

APPENDIX F

**EVALUATION
OF THE
2011 COMMUNITY CONNECTIONS
PROGRAM**

**Final Report
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Prepared for:

**FirstEnergy Ohio Companies:
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1. EXECUTIVE SUMMARY

During 2011, the Ohio operating companies The Cleveland Electric Illuminating Company (“CEI”), Ohio Edison Company (“OE”), and The Toledo Edison Company (“TE”) (collectively “Companies”) continued the Community Connections Program. The program was targeted to low-income residential customers, either directly or through landlords of such customers. The program was administered by Ohio Partners for Affordable Energy (“OPAE”), which worked with subcontractors to deliver weatherization services, energy efficient solutions, and customer education to participating low-income customers. For each participating customer, a walk-through audit of the residence was conducted to determine whether it was feasible and appropriate to install one or more weatherization or energy efficiency measures.

A total of 2,470 low-income households received energy efficiency services through the Community Connections Program in 2011. The numbers of participants in each service territory were as follows:

- CEI 871
- OE 1049
- TE 550

Estimates of the gross energy savings (kWh) and peak demand reductions (kW) for the program in the three service territories are reported in Table 1-1.

Table 1-1. Impact Evaluation Results

<i>Utility</i>	<i>Ex Ante Expected Gross Savings</i>		<i>Ex Post Verified Gross Savings</i>	
	<i>Gross kWh</i>	<i>Gross kW</i>	<i>Gross kWh</i>	<i>Gross kW</i>
CEI	1,149,154	159	688,537	100
OE	1,209,562	159	856,700	126
TE	374,553	48	191,240	28
Total	2,733,269	367	1,736,477	254

The gross ex post kWh savings total shown in Table 1-1 reflect a realization rate of 64 percent, as determined by the ratio of verified gross kWh savings to expected gross kWh savings. The major explanatory factor for the variance in savings estimates is that 16 percent of the CFLs and 14 percent of the ENERGY STAR® freezers were never delivered to the 2011 Community Connections participants.

The replacement of refrigerators and freezers with ENERGY STAR® models and the installation of energy efficient lighting accounted for 99 percent of the verified gross kWh savings.

2. INTRODUCTION AND PURPOSE OF THE STUDY

The Community Connections Program was continued in 2011. The program was targeted to low-income residential customers, either directly or through landlords of such customers. The program was administered by OP&A, which worked with subcontractors to deliver weatherization services, energy efficient solutions, and customer education to participating low-income customers.

The purpose of this report is to present the results of the evaluation effort undertaken by ADM Associates Inc. (“ADM”) to verify the energy savings and peak demand reductions that resulted from measures installed through the Community Connections Program during 2011. Additionally, the evaluation was undertaken to determine customer satisfaction with the Community Connections Program in 2011 and to identify any issues or concerns about program implementation that need to be resolved.

The methods used to calculate energy savings and peak demand reductions depended on whether or not a measure was a lighting measure.

- The lighting measures that were installed through the Community Connections Program were compact fluorescent lamps (“CFLs”) of different wattages and types that were directly installed. For each such CFL measure, total kWh savings and total peak demand savings for that measure were determined as a product of the number of measures verified as being installed and the savings per measure. The quantities of CFLs installed through the Community Connections Program were verified through a telephone survey of a randomly-selected sample of households that participated in the Community Connections Program during 2011. Savings per bulb installed were determined using values from the telephone survey and the draft State of Ohio Energy Efficiency Technical Reference Manual¹ (“TRM”).
- The types of non-lighting measures installed through the Community Connections Program in 2011 included replacement of refrigerators and freezers, replacement of central air conditioning systems, replacement of electric water heaters, installation of attic insulation, installation of air source heat pumps, HVAC tune-ups, reduction of air infiltration, and installation of water heater wraps, low flow showerheads, and faucet aerators. For each such non-lighting measure, total kWh savings and total peak demand savings for that measure was determined as a product of the number of measures verified as being installed and the savings per measure. The quantities of non-lighting measures installed through the Community Connections Program were verified through a telephone survey of a randomly-selected sample of households that participated in the Program during 2011. Per-unit savings for non-lighting measures were determined using values from the telephone survey and from either

¹ Vermont Energy Investment Corporation (VEIC), *State of Ohio Energy Efficiency Technical Reference Manual*, Prepared for Public Utilities Commission of Ohio, Draft of August 6, 2010.

the TRM or from the November 3, 2010 Ohio TRM Joint Objections and Comments, Case Number 09-512-GE-UNC.

ADM administered a telephone survey to 100 program participants to verify receipt of energy efficiency measures and services claimed in the Community Connections Program records and to estimate customer satisfaction with the 2011 Community Connections Program. The survey measured satisfaction on a scale of zero to ten for each of the services that customers received through Community Connections. The survey was also used to describe CFL installation practices among customers who received CFLs as well as to describe customer experiences with the contractors who performed the measure installations and the health and safety repairs.

Finally, in-depth interviews were carried out with a sample of Community Connections Program staff and with staff from OP&E, the implementation contractor. Additionally, a sample of contractors from the local community agencies that implemented the program was also interviewed. The objective of these interviews was to gather feedback from program staff and the implementer agencies to determine how the program was operating and to obtain suggestions for program improvements.

3. DESCRIPTION OF PROGRAM

The 2011 Community Connections Program provided weatherization measures, energy efficient solutions, and consumer education to low-income households in the Companies service territory. The program targeted residential customers and landlords of residents eligible for one of the following Ohio programs:

- Home Weatherization Assistance Program (HWAP);
- Electric Partnership Program
- House Warming Program
- Home Energy Assistance Program (HEAP).

The Community Connections Program for 2011 was a continuation of the program that began in 2003. As in previous years, the program was administered by OP&E who worked with subcontractors to deliver the weatherization services, energy efficient solutions, and customer education. For each participating low-income customer, a walk-through audit was conducted to determine whether it was feasible and appropriate to install one or more weatherization measures. The audit also identified where health or safety measures were also needed, which generally consisted of various electrical wiring and roofing repairs. Weatherization and health and safety measures that were installed in 2011 are listed in Table 3-1. All work in installing these measures was done pursuant to appropriate government permits and inspected as required. In particular, measures installed met Weatherization Program standards for the State of Ohio.

