Impact Evaluation of Georgia Power Company's 2011 DSM Programs

Submitted to Georgia Power Company

Submitted By Nexant

In partnership with: The Cadmus Group and Abt SRBI

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Nexant

CONTENTS

1 EXECUTIVE SUMMARY

Nexant, Inc., in association with The Cadmus Group (Cadmus) and Abt SRBI (SRBI) (collectively, the "Evaluation Team") have been retained by Georgia Power Company to conduct an impact evaluation of its demand side management (DSM) certified programs for the 2011 program year. This report presents the methodology and results of this evaluation. This report is limited to the impact evaluation findings and methodology for gross and net energy and demand savings. Findings from the process evaluation of Georgia Power's DSM programs can be found in a companion report titled Process Evaluation Final Report for Georgia Power 2011 DSM report authored by Nexant in partnership with The Cadmus Group dated December 31, 2012.

As part of its DSM portfolio, Georgia Power Company (GPC) implements seven (7) certified DSM programs to incentivize, encourage and educate GPC residential and commercial customers to adopt energy efficiency practices and install energy efficient equipment. These programs aim to overcome typical market barriers associated with demand-side management (DSM) in residences and businesses; largely, the lack of up-front capital and technical assistance needed to implement energy efficiency projects. The portfolio approved targets total 104,099 MWh for program year 2011.

1.1 EVALUATION GOALS AND OBJECTIVES

Evaluation goals follow the definition of impact evaluation established in the "Model Energy-Efficiency Program Impact Evaluation Guide – A Resource of the National Action Plan for Energy Efficiency," November 2007:

"Evaluation is the process of determining and documenting the results, benefits, and lessons learned from an energy-efficiency program. Evaluation results can be used in planning future programs and determining the value and potential of a portfolio of energy-efficiency programs in an integrated resource planning process. It can also be used in retrospectively determining the performance (and resulting payments, incentives, or penalties) of contractors and administrators responsible for implementing efficiency programs.

Evaluation has two key objectives:

1. To document and measure the effects of a program and determine whether it met its goals with respect to being a reliable energy resource.

2. To help understand why those effects occurred and identify ways to improve."

1.2 EVALUATIED GEORGIA POWER DSM PROGRAMS

The primary goal of this impact evaluation was to provide an accurate summary of the gross and net energy and demand impact savings attributable to the following GPC DSM programs:

1. **Commercial Custom Incentive Program:** offers rebates for certain fluorescent, high-bay and other ENERGY STAR® qualified lighting for eligible commercial-rate customers.

2. **Commercial Prescriptive Incentive Program:** offers rebates to promote the purchase of eligible high-efficiency lighting, HVAC equipment, shell improvement and appliances installed at qualifying (new or existing) customer facilities.

3. **Residential Lighting and Appliance Program:** through customer education, retail partnerships, and sales training, focuses on increasing awareness of the benefits of energy-efficient technologies and promoting the purchase and installation of energy-efficient lighting products and appliances by residential customers through customer and mid-stream incentives.

4. **Residential Home Energy Improvement Program:** offers financial incentives, customer education and awareness campaigns, and contractor partnerships and training to promote a comprehensive, whole-building approach to improving the energy-efficiency and comfort of existing single and multi-family homes. Additionally, the program offers an unbundled, prescriptive path for customers interested in per unit incentives.

5. **Residential Water Heating Program:** offers free in-home assessments of existing water heating systems for potential energy-efficiency improvements and the opportunity for customs with electric water heaters to have insulating blankets and pipe installation installed.

6. **Residential Refrigerator Recycling Program**: aims to eliminate inefficient or extraneous secondary refrigerators and freezers in an environmentally safe manner by providing eligible customers with convenient, free refrigerator and freezer pickups in addition to cash incentives.

7. **Residential High Efficiency New Home Program:** provides financial incentives for qualifying new homes to offset the cost of a formal inspection by a certified Home Energy Rating System (HERS) rater, in order to promote the performance of participating homes to at least 15 percent above the existing residential energy code.

1.3 METHODOLOGY

The evaluation generally comprised the following steps, which are described in further detail throughout this report:

- **Obtain the Specific Program Data Records**: These documents include program manuals detailing processes and energy savings justifications, tracking databases/spreadsheets project files/applications, project documents from external sources, such as documents from customers, program consultants, or implementation contractors and customer utility bill and consumption records, as applicable.

