navigant recommends limiting to eQuest or Trane Trace format. The current practice of requiring only model inputs and outputs leaves open the potential for mis-interpretation or inaccuracies.

Some models allow the modeler to change model logic in order to accommodate unusual systems or approaches. While valuable to the modeler, these changes can significantly alter model outputs (affecting incentive levels), but can be very difficult for an evaluator/reviewer to identify. Navigant suggests that applicants be required to document any changes made to the algorithms/logic of the model and identify these changes in model summaries/reports.

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Section 5. Appendices

5.1 *Project Tracking Database*

The table below summarizes the data fields included on the application forms for the New Construction program. These fields were compared to the fields listed in the Project Tracking Database.

- A "✓" indicates that the field shows on the application form is recorded in the database.
- "No" indicates that the field is not recorded in the database, and,
- A "?" indicates that it was unclear, based on the information presented in the database whether the field from the application form was represented in the database.

Data Fields on Application Form	Fields Appearing in Tracking Database
Owner/Developer Information	
• Name	✓
• Phone number	✓
• AEP Ohio Account #	✓
• Applicant Taxpayer ID #	✓
• Mailing Address	✓
• Contact/Authorized Representative	✓
• Contact e-mail address	✓
• Contact phone number	✓
• Project address	✓
Application Information	
• Is this a Whole Building Performance project?	?
• Seeking Design Incentive	?
• Primary Business Type	✓
• Tax Status (organization type for tax purposes)	✓
• Number of operating shifts	✓
• Number of operating days/week	✓
• Building Certification Rating (LEED, EnergyStar, etc.)	No
• Floor area	✓
• Expected Completion Date	✓
• Estimated Incentive	✓

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Data Fields on Application Form	Fields Appearing in Tracking Database
• Total Project Cost	◎
Renovation Project Information	
• % of Building under Renovation	No
• Building Age	No
• Building Systems Under Renovation	No
• Additional Comments	No
Project Contacts *- for each the firm name, contact name, phone and extension, fax, email are recorded.*	
• Architectural	?
• Mechanical	?
• Electrical	?
• Other	?
Note - modeling firm not listed on form.	
• Type of Incentive Sought (Prescriptive, Custom, Whole Building)	No
Project Completion Notice Application Form	
• Owner name	◎
• Total Construction Costs	No
• Total Design Costs	No
• Total Project Costs	◎
• Design Firm (if seeking Design Incentive)	?

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5.2 *Participant Survey Instrument*

AEP OHIO C&I NEW CONSTRUCTION

CUSTOMER DECISION MAKER

FINAL 2012/03/14

Survey Purpose, Respondent Contact & Disposition Protocol

This interview guide will be used to attribute the effects of the Commercial New Construction Program on the projects under the purview of the respondent. It will also support the process analysis for this program. We will call the primary contact person as provided from the program records, but it may be necessary to talk with other individuals within the project if it appears that others were highly involved in the decision-making process. In those cases, contact Argene McDowell, Navigant survey coordinator, to coordinate follow-up contacts to complete the survey.

The contact persons listed in the sample pool are those listed in the program record as being the Application Contact Person for the project at the listed Service Address. That is the initial person to contact and qualify for answering the survey. We are looking for the decision maker who is the most knowledgeable about the customer's decision to participate and their interaction with the program. That person may actually NOT be the Application Contact Person listed from the program records, but instead may be the customer's designated developer, architect/engineering design firm or other organization. Whomever the primary respondent ends up being, that individual should have primary knowledge of the customer's decision processes and the interaction and influence of the program with the new building project at the listed Service Address.

All respondents' names, whether they complete the survey or decline to complete it, are to be retained in a master customer contact list to ensure none of them are contacted again for this **or other surveys and on-site visits** currently being conducted to evaluate various AEP-Ohio C&I programs. Those individuals, whether associated with other New Construction projects (at a different Service Address) or other AEP-Ohio C&I programs currently being evaluated, and their associated New Construction or other program participations (i.e., that resulted in energy efficiency measures being installed and/or other energy efficiency services provided), are to be removed from the sample pool for all C&I program evaluations involving customer surveys.

Similarly, respondents who have completed other program evaluation surveys, who also are listed in the New Construction sample pool, are to be removed from the New Construction sample pool. Argene McDowell is also Navigant's coordinator for this effort to avoid multiple survey/on-site visit contacts of the same person.

Respondent Qualification

Place call to person listed from program records as the Application Contact Person. If more than one project is associated with that person, per the sample pool listing, select ONE SERVICE ADDRESS for the survey focus on, and when the respondent has been qualified confirm that the selected project is one with which the respondent is most knowledgeable about. If there is more than one project at the selected SERVICE ADDRESS, ask the respondent to consider as a whole all projects at the selected SERVICE ADDRESS, unless the respondent prefers to focus on only one project at SERVICE ADDRESS – in which case ask them to focus on the largest project there.