Table 3-1. Measures Installed through the 2011 Community Connections Program

Energy Efficiency Measures: Lighting	Energy Efficiency Measures: Non-Lighting	Health/Safety and Education Measures
CFL – 0.3 Watt night light	Appliance replacement – Refrigerator	Electric repair/upgrade
CFL – 0.5 Watt night light	Appliance replacement – Freezer	Roof repair/ replacement
CFL – 7-9 Watt candelabra	Appliance replacement – Air Source	Removal: refrigerator, freezer,
CFL – 14 Watt candelabra	Heat Pump	or stove
CFL – 9 Watt globe	Appliance replacement – Central Air	Miscellaneous Repairs
CFL – 9-15 Watt	Conditioning	Customer energy education
CFL – 15 Watt globe	Appliance replacement – Electric	
CFL – 15 Watt outdoor	Water Heater	
CFL – 15 Watt dimmable	HVAC Tune-Up	
CFL – 16-20 Watt	Insulation – Attic	
CFL – 16-20 Watt outdoor	Air Infiltration Reduction	
CFL – 16-20 Watt flood light	Water Heater Wrap	
CFL – 21 Watt	Water Heating –Energy Saving	
CFL – 21 Watt outdoor	Showerhead	
CFL – 150 Watt outdoor	Water Heating – Faucet Aerators	
CFL – 3-way circle line		
CFL –3-way spiral		
CFL – 3-way dimmable torchiere		

For qualified customers, weatherization measures recommended through the audit were installed at no cost to the customer. Landlords of qualified low-income residential customers received weatherization measures and energy efficiency solutions at 50 percent of cost.

4. METHODOLOGY

The methods used to calculate kWh savings and kW reductions for measures installed through the Community Connections Program are presented in this chapter. The methods used depended on whether or not a measure was a lighting measure. The methods used to calculate savings for lighting and non-lighting measures are therefore described separately in the following sections.

4.1 METHODS USED TO CALCULATE SAVINGS FOR LIGHTING MEASURES

As discussed in Chapter 3, the lighting measures that were installed through the Community Connections Program were CFLs of different wattages that were supposed to be directly installed. For each such CFL measure, total kWh savings and total peak demand savings for that measure are determined as a product of the number of measures verified as being installed and the savings per measure. The methods used to determine verified installations and per-unit kWh and peak demand savings are described in this section.

4.1.1 Verification of Number of Measures Installed

The quantities of CFLs installed through the Community Connections Program were verified through a telephone survey of a randomly-selected sample of 100 households that participated in the Community Connections Program during 2011. The survey can be found in the Appendix.

4.1.2 Calculation of kWh Savings per Lighting Measure

For each lighting measure, annual, first-year pro-rata and lifetime kWh savings were calculated through the following procedures.

4.1.2.1 Calculation of Annual kWh Savings per Lighting Measure

The lighting measures that were installed through the Community Connections Program were CFLs of different wattages that were directly installed. For these measures, kWh savings per measure were calculated per procedures set out in the TRM.² As set out in the TRM,

$$\text{kWh Savings} = \Delta\text{kWh} = \left(\frac{\Delta\text{Watts}}{1,000} \right) * \text{ISR} * \text{Hours} * \text{WHFe}$$

Where:

ΔWatts = CFL watts * delta watts multiplier:

CFL watts = wattage of installed CFL, as verified

Delta watts multiplier = factor to adjust for change in baseline conditions resulting from Energy Independence and Security Act of 2007. For 2011, this multiplier is 3.25.

² Ibid., pp. 17-22.

ISR = In Service Rate (i.e., percentage of units rebated that are actually installed);

Hours = Average hours of use per year; (TRM specifies a value of 1,040 hours).

WHFe = Waste Heat Factor for energy (to account for cooling savings from efficient lighting).

TRM-specified values were used in the calculation of kWh savings, with Hours = 1,040 and WHFe = 1.07.

The value for ISR specified in the TRM is 0.81. However, this value was based on the analysis for Time of Sale measures. For measures that are directly installed, ISR should be higher. Accordingly, a value of 0.89 was used in calculating kWh savings, per a recommendation from Duke Energy based on an evaluation of their CFL program. The ISR value of 0.89 was also validated through the telephone survey.

4.1.2.2 Calculation of First-Year Pro-Rata Savings per Lighting Measure

First-year pro-rata savings were calculated by determining the midpoint date of installation for lighting measures and using this date to determine the number of months remaining in 2011 for which annual savings could be attributed as first-year savings.

4.1.2.3 Calculation of Lifetime kWh Savings per Lighting Measure

Lifetime kWh savings for lighting measures were calculated by multiplying annual ex post kWh savings by the deemed effective useful life for the early replacement of CFLs, which the TRM deems to be eight years.

4.1.3 Calculation of Summer Coincident Peak Demand Savings per Lighting Measure

Per the TRM, summer coincident peak demand savings per lighting measure were calculated according to the following formula.

$$\text{Summer Coincident Peak Demand Savings} = \left(\frac{\Delta \text{Watts}}{1,000} \right) * \text{ISR} * \text{WHFd} * \text{CF}$$

Where:

Δ Watts = CFL watts * delta watts multiplier:

CFL watts = wattage of installed CFL, as verified

Delta watts multiplier = factor to adjust for change in baseline conditions resulting from Energy Independence and Security Act of 2007. For 2011, this multiplier is 3.25.

ISR = In Service Rate (i.e., percentage of units rebated that are actually installed);

WHFd = Waste Heat Factor for Demand (to account for cooling savings from efficient lighting);

CF = Summer Peak Demand Coincidence Factor

TRM-specified values for WHFd and CF were used in the calculation of summer coincident peak demand savings, with WHFd = 1.21 and CF = 0.11. However, as with the calculation of kWh savings, the value used for ISR was 0.89 rather than 0.81 (to reflect the effects of the CFLs being directly installed).

4.2 CALCULATION OF SAVINGS FOR NON-LIGHTING MEASURES

Estimates of savings were calculated for the following types of non-lighting measures installed through the Community Connections Program in 2011.

- Refrigerator replacement
- Freezer replacement
- Central air conditioning replacement
- Air Sealing (Infiltration Reduction)
- Water Heater Wrap
- Low Flow Showerhead
- Faucet Aerators

For each such non-lighting measure, total kWh savings and total peak demand savings for that measure are determined as a product of the number of measures verified as being installed and the savings per measure. The methods used to determine verified installations and per-unit kWh and peak demand savings for the non-lighting measures are described in this section.

4.2.1 Verification of Number of Non-Lighting Measures Installed

Verification of the quantities of non-lighting measures installed through the Community Connections Program during 2011 was accomplished through a telephone survey of a randomly-selected sample of 100 households that participated in the 2011 Community Connections Program.

4.2.2 Calculation of Energy & Peak Demand Savings for Refrigerator Replacements

For the 2011 program, ADM used the average annual kWh savings per replaced refrigerator unit determined from the ex post value obtained in the 2010 evaluation of the Community Connections Program for the remaining life of an existing unit (for the first 8 years of life). Unit Energy Consumption (UEC) in the 2010 evaluation was based on modified values recommended in the Joint Utility Objections document for the average value of an existing unit (UEC_{existing}) and the ENERGY STAR® replacement unit (UEC_{ES}). The average energy savings obtained for early replacement of an existing refrigerator with an ENERGY STAR® refrigerator using the modified values was 1,251 kWh. Similarly, the average summer coincident peak kW savings per

unit based on the ex post value obtained from the 2010 evaluation of the Program was 0.192 kW. ADM therefore used the following deemed values for refrigerator units replaced by ENERGY STAR® refrigerators in 2011:

- Average annual energy savings of a replaced refrigerator unit: **1,251 kWh**.
- Average peak demand savings of a replaced refrigerator unit: **0.192 kW**.

