

Large Filing Separator Sheet

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- What is being done about that? Do you think that will fix things?
- If you could rebuild the program from scratch, what would you do differently in terms of established procedures for communication?

Are there regular interactions between APT and EFI?

- Please describe.
- How is that going in general? [Probe.]

Is there a process for resolving any issues that EFI might bring to your attention concerning the accuracy of sales data? Please describe.

How would you resolve an issue with retailers/manufacturers requesting incentives for non-program lamps?

Are there procedures in place for other issues that might come up, such as customers purchasing more than the 12 maximum lamps? Please describe.

Is there any documentation of these contingency plans?

- [Request documentation.]

CFL Recycling Program

Please describe APT's role, if any, in promoting the AEP Ohio CFL recycling program to retailers.

- How is the implementation of this program going?
- Is EFI involved at all?
- How have you been promoting it to retailers in the program? [Probe: How so? Verbally? With program documentation?]
- Approximately how many retailers are currently participating?
- What is your goal for participating retailers?

Is safe lamp disposal communicated to consumers? If so, how?

Program Strengths/Areas for Improvement

Overall, what would you say is working really well in this program?

What would you most like to change or improve?

Is there anything that seems to stand in the way of making these changes at this time?

Summary

Do you have any other comments, concerns or suggestions about the program that we didn't discuss that you would like to make sure I know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. If I come up with any additional questions that come from this interview do you mind if I send you an email or give you a quick call?

IMPLEMENTATION CONTRACTOR INTERVIEW GUIDE: APT FIELD REPRESENTATIVES

EFFICIENT PRODUCTS – PY 2010 (YEAR 2)

Interview Objectives:

- Assess effectiveness/efficiency of program operations and delivery
 - Program tracking
 - Communication
 - Staffing
- Determine if and how the program implementation has changed since 2009
- Determine whether recommendations from the 2009 evaluation have been implemented
- Identify current program challenges, if any
- Determine Quality Assurance and / Quality Control (QA/QC) procedures
- Effectiveness of in-store demonstrations

Introduction

First we would like to give you some background about who we are and why we want to talk with you today. EMI is an independent consulting firm that works with electric and gas utilities to review and improve program operations and delivery.

We are part of the team hired to help improve AEP Ohio's energy efficiency programs, and we're currently in the process of conducting interviews with program managers and key staff in order to improve our understanding of those programs. At this time we are interested in asking you some questions about the Efficient Products CFL discount program so that we can get your insights into what is working well and not working well with the program, from your perspective.

Before we get started, can you take a moment and explain your role and scope of responsibilities with respect to AEP Ohio's Efficient Products Lighting Program? How long have you held this position?

- How many stores do you cover?
- Over how much area?
- What types of stores?

Next, I'm going to ask you some questions about your involvement with different aspects of the Efficient Products Lighting Program.

Retailer Training

Briefly describe the training for retailers.

- What is the purpose of the training?
- How does the training occur? How long is the training? Is it one-shot or multiple visits?
- What format does it take? Is it a formal training in more of a classroom setting, or is it a one-on-one type training?
- How soon after becoming a participant does training take place?
- What feedback, if any, have you received on the training?

Has anything changed with respect to retailer training since 2009?

- Does the training include which products are discounted by the program, and is this compared with similar products that are NOT discounted?
- Does the training include what the benefits of the program are for the retailer?

In-Store Demonstrations

What is the purpose of the in-store lighting demonstrations?

- What is communicated to customers during the demos?
- Are customers aware that the program CFLs have been discounted?
- Are customers aware of what the price was before the discount?
- Are they aware that the discount is provided by AEP Ohio?

What do customers most commonly ask questions about?

- What are common customer concerns?
- Are there common customer misconceptions about CFLs?

How often are the demos conducted?

- Who decides which retailers get visited and how often?

What kind of information is tracked during the in-store demos?

- (e.g., number of customers spoken with, number who purchase program CFLs?)
- Anything else?

During in-store demos, are there procedures in place to prevent customers from purchasing more than the 12 maximum program-discounted CFLs? Please describe.

During in-store demos, are there procedures in place to prevent non-AEP Ohio customers from purchasing program-discounted CFLs? Please describe.

During in-store demos, is safe lamp disposal communicated to consumers? If so, how?

Store Visits

Aside from the lighting demonstrations, do APT field representatives regularly visit participating retail stores?

- What happens during these visits?
 - Is there a checklist?
 - Other forms?
- Who do you interact with during store visits (e.g., lighting manager, store manager)?
- How many stores, how frequently? Is there a program goal on this activity?
- Who decides which retailers get visited and how often?

What is the procedure to make sure that stores are well stocked, staff is well-trained, and point-of-purchase (POP) materials are displayed correctly?

- [If so:] How often does this occur? Can you please describe the process?
- What processes are in place in terms of documenting and reporting?
- Are retailers aware of when store visits will occur, or are the visits unannounced?
- [If aware:] Is there a reason unannounced store visits are not conducted?

Is there a procedure for ensuring that participating manufacturers are marketing the discounted CFLs consistent with the program design?

- When/how is this monitored?

Incentive Levels

What do retailers think about the level of incentives? [Prompt if needed with "high, about right, too low."]

- What do retailers think about the level of paperwork required to process incentives?

What do you perceive to be the level of satisfaction among customers with the current discount amounts (or prices of lamps)?

- How do you determine this?

Marketing to Consumers

At your participating stores, approximately what percent of lighting shelf space is now devoted to CFLs?

- How does that vary by store type?
- How has that changed since the program began?

Please tell me about the marketing materials that APT has developed for use in the retail stores.

- Signage, coupons next to the product? Other displays?

Have the coupons or marketing materials changed at all since 2009?

Are general service LEDs (i.e., those intended for residential applications where an incandescent would traditionally be used) being offered in any of your retail stores?

- How expensive are they? Do you have any information on how they are selling?

What percentage of your participating retailers offer specialty CFLs, such as dimmable or 3-way CFLs?

- Are these types of CFLs marketed differently?

QA/QC of Field Representatives' Performance

How does APT evaluate the quality of your work for the different activities we have been discussing?

- How are you assessed regarding merchandising placement?
- How are you assessed regarding the quality of retailer training?
- How is the quality of your relationships with the retail staff assessed?
- How is the assessment of your work communicated back to you?

Is the status of your work monitored on a daily basis?

- [If so:] Please describe.

Communication

How often does communication occur between you and your supervisor at APT?

- Can you generally describe the methods of coordination and communication with your supervisor?
- Does communication primarily occur when a problem comes up, or are there regularly scheduled meetings?
- If regularly scheduled, how often? What is discussed during these meetings?
- Are there any barriers to effective communication?

Is there anything you would like to be kept informed of, or that you would like more information about, that would help you with your job?

Program Strengths/Areas for Improvement

Overall, what would you say is working really well in this program?

What would you most like to change or improve?

- Are there certain retailers or types of stores that you think should be participating but aren't?

Is there anything that seems to stand in the way of making these changes/improvements at this time?

Summary

Do you have any other comments (either positive or negative), concerns or suggestions about the program that we didn't discuss that you would like to make sure I know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. If I come up with any additional questions that come from this interview do you mind if I send you an email or give you a quick call?

IMPLEMENTATION CONTRACTOR INTERVIEW GUIDE: EFI INTERVIEW GUIDE

EFFICIENT PRODUCTS – PY2010 (YEAR 2)

Interview Objectives:

- Assess effectiveness/efficiency of program operations with respect to:
 - Data tracking and reporting
 - Quality control
 - Payment processing
- Determine if and how the program implementation has changed since 2009
- Determine whether recommendations from the 2009 evaluation have been implemented
- Identify current program challenges, if any

Prior to Interview, request program documents:

- Sales reports or data pulls shared with AEP Ohio and/or APT
- Examples of any summary reports (e.g., by retailer, store location, manufacturer and SKU) provided to AEP Ohio
- Any formal documentation of QA/QC procedures for coupon data
- Any formal documentation of QA/QC procedures for instant markdown data

Introduction

First we would like to give you some background about who we are and why we want to talk with you today. EMI is an independent consulting firm that works with electric and gas utilities to review and improve program operations and delivery.

We are part of the team hired to help improve AEP Ohio's energy efficiency programs, and we're currently in the process of conducting interviews with program managers and key staff in order to improve our understanding of those programs. At this time we are interested in asking you some questions about the Efficient Products CFL Discount program so that we can get your insights into what is working well and not working well with the program, from your perspective.

Before we get started, can you take a moment and explain your role and scope of responsibilities with respect to AEP Ohio's Efficient Products Lighting Program? How long have you held this position?

Next, I'm going to ask you some questions about some of the practical aspects of the Efficient Products Lighting Program.

My understanding is that EFI is responsible for tracking retailer/manufacturer sales data and issuing incentive checks. Is there anything else EFI is responsible for relating to AEP Ohio's CFL discount program?

Payment Processing

First, I'd like to talk about the payment process between EFI and manufacturers and retailers for both the coupons and markdown program.

Please describe the payment process between EFI and manufacturers.

- What data is required from manufacturers to process incentives for the Efficient Products Lighting Program?
- Are these data based on sales data collected from the stores, or are they based on shipment data?
- What forms must be filled out / submitted?
- What do manufacturers think about the level of paperwork required to process incentives? [Prompt if needed with "high, about right, too low."]

Please describe the payment process between EFI and retailers

- What data do retailers submit to receive incentives for the Efficient Products Lighting program?
- How does this process vary for instant markdown stores vs. coupon stores?
- How do the retailers collect these data?
- What do retailers think about the level of paperwork required to process incentives? [Prompt if needed with "high, about right, too low."]

Have there been any issues (inaccuracies, completeness, timeliness) with manufacturers and retailers filling out the required forms to request incentives?

- Please describe the nature of these issues.
- How frequently do these issues arise?
- Have the problems been resolved?
- How do you resolve those problems?

Data Tracking

I would like to talk a little bit about the program tracking systems.

Can you briefly describe what data are tracked by EFI and how that data is collected?

- Besides the data requirements we've already discussed, are there other data collected from manufacturers? How are these data collected from manufacturers?
- Besides the data requirements we've already discussed, are there other data collected from retailers? How are these data collected from retailers?
- Do you always receive data on the store level, or is it aggregated across store locations?
- How frequently are sales data updated?
 - Weekly, bimonthly, monthly?

Can you describe the process for entering data into the program tracking databases?

- Is this process the same for coupon data and instant markdown data?
- How regularly are the databases maintained?
- Have you had to deviate from the documented procedures for any reason? If yes, explain.
- Are there any areas where you feel the accuracy and completeness of the program tracking systems are weaker? What are these?

What happens if there is missing data?

- Is there any feedback mechanism that provides retailers information about missing/invalid coupon data? How about markdown data?
- Is there any feedback mechanism that provides manufacturers information about missing/invalid data?

What tracking data do you share with AEP Ohio? With APT?

- How is that information shared and how often?
- Is it in the form of a report or data pulls?

Has EFI designed any reports to provide summary information to AEP Ohio (by retailer, store location, manufacturer and sku)?

- Any custom reports? Ad hoc?
- How frequently are these reports distributed to AEP Ohio? Who at AEP Ohio gets them?
- Has anyone at AEP Ohio called to ask questions and/or for more detailed information to make decisions about possible changes based on what they've seen in the report?

Has anything changed with respect to data tracking procedures since 2009?

- Are there changes you would like to see made in the future?

Does this program track sales of specialty lamps (e.g., dimmable and 3-way CFLs)?

Quality Control (QC)

Is there a formal quality control procedure to verify the data entry of coupon information?

- What happens if you find an error in coupon data?

Is there a formal quality control procedure to verify the accuracy of instant markdown data?

- What happens if you find an error in instant markdown data?

Is there a formal process in place to ensure that incentives are only paid for program bulbs sold at the appropriate price?

- Please describe.
- Is this process the same for coupon data and instant markdown data?
- What is the procedure for correcting any discrepancies with sales data submitted for non-program lamps?
- Are these procedures different for manufacturers versus retailers?

Is there a formal process in place to ensure that sales data for a particular date range have only been submitted once for an incentive payment?

- Please describe.

What happens if the sales data indicate that customers may be purchasing more than 12 lamps at a time?

Is customer eligibility tracked or enforced?

- (Purchasers must be AEP Ohio customers.)

Are there any additional quality assurance and control procedures in place?

- Please describe.

[If no formal documentation received prior to interview, verify:] Are the processes you have mentioned formally documented anywhere?

- [If yes:] Can we have copies of that documentation?
- [If no:] Are there any plans to formally document these processes?

Has anything changed with respect to QC procedures since 2009?

- Are there changes you would like to see made in the future?

Program Strengths/Areas for Improvement

What would you say is working really well?

What would you most like to change?

Is there anything that seems to stand in the way of making those changes at this time?

Summary

Do you have anything else about the program that we didn't discuss that you would like to make sure I know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. If I come up with any additional questions that come from this interview do you mind if I send you an email or give you a call?

MANUFACTURER INTERVIEW GUIDE:

EFFICIENT PRODUCTS – PY2010 (YEAR 2)

Interview Objectives:

- Assess the experience and satisfaction of AEP Ohio manufacturers participating in the program
- Determine how manufacturers at the corporate level become aware of the program
- Identify benefits to and motivations for manufacturer participation
- Identify challenges to manufacturer participation
- Determine Quality Assurance / Quality Control (QA/QC) activities with respect to sales/shipping data

Target:

- Manufacturers participating in the Efficient Products Lighting Program
- Target completes: Three manufacturers involved in/familiar with the company's decision to participate in the program)

Introduction

May I speak with <CONTACT>?

[IF CONTACT IS UNAVAILABLE DETERMINE BEST TIME TO CALL BACK.]

[IF CONTACT IS NO LONGER ACTIVE] Is there someone else I can talk to who might be familiar with the company's decision to participate in this program?

Lead in for respondent:

Hello my name is _____ from Energy Market Innovations. I am calling on behalf of AEP Ohio regarding their residential efficient lighting products discount program. We are speaking with participating manufacturers to understand their experience with AEP Ohio's CFL discount program so we can help improve the program. Is this a good time for us to talk? Your feedback is very important for the future of these types of programs. The interview will take about 30 minutes of your time. [If NO, schedule time to call back.]

Our records indicate that <MFR NAME> has participated or is participating in the Efficient Products CFL discount program within AEP Ohio's service territory. Are you familiar with this program? [If NO or DK, describe the program. If still not familiar, ask if there is someone else

at the corporate level who might be familiar with the company's decision to participate in this program.]

Before we get started, can you take a moment and explain your role and scope of responsibilities at <COMPANY>.

- How long have you held this position?

What is your role with respect to AEP Ohio's CFL discount program?

Are there other staff members at your company that are knowledgeable about (or involved with) AEP Ohio's CFL discount program?

- [IF YES] What is/are their roles?
- [Request names and contact information.]

Manufacturer Participation

How did you first learn about this program?

- [If needed -- Prompt:] From a retailer? AEP Ohio or APT? Or some other source?
- Did <COMPANY> initiate contact? Or did someone approach <COMPANY>?
- Did you have a previous relationship with APT?
- Has <COMPANY> participated in other utility programs (statewide or nationally)? If yes, which programs?

Why did your company decide to participate in AEP Ohio's CFL discount program?

- To your knowledge, do other manufacturers participate in AEP Ohio's CFL discount program?

If you had to make a guess, why do you think some manufacturers might choose not to participate in this program?

Did you have any initial concerns about participating in the program?

- [IF YES:] What concerns did you have about participating in the program?
- Were your concerns addressed or resolved in some way?
 - [IF YES:] How so?
 - [IF NO:] What could AEP do to help resolve those concerns?

Does your company recruit retailers to participate in AEP Ohio's CFL discount program? If so, please describe the process.

If you had to make a guess, why do you think some retailers might choose not to participate in this program?

Marketing

How does your <COMPANY> market or promote the program's discounted CFLs?

- (e.g., different packaging, marketing to retailers, marketing to consumers?)
- Please describe.
- Are you able to send to me copies of the marketing materials that your company has developed for this program?

Does your company cross-promote these CFLs with participating retailers? If so, please describe.

Sales

Prior to the start of the program, were sales of CFLs increasing, decreasing, or holding approximately steady?

If the [manufacturer buy-down discounts/incentives from AEP Ohio] and program promotional materials were not available, do you think your sales of these types of spiral Energy Star CFL lamps through your stores in the AEP Ohio service territory would have been about the same, lower, or higher?

1 Same - It sounds like the program is not having an effect on sales of CFLs. Why do you think that might be the case?

2 Higher - Why do you say this?

3 Lower - By what % do you estimate your sales of spiral Energy Star CFL lamps would be lower during this period if the program incentives and promotional materials had not been available? **RECORD PERCENTAGE DECREASE: __%**

[ASK IF RESPONSE TO QUESTION ABOVE IS "LOWER":] I want to make sure I understand you correctly. You estimate that your sales would have been [PERCENTAGE FROM PREVIOUS QUESTION] % lower without the manufacturer buydowns/incentives from AEP Ohio. So if you actually sold 100 spiral CFLs in a given week, you think you would have sold only about $[100 - (\text{PERCENTAGE FROM PREVIOUS QUESTION} * 100)]$ in that period if the manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES VOLUME DECREASE]

Has the program changed the types of lamps your company manufactures, or how those lamps are packaged (e.g., multipacks vs. single lamps; particular wattages or specialty lamps)?

- Did you manufacture Energy Star qualified CFLs before this program began?
 - If no, why?
 - If yes, are you increasing production as a result of the program?
 - How much has production increased, as a percent of prior production volume?

To what extent has this program influenced the proportion of CFLs your company manufactures, compared to other types of lamps/bulbs?

- What percent of the lamps manufactured by your company are CFLs? What was the percentage prior to participation in AEP Ohio's CFL discount program?
- How do sales of the discounted CFLs compare to the non-discounted CFLs your company manufactures?
- Are these assessments estimates or are they based on sales data/store reports?

Are retailer locations that are participating in the program in Ohio varying in performance when it comes to sales or orders for the CFLs that your company manufactures?

- [IF YES:] Are there regional differences or trends in Ohio that might explain these differences? If so, which ones?
- [IF YES:] Do you know of other reasons for CFL sales differences across locations?

Do you expect strong sales growth for CFLs in Ohio or nationally in the future?

- [IF YES] Would you still expect strong sales growth without programs like the AEP Ohio CFL discount program?
- Why?

Interface/Communication with Implementation Contractors

Please describe your interactions on a corporate/regional level with program implementers APT and EFI. [If needed: APT is responsible for recruiting retailers and manufacturers to participate in the program. EFI is responsible for tracking retailer sales data and issuing incentive checks.]

- How regularly do you have interactions with APT and EFI?

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Do you feel you are getting what you need from program personnel?

- [IF NO:] What do you need? How can communications be improved?

Program Tracking & Verification

[IF THE COMPANY HAS A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Can you describe how your company tracks the information regarding discounted CFL purchases? [If unsure of tracking, ask for an appropriate contact person for this info, collect contact information and then SKIP to Section 7.]

- What sales information is regularly sent to APT/EFI?
- How often is this info transmitted to APT/EFI?
- Have there been any challenges with this approach?

[IF THE COMPANY HAS A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Is there a verification process to ensure the sales data are accurate before being sent to APT/EFI?

- Please describe the process.

Incentives Processing

Can you describe how <COMPANY> gets incentives from AEP Ohio for the CFL markdowns?

- Are you satisfied with this process? Is there anything you would like to change about this process? [Probe.]

Has <COMPANY> received incentives from AEP Ohio in a timely fashion?

Satisfaction

What would you say are the primary benefits of this program, from <COMPANY>'s perspective?

- Anything besides the incentives?

And what are the disadvantages of this program, from <COMPANY>'s perspective?

- Were there barriers to your company's participation in this program? Do you see any barriers going forward?
- Is there anything AEP Ohio or APT/EFI can do to help overcome these barriers and improve this program?

How satisfied are you with the incentive payment amount?

- If some level of dissatisfaction - what level of incentive payment would you be more satisfied with?

Overall, how satisfied are you with AEP Ohio's CFL program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH APT:] Overall, how satisfied are you with APT's role in the program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH EFI:] Overall, how satisfied are you with EFI's role in the program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

Will your company continue to work with this program after your current contract expires?

- Why or why not?

What program improvements should be at the top of the priority list?

Does your company participate in CFL-markdown programs with other utilities in Ohio? In other states?

- If yes, how does AEP Ohio's program compare (e.g., incentive levels, advantages, disadvantages)?

END

Do you have any other comments, concerns or suggestions about the program that we didn't discuss that you would like to make sure I know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. If I come up with any additional questions that come from this interview do you mind if I send you an email or give you a quick call?

CORPORATE-LEVEL RETAILER INTERVIEW GUIDE:

EFFICIENT PRODUCTS – PY2010 (YEAR 2)

Interview Objectives:

- Assess the experience and satisfaction of AEP Ohio retailers participating in the program
- Determine how retailers at the corporate level become aware of the program
- Identify benefits to and motivations for retailer participation
- Identify challenges to retailer participation
- Determine Quality Assurance / Quality Control (QA/QC) activities with respect to sales data

Target:

- Corporate level retailer participants in the Efficient Products Lighting Program
- Target completes: Five corporate-level retailer staff involved in/familiar with the company's decision to participate in the program)

Introduction

May I speak with <CONTACT>?

[IF CONTACT IS UNAVAILABLE DETERMINE BEST TIME TO CALL BACK.]

[IF CONTACT IS NO LONGER ACTIVE] Is there someone else I can talk to who might be familiar with the company's decision to participate in this program?

Lead in for respondent:

Hello my name is _____ from Energy Market Innovations. I am calling on behalf of AEP Ohio regarding their residential efficient lighting products discount program. We are speaking with participating retailers to understand their experience with AEP Ohio's CFL discount program so we can help improve the program. Is this a good time for us to talk? Your feedback is very important for the future of these types of programs. The interview will take about 30 minutes of your time. [If NO, schedule time to call back.]

Our records indicate that one or more of <STORE NAME> locations within AEP Ohio's service territory have participated or are participating in the Efficient Products CFL discount program. Are you familiar with this program? [If NO or DK, describe the program. If still not familiar, ask if there is someone else at the corporate level who might be familiar with the company's decision to participate in this program.]

Before we get started, can you take a moment and explain your role and scope of responsibilities at <COMPANY>.

- How long have you held this position?

What is your role with respect to AEP Ohio's CFL discount program?

Are there other staff members at your company that are knowledgeable about (or involved with) AEP Ohio's CFL discount program?

- [IF YES] What is/are their roles?
- [Request names and contact information.]

Retailer Participation

How did you first learn about this program?

- [If needed -- Prompt:]From a manufacturer? AEP Ohio or APT? Or some other source?
- Did <COMPANY> initiate contact? Or did someone approach <COMPANY>?
- Did you have a previous relationship with APT?
- Has <COMPANY> participated in other utility programs (statewide or nationally)? If yes, which programs?

Why did your company decide to participate in AEP Ohio's CFL discount program?

- To your knowledge, do other retailers in the area participate?

If you had to make a guess, why do you think some retailers might choose not to participate in this program?

Did you have any initial concerns about participating in the program?

- [IF YES:] What concerns did you have about participating in the program?
- Were your concerns addressed or resolved in some way?
 - [IF YES:] How so?
 - [IF NO:] What could AEP do to help resolve those concerns?

Marketing

How satisfied are you with the promotional materials that AEP has developed and placed in participating stores? Would you say you are...

5. Very SATISFIED
 4. Somewhat SATISFIED
 3. Neither satisfied nor dissatisfied
 2. Somewhat DISSATISFIED
 1. VERY DISSATISFIED
 98. Don't Know
- Please explain why you gave that rating.

Do you have suggestions for making these materials more effective?

Has your <COMPANY> created its own materials to promote the program's discounted CFLs?

- (e.g., in-store signage, circular ads, signage outside the store?)
- Please describe.
- Are you able to send to me copies of the marketing materials that your store has developed for this program?

Sales

Prior to the start of the program, were sales of CFLs increasing, decreasing, or holding approximately steady?

If the [manufacturer buy-down discounts/incentives from AEP Ohio] and program promotional materials were not available, do you think your sales of these types of spiral Energy Star CFL lamps through your stores in the AEP Ohio service territory would have been about the same, lower, or higher?

- 1 Same - It sounds like the program is not having an effect on sales of CFLs. Why do you think that might be the case?
- 2 Higher - Why do you say this?
- 3 Lower - By what % do you estimate your sales of spiral Energy Star CFL lamps would be lower during this period if the program incentives and promotional materials had not been available? **RECORD PERCENTAGE DECREASE: __%**

[ASK IF RESPONSE TO QUESTION ABOVE IS "LOWER":] I want to make sure I understand you correctly. You estimate that your sales would have been [PERCENTAGE FROM PREVIOUS QUESTION] % lower without the manufacturer buydowns/incentives from AEP. So if you actually sold 100 spiral CFLs in a given week, you think you would have sold only about $100 - (\text{PERCENTAGE FROM PREVIOUS QUESTION} * 100)$ in that period if the manufacturer buydowns hadn't been available? [IF RESPONSE IS ≠ YES THEN CLARIFY ESTIMATED SALES VOLUME DECREASE]

Has the program changed how customers buy lamps or which lamps they buy (e.g., multipacks vs. single lamps; particular wattages or specialty lamps)?

- Are these assessments estimates or are they based on sales data/store reports?
- How do sales of the discounted CFLs compare to the non-discounted CFLs that are stocked at your store?

How has this program influenced <COMPANY's> CFL stocking practices, if at all?

- Did you stock Energy Star qualified CFLs before this program began?
 - If yes, are you keeping more stock on hand as a result of the program?
 - How much more stock are you keeping on hand, as a percent of prior stock volume?

To what extent has this program influenced the amount of shelf space devoted to CFLs, compared to other types of lamps/bulbs?

- What is the percent of the shelf space for light bulbs devoted to CFLs? What was the percentage prior to participation in AEP Ohio's CFL discount program?
- Have you made any changes to the placement or location of CFLs in your store since participating in the program?
 - Please describe
 - Why did you make this change?

Are <COMPANY> locations that are participating in the program in Ohio varying in performance when it comes to CFL sales?

- [IF YES:] Are there regional differences or trends in Ohio that might explain these differences? If so, which ones?
- [IF YES:] Do you know of other reasons for CFL sales differences across locations?

Do you expect strong sales growth for CFLs in Ohio or nationally in the future?

- [IF YES] Would you still expect strong sales growth without programs like the AEP CFL discount program?

Interface/Communication with Implementation Contractors

Please describe your interactions on a corporate/regional level with program implementers APT and EFI. [If needed: APT is responsible for recruiting retailers and manufacturers to participate in the program, placing promotional materials in the stores, and training retail staff. EFI is responsible for tracking retailer sales data and issuing incentive checks.]

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Do you feel you are getting what you need from program personnel?

- [IF NO:] What do you need? How can communications be improved?

Program Tracking & Verification

[IF THE COMPANY HAS A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Can you describe how your company tracks the information regarding discounted CFL purchases? [If unsure of tracking, ask for an appropriate contact person for this info, collect contact information and then SKIP to Section 7.]

- What sales information is regularly sent to APT/EFI?
- How often is this info transmitted to APT/EFI?
- Have there been any challenges with this approach?

[IF THE COMPANY HAS A SIGNIFICANT RELATIONSHIP WITH APT/EFI:] Is there a verification process to ensure the sales data are accurate before being sent to APT/EFI?

- Please describe the process.

Incentives Processing

Can you describe how <COMPANY> gets incentives from AEP Ohio for the CFL markdowns?

- Are you satisfied with this process? Is there anything you would like to change about this process? [Probe.]

Has <COMPANY> received incentives from AEP Ohio in a timely fashion?

Satisfaction

What would you say are the primary benefits of this program, from <COMPANY>'s perspective?

- Anything besides the incentives?

And what are the disadvantages of this program, from <COMPANY>'s perspective?

- Were there barriers to your company's participation in this program? Do you see any barriers going forward?
- Is there anything AEP Ohio or APT/EFI can do to help overcome these barriers and improve this program?

How satisfied are you with the incentive payment amount?

- If some level of dissatisfaction - what level of incentive payment would you be more satisfied with?

Overall, how satisfied are you with AEP Ohio's CFL program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH APT:] Overall, how satisfied are you with APT's role in the program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

[IF THEY HAVE A SIGNIFICANT RELATIONSHIP WITH EFI:] Overall, how satisfied are you with EFI's role in the program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

Will your company continue to work with this program after your current contract expires?

- Why or why not?

What program improvements should be at the top of the priority list?

END

We are almost finished. I just have a couple remaining questions.

Can you please estimate the total number of <COMPANY> locations in the state of Ohio?

Do you have any other comments, concerns or suggestions about the program that we didn't discuss that you would like to make sure I know about?

Thank you very much for taking the time in assisting us with this evaluation. Your contribution is a very important part of the process. If I come up with any additional questions that come from this interview do you mind if I send you an email or give you a quick call?

STORE-LEVEL RETAILER INTERVIEW GUIDE:

EFFICIENT PRODUCTS – PY 2010 (YEAR 2)

Interview Objectives:

- Assess the experience and satisfaction of AEP Ohio retailers participating in the program
- Determine effectiveness of marketing activities/collateral from the retailer perspective
- Determine effectiveness of retail staff training
- Determine QA/QC activities with respect to sales data

Target:

- Retailer participants in the Efficient Products Lighting Program that were not contacted as part of the 2009 evaluation, including new participants in 2010.
- Target completes: Ten store-level retailer staff in charge of managing lighting products or overall store managers (when lighting specific staff are not available).

Introduction

May I speak with <CONTACT>?

[IF CONTACT IS UNAVAILABLE, DETERMINE BEST TIME TO CALL BACK.]

[IF CONTACT IS NO LONGER ACTIVE] May I speak with the manager of the lighting department, or general store manager if there is no specific lighting manager?

Lead in for respondent:

Hello my name is _____ from Energy Market Innovations, and I am calling on behalf of AEP Ohio regarding their residential efficient lighting products discount program. We are speaking with participating retailers to understand their experience with AEP Ohio's CFL discount program so we can help improve the program. Is this a good time for us to talk? Your feedback is very important for the future of these types of programs. The interview will take about 30 minutes of your time. [If NO, schedule time to call back.]

Our records indicate that your store located at <STORE ADDRESS> participated in the CFL discount program. Are you familiar with this program? [If NO or DK, describe the program. If still not familiar, ask if there is someone else in the store who might be familiar with this program.]

Before we get started, can you take a moment and explain your role and scope of responsibilities at [store name].

- How long have you held this position?

Are there other staff members at your store that are knowledgeable about (or involved with) AEP Ohio's CFL discount program?

- [IF YES] What is/are their roles?
- [Request names and contact information.]

Retailer Participation

How long has the store located at [store address] participated in AEP Ohio's CFL discount program?

What different types of AEP-discounted CFLs does your store stock?

- What wattages (or range of wattages are available)?
- What type of specialty bulbs are discounted at the store (e.g., three-ways, globes, reflectors, dimmable, A-shape etc.)?
- How many different manufacturers/brands?
- Mostly single bulbs or multipacks?

How did you first learn about this program?

- From a manufacturer? AEP Ohio? Or some other source?
- Did the store initiate contact? Or did someone approach the store?

Marketing

[Note to interviewer: instant markdown stores will not know APT or EFI by name; they will think of them as representatives of AEP Ohio. However, the coupon stores will likely know APT and EFI by name.]

Are you using promotional materials provided by AEP Ohio (or APT)? What materials are you using? How are they displayed?

- How are the discounted CFLs promoted in the store?
 - Signage, coupons next to the product? Other displays?
- If no AEP Ohio (or APT) promotional materials are being used: Why aren't you using the promotional materials?

Has your store created its own materials to promote the program's discounted CFLs?

- (e.g., in-store signage, circular ads, signage outside the store?)

- Please describe. Can you describe why your store created its own materials for this program?
- Are you able to send to me copies of the marketing materials that your store has developed for this program?

How satisfied are you with the promotional materials that AEP Ohio (or APT) has developed and placed in participating stores? Would you say you are...

- 5. Very SATISFIED
- 4. Somewhat SATISFIED
- 3. Neither satisfied nor dissatisfied
- 2. Somewhat DISSATISFIED
- 1. VERY DISSATISFIED
- 98. Don't Know

- Please explain why you gave that rating.

Do you have suggestions for making these materials more effective?

Sales

Prior to the start of the program, were sales of CFLs increasing, decreasing, or holding approximately steady?

Since the start of your store's participation in this program, have CFL sales increased, decreased, or remained the same?

- [If increased or decreased:] How many more/less CFLs would you estimate you sell now compared to before the program, as a percentage of prior sales?
- Has the program changed how customers buy bulbs or which bulbs they buy (e.g., multipacks vs. single bulbs; particular wattages or specialty bulbs)?
- Are these assessments estimates or are they based on sales data/store reports?
- Do you currently carry CFLs that are not discounted by AEP Ohio?
- Of all CFLs sold at this store location, what percentage would you say are AEP-discounted CFLs? What percentage are non-discounted CFLs?

How has this program influenced your store's CFL stocking practices, if at all?

- Did you stock Energy Star qualified CFLs before this program began?
 - If yes, are you keeping more stock on hand as a result of the program?
- Have you made any changes to the placement or location of CFLs in your store since participating in the program?

To what extent has this program influenced the amount of shelf space devoted to CFLs, compared to other types of lamps/bulbs?

- What is the percent of the shelf space for lighting that is devoted to CFLs?
- Have you made any changes to the placement or location of CFLs at your store as a result of this program?

Retailer Staff Training

Did any staff at your store receive training to support participation in AEP Ohio's CFL discount program?

[If Yes, CONTINUE. If No, SKIP TO Section 6:]

- How many employees received training?
- What types of employees received training?
- How often is training conducted?

What were the main topic areas covered in the training?

- What did you/staff learn from the training?
- In what ways are sales staff encouraged to promote the discounted CFLs?

How satisfied were you with the quality of the training?

- Was there any information you would recommend adding to the training?

How satisfied were you with the knowledge and expertise of the representative conducting the training?

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

How satisfied were you with the professionalism of the representative conducting the training? [e.g., appearance, promptness, communication skills]

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

Interface/Communication with Implementation Contractors

Do you feel you are getting what you need from program personnel?

- [IF NO:] What do you need?

Program Tracking & Verification

Can you describe how your store tracks the program-required information regarding discounted CFL purchases? [If unsure of tracking, ask for an appropriate contact person for this info, collect contact information and then SKIP to Section 9.]

- What information is sent to AEP Ohio (or APT/EFI)?
- How often is this information transmitted to AEP Ohio (or APT/EFI)?
- Have there been any challenges with this approach?

Is there a verification process to ensure the sales data are accurate before being sent to AEP Ohio (or APT/EFI)?

- Please describe the process.

Incentives Processing

Can you describe the process of how this store applies for and receives incentive payments from AEP Ohio (or EFI) for the CFL markdowns? [If unsure of process, SKIP to Section 9.]

- Are you satisfied with this process?
- Is there anything you would like to change about this process?

Have you received incentives from AEP Ohio (or EFI) in a timely fashion?

- On average, how long does it take to apply for and receive an incentive?
- Have there been any problems? Have these been resolved?

Satisfaction

What would you say are the primary benefits of this program, from your store's perspective?

- Anything besides the incentives?
- Do individuals on the sales staff benefit directly from the program in any way?

And what are the disadvantages of this program, from your store's perspective?

- Do you see any barriers to participating in this program?
- Is there anything AEP Ohio or APT/EFI can do to help overcome these barriers and improve this program?

Overall, how satisfied are you with AEP Ohio's CFL program? Would you say you are...

5. Very SATISFIED
4. Somewhat SATISFIED
3. Neither satisfied nor dissatisfied
2. Somewhat DISSATISFIED
1. VERY DISSATISFIED
98. Don't Know

- Please explain why you gave that rating.

What is your impression of what the sales staff think about the program?

- Are they satisfied with the program?
- Are they enthusiastic about the store's participation in the program?

Will your store continue to participate in this program after its current contract expires?

Firmographics

We are almost finished. I just have a few remaining questions.

Can you please estimate the total INDOOR square footage of your facility at this location?

Approximately how many employees does your store have at this location?

- Approximately how many are in the lighting department?

END

Do you have anything else about the program that we didn't discuss that you would like to make sure I know about?

Those are all of my questions. Thank you very much for your time today.



AEP Ohio
Energy Efficiency/Demand Response Plan
Year 2 (1/1/2010-12/31/2010)

Program Year 2010 Evaluation Report:
Appliance Recycling Program

Presented to



March 7, 2011

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Section E. Executive Summary

E.1 Program Summary

The Appliance Recycling Program provides AEP Ohio customers with a financial incentive to remove spare refrigerators and freezers from operation as secondary units. Through the program, units are removed to a collection facility and disassembled for environmentally responsible disposal and recycling. The program also prevents existing primary refrigerators and freezers from being retained and used as secondary units after customers purchase new units. Overall, the intended outcome of the program is the attainment of substantial energy savings via the reduction in the total number of inefficient refrigerators and freezers operating on the grid. AEP Ohio launched this program in mid-2009 in both the Ohio Power Company (OPCo) and the Columbus Southern Power (CSP) service areas. The implementation contractor for this program is JACO Environmental, Inc. (JACO) as a single program under the gridSMART from AEP Ohio umbrella.