==========

INTRO1. Hello. My name is _____ with Data Prompt International, an independent market research company. I am calling on behalf of AEP-Ohio regarding the New Construction energy efficiency program we are helping AEP to evaluate, and in which I understand your organization participated. I am not selling anything. We are conducting a survey of program participants and got your name from the program records as being the Application Contact Person for the New Construction project(s) at _____ [SERVICE ADDRESS]. Is that correct? [NOTE: IF >1 project is associated with this person, acknowledge there were multiple projects including at other service addresses; once the respondent is qualified, we'll ask them to focus on the project at SERVICE ADDRESS or, if more than one project at the same SERVICE ADDRESS, the group of projects at that address as a whole; however, if the respondent prefers to only focus on one of multiple projects at SERVICE ADDRESS, ask them to focus on the largest project there.]

1. Yes [Complete Respondent information below and proceed with Introduction once **NOTES** below have been considered.]
2. No [Ask if they are the person most knowledgeable about the new building project, the customer's decision making and participation in and interaction with the New Construction Program. If they are not that person, ask to be referred to that most knowledgeable person. Record the other person's contact information and BEFORE contacting that other person, check the master contact list (coordinate with Argene

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McDowell at Navigant) to ensure that other person has not yet been surveyed for this or other current program evaluations. If person called is not the most knowledgeable about the project and no referral made, thank and terminate.]

3. Don't Know [Ask if they are the person most knowledgeable about the new building project, the customer's decision making and participation in and interaction with the New Construction Program. If not, ask to be referred to that most knowledgeable person, record the other person's contact information and BEFORE contacting that other person, check the master contact list (coordinate with Argene McDowell at Navigant) to ensure that other person has not yet been surveyed for this or other current program evaluations. If person called is not the most knowledgeable about the project and no referral made, thank and terminate.]

==========

NOTE: The ultimate respondent may not be an employee of the end customer, but regardless of the person's affiliation, we are seeking the one person MOST knowledgeable about the new construction project. Preferably that person also will be the primary decision maker regarding the energy efficiency aspects of the new building, or have a good understanding of and can generally articulate the attitudes and decisions made by the person who is the primary decision maker.

==========

NOTE: If the person being contacted states they already have been surveyed for another program, thank and terminate. Add the person's name to the "Already Surveyed" master list and coordinate with Argene McDowell at Navigant.

==========

Respondent name:	
Respondent phone	
Respondent title:	
Respondent type: (circle one:)	**Developer/owner, A&E Design Professional, Other**
Company name:	
Company Type:	

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Project (in sample)	
Project Type (circle as many as needed:)	**Whole Building Prescriptive Custom**
Interviewer:	
Date:	
Time Start:	

Introduction

Thank you for taking the time to talk with me today. We will make sure your individual responses to the survey questions are kept confidential.

==========

INTRO2. As the Application Contact Person listed in the program records for the project, I just want to confirm that you are the person most knowledgeable about the overall project, the decision to participate in the New Construction program and various program interactions. Is that correct?

1. Yes [Proceed with remaining Introduction]
2. No [Ask for the person most knowledgeable about the new building project, the customer's decision making and participation in and interaction with the New Construction Program.]

   If referral made, record the other person's contact information and BEFORE contacting that other person, check the master contact list (coordinate with Argene McDowell at Navigant) to ensure that other person has not yet been surveyed for this or other current program evaluations. If the other person is cleared for surveying, contact them and restart the Introduction by informing the person being called that you got their name from the person initially contacted (have that person's name at hand for this).

   If no referral made, thank and terminate.]
3. Don't Know [Ask for the person most knowledgeable about the new building project, the customer's decision making and participation in and interaction with the New Construction Program.

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If referral made, record the other person's contact information and BEFORE contacting that other person, check the master contact list (coordinate with Argene McDowell at Navigant) to ensure that other person has not yet been surveyed for this or other current program evaluations.
If no referral made, thank and terminate.]

Introduction, continued

The Navigant evaluation team is currently conducting a study for AEP Ohio. There are two aims of this interview: first, we'd like to get your perspective on the Commercial and Industrial New Construction Program; and second, we'd like to find ways to improve the program as much as possible. We'd like to get your insights about the program and your experience with it. The interview should take about 40 minutes.

Throughout this interview when I ask about the "program" or "New Construction program" please consider your experience with AEP Ohio and KEMA, the program implementation contractor, to the [PROJECT NAME at SERVICE ADDRESS – if more than one project at SERVICE ADDRESS, ask respondent to consider the group of projects as a whole, or select the largest project to focus their thoughts on].