- **Design the Sample for Measurement and Verification (M&V)**: Review, measurement and verification of all implemented projects is not plausible or cost-effective given the size of these programs. Consequently, a sample of projects was established for measurement and verification. In order to provide the most cost-effective sample, the Evaluation Team employed a Value of Information (VOI) approach. VOI is used to balance cost and rigor and follows a process to allocate the bulk of the evaluation funds to programs and projects with high impact and high uncertainty.

- **Verify the Sample:** The following activities were executed to gain a more detailed understanding of program activities and energy savings:

    - **Review the Project Files:** The Evaluation Team performed a desk review of the project file requested from each program stream. The project specific documents for the sampled projects included the customer applications, savings declarations performed by third-party contractors (if applicable), post project audits, etc. The Evaluation Team conducted an engineering file review to answer the following questions:

        - Did sample projects meet all process and eligibility requirements, including the applicant, building, measure, and project cost eligibility?

        - Were data files of sample projects complete, well-documented, and adequate to calculate and report savings?

        - Were measures properly installed as described in the program tracking and reporting system?

    - **Develop Program/Measure- Specific M&V Plans:** Upon review of the program documents, a unique M&V plan was developed for each program and measure, including a metering protocol, as applicable. M&V methods for each measure type were developed with adherence to the International Performance Measurement and Verification Protocol (IPMVP) and other well-established engineering analysis procedures.

    - **Participant Surveys and On-site Inspections:** The file review for all sampled and reviewed projects concluded with a telephone survey with the participant. For a portion of the reviewed projects, on-site audits and measurement further detailed the information obtained during the file review necessary to calculate energy savings. Table 1-1 summarizes the number of surveys and on-site inspections completed

Table 1-1: Summary of Verification Activities

Program Sector	Sample Size: Desk Analysis With Telephone Survey Verification Method	Subset Sample Size: On-Site Analysis Verification Method	Subset Sample Size: Utility Bill Analysis
Commercial Totals	181	181	0(1)
Residential Totals	442	160	160
Portfolio Total	**623**	**341**	**160**

(1) Utility bill analysis not utilized for commercial program measures.

- **Establish Measure Baseline:** "What would have happened in the absence of program?" is a fundamental question utilized to establish the baseline energy consumption. The Evaluation Team will gather and review data from a variety of sources and reconcile the results to ensure that an accurate representation of the baseline characteristics is obtained.

- **Calculate Impacts and Analyze Load Shapes:** Data collected via the on-site visits, desk reviews, utility bill consumption and telephone surveys enabled the Evaluation Team to calculate **gross verified** energy and demand savings for each project or measure. Hourly load shapes are important in calculating system on-peak demand savings, especially when the measures installed have daily and seasonal variations in the operating schedule.

- **Extrapolate Sample to the Population:** Once the sampled projects are verified, the analysis results are extrapolated to the applicable program reported savings. The ratio of gross verified savings to reported savings is the **realization rate** as an applied scaling factor to the GPC reported savings.

- **Estimate Net Savings:** Net impacts are a reflection of the degree to which the gross savings are a result of the program efforts and funds. The Evaluation Team estimated free-ridership and spillover for each project in the impact sample utilizing self-report methods through surveys with program participants. The ratio of net verified savings to gross verified savings is the **net-to-gross ratio** as an applied scaling factor to the GPC reported savings.

- **Assess Program Cost-Effectiveness:** Multiple cost-effectiveness tests have been completed, including the Total Resource Cost Test, the Participant Test, the Ratepayer Impact Test, and the Program Administrator Test. Results are presented at the program, sector and portfolio levels.

1.4 SUMMARY OF IMPACT EVALUATION RESULTS

Participation in the 2011 program year totaled 235,049 projects; however, the large share of the participation was residential compact fluorescent lamps at 219,498 projects (93%). Net energy savings for GPC DSM programs in 2011 amounted to 98,004,745 kWh. Table 1-2, Table 1-3, and Table 1-4 summarize Georgia Power's 2011 DSM program energy impact evaluation results for commercial, residential sectors and the overall DSM portfolio.