E.2 Key Impact Findings

The adjusted (ex-post) gross energy and demand savings for 2010 were 17,865 megawatt hours (MWh) and 2.312 megawatts (MW), respectively. These savings far exceeded the program goals of reducing energy usage by 8,324 MWh and peak demand by 1.004 MW, as shown in Table E-1. The program, meanwhile, reported 17,850 MWh savings and 1.620 MW demand reduction, which is somewhat lower compared to the calculated ex-post gross savings. The realization rates were 1.00 for MWh and 1.43 for peak MW. This means that the ex-ante gross energy savings reported by AEP Ohio were nearly identical to the evaluation-calculated gross energy savings. On the other hand, the evaluation-calculated gross demand savings were 43 percent higher than the ex-ante gross demand savings reported by AEP Ohio.

Table E-1. Overall Evaluation Results

Service Territory	2010 Program Goals		2010 Ex-Ante Claimed Savings		2010 Ex-Post Gross Savings	
	Gross MWh	Gross MW	Gross MWh	Gross MW	Gross MWh	Gross MW
Columbus Southern Power (CSP)	4,245	0.472	8,576	0.775	8,587	1.109
Ohio Power Company (OPCo)	4,079	0.532	9,274	0.844	9,278	1.203
Total	8,324	1.004	17,850	1.620	17,865	2.312

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E.3 Key Process Findings

The process component of the evaluation generally found that program processes are effective. AEP Ohio and implementation staff are satisfied with program processes and communications, and program participants are overwhelmingly satisfied with the various aspects of the program, from enrollment to receipt of the incentive check. While the program ended up meeting its energy and demand saving goals, it fell short of the contractual goal with JACO in terms of units collected. Because program staff were tracking program progress in terms of units collected, there was much concern over the course of the program year regarding the lower-than-expected participation levels. Staff hypothesized that perhaps the marketing efforts were not effective enough, and the geographically-scattered nature of the AEP Ohio service territory was also identified as a potential road-block to more widespread marketing efforts. To increase program participation, an increased incentive was offered from May through December, and this appeared to at least temporarily increase participation. The program also embarked on a retailer partnership in the fall, but this aspect of the program produced very few participants. It appears that there is room to increase program awareness and participation, as baseline survey data found that 46 percent of AEP Ohio customers are still unaware of the program.

E.4 Recommendations

Based on the impact and process evaluations of the PY 2010 Appliance Recycling Program, the evaluation team offers the following recommendations for program improvements:

1. **The evaluation team recommends that AEP Ohio set goals for marketing effectiveness, and that marketing efforts are in turn monitored to assess progress toward goals.** Because participation rates were lower than expected, comparing marketing efforts to program participation may help pinpoint areas where specific types of marketing are more effective. For example, a GIS study comparing where marketing takes place versus where appliances are collected could shed light on the effectiveness of program marketing methods across the AEP Ohio service territory.
2. **The program may want to consider allowing pickups without a person present.** Interviews with near-participants (those who enrolled in the program but did not have an appliance picked up) found that convenience was the number one reason they originally enrolled in the program. Customers just want the appliance out of their home as soon as possible, and they do not want to have to take a day off of work to do so. For many near-participants, once their appointment was cancelled, instead of rescheduling with AEP Ohio, and waiting up to two weeks to have their appliance removed, they often chose the most convenient option. This could mean that appliances remain in operation rather than being recycled. In other similar programs across the country, customers are allowed to leave a note indicating their approval to have the appliance picked up in their absence and without their signature on the paperwork. In this case, the customer would be asked to tape the door shut, and face the door to an outside wall.

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The unit remains plugged in with the use of an extension cord, and the customer places the unit in a backyard, or otherwise out of sight, if possible.

3. **The evaluation team recommends that AEP Ohio evaluate the retail partnership to determine whether it should continue or be revised.** Part of this review may involve examining the scheduling process for customers who participate through retailers, and/or assessing the ability and willingness of retail sales associates to promote the program. It would also be instructive to examine best practices and lessons learned from other utilities that have implemented retailer partnerships with respect to appliance recycling programs. Additionally, if AEP Ohio is interested in continuing or expanding the retailer partnership, it is recommended that AEP Ohio examine the quality assurance and quality control (QA/QC) procedures to ensure that proper procedures are taken to verify the eligibility of appliances and collection procedures for this component of the program.
4. **The tracking data should allow the program to easily track whether drop-outs sign up for the program at a later date.** The current practice is to cancel order numbers and create new order numbers when drop-outs re-enroll in the program. Because of this, many customers have several order numbers representing multiple cancellations/pickups. Some customers had cancellations *after* pickups occurred. Furthermore, some orders included a cancel date but then also included an entry (in the "Uc" and "PX" fields) indicating that the appliance was collected. Finally, some customers have more than one account number, which also creates a challenge when trying to match up records to determine if customers who cancel eventually participate. Although not impossible, it is difficult and time-consuming to determine whether those with cancelled appointments eventually participate in the program. The evaluation team recommends that JACO or AEP Ohio develop a system to more easily track the status of program drop-outs and whether they eventually participate in the program. JACO should consider tracking one order number for each appliance, instead of cancelling order numbers and creating new order numbers when a drop-out re-enrolls in the program.
5. **The evaluation team recommends that JACO alter their data entry process so that it only allows appropriate configuration options for freezers and refrigerators as defined by the regression model.** Forty-five percent of freezers were incorrectly labeled as "single-door," which is a term used only to describe refrigerators in the regression model used for the calculation of savings. Without first correcting this in the program tracking data, energy savings could be under-estimated. Additionally, AEP Ohio and JACO should come to an agreement on how terms tracked in the program data are defined, and how these responses are collected in the field. For example, altering how customers are asked whether their appliance is currently in use vs. in use part of the year will contribute to more accurate savings estimates.

6. **The Program should examine ways to vary the incentive level seasonally.** Although the effect of the increased incentive cannot be isolated from other factors, such as a typical summer increase in appliance removals, it appears that the increased incentive likely had at least a temporary effect. Program enrollments increased substantially in May 2010, when the incentive level increased from \$25 per appliance to \$50 per appliance. Because appliance recycling programs traditionally show a natural increase in participation in spring and summer, AEP Ohio may want to consider only offering the increased incentive during fall and winter months when participation would normally decrease. AEP Ohio is strongly encouraged to conduct research to examine the potential effect of seasonal variations in the incentive level.

Section 1. Introduction and Purpose of Study

1.1 *Evaluation Objectives*

This report presents the findings from the impact and process evaluations of AEP Ohio's residential Appliance Recycling Program for Program Year 2010 (PY 2010). The objectives of the evaluation were to: (1) quantify energy and peak demand savings impacts as a result of the program during PY 2010, and (2) determine key process-related program strengths and weaknesses, and provide recommendations to improve the program. Specific evaluation questions are summarized in Section 3.2.

1.2 *Evaluation Methods*

For this report, program impacts for the Appliance Recycling Program were evaluated in terms of energy and demand savings. Both energy and demand savings were estimated using a regression equation to calculate refrigerator and freezer unit energy consumption (UEC) in kilowatt hours (kWh). This regression equation was based on a database of over 1,600 previously metered units in California utilizing a DOE lab metering approach.¹ The regression equation estimates usage as a function of unit characteristics including age, size, configuration, defrost mode, and label amps. The characteristics of units collected by JACO for AEP Ohio were entered into the model to estimate unit energy consumption (UEC), representing kWh savings that are specific to the AEP Ohio program.

The adjusted (ex-post) gross demand savings were calculated using a regression equation to calculate the unit demand consumption (UDC) for each unit recycled through the program, aggregating these savings to the program level and then applying a summer use adjustment factor (SUAF) based on how many units were reported to be operational in the summer, when peak demand occurs.

Prior to any data collection efforts, the evaluation team first analyzed program documentation (including marketing materials and program operations and procedures manuals) and the program tracking data, which contains information on all appliances recycled through the Appliance Recycling Program. The results of this initial analysis informed both the process and impact analyses conducted for this study.

In addition to the analysis of tracking data and program documentation, process evaluation findings were based on several primary data collection activities, summarized in Table 1-1. Primary data collection efforts included in-depth phone interviews with program staff at AEP Ohio and the program implementers (JACO and Appliance Distribution), and in-depth

¹ Evaluation Study of the 2004-05 Statewide Residential Appliance Recycling Program, Final Report. April 2008. ADM Associates, Inc. http://www.calmac.org/publications/EM&V_Study_for_2004-2005_Statewide_RARP_-_Final_Report.pdf

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interviews with near-participants (i.e., customers who enrolled in the program but did not have an appliance collected). Phone surveys were also conducted with program participants. Additionally, secondary analysis was conducted of baseline survey data collected from a general population of AEP Ohio customers located throughout the service territories. Impact evaluation findings were based on the assessment of the tracking data, coupled with results from the phone surveys with participants.

Table 1-1: Summary of Data Collection Activities

Data Collection Type	Targeted Population	Supported Evaluation Activities
Tracking Data Review	All program participants	Impact and Process Evaluation
In-depth Phone Interviews	Program staff	Process Evaluation
	Near-participants	Process Evaluation
Phone Surveys	All program participants	Impact and Process Evaluation
Baseline Survey Analysis	General population of the AEP Ohio service territories	Process Evaluation

Section 2. Program Description and Theory

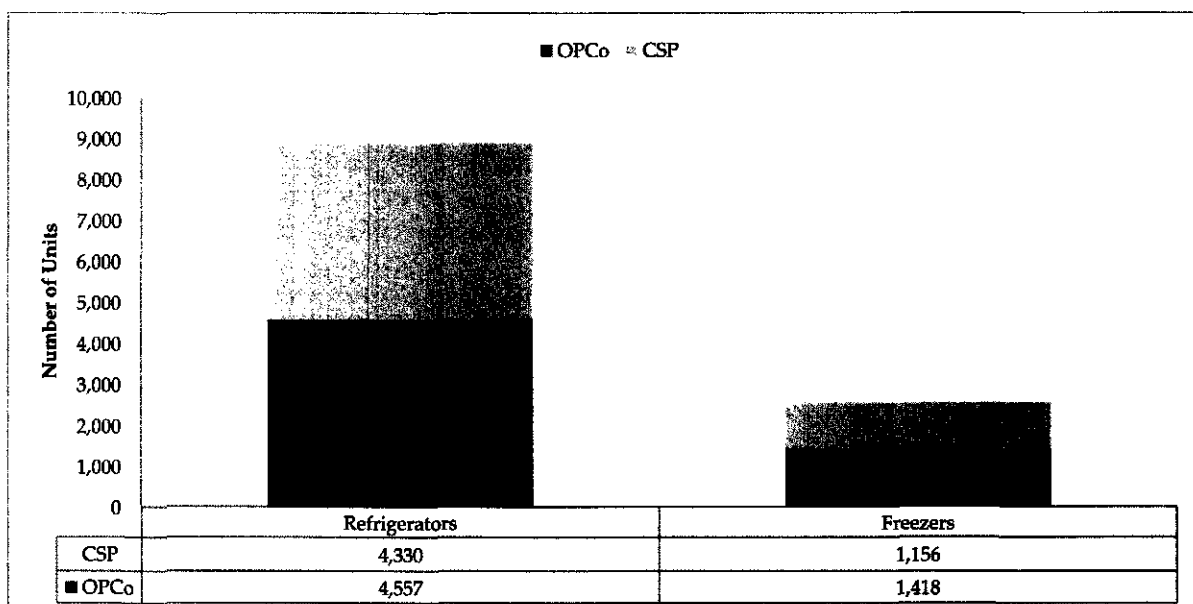
This section provides a description of the Appliance Recycling Program, as well as a discussion of the underlying theory of the program.

2.1 Program Description

The objective of the AEP Ohio Appliance Recycling Program is to collect and recycle old, inefficient refrigerators and freezers in order to reduce the number of secondary working appliances in operation, and therefore reduce energy use and peak demand. AEP Ohio offers free removal and recycling of refrigerators and freezers, and provides a cash incentive to customers who retire these appliances. The incentives, including \$25 per appliance (increased to a \$50 payment from May through December of 2010) and free pick-up of the old appliances, are available to customers of both AEP Ohio service territories: Ohio Power Company (OPCo) and Columbus Southern Power (CSP). For a customer to qualify, the refrigerator and/or freezer must be between 10 and 30 cubic feet in size, and empty and operational at the time of pickup.

For 2010, the Appliance Recycling Program aimed to reduce energy usage by 8,324 megawatt hours (MWh) and peak demand by 1.004 megawatts (MW). As discussed in Section 4, these goals were exceeded due to large numbers of collected appliances and a higher achieved per-unit savings than originally forecasted. In 2010, the program collected a total of 11,461 appliances (8,887 refrigerators and 2,574 freezers). As shown in Figure 2-1 these appliances were split fairly equally between the two service territories.

Figure 2-1. Appliance Recycling Units Collected



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In the absence of the AEP Ohio Appliance Recycling Program, customers who purchase new refrigerators or freezers would be more likely to either: (1) retain their old appliance and use it as a spare; or (2) sell or give away their old appliance to someone else. Some reasons that customers keep secondary appliances may include year-round extra cold storage or increased capacity for particular times of the year like holidays. Customers who decide to sell or give away their old appliance after installing a new primary appliance may do so for the monetary incentive, and because this saves a trip to the dump or recycling center, avoiding hassle and dumping costs. Selling or giving away the old appliance means that an inefficient appliance remains in use (albeit by another, unknown customer) and continues to contribute to energy use and peak demand within the AEP Ohio service territory. The program aims to motivate these customers to sign up for the program and have these appliances removed and recycled rather than going into the secondary market.

The implementation contractor, JACO Environmental, provides complete implementation services, including verification of customer eligibility, scheduling of appliance pick-up, collection of appliances from the homes of customers, transfer to a recycling facility (performed by subcontractor Appliance Distribution), and incentive processing and payment. The implementation contractor also handles the development of marketing materials, media placement and promotion of the program, and data tracking and reporting for the appliance scheduling and collection.

In addition to direct pick-up by a program contractor, the Appliance Recycling Program also recycles some units through partnership with retail stores, as working appliances picked up by these stores may otherwise find their way back to the secondary market. The Appliance Recycling Program began a pilot program to partner with retailers in August 2010. With this pilot program, the retailer promotes the program to customers purchasing new appliances from the retailer. The retailer then collects the old appliance(s) when they deliver the new appliance(s) to the customer. The pilot operated with just one retailer, Sears, in 2010.

2.2 *Program Theory and Logic Model*

Theory-based evaluation serves as a means for understanding and documenting the *causality* of program results. In using a theory-based evaluation framework, the evaluation team can identify the impacts of a particular program, and also assess whether these impacts are likely to be replicable through an on-going program. Logic Models are often developed as a visual tool to document the program theory. The creation of such a model serves to develop a common understanding of program activities and intended outcomes among program staff and between AEP Ohio and the evaluator. With this foundation, the evaluation team can then make informed choices related to the prioritization and focus of evaluation resources.

Program logic models provide a framework for an evaluation because they highlight key linkages between program activities and expected outcomes. The process and impact evaluations focus on these linkages, particularly those on the critical path to achieving savings goals. The evaluation identifies which linkages in the program logic model are working

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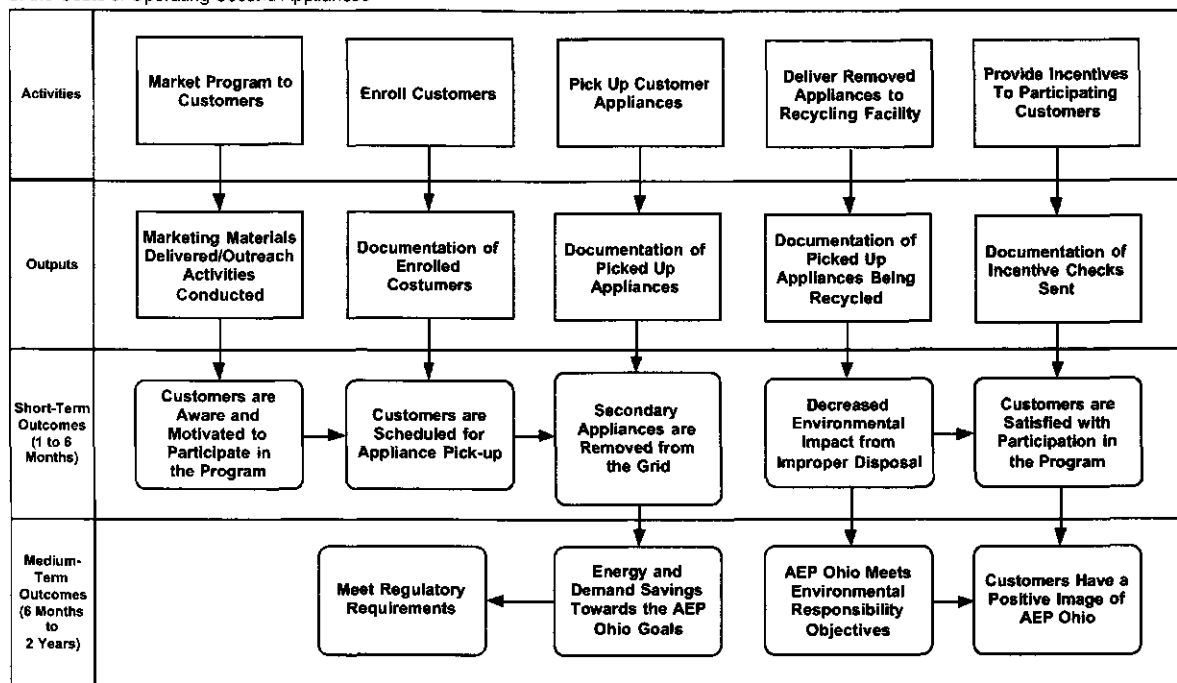
properly and which linkage(s) may be weak or broken. Thus, if the program falls short of achieving its intended short, mid, or long-term outcome(s), the source of the shortfall can be pinpointed and remedied.

2.2.1 Program Logic Model Diagram

The underlying theory for the Appliance Recycling Program is articulated in the Logic Model provided in Figure 2-2. The evaluation team created the logic model based on a review of program documentation and discussions with program management and implementers. The first row of the Logic Model diagram includes groups of program activities. Outputs from each of these activities is documented, followed by expected short-term (1 – 6 months) and medium-term (6 months – 2 years) outcomes.

Figure 2-2. AEP Ohio Appliance Recycling Program Logic Model

Inputs: AEP Ohio Funding for Program Marketing, Incentive Payments and Appliance Pick-Up, Staff Resources and Prior Experience in Developing and Implementing Similar Programs, Relationships Between The Implementer and The Subcontractors, Experience of the Program Implementers with Similar Programs, Awareness and Credibility of AEP Ohio Companies Among Residential Consumers, Customer Awareness of the Costs of Operating Second Appliances



External Influences: Macroeconomic Conditions that Affect the Willingness of Residential Customers to Operate Second Appliances or Replace Inefficient Appliances, Prior Residential Customer Awareness of The Costs of Operating Second Appliances, Weather and Associated Impacts on Customer Actions and Energy Bills, Electricity Prices, Customer Perceptions of Energy and Global Climate Change Issues, Cost/Performance/Availability of New or More Efficient Appliances, Perceptions of the Value of Non-Energy Impacts, Federal Energy Policies, Environmental Standards, Changes in State Political Priorities and Regulations, Other Appliance Recycling Programs

2.2.2 Logic Model: Program Activities

The representation of program *activities* within the logic model is intended to include all of the major elements of the program design. The *outputs* of these activities then serve to enable the short- and medium-term *outcomes* for the program. Energy and peak demand savings represent the ultimate outcome from this program, resulting from a number of activities performed by AEP Ohio and the implementation contractors.

Table 2-1 summarizes the primary program activities and sub-activities.

Table 2-1. Appliance Recycling Program Activities

Market Program to Customers	
»	JACO advertises the following aspects of the program to customers on behalf of AEP Ohio: <ul style="list-style-type: none"> – Free removal of the old appliance. – Cash incentive for giving up old appliance. – Potential costs from operating second appliances.
»	JACO advertises through: <ul style="list-style-type: none"> – Television advertisements. – Newspaper advertisements. – Bill inserts. – Energy-saving tips included with Home Energy Reports. – Community outreach events. – The <i>gridSMART Ohio</i> Website. – Flyers at in-store lighting demonstrations for the Efficient Products Program. – Earned (i.e., not purchased) media coverage.
»	The partnering retailer also promotes the program to customers who purchase new appliances, and provides customers with the phone number for the JACO call center.
Enroll Customers	
»	JACO operates a call center and web enrollment form to enroll customers.
»	If a customer enrolls online, a JACO representative calls the customer to schedule an appliance pick-up appointment.
»	If the customer calls to enroll, a JACO representative schedules the appliance pick-up appointment at that time over the phone.
»	The JACO representative also verifies that the customer is an AEP Ohio customer, that the appliance is in working condition, and that it meets size requirements.

Table 2-1, continued

Pick Up Customer Appliances
<ul style="list-style-type: none"> » JACO's subcontractor, Appliance Distribution, calls customers on the day of pick-up to confirm the appointment. » When Appliance Distribution picks up the appliance from the customer, they: <ul style="list-style-type: none"> – Ensure it is functional by plugging it in. – Load the appliance onto the truck. – Record detailed information about the appliance (e.g., size, model, year, type of unit, location where used, labeled amperage, etc.) and take a photograph of the unit. – Disable the appliance (e.g., cut the power cord, damage the cold control). » The partnering retailer also picks up qualified units for customers that have enrolled in the program when delivering new appliances to customers, which they take to their warehouse where Appliance Distribution then picks them up.
Deliver Removed Appliances to Recycling Facility
<ul style="list-style-type: none"> » Appliance Distribution delivers the appliances to subcontractor Univar Chemical Company. » Univar Chemical Company removes hazardous liquids from the appliance and arranges proper disposal. » The remaining 95 percent of appliance components are transported to regional recyclers for recycling.
Provide Incentives to Participating Customers
<ul style="list-style-type: none"> » Within 28 days after pick-up, JACO sends a check to the customer in the amount of \$25 (or \$50 as of May 2010) for each appliance recycled. » JACO pays participating retailers a \$20 fee for every unit collected for the Program. Customers still receive the full incentive, and AEP pays the same regardless of whether the appliance is picked up by Appliance Distribution or a retailer. » JACO sends invoices to AEP Ohio for the cost of pick-ups and incentive payments.

2.2.3 Logic Model: Program Inputs and External Influences

In addition to the activities performed by the utility and implementer, the ability of the Appliance Recycling Program to accomplish its goals depends in part on the level and quality of inputs that go into these efforts. External influences can help or hinder the achievement of anticipated outcomes. Key program inputs and potential external influences are shown in Table 2-2.

Table 2-2. Program Inputs and Potential External Influences

Program Inputs
<ul style="list-style-type: none"> » AEP Ohio funding for program marketing, incentive payments and appliance pick-up. » Staff resources and prior experience in developing and implementing similar programs. » Relationships between the implementer and the subcontractors. » Experience of the program implementers with similar programs. » Awareness and credibility of AEP Ohio among residential customers. » Customer awareness of the costs of operating second appliances.
External Influences and Other Factors
<ul style="list-style-type: none"> » Macroeconomic conditions that affect the willingness of residential customers to operate second appliances or replace inefficient appliances. » Prior residential customer awareness of the costs of operating second appliances. » Weather and associated impacts on customer actions and energy bills. » Electricity prices. » Customer perceptions of energy and global climate change issues. » Cost, performance and availability of new or more efficient appliances. » Perceptions of the value of non-energy impacts. » Federal energy policies. » Environmental standards. » Changes in state political priorities and regulations. » Other appliance recycling programs.

2.2.4 Logic Model: Program Outputs, Outcomes, and Associated Measurement Indicators

It is important to distinguish between outputs and outcomes. For the purposes of the logic model, outputs are defined as the immediate results from specific program activities. These results are typically easily identified and can often be counted by reviewing program records.

Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with the AEP Ohio program activities and will vary depending on the time period being assessed. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated short, intermediate and long-term program outcomes.

The following tables list outputs (Table 2-3) and outcomes (Table 2-4), taken directly from the logic model and associated measurement indicators. For each indicator, a proposed data source or collection approach is presented.

Table 2-3. Program Outputs, Associated Indicator and Potential Data Sources

Outputs (< 1 year)	Indicators	Data Sources and Potential Collection Approaches
Marketing materials delivered/ outreach activities conducted	<ul style="list-style-type: none"> » Marketing materials developed. » TV and newspaper spots. » Bill inserts sent. » Content on <i>gridSMART Ohio</i> website. » Signage present at Efficient Products in-store demonstrations. » Home Energy Reports containing appliance recycling tips. 	<ul style="list-style-type: none"> » Interviews with program staff. » Marketing materials developed. » <i>gridSMART Ohio</i> website. » Documentation of marketing activities/outreach.
Documentation of number of enrolled customers	Number of pick-ups scheduled	Program tracking data
Documentation of picked up appliances	Number of pick-ups completed	Program tracking data
Documentation of picked up appliances being recycled	Number of appliances recycled	Program tracking data
Documentation of incentive checks sent	Number of incentive checks sent	Program tracking data

Table 2-4. Program Outcomes, Associated Indicators and Potential Data Sources

Outcomes	Indicators	Data Sources and Potential Collection Approaches
	Short-Term (1-6 months)	
Customers are aware of and sign up for the program	<ul style="list-style-type: none"> » Customer awareness of the program. » Number of customers who contact JACO and sign up for the program. 	<ul style="list-style-type: none"> » Program tracking data. » Baseline customer survey. » Non-participant survey.
Customers are scheduled for appliance pick-up	Number of customers JACO schedules for pick-up	Program tracking data
Secondary appliances are removed from the grid	Number of appliances picked up by JACO	Program tracking data
Decreased environmental impact from improper disposal	The number of appliances that are recycled appropriately	Program tracking data
Customers are satisfied with participation in program	Customer satisfaction indicators	<ul style="list-style-type: none"> » Participant surveys. » Non-participant/ near-participant survey.
Medium-Term (6 months – 2 years)		
Energy and demand savings towards the AEP Ohio goals	kW and kWh savings	<ul style="list-style-type: none"> » Program tracking data. » Participant surveys. » Impact calculations.
AEP Ohio meets environmental responsibility objectives	95% of each unit is recycled and chemicals are properly disposed	Program tracking data
Customers have a positive image of AEP Ohio	Customer satisfaction ratings	Participant surveys
Regulatory requirements are met	Cost effectiveness of kW and kWh savings	<ul style="list-style-type: none"> » Program tracking data. » Program evaluation data. » Cost-benefit modeling.

2.2.5 Potential Research Issues for Evaluation Planning

As indicated in the program logic model, the critical paths for achieving energy and demand savings goals for this program include:

- » Conducting marketing and outreach activities so that customers are aware of the benefits of the Appliance Recycling Program. This includes the benefits customers get from reduced electricity bills, along with the incentive payment and free pick-up, as all of these aspects will motivate customers to retire their secondary units.

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- » Successfully removing appliances from enrolled homes of the customers. This activity includes making sure all of the steps in this process are working: enrolling customers, scheduling an appointment, picking up the appliance at the scheduled time, properly disposing of the appliance and sending the customers their incentive check. These paths lead to satisfaction in the program and an improved image of AEP Ohio by customers.

Based on this assessment of the AEP Ohio Appliance Recycling Program, a number of research issues were identified. However, the logic model development occurred late in the 2010 evaluation, after evaluation plans were finalized and data collection was well underway. Because of this timing, any new research issues that were identified through the logic model review were instead considered for recommendations for additional research for the 2011 program year. These recommendations are included in Section 5.3. The evaluation questions that were developed for the 2010 program evaluation are discussed in Section 3.2

Section 3. 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 data collection tasks, and finally, the methods used to analyze the impact and process data.

3.1 Overview of Approach

This evaluation was driven by two overarching objectives: (1) determine the impacts of the AEP Appliance Recycling Program in terms of energy and demand savings, and (2) evaluate the effectiveness of program processes and identify any process-related barriers to program success. To meet the dual objectives, the evaluation team undertook the following activities:

1. **Evaluation Questions.** Established key evaluation questions from: (1) the development of the 2010 evaluation plan with AEP Ohio staff, and (2) a review of the key outcomes of the 2009 evaluation for the first year of the program.
2. **Tracking Data Review.** Reviewed the program tracking data collected by JACO and provided to the evaluation team by AEP Ohio.
3. **Primary Data Collection.** Performed primary data collection, including: (1) interviews with program staff, (2) interviews with near-participant customers (i.e., those who enrolled for the program but did not have an appliance collected), and (3) surveys of participating customers. Analysis of a general population baseline survey with a random sample of all AEP Ohio customers was also conducted.
4. **Methods Used to Analyze Impact Data.** Determined program impacts by applying a regression model to the program tracking data to determine the estimated unit energy consumption (UEC) of each appliance collected through the program. The evaluation team then used the results of the participant surveys and secondary data sources to make adjustments to the UEC values to calculate the ex-post gross energy savings and the ex-post demand savings.
5. **Methods Used to Analyze Process Data.** Assessed the effectiveness of the program processes by analyzing program documents, in-depth interview data, and participant survey data.

3.2 Evaluation Questions

The evaluation sought to answer the following key research questions developed for the evaluation plan:

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Impact Questions

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

Process Questions

1. What is the effectiveness of the program implementation, design, and delivery processes?
2. How effective were the marketing and outreach? How do customers become aware of the program? Are marketing efforts generating sufficient participation?
3. What are key barriers to program participation? How can these barriers be circumvented?
4. What are the current program challenges and how are these being addressed?
5. Have goals related to program implementation, customer satisfaction, and marketing efficacy been established? Have metrics been developed and plans for collection of the metrics established to track progress towards goal? How often do program managers review reports clarifying progress towards goals?
6. Is the program tracking system accurate and adequate? What types of quality assurance and control systems are in place?
7. For the pilot program with increased incentives, was demand increased in proportion to the increased costs of incentives? Should AEP Ohio continue to offer this higher level of incentive throughout the program?
8. Has the program implementation changed from the original plan? If so, how, why, and was this an advantageous change?
9. Has AEP Ohio addressed findings and implemented recommendations of the 2009 evaluation into the 2010 program? If not, why not?

3.3 *Tracking Data Review*

The program tracking data is critical for determining the impacts of the Appliance Recycling Program, as it describes the number and types of appliances collected through the program. Thus, reviewing the tracking system is important for calculating program impacts and developing recommendations to improve the processes of the program.

The tracking data collected by JACO was provided by AEP Ohio to the evaluation team for review. First, the evaluation team determined key data fields essential for consideration in the impact and process evaluations. Next, the team examined frequency distributions for each of the key fields, identifying missing, incomplete, or inconsistent data. Finally, the team formulated assumptions and developed correction factors used in subsequent analyses. The result was a more complete and accurate evaluation and assessment of the impacts of the Appliance Recycling Program.

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The tracking review also included additional assessments of the data, including:

- » Analysis of the key characteristics (e.g. age, size, model) of appliances recycled through the program.
- » Analysis of duplicate account numbers to determine how many customers recycled more than one appliance through the program.
- » Formulation of recommendations for improvements to the tracking system to increase the quality of data for future impact and process evaluations.

The assessment of the tracking data is discussed in part alongside the impact analysis in Section 4.1 where program activity is discussed along with the necessary adjustments that were made to account for missing or erroneous data. In addition, further process findings regarding the program-tracking systems and their effectiveness are discussed in Section 4.3.

3.4 *Primary Data Collection*

To determine answers for the key research questions in the evaluation, the evaluation team conducted a series of data collection activities. Qualitative data were collected through in-depth interviews with program staff and with “near-participants” (those who signed up for the program but did not actually recycle an appliance). Quantitative data were collected through telephone surveys with program participants who had at least one appliance recycled.

In lieu of a non-participant survey specific to Appliance Recycling evaluation, the evaluation team analyzed data from a cross-program baseline telephone survey of the general population of AEP Ohio customers. The baseline survey collected process information on refrigerator/freezer use and program awareness.

A summary of these data collection activities is provided in Table 3-1. The summary is followed by a discussion of the sample design and expected sampling error and precision for the data collection efforts undertaken with customers (i.e., the near-participant interviews, participant survey, and baseline survey).

The primary data collected was used to inform the impact and process evaluations as described in sections 4.2 and 4.3, respectively.

Table 3-1. Data Collection Activities

Data Collection Type	Targeted Population	Sample Frame	Sample Target	Sample Size	Timing
In-depth Phone Interviews	AEP Ohio Program Manager	Contact from AEP Ohio	Program Manager	1	October 2010
	JACO Environmental (Program Implementer)	Contacts from JACO	Senior Program Manager; Call Center Operation Manager	2	October - November 2010
	Appliance Distribution (JACO subcontractor)	Contact from JACO	President/ General Manager	1	November 2010
	Near-Participants	Tracking Database	Random sample of near-participants	40	October - November 2010
Phone Surveys	All Program Participants	Tracking Database	Stratified sample of program participants	317 Total 244 Refrigerators 73 Freezers	September - November 2010
Baseline Survey Analysis	All AEP Ohio Residential Customers	AEP Billing Data	Baseline survey of residential customers	386	September - November 2010

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3.4.1 Population and Sampling

This section discusses the methods used to select samples for the near-participant interviews, as well as the participant phone surveys and the cross-program baseline phone survey. Staff interviewees were selected by identifying those responsible for key program operations as well as those with insight into customer experiences.

Near-Participant Sampling Strategy

- » Near-participant data were collected in two “waves,” with the first sample of near-participant contacts coming from January – July, 2010 program tracking data. The second wave came from July – October 14, 2010 program tracking data. For the first wave, the evaluation team defined near-participants as customers who had an appointment cancelled through June 1, and had not rescheduled as of July 1. For the second wave, we defined near-participants as customers who had an appointment cancelled between July 2 and September 14, and had not rescheduled as of October 14.
- » The purpose of conducting the interviews in two waves was so that interviews could begin with only the first seven months of tracking data, and then continue with additional tracking data from later in the year. Additionally, the two waves allowed the evaluation team to add follow-up questions to the Wave 2 interviews related to key findings stemming from the Wave 1 interviews. In this way, data collection was approached in a more iterative process.
- » Near-participant respondents were randomly selected from each sample of contacts. The evaluation team completed 15 interviews with Wave 1 near-participants and 25 interviews with Wave 2 participants. Results of near-participant interviews were not intended to be statistically significant. Instead, the interviews were intended to provide rich qualitative data that would shed light on barriers to participation. Thus, the total sample size of 40 was chosen so as to be sufficient to provide this type of qualitative data, not to be statistically significant or generalize to the overall population.

Participant Sampling Strategy

- » The sample of Appliance Recycling Program participants was randomly selected from the Program Tracking Database provided by AEP Ohio. The sample was stratified by appliance type and quotas were set based on the estimated proportion of each stratum in the general population. Data cleaning was conducted before the sample was pulled from the database to ensure data quality and completeness of required information. For

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example, records containing invalid phone numbers were excluded because these participants could not be contacted for the phone survey.²

Baseline Survey Sampling Strategy

- » The baseline survey was conducted with a random sample of the AEP Ohio customer population in fall 2010. Because the baseline survey was conducted with AEP Ohio customers in general, and was not specific to the evaluation of the Appliance Recycling Program, the sampling strategy and sampling error/expected precision are not discussed in this document.

3.4.2 Sampling Error/ Expected Precision

Because the evaluation began in the middle of the program year, the sample size for the participant survey could not be based on a known population of participants for the full program year. Instead, the evaluation team annualized the year-to-date program data reported in the AEP Ohio 7/12/2010 performance report to estimate the total participation level, as well as the breakdown by type of appliance collected (i.e., refrigerators with top freezer configuration, refrigerators with bottom freezer configuration, and stand-alone freezers). Table 3-2 shows the total PY 2010 population of appliances collected, the attained participant survey sample size, and the resulting sampling error of +/- 5.43 percent with a confidence level of 95 percent.

Table 3-2: PY 2010 Sample Size and Population-Level Sampling Error

Appliances Collected	PY 2010 Population Size (N)	Survey Sample Size (n)	Sampling Error (95% CI)
Refrigerators with top freezer configuration	4,600	145	8.01%
Refrigerators with another configuration (e.g., bottom freezer, side-by-side)	4,287	73	11.37%
Freezers	2,574	99	9.66%
Total	11,461	317	5.43%

Table 3-3 shows the final dispositions for the 1,306 program participants who were contacted at least once to complete the participant phone survey. As shown, the evaluation team completed surveys with 317 participants, reflecting an overall response rate of 24 percent. Only 10 percent of participants contacted refused to participate in the survey.

² Note, however, that records excluded for sample construction purposes were included in the analyses for the final impact assessment.

Table 3-3. Participant Survey Sample Disposition

Contact Disposition	Customers	Percent
Completes	317	24.3%
Unable to Reach	606	46.4%
Phone Number Issue	157	12.0%
Refusal	132	10.1%
Non-Specific Callback/Appointment Scheduled	58	4.4%
Language Barrier	18	1.4%
Appliance not picked up	5	0.4%
Electric company not AEP Ohio	5	0.4%
Quota met	5	0.4%
Respondent unaware of appliance details	3	0.2%
Total Participants Attempted to Contact	1,306	100.0%

3.5 *Methods Used to Analyze Impact Data*

The primary goal of the impact analysis was to determine the overall, gross energy and demand savings and the cost-effectiveness of the AEP Ohio Appliance Recycling Program. To meet this goal, the evaluation team utilized a modeling approach to calculate the basic UEC and UDC for each unit collected through the program. These results were then aggregated, and relevant adjustments were made to develop estimates of the program-wide adjusted (ex-post) gross energy and demand savings. The outputs of these calculations were then compared to the ex-ante savings claimed by the program to calculate the program realization rates. The remainder of this section outlines these calculations in detail.