4.2.3 Calculation of Energy & Peak Demand Savings for Freezer Replacements

The TRM does not have procedures for calculating annual kWh savings and peak demand savings for replacement of a freezer for a low-income household. Historically, evaluations of appliance turn-in programs have used a refrigerator to freezer conversion factor methodology to estimate the annual energy savings of recycled freezers. This methodology³ is based on prior research showing that freezers typically use less energy than refrigerators.

In the 2010 evaluation of the Community Connections Program, ADM used a refrigerator to freezer conversion factor of 90% which was applied to the modified savings values for replacing refrigerators in low-income households (as described above for refrigerators) to estimate the savings⁴ for replacement of freezers for such households; see the calculations in the footnote below. Based on the refrigerator to freezer conversion methodology employed in 2010, ADM proposed that the 2010 ex post results for freezers be used as the deemed values in the 2011 evaluation for average annual kWh savings and summer peak kW savings reduction for freezer replacement. Accordingly, ADM recommended using the following values for freezer units replaced by ENERGY STAR® freezers in 2011:

- Average annual energy savings of a replaced freezer unit: **1,131 kWh**.
- Average peak demand savings of a replaced freezer unit: **0.175 kW**.

4.2.4 Calculation of Energy & Peak Demand Savings for Central Air Conditioning

The TRM algorithms for the early replacement of central air conditioning⁵ were be used for calculating energy and demand savings in the 2011 evaluation. As specified in the TRM, the formula for calculating annual energy savings for the early replacement of a central air conditioning unit (first five years) is:

³ For example, in the California Residential Appliance Recycling Program conducted in 2002 (KEMA-Xenergy), a refrigerator to freezer conversion factor of 85% was used since refrigerators consumed 15% more energy than freezers on the average. In the 2004-2005 California statewide RARP conducted by ADM Associates, a conversion factor of 81% was employed because the refrigerator-freezer EUC differential was 19%. In the 2010 Community Connections evaluation of freezer replacements conducted by ADM, a conversion factor of 90% was used based on the ratio of deemed savings for freezers to refrigerators listed in the Ohio draft TRM for non-low income early replacement of refrigerators and freezers in which refrigerators consumed 10% more energy than freezers.

⁴ For freezer kWh savings, calculation is $(1244/1376)*1251 = 1,131$ kWh. For freezer kW savings, calculation is $(0.20/0.22)*0.192 = 0.175$ kW

⁵ VEIC, *State of Ohio Energy Efficiency Technical Reference Manual*, Draft of August 6, 2010, pp. 78-81.

$$\text{kWh Savings} = (\text{FLHcool} * \text{BtuH} * (1/\text{SEERexist} - 1/\text{SEERee}))/1000$$

Where:

FLHcool = Full load cooling hours, which depend on location

BtuH = Size of the replaced AC unit in tons (1 ton = 12,000 BtuH)

SEERexist = SEER efficiency rating of the replaced AC unit

SEERee = SEER efficiency rating of the ENERGY STAR® AC unit installed

The formula for calculating demand savings for the early replacement of a central air conditioning unit (first five years) is specified as follows in the TRM:

$$\text{kW Savings} = (\text{BtuH} * (1/\text{EERexist} - 1/\text{EERee}))/1000 * \text{CF}$$

Where:

BtuH = Size of the replaced AC unit in tons (1 ton = 12,000 BtuH)

EERexist = EER efficiency rating of the replaced AC unit (TRM specifies this as a calculated value, computed as SEER * 0.09⁶)

EERee = EER efficiency rating of the ENERGY STAR® AC unit installed

CF = Summer Peak Coincidence Factor for measure (TRM specifies CF = 0.05)

4.2.5 Calculation of Energy & Peak Demand Savings for Air Infiltration Reduction

Energy and peak demand savings for residences where air infiltration was reduced were calculated using the procedures set out in the TRM⁷ for calculating energy savings for space cooling. In order to perform the TRM-specified calculations, data for the 55 cases reported in the final Community Connections 2011 program database (i.e., the CC System) were obtained from the implementing community agencies through the Companies for the following variables:

- Blower door test result before air sealing (CFM50Exist);
- Blower door test result after air sealing (CFM50New);
- SEER of the existing central air conditioning unit; and

The remaining values needed to estimate energy and peak demand savings for space cooling were constants.

⁶ If SEER is unknown, the TRM specifies the default EER value as 9.0

⁷ VEIC, *State of Ohio Energy Efficiency Technical Reference Manual*, Draft of August 6, 2010, pp. 100-103.

4.2.6 Calculation of Energy & Peak Demand Savings for Water Heater Wraps

Program-level energy and peak demand savings from installing water heater wraps were calculated using the deemed savings values for this measure in the TRM.⁸ The deemed annual energy savings value is 79 kWh per unit, and the deemed summer coincident peak demand savings is 0.009 kW.

4.2.7 Calculation of Energy & Peak Demand Savings for Low Flow Showerheads

ADM used deemed values for energy and peak demand savings from installing low-flow showerheads based on the ex post findings of the 2010 evaluation of the Community Connections program. The 2010 findings were based on using modified TRM specifications based on information submitted in the Joint Utility Comments on the TRM.⁹ Specifically, a modified value of 244 kWh saved per gallons per minute was used in 2010 for the calculation of energy savings. Otherwise, the TRM specifications for a low flow showerhead¹⁰ were used, which assume that installation of a low flow showerhead would change the water flow from 2.87 gpm to 2.0 gpm. The resulting average annual energy savings value obtained in 2010 was 212.28 kWh per showerhead, and the average summer coincident peak demand savings value obtained was 0.000112 kW. Therefore, ADM used the following deemed values in the 2011 evaluation:

- an annual energy savings value of 212 kWh per showerhead in 2011; and
- a peak demand savings value of 0.000112 kW per showerhead in 2011.

4.2.8 Calculation of Energy & Peak Demand Savings for Faucet Aerators

ADM used deemed values for energy and peak demand savings from installing low-flow showerheads based on the ex post findings of the 2010 evaluation of the Community Connections program. The 2010 findings were based on using TRM specifications,¹¹ which assume that installation of a faucet aerator would change the water flow from 2.2 gpm to 1.5 gpm. The resulting average annual energy savings value obtained in 2010 was 24.5 kWh per faucet aerator, and the average summer coincident peak demand savings value obtained was 0.0031 kW. Therefore, ADM used the following deemed values in the 2011 evaluation:

- an annual energy savings value of 24.5 kWh per faucet aerator in 2011; and
- a peak demand savings value of 0.0031 kW per faucet aerator in 2011.

⁸ VEIC, *State of Ohio Energy Efficiency Technical Reference Manual*, Draft of August 6, 2010, pp. 131-132.