==========

Respondent's Role on Program Projects

1. What was your role on this/these project(s)? [DO NOT READ; SELECT BEST OPTION]
    1. Employee of [CUSTOMER NAME]
    2. My company provides energy-related services to [CUSTOMER NAME]
    3. Contractor involved in the design, engineering or installation of energy efficient equipment for this project
    88. Other (specify) _____
    99. Don't know/refused

Awareness and Program Marketing

2. How did you first hear about the program? [DO NOT READ; SELECT ALL]
    1. Program representative (AEP account rep or KEMA rep)
    2. AEP website/web search
    3. Contractor

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4. Architect/Engineer
5. Equipment Vendor
6. Friend/colleague
7. Trade journal
8. Other news media
9. AEP brochure, direct mail
88. Other (specify) _____
99. Don't Know/don't recall/Refused

3. Did you learn about the program before or after you started planning the building involved with the program?
    1. Before [GO TO Q4]
    2. After [GO TO Q5]
    99. Don't Know/Refused

4. [If Q3 = 2] At what point in the project development did you first learn about AEP Ohio's New Construction Program and the incentives available for energy efficient installation and design? Was it during the…
    1. Pre-design?
    2. Schematic design?
    3. Design development?
    4. Construction documentation?
    5. Construction phase?
    6. After the project was completed
    88. Other (specify) _____
    99. Don't know/Refused

5. SAT1:[1] Using a 0 to 10 satisfaction scale, how would you rate your overall satisfaction with the New Construction Program? [SCALE 0-10; 98=Don't know, 99=Refused]

5a. SAT2: Why do you give it that rating? [RECORD VERBATIM]

[1] Grey highlighted secondary question numbers are SWE-ordered questions.

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6. B1a. What do you see as the main benefits to participating in the New Construction Program? [DO NOT READ; PROBE FOR ADDITIONAL; MULTIPLE RESPONSE, UP TO 3]

    1. Energy Savings
    2. Good for the Environment
    3. Lower Maintenance Costs
    4. Better Quality/New Equipment
    5. Rebate/Incentive
    6. BLANK
    7. Improved Safety/Morale
    8. Set Example/Industry Leader
    9. Able to make improvements sooner
    10. Saves money on utility bill
    88. Other, Specify _____
    98. Don't know
    99. Refused

7. B1b. What do you see as the drawbacks to participating in the program? [MULTIPLE RESPONSE, UP TO 3]

    1. Paperwork too burdensome
    2. Incentives not high enough/not worth the effort
    3. Program is too complicated
    4. Cost of equipment
    5. No drawbacks
    6. Poor Communication
    7. Time Consuming
    8. Underfunded/Ran out of money
    88. Other, specify _____
    98. Don't know
    99. Refused

8. What was most important in your decision to participate in the program? [READ LIST; SELECT ALL; PROBE FOR ADDITIONAL.]

    1. Design/modeling assistance value
    2. Other technical assistance value
    3. Design incentive
    4. Incentives for efficiency improvements incorporated
    5. Save Energy/promote energy efficiency
    88. Other (specify) _____
    98. Don't Know/Don't Recall
    99. Refused

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9. You completed your new construction project through the [Whole Building/Custom/Prescriptive] track. What was your main rationale for choosing this particular track and not one of the other tracks? [DO NOT READ LIST]

    1. Fit needs of the project best
    2. Was able to get a larger incentive
    3. Recommendation of contractor
    4. Didn't know there were other tracks
    5. Least paperwork/hassle
    88. Other (specify) _____
    98. Don't know/don't recall
    99. Refused

10. Were the requirements for the New Construction Program clearly explained by program staff, your Solution Provider (if not the respondent) or the program materials you saw? [ACCEPT MULTIPLE ANSWERS]

    1. Yes, by program staff
    2. Yes, by Solution Provider
    3. Yes by program materials
    4. No (ASK Q10a)
    98. Don't Know
    99. Refused

    10a. What could have been better explained, and by whom? [RECORD VERBATIM]

11. Are there other ways you would prefer to receive information about the New Construction Program? [DO NOT READ; SELECT ALL; PROBE FOR ADDITIONAL.]

    1. Program representative (AEP account rep or KEMA rep)
    2. AEP website/web search
    3. Contractor
    4. Architect/Engineer
    5. Equipment Vendor
    6. Friend/colleague
    7. Trade journal
    8. Other news media
    9. AEP brochure, direct mail
    88. Other (specify) _____
    98. Don't Know
    99. Refused

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E1. Where did you get your incentive application? [USE LIST TO PROMPT AS NECESSARY. RECORD ONE RESPONSE.]

1. Contractor or Equipment Vendor
2. Website/on-line
3. Utility
4. Program staff
5. Consulting Engineer, Architect or Energy Consultant
88. Other [specify] _____
98 Don't know
99 Refused

E2. Who was most responsible for completing the rebate application? Was this you, someone else in your organization, a contractor or vendor, someone from the utility or working for the program, or someone else? [READ LIST. RECORD ONE RESPONSE.]