3.5.1 Ex-Post Gross Energy Savings Calculation

The ex-post gross energy savings were calculated by modeling the UEC of each unit in the program tracking database and then making adjustments through use of an in situ adjustment factor (ISAF) and part-use factor (PUF), which account for the actual energy use in the home and the effects of customers that only use the appliances for part or the year, respectively. Equation 3-1 gives the full calculation of the ex-post gross energy savings including the referenced adjustments. An explanation of the calculation for the UEC, the in situ adjustment factor, and the part-use adjustment factor are discussed below.

Equation 3-1. Ex-Post Gross Energy Savings

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UEC Calculation

UECs were estimated using a regression model derived from a statewide California appliance recycling program evaluation, in which the actual in-home energy usage of over 1,600 appliance units was compared to DOE lab-metered testing results from the same units.³ Included in this model as continuous data are unit age, cubic feet, and label amps; included as categorical data are indicator variables describing the unit configuration (e.g. bottom freezer, side-by-side, single-door frost-free). The model and coefficients are shown in Equation 3-2 and detailed in Table 3-4. The model was applied to the AEP Ohio Appliance Recycling Program tracking data, resulting in an estimated UEC for each appliance recycled through the program.

Equation 3-2. Unit Energy Consumption

³ Evaluation Study of the 2004-05 Statewide Residential Appliance Recycling Program, Final Report. April 2008. ADM Associates, Inc. http://www.calmac.org/publications/EM&V_Study_for_2004-2005_Statewide_RARP_-_Final_Report.pdf

Table 3-4. Regression Model Coefficients of DOE Annual UEC for Recycled Appliances

Variable Description	Variable Name	Coefficient	t-value ^(a)
Intercept	-	-422.4106	-0.77
Freezer binary (= 1 if freezer)	<i>Freezer</i>	169.0536	1.84
Bottom freezer binary (= 1 if unit is bottom freezer)	<i>BottomFreezer</i>	595.3794	2.91
Side by side binary (= 1 if unit is side-by-side)	<i>SidebySide</i>	-129.3553	-0.34
Single door binary (= 1 if unit is single door)	<i>SingleDoor</i>	-417.1026	-4.73
Frost-free binary (= 1 if unit is frost-free)	<i>FrostFree</i>	-445.0348	-1.00
Natural log of unit age ^(b)	<i>ln(UnitAge)</i>	405.2134	2.15
Cubic Feet of unit (per tracking system data)	<i>CubicFeet</i>	43.6478	4.59
Label Amps	<i>LabelAmps</i>	104.1018	4.83
Freezer binary x frost-free binary	<i>Freezer x FrostFree</i>	319.1097	1.94
Bottom freezer binary x frost-free binary	<i>BottomFreezer x FrostFree</i>	-302.0484	-1.28
Side by side binary x frost-free binary	<i>SideBySide x FrostFree</i>	1451.3206	3.80
Side-side binary x amps	<i>SideBySide x LabelAmps</i>	-126.4332	-2.88
Frost-free binary x ln(age) ^(b)	<i>FrostFree x ln(UnitAge)</i>	299.8206	2.09
Binary if unit age is 15 years or greater ^(b)	<i>OlderThan15</i>	1197.8349	2.61
Ln age x age 15 or greater binary ^(b)	<i>ln(UnitAge) x UnitOlderThan15</i>	-524.9782	-3.08

a. T-values are a statistic for measuring how statistically significant an independent variable is in explaining a dependent variable. T-values are calculated by dividing the estimated regression coefficient by its standard error. In general, a t-value with an absolute value of 1.96 or higher indicates that a coefficient is significant at the 95th confidence level. In this chart, t-values are shown to describe the significance of variables in the original California study's regression and are different for the analysis conducted for AEP Ohio.

b. Unit age coefficients capture how appliance performance degrades over time. The unit age coefficients are related only to an appliance's age, not its energy consumption in specific years. Thus, the coefficients do not account for changes in appliance vintages, such as when Federal Standards changed in 1993. Therefore, the coefficients remain constant and do not change when the program evaluation year changes.

In Situ Adjustment for Energy Savings

The evaluation team applied an in situ adjustment because the energy a refrigerator or freezer actually uses when installed inside a home has been found to be different than that measured in a laboratory setting. The UEC values calculated from the regression model are based on energy usage data that was measured in tightly-controlled DOE laboratory settings not representative of true operating environments (e.g., 90 degree F indoor air temperature, no door openings) so the evaluation team used the in situ adjustment factor to ensure the savings calculations were characteristic of conditions in residential homes. To develop the in situ adjustment factor for

this evaluation, the evaluation team studied two California studies that involved dual metering of appliances in operation and using the DOE test procedure. From these studies, the evaluation team estimated an in situ adjustment factor deemed appropriate for the AEP Ohio service territory.

Part-Use Adjustment for Energy Savings

An adjustment was also needed to account for the fact that secondary appliances are often non-operational during portions of the year. For example, appliances may not be used during the winter months or may only be used for special occasions. The evaluation team therefore determined a part-use factor to adjust the annualized UEC estimates to better reflect the number of months the recycled unit would have actually operated had it not been removed by the program. The adjustment is particularly important for the AEP Ohio program, because the refrigerators and freezers located in garages may be shut down during the winter months, when cold weather reduces or eliminates the need to run the unit.

The evaluation team calculated separate part-use factors for both refrigerators and freezers. The part-use factor is based on the average of self-reported program participant survey data for the number of months over the year that the appliance would have been plugged in and running in the absence of the program (i.e., if the appliance had not been removed) divided by 12 months, as shown in Equation 3-3.

Equation 3-3. Part-Use Adjustment

For refrigerators, the program participant survey asked whether appliances were used as primary (i.e., always in use) or secondary/spare units. This evaluation assumes that any unit that would have otherwise been kept in use in the absence of the program would have been used as a secondary and not as a primary refrigerator. Therefore, the part-use factor for all refrigerators recycled through the program is set at the average part-use reported by participants who disposed of a secondary refrigerator.

For freezers, the survey did not distinguish between primary and secondary units (all units were assumed to be secondary to a primary refrigerator that also includes a small freezer as part of the unit).

3.5.2 Ex-Post Gross Demand Savings Calculation

The adjusted (ex-post) gross demand savings were calculated using a regression equation to calculate the unit demand consumption (UDC) for each unit recycled through the program, aggregating these savings to the program level and then applying a summer use adjustment factor (SUAF) based on how many units were reported to be operational in the summer, when peak demand occurs. Equation 3-4 shows the full calculation of the ex-post gross demand savings from the UDC and the summer use adjustment factor. More information follows on the calculation of the UDC and the summer use adjustment factor.

Equation 3-4. Ex-post Gross Demand Savings

UDC Calculation

The UDC was calculated using a regression equation developed for a California study that developed refrigerator energy usage characteristics using both DOE testing methods and *in situ* metering.⁴ The regression equation calculates UDC as a function of the *in situ* UEC and the hourly outdoor air temperature. The regression coefficients are shown in Table 3-5.

Table 3-5. Demand Savings Regression Coefficients

Variable Description	Coefficient	t-Value ^(a)
Intercept	-0.03190	-12.80
Mean Hourly kWh	1.00020	235.10
Peak Outdoor Air Temperature	0.00047	13.40

a. *T-values are a statistic for measuring how statistically significant an independent variable is in explaining a dependent variable. T-values are calculated by dividing the estimated regression coefficient by its standard error. In general, a t-value with an absolute value of 1.96 or higher indicates that a coefficient is significant at the 95th confidence level. In this chart, t-values are shown to describe the significance of variables in the original California study's regression and are different for the analysis conducted for AEP Ohio.*

The regression equation relies on the outdoor air temperature at the time of the peak period. The peak period is defined as the average of 3-6 pm of summer weekdays from June through August by Commission Rules. For this analysis, the evaluation team received the system "coincident" peak times for each service territory from AEP Ohio. Next, the temperature within each service territory was determined at the hour that the coincident peak period occurred.

⁴ Residential Retrofit. High Impact Measure Evaluation Report. California Public Utility Commission. The Cadmus Group, Inc. February 8, 2010. http://www.calmac.org/publications/FinalResidentialRetroEvaluationReport_11.pdf

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Historic hourly temperatures for various cities in the AEP Ohio service territory were taken from Weather Underground,⁵ which references information from the National Weather Service.⁶ Several cities were referenced to develop an average temperature for each of the two service territories at the given peak hour.

The UDC is calculated for each recycled appliance by first dividing the in situ ex-post UEC by the number of hours in the year (8760 hours) to calculate the average energy usage of the unit over the year. Then, the calculated average energy and peak temperature () are multiplied by the appropriate coefficients within the regression equation. The calculation for determining the UDC is shown in Equation 3-5.

Equation 3-5. Unit Demand Consumption

Summer Peak Adjustment for Demand Impact Calculation

To account for the fact that not all AEP Ohio customers use their appliances during the summer peak, participant survey data was used to calculate the summer use adjustment factor based on the fraction of respondents who reported using their appliance during the summer, as indicated in Equation 3-6.

Equation 3-6. Summer Peak Adjustment Factor

3.5.3 Realization Rates Calculation Method

Realization rates (*RR*) for the adjusted (ex-post) gross energy and demand savings were calculated separately for each service territory. These rates were determined by dividing the ex-post gross program impacts (*Impacts_{ex-post}*) by the reported impacts for 2010 (*Impacts_{ex-ante}*), as shown in Equation 3-7.

Equation 3-7. Realization Rates

⁵ <http://www.wunderground.com>

⁶ <http://www.nws.noaa.gov>

3.6 *Methods Used to Analyze Process Data*

Following is a description of the qualitative and quantitative analyses undertaken to inform the process evaluation. Findings from the process analysis were then organized into themes as discussed in Section 4.3.

- » **Review of Program Documentation.** A review of program documents included copies of marketing materials, the draft Operations Manual, and the scope of work for the prime implementer, JACO. These documents were reviewed to understand the details of program processes before interviews with program staff. These documents were also used to construct the program logic model and to identify key evaluation priorities.
- » **In-depth Interviews with Program Staff (n = 3).** Qualitative data were analyzed with respect to the effectiveness/operational efficiency of various program processes, any changes made to implementation since 2009, and any challenges to program success. Rather than look solely for common themes across the three staff interviews, the evaluation team identified any potential challenges to program success, even if they were only identified by one staff person. The reason for this was twofold: (1) each staff person interviewed has a unique set of responsibilities and perspective that may not be visible to other staff we interviewed, and (2) it is better to over-identify potential risks than to overlook a risk that could end up being a substantial program challenge in the future.
- » **Participant Telephone Survey (n = 317).** Quantitative survey data were first reviewed for missing or erroneous data. Data were re-coded in some instances to disaggregate “other” responses or to combine similar responses into one category. Frequencies of quantitative responses were then tabulated with respect to program awareness, motivations for participating, and satisfaction with various aspects of the program. To evaluate the effectiveness of the increased incentive level, *t*-tests were conducted to determine if responses differed between those customers who received the \$25 incentive and those who received the \$50 incentive.
- » **In-depth Interviews with Near-Participants (n = 40).** The evaluation team conducted a systematic qualitative analysis of the 40 near-participant interviews. Common themes were identified with respect to reasons for cancellations and barriers to participation.

Section 4. Detailed Evaluation Findings

The AEP Ohio Appliance Recycling Program collected a total of 11,461 appliances in 2010, which amounted to an adjusted (ex-post) gross energy savings of 17,865 MWh and adjusted (ex-post) gross demand savings of 2.300 MW, exceeding the goals set by AEP Ohio. Program processes generally appear to be effective, and participants are highly satisfied with the program. There was some concern among program staff about the effectiveness of marketing efforts and the ability of the program to meet the contractual target, set with the implementer, for the number of units recycled. As a result, an increased incentive was offered from May through December, which appeared to at least temporarily increase participation, and a retailer partnership was begun in August, which has so far resulted in few participants. Further details of the program activity, impact evaluation, and process evaluation follow.

4.1 Program Activity

This section provides a summary of program activity, as well as a detailed description of characteristics of appliances collected through the 2010 AEP Ohio Appliance Recycling Program. It is important to understand the characteristics of appliances collected, because this information feeds directly into the calculations for determining program savings and impacts. Alongside the discussion of appliance characteristics is a description of any missing/erroneous information in the program tracking data, and how these data were treated for the subsequent impact analyses.

The AEP Ohio Appliance Recycling Program collected 11,461 appliances in 2010, 78 percent of which were refrigerators. This is a 235 percent increase from 2009, when the Appliance Recycling Program collected 4,881 units, albeit in less than a full year of program implementation.

Table 4-1 shows the breakdown of appliances collected by OPCo and CSP.

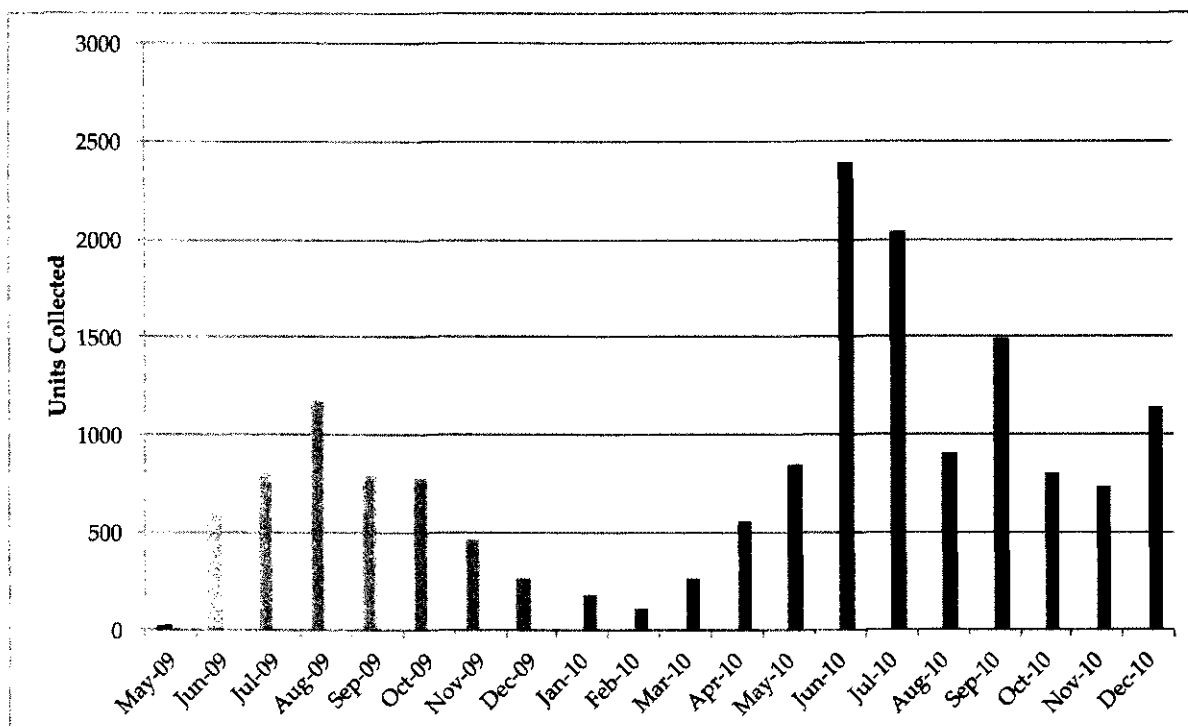
Table 4-1. Number of Appliances Recycled by Service Territory

Appliance Type	OPCo	CSP	Total
Refrigerators	4,557	4,330	8,887
Freezers	1,418	1,156	2,574
Total	5,975	5,486	11,461

4.1.1 Appliances Recycled by Month

Figure 4-1 shows the number of appliances recycled by month for both PY 2009 and PY 2010. This graph shows that 2010 recycling was generally not any higher than 2009 recycling until June of 2010, when the number of units recycled increased considerably. The spike in appliance collection in June 2010 was likely at least partly due to the incentive increase that occurred in May 2010. This incentive increase is discussed in more detail in Section 4.3.

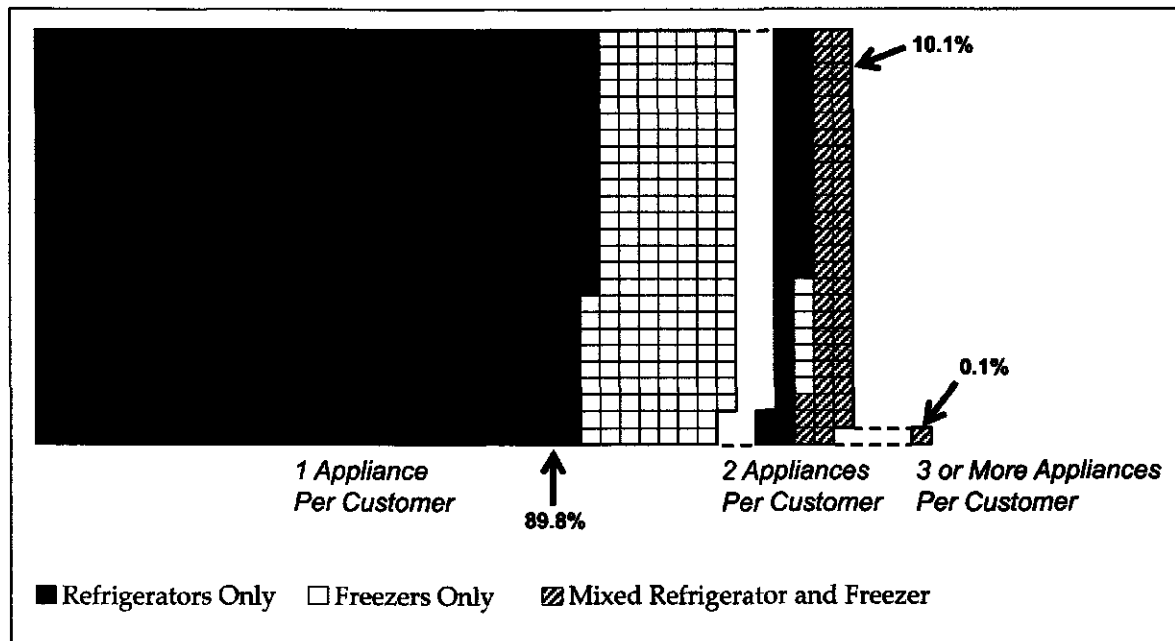
Figure 4-1. Appliances Recycled By Month in 2009 and 2010



4.1.2 Appliances Recycled per Participant

Figure 4-2 shows a further breakdown of the appliances collected from participants, as reported by the tracking data. Almost 90 percent of participants turned in only one appliance, while the rest turned in more than one unit. Most of these participants turned in just two appliances, and only 0.12 percent of respondents turned in three or more appliances. This participant breakdown is based on AEP Ohio customer account numbers, although there are at least 68 instances that were identified in which a customer has more than one account number, meaning a slightly greater number of units are being recycled by a single person.

Figure 4-2. Quantity of Appliances Turned In by Each Participant

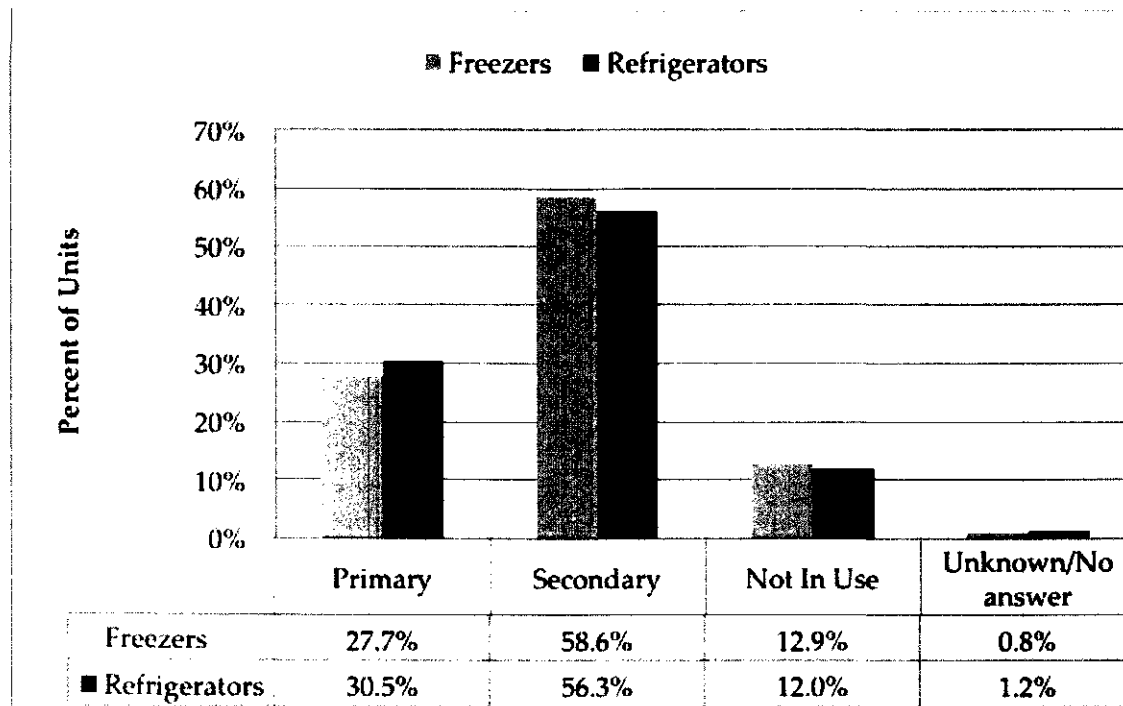


Note: Each square represent 0.1% of the program participants, or roughly 11 participants

4.1.3 Appliances Recycled by Primary or Secondary Units

The program tracking data included information on whether the recycled appliances were primary, secondary or unused appliances. Figure 4-3 shows that over half of the appliances picked up were secondary appliances, and that the reported characteristics were approximately equivalent for refrigerators and freezers, although it is not clear to the evaluation team exactly what the distinction between a primary and secondary freezer is, as the evaluation team would consider most residential stand-alone freezers as being secondary to a main refrigerator that includes a freezer.

Figure 4-3. Type of Units Collected in Tracking Data



The participant survey also collected information on appliance use. The number of appliances reported to be "not in use" in the participant survey data was only 5.7 percent, which is substantially lower than the roughly 12 percent reported in the program tracking data. Thus, the evaluation team cannot be sure of how JACO collected these data, and if, for instance, JACO might have coded a refrigerator that was not being used at the time of pick-up as "not in use," even if that refrigerator is used during part of the year. For this reason, the evaluation team counted savings from every appliance recycled. The adjustment for refrigerators not in use instead comes through the part-use factor (PUF) based on survey responses. All refrigerators in the tracking data will be attributed savings, but the PUF will include zero months per year usage for all units reporting no usage in the survey data.

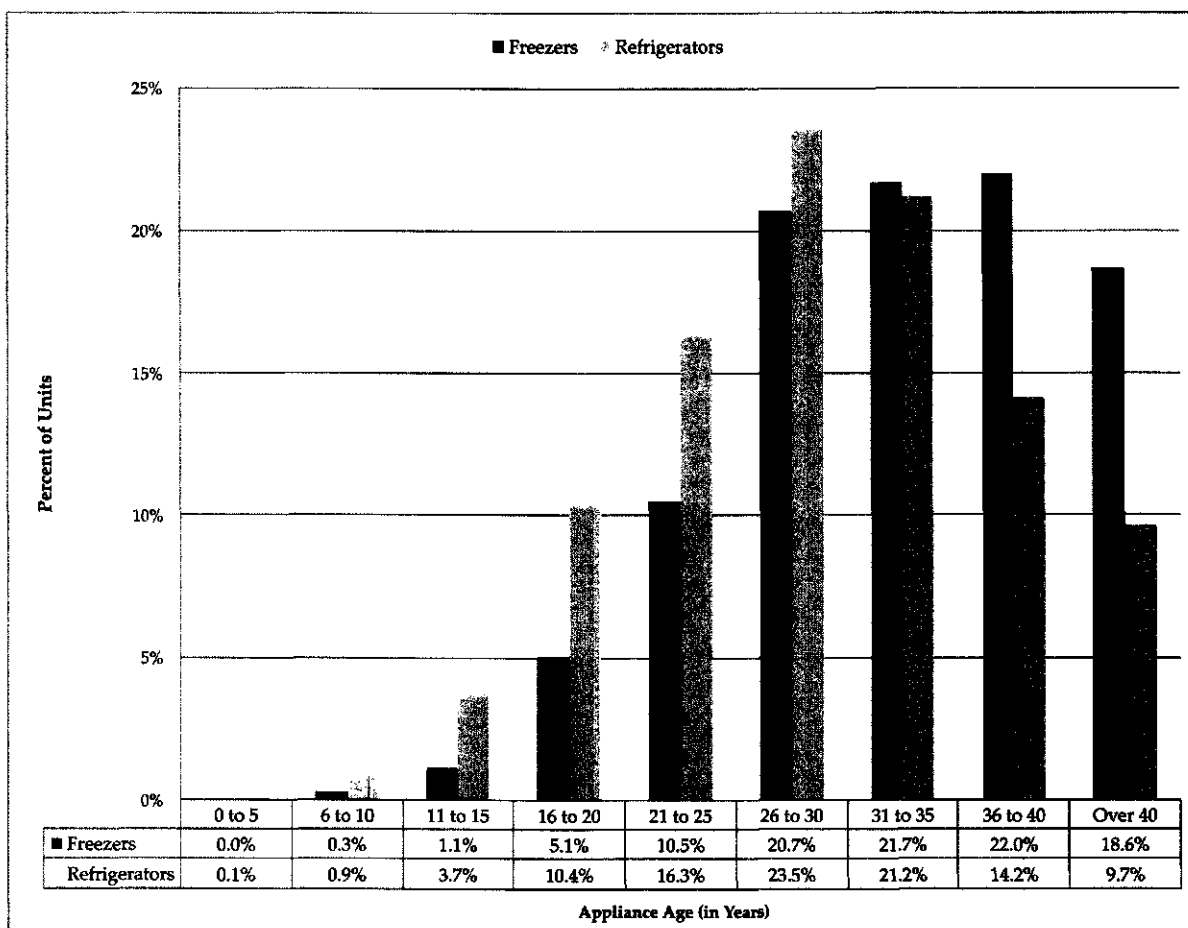
4.1.4 Appliances Recycled by Age

Appliance age (in years) is a key characteristic for energy savings of the program, as older and larger units use more electricity for two reasons:

1. Because of a change in Federal minimum energy efficiency standards in 1993, units built since that time are much more energy efficient and generally smaller than units made prior to the standards change.
2. As units age, efficiency typically degrades.

Figure 4-4 shows the breakdown of ages for both refrigerators and freezers collected by the program. The freezers collected tend to be older than the refrigerators, with the average ages for freezers and refrigerators being 34.4 and 30.2 years, respectively.

Figure 4-4. Age Characteristics of Recycled Appliances

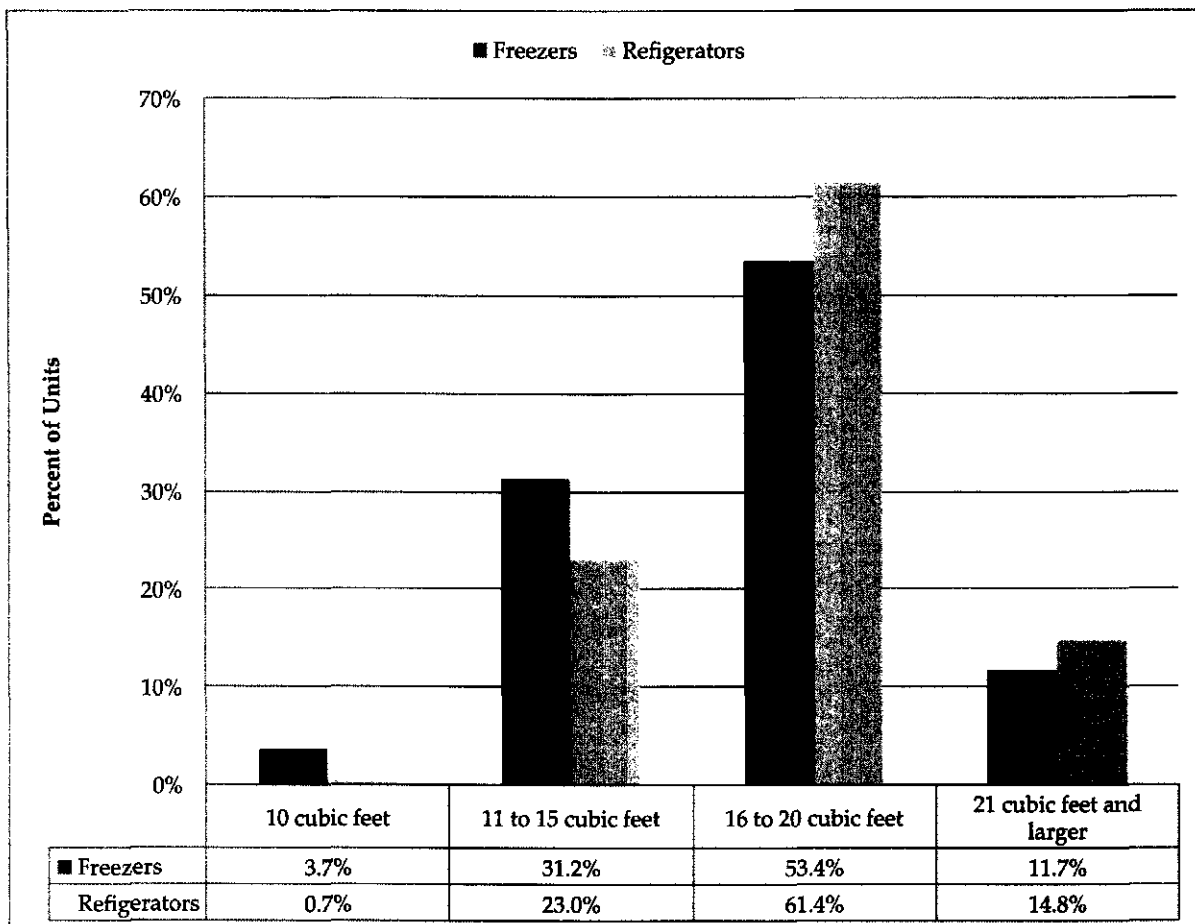


Based on the prior experience of the evaluation team with recycling programs, and because this is the first full year for the AEP Ohio Appliance Recycling Program, the appliances collected during PY 2010 have been primarily older and larger units than those collected via a more established program (as in California).

4.1.5 Appliances Recycled by Size

The size of the refrigerator or freezer is also a key determinant of the UEC, as larger units tend to use more energy. As shown in Figure 4-5, the majority of refrigerators picked up by JACO for recycling were over 16 cubic feet or larger in size. Recycled refrigerators were somewhat larger than freezers, and the distribution of freezers was slightly more diverse than refrigerators. There were no missing data on appliance size in the JACO data.

Figure 4-5. Size Characteristics of Recycled Appliances



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4.1.6 Appliances Recycled by Type Detail

Table 4-2 shows the number of appliances recycled by type, as reported in the program tracking data.

Table 4-2. Appliances Recycled by Type as Reported in the Program Tracking Data

Appliance Type	Type Detail	Number of Units	Percentage
Refrigerators	Side-by-Side	1,526	17.20%
	Single Door	707	8.00%
	Bottom Freezer	233	2.60%
	Top Freezer	4,600	51.80%
	Upright	1,739	19.60%
	Chest	53	0.60%
	Unknown	29	0.30%
	Total	8,887	100.00%
Freezers	Side-by-Side	14	0.50%
	Single Door	1,160	45.10%
	Bottom Freezer	5	0.20%
	Top Freezer	48	1.90%
	Upright	551	21.40%
	Chest	793	30.80%
	Unknown	3	0.10%
	Total	2,574	100.00%

As indicated in Section 3.5.1, the detailed appliance type is an important determinant of the UEC for an individual appliance, as coefficients are applied that add or detract from the UEC for freezers, “bottom freezer” refrigerators, “side by side” refrigerators, or “single door” refrigerators. In many instances, the program tracking data did not label the units consistently with how these labels are used in the regression analysis. These data included many freezers that were labeled as being “top freezer,” “bottom freezer,” “side by side,” and “single door” freezers, even though these labels should only apply to refrigerators. The labels “upright” or “chest” should only apply to freezers, but because each freezer is treated equally for the regression analysis (by applying only a “freezer” coefficient and no coefficient for “upright” or “chest” units) this is not an issue for the regression analysis.

The evaluation team made a number of assumptions to fit the existing data for refrigerators into the regression analysis. Because “top freezer” refrigerators made up the majority of the refrigerators with valid configuration types, the evaluation team made all invalid types (e.g., “upright,” “chest” and “unknown”) equal to “top freezer” for the analysis as shown in Table 4-3. This designation resulted in changes to just over 20 percent of the refrigerator units,

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with the vast majority of these (19.6 percent of all refrigerators) mistakenly labeled “upright”. This assumption may have resulted in slightly overestimated savings, because if some of these units were side-by-side (the second most frequent refrigerator type in the tracking data), the units would have had a slight negative coefficient applied in the regression analysis. Because mislabeled freezers had no influence on the calculation of the UECs for freezers, the evaluation team did not make adjustments to these data.

Table 4-3. Type Detail Refrigerator Assumptions for Regression Analysis

Appliance Type	Type Detail	Changed To
Refrigerators	Side-by-Side	Side-by-Side
	Single Door	Single Door
	Bottom Freezer	Bottom Freezer
	Top Freezer	Top Freezer
	Upright	
	Chest	
	Unknown	

4.1.7 Appliance by Defrost Type

Another important characteristic of appliances for the regression analysis was whether the unit was “frost-free” or not. A frost-free appliance uses a heating element and forced air to prevent the buildup of frost inside the appliance, which usually results in greater energy use than a comparable manual-defrost appliance. The tracking data contained four categories for frost settings: “frost-free,” “manual,” “part frost-free,” and “auto.” The regression equation only includes two options for this variable, however: “frost-free” and “manual.”

Table 4-4 summarizes the assumptions the evaluation team used to map the tracking data frost settings to what is needed for the regression.

Data on frost setting were missing or unknown for 32 units (28 refrigerators and 4 freezers). For refrigerators, this variable was changed to “Frost-Free” if the unit was less than 15 years old and “Manual” if the unit was 15 years or older. For freezers this was changed to “Manual” for all units.

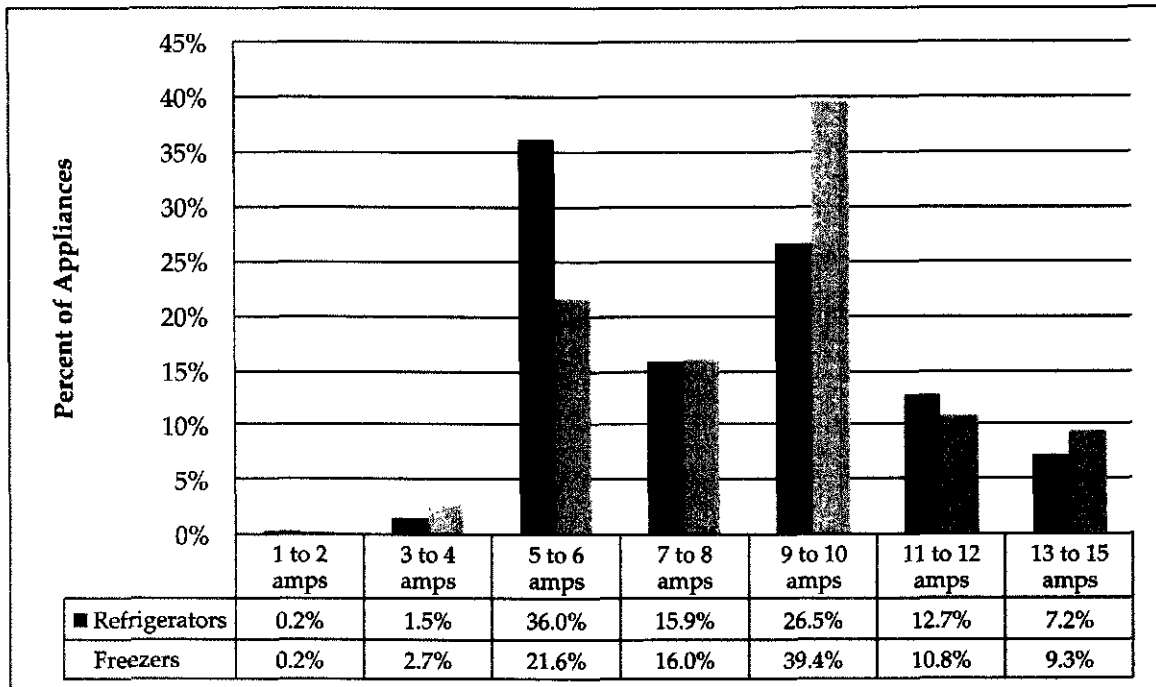
Table 4-4. Frost Setting Assumptions for Regression Analysis

Appliance Type	Type Detail	Number of Units	Percent	Changed To
Refrigerators	Frost-Free	3,811	42.88%	Frost-Free
	Manual	3,358	37.79%	Manual
	No Response	3	0.03%	Frost-Free
	Part Frost-Free	10	0.11%	Frost-Free
	Auto	1,680	18.90%	Frost-Free
	Unknown	25	0.28%	Frost-Free
	Total	8,887	100%	-
Freezers	Frost-Free	416	16.16%	Frost-Free
	Manual	1,972	76.61%	Manual
	No Response	-	-	Manual
	Part Frost-Free	3	0.12%	Frost-Free
	Auto	179	6.95%	Frost-Free
	Unknown	4	0.16%	Manual
	Total	2,574	100%	-

4.1.8 Appliances Recycled by Labeled Amperage

The JACO tracking data also included data on the operating amperages listed on the appliances. The distribution of amps is shown in Figure 4-6. While this information was not missing for any records, it did equal zero for 59 observations (0.5 percent of the data.) Because the amperage should not equal zero for any appliances recycled, the average of the labeled amperages for the specific appliance type was applied to these units. The average labeled amperage was 8.0 for refrigerators and 8.8 for freezers.