Table 1-2: Commercial Sector 2011 Program Evaluation Results - Energy

Program	Reported Gross Energy Savings (kWh)	Realization Rate (%)	Verified Gross Energy Savings (kWh)	Net-to-Gross (%)	Verified Net Energy Savings (kWh)
Custom Incentive	65,458,200	110.9%	72,605,954	62.1%	45,110,079
Prescriptive Incentive	16,320,971	59.7%	9,738,239	62.1%	6,050,368
Commercial Total	**81,779,171**	**100.7%**	**82,344,193**	**62.1%**	**51,160,447**

Table 1-3: Residential Sector 2011 Program Evaluation Results - Energy

Program and Sector	Reported Gross Energy Savings (kWh)	Realization Rate (%)	Verified Gross Energy Savings (kWh)	Net-to-Gross (%)	Verified Net Energy Savings (kWh)
Lighting & Appliances	30,355,456	116.3%	35,295,542	94.0%	33,185,763
Refrigerator Recycling	7,320,549	120.8%	8,840,971	61.0%	5,392,993
High Efficiency New Homes	2,384,652	85.3%	2,035,002	104.0%	2,116,402
Home Energy Improvement	8,244,819	88.9%	7,332,688	79.1%	5,803,787
Water Heating	319,720	97.3%	310,981	111.1%	345,353
Residential Total	**48,625,196**	**110.7%**	**53,815,184**	**87.0%**	**46,844,298**

Table 1-4: Portfolio 2011 Evaluation Results - Energy

Program and Sector	Reported Gross Energy Savings (kWh)	Realization Rate (%)	Verified Gross Energy Savings (kWh)	Net-to-Gross (%)	Verified Net Energy Savings (kWh)
Commercial Total	81,779,171	100.7%	82,344,193	62.1%	51,160,447
Residential Total	48,625,196	110.7%	53,815,184	87.0%	46,844,298
Portfolio Total	**130,404,367**	**104.4%**	**136,159,377**	**72.0%**	**98,004,745**

Figure 1-1 summarizes program contribution to the 2011 GPC DSM portfolio net energy savings.