1. You
2. Someone else in your organization
3. Contractor/vendor/other trade ally
4. Program or utility staff
88. Other (specify) _____
98. Don't know
99. Refused

[IF RESPONDENT IS STAFF OF AN ARCHITECT OR DESIGN/BUILD FIRM, PER Q1=3, ASK:] How important was the Solution Provider incentive to your decision to participate in the program? Was it…

1. Extremely important
2. Very important
3. Somewhat important
4. Not very important
5. Not important at all
98. Don't Know
99. Refused

R1. Do you plan to participate in the program again in the future?

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1. Yes
2. No [ASK 15a]
3. Maybe
98. Don't know
99. Refused

15a: Why don't you plan to participate in the program again? [DO NOT READ; SELECT ALL]

1. Program incentives are not sufficient
2. Design assistance issues
3. Program administrative requirements too burdensome
4. Program staff relationship issues
5. No buildings planned in the foreseeable future
6. Change in business strategy in relation to building design needs.
88. Other (Specify) _____
98. Don't Know
99. Refused

In retrospect, what was the relative value of the program's technical assistance, if any was provided, versus the incentives involved? To score the relative value, tell me this: If you could award a total of a hundred points total to both of these program benefits, how many points would you award technical assistance and how many would you award incentives?

a. Technical assistance: ____ points/___ OR Not Applicable – no technical assistance provided
b. Incentive: _____ points

Using a scale between 0 and 10, where 0 is not at all influential and 10 is extremely influential, how influential was the overall program (incentives, technical assistance, etc.) in your decision to choose the efficiency improvements installed or designed into the new building? [SCALE 0-10; 98=Don't know, 99=Refused]

17a. [IF RATING > 6, ASK] What was it about the program that was most influential? [RECORD VERBATIM]

Processes

Let's dig a little deeper on various aspects of the program and your experience with it. Please rate the following aspects of the program, where "0" means "Very Difficult" and "10" means "Very Easy." If you cannot rate an aspect for whatever reason, just say "Not Applicable." [SCALE 0-10; 88=NA, 98=Don't know, 99=Refused]

1.

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a. Verifying eligibility……..…..____ N/A
b. Identifying equipment efficiency upgrades____ N/A
c. Estimating costs and savings of proposed measures ……..……...____ N/A
d. Completing program application forms ……..….____ N/A
e. Incentive payment ……..……...……. ____ N/A
f. Other (specify) _____……..…….____ N/A

18a. Please comment on any particular problems you encountered with the program processes we just covered. [RECORD VERBATIM]

E8. In the course of participating in the <UTILITY> program, and other than sending in the incentive application, how often did you contact <UTILITY> or program staff with questions? [DO NOT READ]

1. Never
2. Once
3. 2 or 3 times
4. 4 times or more
98. Don't Know/Don't recall
99. Refused

E9. How did you contact them? [CHECK ALL THAT APPLY; AFTER EACH RESPONSE, ASK: Were there any other ways you contacted them?]

1. Phone
2. Email or fax
3. Letter
4. In person
88. Other (specify) _____
98. Don't recall
99. Refused

20a. E11A. Were there any other ways you contacted them? [RECORD VERBATIM]

E10. And overall, how satisfied were you with your communications with the program staff? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

21a. E11. What would have made you more satisfied? [RECORD VERBATIM]

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E6. How satisfied were you with the measures offered by [covered by] the program? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

22a. [IF RATING <5 ASK] E7. What would have made you more satisfied with the measures? [RECORD VERBATIM]

E17. Have you noticed lower electricity bills since the building was completed, compared to what you would have expected without the program?

1. Yes
2. No
3. Not enough time has passed yet to tell
98. Don't Know
99. Refused

E18. Would you say your bill savings are…[READ LIST]

1. About what you expected
2. More than you expected
3. Less than you expected
98. Don't know
99. Refused

E3. How satisfied were you with the energy efficiency level required to qualify for an incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

25a. E4.What would have made you more satisfied? [RECORD VERBATIM]

E5. How satisfied were you with the amount of the incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

E12. From the time you had the equipment installed and submitted the application, about how many weeks did it take to receive your incentive? _____ [RECORD # of WEEKS]

E13. How satisfied were you with how long it took to receive the incentive? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

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E14. Did <UTILITY> or its contractors conduct a post-installation inspection of the equipment you installed through the incentive Program?