Figure 4-6. Labeled Amperage of Recycled Appliances



4.2 Impact Findings

This section begins with a summary of the evaluation-calculated energy and demand savings for 2010. The remainder of this section contains a discussion of how the savings were calculated, and also discusses reasons why energy savings and demand impacts for 2010 were considerably higher than those for 2009. This section ends with an examination of realization rates for the program, which compares the evaluation-calculated ex-post gross impacts with the program-reported ex-ante gross impacts.

4.2.1 Summary of Impact Findings

The adjusted (ex-post) gross energy and demand savings for 2010 were 17,865 MWh and 2.300 MW, respectively. This far exceeded the program goals of reducing energy usage by 8,324 MWh and peak demand by 1.004 MW. Program savings for the AEP Ohio service territory are summarized in Table 4-5.

Table 4-5. PY 2010 Ex-Post Energy and Demand Savings

Ex-Post Gross Energy Savings	Refrigerator	Freezer	Total
Columbus Southern Power – kWh	6,717,165	1,869,797	8,586,962
Ohio Power Company – kWh	6,919,376	2,359,085	9,278,461
Total	13,636,541	4,228,881	17,865,422
Ex-Post Gross Demand Savings	Refrigerator	Freezer	Total
Columbus Southern Power – kW	882	226	1,107
Ohio Power Company – kW	909	284	1,193
Total	1,790	510	2,300

4.2.2 Unadjusted Energy Savings

Table 4-6 shows the results of the modeling procedures discussed in Section 3.5.1 to compute the UEC estimates for each unit in the program tracking database. These UECs were then aggregated to determine the total energy savings from the regression analysis. This total was then divided by the total number of units to determine the average UEC per unit.

Table 4-6. Total Unadjusted Energy Savings

	Refrigerators	Freezers
Unadjusted Energy Savings (kWh)	20,053,737	6,142,166
Number of Units	+ 8,887	+ 2,574
Average UEC (kWh)	2,257	2,386

4.2.3 In Situ Adjustment Factor

Two recent California studies estimated an in situ adjustment by comparing the energy usage of appliances that were still in homes, to these same appliances measured at the DOE lab. The 2004-2005 California study⁷ from which the UEC regression analysis is derived estimates that refrigerators and freezers use roughly 10-15 percent less energy in the home than when tested using the DOE test procedure on which the regression analysis was based. A follow-up California study in 2006-2008⁸ found similar results; in situ results for secondary refrigerators ranged from being roughly equivalent to the DOE results to being 20 percent lower in energy use, with larger decreases for cooler climate zones. Based on this information, the evaluation team estimated an in situ adjustment factor of 0.85 (representing a 15 percent decrease over the

⁷ Evaluation Study of the 2004-05 Statewide Residential Appliance Recycling Program, Final Report. April 2008. ADM Associates, Inc. http://www.calmac.org/publications/EM&V_Study_for_2004-2005_Statewide_RARP_-_Final_Report.pdf

⁸ "Residential Retrofit High Impact Measure Evaluation Report" prepared for the California Public Utilities Commission, February 8, 2010.

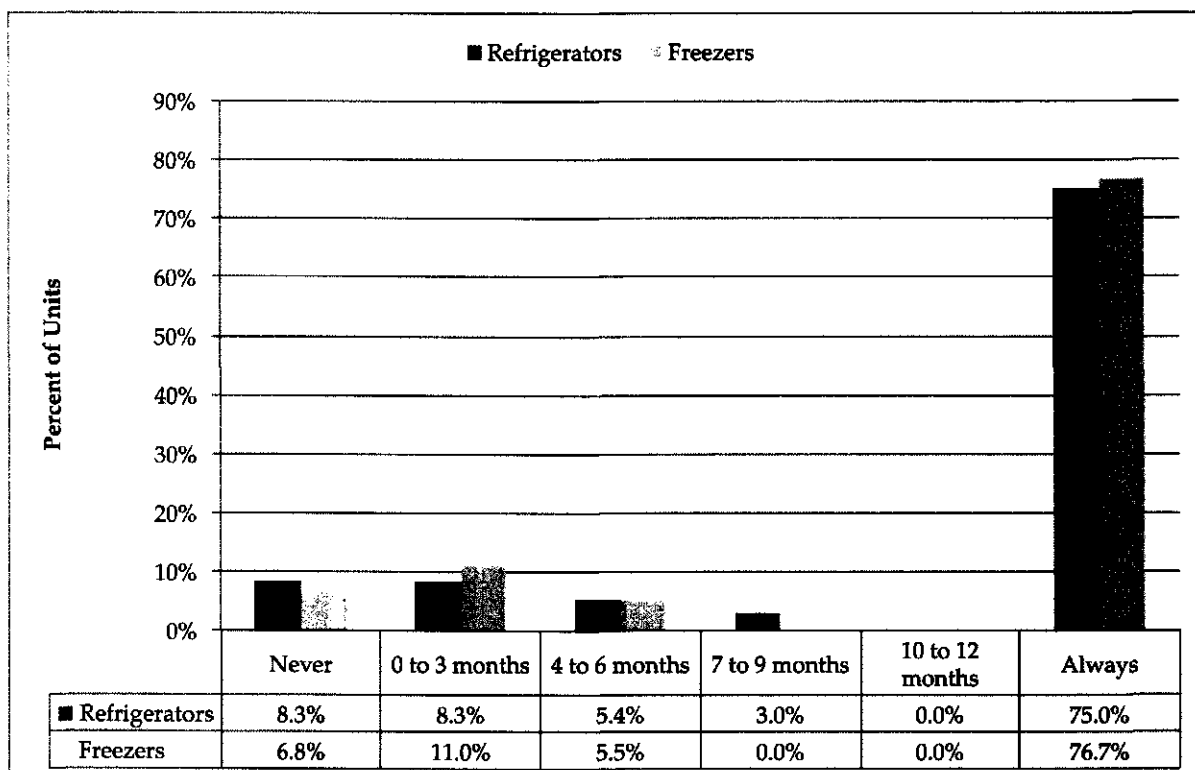
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DOE measurements), which is on the upper end of the 2004-2005 estimate and near the upper end of the bounds of the 2008 study. A value near the upper bound was chosen to account for the cooler climate in the AEP Ohio Service territory. In addition, 0.85 is equivalent to the value used by the draft Ohio Technical Resources Manual (TRM) from August 2010.

4.2.4 Part-Use Factor

The evaluation team next calculated the part-use factor, as detailed in Section 3.5.1, to provide an adjustment for the number of months of actual operation. For example, if an appliance only operated three months of the year, then only 25 percent (3 months out of 12 months) of the savings associated with a full-year operation would apply. For refrigerators, 69 percent of appliances were reported to be secondary spare units, while 31 percent were primary units. Only the secondary appliances were used when calculating part-use, as it is assumed that participants who recycled primary units did so because they purchased new primary units, and thus the recycled primary unit would have become a secondary unit in the absence of the program. Figure 4-7 shows the breakdown of how many months out of the year survey respondents reported using an appliance before recycling it.

Figure 4-7. Frequency of Secondary Unit Usage in the Absence of the Program



On average, survey participants reported using their refrigerators and freezers 80 percent and 81 percent of the time, respectively, thus the part-use factors for refrigerators and freezers are 0.80 and 0.81, respectively, as shown in Table 4-7.

Table 4-7. Part-Use Adjustment

	Refrigerators	Freezers
Part-Use Factor	0.80	0.81

4.2.5 Ex-Post Gross Energy Savings

The adjusted (ex-post) gross energy savings were calculated by multiplying the total energy use from the regression analysis by the in situ adjustment factor and part-use factor as indicated in Equation 3-1. These results are shown in Table 4-8.

Table 4-8. Ex-Post Gross Energy Savings

Ex-Post Gross Energy Savings	Refrigerators	Freezers	Total
Total Energy Use from Regression Analysis (kWh)	20,053,737	6,142,166	26,195,903
In Situ Adjustment Factor (ISAF)	x 0.85	x 0.85	-
Part-Use Factor (PUF)	x 0.80	x 0.81	-
Ex-Post Gross Energy Savings (kWh)	13,636,541	4,228,882	17,865,422

Table 4-9 shows the per-unit ex-post gross energy savings. Per-unit energy savings are somewhat higher for freezers compared to refrigerators.

Table 4-9. Per-Unit Ex-Post Gross Energy Savings

Ex-Post Per-Unit Gross Energy Savings	Refrigerators	Freezers	Total
Ex-Post Gross Energy Savings (kWh)	13,636,541	4,228,882	17,865,422
Units	8,887	2,574	11,461
Per-Unit Ex-Post Gross Energy Savings (kWh)	1,534	1,643	1,559

4.2.6 Unadjusted Demand Savings

The Unit Demand Consumption values (UDCs) were calculated using the regression equation approach referenced and described in Section 3.5. This calculation adjusts yearly average energy usage to account for peak period demand and temperature differences. To apply this approach, the evaluation team first determined peak periods and associated temperatures during those periods for both service territories, which are summarized in Table 4-10.

Table 4-10. Peak Periods and Temperatures

Service Territory	Date	Time (hour bucket)	Temperature (degrees F)
CSP	August 13, 2010	4pm	90
OPCo	July 23, 2010	3pm	93

Next the evaluation team used this peak temperature along with the in situ ex-post UEC values to determine the UDCs as indicated in Equation 3-5. Table 4-11 summarizes total unadjusted demand savings from this calculation as well as the average UDC.

Table 4-11. Unadjusted Demand Savings

	Refrigerators	Freezers
Total Unadjusted Demand Estimation (kW)	2,045	625
Number of Units	÷ 8,887	÷ 2,574
Average UDC (kW)	0.2301	0.2428

4.2.7 Summer Use Factor

The evaluation team then computed the summer use factor from the percentage of AEP Ohio customers who use their appliances during the summer, as indicated in Equation 3-6. Using the participant survey data, the summer use factor was calculated to be 0.88 for refrigerators and 0.82 for freezers. As with the part-use factor, the summer use factor for refrigerators is calculated using only secondary units, because it is assumed that all primary refrigerators that are recycled would have become secondary units in the absence of the program, and all freezers are considered to be secondary for the analysis.

4.2.8 Gross Ex-Post Demand Savings

Finally, the evaluation team used the summer use factor to adjust the results of the regression analysis as indicated in Equation 3-4. Table 4-12 summarizes the results.

Table 4-12. Demand Savings Adjusted for Summer Use

	Refrigerators	Freezers	Total
Total Unadjusted Demand Estimation (kW)	2,045	625	2,670
Summer Factor	x 0.88	x 0.82	0.88
Ex-post Gross Demand Savings (kW)	1,800	512	2,312

Table 4-13 shows the per-unit ex-post demand savings. Per-unit ex-post demand savings are nearly identical for refrigerators and freezers.

Table 4-13. Per-Unit Ex-Post Demand Savings

Ex-Post Per-Unit Gross Energy Savings	Refrigerators	Freezers	Total
Ex-Post Gross Demand Savings (kW)	1,800	512	2,312
Units	8,887	2,574	11,461
Per-unit Ex-Post Gross Demand Savings (kW)	0.2025	0.1989	0.2017

4.2.9 Realization Rates

Table 4-14 shows that adjusted (ex-post) gross kWh savings for 2010 were more than double (2.15 times) the goal set by AEP Ohio. Likewise, 2010 demand savings are more than double (2.3 times) the goal set by AEP Ohio. Cumulatively, over the course of the 2009 and 2010 program years, the program exceeded its goals by 12,577 MWh and 1.436 MW.

Table 4-14. PY 2009 and PY 2010 Goals Versus Actual

	Energy Savings (MWh)			Demand Savings (MW)		
	Goal	Actual	Difference	Goal	Actual	Difference
2009	4,665	7,701	+ 3,036	0.563	0.691	+ 0.128
2010	8,324	17,865	+ 9,541	1.004	2.312	+ 1.308
Total	12,989	22,566	+12, 577	1.567	3.003	+ 1.436

Table 4-15 shows the realization rates by service territory for the PY 2010 AEP Ohio Appliance Recycling Program. For energy savings, the realization rate was 1.00, even though the evaluation-calculated ex-post gross savings showed 15 additional MWh of savings compared to the ex-ante savings claimed by the program. This is because, 15 MWh is a relatively small difference compared to the overall savings of 17,865 MWh. For demand savings, the realization rate was 1.43, meaning that the evaluation-calculated gross ex-post demand savings showed 43 percent more savings compared to the ex-ante demand savings claimed by the program. Realization rates were approximately equal between the two service territories.

Table 4-15. PY 2010 Realizations Rates by Service Territory

Service Territory	2010 Ex-Ante Claimed Savings		2010 Ex-Post Gross Savings		Realization Rates	
	Gross MWh	Gross MW	Gross MWh	Gross MW	MWh	MW
CSP	8,576	0.775	8,587	1.109	1.00	1.43
OPCo	9,274	0.844	9,278	1.203	1.00	1.43
Total	17,850	1.620	17,865	2.312	1.00	1.43

4.2.10 Comparison of 2010 and 2009 Results

Energy Savings

As shown above, adjusted (ex-post) gross energy savings for the AEP Ohio Appliance Recycling Program were much higher in 2010 than 2009. The 2010 ex-post per-unit energy savings were roughly on par with 2009, as shown in Table 4-16. Therefore, the increase in ex-post gross energy savings from 2009 to 2010 was largely due to the 235 percent increase in units collected (and the fact that the program began in mid-2009).

Table 4-16. Average Ex-Post UECs Calculated in 2009 vs. 2010

	Refrigerator	Freezer
2009 Ex-Post Average UEC (kWh)	1,616	1,457
2010 Ex-Post Average UEC (kWh)	1,534	1,643

The 2010 ex-post UECs were on par despite the addition of the in situ adjustment factor, which decreased estimated savings by 15 percent. This was because the unadjusted gross energy savings for 2010 were higher in 2010 than in 2009, as shown in Table 4-17.

Table 4-17. Average Unadjusted UECs Calculated in 2009 vs. 2010

	Refrigerator	Freezer
2009 Unadjusted Average UEC (kWh)	1,995	1,714
2010 Unadjusted Average UEC (kWh)	2,257	2,386

To explain these higher 2010 per-unit savings, the evaluation team analyzed differences in the characteristics of the appliances calculated in 2010 versus 2009. Table 4-18 shows the breakdown of units recycled in 2009 and 2010 for each of the variables used in the regression analysis, with the most notable discrepancies highlighted. For the binary variables, the table shows the percent of units characterized by that configuration. For the continuous variables, the table shows the average value for those characteristics.

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One of the biggest differences is that the number of recycled freezers classified as “single door” decreased from 43 percent in 2009 to 0 percent in 2010. This arose from the discovery of a processing error related to recycled freezers in 2009, namely, the “single door” designation should only have been used to classify refrigerators. A *single door* unit is a model of refrigerator where the main outside door needs to be opened in order to gain access to a smaller, less-insulated inner door that provides access to the freezer area. Because single door units are more energy-efficient and associated with a UEC that is lower by -417 kWh, having no single door freezers in 2010 increased the average 2010 UEC for freezers considerably.

Similarly, there are fewer single door refrigerators in 2010. Having fewer single door refrigerators leads to a higher average UEC for refrigerators, as single door refrigerators are also associated with energy use that is lower by -417 kWh.

Another difference between the 2009 and 2010 data is the increase in the percent of frost-free units, for both refrigerators and freezers. When all of the regression coefficients related to being a frost-free unit are considered, frost-free units on average have higher UECs, so having more of these units increases the average UECs.

Finally, there was an increase in unit amps reported for both refrigerators and freezers in 2010 compared to 2009. Because higher amps are associated with higher energy use, this drives up the average UECs for both refrigerators and freezers.

Table 4-18. Characteristics of Appliances Used in Regression Analysis

	Freezers		Refrigerators	
	2009	2010	2009	2010
Bottom freezer	1%	-	3%	3%
Side by Side dummy	1%	-	16%	17%
Single door dummy	43%	-	13%	8%
Frost-free dummy	12%	23%	55%	62%
Freezer X frost-free dummy	12%	23%	-	-
Bottom Freezer X Frost-free dummy	-	-	1%	2%
Side-by-side X frost-free dummy	-	-	12%	12%
Average Age	30.9	35.3	26.2	31.2
Average Amps	5.1	8.8	5.6	8.0
Average Size	16.4	16.8	17.7	17.7

While the increase in the age of units recycled in 2010 does not, in itself, directly increase the UECs from the regression coefficient, the combination of age and amperage does result in higher UECs. Both refrigerators and freezers are older on average in 2010, and age is positively

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correlated with amperage. Thus, the higher unadjusted UECs for 2010 are partly attributable to older appliances being recycled in 2010 compared to 2009.

Based on previous experience with recycling programs, the evaluation team estimates that the stock of these unwanted older appliances will decline over time as the program matures over several program years and the base of these very old, inefficient units available for recycling is reduced. This has implications for the expected average UECs of units collected by the program in subsequent years, which would likely be somewhat less than seen in PY 2009 and PY 2010.

Demand Savings

The average per unit demand savings calculated for 2010 are also larger than the per unit savings used in 2009, as summarized in Table 4-19. In 2009, unit demand savings were a deemed value that came from the AEP Ohio Program Plan. The larger per unit demand savings are a result of the difference in methodology. Also, because the 2010 value is dependent on the unit UEC, the high demand savings are partially due to the characteristics of the appliances recycled in 2010 that led to high UEC values.

Table 4-19. Average Per-Unit Demand Savings Calculated in 2009 vs. 2010

	Refrigerator	Freezer
2009 Deemed Per Unit Savings (kW) ^(a)	0.134	0.120
2010 Ex-Post Average UED (kW)	0.203	0.199

a. The 2009 calculation used a deemed savings approach with no adjustments

4.3 Process Findings

The process component of the evaluation generally found that program processes appear effective. AEP Ohio and implementation staff are satisfied with program processes and communications, and program participants were overwhelmingly satisfied with the various aspects of the program, from enrollment to receipt of the incentive check. While the program ended up meeting its energy and demand savings goals, it fell short of the contractual goals in terms of units collected. And because program staff were tracking program progress in terms of units collected,⁹ there was much concern regarding the lower-than-expected participation levels. Staff hypothesized that perhaps the marketing efforts were not effective enough, and the geographically-scattered nature of the AEP Ohio service territory was also identified as a road-block to more widespread marketing efforts. To increase program participation, an increased incentive was offered from May through December, and this appeared to at least temporarily increase participation. The program also embarked on a retailer partnership in the fall, but this

⁹ Because the AEP Ohio Program Managers and Coordinators are responsible for managing contracts with the implementers, these staff track program progress in terms of the number of units collected. The AEP Ohio Manager of DSM Compliance, on the other hand, tracks program progress in terms of energy and demand savings.

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aspect of the program has so far produced few participants. There is room to increase program awareness and participation, as baseline survey data found that 46 percent of customers are unaware of the program.

The remainder of this section presents these findings in more detail. The section begins by discussing the overall effectiveness of program staffing and communications, followed by participant satisfaction. 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 and program awareness
- » Motivation for participating in the program
- » Participant experiences with the enrollment process
- » The appliance collection process
- » The incentive payment process
- » The effectiveness of the increased incentive level

Following this, the following aspects of program process are examined in further detail:

- » Pick-up cancellations
- » The effectiveness of the retailer partnership
- » Program data tracking
- » Verification and due diligence

4.3.1 Program Staffing and Communications

Program staff indicated that they are generally satisfied with the program and it is easy to resolve any issues that may arise, because roles and responsibilities are well defined, and communications among all parties involved are regular and open.

Roles and responsibilities are clearly defined. The implementation of the Appliance Recycling Program involves the coordination of several different parties: JACO Environmental, the marketing firm Runyon Saltzman & Einhorn, Appliance Distribution, Univar Chemical Company, the AEP Ohio DSM group, AEP Corporate Communications, and the AEP Ohio Communications group. The AEP Ohio Operations Manual is currently in draft form and is meant for new employees, who should be able to reference the manual when assuming a new role. According to the Program Manager, staffing is adequate for the program to meet its goals.

Communication procedures are facile. Communications between AEP Ohio and JACO occur at least weekly, by email and/or phone. There is also a biweekly scheduled meeting between JACO, Runyon Saltzman & Einhorn, and AEP Ohio. Roles and responsibilities are clearly defined and it is easy for all involved parties to get in touch with one another when and if issues arise. The transition to a new program manager in PY 2010 was reportedly a smooth transition.

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4.3.2 Participant Satisfaction

As shown in Table 4-20, satisfaction with various elements of the Appliance Recycling Program was quite high, with an overall mean satisfaction score of 9.34 on a scale of 0 to 10. Although satisfaction with the different aspects of the program did not vary much, the highest ratings were provided for the sign-up process and the collection team. Somewhat lower scores were provided for the time between enrollment and pickup, and the time between pickup and receipt of the incentive check.

Table 4-20. Mean Satisfaction Scores

Program Aspect	Satisfaction Rating, Scale of 0 to 10 (n=317)	
	Mean	Standard Deviation
Collection team	9.45	1.39
Sign-up process	9.44	1.26
Program overall	9.34	1.33
Size of payment	9.12	1.87
Time between enrollment and pickup	8.98	1.71
Time between pickup and receiving check	8.89	1.69

Survey respondents were asked to state which aspects of the program they particularly liked. Table 4-21 shows that the most popular benefit of the program among participants was not having to remove the appliances themselves, which 55 percent of respondents identified. The incentive payment, which was mentioned by 44 percent of respondents, was a close second. Although satisfaction was high for both groups, those receiving the \$50 rebate were somewhat more satisfied with the program overall than those receiving \$25—with a mean rating of 9.4 compared to 8.2 ($p < 0.01$), respectively.

Table 4-21. Aspects of Appliance Recycling Program Customers Liked

Response	Frequency ¹	Percent
Did not have to remove appliance by myself	170	54.7%
Incentive payment	136	43.7%
Pick-up team did a nice job	58	18.6%
Recycling of the appliance/environmental component	46	14.8%
Free disposal of appliance	12	3.9%
The whole program/Everything/All of it	12	3.8%
Came to pick it up/Their help with getting rid of it	12	3.8%
Short wait time between sign up and pick up of appliance	11	3.5%
Doing it online/On computer	6	1.9%
Easy process/Sign up	5	1.6%
That they would offer the service	4	1.3%
Convenience	4	1.3%
Encourage us to buy energy-efficient appliances	3	1.0%
Replacing with a more energy-efficient model/Being energy efficient now	3	1.0%
Other	7	2.2%
Don't know/Refused	7	2.5%

¹Open-ended question, multiple responses accepted.

Survey respondents were also asked to report how satisfied they were with having AEP Ohio as their utility, based on their overall experience with the service of AEP Ohio. As shown in Table 4-22, respondents were generally satisfied with AEP Ohio; only 4.1 percent stated that they were either somewhat dissatisfied or very dissatisfied.

Table 4-22. Satisfaction with AEP Ohio

Satisfaction Rating	Frequency	Percent
Very satisfied	192	60.6%
Somewhat satisfied	92	29.0%
Neither Satisfied nor Dissatisfied	17	5.4%
Somewhat dissatisfied	9	2.8%
Very dissatisfied	4	1.3%
Refused	3	1.0%
Total	317	100.0%

Note: Due to rounding, percentages do not total to exactly 100%

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Participants were also asked to report whether participating in the program had made them feel more favorable, less favorable, or no different about AEP Ohio. As shown in Table 4-23, about half of participants reported that participating in the program had made them feel more favorable about AEP Ohio. Less than one percent said it made them feel less favorable.

Table 4-23. Effect of Program Participation on Attitude Toward AEP Ohio

Response	Frequency	Percent
More favorable toward AEP Ohio	162	51.1%
Less favorable toward AEP Ohio	2	0.6%
No different about AEP Ohio	149	47.0%
Don't know	3	0.9%
Refused	1	0.3%
Total	317	100.0%

Note: Due to rounding, percentages do not total to exactly 100%

4.3.3 Marketing/Program Awareness

The Appliance Recycling Program is advertised through a number of marketing channels, including television and newspaper advertisements, bill inserts, the *gridSMART Ohio* website, and community outreach events. Bill inserts and newspaper ads reviewed by the evaluation team showed that these marketing materials emphasize the extra energy use and higher electricity costs that result from older (i.e., 10 years or older) refrigerators. Newspaper ads also emphasize the environmental impact of appliances that are disposed of improperly. Marketing materials advertise that customers can save up to \$150 per year on their utility bill by retiring a secondary appliance.

While the program did meet its energy and demand savings goals, the method used by the Program Manager to track the performance of the program is to track the number of units collected. As of October 2010, when staff interviews were conducted, the program had collected approximately 9,300 appliances and was not on track to meet its goal of 13,000 units collected, which is a contractual goal set with the implementer, JACO. It is interesting to note that 9,300 appliances is roughly equal to energy savings of 14,499 MWh ($9,300 \times$ the average ex-post UEC of 1,559 kWh), which far exceeds the 2010 goal of 8,324 MWh. To overcome the slower-than-expected progress, the program undertook an additional marketing effort in the fall, sending a direct mailer to 100,000 non-participants, and purchasing additional newspaper advertisements. It should also be noted that these increased savings for this program helped the Companies meet their overall Portfolio and PUCO goals by achieving additional savings that compensated for shortfalls in other programs that did not meet their goals.

There is opportunity to increase program awareness and participation. The baseline survey found that 46 percent of respondents were not aware of the AEP Ohio Appliance Recycling Program, suggesting that additional marketing, or a revised marketing strategy, may help the

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program meet its goals in terms of number of units collected. Thirty-five percent of baseline survey respondents indicated that they own two or more refrigerators, and 6.5 percent of baseline survey respondents have more than one stand-alone freezer. Aside from lack of awareness, the primary reason respondents were not interested in participating in the program is because their appliances still worked.

Difficulty in marketing to a dispersed service territory is a possible explanation for why the program did not meet its collection goals. Rather than conducting widespread marketing campaigns, marketing efforts may have to be much more targeted. According to one staff person, First Energy and the municipal utilities in Ohio are beginning to plan for the implementation of an appliance recycling program. This may help “fill in” some of the gaps in marketing by introducing marketing efforts across a greater part of the state.

The Ohio market may just be “different” from other markets. One staff person remarked that some states simply do not witness high participation in recycling programs, for largely unexplainable reasons, suggesting that while additional marketing may help, Ohio may just be a “different market” that will never see the participation that other states have witnessed. Another staff person stated that, compared to other similar markets, the program does not see the same “lift” when a bill insert advertising the program is implemented. External factors that are not identified could contribute to the lower participation rates in Ohio.

A more consistent marketing campaign and program participation may influence the quality of the work of those who implement the program. In the words of one staff-person, the current marketing campaign for 2010 has been “really up and down.” Two program staff mentioned that the “up and down” participation and fluctuating marketing efforts have made it very difficult to keep implementation staff on hand and properly trained. When there is a large decrease in participation, collection staff who pick up appliances and call-center staff who schedule appointments need to be laid off. Then, when the program participation increases, the same people are no longer available to work, and the implementation contractor must hire and train new individuals. Thus, the program is not able to maintain employees with experience and must frequently train new employees.

One staff member suggested a higher incentive in winter. A higher incentive during the winter season may help keep program participation more even, since summer typically sees a natural increase in participation. This person mentioned that similar programs offered by different utilities have used this approach and it has been successful in increasing participation at a time when appliance collection is normally low. One staff person felt that the \$50 incentive is best used as a promotion to increase participation for fixed periods of time, and that the “regular” incentive should be set at \$35 per appliance.

Efforts to integrate the residential programs are underway. The Home Energy Reports included a tip for customers to reduce their energy use by recycling their old appliances. Program staff expressed desire to eventually cross-promote the Appliance Recycling Program with all other residential programs. Outreach events promote all residential programs

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simultaneously. The residential Lighting Program implementer also routinely delivers information to retailers that also offer appliances in addition to lighting products. The AEP Ohio Program Manager noted that the Appliance Recycling Program is even promoted at some business events.

While the program has established goals for number of appliances collected and demand and energy savings, the program does not currently have comprehensive process-related goals.

AEP Ohio has not set a goal for customer satisfaction, and leaves this metric up to the evaluators. However, there are efforts underway to examine marketing effects in terms of where marketing took place compared to where pickups occurred. The program does not have goals for the number of days between enrollment and appliance pickup, however there is a goal for the number of days between appliance pickup and the mailing of the incentive check (within 4 to 6 weeks). According to best practices reported by ENERGY STAR[®],¹⁰ participation in refrigerator/freezer recycling programs is greatest when the pickups are scheduled within 3 to 5 days of sign-up. For AEP Ohio, the number of days between sign up and pickup is typically between 8 and 10 days. Setting goals for these process-related metrics may help the program pinpoint reasons for lower-than-expected participation.

Table 4-24 shows sources of program awareness among participant survey respondents. Respondents were first asked to report where they initially heard of the program. Respondents were next prompted to indicate if they had heard about the program from any additional sources since first learning about the program.

Newspaper advertisements and bill inserts were the most often cited sources of program knowledge among participants. When asked where they had first heard of the program, almost 40 percent of the surveyed participants recalled ever seeing the program mentioned in a newspaper, and almost a quarter (23 percent) first learned through a bill insert. In total, 56 percent of respondents recalled seeing references to the program in a newspaper and 45 percent in bill inserts. The sources of awareness among the 40 near-participant interviewees were very similar, suggesting that the source of program awareness is not related to pickup cancellations.

¹⁰ http://www.energystar.gov/ia/products/recycle/documents/StartAFridgeFreezerRecyclingProgram_FINAL.pdf

Table 4-24. Where Customers Have Heard of the Appliance Recycling Program

Source	First Heard of Program ¹	Percent	All Places Where Heard ²	Percent
Newspaper	124	39.1%	178	56.1%
Bill insert	74	23.3%	143	45.1%
Television ad	47	14.8%	101	31.8%
Friend/relative/neighbor	35	11.0%	76	23.9%
AEP Ohio website	7	2.2%	39	12.3%
At work/flier at work	4	1.3%	4	1.3%
Retailer where bought new appliance	3	0.9%	3	0.9%
Heard from an employee of AEP	3	0.9%	3	0.9%
Online website (non AEP website)	3	0.9%	3	0.9%
On the side of a truck ³	2	0.6%	2	0.6%
Community event	0	0.0%	9	2.8%
Don't know	9	2.8%	9	2.8%
Other	6	1.9%	6	2.5%
Total	317	100.0%	-	-

¹Open-ended question.

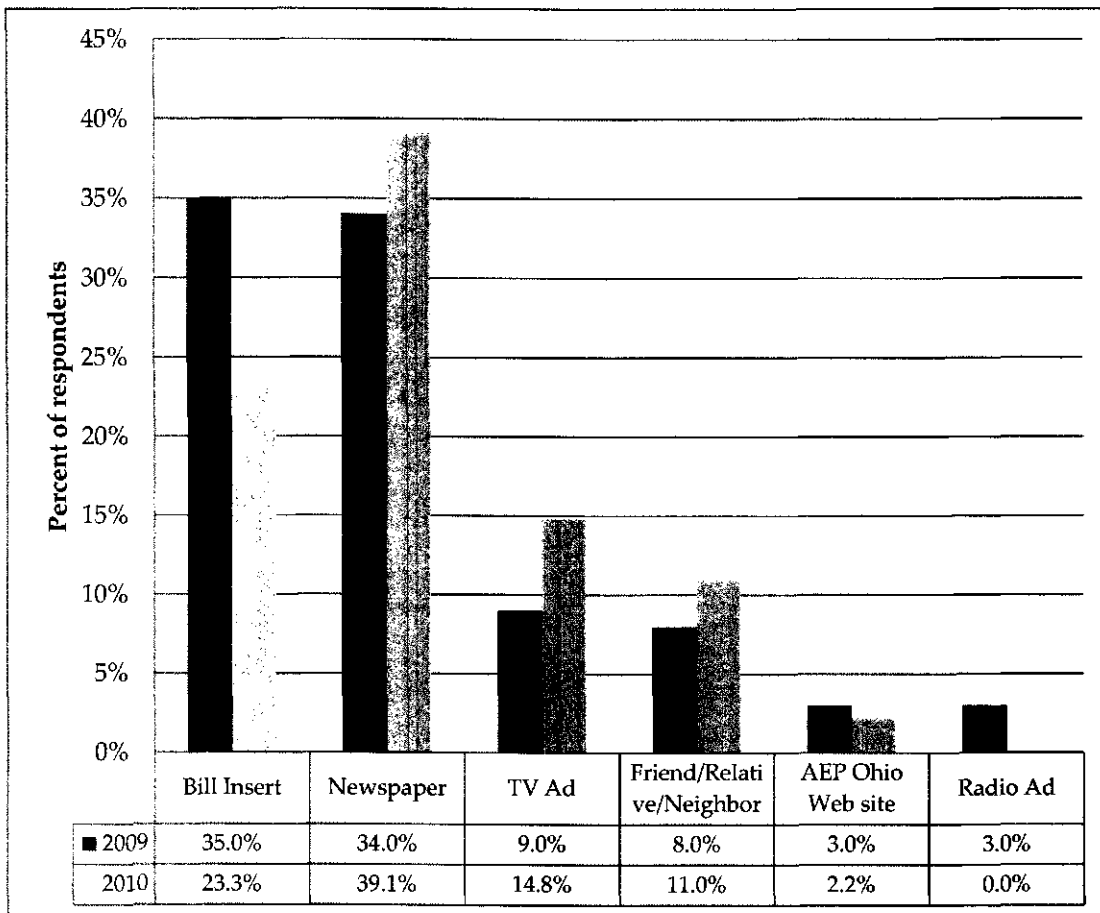
²Closed-ended, prompted question.

³Appliance Distribution advertises the program on the trucks it uses to collect the appliances.

Note: Due to rounding, percentages do not total to exactly 100%

Figure 4-8 shows a comparison of 2009 and 2010 responses for the percentage of respondents who first heard of the program through each of the most common sources. A greater percentage of survey respondents first heard of the program through the newspaper, television, and word-of-mouth in 2010 compared to 2009. A lower percentage of survey respondents first heard about the program via bill inserts in 2010 compared to 2009.

Figure 4-8. Where Participants First Learned of the Program



Note: For comparison purposes, only categories with the highest percentages of responses are included. Thus, responses do not add to 100%.

4.3.4 Motivation for Participating in the Program

Participants were asked, unprompted, in an open-ended question, why they chose the AEP Ohio Appliance Recycling Program to dispose of their appliance, instead of some other disposal method. As shown in Table 4-25, the cash incentive was by far the most popular reason for participating, with 52 percent saying it was their main reason for participating and 75 percent saying it was one of their reasons for participating. Convenience of the home pick-up was the second most common reason, with 26 percent stating it was the main reason and 42 percent stating it was one of the reasons for participating. Only 2 percent reported saving energy as a reason, and less than two percent reported saving money on their electric bill as a reason for participating.

Table 4-25. Reasons Why Customers Chose the Appliance Recycling Program

Response	Main Reason ¹	Percent	All Reasons ¹	Percent
Cash incentive	164	51.7%	237	74.7%
Convenience of home pickup	81	25.6%	134	42.3%
Recycling/environmentally friendly	26	8.2%	56	17.7%
Pick up was free	15	4.7%	28	8.8%
Did not know of any other way/no other option	10	3.2%	13	4.1%
Saw ad on our bill/in the papers	7	2.2%	7	2.2%
Save energy/getting a more energy efficient refrigerator	4	1.3%	7	2.2%
Was recommended by friends/family	3	0.9%	4	1.2%
To save on our electric bill	2	0.6%	5	1.5%
Needed to get rid of it	0	0.0%	2	0.6%
Other	5	1.6%	29	9.2%
Don't know /no other reasons	0	0.0%	153	48.3%
Total	317	100.0%	675	-

¹Open-ended question.

Interestingly, the cash incentive appeared to be a much larger motivator for participating in the program in 2010 compared to 2009, when only 23 percent mentioned it as their primary motive and 53 percent mentioned it as a reason at all. Conversely, the environmental aspect was much less prevalent in 2010, with only 8 percent mentioning this as their primary motive and 18 percent mentioning it at all, compared to 26 percent and 39 percent in 2009, respectively. The increased importance of the cash incentive could be because the cash incentive was increased from \$25 per appliance to \$50 per appliance in May 2010. Of the 317 participant survey respondents, 82 percent reported receiving \$50 and only 15 percent reported receiving \$25. Those who received the \$50 incentive were more likely to report that the incentive was their primary motivator (54 percent) compared to those who received the \$25 incentive (43 percent), and this difference was statistically significant ($p \leq 0.001$).

Respondents were also asked to rate the extent to which the rebate motivated them to participate in the program on a scale of 0 to 10. While the average rating was 8.2 for those receiving the \$50 rebate, it was only 6.4 for those receiving the \$25 rebate, and this difference was statistically significant ($p < 0.001$).