⁹ November 3, 2010 Ohio TRM Joint Objections and Comments, Case Number 09-512-GE-UNC, 2010 Ohio Technical Reference Manual—Residential Market Sector, p. 11.

¹⁰ VEIC, *State of Ohio Energy Efficiency Technical Reference Manual*, Draft of August 6, 2010, pp. 93-96.

¹¹ VEIC, *State of Ohio Energy Efficiency Technical Reference Manual*, Draft of August 6, 2010, pp. 89-92.

4.2.9 Savings Measures not Calculated

Savings were not calculated for four measures: HVAC tune-up, air source heat pump, attic insulation installation, and replacement of electric water heaters. The reasons for this decision are summarized below.

There was only a single instance of implementation reported for each of the following three measures: HVAC tune-up, air source heat pump, and attic insulation installation. ADM would have had to request additional data from the Companies to calculate savings for these three measures since not all the required data elements for these three measures were included in the current version of the CC System. The data fields for these three measures are present in the CC System. However, the agencies installing the measures need to be trained in the CC System data entry requirements for these data fields.

The electric water heater measure is problematic in at least two respects: (a) there is no algorithm specified in the TRM for calculating savings from the replacement of an electric water heater, and (b) there is no indication that these water heaters are high efficiency units.

In summary, ADM did not attempt to estimate savings for these four additional measures because: (a) the savings would have been negligible; (b) it would not have been an efficient use of evaluation resources; and (c) calculating savings for the electric water heater measure is presently not feasible.

4.3 PROCESS EVALUATION METHODS

Process evaluation activities included a customer telephone survey and a series of in-depth interviews with the Companies' program staff, OPAE staff, and contractors affiliated with six of the community agencies implementing Community Connections services.

4.3.1 Customer Telephone Survey

The telephone survey was designed to verify customer receipt of the various measures indicated in the Community Connections database – particularly CFLs, refrigerators and freezers. Additionally, the survey collected data about CFL installation, energy education, and customer satisfaction with the program. The telephone survey was completed by a random sample of 100 Community Connections participants during February, March, and early April 2012. Follow-up verification interviews were conducted with customers who indicated that they had not received CFLs, refrigerators, or freezers according to program records.

4.3.2 In-Depth Interviews with Program and Implementation Contractor Staff

In-depth interviews were conducted in March and April with program and implementation contractor staff. The interviews addressed the following researchable issues:

- How well has the team (i.e., the Companies' staff and Implementation staff) worked together?
- How well is the Community Connections program working? What changes should the program implement in order to improve effectiveness? What were the issues and concerns about implementing the program in 2011? What issues remain unresolved? What were the lessons learned in implementing the program in 2011?
- How effective is the collaboration between the Companies and the local agencies? How effective is the interaction between OPAE and the local agencies?
- Do agencies have any concerns about program implementation and their role in the program? Do local agencies feel they have sufficient staffing resources to deliver the program? Is the training to agencies sufficient? If not, what training and education support is needed?
- Are there additional needs of the participants that could be met through the Community Connections program? Should additional measures be considered? Are there any groups not reached by the Community Connections program that also have financial and weatherization needs?
- How effectively has the Companies' staff been able to monitor and administer the program?

5. DETAILED EVALUATION FINDINGS

The numbers of low-income households that received energy efficiency services through the Community Connections Program in 2011 in the service territories of the Companies are shown in Table 5-1.

Table 5-1. Numbers of Participants in Community Connections Program during 2011

<i>Utility</i>	<i>Number of Participants</i>
CEI	871
OE	1,049
TE	550
Total Companies	2,470

5.1 IMPACT EVALUATION FINDINGS

Table 5-2 shows the quantities of energy efficient lighting measures that were installed for these participants through the Community Connections Program and Table 5-3 shows the quantities of energy efficient non-lighting measures that were installed for the participants in 2011. Table 5-4 shows the number of health and safety measures and the number of energy education consultations that were conducted under the Community Connections Program in 2011.

Applying the methods described in Chapter 4 produced estimates of savings per unit on a measure-by-measure basis. Multiplying the quantities in Tables 5-2 and 5-3 by the per-measure savings estimates produced the program-level estimates of energy savings reported in Table 5-5 and the peak demand reductions reported in Table 5-6.

Table 5-2. Quantities of Energy Efficient Lighting Measures Installed per Operating Company¹²

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total Companies</i>
CFL – 0.3 Watt night light	-	14	8	22
CFL – 0.5 Watt night light	-	3	-	3
CFL – 7-9 Watt candelabra	13	113	4	130
CFL – 14 Watt candelabra	-	2	-	2
CFL – 9 Watt globe	17	7	-	24
CFL – 9-15 Watt spiral	572	650	352	1,574
CFL – 15 Watt globe	77	107	16	200
CFL – 15 Watt outdoor	14	121	0	135
CFL – 15 Watt dimmable	1	17	1	19
CFL – 16-20 Watt spiral	396	281	131	808
CFL – 16-20 Watt outdoor	-	30	-	30
CFL – 16-20 Watt flood light	1	7	-	8
CFL – 21 Watt spiral	344	193	102	639
CFL – 21 Watt outdoor	3	24	-	27
CFL – 21 Watt flood	-	5	-	5
CFL – 150 Watt outdoor	-	8	-	8
CFL – 3-way circle line	38	17	3	58
CFL –3-way spiral	-	135	20	155
CFL – 3-way dimmable torchiere	4	7	2	13
Total CFLs	1,480	1,741	639	3,860

¹² Adjusted based on survey verification showing a CFL receipt rate of 84% of program records claims.

Table 5-3. Quantities of Non-Lighting Efficiency Measures Installed per Operating Company

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total Companies</i>
Refrigerator replacement	564	400	120	1,084
Freezer replacement ¹³	52	77	3	132
Water heating – faucet aerator	62	14	4	80
Water heating – low flow showerhead	44	13	5	62
Air infiltration reduction	-	28	27	55
Water heating -- water heater replacement	-	4	4	8
Water Heating – lower set point temperature	-	4	-	4
Central air conditioning replacement	-	1	2	3
Water heater wrap	-	-	2	2
Attic insulation	-	-	1	1
Air source heat pump	-	1	-	1
HVAC tune-up	-	1	-	1
Total Non-Lighting Measures	722	543	168	1,433

Table 5-4. Quantities of Health & Safety and Education Measures per Operating Company

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total Companies</i>
Electrical Repairs	539	314	42	895
Roof Repairs	76	145	47	268
Energy Education Consultations	128	732	507	1,367
Total Health & Safety and Education Measures	743	1,191	596	2,530

¹³ Adjusted based on survey verification showing a Freezer installation rate of 86% of program records claims.