1. Yes
2. No
98. Don't know
99. Refused

E15. How satisfied were you with the inspection? Please use a scale from 0 to 10, where 0 is "not at all satisfied" and 10 is "completely satisfied"? [SCALE 0-10; 98=Don't know, 99=Refused]

30a. What would have made you more satisfied with the inspection? [RECORD VERBATIM]

31. Did your participation in AEP's C&I New Construction Program delay your project at any point in time?
    1. Yes
    2. No (GO TO Q31a)
    98. Don't Know
    99. Refused

    31a. What was delayed and how might that have been avoided? [RECORD VERBATIM]

Program Improvements

32. What have been the key barriers to participation in the program? [DO NOT READ; SELECT ALL]

    1. Additional cost of improvements
    2. Lack of capital/budget for such improvement
    3. Other design features take priority
    4. Don't know how to incorporate energy efficiency in this type of building
    5. Lack of program knowledge of design staff/contractor
    6. No major barriers in particular
    88. Other (Specify) _____
    99. Don't know/refused

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[ASK Q33-Q34 IF Q32 = 1-4; ELSE GO TO Q35]

33. How did your organization overcome these barriers? [RECORD VERBATIM]

34. What can AEP Ohio do in the future to reduce these program barriers? [RECORD VERBATIM]

35. E23. Do you have any (other) suggestions on how the program could be improved? [MULTIPLE RESPONSE, UP TO 4]

    1. Higher incentives
    2. More measures
    3. Greater publicity
    4. Better communication/Improve program information
    5. Contact/information from Account Executives
    6. Longer time period to complete project
    7. Better review of applications
    8. Simplify application process
    9. Electronic applications
    10. More funds for the program
    11. BLANK
    88. Other (specify) _____
    96. No recommendations
    98. Don't know
    99. Refused

36. E21. Beyond the program, if you were rating your overall satisfaction with AEP-Ohio, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied or Very Dissatisfied?

    1. Very Satisfied
    2. Somewhat satisfied
    3. Somewhat Satisfied
    4. Neither Satisfied nor Dissatisfied
    5. Somewhat Dissatisfied or
    6. Very Dissatisfied
    98. Don't know
    99. Refused

    36a. E22. Why do you give it that rating? [RECORD VERBATIM]

Finally, I'd like to ask you few general questions about your organization, as associated with the building(s) involved with the program.

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37. B1. What is your job title or role? [PER SCREENER]

1 Facilities Manager
2 Building Manager
3 Energy Manager
4 Other facilities management/maintenance position
5 Chief Financial Officer
6 Other financial/administrative position
7 Proprietor/Owner
8 President/CEO
88 Other (Specify) _____
98 Don't know
99 Refused

38. B2. Our records describe the facility at [SITE_ADDRESS] where [COMPANY] participated in the [PROGRAM] as [BUS_TYPE]. Is this correct?

1 Yes
2 No
98 Don't know
99 Refused

39. B3. What is the principal activity (type of business) [ORGANIZATION] conducts at this location? [IF NEEDED:] This may not be the main activity of your organization, but should be the main activity that occurs at this location. For example, is it an office, a warehouse, a store? [DO NOT READ LIST. RECORD ONE RESPONSE.]

1 Office
2 Retail (non-food)
3 College/university
4 School
5 Grocery store
6 Convenience store
7 Restaurant
8 Health care/hospital
9 Hotel or motel
10 Warehouse
11 Personal Service
12 Community Service/ Church/ Temple/Municipality
13 Industrial Electronic & Machinery
14 Industrial Mining, Metals, Stone, Glass, Concrete
15 Industrial Petroleum, Plastic, Rubber and Chemicals
16 Other Industrial
17 Agricultural

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18 Condo Assoc/Apartment Mgmt
77 Miscellaneous [RECORD VERBATIM]
98 Don't Know
99 Refused

40. B4. Does your organization own or lease the space at [SITE_ADDRESS]

1. Own
2. Lease
3. Own Part, Lease part
98. Don't know
99. Refused

41. B5. What is the total square footage of the portion of the facility that you occupy at this location? Your best estimate will be fine.

_____Square Feet

98. Don't know
99. Refused

42. F4a. How old is this facility? [NUMERIC OPEN END, 0 TO 150; 998=Don't know, 999=Refused]

[ASK 42a. IF Q42=998]

42a. F4b. Do you know the approximate age of the building? Would you say it is…?

1. Less than 2 years
2. 2-4 years
3. 5-9 years
4. 10-19 years
5. 20-29 years
6. 30 years or more years
98. Don't know
99. Refused

43. F6. Which of the following best describes the facility? This facility is…

1. <ORGANIZATIONNAME>'s only location
2. One of several locations owned by <ORGANIZATIONNAME>
3. The headquarters location of <ORGANIZATIONNAME> with several locations

44. B7. About how many full-time equivalent employees work at the facility at [SITE_ADDRESS]?

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1 Fewer than 10
2 11 to 25
3 26 to 40
4 41 to 75
5 76 to 100
6 More than 100
98 Don't Know
99 Refused

CLOSING

45. Is there anything else that you would like to let us know about your experience with the New Construction Program?

Thank and close.