4.3.5 Participant Experiences with the Enrollment Process

It appears that the sign-up process worked quite well. Of the 71 percent of participant survey respondents who signed up over the phone, 98 percent reported that the representative they talked to was polite and courteous and 96 percent said the representative was able to answer all

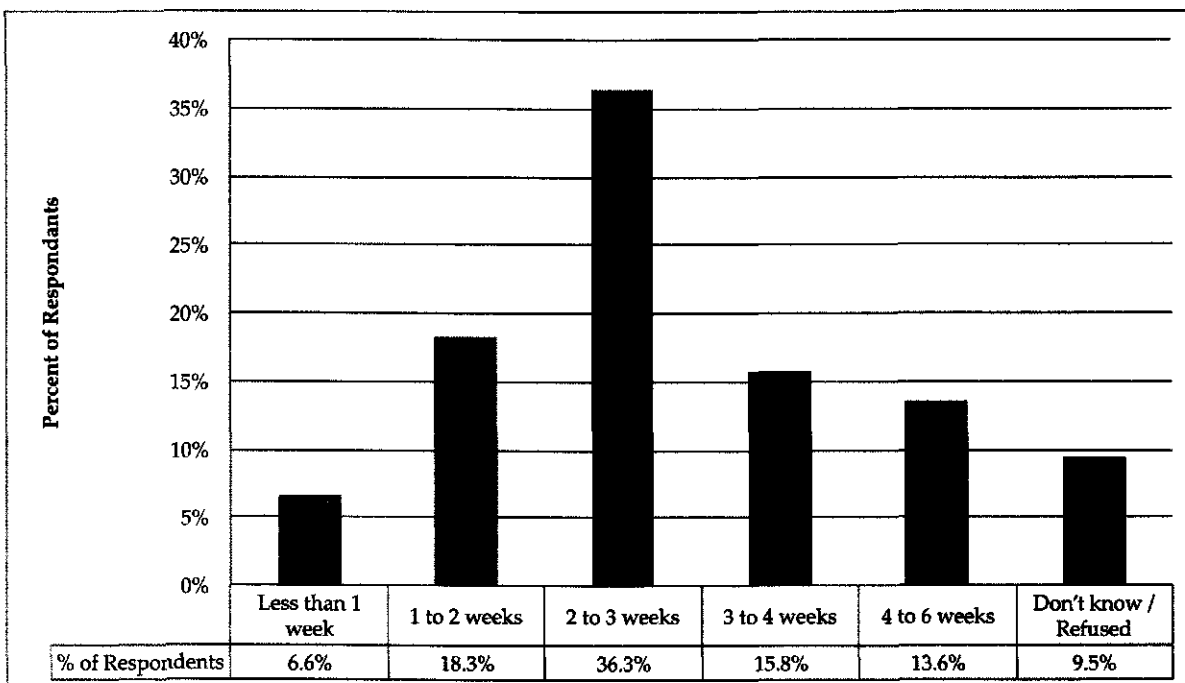
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of their questions. Out of the 26 percent of respondents who signed up online, 96 percent reported that it was easy to find the sign-up screen on the website, 99 percent said that the website answered all of their questions, and 96 percent said that they received confirmation that their sign-up had been successful. On average, respondents ranked their satisfaction with the sign-up process as a 9.4 on a 0 to 10 scale. There was no statistically significant difference in satisfaction between those who signed up online versus over the telephone.

Thirty-one of the 40 near-participant interviewees had themselves signed up for the program (as opposed to someone else in the household). Of these, 26 signed up by telephone and 5 signed up online. Near-participant interview respondents were asked to rate their satisfaction with the sign-up process on a 0 to 10 scale, where 0 is "very dissatisfied" and 10 is "very satisfied." Both sign up methods received high satisfaction ratings. For telephone sign-up, ratings ranged from 2 to 10 ($n = 23$), and the mean satisfaction was 9.0. For online sign-up, ratings ranged from 8 to 10 ($n = 5$), and the mean satisfaction rating was 9.6. Near-participants commented that the sign-up process was easy and that the phone representatives were courteous, suggesting that the enrollment process is not a factor in pickup cancellations.

The remainder of the enrollment process also operated smoothly. Ninety-eight percent of the participant survey respondents reported that they were able to schedule a pick-up date and time that was convenient, although this percentage does not take into account potential participants who dropped out because they either could not find a convenient time, or those who scheduled and then dropped out because they found an alternative means of disposal before the pickup date. On a 0 to 10 scale, survey respondents rated the time between when they scheduled the appliance pickup and when it actually got picked up a mean score of 8.98. As shown in Figure 4-9, over 60 percent of respondents reported being able to schedule an appointment within two weeks or less of calling to make the appointment. According to program staff, the number of days between sign up and pickup is typically between 8 and 10 days.

Figure 4-9. Self-Reported Time Between Appointment and Pick-Up of Appliance



4.3.6 Appliance Collection Process

JACO collection crews are instructed to call customers one or two days in advance to confirm appointments and remind customers that the appliances should be plugged in and empty. A second reminder call is provided when the collection crew is 30 minutes from the customer's home to serve as a final confirmation and also to give customers an update if the time has changed due to traffic or weather conditions.

Just before the pick-up took place, 91 percent of survey respondents reported that they did receive a confirmation phone call from the collection team, and only two percent were sure that they did not receive a phone call. Ninety-six percent reported that the collection team arrived on time, while only two percent said they were not on time. Participants gave the collection team an average satisfaction score of 9.45 on a 0 to 10 scale.

Survey respondents were asked to report the condition of their appliance at the time of pickup. Respondents reported that over 99 percent of the refrigerators and all of the freezers that were picked up were operational, although some repairs were needed such as a door seal or handle. Half of refrigerators and two-thirds of freezers were in good physical condition. Although these data are self-reported, it suggests that the JACO collection team is effectively screening out non-working appliances from the program.

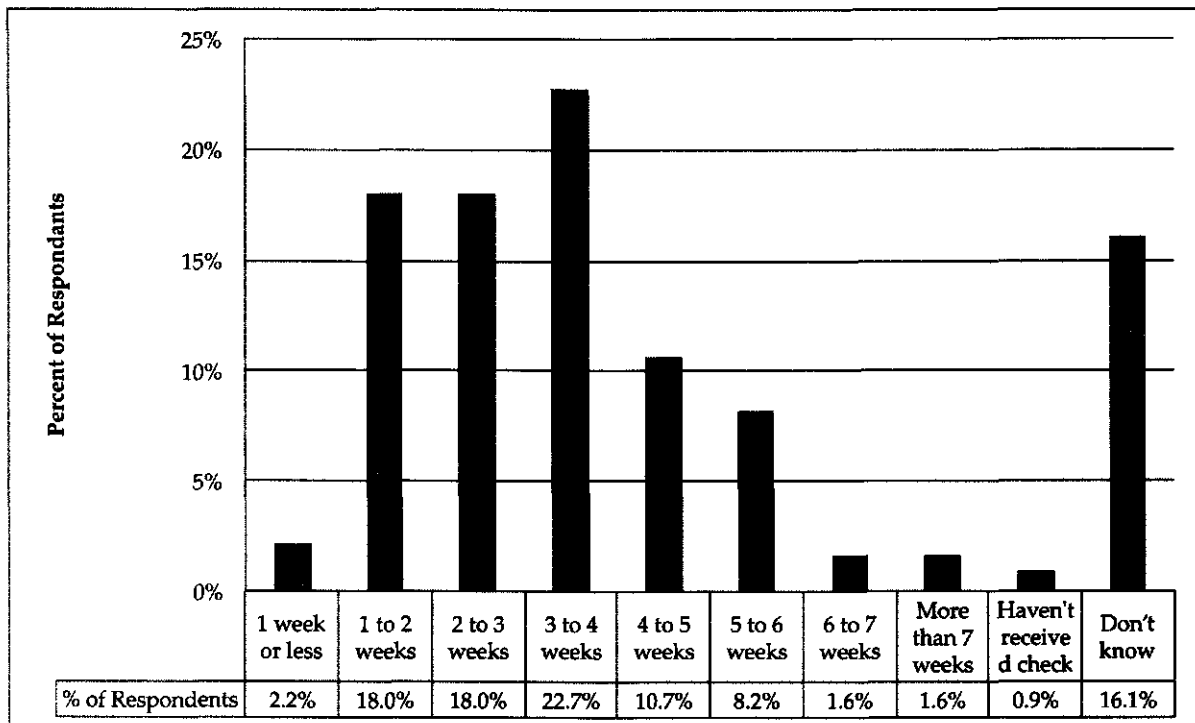
Table 4-26. Participant Reported Condition of Appliances Collected by the Program

Response	Refrigerators		Freezers	
	Frequency	Percent	Frequency	Percent
It worked and was in good physical condition	121	49.6%	48	65.8%
It worked but needed minor repairs like a door seal or handle	93	38.1%	20	27.4%
It worked but had some bigger problems	29	11.9%	5	6.8%
It didn't work	1	0.4%	0	0.0%
Total	244	100.0%	73	100.0%

4.3.7 Incentive Payment Process

According to JACO, customers can expect to receive their incentive checks within 4 to 6 weeks of appliance pickup. Figure 4-10 summarizes the time reported by customers between pickup of the appliance(s) and their receipt of the incentive check. There was quite a bit of variance around the time it took for customers to receive their checks based on recall, with 16 percent unable to remember how long it took to receive their incentive check. Only 3.2 percent stated that it had taken 6 weeks or longer to receive their incentive check, suggesting that the program is meeting its stated goals for the timeliness of incentive payments. The average satisfaction score of participants for the time it took to receive their check was 8.9 on a 0 to 10 scale.

Figure 4-10. Time Between Appliance Pickup and Receipt of Incentive Check

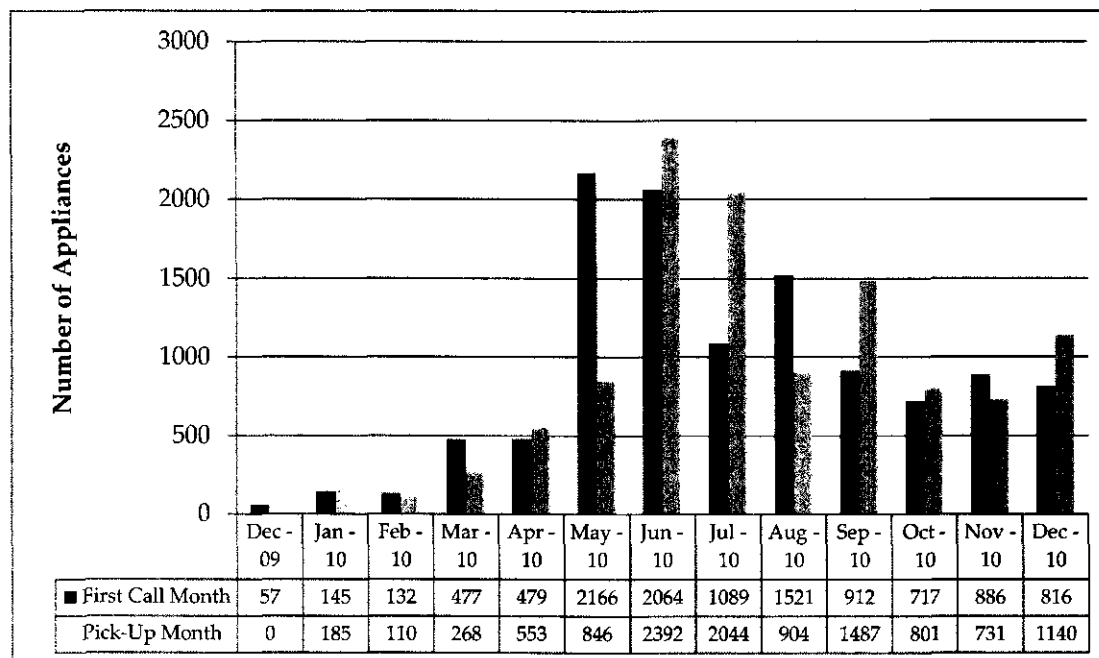


4.3.8 Effect of the Increased Incentive Level

Beginning in May 2010, the Appliance Recycling Program increased the incentive from \$25 to \$50 for each appliance recycled. This increased incentive lasted through the end of December 2010. Because there was no control group, and the \$50 incentive was offered across the board, it is not possible to isolate the effect of the increased incentive amount on the success of the program. However, survey data showed that participants who received the \$50 incentive were more motivated to participate by the incentive compared to those who received the \$25 incentive. According to program staff, appliance recycling programs across the country tend to experience more activity in the spring and summer months. All program staff agreed that the increased incentive likely had some influence on the increase in appliances collected for the program.

Figure 4-11 shows the program activity by month. The frequency of customers' first enrollment in the program by month is shown in dark blue, and the number of appliances collected by month is shown in light blue. Given that the incentive was increased in May, and enrollments quadrupled in May compared to the previous month, it is likely that at least some of the increased activity was due to the increased incentive.

Figure 4-11. Number of Enrollments and Pickups by Month



4.3.9 Pickup Cancellations

The average of two “drop-out” estimates provided during staff interviews suggests that approximately 12 percent of customers that enroll in the program drop out and never reschedule their appliance for pickup by the AEP Ohio program. For 2010, this would amount to an estimated 1,563 appliances that were not picked up by the program because of cancelled appointments that were never rescheduled.

The program tracking data is currently not set up to track drop-outs to determine if they eventually participate. Program staff estimated that about 15 to 25 percent of customers initially sign up and then drop out of the program for one reason or another. One staff person estimated that 25 percent initially drop out, but then 10 percent come back into the program, resulting in a net dropout rate of 15 percent. Another staff person said that the cancellation rate is 16 percent with 7 percent rescheduling, resulting in a net dropout rate of 9 percent. JACO calls back no-shows to try and reschedule the appointments, and this is tracked in the database as a new order (the old order number reflects the cancellation). In fact, every time a customer reschedules, a new order number is created. Thus, many customers have multiple orders with cancellations and/or pickups. To determine whether drop-outs later participate in the program, the evaluation team compared the latest cancellation date to the pickup date; if a pickup occurred after the cancellation date, it was usually the case that these drop-outs had re-joined the program. However, some customers had cancellations *after* pickups occurred. Furthermore, some orders included a cancel date but then also included an entry (in the “Uc” and “PX” fields) indicating that the appliance was collected. Finally, some customers have more than one account number, which also creates a challenge when trying to match up records to determine if

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customers who cancel eventually participate. Although not impossible, it is difficult and time-consuming to determine whether those with cancelled appointments eventually participate in the program.

Reasons for pickup cancellations are varied. According to staff interviews, reasons for customer cancellations include a variety of reasons, including: having an unqualified appliance, deciding to sell or give away the appliance instead, and the length of time between calling and the scheduled pickup date. In addition, each region is assigned a block of days so not every region will always have a Saturday option for pickup. Occasionally, JACO will have to cancel an appointment due to issues with a truck, the weather, or personnel shortages (e.g., illness). In these cases, JACO will work to get another truck out on the route. In some cases, it is physically impossible to remove the appliance from the residence of the customer without damaging or altering the structure of the home. JACO is not allowed to make any modifications (e.g., removing doors) in order to allow the appliance to be removed. Another big reason according to one staff person, is due to the fact that some customers cannot take off work to be present when the appliance is picked up. Currently the program requires an adult to be present when the appliance is picked up.

The evaluation team conducted in-depth interviews with 40 customers who scheduled appointments for one or more appliances to be picked up by JACO, but whose appointments were subsequently cancelled. These “near-participants” are a missed opportunity for the program. Therefore, the objectives of these interviews were to determine why the appointments were cancelled, what happened to the appliances that were originally scheduled for pickup, and what barriers might exist to prevent such customers from participating in the program. Out of the 40 near-participant interview respondents, 38 confirmed that their appliance had never been picked up by JACO. The remaining 2 interviewees had cancelled their original appointments, and after more than expected delays, eventually had their appliance picked up by JACO.

Near-Participants’ Motivations for Enrolling in the Appliance Recycling Program

Table 4-27 shows the reasons that near-participants chose AEP Ohio to pick up their appliance. The main reasons cited by most near-participants included the convenience of the home pick-up, as well as the incentive. This result contrasts with participants who indicated that the cash incentive was the primary reason for participating in the program. Although the incentive was the primary reason for 25 percent of near-participant respondents, 50 percent stated that the incentive was one of the reasons they signed up for the AEP Ohio Appliance Recycling Program. Almost 18 percent said that the environmentally friendly disposal was one of the reasons they signed up for the program.

Table 4-27. Reasons Near-Participants Chose AEP Ohio to Pick Up Their Appliance

Response	Main Reason ¹		All Reasons ²	
	Frequency	Percent	Frequency	Percent
The convenience of the home pick-up	12	30.0%	16	40.0%
The cash incentive/incentive check	10	25.0%	20	50.0%
Was recommended by friend/family	4	10.0%	4	10.0%
Appliance was recycled/disposed of in a way that was good for environment	3	7.5%	7	17.5%
Pick up was free	2	5.0%	3	7.5%
Did not know of any other way	2	5.0%	3	7.5%
Was recommended by retailer	1	2.5%	1	2.5%
Other	3	7.5%	3	7.5%
Refused	2	5.0%	2	5.0%
Missing	1	2.5%	1	2.5%
Total	40	100.0%	-	-

¹ Open-ended response.

² Open-ended response, multiple responses accepted.

Near-Participants' Self-Reported Reasons for Pickup Cancellations

Customers were asked to report why their appliance was not picked up by AEP Ohio/JACO. Responses for those whose appliance had yet to be picked up at the time of the interview are shown in Table 4-28. These include reasons why the appliance was initially not picked up, and reasons why the customer decided not to reschedule the appointment. Responses were open-ended. The two most frequent reasons included JACO either cancelling the appointment or simply not showing up, and customer cancellation. Of the ten customers who stated that they cancelled the appointment, five noted that they cancelled the appointment because they could not be at home during the pickup time/day. Three additional customers stated that they could not or did not want to take time off work to reschedule their appointment.

Table 4-28. Reasons Appliance Was Not Picked Up By AEP Ohio

Response	Frequency ¹	Percent
Contractor didn't show up or cancelled appointment	11	27.5%
Customer reason for cancelling appointment	10	25.0%
Appliance or customer did not qualify	6	15.0%
Scheduling is too far out /not willing to wait	4	10.0%
Could not or did not want to take a day off work	3	7.5%
Decided to keep the appliance in use	3	7.5%
Knew someone else who needed the appliance	3	7.5%
Appliance too heavy/ liability issues	2	5.0%
Did not hear JACO at the door	1	2.5%
Scheduling was a hassle	1	2.5%
Construction on street prevented access	1	2.5%

¹Multiple responses accepted.

For the two near-participant respondents who eventually had their appliance picked up, both had rescheduled their appointments. One customer stated that the process worked smoothly. The other ended up scheduling the appointment five times before it was finally picked up. The first two appointments were cancelled by the customer due to a work conflict. For the third and fourth appointments, JACO did not show up to pick up the appliance:

"The third time, I scheduled for July 7th and it would have worked great. But no one stopped by, so I called AEP and they looked and said there was a glitch in the computer and no pickup was scheduled. I then scheduled for July 14th, and I thought well this is going to be my fourth attempt. They said to leave it outside with a note for AEP to pick up and sign off on it. However, when I came home on the 14th, it was still there. At that point I gave up on it. But for some reason I gave it one more shot and it worked. November 4th it was picked up."

It is important to note that once the appointment is cancelled or the contractor is a no-show, the customer may not reschedule the appointment for several reasons. The customer may reconsider their decision, perhaps because they do not want to wait any longer, or they do not want to take another day off work.

"We decided to not reschedule because their only time available was two weeks away."

"I certainly understand they need to have plenty of time. But we needed to get rid of it right away. Within 5 days."

"I couldn't take a day off of work to wait for them to come and get it."

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Two customers explained that they did not trust JACO to pick it up after missing the first appointment, and this is why they did not attempt to reschedule the appointment.

"I thought whoever was supposed to pick it up the first time, they probably won't do any better the second time."

"I wasn't even going to mess with it again. If they weren't going to come I wasn't going to call them."

Customers with cancelled appointments may decide to keep the appliance, give it away, or sell it. Much of this is driven by the fact that the near-participant respondents often just wanted the old appliance gone, and the method by which it is removed, or even the incentive amount, was less important.

"They didn't have to give me anything. I was just trying to get rid of it."

"I just wanted to get rid of it. The \$25, or I can't remember what they were going to give me, it really had very little bearing on it."

"Since they couldn't come and get it, we just needed to get rid of it. Maybe if it was a higher incentive we would have kept it, but we just wanted to get rid of it."

Respondents were asked to report any suggestions they had for program improvements. Several respondents commented on the need for weekend appointments (which may not be available in all areas on a regular basis) or appointments later in the day.

"Weekend pickups would have been a better deal. I was taking time off on a weekday. Is it worth losing a paycheck?"

Others who reported that the collection team did not show up on schedule had suggestions for improving the service:

"I would say they need more help -- more drivers or more availability. Sounded like they were trying to cover too big an area to me."

"Well, just pick them up. They should show up within a time period. They told me they would. They called me three times to say they would be late and then later then never showed."

What Happens to the Appliances When Pickups Are Cancelled?

Near-participant respondents were asked to report what had happened to the appliance after their appointment with AEP Ohio was cancelled. Table 4-29 shows that half of respondents indicated that the appliance was in use, or possibly still in use (e.g., it is unknown whether appliance retailers dispose of old appliances or release them back into the secondary market). The most common response was that the customer had given away or sold the appliance,

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meaning that it is currently being used by another person. The convenience of home pick up was the number one response for signing up for the program; therefore, it makes sense that customers would attempt to sell or give away their appliance. This way, someone else comes to take away the appliance and the customer would not need to move it out of their home themselves.

Because this is based on a small sample of 40 near-participants, the evaluation team cannot conclude that 50 percent of all program near-participants will end up keeping their appliances in use. However, to estimate the effect that cancellations could have on program impacts, we took an average of two "drop-out" estimates provided during staff interviews, which yielded an average drop-out rate of 12 percent. For 2010, this would amount to an additional 1,563 appliances that were not picked up by the program because of cancelled appointments that were never rescheduled. Assuming the same proportion of refrigerators and freezers as those collected by the program for the 2010 program year, this would equate to a missed opportunity of 1,212 refrigerators and 352 freezers, which is equivalent to 2,437 MWh. If 50 percent of these remain in use, it means that the program would miss the opportunity to prevent 1,219 MWh of energy use.

Table 4-29. Near-Participants' Reports of What Happened to the Appliance That Was Not Picked Up

Response	Frequency	Percent
In Use or Possibly Still in Use		
Gave It Away Or Sold It	10	25.0%
Kept Appliance, In Use	5	12.5%
Picked Up by Appliance Retailer	3	7.5%
Kept Appliance, Plan to Sell It Or Give It Away	2	5.0%
Total In Use or Possibly Still in Use	20	50.0%
No Longer in Use or Plan to No Longer Use		
Kept Appliance, Unplugged	8	20.0%
Kept Appliance, Plan to Reschedule with AEP Ohio	5	12.5%
Took It to a Dump or Recycling Center	4	10.0%
Picked up by AEP Ohio	2	5.0%
Kept Appliance, Plan to Take It to Dump or Recycling Center	1	2.5%
Total No Longer In Use or Plan to No Longer Use	20	50.0%
Grand Total	40	100%

Ways to Increase Pickups/Decrease Cancellations

Staff offered several ways to increase the number of appliances picked up by the AEP Ohio Appliance Recycling Program. One consideration is that, according to the JACO Program

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Manager, if participation were to increase, the amount of time between customer enrollment and when the appliance can be picked up will decrease. This is because more program activity necessitates more frequent pickups in each region within the AEP Ohio service territory. With more frequent pickups, cancellations may decrease due to shortened scheduling times, leading to an even greater increase in appliance collections.

AEP Ohio may want to consider allowing pickups without a person present. According to the Operations Manager, a big reason for pickup cancellations is because somebody 18 years or older must be present at the pickup to sign the paperwork. For example, some customers might not be able to take off work to be at home when the pickup occurs. In other similar programs across the country, customers are allowed to leave a note indicating that it is okay to pick up the appliance without their presence or signature on the paperwork. In this case, the customer would be asked to tape the door shut, and face the door to an outside wall. The unit remains plugged in with the use of an extension cord, and the customer places the unit in a backyard or otherwise out of sight, if possible. According to the Operations Manager, this approach would cut down on the number of cancellations because the customer does not need to be home when the appliance is picked up.

The size requirements for eligible appliances may prevent some secondary refrigerators from being retired. One staff interviewee suggested decreasing the requirements for eligible refrigerators to allow eight cubic feet. The program currently specifies a minimum size of ten cubic feet. The larger volume size requirement means that a small fraction of the time (i.e., several per week) JACO will arrive at the customer's residence and find that the appliance does not meet the size requirement. This was more of a problem when the program first began, however. Still, this staff person felt that allowing smaller sized appliances would increase the number of eligible pickups.

The program may want to consider expanding the program to include window air conditioners and/or dehumidifiers. One program staff person noted that programs in other states include window air conditioners and dehumidifiers in their appliance recycling programs. While this is the opinion of one staff person, AEP Ohio may want to consider whether adding these appliances to the eligible products list may be cost-effective. Adding eligible appliances could theoretically increase participation to the extent that the schedule for appliance pickups could be adjusted to more frequently visit different areas and, therefore, allow for quicker turnaround times between when a customer calls to schedule an appointment and when they are able to set the pickup appointment. Faster turnaround times could in turn result in greater participation rates.

4.3.10 Retailer Partnership

AEP Ohio and JACO began partnering with the retailer Sears in August 2010. Sears sales associates promote the program to customers purchasing new refrigerators or freezers. Customers still enroll in the program through JACO, but Sears picks up the old appliances when the new appliances are delivered. JACO then collects the appliances from Sears.

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According to the JACO Program Manager, there is some anecdotal evidence that some appliances picked up by Sears may have previously gone into the secondary market. Furthermore, without the incentive and recycling benefit, it is possible that some customers might have kept their units and used them as secondary appliances, or they might have sold or given them away. Therefore, the arrangement with Sears means that these appliances are instead guaranteed to be removed from operation and recycled.

Participation through the retail partner has been low. From August through December 2010, only 22 appliances were collected for the AEP Ohio program through the partnership with Sears. The retail staff are responsible for promoting the program, and it is possible that the retail staff are not appropriately engaged. While Sears receives a \$20 fee for picking up appliance for the AEP Ohio program, the retail staff do not receive any incentive. Another possible contributor to low participation is staff turnover. One program staff person suggested perhaps it is time to visit the stores again and retrain the retail staff so they are better equipped to explain the program to customers.

The scheduling process may prevent more appliances from being picked up by Sears for the AEP Ohio program. At this time, Sears does not have access to schedule customers in the JACO enrollment system. Instead, the program relies on the customer to go home and call JACO to have their appliance count toward the AEP Ohio program goals. The customer can call to enroll in the AEP Ohio program any time before the retailer removes the old appliance from the home. If the customer forgets to enroll before Sears arrives to deliver the new appliance, the customer can either call JACO to enroll at that moment, or they can choose to retain the old appliance and enroll with JACO at a later time. If Sears removes the old appliance before the customer has called to enroll in the AEP Ohio program, the collected appliance will not be credited to the program. Sears will simply go through its usual channels to get rid of the appliance.

4.3.11 Program Tracking Data Review

The evaluation team conducted a review of the program tracking data and documented any issues that were discovered. All of the issues identified were generally associated with incomplete records for a number of tracked fields. Most fields were well-populated, particularly the most important fields for evaluation and the regression-based impacts determination (age, size, configuration, defrost mode, and labeled amperage). However, some of the tracked fields were missing or the entry was designated "unknown" or "N/A." Furthermore, some data were entered incorrectly, or in a way that makes accurate tracking of participants across time very difficult.

Many of the entries for the "Type Detail" field were inaccurate. For example, 45 percent of freezers in the tracking data were denoted as "single door." Freezers can only be "chest" or "upright," so the evaluation team was required to recode this field. A change to the script for the data-entry software could quickly solve this problem by only allowing options for freezers that are appropriate for freezers, and only allowing options for refrigerators that are appropriate for refrigerators.

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JACO tracks reasons for cancellations, but this information is not regularly included in the data requested by AEP Ohio. If AEP Ohio were to regularly request and review these data, it may help trouble-shoot ways to prevent cancellations.

The program tracking data is currently not set up to easily track cancellations to determine if these customers eventually participate. Every time an appointment is rescheduled, the appointment is tracked in the database as a new order (the old order gets cancelled when the customer is a no-show). Account numbers are at times not consistently entered, or names are spelled differently. A customer who cancels multiple times will have multiple orders. This situation creates a challenge when trying to determine whether a customer who cancelled eventually ends up participating, or whether they “drop out” of the program altogether.

4.3.12 Verification and Due Diligence

The evaluation team also assessed the effectiveness of QA/QC procedures with respect to:

- » Verification of customer/appliance eligibility
- » Accuracy of appliance pickup data
- » Accuracy of appliance recycling data

The QA/QC procedures used for the AEP Ohio Appliance Recycling Program were compared to industry “best practices” for similar programs.¹¹ Information was collected primarily through interviews with implementers JACO and Appliance Distribution, as well as through program documentation.

Verification of Customer/Appliance Eligibility

The JACO call-center operators go through a pre-qualification screening with the customer before an appointment is set up. Customers are asked who their utility is and to provide the size of the unit being collected. JACO then checks that the person/residence is in the customer database provided by AEP Ohio. If size is not easily discernable from the nameplate, the customer is instructed to take the measurements on the inside of the appliance. Operators also verify with the customer that the appliance is in working order. “Working order” is defined as a working compressor. If the customer is unsure if their appliance qualifies, the customer can go ahead and schedule a pickup, but the customer is notified that if the collection team determines that the appliance does not qualify, the team will not be able to remove the appliance from the customer’s home.

¹¹ Industry best practices were identified through <http://www.eebestpractices.com/benchmarking.asp> and http://www.energystar.gov/ia/products/recycle/documents/StartAFridgeFreezerRecyclingProgram_FINAL.pdf

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Customers are instructed to have the unit empty and plugged in to prove that the unit is operational. Size limitation is a minimum of 10 cubic feet to a maximum 30 cubic feet.

Because the appliances are disabled prior to arrival at the collection warehouse, this ensures that the appliances are not going to the secondary market, as they are rendered unusable. The power cord is severed during pick up, and once on the truck, the crew damages the cold-control, cuts the gasket, and defaces the unit with a marker (by writing the tracking number on it). However, this approach also means that there is no quality assurance method for ensuring that all collected appliances are operational at the time of pick-up.

Assessment: Procedures for determining customer eligibility are appropriate. AEP Ohio provides JACO with customer data, and the JACO call center verifies that the person is an AEP Ohio customer when the appointment is scheduled. However, there is no check on the functionality of units that are picked up, as units are disabled prior to arriving at the warehouse. Participant surveys and staff interviews do not suggest that non-operational appliances are being picked up by JACO. However, the evaluation team recommends that AEP Ohio regularly request and review data regarding cancellation reasons from JACO to determine if appointments are cancelled on the pickup day because the appliance does not qualify. If no appointments are cancelled on the pickup day due to a non-qualifying appliance, this could suggest that JACO may be picking up some appliances that are not operational instead of canceling the appointment.

Collection of Appliances

This section reviews verification and due diligence procedures with respect to the collection of appliances picked up by JACO, then for appliances picked up by the retail partner, Sears.

JACO Pickups

Pickups are conducted by the JACO subcontractor, Appliance Distribution. All pickups are scheduled within two weeks of the customer request (unless the customer requests a later pickup date), but the timing of pickups is heavily dependent on when the next pickup is scheduled for the general area where the customer lives. The typical wait time is 8 to 10 days, while some are picked up in as little as 2 to 3 days.

When the appliance is picked up, the appliance gets a barcode and the barcode is assigned to the customer in the database. In addition to the barcode, the tracking number, along with the initials of the driver and the date, is written in marker on the side of the appliance. A photograph is taken of the appliance. The collection team uses handheld devices to record size, model, year, type of unit, and amperage off the nameplate. This system, which uses the barcode, photo, and handheld data entry, ensures that the units that are picked up are the same units that are delivered to the recycling facility.

The barcode and pictures are used to make sure that the unit that is picked up from the customer is the same as the one that is received at the recycling facility. If barcode and unit

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description are not the same at the recycling facility, collection staff can use the photograph to check. When a unit comes into the facility, staff cross-check the data that were entered in the field. This approach is an informal process of double-checking information and correcting anything that is missing or incorrect.

Although there is not yet a formal plan or approach, AEP Ohio has expressed a desire to begin randomly calling customers to check that appliances are being picked up. AEP Ohio has no reason to suspect the data are inaccurate, however.

The JACO call center conducts quality assurance by conducting follow-up with some customers, calling back a subset to ensure that collection procedures were followed. To ensure that collection staff members are properly trained and conducting pickups according to the prescribed protocol, ride-alongs are conducted once a quarter, with a JACO trainer spending a full day with each crew.

Assessment: Procedures are in place to ensure that the appliances that are picked up in the field are the same units that are being delivered to the recycling facility. The collection team uses barcodes, photographs, and data entered at the customer home to ensure the appliance is properly tracked, while the call center follows up with a random selection of participants to confirm that proper procedures are being followed. Ride-alongs with JACO trainers are scheduled for once per quarter.

Sears Pickups

When Sears delivers the new appliance to the customer, Sears picks up the old appliance. Prior to removal, the customer places a sticker on the outside of the appliance that contains the order tracking number. Sears delivers the appliances to their distribution warehouse, and the appliances that are marked for the Appliance Recycling Program are separated from the other units Sears has collected. JACO then comes to pick up the units and delivers them to the recycling facility.

Assessment: Because the retail partnership began late in the 2010 program year, and very few appliances were collected through this channel, the evaluation team did not review program documentation specific to the retailer partnership. If AEP Ohio is interested in continuing or expanding the program, it is recommended that AEP Ohio examine the QA/QC procedures with respect to the retail partnership in greater detail to ensure that proper procedures are taken to verify the eligibility of appliances and collection procedures.

Recycling of Appliances

The identifying barcodes, photographs, and appliance data collected in the field all ensure that the unit that is collected is the same unit that is delivered to the recycling facility. Once appliances reach the recycling center, the unique barcode gets scanned. Then, the amounts of fluids and weights/volumes of materials extracted during the de-manufacturing process are recorded in the database. To ensure that de-manufacturing staff are properly trained and that

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procedures are conducted according to the prescribed protocol, a trainer spends a full day with the staff once per quarter.

Assessment: Procedures appear to be adequate, however, this evaluation did not audit the de-manufacturing facility or conduct interviews with recycling staff. A more in-depth review of recycling QA/QC procedures should be conducted if AEP Ohio is concerned about the verification of appliance recycling procedures.

Verification of Program Tracking Database

An online dashboard allows AEP Ohio and JACO to track program progress in real time. Appliance collection data are uploaded/populated instantaneously to the program-tracking database. The information collected at the recycling center is populated by a pocket PC by the warehouse staff. JACO collaborates with a subcontractor to compile the data and the data are then shared with AEP Ohio.

JACO monitors the online dashboard for projected versus actual units picked up. Any major anomalies can be detected by observing the dashboard on a regular basis and determining whether the data are drastically different from one day to the next. In this way, JACO can identify where errors are and have them sought out and corrected. Before an invoice goes out to AEP Ohio, JACO conducts a manual scan to make sure all fields are populated and that there are account numbers for all orders.

AEP Ohio monitors the online dashboard at least weekly, often two or three times per week. The primary information reviewed by the AEP Ohio Program Manager includes the number of pickups and the number of scheduled pickups. The Program Manager also checks the invoice against the dashboard to ensure invoicing accuracy. The AEP Ohio Compliance team also downloads the data on a weekly basis and performs checks to validate the consistency of the database.

Assessment: Number/types of appliances picked up are reported on a continuous basis, which is consistent with best practices identified by ENERGY STAR®. The data are also regularly reviewed for anomalies by both JACO and AEP Ohio staff.

4.4 *Cost Effectiveness Review*

This section addresses the cost effectiveness of the Consumer Appliance Recycling Program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. Table 4-30 summarizes the unique inputs used in the TRC test.

Table 4-30. Inputs to Cost-Effectiveness Model for Appliance Recycling Program

Item	CSP	OPCo
Measure Life	5.0	5.0
Units Recycled	5,486	5,975
Annual Energy Savings (MWh)	8,587	9,278
Coincident Peak Savings (MW)	1.109	1.203
Third Party Implementation Costs	\$358,504	\$335,337
Utility Administration Costs	\$28,248	\$26,453
Utility Incentive Costs	\$595,207	\$711,564
Participant Contribution to Incremental Measure Costs	\$0	\$0

Based on these inputs, the TRC ratios are 4.3 and 5.0 for CSP and OPCo, respectively. Therefore, the program passes the TRC test in each service territory. Table 4-31 summarizes the results of the cost-effectiveness tests. Results are presented for the Total Resource Cost test, the Ratepayer Impact Measure Test, and the Utility Cost Test. Because the participants did not contribute to costs, the Participant Cost Test is not applicable for this program.

Table 4-31. Cost Effectiveness Results for the Appliance Recycling Program

Test Results for Prescriptive	CSP	OPCo
Total Resource Cost	4.3	5.0
Participant Cost Test	N/A	N/A
Ratepayer Impact Measure	0.3	0.3
Utility Cost Test	1.7	1.7

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.

Section 5. Conclusions and Recommendations

5.1 *Conclusions from PY 2010*

Overall, the Appliance Recycling Program is exceeding its goals, and program processes appear to be operating smoothly. Detailed conclusions are organized with respect to each of the evaluation questions listed in Section 3.2.