Table 5-5. Estimates of Annual kWh Savings by Utility and Measure

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total Companies</i>
<u>Energy Efficiency Measures: Lighting</u>				
CFL – 0.3 Watt night light	-	14	8	22
CFL – 0.5 Watt night light	-	5	-	5
CFL – 7-9 Watt candelabra	377	3,273	116	3,766
CFL – 14 Watt candelabra	-	90	-	90
CFL – 9 Watt globe	492	203	-	695
CFL – 9-15 Watt spiral	23,935	27,199	14,729	65,863
CFL – 15 Watt globe	3,718	5,166	773	9,657
CFL – 15 Watt outdoor	676	5,842	-	6,518
CFL – 15 Watt dimmable	48	821	48	917
CFL – 16-20 Watt Spiral	24,218	17,185	8,012	49,415
CFL – 16-20 Watt outdoor	-	1,835	-	1,835
CFL – 16-20 Watt flood light	61	428	-	489
CFL – 21 Watt spiral	23,252	13,046	6,895	43,193
CFL – 21 Watt outdoor	203	1,622	-	1,825
CFL – 21 Watt flood	-	338	-	338
CFL – 150 Watt outdoor	-	3,863	-	3,863
CFL – 3-way circle line	4,036	1,806	319	6,161
CFL – 3-way spiral	-	12,341	1,828	14,169
CFL – 3-way dimmable torchiere	461	807	-	1,268
Total Annual kWh Savings, Lighting	81,477	95,884	32,728	210,089
<u>Energy Efficiency Measures: Non-Lighting</u>				
Refrigerator replacement	705,564	500,400	150,120	1,356,084
Freezer replacement	58,812	87,087	3,393	149,292
Central air conditioning replacement	-	1,633	3,265	4,898
Air Infiltration Reduction	-	434	418	852
Water Heating – Low Flow Showerhead	9,328	2,756	1,060	13,144
Water Heating – Faucet Aerators	1,519	343	98	1,960
Water Heater Wrap	-	-	158	158
Total Annual kWh Savings, Non-Lighting	775,223	592,653	158,512	1,526,388
Total Annual kWh Savings, All Measures	856,700	688,537	191,240	1,736,477

Table 5-6. Estimates of Peak Demand kW Reductions by Utility and Measure

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total Companies</i>
<i>Energy Efficiency Measures: Lighting</i>				
CFL – 0.3 Watt night light	-	0.001	0.001	0.002
CFL – 0.5 Watt night light	-	0.001	-	0.001
CFL – 7-9 Watt candelabra	0.04	0.34	0.01	0.39
CFL – 14 Watt candelabra	-	0.01	-	0.01
CFL – 9 Watt globe	0.05	0.02	-	0.07
CFL – 9-15 Watt spiral	2.29	2.60	1.41	6.30
CFL – 15 Watt globe	0.39	0.54	0.08	1.00
CFL – 15 Watt outdoor	0.07	0.61	-	0.68
CFL – 15 Watt dimmable	0.01	0.09	0.01	0.10
CFL – 16-20 Watt spiral	2.38	1.69	0.79	4.85
CFL – 16-20 Watt outdoor	-	0.18	-	0.18
CFL – 16-20 Watt flood light	-	0.04	-	0.04
CFL – 21 Watt spiral	2.41	1.35	0.71	4.47
CFL – 21 Watt outdoor	0.02	0.17	-	0.19
CFL – 21 Watt flood	-	0.04	-	0.04
CFL – 150 Watt outdoor	-	0.41	-	0.41
CFL – 3-way circle line	0.42	0.19	0.03	0.64
CFL – 3-way spiral	-	1.35	0.20	1.55
CFL – 3-way dimmable torchiere	0.05	0.08	-	0.13
Total Peak Demand Reduction, Lighting	8.13	9.71	3.24	21.08
<i>Energy Efficiency Measures: Non-Lighting</i>				
Refrigerator replacement	108.29	76.80	23.04	208.13
Freezer replacement	9.10	13.48	0.53	23.10
Central air conditioning replacement	-	0.46	0.92	1.38
Air Infiltration Reduction	-	0.05	0.05	0.10
Water Heating – Low Flow Showerhead	0.005	0.001	0.0004	0.01
Water Heating – Faucet Aerators	0.19	0.04	0.01	0.24
Water Heater Wrap	-	-	0.009	0.009
Total Peak Demand Reduction, Non-Lighting	117.58	90.83	24.56	232.97
Total Peak Demand Reduction, All Measures	125.71	100.54	27.80	254.05

5.2 PROCESS EVALUATION FINDINGS

Process evaluation findings are reported topically in this section, bringing together findings from both the telephone surveys and the in-depth interviews to provide a comprehensive view of program implementation.

5.2.1 Customer Receipt of CFLs, Refrigerators and Freezers

The main energy efficiency measures for which savings can be claimed by the Companies involve the installation of CFLs, ENERGY STAR® refrigerators, and ENERGY STAR® freezers. Survey results suggest that for the Community Connections Program population:

- 68% of participants received CFLs;
- 40% of participants received ENERGY STAR® refrigerators; and
- 12% of participants received ENERGY STAR® freezers.

5.2.1.1 Receipt and Installation of CFLs

During the walk-through energy audit of a customer's residence, the contractor identifies which lights in the home are used more than 2.5 to 3 hours per day. These higher-use lights are selected to be replaced by energy efficient CFLs. The lights being replaced are usually less energy efficient, standard incandescent light bulbs.

The telephone survey (n=81) verified that only 84% of those customers who were supposed to receive CFLs – according to program records -- actually did receive CFLs from the contractors who were hired to provide and install CFLs. As indicated in the methodology section, follow-up verification interviews were conducted with all customers who indicated that they had not received CFLs, refrigerators, or freezers according to program records. In the case of refrigerators replacements, the verification interviews corrected some of the information obtained in initial interviews (i.e. ADM concluded that all refrigerators had been delivered). In the case of CFLs and freezer replacements, final conclusions were based on verification of findings from the initial interviews. The verification interview involved the use of probes to explore whether the measures were delivered and installed by contractors partnering with the Companies. To the extent feasible, the interviews were carried out with the same person who was present at the audit or installation.

The median number of CFLs actually received by customers was 10, most often installed in bedrooms, living rooms and bathrooms. Contractors directly installed approximately 74% of the CFLs that customers received from the program.

The in-service rate (ISR) for those customers who actually received CFLs was 89.6%, according to the survey. This is essentially the same ISR value as recommended in the Joint Utility Comments document (i.e., 89%). CFLs that were installed and later removed by customers

comprised about 1.3% of the CFLs received, according to the survey. Generally, these were CFLs that were broken or burned out when received or installed. The remaining 9.1% of the CFLs received by customers had not been installed at the time of the survey interview. The most common reason for not installing the CFLs was that the customer believed they did not need to install them yet. This suggests that the uninstalled CFLs were those that the contractor had given to the customer to install, who rather than install them, stored the CFLs for later use. The dominant customer logic for installing CFLs was to wait until a currently installed light had burned out before replacing it with a CFL.