APPENDIX N

NAVIGANT

AEP Ohio
Energy Efficiency/Demand Response Plan
Year 3 (1/1/2011-12/31/2011)

Program Year 2011 Evaluation Report: Transmission and Distribution and Internal System Efficiency Improvements

Presented to

AEP OHIO®
A unit of American Electric Power

May 10, 2012

Presented by:
Randy Gunn
Managing Director
Navigant Consulting
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606

Phone 312.583.5700
Fax 312.583.5701

www.navigantconsulting.com



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NAVIGANT

Submitted to:

AEP Ohio
850 Tech Center Drive
Gahanna, Ohio 43230

Submitted by:

Navigant Consulting, Inc.
30 S. Wacker Drive, Suite 3100
Chicago, IL 60606
Phone 312.583.5700
Fax 312.583.5701

Contact:

Randy Gunn, Managing Director
312.583.5714
randy.gunn@navigantconsulting.com

Stu Slote, Associate Director
802.526.5113
stu.slote@navigantconsulting.com

Prepared by:

Eugene Shlatz, Director
802.985.5216
eugene.shlatz@navigant.com

Program Description

AEP Ohio's loss reduction program is targeted to transmission and distribution (T&D) facilities that are candidates for efficiency improvements, typically in concert with other benefits, such as increased capacity or reliability performance. For most of these programs, T&D savings are achieved when lines and equipment are replaced with similar facilities with lower losses; for example, replacing smaller wire with high resistance with larger wire that has lower resistance, commonly referred to as reconductoring. Physical losses accrue in the form of heat losses. When heating losses are very high due to loading equipment above normal ratings for extended periods of time, equipment can be damaged or experience premature loss of life.

Loss reduction also is achieved when new lines are added and existing lines reconfigured, lines are converted to operate at a higher voltage (lower current is needed to supply the same amount of load), feeder power factor is improved, and low loss devices are installed, such as highly efficient transformers. T&D efficiency benefits accrue via lower peak demand and reduced energy losses. Because losses are proportional to the square of the load served, the percent reduction in peak demand losses typically are higher than the percent reduction in energy losses.

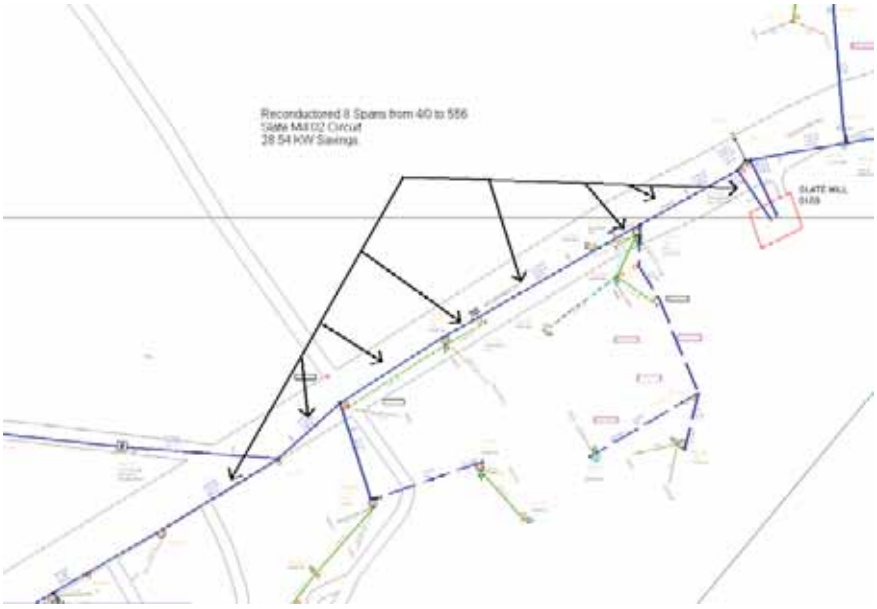
The AEP Ohio T&D loss reduction projects for 2011 are listed below. The methodology AEP Ohio employed to derive demand and energy loss savings is presented in sections that follow.

- Line reconductoring (distribution, subtransmission and transmission)
- New lines (distribution, subtransmission and transmission)
- Voltage conversion
- Power factor improvement (via capacitor banks)
- Feeder reconfiguration
- Load transfers and phase balancing

The items listed above commonly are referred to as load loss reduction programs. Electrical equipment, such as transformers, includes both load and no-load losses. Load losses are those that vary as the amount of current increases or decreases. No-load losses are those that are independent of load, and occur during all hours the device is in service. No-load losses typically occur only on equipment that requires inductive current (magnetizing current) to operate, such as transformers and motors. Loss reduction programs sometimes may include the replacement of equipment with high no-load losses with devices with lower no-load losses. The load reduction savings AEP Ohio has estimated for the above programs do not appear to include any projects focusing mostly on reduction of no-load losses, which is common among utilities.