5.1.1 Program Impacts/Realization Rates

The Appliance Recycling Program exceeded energy and demand savings goals for 2010. The goal for energy savings was 8,325 MWh, while the demand savings goal was 1,004 kW. The calculated ex-post gross savings for the 2010 program year were much greater, at 17,865 MWh and 2,312 kW. The program, meanwhile, reported 17,850 MWh savings and 1,619 kW demand reduction, which is somewhat lower compared to the ex-post gross savings. The realization rates were 1.00 for gross energy savings and 1.43 for gross demand savings. This means that the evaluation-calculated gross demand savings were 43 percent higher than the ex-ante gross demand savings reported by AEP Ohio.

5.1.2 Benefits/Costs/Cost Effectiveness

The Total Resource Cost (TRC) ratios for the PY 2010 Appliance Recycling Program are 4.3 and 5.0 for CSP and OPCo, respectively. Therefore, the program passes the TRC test in each utility and for AEP Ohio in its entirety. 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 TRC benefit/cost ratio.

5.1.3 Effectiveness of the Program Implementation, Design, and Delivery Processes

Participants are highly satisfied with the program. Participants particularly liked not having to remove the appliance themselves, as well as the incentive offered by AEP Ohio. Half of participant survey respondents indicated that the program made them feel more favorable about AEP Ohio. Only 2 out of 317 participant survey respondents (0.6%) stated that they felt less satisfied with AEP Ohio after participating in the program.

Staffing roles/responsibilities are clearly defined and communications between persons/departments are regular and facile. Finalizing the Operations Manual will allow AEP Ohio to continue to document and communicate roles and responsibilities with new staff.

5.1.4 Marketing and Program Awareness

In 2010, more participants learned of the program through newspaper and television ads; however, almost half of customers remain unaware of the program. Compared to 2009, a greater proportion of 2010 participant survey respondents reported first learning of the program through newspaper or television ads. In 2010, 56 percent of participants surveyed had

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seen the Appliance Recycling Program advertised in a newspaper, while 45 percent had seen the program advertised in a bill insert, and 32 percent had seen it advertised on television. However, 2010 participation was lower than expected, with 11,461 appliances collected compared to the contractual goal of 13,000. Because of this, the program increased marketing in the fall with a targeted marketing campaign to 100,000 nonparticipants. The baseline survey found that 46 percent of AEP Ohio residential customers were unaware of the Appliance Recycling Program, so there is substantial room to increase awareness of the program.

5.1.5 Barriers to Participation

The wait time between enrollment and appliance pickup prevents some participants from participating in the program. Convenience was the number one reason near-participants initially chose the AEP Ohio Appliance Recycling Program. While the incentive was a close second reason, many respondents remarked that they just wanted the appliance removed from their home. Once an appointment is cancelled, whether the cancellation is related to a customer reason or a JACO reason, customers view rescheduling as a hassle. Customers may not want the hassle of waiting up to an additional two weeks to have the appliance removed. Customers whose appointments are cancelled are at risk for dropping out of the program completely so they can quickly get rid of their old appliance so that it does not continue taking up space in their home. Thus, customers may resort to the next best option for having the appliance removed from their home, meaning that appliances may stay in operation, rather than being destroyed or recycled. Of the 40 near-participants that the evaluation team interviewed, half of the appliances remained in use after the cancelled appointment. Scheduling appointments within shorter times frames, or making pickups more convenient for the customer (e.g., do not require the customer to be present during pickup) would decrease pickup cancellations.

AEP Ohio may want to consider allowing pickups without a person present. According to the Operations Manager, a big reason for pickup cancellations is because somebody 18 years or older must be present at the pickup to sign the paperwork. This was corroborated by 8 (20 percent) of the 40 near-participant respondents; five originally cancelled the appointment because they could not be home during the pickup, and three specifically stated that they could not or did not want to take time off work to be there when the pickup occurs. In other similar programs across the country, customers are allowed to leave a note indicating that it is okay to pick up the appliance without their presence or signature on the paperwork. In this case, the customer would be asked to tape the door shut, and face the door to an outside wall. The unit remains plugged in with the use of an extension cord, and the customer places the unit in a backyard or otherwise out of sight, if possible. According to the Operations Manager, this approach would cut down on the number of cancellations because the customer does not need to be home when the appliance is picked up.

The size requirements for eligible appliances may prevent some secondary refrigerators from being retired. One staff interviewee suggested decreasing the requirements for eligible refrigerators to allow 8 cubic feet. The larger volume size requirement means that sometimes JACO will arrive at a customer's residence and find that the appliance does not meet the size

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requirement. This was more of a problem when the program first began. Still, this staff person felt that allowing smaller sized appliances would increase the number of eligible pickups. Several of the scheduled pickups per week are cancelled because they do not meet the size requirements.

There is opportunity to increase program awareness and participation. The baseline survey found that 46 percent of respondents were not aware of the AEP Ohio Appliance Recycling Program, suggesting that additional marketing, or a revised marketing strategy, may help the program meet its goals in terms of number of units collected. Thirty-five percent of baseline survey respondents indicated that they own two or more refrigerators, and 6.5 percent of baseline survey respondents have more than one stand-alone freezer. Aside from lack of awareness, the primary reason respondents were not interested in participating in the program is because their appliances still worked. Thus, communications should continue to emphasize the benefits of retiring older, yet operational, secondary appliances.

5.1.6 Current Program Challenges

It is not clear why the retailer partnership resulted in so little participation. The retail partnership has only resulted in 22 appliance pickups from August (when the partnership began) through December 2010. One potential factor raised by program staff is the scheduling process, which requires customers to go home and call JACO to enroll in the program, before the retailer delivers the new appliance and picks up the old one. If the retailer removes the old appliance before the customer has enrolled with JACO, the appliance will not count toward the program, and will instead be disposed of through the retailer's usual methods. Another potential factor is that retail sales associates may not be engaged in the program at a level sufficient to attain the full potential of the partnership.

5.1.7 Process Goals

While the program has established goals for number of appliances collected and demand and energy savings, the program does not currently have comprehensive process-related goals. While the program has established goals for number of appliances collected, energy savings, and demand savings, the program does not currently have set goals for customer satisfaction or marketing effectiveness. However, according to program staff, efforts are underway to examine marketing effects in terms of where marketing took place compared to where pickups occurred. Concerning process-related implementation goals, while there is a goal for the amount of time between appliance pickup and the mailing of the incentive check (within 4 to 6 weeks), the program does not have goals for the number of days between enrollment and appliance pickup. Setting goals for these process-related metrics may help the program pinpoint reasons for lower-than-expected participation levels. A systematic examination of marketing effects by region may also shed light on program success.

5.1.8 Program Tracking System QA/QC

The tracking data are not currently set up to allow the program to easily track whether drop-outs sign up for the program at a later date. The current practice is to cancel order numbers and create new order numbers when drop-outs re-enroll in the program. This means that many customers have multiple order numbers representing different cancellations and/or pickups. Tracking one order number for each appliance, instead of cancelling order numbers and creating new order numbers when a drop-out re-enrolls in the program, would easily allow the program to track the status of cancellations.

AEP Ohio does not regularly review data regarding “reasons for cancellation.” Whereas JACO tracks reasons for cancellation, the tracking data provided to the evaluation team by AEP Ohio did not regularly contain this information. Access to this information would allow program staff to identify barriers to participation and monitor the rate of cancellation.

Appliance data coded in the “Type Detail” field are not always consistent with the regression analysis designations. An examination of the program tracking data found that 45 percent of freezers collected were coded as “single door,” a characteristic that should be used to describe refrigerators only. Freezers should only be coded as “chest” or “upright.” Likewise, refrigerators should only be coded as “single-door,” “side-by-side,” “top freezer,” or “bottom freezer.” If these data are entered more consistently, then savings calculations can be more quickly and easily conducted throughout the program year, enabling AEP Ohio to more accurately track progress toward savings goals in addition to units collected. In addition, a comparison of program tracking data with participant survey data suggests that JACO might have coded a refrigerator that was not being used at the time of pick-up as “not in use” even if that refrigerator was used during part of the year, which would result in an underestimate of savings.

Quality control/quality assurance processes are generally adequate. Procedures for determining customer eligibility are appropriate. Procedures are also in place to ensure that the appliances that are picked up in the field are the same units that are being delivered to the recycling facility. Number/types of appliances picked up are reported on a continuous basis, which is consistent with best practices identified by ENERGY STAR®.

5.1.9 Increased Incentive Level

The increased incentive appeared to result in a temporary increase in program participation. Among participant survey respondents, the cash incentive was the most common motivation for participating, with 52 percent stating that this was the main reason they chose the AEP Ohio program to get rid of their appliance. Although the effects of the increased incentive cannot be isolated from other factors, such as a typical summer increase in appliance removals, it appears that the increased incentive likely had at least a temporary effect by increasing enrollments. Enrollments increased from 479 in April to 2,166 in May, when the incentive was increased from \$25 to \$50 per appliance. June enrollments were similar to May, and July enrollments were

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down to 1,089. Survey respondents who received the \$50 incentive reported that they were somewhat more satisfied with the program, and they were more motivated to participate by the incentive, compared to those who received the \$25 incentive. Staff interviews suggested that typical cycle of appliance recycling program is to see most participation in the spring and summer months, which requires layoff of collection and call-center staff in the winter months. The program may suffer when new staff are then hired when the program picks back up again, rather than benefitting from the experience of seasoned staff. To increase participation in the fall and winter months, and prevent staff layoffs and turnover, one possibility is to use the \$50 incentive as a "special" incentive in the fall and winter months.

5.1.10 Changes in Program Implementation

The only change to program implementation in 2010 was the addition of the retailer partnership. Thus far, the partnership has seen little participation. See 5.1.6 for a more detailed discussion.

5.1.11 Implementation of 2009 Recommendations

Several of the 2009 recommendations became evaluation questions for 2010, and these items are discussed in sections 5.1.6, 5.1.7, 5.1.8, and 5.1.9. Following is a summary of the status of the remaining 2009 recommendations.

AEP Ohio has continued to reinforce the value of recycling older appliances in customer communications. Bill inserts and newspaper ads reviewed by the evaluation team showed that the marketing materials emphasize the extra energy use and higher electricity costs that result from older (i.e., 10 years or older) refrigerators. Newspaper ads also emphasize the environmental impact of appliances that are disposed of improperly.

The program is educating customers on energy bill savings that would result from recycling an old appliance. Marketing materials advertise that customers can save up to \$150 per year on their utility bill by retiring a secondary appliance.

AEP Ohio has begun to integrate its programs that serve residential customers. The Home Energy Reports included a tip for customers to reduce their energy use by recycling their old appliances. Outreach events promote all residential programs simultaneously. The residential Lighting Program implementer also routinely delivers information to retailers that also offer appliances in addition to lighting products. AEP Ohio should continue these efforts and consider cross-promoting the Appliance Recycling Program with all other residential programs.

5.2 Recommendations for Program Improvements

Based on the impact and process evaluations of the PY 2010 Appliance Recycling Program the evaluation team offers the following recommendations for improvements:

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1. **The evaluation team recommends that AEP Ohio set goals for marketing effectiveness, and that marketing efforts are in turn monitored to assess progress toward goals.** Because participation rates were lower than expected, comparing marketing efforts to program participation may help pinpoint areas where specific types of marketing are more effective. For example, a GIS study comparing where marketing takes place versus where appliances are collected could shed light on the effectiveness of program marketing methods across the AEP Ohio service territories.
2. **The Program may want to consider allowing pickups without a person present.** Interviews with near-participants (those who enrolled in the program but did not have an appliance picked up) found that convenience was the number one reason they originally enrolled in the program. Customers just want the appliance out of their home as soon as possible, and they do not want to have to take a day off of work to do so. For many near-participants, once their appointment was cancelled instead of rescheduling with AEP Ohio, and waiting up to two weeks to have their appliance removed, they often chose the most convenient option. This could mean that appliances remain in operation rather than being recycled. In other similar programs across the country, customers are allowed to leave a note indicating their approval to have the appliance picked up in their absence and without their signature on the paperwork. In this case, the customer would be asked to tape the door shut, and face the door to an outside wall. The unit remains plugged in with the use of an extension cord, and the customer places the unit in a backyard or otherwise out of sight, if possible.
3. **The evaluation team recommends that AEP Ohio evaluate the retail partnership to determine whether it should continue or be revised.** Part of this may involve examining the scheduling process for customers who participate through retailers, and/or assessing the ability and willingness of retail sales associates to promote the program. It would also be instructive to examine best practices and lessons learned from other utilities that have implemented retailer partnerships with respect to appliance recycling programs. Additionally, if AEP Ohio is interested in continuing or expanding the retailer partnership, it is recommended that AEP Ohio examine the QA/QC procedures to ensure that proper procedures are taken to verify the eligibility of appliances and collection procedures for this component of the program.
4. **The tracking data should allow the program to easily track whether drop-outs sign up for the program at a later date.** The current practice is to cancel order numbers and create new order numbers when drop-outs re-enroll in the program. Because of this, many customers have several order numbers representing multiple cancellations/pickups. Some customers had cancellations *after* pickups occurred. Furthermore, some orders included a cancel date but then also included an entry (in the "Uc" and "PX" fields) indicating that the appliance was collected. Finally, some customers have more than one account number, which also creates a challenge when trying to match up records to determine if customers who cancel eventually participate.

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Although not impossible, it is difficult and time-consuming to determine whether those with cancelled appointments eventually participate in the program. The evaluation team recommends that JACO or AEP Ohio develop a system to more easily track the status of program drop-outs and whether they eventually participate in the program. JACO should consider tracking one order number for each appliance, instead of cancelling order numbers and creating new order numbers when a drop-out re-enrolls in the program.

5. **The evaluation team recommends that JACO alter their data entry process so that it only allows appropriate configuration options for freezers and refrigerators as defined by the regression model.** Forty-five percent of freezers were incorrectly labeled as “single-door,” which is a term used only to describe refrigerators in the regression model used for the calculation of savings. Without first correcting this in the program tracking data, energy savings could be under-estimated. Additionally, AEP Ohio and JACO should come to an agreement on how terms tracked in the program data are defined, and how these responses are collected in the field. For example, altering how customers are asked whether their appliance is currently in use vs. in use part of the year will contribute to more accurate savings estimates.
6. **The Program should examine ways to vary the incentive level seasonally.** Although the effect of the increased incentive cannot be isolated from other factors, such as a typical summer increase in appliance removals, it appears that the increased incentive likely had at least a temporary effect. Program enrollments increased substantially in May 2010, when the incentive level increased from \$25 per appliance to \$50 per appliance. Because appliance recycling programs traditionally show a natural increase in participation in spring and summer, AEP Ohio may want to consider only offering the increased incentive during fall and winter months when participation would normally decrease. AEP Ohio is strongly encouraged to conduct research to examine the potential effect of seasonal variations in the incentive level.

Section 6. Appendices

6.1 Data Collection Instruments (Imbedded)

The following guides were used to conduct the surveys with program participants, in-depth interviews with program near-participants, and in-depth interviews with program staff.



6.2 Required Savings Tables

Table 6-1 shows the Ohio state-wide required savings for the PY 2010 Appliance Recycling Program. First, column B presents the audited gross savings, which audits the reported gross ex-ante savings by checking participation counts, savings values and savings calculations. By reviewing the code AEP Ohio used to calculate ex ante energy savings and applying it to the tracking data, the evaluation team was able to verify that the ex-ante energy savings were calculated correctly. Likewise, for demand savings, the evaluation team confirmed that AEP Ohio's ex-ante savings calculations are correct given the methodology of attributing 0.1413 kW savings for each unit recycled.

The evaluation team did not verify the program tracking data through on-site visits or phone calls to JACO or customers. Because of this, verified gross savings are not presented.

Table 6-1. Required Savings Table

	Gross Ex-Ante Savings (a)	Audited Gross Savings (b)	Statistical Adjustment (c)	Adjusted Gross Savings (d) = (b) x (c)	Gross Realization Rate RR = (d) / (a)
Energy Savings (MWh)					
CSP	8,576	8,576	1.001 ^(a)	8,587	100.1% ^(a)
OPCo	9,274	9,274	1.000	9,278	100.0%
Total	17,850	17,849	1.001	17,865	100.1%
Demand Savings (MW)					
CSP	0.775	0.775	1.431	1.109	143%
OPCo	0.844	0.844	1.425	1.203	143%
Total	1.620	1.619	1.428	2.312	143%

a. Tenth-place presented to show slight difference in results.

For energy savings, AEP Ohio used the same procedure as the evaluation team to calculate the ex-ante savings, so the ex-ante savings should be the same as both the audited gross savings

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and adjusted gross savings. The evaluation team has reviewed AEP Ohio's algorithm and it is unclear why there is a slight difference in savings.

Column C shows the adjusted (ex-post) gross savings presented in the report. Column D shows the adjustment factor that needs to be applied to the audited gross savings to calculate the adjusted gross savings. For energy savings, AEP Ohio used the same procedure to calculate the ex-ante savings as the evaluation team used to calculate adjusted gross savings, so these two values should be the same. The evaluation team has not found any causes for the very slight differences in these values, so these are assumed to be attributable to rounding differences. For demand, the adjustment factors are larger than one because the evaluation team's method for calculating demand yields larger savings than the method AEP Ohio used. Column E shows the realization rates as presented in the report.

Data Collection Instruments

1.1.1 AEP Ohio Appliance Recycling Participant Survey

AEP OHIO CONSUMER PROGRAMS – APPLIANCE RECYCLING PROGRAM

PARTICIPANT SURVEY – APPLIANCE RECYCLING

QUOTA CHECK:

Strata Code (Sample)	Name	Wave 1 Quota	Wave 2 Quota	TOTAL
1	TOP FREEZER REFRIGERATOR	108	36	144
2	FREEZER	53	18	71
3	OTHER REFRIGERATOR	74	25	99
TOTAL		235	79	N = 314

INTRODUCTION AND SCREENER

Hello, this is [SURVEYOR NAME] from DataPrompt International calling on behalf of AEP Ohio, your electric utility. This is not a sales call. We are contacting customers who had refrigerators or freezers removed through an appliance pick-up and recycling program offered by AEP Ohio. May I please speak with [CUSTOMER_NAME]?

Are you the person who was most involved and familiar with the refrigerator or freezer removal? (IF NOT: May I please speak with the person who was most involved with the removal?)

IF NO REFRIGERATOR OR FREEZER PICKED UP: THANK AND TERMINATE

CONTINUE WITH RIGHT PERSON: We are conducting a study to evaluate AEP Ohio's appliance pick up and recycling program and would like to include your opinions. This is required by the Public Utilities Commission of Ohio and will be used to verify the effectiveness of the program and to make improvements.

(IF NEEDED: It will take about 15 minutes.)

This call may be monitored or recorded for quality purposes.

SCREENING QUESTIONS

S0. Is your electric company AEP Ohio, Ohio Power (OP), Columbus Southern Power (CSP) or another company? **[DO NOT READ RESPONSE LIST]**

1. AEP Ohio
2. Ohio Power/OP
3. Columbus Southern Power/CSP
4. Another company (specify) **[TERMINATE]**
8. Don't know
9. Refused **[TERMINATE]**

S1. Our records show that you had [IF STRATA 1 OR 3: one or more refrigerators / IF STRATA 2: one or more freezers] picked up by AEP Ohio or its subcontractor JACO. Is this correct? **[DO NOT READ RESPONSE LIST]**

- 1 Yes, correct
- 2 No, it was **[RECORD VERBATIM and TERMINATE]**
- 8 Don't know **[TERMINATE]**
- 9 Refused **[TERMINATE]**

[IF STRATA 1 OR 3, READ SECTIONS A AND B. If STRATA = 2, SKIP TO SECTION C.]

SECTION A: REFRIGERATOR CHARACTERISTICS

Now I'm going to ask you some specific questions about the refrigerator that was picked up by AEP Ohio.

A1. Were you using the refrigerator that was picked up by AEP Ohio as your main refrigerator OR had it been used as a spare/secondary unit? If you had recently bought a new refrigerator to use as your main refrigerator and were just waiting for the old main refrigerator to be picked up, it should be classified as "main." **[READ IF NEEDED: A main refrigerator is typically in the kitchen, a spare/secondary unit is usually kept someplace else and might or might not be running all the time. [DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

- 1 Main
- 2 Spare/Secondary
- 3 N/A - Respondent is not primary user of fridge (landlord, etc.) **[TERMINATE]**
- 8 Don't know **[TERMINATE]**
- 9 Refused **[TERMINATE]**

A2. How old was the refrigerator when AEP Ohio removed it? [DO NOT READ RESPONSE LIST]

[NUMERIC OPEN END; RECORD IN YEARS]

- 00 Less than one year
- 98 Don't know
- 99 Refused

A3. What was the condition of the refrigerator? Would you say ... [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1. It worked and was in good physical condition
- 2. It worked but needed minor repairs like a door seal or handle
- 3. It worked but had some bigger problems
- 4. It did not work
- 8. Don't know [DO NOT READ]
- 9. Refused [DO NOT READ]

A4. What was the main reason you chose to get rid of the old refrigerator that was picked up by AEP Ohio? [DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 The refrigerator was expensive to run
- 2 The refrigerator was not working properly
- 3 The refrigerator was a spare that I did not use very much
- 4 The refrigerator was old and I wanted something with more modern features
- 5 I wanted a bigger refrigerator
- 6 I wanted a new refrigerator
- 97 Other (SPECIFY:___)
- 98 Don't know
- 99 Refused

A4b. Were there any other reasons you chose to get rid of the refrigerator? [DO NOT READ RESPONSE LIST; ALLOW FOR MULTIPLE RESPONSES]

- 1 The refrigerator was expensive to run
- 2 The refrigerator was not working properly
- 3 The refrigerator was a spare that I did not use very much
- 4 The refrigerator was old and I wanted something with more modern features
- 5 I wanted a bigger refrigerator
- 6 I wanted a new refrigerator
- 7 I wanted to take advantage of AEP Ohio's offer to remove it for free
- 97 Other (SPECIFY:___)
- 98 Don't know
- 99 Refused

[IF A1=1 SKIP TO A12; IF A1=2 THEN CONTINUE WITH A5]

SPARE/SECONDARY REFRIDGERATOR BATTERY

A5. How long had you been using this refrigerator as a spare/secondary unit when you decided to get rid of it?

[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

[NUMERIC OPEN END, RECORD IN YEARS]

- 00 Less than one year
- 98 Don't know
- 99 Refused

A6. Where was the refrigerator located before it was removed by AEP Ohio? [DO NOT READ; RECORD ONLY ONE RESPONSE; PROGRAMMER: RECORD RESPONSE TO BE USED LATER]

- 1 Kitchen
- 2 Garage
- 3 Porch/Patio
- 4 Basement
- 7 Other (SPECIFY: _____)
- 8 Don't know
- 9 Refused

A7. Thinking just about the past year, was the spare/secondary refrigerator plugged in and running...? [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 All the time [SKIP TO A10]
- 2 For special occasions only
- 3 During certain months of the year only, or
- 4 Was it never plugged in and running?
- 8 Don't know [DO NOT READ] [SKIP TO A12]
- 9 Refused [DO NOT READ] [SKIP TO A12]

A8. [ASK IF A7=2 OR 3] If you add up the total time your spare/secondary refrigerator was plugged in and running during the last 12 months that you had it, about how many total months would that be? Your best estimate is okay. [DO NOT READ RESPONSE LIST]

- ## [NUMBER OF MONTHS FROM 01 TO 12]**
- 00 Less than 1 month
 - 98 Don't know
 - 99 Refused

A9. [ASK IF A7=2 OR 3] Was the refrigerator running during the summer or was it mainly running during other times of the year? [ONLY RECORD ONE RESPONSE]

- 1. Running during the summer
- 2. Mainly running other times of the year
- 3. A mix of both summer and other times of the year
- 8. Don't know [DO NOT READ]
- 9. Refused [DO NOT READ]

A12. Was the refrigerator that was picked up by AEP Ohio replaced with another one?

- 1. Yes
- 2. No
- 8. Don't know
- 9. Refused

[IF A12=1, CONTINUE WITH A13; IF A12=2,8, OR 9, SKIP TO B1]

REPLACEMENT REFRIGERATOR BATTERY

Please think about the refrigerator that *replaced* the refrigerator that AEP Ohio removed.

A13. Did you replace the refrigerator that was removed with a new refrigerator you bought, a used refrigerator you bought, or a refrigerator you moved from somewhere else in the house?

1. Bought New
2. Bought Used
3. Moved from somewhere else
8. Don't know
9. Refused

A14. [IF A13 = 1 OR 2] Did you purchase the replacement refrigerator before or after the old refrigerator was picked up by AEP Ohio? **[RECORD ONLY ONE RESPONSE]**

- 1 Before
- 2 After
- 3 Got it the same day **[SKIP TO A16]**
- 8 Don't know **[SKIP TO A16]**
- 9 Refused **[SKIP TO A16]**

A15. [ASK IF A14=1 OR 2] How long **[BEFORE / AFTER FROM A14]** the old one was picked-up did you get the replacement refrigerator? **[READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

1. Within one to two weeks
2. Over two weeks, but less than two months
3. Within two to three months
4. Within four to six months
5. Within six to twelve months/ one year
6. More than one year
7. Other (Please specify) **[DO NOT READ]** _____
8. Don't know **[DO NOT READ]**
9. Refused **[DO NOT READ]**

A16. [ASK IF (A13=2) OR (A13=1, A14=1 AND A15=6)] How old is this replacement refrigerator?

- ## [NUMERIC OPEN END; RECORDED IN YEARS]**
00. Less than one year
 98. Don't know
 99. Refused

A17. Please keep thinking about the refrigerator that replaced the refrigerator removed by AEP Ohio. Does your replacement refrigerator have ... [READ LIST; RECORD ONLY ONE RESPONSE]

1. A single door, with a freezer compartment inside
2. Two doors, side by side, with a freezer on one side
3. A Top freezer
4. Or a Bottom freezer?
7. Other (SPECIFY:___)
8. Don't know
9. Refused

A18. Is the replacement refrigerator frost-free or manual defrost? [DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 Frost free
- 2 Manual defrost
- 7 Other (SPECIFY:_____)
- 8 Don't know
9. Refused

A19. Is your replacement refrigerator larger, smaller or the same size as the one it replaced? [DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 Larger
- 2 Smaller
- 3 Same Size
- 8 Don't know
- 9 Refused

SECTION B: CONSIDERATION OF ALTERNATIVES SECTION

Now let's get back to your old refrigerator that was removed by AEP Ohio.

B1. When you first heard about AEP Ohio's Appliance Recycling Program, were you already considering getting rid of this refrigerator? This could have been by selling it, giving it away, having someone pick it up, or taking it to the landfill or a recycling center.

- 1 Yes, already considering getting rid of it
- 2 No, had not considered getting rid of it **[SKIP TO B5]**

- 8 Don't know **[SKIP TO B5]**
- 9 Refused **[SKIP TO G1]**

B2. [ASK IF B1 = 1] If you had been unable to get rid of your refrigerator through the AEP Ohio Appliance Recycling program, would you have still gotten rid of the refrigerator or would you have kept it? **[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

- 1 Gotten rid of it
- 2 Kept it **[SKIP TO B5]**
- 8 Don't know **[SKIP TO G1]**
- 9 Refused **[SKIP TO G1]**

GOTTEN RID OF

B3. [ASK IF B2 = 1] Now suppose that the AEP Ohio Appliance Recycling program hadn't been available. In this case, do you think you would you have gotten rid of the refrigerator within 6 months of when you did, within a year of when you did, or would it have taken longer than a year for you to get rid of this refrigerator? **[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

- 1. Within 6 months
- 2. Over 6 months, but within a year
- 3. Over a year
- 8. Don't know
- 9. Refused

B4. I am going to read a list of alternative ways that you could have disposed of this refrigerator if the AEP Ohio program hadn't been available. Please tell me which one you would have been most likely to use to get rid of this refrigerator. Would you have... **[READ RESPONSE LIST; RANDOMIZE; RECORD ONLY ONE RESPONSE]**

- 1. Sold it
- 2. Given it away for free
- 3. Had it removed by the dealer you got your new or replacement refrigerator from
- 4. Taken it to a dump or recycling center
- 5. Hired someone to take it to a dump or recycling center
- 6. Kept it
- 8. Don't know **[DO NOT READ]**
- 9. Refused **[DO NOT READ]**

[IF B2 = 1 SKIP TO G1]

KEPT IT

B5. If you had kept the refrigerator, would it have been stored unplugged or used as a secondary? [RECORD ONLY ONE RESPONSE]

- 1 Stored it unplugged **[SKIP TO G1]**
- 2 Used it as a secondary refrigerator at least some of the time
- 8 Don't know **[DO NOT READ] [SKIP TO G1]**
- 9 Refused **[DO NOT READ] [SKIP TO G1]**

B6. [IF B5=2 OR 3] If you had kept the refrigerator would you have had it plugged in and running...? [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 All the time
- 2 For special occasions only
- 3 During certain months of the year only, or
- 4 Was it never plugged in and running?
- 8 Don't know **[DO NOT READ]**
- 9 Refused **[DO NOT READ]**

B7. [ASK IF B6=2 OR 3] If you add up the total time this refrigerator would have been plugged in and running over a 12 month period, about how many total months would that be? Your best estimate is okay. [DO NOT READ RESPONSE LIST]

- ## [NUMBER OF MONTHS FROM 01 TO 12]**
- 00 Less than 1 month
- 98 Don't know
- 99 Refused

B8. [ASK IF B5 = 2 OR 3] For how many years would you have continued using this refrigerator as a spare? IF NEEDED: Your best estimate is fine.

- ## [NUMERIC OPEN END]**
- 00 Less than 1 year
- 96 Until it broke, indefinitely
- 98 Don't know **[DO NOT READ]**
- 99 Refused **[DO NOT READ]**

READ SECTIONS C AND D IF STRATA = 2

SECTION C: FREEZER CHARACTERISTICS

Next, I'm going to ask you some specific questions about the freezer that was picked up by AEP Ohio.

C1. How old was the freezer when AEP Ohio removed it?

[NUMERIC OPEN END; RECORD IN YEARS]

- 00 Less than one year
- 98 Don't know
- 99 Refused

C2. How long had you been using this freezer when you decided to get rid of it?

[NUMERIC OPEN END, RECORD IN YEARS]

- 00 Less than one year
- 96 N/A – Respondent not primary user (landlord, etc.) **[TERMINATE]**
- 98 Don't know
- 99 Refused

C3. What was the condition of the freezer? Would you say ... **[READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

- 1 It worked and was in good physical condition
- 2 It worked but needed minor repairs like a door seal or handle
- 3 It worked but had some bigger problems
- 4 It wasn't working
- 8 Don't know **[DO NOT READ]**
- 9 Refused **[DO NOT READ]**

C4. What was the main reason you chose to get rid of the old freezer that was picked up by AEP Ohio? **[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

- 1 The freezer was expensive to run
- 2 The freezer was not working properly
- 3 I did not use the freezer very much
- 4 The freezer was old and I wanted something with more modern features
- 5 I wanted a bigger freezer
- 6 I wanted a new freezer
- 97 Other (SPECIFY:___)

- 98 Don't know
- 99 Refused

C4b. Were there any other reasons you chose to get rid of the freezer? [DO NOT READ RESPONSE LIST; ALLOW FOR MULTIPLE RESPONSES]

- 1 The freezer was expensive to run
- 2 The freezer was not working properly
- 3 I did not use the freezer very much
- 4 The freezer was old and I wanted something with more modern features
- 5 I wanted a bigger freezer
- 6 I wanted a new freezer
- 7 I wanted to take advantage of AEP Ohio's offer to remove it for free
- 97 Other (SPECIFY:___)
- 98 Don't know
- 99 Refused

C5. Thinking just about the past year, was the freezer plugged in and running ... [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 All the time [SKIP TO C8]
- 2 For special occasions only
- 3 During certain months of the year only, or
- 4 It was never plugged in and running [SKIP TO C11]
- 8 Don't know [DO NOT READ] [SKIP TO C11]
- 9 Refused [DO NOT READ] [SKIP TO C11]

C6. [ASK IF C5=2 OR 3] If you add up the total time your freezer was plugged in and running during the last 12 months that you had it, about how many total months would that be? Your best estimate is okay. [DO NOT READ RESPONSE LIST]

- ## [NUMBER OF MONTHS FROM 01 TO 12]
- 00 Less than 1 month
- 98 Don't know
- 99 Refused

C7. [ASK IF C5=2 OR 3] Was the freezer running during the summer or was it mainly running during other times of the year? [DO NOT READ RESPONSE LIST]

- 1. Running during the summer
- 2. Mainly running other times of the year

- 3. A mix of both summer and other times of the year
- 8. Don't know
- 9. Refused

C8. In what location did the freezer operate before it was removed by AEP Ohio? [DO NOT READ LIST; RECORD ONLY ONE RESPONSE]

- 1 Kitchen [SKIP TO C10]
- 2 Garage
- 3 Porch/Patio
- 4 Basement
- 7 Other [SPECIFY: _____]
- 8 Don't know [SKIP TO C11]
- 9. Refused [SKIP TO C11]

C11. [ASK ALL] Did you replace the freezer that AEP Ohio picked up with another one?

- 1. Yes
- 2. No [SKIP TO D1]
- 8. Don't know [SKIP TO D1]
- 9. Refused [SKIP TO D1]

REPLACEMENT FREEZER BATTERY

Please think about the freezer that *replaced* the freezer that AEP Ohio removed.

C12. Did you get the replacement freezer before or after the old freezer was picked up?

- 1. Before
- 2. After
- 3. Got it the same day [SKIP TO C14]
- 8. Don't know [SKIP TO C14]
- 9. Refused [SKIP TO C14]

C13. [ASK IF C12=1 OR 2] How long [IF C12=1: before / IF C12=2: after] the old one was picked-up did you get the replacement freezer? [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 Within one to two weeks
- 2 Over two weeks, but less than two months
- 3 Within two to three months
- 4 Within four to six months
- 5 Within six to twelve months/ one year
- 6 More than one year
- 7 Other (specify) **[DO NOT READ]** _____
- 8 Don't know **[DO NOT READ]**
- 9 Refused **[DO NOT READ]**

C14. Was this replacement freezer new or used when you bought it?

- 1. New
- 2. Used
- 8. Don't know
- 9. Refused

C15. [ASK IF (C14=2) OR (C12=1 AND C13=6 AND C14=1)] How old is this replacement freezer?

- ## [RECORD IN YEARS]**
- 00 Less than one year
 - 98 Don't know
 - 99 Refused

C16. Is your replacement freezer ... [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 01 A chest freezer or
- 02 An upright freezer
- 97 Other (SPECIFY:___)
- 98 Don't know
- 99 Refused

C17. Is the replacement freezer frost free or manual defrost? [RECORD ONLY ONE RESPONSE]

1. Frost free
2. Manual defrost
7. Other (SPECIFY: _____)
8. Don't know
9. Refused

C18. Is your replacement freezer larger, smaller or the same size as the one it replaced? [RECORD ONLY ONE RESPONSE]

1. Larger
2. Smaller
3. Same Size
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

SECTION D: FREEZER CONSIDERATION OF ALTERNATIVES SECTION

Now let's get back to your old freezer that was removed by AEP Ohio.

D1. When you first heard about AEP Ohio's Appliance Recycling Program, were you already considering getting rid of this freezer? This could have been by selling it, giving it away, having someone pick it up, or taking it to the dump or a recycling center.

- 1 Yes, had already considered getting rid of it
- 2 No, had not considered getting rid of it [SKIP TO D5]
- 8 Don't know [SKIP TO D5]
- 9 Refused [SKIP TO G1]

D2 [ASK IF D1 = 1] If you had been unable to get rid of your freezer through AEP Ohio's Appliance Recycling program, would you have still gotten rid of the freezer or would you have kept it? [RECORD ONLY ONE RESPONSE]

- 1 Gotten rid of it
- 2 Kept it [SKIP TO D5]
- 8 Don't know [SKIP TO G1]
- 9 Refused [SKIP TO G1]

GOTTEN RID OF

D3. [ASK IF D2 = 1] Now suppose that AEP Ohio Appliance Recycling program hadn't been available. In this case, do you think you would you have gotten rid of the freezer within 6 months of when you did, within a year of when you did, or would it have taken longer than a year for you to get rid of this freezer? **[RECORD ONLY ONE RESPONSE]**

1. Within 6 months
2. Over 6 months, but within a year
3. Over a year
8. Don't know **[DO NOT READ]**
9. Refused **[DO NOT READ]**

D4. I am going to read a list of alternative ways you could have disposed of this freezer if the AEP Ohio program hadn't been available. Please tell me which one you would have been most likely to use to get rid of this freezer. Would you have... **[READ RESPONSE LIST; RANDOMIZE; RECORD ONLY ONE RESPONSE]**

1. Sold it
2. Given it away for free
3. Have it removed by the dealer you got your new or replacement freezer from
4. Taken it to a dump or recycling center
5. Hired someone to take it to a dump or recycling center
6. (Kept it)
8. Don't know
9. Refused

[IF D2=1 SKIP TO G1]

KEPT IT

D5. If you had kept the freezer, would it have been stored unplugged or would you have continued using it? **[RECORD ONLY ONE RESPONSE]**

- 1 Stored it unplugged **[SKIP TO G1]**
- 2 Continued using it at least some of the time
- 8 Don't know **[DO NOT READ] [SKIP TO G1]**
- 9 Refused **[DO NOT READ] [SKIP TO G1]**

D6. [IF D5=2 OR 3] If you had kept the freezer would you have had it plugged in and running...? [READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

- 1 All the time
- 2 For special occasions only
- 3 During certain months of the year only, or
- 4 Was it never plugged in and running?
- 8 Don't know [DO NOT READ]
- 9 Refused [DO NOT READ]

D7. [ASK IF D6=2 OR 3] If you add up the total time this freezer would have been plugged in and running over a 12 month period, about how many total months would that be? Your best estimate is okay. [DO NOT READ RESPONSE LIST]

- ## [NUMERIC OPEN END IN MONTHS]**
- 00 Less than 1 month
 - 98 Don't know
 - 99 Refused

D8. [ASK IF D5 = 2 OR 3] For how many years would you have continued using this additional freezer? [IF NEEDED:] Your best estimate is fine.