5.2.1.2 Receipt and Installation of Refrigerators and Freezers

Contractors metered the electricity consumption of the customer's old refrigerator or freezer during the walk-through home energy audit to identify units that needed to be replaced. Refrigerators and freezers found to be wasteful in their energy consumption were scheduled for replacement with an ENERGY STAR® model.

All of those surveyed who were supposed to receive a replacement refrigerator (n=40) according to program records did receive a refrigerator. Approximately two-thirds of the replaced refrigerators were top-freezer models, followed by side-by-side configuration models (27%), and lastly bottom-freezer models (5%).

However, only 86% of those customers who were supposed to receive a freezer according to program records actually did receive a replacement freezer, according to survey results (n=14). ADM would need to know the contractors responsible for freezer delivery in order to find out more about the delivery problems and whether the Companies were billed for equipment not delivered. Approximately two-thirds of the replaced freezers were upright freezer models and one-third of the replaced freezers were chest freezer models.

5.2.2 Customer Education

Approximately 31% of the program participants received energy education from the contractors doing the walk-through home energy audits, according to survey estimates (n=38). Data from the in-depth interviews suggest that customer education was typically delivered by the contractor through discussion with the customer – as part of the home energy audit process – about how energy was being used in the home. Most of those surveyed who received energy education (86%) indicated that the contractor had discussed ways to save energy in the home. Over half (64%) indicated that the contractor had provided the customer with energy education materials. The in-depth interviews revealed, however, that the energy education materials are not standardized and do not promote a consistent message about ways to save energy.

Almost all (97%) of the customers surveyed indicated that they now knew more about saving energy in the home after receiving the information from the contractor about residential energy conservation. When asked about how useful the energy education information was that the customer had received, the median response was 10 out of 10 on a scale of 0 to 10, where a scale

value of 10 is extremely useful and zero is not at all useful. The mean usefulness rating was 9.24 with a standard deviation of 1.27 (n=29).

5.2.3 Customer Satisfaction

Survey respondents were asked about their satisfaction with the equipment and services they had received through the Community Connections Program. The same rating scale (zero to ten) as previously described was used. As can be seen in Table 5-7, mean satisfaction ratings were typically around 9 on the zero to ten satisfaction scales, indicating that program participants were generally very satisfied with the equipment and services received from Community Connections.

However, there was some degree of customer dissatisfaction with the program, as indicated by the standard deviation and range statistics which indicate ratings in the lower end of the satisfaction scales. This is perhaps most notable with some of the health and safety measures,¹⁴ as discussed below.

Table 5-7. Satisfaction with Community Connections Equipment and Services

Measure	N	Mean	Std. Deviation	Range
CFLs	67	9.09	1.756	1-10
ENERGY STAR® Refrigerator	38	8.92	1.715	4-10
ENERGY STAR® Freezer	11	9.55	1.036	7-10
Electrical Repairs	11	9.09	3.015	0-10
Community Connections	87	9.45	1.412	2-10

5.2.3.1 Satisfaction with CFLs

Over 90% of the respondents were satisfied with the CFLs they received from the program. Participants commented that they “liked that they last longer and are brighter” than standard incandescent light bulbs and are more energy efficient. Participants who were not satisfied with the CFLs claimed that the installation contractor had given them burned out bulbs or broken bulbs that did not work.

5.2.3.2 Satisfaction with ENERGY STAR® Refrigerators

As with the CFLs, over 90% of the respondents were satisfied with the ENERGY STAR® refrigerators they received from the program to replace their old, less energy efficient models. Participants registering dissatisfaction with their ENERGY STAR® refrigerator voiced the following complaints:

¹⁴ The survey sample of respondents who rated roof repairs was too small to include in Table 5-7 for statistical reasons.

- The refrigerator is too small and makes noises
- There is no light in the refrigerator
- The door or the door handle on the refrigerator broke
- The handles on the refrigerator are not straight
- The ice machine in the refrigerator does not work
- The refrigerator took a long time to arrive

5.2.3.3 Satisfaction with ENERGY STAR® Freezers

ENERGY STAR® freezers received the highest satisfaction ratings from the survey respondents: 9.55 on the ten point scale.

5.2.3.4 Satisfaction with the Energy Inspectors and Installation Contractors

The vast majority of survey respondents indicated they were very satisfied with the electrical and roofing repairs performed by contractors through the Community Connections Program. There were, however, indications of extreme dissatisfaction among some of the program participants who related stories about the poor quality of work provided by some of the contractors.

5.2.3.5 Satisfaction with the Community Connections Program

Over 90% of the survey respondents indicated they were satisfied with the Community Connections Program. The average satisfaction rating was 9.45 on the 0 to 10 point scale. Comments received from satisfied customers included the following:

- Easy application process; auditor was friendly.
- Good auditor.
- Good program.
- It was educational; it helped out.
- The utility company listened to our needs.
- Very helpful to save energy.

5.2.4 The Community Connections System

The Community Connections (CC) System was designed by the Companies as a tracking database and an invoicing system for low-income targeted programs like Community Connections. Implementation of the CC System began in June 2011 and will be used across Ohio by other utilities utilizing OPAE for their low-income programs. The intent was for local community agencies to use the CC System to track, invoice, and report progress in implementing weatherization and energy efficiency improvement jobs. For the Companies' users, the intent was to utilize the CC System to monitor program implementation. This includes using the CC

System to collect and report data for estimating energy savings attributable to the Community Connections Program; monitoring community agencies' progress with job completion; processing invoices submitted by community agencies to OPAE for payment of services rendered; and processing invoices submitted to the Companies by OPAE.

While the CC System is a huge improvement over the spreadsheets used previously, two concerns stand out with respect to its use and usefulness:

1. As a tracking database, the CC System functions as a global reporting system and does not collect all the data elements needed to estimate savings for the measures tracked. Some data elements for the following measures must be requested directly from the local community agencies and are not contained in the CC System for estimating savings: air sealing; central air conditioning system replacement; HVAC tune-up; heat pump replacement; and installation of attic insulation. All data fields have been programmed into the system. However, the agencies need training on the additional data collection and data entry requirements.
2. The CC System was primarily designed to serve the Companies reporting and invoice processing needs. While many local agencies use the system primarily for invoicing, the potential exists for expanding its use to monitoring and project management. It can help the agencies manage their work if they choose to use it that way. However, ADM recognizes that using the system that way is not required of the agencies.

5.2.5 Quality Assurance and Quality Control

The HWAP currently has quality assurance and quality control (QA/QC) procedures in place to assess the work done by the local community agencies. However, the results of this effort are not shared with the Companies. Interviews with the Companies program staff indicate that they would like to see QA/QC third party reviews of contractors to ensure adherence to program requirements and to assess the quality of work with results reported directly to the Companies and to OPAE.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions:

A total of 2,470 low-income households in the service territories of the Companies received energy efficiency services through the Community Connections Program in 2011. The numbers of participants for each service territory were as follows:

- CEI 871
- Ohio Edison 1,049
- Toledo Edison 550

The overall evaluation results for estimated gross energy savings (kWh) and peak demand reductions (kW) for the program in the three service territories are summarized in Table 6-1.