Methodology

AEP Ohio estimated loss reduction amounts using tools and methods that are commonly employed to accurately predict peak and energy savings. These include use of a comprehensive and detailed distribution feeder load flow simulation model (CYMDist) and network transmission load flow models to estimate loss savings at the time of the feeder peak. The CYMDist model is commonly used by power industry professionals and employs a level of rigor that is sufficient to accurately predict losses for distribution facilities.[1] The accuracy of the model results is highly dependent on model inputs and assumptions. AEP Ohio provided Navigant a detailed model that includes impedances and loads for many nodes for each feeder, with an accurate representation of the segment of the feeder impacted by the upgrade, thereby ensuring loss estimates are not over- or under-stated. A typical line segment of a representative feeder targeted for loss savings is illustrated below. In this example, a portion of the feeder containing smaller 4/O conductor was replaced with larger 556 aluminum conductor steel reinforced (ACSR) conductor.



Peak demand losses are derived by conducting load flow studies with and without the upgrade, with the difference in losses between the two cases equal to the net loss savings. AEP Ohio provided copies of model output and feeder maps that confirm AEP Ohio's distribution planning personnel included a high level of detail in the CYMDist feeder model for each of the loss reduction programs listed above.

[1] The loss reduction programs cited by AEP include distribution lines, typically 15kV class and below. It also includes higher rated distribution and transmission lines rated 23kV, 34.5kV, 69kV, 138kV and 345kV. Lines rated 34.5kV, 69kV and 138kV often operate radially, but may be configured in a network arrangement; particularly 138kV. Lines rated 345kV are almost always operated in a network configuration.

The peak load loss savings AEP Ohio derived for each of the programs listed above are consistent with the percent savings Navigant has performed in its own studies of similar upgrades for utility distribution systems, as well as results we have reviewed developed by other utilities. To derive energy loss savings, AEP Ohio employs the following formula, which Navigant supports is a reasonable and accurate approach, as it has been vetted and accepted within the industry for decades.

*Energy Loss Savings = Peak Loss Savings * (C_1*LF + C_2*LF^2) * 8760*

Where LF is the feeder load factor, and C1 and C2 are coefficients derived using methods outlined in published industry literature. C_1 and C_2 for AEP Ohio is 0.1 and 0.9, respectively.[2]

The loss factor for the above formula typically is between 0.40 and 0.50. The results of AEP Ohio's loss reduction program are presented in subsequent sections of this report.

Detailed Findings

Table 1 summarizes the peak demand and energy reductions for Ohio Power Company (OPCo) and Columbus Southern Power (CSP). Results are presented separately for distribution feeders, and substations and transmission. Results indicate the loss savings for higher voltage transmission and subtransmission dominates overall savings for both demand and energy. The Appendix lists the T&D projects reviewed.

	Number of Projects	Peak (kW)	Energy (MWh)
Distribution	38	682	2,279
Transmission	6	7,599	23,487
TOTAL	**44**	**8,281**	**25,765**

(1) Distribution Loss Savings

Navigant's review confirmed that AEP Ohio's composite peak demand savings of approximately 0.7 MW for distribution is reasonable. This conclusion is supported by the number of projects included in the AEP Ohio loss reduction program and the methods AEP Ohio employed to derive these savings. For most AEP Ohio distribution projects, loss savings are less than one percent of peak feeder load. For many projects, peak loss reductions are

[2] System Load Factor values used by AEP were obtained from internal reports titled "2006 Analysis of System Losses" for the Columbus Southern Power Company and Ohio Power Company. These reports compiled the results of system loss investigations conducted during 2006 and published in 2007 by Management Applications Consulting, Inc. for The Columbus Southern Power Company. These studies also included derivation of the C1 and C2 coefficients.

between 0.1 and 0.3 percent. These modest reductions are reasonable give the scope of each upgrade, and confirm that AEP Ohio exercised care to not overstate savings. For example, several project involved reconductoring; that is, replacing smaller wire with larger wire. However, the amount of wire replaced typically is a relatively small percent of the total miles of conductor on the feeder, which accounts for the relatively small amount of loss savings as a function of total feeder load. However, because distribution feeder losses typically are less than five percent of total feeder demand, the reductions that AEP Ohio cites often represent significant savings.

(2) Transmission Loss Savings

The magnitude of loss savings associated with transmission level projects is well above that of distribution projects, both for individual projects and in aggregate. Navigant views these savings as well within expected levels of loss reduction. Navigant's review of AEP's project scope, one-line diagrams, and the analysis AEP Ohio prepared for each project confirms that the level of rigor applied to transmission level projects was robust. Further, the analysis AEP Ohio used to derive transmission loss savings meet or exceed those most commonly used by the electric utility industry level. Most important, detailed network load flow models that included a full representation of the operating company grid were employed to predict transmission loss savings.[3] One project, the Second 345kV line from New Hayden to Roberts Circuit alone resulted in over 5 MW of savings at peak. Given the very high loading capability of 345kV lines – up to 1000 MW or greater is common for double circuit 345kV – the percent loss savings is reasonable as a percent of total line loadings. Further, Navigant's experience confirms that transmission loss savings typically are well above those derived for distribution, as the amount of load served can be up to an order of magnitude higher for lines operating at 138kV.