- ## [NUMERIC OPEN END]**
- 00 Less than 1 year
 - 96 Until it broke, indefinitely
 - 98 Don't know
 - 99 Refused

PROCESS QUESTIONS

Next I have some questions about your experiences with the AEP Ohio Appliance Recycling Program.

G1. How did you first learn about the Appliance Recycling Program? [DO NOT READ LIST; RECORD ONLY ONE RESPONSE]

1. Bill insert
2. TV ad
3. Friend/relative/neighbor
4. AEP Ohio website
5. Newspaper
6. Community event
7. Retailer where bought new appliance, e.g. Sears [SPECIFY RETAILER]
97. Other_____ [SPECIFY]
98. Don't know
99. Refused

G2. Since you first learned about the program, did you hear about the program from any of these other sources? [READ RESPONSE LIST; DO NOT READ RESPONSE SELECTED IN G1. ALLOW FOR MULTIPLE RESPONSES]

		Yes	No	Don't know	Refused
G2a.	Bill insert	1	2	8	9
G2b.	TV ad	1	2	8	9
G2c.	Friend/relative/neighbor	1	2	8	9
G2d.	AEP Ohio website	1	2	8	9
G2e.	Newspaper	1	2	8	9
G2f.	Community event	1	2	8	9

G3. There are a number of ways you could have gotten rid of your appliance(s). What is the MAIN reason you chose the AEP Ohio Appliance Recycling Program instead of some other way? **[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

1. The cash incentive
2. The convenience of the home pick-up/Don't have to take it someplace myself
3. Pick up was free
4. Appliance was recycled/Was disposed of in a way that was good for environment
5. Was recommended by friend/family
6. Was recommended by retailer
7. Did not know of any other way/No other option
97. Other [specify _____]
98. Don't know
99. Refused

G4. Were there any other reasons? **[DO NOT READ RESPONSE LIST; DO NOT SHOW ANSWER SELECTED IN G3.; ALLOW FOR MULTIPLE RESPONSES]**

1. The cash incentive/incentive check
2. The convenience of the home pick-up/Don't have to take it someplace myself
3. Pick up was free
4. Appliance was recycled/Was disposed of in a way that was good for environment
5. Was recommended by friend/family
6. Was recommended by retailer
7. Did not know of any other way/No other option
97. Other [SPECIFY]
96. No other reason
98. Don't know
99. Refused

G4b. On a scale of 0 to 10, where 0 is not at all, and 10 is very much, to what extent did the rebate from AEP Ohio motivate you to participate in this program?

0. 0 **[NOT AT ALL]**

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9

10. 10 **[VERY MUCH]**

98. (DON'T KNOW)

99. (REFUSED)

G5. Once you decided to participate, the first step was signing up for the program. Are you the one that signed up, or did someone else in your household sign up?

- 1. I signed up
- 2. Someone else signed up **[SKIP TO G14]**
- 8. Don't know **[SKIP TO G14]**
- 9. Refused **[SKIP TO G14]**

G6. [ASK IF G5 = 1] Did you sign up online or on the phone?

- 1. Telephone **[SKIP TO G10]**
- 2. Online
- 7. Other _____ **[SPECIFY] [SKIP TO G14]**
- 8. Don't know **[SKIP TO G14]**
- 9. Refused **[SKIP TO G14]**

ONLINE SIGNUP

G7. [ASK IF G6 = 2] Was it easy to find the sign up screen on the website?

- 1. Yes
- 2. No
- 8. Don't know
- 9. Refused

G8. [ASK IF G6 = 2] Did the website answer all your questions about the appliance recycling program?

- 1. Yes
- 2. No
- 3. Not applicable
- 8. Don't know
- 9. Refused

G9. [ASK IF G6 = 2] Did you receive confirmation that your sign up had been successful?

- 1. Yes
- 2. No
- 3. Not applicable
- 8. Don't know
- 9. Refused

[SKIP TO G14]

PHONE SIGNUP

G10. [ASK IF G6 = 1] Was the representative you spoke to on the telephone polite and courteous?

- 1. Yes
- 2. No
- 3. Not applicable
- 8. Don't know
- 9. Refused

G11. [ASK IF G6 = 1] Did the representative answer all your questions about the program?

- 1. Yes
- 2. No [SPECIFY: _____]
- 3. Not applicable
- 8. Don't know
- 9. Refused

G12. [ASK IF G6 = 1] Did you have to call more than once?

- 1. Yes
- 2. No
- 3. Not applicable
- 8. Don't know
- 9. Refused

G13. [ASK IF G6 = 1] Why did you need to call more than once?

- 7. [RECORD OPEN END]
- 8. Don't know
- 9. Refused

ALL

G14. Were you able to schedule a pick-up date and time that was convenient for you?

- 1. Yes
- 2. No
- 8. Don't know
- 9. Refused

G15. On a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, how satisfied were you with the sign up experience?

0. 0 [VERY DISSATISFIED]

- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9

10. 10 [VERY SATISFIED]

- 98. Don't know
- 99. Refused

G16. [ASK IF G15=0,1,2,3] Why did you rate it that way? [PROBE TO CLARIFY]

[RECORD OPEN END]

- 8. Don't know
- 9. Refused

G17. How much time passed between when you scheduled the appointment and when your appliance(s) was/were picked up? [NOTE TO INTERVIEWER: IF RESPONDENT SAYS "ABOUT A WEEK", RECORD AS 1 WEEK, ETC.]

[ENTER DAYS AND WEEKS]

- 98. Don't know
- 99. Refused

G18. On a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, how satisfied are you with the time it took between when you scheduled the appliance pickup and when it actually was picked up?

0. 0 [VERY DISSATISFIED]

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10 [VERY SATISFIED]

98. Don't know

99. Refused

G19. Just before the pick-up took place, did you or anyone in your household receive a call in advance to confirm the appointment or to let you know the collection team was coming?

1. Yes

2. No

3. Not applicable

8. Don't know

9. Refused

G20. Did the collection team arrive on time?

1. Yes

2. No

3. Not applicable

8. Don't know

9. Refused

G21. On a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, how satisfied were you with the collection team who picked up your appliance(s)? **[REPEAT SCALE IF NECESSARY]**

0. 0 [VERY DISSATISFIED]

1. 1

2. 2

- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9
- 10. 10 [VERY SATISFIED]
- 11. (WASN'T AT HOME)
- 98. (DON'T KNOW)
- 99. (REFUSED)

G22. [ASK IF G21=0, 1,2,3] Why did you rate it that way?

- 7. [RECORD OPEN END]
- 8. Don't know
- 9. Refused

G23. On that same scale from 0 to 10, how satisfied are you with the size of the payment you received as a result of your participation in the AEP Ohio Appliance Recycling Program?
[REPEAT SCALE IF NECESSARY]

- 0. 0 [VERY DISSATISFIED]
- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9
- 10. 10 [VERY DISSATISFIED]
- 98. Don't know
- 99. Refused

G23b. How much was the payment that AEP Ohio offered for recycling your appliance? If you recycled more than one appliance, we are interested in knowing the amount of the payment you received (or will receive) for the single appliance we've been discussing today. [DO NOT READ RESPONSE LIST.]

1. \$25
2. \$50
7. Other [SPECIFY]
8. Don't know
9. Refused

G24. [ASK IF G23=0, 1,2,3] What size payment would you have been satisfied with? [PROBE TO CLARIFY]

[RECORD OPEN END]

8. Don't know
9. Refused

G25. How long did it take to get the check after your appliance was picked up? [DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]

1. 1 week or less
2. more than one week to 2 weeks
3. more than 2 weeks to 3 weeks
4. more than 3 weeks to 4 weeks
5. more than 4 weeks to 5 weeks
6. more than 5 weeks to 6 weeks
7. more than 6 weeks to 7 weeks
8. longer than 7 weeks [SPECIFY NUMBER OF WEEKS] _____
9. have not received my check yet [SPECIFY HOW LONG THEY'VE BEEN WAITING IN WEEKS] _____ [SKIP TO G28]
98. Don't know [SKIP TO G28]
99. Refused [SKIP TO G28]

G26. How satisfied are you with the amount of time it took to receive your payment from AEP Ohio, using the same scale from 0 to 10? **[REPEAT SCALE IF NECESSARY]**

0. 0 **[VERY DISSATISFIED]**

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10 **[VERY SATISFIED]**

98. Don't know

99. Refused

G27. **[ASK IF G26=0, 1,2,3]** What amount of time would be reasonable to receive the payment?
[PROBE TO CLARIFY]

[OPEN END]

8. Don't know

9. Refused

G28. Thinking about your entire experience with the AEP Ohio Appliance Recycling Program, overall, how satisfied are you with the service, using the same scale from 0 to 10?

[REPEAT SCALE IF NECESSARY]

0. 0 **[VERY DISSATISFIED]**

1. 1

2. 2

3. 3

4. 4

5. 5

6. 6

7. 7

8. 8

9. 9

10. 10 **[VERY SATISFIED]**

98. Don't know – **[SKIP TO G13]**

99. Refused – **[SKIP TO G13]**

G29. [ASK IF G28 \geq 5] What aspects of the program did you particularly like? [DO NOT READ LIST; ALLOW MULTIPLE RESPONSES]

- 01. Positive comment about pick-up team
- 02. The service was easy/Didn't have to dispose of appliance myself
- 03. Short wait between signing up and pick-up
- 04. It was free
- 05. The \$25 or \$50 payment
- 06. Like that appliance was recycled/helps the environment.
- 97. Other-specify _____
- 96. None of it/Didn't like any of it
- 98. Don't know/Not sure
- 99. Refused

G30. [ASK IF G28 \leq 5] What aspects of the program did you particularly dislike? [DO NOT READ RESPONSE LIST; ALLOW FOR MULTIPLE RESPONSES]

- 01. Pick up team did not arrive on time
- 02. Other negative comment about pick-up team
- 03. Had to wait too long to get an appointment
- 04. Other negative comment about scheduling appointment
- 05. Someone had to be home for pick-up
- 06. Refund wasn't as much as I was told/false advertising
- 07. Took too long to receive payment; haven't received payment yet
- 97. Other-specify _____
- 96. None of it/Was satisfied with all)
- 98. Don't know
- 99. Refused

G31. Based on your overall experience with AEP Ohio's service, how satisfied are you with having them as your electric company? Would you say you are: [READ LIST?]

- 1. Very Satisfied
- 2. Somewhat Satisfied
- 3. Neither Satisfied nor Dissatisfied
- 4. Somewhat Dissatisfied
- 5. Very Dissatisfied

G32. [ASK IF G31=4 or 5] Why did you rate it that way? [PROBE FOR CLARITY AND SPECIFICITY IF NEEDED: *Was there something in particular you had in mind when you chose a rating of [RATING]?*]

[OPEN END]

8 Don't know

9 Refused

G33. Would you say participating in this program has made you feel more favorable, less favorable, or no different about AEP Ohio?

1. More favorable about AEP Ohio

2. Less favorable about AEP Ohio

3. No different about AEP Ohio

8. Don't know

9. Refused

G34. For how many years have you been an AEP Ohio customer at any location?

[RECORD NUMERIC OPEN END]

0. Less than one year

98. Don't know

99. Refused

G35. Based on your participation in the AEP Ohio Appliance Recycling Program, have you taken any additional actions to save energy in your home?

1. Yes

2. No

8. Don't know **[DO NOT READ]**

9. Refused **[DO NOT READ]**

G36. [ASK IF G35=1] What energy saving actions have you taken? [PROBE TO CLARIFY]

[OPEN END]

8. Don't know

9. Refused

G37. Since participating in the program, have you participated in any other AEP Ohio energy efficiency programs?

- 1 Yes
- 2 No **[SKIP TO G40]**
- 8 Don't know **[DO NOT READ] [SKIP TO G40]**
- 9 Refused **[DO NOT READ] [SKIP TO G40]**

G38. [ASK IF G37=1] Which other program(s) did you participate in? **[PROBE TO CLARIFY]**

[OPEN END]

- 8 Don't know
- 9 Refused

G39. [ASK IF G37=1] How did you hear about this/these other program(s)? **[DO NOT READ; ALLOW FOR MULTIPLE RESPONSES]**

- 1. Retailer
- 2. Internet
- 3. Bill Insert
- 4. Friend/relative/neighbor
- 5. AEP Ohio website
- 6. Municipal Website or Municipal newsletter
- 7. Radio
- 8. Newspaper
- 9. TV
- 97. Other _____
- 98. Don't know
- 99. Refused

G40. Have you noticed a reduction in the amount of your electric bill since your appliance(s) was/were removed?

- 1. Yes
- 2. No
- 8. Don't know **[DO NOT READ]**
- 9. Refused **[DO NOT READ]**

I have just a few questions left for background purposes only.

H1. Do you own or rent your home?

- 1. Own
- 2. Rent
- 8. Don't Know **[DO NOT READ]**
- 9. Refused **[DO NOT READ]**

H2. [ASK IF H1 = 2] Do you pay your own electric bill or is it included in your rent?

- 1. Pay bill
- 2. Included in Rent
- 8. Don't Know **[DO NOT READ]**
- 9. Refused **[DO NOT READ]**

H3. How many people live in your household year-round?

- ## [NUMERIC OPEN END]**
- 98. Don't Know
- 99. Refused

H4. What is the age of the Head-of-the Household? [IF THE ROLE IS SHARED, ASK FOR AN AVERAGE]

- ## [NUMERIC OPEN END]**
- 98. Don't Know
- 99. Refused

H5. What is the approximate square footage of the home you live in?

- ## [NUMERIC OPEN END]**
- 98. (Don't Know)
- 99. (Refused)

**H6. [ASK IF H5 = 98] Is it... [ONLY READ LIST IF RESPONDENT NEEDS PROMPTING;
RECORD ONLY ONE RESPONSE]**

1. Less than 500 square feet
2. 500 to less than 1000 square feet
3. 1000 to less than 1500 square feet
4. 1500 to less than 2000 square feet
5. 2000 to less than 2500 square feet
6. 2500 to less than 3000 square feet
7. 3000 to less than 4000 square feet
8. 4000 to less than 5000 square feet
9. 5000 square feet or more
98. Don't Know [DO NOT READ]
99. Refused [DO NOT READ]

H7. How long have you lived at your current residence?

[RECORD YEARS]

00. Less than 1 year
98. Don't Know
99. Refused

**H8. What is the highest level of education you have completed? [READ RESPONSE LIST;
ACCEPT ONLY ONE RESPONSE]**

1. Less than high school
2. High school graduate or equivalent (e.g., GED)
3. Attended some college (includes junior/community college)
4. Bachelors degree
5. Advanced degree
7. Other, Specify
8. Don't know
9. Refused

H9. Was your total family income in 2009 before taxes UNDER OR OVER \$50,000?

1. Under \$50,000
2. Over \$50,000
3. Exactly \$50,000
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

H10. [ASK IF H9=1] Was it under \$15,000, between \$15,000 and \$30,000 or between \$30,000 and \$50,000? [INTERVIEWER NOTE: IF EXACTLY \$30,000 ENTER AS '3. \$30,000-\$50,000']

1. Under \$15,000
2. \$15,000-\$30,000
3. \$30,000-\$50,000
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

H11. [ASK IF H9=2] Was it between \$50,000 and \$75,000, or between \$75,000 and \$100,000, or was it over \$100,000? [INTERVIEWER NOTE: IF EXACTLY \$75,000 ENTER AS '2. \$75,000-\$100,000'. IF EXACTLY \$100,000, ENTER AS '3. OVER \$100,000']

1. \$50,000-\$75,000
2. \$75,000-\$100,000
3. Over \$100,000
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

Those are all the questions I have. Thank you so much for your participation!

1.1.2 AEP Ohio Appliance Recycling Near-Participant Survey

AEP OHIO CONSUMER PROGRAMS – APPLIANCE RECYCLING PROGRAM

NEAR-PARTICIPANT IN-DEPTH INTERVIEW GUIDE

INTRODUCTION AND SCREENER

Hello, this is [SURVEYOR NAME] from Energy Market Innovations calling on behalf of AEP Ohio, your electric utility. This is not a sales call. We are contacting customers who scheduled a removal of a refrigerator or freezer through the Appliance Recycling program offered by AEP Ohio, but did not have the appliance removed. May I please speak with [CUSTOMER_NAME]?

Are you the person who was most involved and familiar with scheduling the removal of the refrigerator or freezer? (IF NOT: May I please speak with the person who was most involved with scheduling the removal?)

CONTINUE WITH RIGHT PERSON: We are conducting a study to evaluate AEP Ohio's appliance pick-up and recycling program and would like to include your opinions. This information will be used to verify the effectiveness of the program and to make improvements.

(IF NEEDED: This should take about 10 or 15 minutes.)

Your responses are confidential. This call may be monitored or recorded for quality purposes.

SCREENING QUESTIONS

S1. Our records show that you had an appliance scheduled for pick-up by AEP Ohio, or its subcontractor JACO, earlier this year. Is this correct?

- 01 Yes, correct [SKIP TO QUESTION S2]
- 97 No, it was [RECORD VERBATIM and CONTINUE TO QUESTION S1b]
- 98 (Don't know) [TERMINATE]
- 99 (Refused) [TERMINATE]

S1b. Can you think of any reason why our records mistakenly show that you scheduled an appliance for pickup and recycling by AEP Ohio earlier this year? [PROBE.]
[RECORD OPEN END; THANK & TERMINATE]

S2. Our records also show that the appliance was never picked up by AEP Ohio or one of its contractors. Is this correct?

- 01 Correct, never picked up
- 02 Incorrect, an appliance was picked up
- 98 (Don't know) [ASK: Is there someone else who would know that I can talk to?]

99 (Refused) [TERMINATE]

Next, I am going to ask you a few questions about the sign-up process, and then we'll talk more about [why your appliance was never picked up/your appliance pick-up].

PROGRAM SIGN-UP

A1. Are you the person that signed up, or did someone else in your household sign up?

- 1. I signed up [CONTINUE]
- 2. Someone else signed up [SKIP TO B1 or C1]
- 8. Don't know [SKIP TO B1 or C1]
- 9. Refused [SKIP TO B1 or C1]

A2. Did you sign up online or on the phone?

- 1. Telephone
- 2. Online
- 7. Other [SPECIFY]
- 8. Don't know
- 9. Refused

A11. On a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, how satisfied were you with the sign up process?

- 0. 0 [VERY DISSATISFIED]
- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9
- 10. 10 [VERY SATISFIED]
- 98. Don't know
- 99. Refused

A12. Why did you rate it that way? [PROBE TO CLARIFY]

[RECORD OPEN END]

8. Don't know

9. Refused

APPLIANCE NEVER PICKED UP:

[ASK B1 IF QUESTION S2 = 1; SKIP TO C1 IF QUESTION S2 = 2]

B1. Could you tell me why the appliance was not picked up by AEP Ohio?

1. Contractor didn't arrive on schedule

2. Forgot about appointment

3. Unable to keep the appointment

4. Decided to keep the refrigerator/freezer [SKIP to B1b]

5. Decided to sell/give away refrigerator/freezer [SKIP to B1b]

6. Other (Record)

98. Don't know

99. Refused

B1a. Did you contact AEP Ohio to reschedule the appointment?

1. Yes

2. No

3. Other (Record)

98. Don't know [SKIP TO B1b]

99. Refused [SKIP TO B1b]

B1a1. [IF YES:] What was the outcome of the phone call?

1. (Record Open-End)

98. Don't know

99. Refused

B1a2. [IF NO:] Why not?

2. (Record Open-End)

98. Don't know

99. Refused

B1b. Did AEP Ohio contact you to try and reschedule the appointment?

1. Yes

2. No

3. Other (Record)

98. Don't know

99. Refused

B2. And what happened to the unit? Where is it now?

[IF STILL IN POSSESSION OF APPLIANCE:] Are you planning to schedule another appointment for the appliance to be picked up by AEP Ohio? If so, when?

[IF THEY ARE NOT PLANNING ANOTHER APPOINTMENT:] What do you plan to do with the appliance?

[IF PLANNING TO USE THE APPLIANCE:] Do you plan to use the refrigerator full time or only at certain times of the year?

- [ONLY CERTAIN TIMES:] Roughly how much of the year do you expect to operate the refrigerator?
- Would a higher incentive from AEP have convinced you to recycle this refrigerator instead?
 - [IF YES:] What amount of incentive would have persuaded you to turn it in for recycling?

B3. What is the number one thing that AEP Ohio and its partners could do to ensure that customers like you, who make appointments for their appliances to be picked up, will in fact have their appliances picked up by AEP Ohio? [PROMPT IF NECESSARY: Such as a reminder call or email...]

B4. Is there anything else about your experiences with the Appliance Recycling program you would like to let us know about?

[SKIP to “AWARENESS AND MOTIVATION TO PARTICIPATE” SECTION]

APPLIANCE WAS PICKED-UP:

[ASK C1 IF QUESTION S2 = 2; ELSE SKIP TO “AWARENESS AND MOTIVATION TO PARTICIPATE” SECTION]

C1. Can you briefly describe the pick-up process? What happened when they came to remove your appliance?

C2. Was it AEP Ohio or a sub-contractor that picked up your appliance? [IF SUB-CONTRACTOR: Do you remember the name of the sub-contractor?]

C3. Can you remember approximately what date the appliance was picked up?

C4. Did you receive an incentive check? Do you remember approximately how long it took to receive the check? How much was the incentive check?

C5. Can you think of any reason our records mistakenly show that the appliance was NOT picked up (e.g., did you reschedule for any reason)?

[IF RESCHEDULED: What happened with the original appointment? Is there anything that might have enabled you or AEP Ohio to have the appliance picked up on the originally scheduled day?]

[ALL:] AWARENESS AND MOTIVATION TO PARTICIPATE:

G1. How did you first learn about the Appliance Recycling Program? **[DO NOT READ LIST; RECORD ONLY ONE RESPONSE]**

1. Bill insert
2. TV ad
3. Friend/relative/neighbor
4. AEP Ohio website
5. Newspaper
6. Community event
7. Retailer where bought new appliance, e.g. Sears **[SPECIFY RETAILER]**
97. Other____ **[SPECIFY]**
98. Don't know
99. Refused

G2. Since you first learned about the program, did you hear about the program from any of these other sources? **[READ RESPONSE LIST; DO NOT READ RESPONSE SELECTED IN G1. ALLOW FOR MULTIPLE RESPONSES]**

		Yes	No	Don't know	Refused
G2a.	Bill insert	1	2	8	9
G2b.	TV ad	1	2	8	9
G2c.	Friend/relative/neighbor	1	2	8	9
G2d.	AEP Ohio website	1	2	8	9
G2e.	Newspaper	1	2	8	9
G2f.	Community event	1	2	8	9

G3. There are a number of ways you could have gotten rid of your appliance(s). What is the MAIN reason you (initially) chose the AEP Ohio Appliance Recycling Program instead of some other way? **[DO NOT READ RESPONSE LIST; RECORD ONLY ONE RESPONSE]**

1. The cash incentive
2. The convenience of the home pick-up/Don't have to take it someplace myself
3. Pick up was free
4. Appliance was recycled/Was disposed of in a way that was good for environment
5. Was recommended by friend/family
6. Was recommended by retailer
7. Did not know of any other way/No other option
97. Other [specify _____]
98. Don't know
99. Refused

G4. Were there any other reasons? [DO NOT READ RESPONSE LIST; DO NOT SHOW ANSWER SELECTED IN G3.; ALLOW FOR MULTIPLE RESPONSES]

1. The cash incentive/incentive check
2. The convenience of the home pick-up/Don't have to take it someplace myself
3. Pick up was free
4. Appliance was recycled/Was disposed of in a way that was good for environment
5. Was recommended by friend/family
6. Was recommended by retailer
7. Did not know of any other way/No other option
97. Other [SPECIFY]
96. No other reason
98. Don't know
99. Refused

G4b. To what extent did the rebate from AEP Ohio (initially) motivate you to participate in this program? Please use a scale of 0 to 10, where 0 is not at all, and 10 is very much

0. 0 [NOT AT ALL]
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10 [VERY MUCH]
98. (DON'T KNOW)
99. (REFUSED)

G23b. How much was the payment that AEP Ohio offered you for recycling your appliance? (IF NECESSARY: If you were recycling more than one appliance, we are interested in knowing the amount of the payment you received (or would have received) for each single appliance.) [DO NOT READ RESPONSE LIST.]

1. \$25
2. \$50
7. Other [SPECIFY]
8. Don't know
9. Refused

[ALL:] DEMOGRAPHICS:

H1. Do you own or rent your home?

- 1. Own [SKIP TO H3]
- 2. Rent
- 8. Don't Know [DO NOT READ] [SKIP TO H3]
- 9. Refused [DO NOT READ] [SKIP TO H3]

H2. [ASK IF H1 = 2] Do you pay your own electric bill or is it included in your rent?

- 1. Pay bill
- 2. Included in Rent
- 8. Don't Know [DO NOT READ]
- 10. Refused [DO NOT READ]

H3. How many people live in your household year-round?

- ## [NUMERIC OPEN END]
- 98. Don't Know
- 99. Refused

END: Those are all of my questions. Thank you very much for your time, and have a great day!

1.1.3 In-depth Interview Guides

AEP PROGRAM STAFF INTERVIEW GUIDE: APPLIANCE RECYCLING PROGRAM

APPLIANCE RECYCLING – PY 2010 (YEAR 2)

Interview Objectives:

- Determine effectiveness and operational efficiency of program marketing, outreach, and implementation process:
 - Program tracking
 - Communication
 - Staffing
- Determine if and how the program implementation has changed since 2009.
 - Determine status of retailer partnerships.
 - Assess program goals and metrics for 2010.
 - Identify efforts to integrate residential programs.
- Identify current program challenges, if any.
- Determine status and results of pilot study.
- Determine whether process-related variables (e.g., follow-up data for missed appointments) are being collected in the JACO tracking data.
- Determine Quality Assurance and / Quality Control (QA/QC) procedures.

Prior to Interview, request program documents:

- Implementation plan, program operations manual, or other program documentation that explains the program processes
- Most recent status reports
- Marketing materials
- Written results of pilot program

Introduction

EMI is part of the team hired to conduct an evaluation of AEP Ohio's energy efficiency programs, and we're in the process of conducting interviews with program managers and key staff in order to improve our understanding of those programs. At this time we are interested in taking about an hour of your time to ask some questions about the Appliance Recycling program so that we can get your insights into what is working well and not working well with the program, from your perspective. Is now a good time?

Before we get started, can you take a moment to describe your role and scope of responsibilities with respect to AEP Ohio's Appliance Recycling Program? How long have you held this position? Has anything changed with respect to your role since last year?

Program Structure/Design

Have there been any changes in any of the program components since last year? [READ LIST BELOW EXCEPT FOR THOSE ITEMS ALREADY MENTIONED BY INTERVIEWEE]: Were there any changes to:

- Marketing efforts [Probe if/how customers are educated on energy bill savings that may result from recycling an old appliance.]
- The customer signup and scheduling process (call center or online)
- Procedures for picking up appliances
- The types of appliances collected
- Procedures for appliance drop-off at the recycling center

I understand that JACO and AEP Ohio were working on partnering with retailers like Sears to coordinate the collection of old appliances when customers purchase new appliances. What is the status of the negotiations for this effort? [PROBE TO GET DETAILS ON WHETHER THEY THINK IT WILL HAPPEN (AND WHEN) AND WHAT, IF ANYTHING, HAS DERAILED OR DELAYED THE PROCESS]

What are the program goals for program year 2010?

- Quantitative energy and demand savings goals?
- Other qualitative goals, including non-energy goals, if any

Please describe how the program is doing in terms of meeting these goals.

[IF UNDERPERFORMING]: What would you attribute this to? Are there plans to make any changes to get the program back on track?

Is the Appliance Recycling Program integrated, in any way, with other programs that serve residential customers (e.g., Efficient Products)?

- [If so:] In what way(s)?
- [If not:] Are there any plans to integrate the residential programs in any way?
- How is program cross-participation currently promoted?

Implementation Contractor

My understanding is that JACO is responsible for developing promotional materials, scheduling appliance pick-ups, picking up appliances and transferring them to the recycling center, mailing incentive checks, and tracking program participation data. Is there anything else they are responsible for that I didn't mention?

- How satisfied are you with JACO's role in the program? Would you say you are:
 - 5. Very satisfied
 - 4. Somewhat satisfied
 - 3. Neither satisfied nor dissatisfied
 - 2. Somewhat dissatisfied
 - 1. Very dissatisfied
- Why did you rate JACO's role in the program that way?

How often does communication occur between people or departments at AEP Ohio and people or departments at JACO?

- Can you generally describe the methods of coordination and communication with JACO?
- Do you feel that roles and responsibilities are clearly defined?
- Does communication primarily occur when a problem comes up, or are there regularly scheduled meetings? How easy or difficult is it to get in touch with someone at JACO when an issue arises?
- If regularly scheduled, how often?
- Are there any barriers to effective communication? What could be done to resolve these barriers?

Do you feel you are being consulted as necessary and kept informed of activities and issues that arise?

- [If interviewee reports any challenges, clarify nature, then ask:] What effects, if any, is this having on program progress?
- What is being done about that? Do you think this will result in improvements?
 - Is there anything else needed to make communication and coordination as effective as possible?
- Is there a clearly-defined process for resolving any issues that might arise with the implementation contractors?

Program Tracking/Reporting

What information does JACO track for the Appliance Recycling program? [MAKE SURE ALL OF THE FOLLOWING ARE ADDRESSED IF NOT INITIALLY MENTIONED]

- What type of information about the appliance (e.g. size, model, year, condition, etc) is collected:
 - ...when the customer calls to schedule the appointment?
 - ...during appliance pickup [IF DON'T MENTION, ASK:]
 - Do they plug the fridge in and make sure it's running?
 - Other steps taken to ensure the appliance is eligible?
 - ...on receipt of appliance at the recycling center?
 - ...when a customer cancels an appointment?
- Does JACO follow-up on missed appointments? If so: does JACO track these follow-up attempts? What type of information is collected regarding follow-up attempts?
- For each data collection activity: Is this information always collected?

Has AEP Ohio established goals regarding turnaround time between when an appliance is picked up and the incentive payment is mailed out? [If so:] Please describe.

- Do you (or someone else at AEP Ohio) regularly monitor the turnaround time? [If so:] Please describe.
- Based on your understanding of JACO's processes, how long does it typically take for JACO to process incentive payments?

Has AEP Ohio established goals regarding the number of days it takes between the date a customer calls to schedule a pick-up and the date the appliance is picked up?

- Do you (or someone else at AEP Ohio) regularly monitor this time frame? [If so:] Please describe.
- Based on your understanding of JACO's processes, how long does it typically take for JACO to pick up an appliance once a customer calls to schedule a pick-up?

How often do you review tracking-data reports for this program?

- How do you get these data?
- What information is most useful to you?
- Are these reports current? How often is the information updated?

What quality control processes are in place to ensure the program tracking database is accurate?

- Please explain.
- How confident do you feel in the accuracy of the database being used to track these data?

Are there additional types of reports or information that you are currently not receiving from JACO that you would find beneficial?

- Please explain.

Marketing/Outreach

My understanding is that the marketing materials for this program include bill messaging, newspaper and radio ads, and the AEP Ohio website. Are there any other ways that customers find out about this program?

- How frequently does each marketing activity occur?
- Who is in charge of developing marketing materials?
- Who is in charge of marketing activities?

Has AEP Ohio established goals regarding the effectiveness of marketing efforts for this program (e.g., program awareness)?

- Do you (or someone else at AEP Ohio) regularly monitor marketing effectiveness? [If so:] Please describe (for each marketing strategy).

How do you feel marketing and outreach are going so far? Have marketing efforts been going as planned?

- Which strategies have worked well? Which ones have not worked as well as you expected?
- Are there new or unimplemented marketing and outreach efforts you think could help boost program awareness and participation in the future?

[If not already received:] Are you able to send me copies of the marketing materials that have been developed for this program?

- [If JACO's responsibility:] Can you help me get copies of materials from JACO?

Customer Satisfaction and Participation

Has AEP Ohio established goals for customer satisfaction with this program?

- How is customer satisfaction measured? Do you (or someone else at AEP Ohio) regularly monitor customer satisfaction? [If so:] Please describe.

Do you feel the \$25 incentive is adequate to motivate customer participation?

I understand a pilot program was conducted to determine whether raising the incentive from \$25 to \$50 would increase participation. How and when was the pilot implemented?

- With respect to customer count, how large is/was the pilot?
- Were the two alternative incentive amounts offered based on random assignment?
- How did the higher incentive payment affect demand for pick ups?
- What conclusion did you take away from the pilot?
- [If not already received:] Is there a written report of the results of the pilot that you can share with me?

What do you believe prevents more customers from participating in this program?
[Probe:]

1. Incentive level?
2. Customer awareness of the program?
3. Marketing material sufficient to motivate action once aware?
4. How often to eligible customers sign up but then drop out of the program?
 - a. To your knowledge, do you ever have eligible customers cancel because JACO can't come out sooner?
 - i. [IF YES] How often?
 1. [IF OFTEN]: Is there anything that could help minimize that?
Anything AEP Ohio can do to help?
 - ii. [IF YES]: Does JACO attempt to contact the customer if they cancel or "no show"?
 1. [IF YES] Describe the call (what is the goal) and whether any info is recorded and where (tracking database?)
 - iii. [IF YES]: Is there anything JACO can do to try and minimize cancellations by customers due to the length of time till pick up?
 - b. To your knowledge, do you ever have eligible customers cancel or decline the service because JACO can't come out at a time that is more convenient for the customer?
 - i. [IF YES] How often?
 1. [IF OFTEN]: Is there anything that JACO could do to help make pick ups more convenient for participants?

Internal Organization/Staffing

What other departments at AEP Ohio are involved in the back-office functions or delivery of program services? What is/are their role(s)?

- Account Managers?
- Customer Service Reps?
- Managing Data? / Tracking Targets?

From your perspective, is the staffing adequate for this program to meet its goal?

- [If not adequate:] What areas/functions do you feel are not adequately staffed?

It is my understanding that AEP Ohio rolled out the operations manual for this program this year. Could you briefly tell me who the target users of the manual are and how it is meant to be used?

- Is the operations manual being used by all staff involved? Are procedures being followed as set out in the manual?
- Is there a process in place to update this manual on a regular basis?

Program Strengths/Areas for Improvement

What would you say is working really well?

What would you most like to change?

Is there anything that seems to stand in the way of making these changes at this time?

Summary

It's important for us to review what we heard you say in terms of key obstacles and issues you believe exist with this program. [Summarize of key issues and observations].

- I heard you talk about X challenges to the programs [list the challenges reported]. Could you rate each of these on a 0 to 10 scale in terms of how detrimental they are to achieving the goals for the Appliance Recycling program? "0" is not at all detrimental and "10" is very detrimental.

Is there anything else you would like me to know about the program that we didn't already discuss?

Finally, how do you feel you will benefit from our research, and what would you expect to see come out of this research to be truly valuable to you and your team?

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.

IMPLEMENTATION CONTRACTOR (JACO) INTERVIEW GUIDE: APPLIANCE RECYCLING PROGRAM

APPLIANCE RECYCLING – PY 2010 (YEAR 2)

Interview Objectives:

- Determine if and how the program implementation has changed since 2009.
 - Determine status of retailer partnerships.
- Assess progress toward/barriers to goals for 2010.
- Determine status and results of pilot study.
- Determine whether process-related variables (e.g., follow-up data for missed appointments) are being collected in the JACO tracking data.
- Determine Quality Assurance and / Quality Control (QA/QC) procedures.

Introduction

EMI is an independent consulting firm that works with electric and gas utilities to review and improve program operations and delivery. We are part of the team hired to conduct an evaluation of AEP Ohio's energy efficiency programs, and we're in the process of conducting interviews with program managers and key staff in order to improve our understanding of those programs. At this time we are interested in taking about 45 minutes of your time to ask some questions about the Appliance Recycling program so that we can get your insights into what is working well and not working well with the program, from your perspective. Is now a good time, or can we schedule a time to talk?

Before we get started, can you take a moment to review your role and scope of responsibilities with respect to AEP Ohio's Appliance Recycling Program? How long have you held this position? Has anything changed with respect to your role since last year?

Next, I'm going to ask you some questions about various aspects of the program.

Implementation Process

Have there been any changes in any of the program components since last year? [READ LIST BELOW EXCEPT FOR THOSE ITEMS ALREADY MENTIONED BY INTERVIEWEE]: Were there any changes to:

- Marketing efforts [Probe if/how customers are educated on energy bill savings that may result from recycling an old appliance.]
- The customer signup and scheduling process (call center or online)

- Procedures for picking up appliances
- The types of appliances collected
- Dropping off picked-up appliances at the recycling center

[RECORD ANY CHANGES – IF NO CHANGES, NOTE THIS NEXT TO EACH ITEM]

I understand that JACO and AEP Ohio were working on partnering with retailers like Sears to coordinate the collection of old appliances when customers purchase new appliances. What is the status of the negotiations for this effort? [PROBE TO GET DETAILS ON WHETHER THEY THINK IT WILL HAPPEN (and when) AND WHAT, IF ANYTHING, HAS DERAILED OR DELAYED THE PROCESS]

How is the Appliance Recycling program doing in terms of making its goals [with respect to old appliances picked up; other defined goals?] so far this year? Do you think the program will make its 2010 year goals?