Table 6-1. Overall Evaluation Results for Gross kWh and kW Savings

<i>Utility</i>	<i>Ex Ante**</i> <i>Expected Gross Savings</i>		<i>Ex Post</i> <i>Verified Gross Savings</i>	
	<i>Gross kWh</i>	<i>Gross kW</i>	<i>Gross kWh</i>	<i>Gross kW</i>
CEI	1,149,154	159	688,537	100
Ohio Edison	1,209,562	159	856,700	126
Toledo Edison	374,553	48	191,240	28
All Companies	2,733,269	367	1,736,477	254

***Ex ante* expected gross savings were provided by the program for the major CC measures, which include: CFLs, refrigerator and freezer replacements, air sealing, and the installation of low-flow showerheads and faucet aerators. *Ex post* verified gross savings were calculated for the same six measures.

The gross kWh savings total shown in Table 6-1 reflect a realization rate of 64 percent, as determined by the ratio of verified gross kWh savings to expected gross kWh savings. To the best of ADM's present knowledge, difference in analytic methods do not appear to account for the observed differences in savings estimates since the Companies and ADM used the same deemed savings values for calculating kWh savings. The explanation for the variance in savings estimates relates to the fact that 16% of the CFLs and 14% of the ENERGY STAR® freezers were never delivered to the 2011 Community Connections participants.

The replacement of refrigerators and freezers with ENERGY STAR® models and the installation of energy efficient lighting accounted for 99 percent of the verified gross kWh savings.

6.2 Recommendations:

This section provides ADM recommendations pertaining to program improvement.

6.1.1 Recommendations for Program Improvement

- Monitor the installation contractors to verify delivery and customer receipt of energy efficiency measures, particularly with respect to:
 - Delivery and installation of CFLs;
 - Delivery and installation of ENERGY STAR® freezers;
 - Proper completion of home energy assessments; and
 - Proper completion of roofing repair jobs.
- Coordinate with HWAP to implement a quality assurance/quality control review process to assess the quality of the work and follow-through of the implementation contractors.
- Consider instituting a performance contracting system to incentivize the delivery of energy efficiency measures. This would mean linking the payment of contractor invoices to verifiable contractor performance. ADM will look into providing an example of an energy efficiency program for low income populations that has successfully used performance contracting.
- Improve the quality of customer education to promote behavior change with respect to the installation of CFLs to proactively replace incandescent light bulbs at the time of CFL delivery rather than waiting to install the CFL after the standard lighting burns out or breaks.
- Standardize the energy education material to promote a consistent message about ways to save energy in the home.

7. APPENDIX: REQUIRED SAVINGS TABLES

Tables showing measure-level participation counts and savings for the Community Connections Program were provided in Chapter 5. This appendix provides two additional tables summarizing savings results.

- Table 7-1 reports the first-year pro-rata ex post kWh savings by utility and measure.
- Table 7-2 reports the ex post lifetime kWh savings by utility and measure.
- Telephone Survey Instrument

Table 7-1. First-Year Pro-Rata Ex Post (2011) Energy Savings (kWh)

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total, Companies</i>
Lighting	40,739	47,942	16,364	105,045
Refrigerator replacement	293,985	208,500	62,550	565,035
Freezer replacement	9,802	14,515	566	24,882
Central air conditioning replacement	-	953	1,905	2,857
Air Infiltration Reduction	-	271	261	533
Water Heater Wrap	-	-	40	40
Water Heating – Low Flow Showerhead	2,332	689	265	3,286
Water Heating – Faucet Aerators	380	86	25	490
Total First-Year Energy Savings, All Measures	347,238	272,956	81,976	702,168

Table 7-2. Ex Post Lifetime Energy Savings (kWh)

	<i>CEI</i>	<i>OE</i>	<i>TE</i>	<i>Total, Companies</i>
Lighting	651,816	767,072	261,824	1,680,712
Refrigerator replacement	5,644,512	4,003,200	1,200,960	10,848,672
Freezer replacement	470,496	696,696	27,144	1,194,336
Central air conditioning replacement	-	8,165	16,325	24,490
Air Infiltration Reduction	-	6,510	6,270	12,780
Water Heater Wrap	-	-	790	790
Water Heating – Low Flow Showerhead	46,640	13,780	5,300	65,720
Water Heating – Faucet Aerators	7,595	1,715	490	9,800
Total Lifetime Energy Savings All Measures	6,821,059	5,497,138	1,519,103	13,837,300

2011 Community Connections Program Participant Telephone Survey

EDC	Code
Illuminating Company	1
Ohio Edison	2
Toledo Edison	3

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

- Yes 01
- No 02 *[IF NOT AVAILABLE, ASK FOR ANOTHER ADULT FAMILIAR WITH HOUSEHOLD'S PARTICIPATION IN COMMUNITY CONNECTIONS PROGRAM]*

A2 *I'm with ADM Associates, an independent research firm. We are speaking with households that participated in the (name of EDC's) Community Connections Program. You will receive a \$10 gift card for participating in this survey.*

Through this program you would have received energy efficient light bulbs called compact fluorescent lights or CFLs for short; or you might have had your refrigerator or freezer replaced with an energy efficient ENERGY STAR® refrigerator or freezer; or you might have received electrical wiring or roof repairs. Do you recall participating in this program?

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

A3 *You may have received these services through a subcontractor from another company. It is possible you worked with an energy auditor or inspector from the Ohio Home Weatherization Assistance Program (HWAP), or the Electric Partnership Program (EPP), or the Warm Choice or House Warming Program, or the Home Energy Assistance Program (HEAP). Do you recall participating in Community Connections through any of these other programs?*

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

A4 *Is it possible that someone else in your household would be familiar with the items you received through this program?*

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

A5 *May I speak with that person?*

Yes	01	[RECYCLE THROUGH A2 & A3 WITH NEW RESPONDENT]
No	02	[THANK AND TERMINATE]
Don't Know	98	[THANK AND TERMINATE]
Refused 99		[THANK AND TERMINATE]

A6 *Great, thank you. First I want to assure you that I'm not selling anything. I just want to ask your opinion about the program. Your responses will be kept confidential. For quality and training purposes, this call will be recorded. May I take a few minutes of your time to talk with you now about the equipment and services you received and how that has worked out for you?*

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

THE INTERVIEW

Name of Respondent: _____

Premise ID Number: _____ **Phone Number:** _____

1. *I would like to start by asking you about the equipment and services you received through the program. Our records indicate that you received the following items from Community Connections. **Please tell me if you received these items or not.***

[READ ITEMS THAT WERE RECEIVED ACCORDING TO RECORDS
RECORD ANSWER INDICATED BY RESPONDENT]