[3] The loss savings for transmission projects were derived on a composite basis for each operating company, as it was necessary to conduct network load flow studies with all upgrades and modifications in service; that is, the transmission projects are not mutually exclusive in terms of their combined impact on the transmission network, as the resultant line loadings will vary as the network is changed. Thus, the loss savings associated with each project, if modeled individually, are not additive.

Appendix

The following table lists the T&D project types from the Draft Ohio TRM.

Draft Ohio TRM T&D Project Types
1. Mass Plant Replacement and Expansion Analysis Protocol
2. Conductor Analysis Protocol
3. Large Customer Connection Analysis Protocol
4. Mass Plant Retrofit Analysis Protocol
5. Substation Transformer Analysis Protocol
6. System Reconfiguration Analysis Protocol
7. Voltage Conversion Analysis Protocol

The following table lists the project name, scope, whether the project was either Transmission (T) or Distribution (D), the type of project in terms of the Draft Ohio TRM designations, and the peak demand reduction (kW) and the annualized loss reduction (kWh).

Station	Scope	Transmission or Distribution	Type TRM	Peak Reduction (kW)	Annualized Loss Reduction (kWh)
Bascom	Reconductoring	D	2	18.16	71,778
East Tiffin	Reconfiguration	D	6	0.74	2,925
North Upper Sandusky	Capacitor bank	D	6	5.9	23,320
Fremont Station	Reconductoring	D	2	3.75	14,822
Sunnyside Station	Voltage Conversion	D	7	82.7	326,837
Madisonburg Station	Reconfiguration	D	6	27.81	109,919
Glassrock Station, Rural circuit	Reconductoring	D	2	21.13	83,517
Glassrock Station, Central Silica circuit	Reconductoring	D	2	0.35	1,383
Martinsburg Station, Newark Rd circuit	Reconductoring	D	2	24.8	98,022
Martinsburg Station, Martinsburg Rd circuit	Reconductoring	D	2	1.27	5,020

Station/Line	Scope	Transmission or Distribution	Type TRM	Peak Reduction (kW)	Annualized Loss Reduction (kWh)
Martinsburg Station, Industrial circuit	Reconductoring	D	2	64.29	254,107
Rockbridge Station	Reconductoring and Reconfiguration	D	2,6	18.78	74,228
Upper Sandusky Station	Reconductoring	D	2	15.8	62,450
Kenton Station	Voltage Conversion and Reconductoring	D	7,2	1.29	5,099
West Moulton Station	Reconductoring	D	2	2.14	8,458
Newcomerstown Station	Reconductoring	T	2	included	Included
East Sparta Station	Reconductoring	T	2	included	Included
West Millersburgh Station	Reconductoring	T	2	included	Included
Roberts Station	Install New Line	T	6	included	Included
Derwent Station	Reconductoring	T	2	2,000	7,912,000
Rockbridge Station	Reconductoring and Reconfiguration	D	2,6	18.78	74,228

Station	Scope	Transmission or Distribution	Type TRM	Peak Reduction (kW)	Annualized Loss Reduction (kWh)
Beatty Station	Upgrade Voltage Regulators	D	6	2.51	6,981
Kimberly Station	Load and Phase Balancing	D	6	48.94	136,122
Idaho Station	Reconductoring	D	2	23.65	65,780
Slate Mill Station F10901	Reconductoring	D	2	1.34	3,727
Slate Mill Station F10902	Reconductoring	D	2	28.54	79,382
St Clair	Reconductoring	D	2	16.93	47,089
Roberts Station	Reconductoring	D	2	28.59	79,521
Karl Rd F911	Reconductoring	D	2	3.86	10,736
Karl Rd F912	Reconductoring	D	2	10.42	28,982
Karl Rd F916 and F901	Reconductoring	D	2	7.27	20,221

Station	Scope	Transmission or Distribution	Type TRM	Peak Reduction (kW)	Annualized Loss Reduction (kWh)
Jug Street F36531	New Circuit	D	6	18.25	50,761
jug Street F36532	New Circuit	D	6	68.88	191,584
Huntley station	Reconductoring	D	2	12.24	34,044
St Clair Station	Reconductoring	D	2	7.95	22,112
Groves Station	Capacitor Bank and Phase Balancing	D	6	20	55,628
Haners Station	Reconductoring	D	6	16.86	46,895
Mifflin and Bexley stations	Reconductoring and Load Transfer	D	6,2	26.49	73,680
Bexley	Load and Phase Balancing	D	6	12	33,377
Hayden Station	Install New Line	T	6	5,599	15,575,000

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