- If no, why not?

Customer Participation & Barriers

I understand a pilot program was conducted to determine whether raising the incentive from \$25 to \$50 would increase participation. How and when was the pilot implemented?

- Were the alternative incentive amounts randomly assigned to potential participants?
- How did the higher incentive payment affect demand for pick-ups?
- What conclusion did you take away from the pilot?

What do you think might prevent customers from participating in this program?

[Probe:]

5. Incentive level?
6. Customer awareness of the program?
7. Marketing material sufficient to motivate action once aware?
8. How often do eligible customers sign up but then drop out of the program?
 - a. Do you ever have eligible customers cancel because you can't come out sooner?
 - i. [IF YES] How often?
 1. [IF OFTEN]: Is there anything that could help reduce cancellations? Anything AEP Ohio can do to help?

- ii. [IF YES]: Does JACO attempt to contact the customer if they cancel or “no show”?
 1. [IF YES] Describe the call (what is the goal) and whether any info is recorded and where (tracking database?)
- iii. [IF YES]: Anything that can be done to try and minimize cancellations by customers due to the length of time till pick-up?
- b. Do you ever have eligible customers cancel or decline the service because you can’t come out at a time that is more convenient for them?
 - i. [IF YES] How often?
 1. [IF OFTEN]: Is there anything that could help make pick ups more convenient for participants? Anything AEP Ohio can do to help?

Data Tracking

What information does JACO track for the Appliance Recycling program? [MAKE SURE ALL BELOW ARE ADDRESSED IF NOT INITIALLY MENTIONED]

- What type of information about the appliance (e.g. size, model, year, condition, etc) is collected:
 - ...when the customer calls to schedule the appointment?
 - ...during appliance pickup [IF DON’T MENTION, ASK:]
 - Do they plug the fridge in and make sure it’s running?
 - Other steps taken to ensure the appliance is eligible?
 - ...on receipt of appliance at the recycling center?
 - ...when a customer cancels an appointment?
- Does JACO follow-up on missed appointments? If so: does JACO track these follow-up attempts? What type of information is collected regarding follow-up attempts?
- Do you collect data on housing and demographic (e.g., housing type and condition, number of household members, etc?)
- For each data collection activity: Is this information always collected?
- What are the weaknesses and strengths in the data?

Are there any quality assurance and quality control procedures in place to ensure that the data collected are accurate?

- [IF YES]: Please describe. [PROBE FOR EACH TYPE OF INFORMATION:]
 - customer call data
 - appliance pickup data
 - recycling center data

About how much time is there between the date a customer calls to schedule a pick-up the actual pick-up date?

- Does this scheduling seem to work for customers? [TRY TO GET A PROPORTION (i.e. "IT SEEMS TO WORK FOR ABOUT XX% OF PARTICIPANTS.)]
- What are the primary factors that prevent you from scheduling appointments sooner?
 - What can you do to address these factors?
 - What can AEP Ohio do to address these factors?

What is the range of time that normally passes between pickup of an appliance and the mailing of the check? On average, how much time passes between appliance pickup and the mailing?

- Have you received any feedback from customers about this turnaround time?
- Anything preventing JACO from sending the checks sooner?

Are you able to determine whether the unit picked up from a customer matches the one received by the recycling center?

- [IF YES] What information do you use to determine this?
- [IF NO] What type of information would you need to be able to do this?

How frequently do you look at reports created based on the program tracking data?

- How confident are you in the accuracy of the database?
- What do you do if you suspect data are inaccurate?

Please describe how you transfer data to AEP Ohio and how well that process works.

- How often are data transferred?
- What difficulties or complications do you encounter in compiling and transferring data?
- Have you received requests from AEP Ohio for additional program data?
- What can be done to improve the process?

Communication With AEP Ohio

Are you the main liaison for JACO with AEP Ohio? Who is your primary contact at AEP Ohio?

[If more than one contact, ask for each contact:]

- When do you talk, and how often?
- What prompts the conversations or are they scheduled?

Has the transition to a new program manager at AEP Ohio had any effect on program implementation or program goals? Please explain.

Have you received the operations manual for the program?

[IF YES]: Is it helpful? What would make it more helpful or useful?

[IF NO]: Do you know if you'll be receiving one any time soon?

Program Strengths/Areas for Improvement

What aspect(s) of the program would you say is (are) working really well?

What would you most like to change?

Is there anything that seems to stand in the way of making those changes at this time?

Summary

It's important for us to review what we heard you say in terms of key obstacles and issues you believe exist with this program. [Summarize key issues and observations].

- I heard you talk about X challenges to the programs [list the challenges reported]. Could you rate each of these on a 0 to 10 scale in terms of how detrimental they are to achieving the goals for the Appliance Recycling program? "0" is not at all detrimental and "10" is very detrimental.

Is there anything else you would like me to know about the program that we didn't already discuss?

Finally, how do you feel you will benefit from our research, and what would you expect to see come out of this research to be truly valuable to you and your team?



**AEP Ohio
Energy Efficiency/Demand Response Plan
Year 2 (1/1/2010-12/31/2010)**

**Program Year 2010 Evaluation Report:
Residential Retrofit Program**

Presented to



A unit of American Electric Power

March 7, 2011



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Section E. Executive Summary

This report presents a summary of the findings and results from the evaluation of AEP Ohio's Residential Retrofit Program known to the public as the In-home Energy Program in Program Year 2010 (PY 2010). The main goal of the In-home Energy Program is to produce long-term electric energy savings in the consumer sector by helping customers analyze their energy use and recommending appropriate weatherization measures and the installation of high-efficiency lighting, appliances, and other equipment. AEP Ohio did not begin its In-home Energy Program in 2009 as planned. Therefore, the first year goal of the In-home Energy Program was amended to produce 8.1 GWh of electrical energy savings and 0.9 MW of peak demand reduction in 2010. The first year of the In-home Energy Program was focused primarily on program start-up activities related to marketing and outreach to generate trade-ally and contractor participation.

E.1 Evaluation Objectives

New In-home Energy programs require a period of time to develop a trade ally network, aggressively market new offerings, and gain "traction" in the market place. Due to low participation levels during program "ramp-up", the PY 2010 evaluation will be focused on key issues related to program start-up. The major objective of this evaluation is to determine key process-related program strengths/weaknesses to identify ways in which the program can be improved. Impact related evaluation activities are limited to review of the program tracking system.

E.2 Evaluation Methods

Program process research was based upon program material review, secondary research, and in-depth interviews with program staff involved in the delivery of this program. Table E-1 provides a summary of the primary data collection activities conducted to support the process evaluation. As shown, the primary data collection activities for this evaluation were limited to in-depth telephone interviews with program administrators from AEP Ohio and implementation contractor staff.

Table E-1. Data Collection Activities

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
In-Depth Phone Interviews	AEP Ohio Program Staff	Contacts from AEP Ohio	In-home Energy Program Coordinator, Data Analyst	2	Feb 2011
	Staff of Program Implementer	Contacts from CLEAResult	Vice President, IT Manager, Program Manager, Evaluation Manager	4	Feb 2011

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E.3 Key Findings

The process portion of this evaluation reveals several notable findings. Overall, AEP staff, implementation contractors, and participating retailers and manufacturers are satisfied with the program to date.

Key findings from the process evaluation are as follows:

1. Marketing, customer, audit, and impact data should be integrated into a single data extract/report that will support evaluating the effectiveness of marketing efforts as well as tracking and analysis of audit results.
2. Assessment Forms should be modified to include fields for entry of all data pertaining to audit test results (blower door, etc.), or a new form should be created for audits.
3. Required fields on Assessment and Rebate forms should be indicated, noting that incomplete forms will not be processed. Reducing the number of Not-in-good-orders (NIGO) and the duration that these remain outstanding should remain a priority.
4. Continue to focus on training contractors on program processing and protocols to minimize data entry and rebate claim errors.
5. Consider separating data collection, tracking and reporting functions for audits and assessments.
6. Consider conducting regular on-site post-installation inspections to discourage auditors and trade allies from failing to fully and properly install all rebated measures. Random inspections of 10 to 20 percent of projects are usually adequate, but the percentage should be higher for newer contractors.
7. Consider additional efforts to encourage customers to install recommended measures through follow-up phone calls, customer assistance, or adjustments to rebate levels.
8. Continue to integrate program offerings with Columbia Gas to take advantage of savings opportunities identified by Columbia Gas auditors.
9. Consider providing detailed, accurate and timely monthly reports that allow AEP Ohio program staff to monitor program progress and make course corrections, if necessary.

Section 1. Introduction to the Program

This section provides an overview of the AEP Ohio In-home Energy Program. The section begins with a brief description, followed by a summary of various aspects of the implementation strategy and marketing.

1.1 Program Description

The purpose of the In-home Energy Program is to provide in-home energy information and easy-to-install measures to help customers take action to reduce energy use. An energy audit service is provided at two levels: an “In-home Energy Audit” and “In-home Energy Assessment.” The Assessment is a walkthrough energy audit in which the Assessor walks through the home with the homeowner and points out opportunities for energy savings from both low-cost and contractor installed measures. The Audit is a comprehensive, performance-based analysis of energy savings opportunities including a blower door test, a combustion safety test and an infrared scan of the home.

In both the In-home Energy Assessment and the In-home Energy Audit, the auditor also directly installs low cost energy savings devices, including compact fluorescent light bulbs, low-flow showerheads and faucet aerators, pipe insulation, programmable thermostats and LED nightlights.

AEP Ohio selected CLEAResult in the summer of 2010 to implement the In-home Energy Program. CLEAResult worked with AEP Ohio staff August-October of 2010 on the program design and then late October-early December on the program implementation plan. The program was launched to the consumer market on December 7, 2010. Program start-up activities were focused on determining technical requirements, program processes, and on builder and trade ally outreach and orientation.

Due to extensive efforts required in the early stages of the In-home Energy Program to develop program materials, conduct outreach and recruit trade allies, and guide auditors and contractors through the program process, projects were not completed in time to report evaluated savings in 2010.

1.1.1 Implementation Strategy

Program Delivery Mechanisms and Marketing Strategy

Program delivery consists of three main components: an “In-home Energy Assessment,” or an “In-home Energy Audit,” and a direct installation of low-cost energy saving measures. The Audit is a thorough inspection (lasting up to four hours) of the home including blower door testing, combustion safety testing and infrared camera observation. The Assessment is a condensed version of the audit (lasting roughly one hour) during which the Assessor walks

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through the home with the customer identifying opportunities for energy savings. Both the Audit and the Assessment deliver a report to the homeowner prioritizing energy savings opportunities and providing information on rebates. In addition, during each audit/assessment a selection of low-cost energy efficiency measures are directly installed in the home at no cost to the home owner.

The program marketing strategy focuses on residential customers in existing homes and multi-family housing with up to four units. The program targets promotion to customers with both above average consumption and mean household income to maximize savings impacts and the percentage of customers who implement improvements.

Role of AEP Ohio Staff

The AEP Ohio staff member most involved in the administration of In-home Energy Program is the Consumer Programs Coordinator. However, the program is delivered and managed primarily by the staff of CLEAResult, an implementation contractor.

The AEP Ohio Consumer Programs Coordinator is responsible for management of both the In-home Energy and Residential New Construction Programs. The AEP Ohio Consumer Programs Coordinator is responsible for day-to-day program management responsibilities for the utility, including weekly communication with the program implementer, program tracking and reporting, and assisting with development of program marketing materials.

Roles of the Implementation Contractor

AEP Ohio selected CLEAResult to implement the AEP Ohio In-home Energy Program. CLEAResult works on marketing jointly with the utility, and is directly responsible for communicating with customers, scheduling appointments with participants, and coordinating auditors and trade allies who are responsible for assessing participant homes, installing measures, and providing participants with energy surveys that include recommendations for further energy saving actions. CLEAResult also provides AEP Ohio with reporting which includes progress toward goals and participant and measure-level databases.

The roles and responsibilities of CLEAResult include:

- » Contract financial planning and budgeting
- » Energy Auditor recruitment and training
- » Contractor education, training and outreach
- » Customer satisfaction/problem resolution
- » Implementation delivery planning
- » Policy/strategy and implementation planning/updates with AEP Ohio program managers
- » Trade ally recruitment, enrollment, and training, as necessary
- » Marketing materials development and media placement

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- » Incentive processing and payment
- » Data tracking/reporting via password protected website
- » Call center for questions from trade allies and general public related to the program
- » Reporting (monthly, annual)
- » Selected verification to ensure measures are installed

1.1.2 Measures and Incentives

The In-home Energy Program provides direct install services for the following measures:

- » Compact fluorescent lamps (CFLs) (maximum of 12)
- » 1.75 gallon per minute (gpm) low-flow showerhead (maximum of 2) for homes with electric water heating
- » 1.5 gpm faucet aerators (kitchen and bathrooms) for homes with electric water heating
- » Pipe insulation, R-4 rated; six (6) feet (3' inlet and 3' outlet)
- » Programmable setback thermostat
- » LED nightlight (1)

In addition to these direct install services, the program offers two levels of in-home energy audits to identify recommendations for equipment upgrades along with rebates for installation of recommended energy efficiency upgrades.

The In-home Energy Assessment includes a visual inspection of the home and an interview with the homeowner about their lifestyle and energy use. The auditor can identify approximately 80 percent of the energy-saving opportunities (especially quick to install measures) available in the home, and can recommend measures that help the average homeowner cut its energy use by up to 30 percent. There is a \$25 fee for the 1-hour In-home Energy Assessment. The customer pays the fee over the phone while scheduling an appointment.

The In-home Energy Audit is patterned after a Building Performance Institute (BPI) audit and includes a thorough inspection of the home, an interview with the homeowner, a blower door test, a combustion efficiency test and a combustion safety test. The auditor utilizes a computer software program to generate a prioritized list of energy-saving measures and the calculated energy savings, estimated installed costs and simple payback. When a homeowner calls to schedule their audit, CLEAResult refers them to a program-approved auditor. The contracting, pricing and scheduling of the In-home Energy Audit are left to the auditor and customer to negotiate. AEP Ohio provides a \$75 rebate (\$100 for an all-electric home) to participating customers. Customers who had an audit and installed at least \$1,000 worth of measures within six months are eligible for a performance bonus rebate of \$200 for an all-electric home and \$150 for a non-electric home. The combination of the initial rebate (\$100 for an all-electric home or \$75 for a non-electric heat home) and the performance bonus rebate is capped at the cost of the

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audit. Customers who had an assessment and installed at least \$1,000 worth of measures within six months will have their \$25 assessment fee rebated.

Customers are eligible for rebates for a list of measures identified during audits or assessments. **Error! Reference source not found.** shows incentives offered through the In-home Energy Program.

Table 1-1. AEP Ohio In-home Energy Measure Incentives

In-home Energy Rebates	All Electric or Electric Heat	Central AC w/Gas or Other
In-home Energy Audit	\$100.00	\$75.00
PIN Based CFL Indoor Fixture	\$20.00	\$20.00
PIN Based CFL-Outdoor Fixture	\$35.00	\$35.00
CFL Torchieres	\$20.00	\$20.00
Wall Insulation	\$200.00	\$75.00
Air Sealing	\$200.00	\$50.00
Window Film	\$0.00	\$45.00
ENERGY STAR® Window Replacement	\$200.00	\$75.00
Attic Insulation	\$200.00	\$90.00
Shower Start/Stop	\$25.00	\$25.00
ENERGY STAR® Ceiling Fan	\$20.00	\$20.00
Heat Pump Programmable Thermostat	\$50.00	\$25.00
Duct Sealing	\$150.00	\$50.00
RCA Tune Up	\$50.00	\$50.00
Furnace Replacement w/ ECM	\$150.00	\$150.00
ENERGY STAR® Central Air Conditioning Replacement	\$100.00	\$100.00
ENERGY STAR® Heat Pump Replacement	\$350.00	\$150.00
Complete System Bonus	\$150.00	\$150.00
Performance Bonus (Assessment / Audit)	\$25 / \$200	\$25 / \$150

Section 2. Evaluation Methods

This section describes the analytic methods and data collection activities implemented as part of the PY 2010 process evaluation of the In-home Energy Program, including the data sources and sample designs used as the foundation for the data collection activities and analysis.

2.1 Evaluation Questions

The evaluation sought to answer the following key research questions. Each of these questions is addressed in the remainder of the evaluation report.

Marketing and Participation

1. Is the marketing effort sufficient to meet current and future program participation goals?
2. How will customers become aware of the program? What marketing strategies could be used to boost program awareness?
3. Will the program outreach to customers be effective in increasing awareness of the program opportunities?
 - » What is the format of the outreach?
 - » How often will the outreach occur?
 - » Are the outreach messages clear and actionable?

Administration and Delivery

4. Has the program as implemented changed from the original plan? If so, how, why, and was this an advantageous change?
5. Is program administration being documented and program tracking being conducted in a way that makes the program evaluable?
6. Is the program efficient and well managed? How are problems resolved?

2.2 Process Evaluation Analytical Methods

The process evaluation consisted of four in-depth interviews: two with the AEP Ohio program staff, and two with the program implementer. The interviews covered program design and implementation; marketing and promotion; and perceived barriers to participation.

2.2.1 Program Material Review & Secondary Research

The evaluation team has reviewed all program materials provided by AEP Ohio and CLEAResult to date and conducted a review of best practices for implementing residential audit programs. A summary list of program materials reviewed to date for this report follows.

- » Program tracking data

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- » Program impact algorithms and assumptions
- » Program marketing materials/collateral
- » Utility websites
- » Industry Best Practices
- » Program Design and Implementation plans

2.2.2 Program Staff Interviews

Program staff members were interviewed over the phone in February 2011. Each interview lasted between one and two hours and covered program design and implementation; marketing and promotion; and perceived barriers to participation. Table 2-1 provides a summary of the data collection activities conducted to support the process evaluation.

Table 2-1. Data Collection Activities

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
In-Depth Phone Interviews	AEP Ohio Program Staff	Contacts from AEP Ohio	In-home Energy Program Coordinator, Data Analyst	2	Feb 2011
	Staff of Program Implementer	Contacts from CLEAResult	Vice President, IT Manager, Program Manager, Evaluation Manager	4	Feb 2011

Interview guides were developed based on the research issues and metrics identified in the background review for each program. The purpose of the guides was to solicit information from those who implement the programs. The questions in the guides were primarily focused on these topics:

- » Program Contact and Roles
- » Program Goals and Objectives
- » Program Design and Participation
- » Marketing and Outreach
- » Program Tracking
- » Quality Assurance and Quality Control (QA/QC)
- » Staffing and Communication

Separate interviews were conducted with AEP Ohio staff and the implementation contractor to encourage candor and help identify any potential issues regarding the relationships between the two parties. Notes were taken and in some cases interviews were recorded to facilitate the capture of information. These materials were consulted in the preparation of this report but are not made available outside of the evaluation team. Consistent with standard market research procedure, the confidentiality of each person interviewed was guaranteed, and comments are

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not attributed to any one individual; rather the evaluation focuses on trends and issues that arose from a variety of perspectives.

Section 3. Program Level Results

This section presents detailed findings of the process evaluation of the In-home Energy Program.

3.1 Process Evaluation Observations

The process evaluation of the In-home Energy Program focused on reviewing activities related to program start-up in 2010, in order to document key program operations and delivery strategies and identify any potential process-related issues. Data sources for the process evaluation included in-depth interviews with program staff, including the AEP Ohio Consumer Programs Coordinator and the CLEAResult Program Managers and Implementation Staff.

3.1.1 Program Administration

The program was targeted to launch in September of 2010, but was not officially launched until December due to delays resulting from program staffing issues at both AEP Ohio and CLEAResult. Several key program staff at AEP Ohio took early retirements in 2010, leaving the program temporarily without day-to-day management from the utility. Additionally, CLEAResult made adjustments to program management staffing in fall 2010 and additional staff were assigned to the program in November and December to assist with start-up activities that had been delayed. Program staffing and coordination issues were resolved in November and the program ramped up rapidly as program materials and processes were developed and finalized.

3.1.2 Program Participation

Participation in the In-home Energy Program in 2010 was significantly below target in relation to the original forecast. Initial marketing efforts resulted in the scheduling of 98 assessments and 8 audits during the month of December. Each audit/assessment included direct installation of low cost energy efficiency measures. Table 3-1 provides a summary of direct install measure installations in 2010. Savings achieved in 2010 from the measures listed below have not been verified and will be evaluated in 2011.

Table 3-1. AEP Ohio Existing Homes Direct Install Measure Savings 2010

Measure	# Installed	2010 Savings	
		MWh	kW
CFL	1,165	46.6	6.99
Showerhead	80	1.6	0.16
Faucet Aerator	148	5.5	0.61
Pipe Insulation	100	1.7	0.22
LED Nightlight	109	1.4	0.00
Programmable Thermostat	53	5.8	0.18
Total	1,655	62.6	7.80

In addition to the Direct Install measures listed above, 11 customers received incentives for upgrades recommended during the audit/assessment. Incentives were provided for the replacement of heat pumps, central air conditioners, furnaces with ECM motors, and installation of attic insulation and programmable thermostats.

3.1.3 Program Marketing and Outreach

CLEAResult developed a Marketing Plan for the In-home Energy Program in September of 2010 and added a supplement to that plan in January 2011 detailing additional strategies and schedules for marketing to customers, auditors and assessors. The goal of the In-home Energy Program's marketing efforts, as stated in the plan, is to secure the customer participation necessary to meet all program goals in a cost effective manner, while preserving AEP Ohio's brand integrity.

CLEAResult's marketing efforts in 2010 included developing: the program website, a Contractor Toolkit consisting of tools such as flyers, press releases, yard signs and door hangers; and direct customer-facing marketing material, including flyers and bill inserts. Program staff identified Home Shows and trade ally/auditor direct communications as the most effective methods of marketing for the program.

The In-home Energy Program webpage on AEP Ohio's gridsmartohio.com website provides a clear, succinct and comprehensive description of the program. Program components (audit, assessment and direct install) and participation processes are well summarized. Contact information for the call center contractors and auditors is easy to access, user-friendly and comprehensive.

Initial marketing efforts in December 2010 included website content, press releases, television news and newspaper interviews and contractor/auditor word of mouth, which resulted in the scheduling of 98 assessments and 8 audits. According to data recorded by the program call center during customer intake, most of these participants cited the AEP Ohio website (21 percent), newspaper ads (26 percent), or trade ally/auditor word-of-mouth (22 percent) as

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the source of customer program information. **Error! Reference source not found.** presents a list of the marketing sources noted by customers.

Table 3-2. How Participants First Heard of the Program¹

Marketing Source	Percent of Participants (n=95)
Friends	7%
Other	5%
AEP Ohio Webpage	20%
TV/Radio	6%
Newspaper Ad	25%
Word of Mouth	2%
AEP Employee	3%
News Article	4%
Flyer	3%
Contractor Web Page	1%
Bill Insert	1%
Auditor	12%
Contractor	9%
Total	100%

3.1.4 Communication and Coordination

AEP Ohio and CLEAResult staff communicate on a daily basis to discuss details of marketing, customer service, data tracking, and program administration. Weekly check-in calls are also held to discuss program progress and outstanding issues. Initial difficulties related to program staffing have been resolved, and both AEP Ohio and CLEAResult are satisfied with the level and quality of communication.

3.1.5 Application and Payment Processing

During In-home Audits and Assessments, the contractor completes an Assessment Form detailing home characteristics (age, size, appliances, insulation levels, etc) and contact information. When an audit is performed, blower door and combustion safety tests are conducted, and homes are modeled using the Targeted Retrofit Energy Analysis Tool (TREAT) or REM/Rate. The Assessment Form and modeling reports are mailed by the auditor or traded ally to CLEAResult where they are scanned and recorded.

Once In-home Audits/Assessments have been completed, the customer receives a Savings Opportunity Analysis Proposal (SOAP), which prioritizes the list of measures recommended

¹ Customers that did not respond have been removed from the list.

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during the audit and lists the rebate amount offered through the program. If recommended measures are installed, the customer or contractor then fills out a Rebate Claim Form. The form requires customer and contractor contact information, rebates claimed, date installed and receipts for measures installed. The Rebate Claim Form is mailed to CLEAResult where it is scanned, manually entered into the tracking system and double-checked for accuracy by another staff member. If all forms are in good order, a check is mailed to the applicant within 25 days of receipt.

CLEAResult's processes for application and rebate processing appear to be smooth and efficient. However, several instances were identified where a customer either incorrectly received a rebate or data was entered incorrectly. In one instance a heat pump rebate was given to a customer with an existing gas furnace, though heat pump rebates are only available to customers with existing electric heat. Additionally, several heat pump programmable thermostats were rebated to customers with gas heat and central air conditioning.

CLEAResult has established a process for handling forms/applications that contain missing or inaccurate information. When Rebate Forms are received that are incomplete or inaccurate, these are flagged as Not-in-good-orders (NIGO), and are tracked in a separate database. CLEAResult staff follows up with the applicant who must provide complete information before a rebate can be processed. The NIGO database maintained by CLEAResult currently contains over 50 entries that are waiting to be completed before rebates can be issued. The majority of issues delaying completion of these projects were related to missing forms (Savings Opportunity Analysis Proposals and Assessment Forms). It appears that Rebate Claim Forms are often being mailed in before CLEAResult receives a complete Assessment Form from the auditor.

3.1.6 Quality Assurance/Quality Control

Limited Quality Assurance/Quality Control (QA/QC) activities were conducted in 2010 due to late program start-up. QA/QC activities primarily revolved around verification of auditor and trade ally data entry, audit protocols and reporting. Issues were identified in 2010 with the accuracy and completeness of information recorded by auditors and trade allies during audits and additional QC efforts were made by Trade Ally Coordinators to correct these issues.

CLEAResult completed a Quality Assurance/Quality Control Policies and Procedures Manual in January of 2011, which details processes in place for ensuring that customer service, auditor, contractor and data center activities are successful. The manual is comprehensive and complete, and processes are well defined and, if followed, should result in more effective program activities.

3.1.7 Tracking System Review

A final program tracking database was provided in support of this evaluation by AEP Ohio in February of 2011. A final summary report was prepared by AEP Ohio, compiling three separate

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data extracts provided by CLEAResult. The report contained 111 rows, with a unique row for each project, and 55 columns of data reported for each row.

The quality of data entry and reporting was identified by AEP Ohio Program Staff as a major area of concern. Following is a list of issues identified during this evaluation:

- » The Audit Forms were found to be incomplete in capturing data required by AEP Ohio. This issue was identified early on by AEP Ohio staff and has been corrected.
- » Information reported in data extracts varies in level of completeness. For instance, every audit is supposed to include a blower door test and combustion safety test (combustion safety test not required in all electric homes). There were eight audits conducted in 2010 but only two records of blower door test results and combustion safety testing. Basic building information and home data was often missing as well. In order to verify program savings impacts in future evaluations, data recorded for each project needs to be complete and accurate.
- » The extracts produced by the tracking system do not differentiate well between audits and assessments. Data collected during audits and assessments is reported in the same data extract with no clear distinction.
- » There are many fields in the data extract that do not appear on the audit form (where they were entered from), some of which have values entered. Presumably these are data provided by TREAT or REM/Rate reports submitted by contractors or entered in by hand on the Assessment Form.
- » Data collected during audits is significantly more detailed and extensive than data collected during assessments. The same form is used to collect data for both the audit and the assessment and auditors are expected to provide reports generated from modeling software (TREAT or REM/Rate) to document the rest. However, program staff has had difficulty getting auditors to provide this data.
- » Detailed monthly reports were not provided in 2010, due to the fact that there was no data to report for most of the year and because a data reporting format had not yet been agreed on. An initial version of a dashboard was created in 2011 that reports data collected in the tracking system that is required by program staff to monitor program progress and make course corrections, if necessary. However, the dashboard contained inaccurate data and did not contain sufficient detail. CLEAResult is currently developing another automated report that shows additional indicators of progress towards goals.

AEP Ohio and CLEAResult staff have discussed many of these concerns and CLEAResult is making efforts to improve training and support activities relating to program processes and

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protocols to reduce the learning curve for auditors and trade allies and ensure data is being accurately recorded.

The information being collected in the tracking system is comprehensive and, as long as all data is collected accurately and completely, the tracking system should provide a solid foundation on which to build the impact and process analyses for 2011.

3.1.8 Program Theory and Logic Model

This section contains the program theory, logic model, and performance indicators of the In-home Energy Program.

Program Theory

The objective of the AEP Ohio In-home Energy Program is to produce long-term electric energy savings in the consumer sector by helping customers analyze their energy use and recommending and providing incentives for appropriate weatherization measures and the installation of high-efficiency lighting, appliances, and other equipment.

Logic Model

Best practices for energy efficiency programs indicate that all programs should have a sound program plan and clearly articulated program theory. The evaluation team drafted a program logic model following program documentation review and initial program staff interviews. The goal of creating such a model was to show the main programmatic activities AEP Ohio has in place and the anticipated market outputs and outcomes. More importantly, the logic model identifies the key performance indicators appropriate for the In-home Energy Program. The evaluation team reviewed the program logic model with the program manager and staff during in-depth program staff interviews, which resulted in the finalized logic model as presented in Figure 3-1.

The logic model can be linked to key performance indicators to provide ongoing feedback to program management. The model flows from top to bottom and left to right, and is organized according to five basic categories:

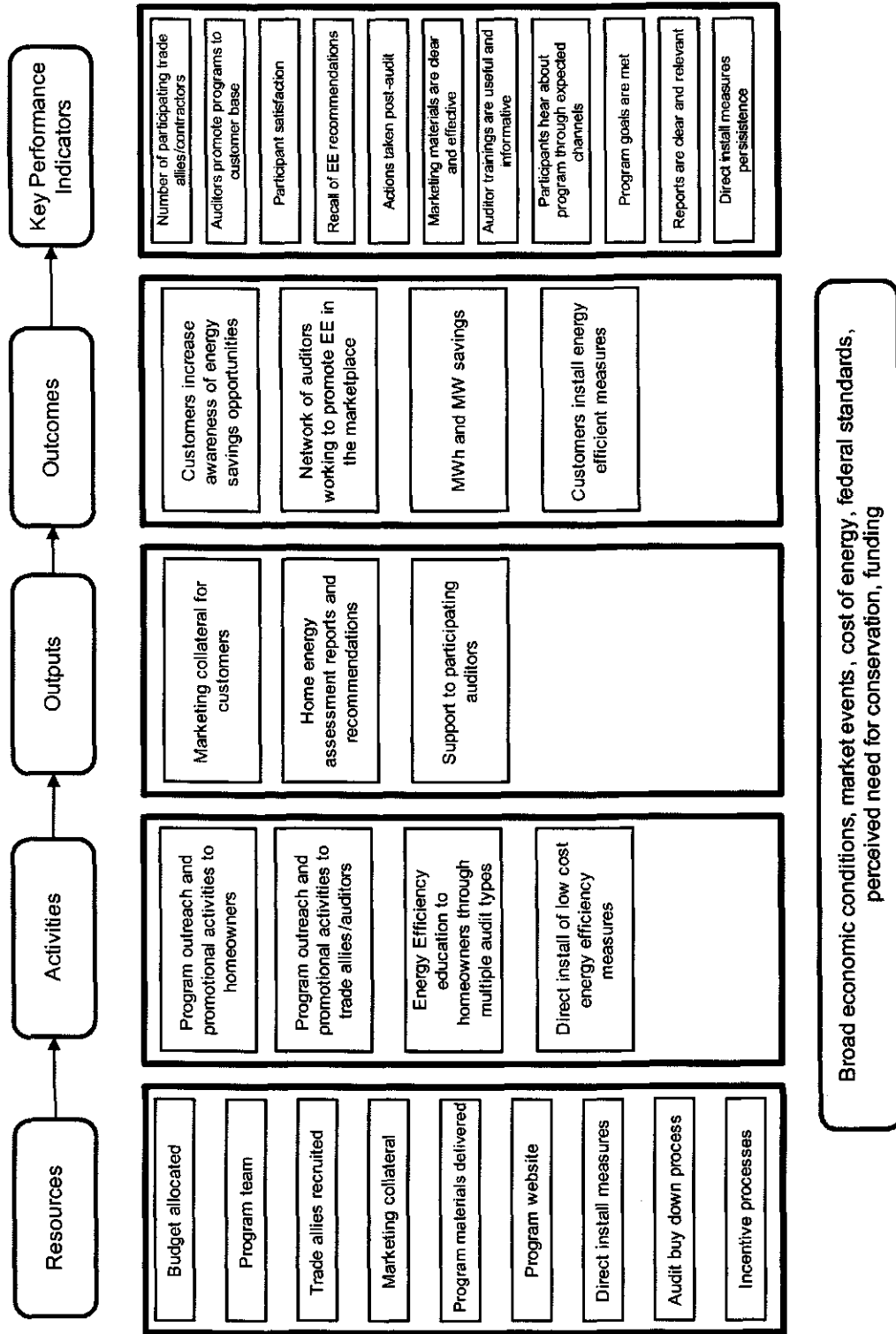
- » Program Resources (Inputs)
- » Program Activities
- » Outputs
- » Outcomes
- » Key Performance Indicators

Stepping across the activities enumerated in the logic model indicates an approximate “flow” in the sequence of activities. For example, this logic model starts with the program resources that support program activities that are expected to yield immediate outputs, followed by the short-term and long-term outcomes that are expected to have a series of impacts, including direct

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energy savings, and then key performance indicators are presented. The program theory links market and program outputs causally with the expected market and program short-term and long-term outcomes.

Figure 3-1. AEP Ohio In-home Energy Program Logic Model



Section 4. Conclusions and Recommendations

This section highlights the findings from the process evaluation of the program delivered by CLEAResult.

4.1 Process Findings

1. The In-home Energy Program was not successful at meeting its savings goals for 2010. The Program was not launched until December due to normal start up requirements and because the program was understaffed as a result of a voluntary severance program that involved the two key program staff responsible for the program. Program staff expect that savings goals will be achieved in 2011.
2. Overall, AEP Ohio program staff has found customers, contractors and auditors to be satisfied with the program and have received very few complaints in the initial month of operation.
3. After initial program staffing issues were resolved, AEP Ohio and CLEAResult have developed an effective working relationship and program staff are satisfied with the level and quality of communication.
4. Program staff have found that a marketing strategy focused on utilizing auditors and trade allies to generate interest among customers to be most effective, at least initially.
5. Data management was identified by AEP Ohio Program Staff as a major area of concern. AEP Ohio and CLEAResult staff have discussed these concerns and CLEAResult is making efforts to improve training and support activities relating to program processes and protocols to reduce the learning curve for auditors and trade allies and ensure data is being accurately recorded.
6. CLEAResult's application and rebate processing appears to be organized and efficient despite frequent issues with the accuracy and completeness of data received by contractors.
7. Data collected during audits is significantly more detailed and extensive than data collected during assessments. The same form is used to collect data for both the audit and the assessment, and auditors are expected to provide reports generated from modeling software (TREAT or REM/Rate) to document the rest. However, program staff has had difficulty getting auditors to provide this data.
8. Information reported in data extracts contained varies in level of completeness. In order to verify program impacts in future evaluations, data recorded for each project needs to be complete and accurate. Data extracts do not differentiate well between audits and

assessments. Data collected during audits and assessments is reported in the same data extract with no clear distinction.

9. Detailed monthly reports were not provided in 2010, due to the fact that there was no data to report for most of the year and because a data reporting format had not yet been agreed on. An initial version of a dashboard was created in 2011 that reports data collected in the tracking system that is required by program staff to monitor program progress and make course corrections, if necessary. However, the dashboard contained inaccurate data and did not contain sufficient detail. CLEAResult is currently developing another automated report that shows additional indicators of progress towards goals.
10. The information being collected in the tracking system is comprehensive and, as long as all data is collected accurately, the tracking system should provide a solid foundation on which to build the impact and process analyses for 2011.
11. While limited activities occurred in 2010, CLEAResult completed a QA/QC Policies and Procedures Manual, which is comprehensive and complete, and should result in effective program activities.

4.2 *Process Recommendations*

1. Marketing, customer, audit, and impact data should be integrated into a single data extract/report that will support evaluating the effectiveness of marketing efforts as well as tracking and analysis of audit results.
2. Assessment Forms should be modified to include fields for entry of all data pertaining to audit test results (blower door, etc), or a new form should be created for audits.
3. Required fields on Assessment and Rebate forms should be indicated, noting that incomplete forms will not be processed. Reducing the number of NIGOs and the duration that these remain outstanding should remain a priority.
4. Consider continuing to focus on training contractors on customer service and program protocols to minimize data entry and rebate claim errors.
5. Consider separating data collection, tracking and reporting functions for audits and assessments. Different data is collected for audits and assessments but the same form is used for both, and all data is reported in the same data extract. For tracking and evaluation purposes, it would be helpful to have the data reportedly separately.
6. Consider conducting regular on-site post-installation inspections to discourage auditors and trade allies from failing to fully and properly install all rebated measures. Random inspections of 10 to 20 percent of projects are usually adequate, but the percentage should be higher for newer contractors.

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7. Consider additional efforts to encourage customers to install recommended measures through follow-up phone calls, customer assistance, or adjustments to rebate levels.
8. Continue to integrate program offerings as appropriate with Columbia Gas to take advantage of savings opportunities identified by Columbia Gas auditors.
9. Consider providing detailed, accurate and timely monthly reports that allow program staff to monitor program progress and make course corrections, if necessary.

Section 5. Appendix: Data Collection Instruments

The following guides were used to conduct the in-depth surveys.

5.1 *AEP Ohio Retrofit Implementation Contractor Interview Guide*



5.2 *AEP Ohio Retrofit Program Staff Interview Guide*