	Yes	No	DK	NA
a. Compact fluorescent light bulbs, called CFLs	01	02	98	99
b. ENERGY STAR® Refrigerator	01	02	98	99
c. ENERGY STAR® Freezer	01	02	98	99
d. Energy Saving Showerheads	01	02	98	99
e. Faucet Aerators	01	02	98	99
f. Electrical Repairs	01	02	98	99
g. Roof Repairs	01	02	98	99
h. Energy Education	01	02	98	99

CFLS

[ASK Q2-Q9 IF Q1A = 1]

2. *You indicated that you received CFLs from the program.*
 a. *Our records indicate you received _____ CFLS (INSERT # FROM RECORDS)*
 b. *As best as you can recall, is that number correct or did you receive a different number of CFLs?*

Number of CFLs in record is correct	01	[GO TO Q4]
Received a different number of CFLs	02	
Don't know	98	[GO TO Q8]
Refused	99	[GO TO Q8]

3. *What is the correct number of CFLs that you received then?*

Number of CFLs received: _____

4. *Of the _____ CFL bulbs you received, how many [READ LIST; ENTER NUMBER FOR EACH]*

- a. *Are currently installed?* _____
 b. *Were installed and removed?* _____
 c. *Have never been installed?* _____

[ASK Q5 IF Q4B > 0]

5. Why were some CFLs removed? (SELECT ALL THAT APPLY)

- CFL broke or burned out 01
- CFL not working as needed (e.g., lights too dim) 02
- Using them in another home or at work 03
- Storing them for later use 04
- Gave them away 05
- Returned them to the program 06
- Other (specify) 07

a) Other reason: _____

[ASK Q6 IF Q4C > 0]

6. Why were some of the CFLs never installed? [RECORD VERBATIM RESPONSE]

7. As best you can recall, how many of the CFLs received through the program -- that are currently installed -- are installed in each of the following room locations?

Room Location	Code	# CFLs Installed
Bedrooms	1	
Bathrooms	2	
Living Room	3	
Kitchen	4	
Entry Way	5	
Dining Room	6	
Garage	7	
Basement	8	
Den	9	
Stairway	10	
Office	11	
Other (specify)	12	

Note: Total should not exceed number in Q4a

a) Specify other room location: _____

8. Please tell me which of the following statements is most correct. [READ
 STATEMENTS; ALLOW ONE RESPONSE]

- An auditor or inspector installed all of the CFLs 01
- An auditor or inspector installed some of the CFLs 02
- An auditor or inspector did not install any of the CFLs 03
- Don't know 98 GO TO Q9
- Refused 99 GO TO Q9

Comments: _____

9. What type of lighting equipment did the CFLs replace? [SELECT ONE]

- Standard incandescent light bulbs 01
- Other CFLs 02
- Both incandescent light bulbs and CFLs 03
- Other (specify) 04
- Don't Know 98
- Refused 99

a) Other lighting: _____

REFRIGERATOR REPLACEMENT

[ASK Q10-11 IF Q1B = 1]

10. You indicated that your refrigerator was replaced. Can you tell me the door style configuration of the new refrigerator that was installed? Is it a... *[READ RESPONSE OPTIONS]*

- Top-freezer refrigerator model 01
- Bottom-freezer refrigerator model 02
- Side-by-Side refrigerator model 03
- Don't know 98 *[PROMPT TO LOOK AT THE UNIT]*
- Refused 99

11. Can you tell me the month in which the new refrigerator was installed? What month was that?

Month of installation: _____

- Don't recall 98 *[GO TO Q12]*
- Refused 99 *[GO TO Q12]*

FREEZER REPLACEMENT

[ASK Q12-13 IF Q1C = 1]

12. You indicated that your freezer was replaced. Can you tell me the type of new freezer that was installed? Is it an...
 [READ RESPONSE OPTIONS]

- | | | |
|-----------------------|----|------------------------------|
| Upright freezer model | 01 | |
| Chest freezer model | 02 | |
| Don't know | 98 | [PROMPT TO LOOK AT THE UNIT] |
| Refused | 99 | |

13. Can you tell me the month in which the new freezer was installed? What month was that?

Month of installation: _____

- | | | |
|--------------|----|-------------|
| Don't recall | 98 | [GO TO Q14] |
| Refused | 99 | [GO TO Q14] |

ENERGY EDUCATION

[ASK Q14-Q22 IF Q1H = 1]

14. *You indicated that you received energy education from the program. Did the auditor or inspector provide you with information about ways you can save energy in your home?*

- Yes 01
- No 02 SKIP TO Q19
- Don't recall 98 SKIP TO Q19
- Refused 99 SKIP TO Q19

15. *How was this information provided to you?* [DO NOT READ; SELECT ALL THAT APPLY]

- Auditor discussed ways to save energy with customer 01
- Auditor provided customer energy education materials 02
- Other (specify) 03

Specify Other: _____

16. *Because of the information you received from the auditor or inspector, do you feel you now know more about how to save energy in your home?* [SELECT ONE]

- Yes, know more now 01
- No, about the same as before 02
- Don't know 98
- Refused 99

17. *On a scale of 0 to 10 where 0 is not at all useful and 10 is extremely useful, how useful was the energy education information you received from the auditor or inspector?*

_____ [ENTER 0 TO 10]

[ASK Q18 IF Q17 <6]

18. *What information could the auditor have provided that would have been more useful to you?* RECORD VERBATIM RESPONSE

SATISFACTION

The final set of questions is about your satisfaction with the equipment you received and other aspects of the program. Using a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, please tell me how satisfied you are with:

[ASK Q19 IF Q1A = 1]

19. ...the CFLs you received through the program?

_____ [ENTER 0 TO 10]

[ASK Q20 IF Q1B = 1]

20. ...the ENERGY STAR® refrigerator you received through the program?

_____ [ENTER 0 TO 10]

[ASK Q21 IF Q1C = 1]

21. ...the ENERGY STAR® freezer you received through the program?

_____ [ENTER 0 TO 10]

[ASK Q22 IF Q1F = 1]

22. ...the electrical repairs you received through the program?

_____ [ENTER 0 TO 10]

[ASK Q23 IF Q1G = 1]

23. ...the roof repairs you received through the program?

_____ [ENTER 0 TO 10]

[ASK Q24 IF Q19 OR Q20 OR Q21 OR Q22 OR Q23 <6]

24. Why weren't you satisfied with (type of product or service)?

[RECORD VERBATIM RESPONSE AND IDENTIFY ITEM(S) CUSTOMER IS DISSATISFIED WITH]

26. Using a scale of 0 to 10 where 0 is very dissatisfied and 10 is very satisfied, please tell me how satisfied you are overall with the (name of EDC) Community Connections Program?

_____ [ENTER 0 TO 10]

26. Why do you give it that rating? [RECORD VERBATIM RESPONSE]

27. Do you have any suggestions for improving the program?

- Yes 01
- No 02 THANK AND TERMINATE

28. *What suggestions do you have for improving the program?*

[RECORD VERBATIM RESPONSE:]

That's all the questions I have. You will receive your gift card sometime in the next 30 days. Thank you for your time. Good bye.