Figure 1-1: 2011 GPC Program Net Saving Contribution

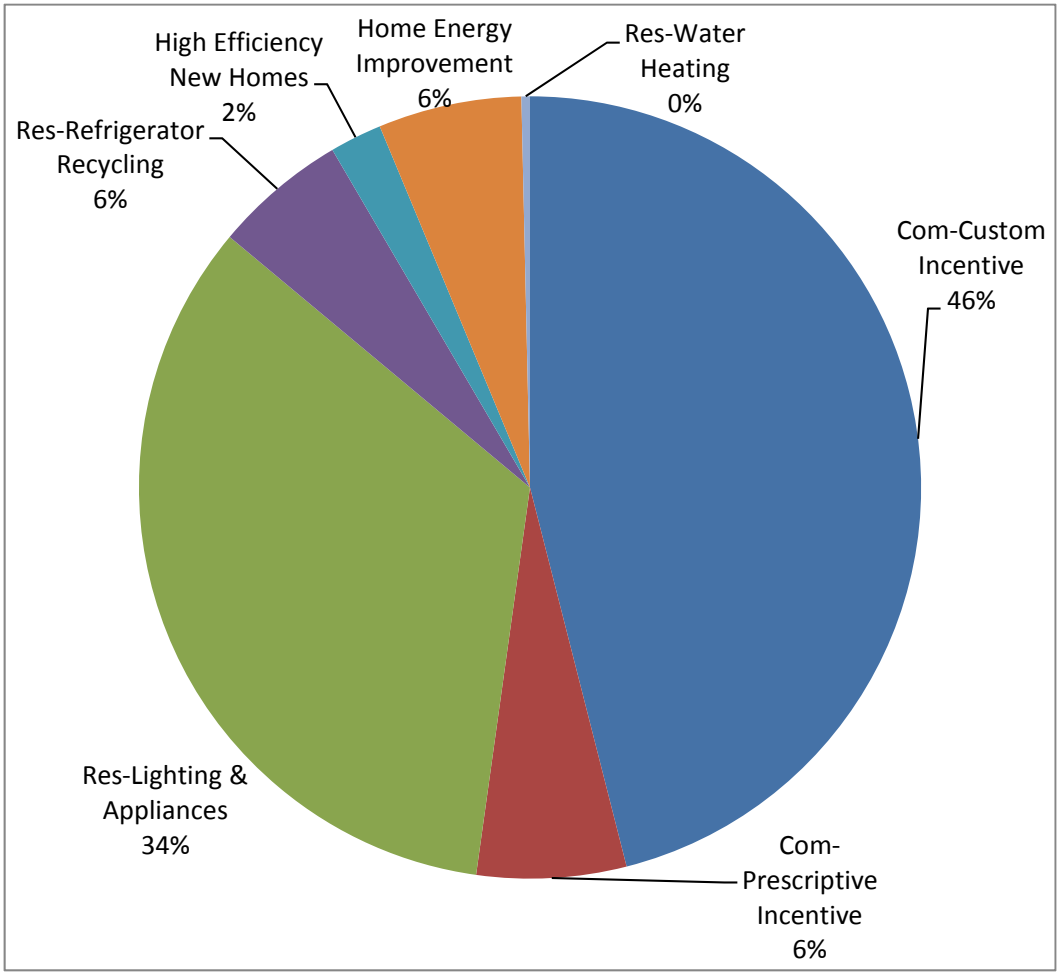


Table 1-5, Table 1-6, and Table 1-7summarize Georgia Power's 2011 DSM program demand impact evaluation results for commercial, residential sectors and the overall DSM portfolio.

Table 1-5: Commercial Sector 2011 Program Evaluation Results - Demand

Program	Reported Gross Demand Savings (kW)	Realization Rate (%)	Verified Gross Demand Savings (kW)	Net-to-Gross (%)	Verified Net Demand Savings (kW)
Custom Incentive	13,774	110.9%	15,275	62.1%	9,490
Prescriptive Incentive	5,260	59.7%	3,140	62.1%	1,951
Commercial Total	**19,034**	**96.7%**	**18,415**	**62.1%**	**11,441**

Table 1-6: Residential Sector 2011 Program Evaluation Results – Demand

Program and Sector	Reported Gross Demand Savings (kW)	Realization Rate (%)	Verified Gross Demand Savings (kW)	Net-to-Gross (%)	Verified Net Demand Savings (kW)
Lighting & Appliances	14,681	116.3%	17,074	94.0%	16,050
Refrigerator Recycling	1,044	120.8%	1,261	61.0%	769
High Efficiency New Homes	1,052	85.3%	897	104.0%	933
Home Energy Improvement	507	88.9%	451	79.1%	357
Water Heating	57	97.3%	55	111.1%	62
Residential Total	**17,341**	**113.8%**	**19,739**	**92.1%**	**18,170**

Table 1-7: Portfolio 2011 Evaluation Results - Demand

Program and Sector	Reported Gross Demand Savings (kW)	Realization Rate (%)	Verified Gross Demand Savings (kW)	Net-to-Gross (%)	Verified Net Demand Savings (kW)
Commercial Total	19,034	96.7%	18,415	62.1%	11,441
Residential Total	17,341	113.8%	19,739	92.1%	18,170
Portfolio Total	**36,375**	**104.9%**	**38,154**	**77.6%**	**29,611**

1.4.1 Discussion of Evaluation Results

The following list provides a brief summary of findings with regards to the realization rate and net-to-gross scaling factors applied to each program; refer to subsequent program specific report sections for more detailed discussion.

Commercial Custom Incentive Program:

The evaluation found the realization rate of verified savings for the lighting end-use was close to the program reported value (94%). The evaluation also found that the program reported savings did not include additional waste heat energy savings from the heating, ventilation and air conditioning (HVAC) end-use, resulting in an additional 17% of reported energy savings.

However, the evaluation found a large share of freeridership, largely due to retro-active projects, resulting in a poor net-to-gross ratio. The evaluation team believes this program freeridership will likely be reduced with market maturation, marketing efforts and direct efforts to eliminate retro-active projects.

Commercial Prescriptive Incentive Program:

The verified energy savings analysis of two significant measures, lighting occupancy sensors and unitary HVAC, found the program overestimated ex-ante per-unit saving values. These two measures accounted for 78% of the 2011 commercial prescriptive program participation. Similar to the custom program, the evaluation found that the program reported savings did not include additional waste heat energy savings from the heating, ventilation and air conditioning (HVAC) end-use.

Similar to the custom program, the evaluation found a large share of freeridership, largely due to retro-active projects, resulting in a poor net-to-gross ratio. The evaluation team believes this program freeridership will likely be reduced with market maturation, marketing efforts and direct efforts to eliminate retro-active projects.

Residential Lighting and Appliance Program:

On-site measurement activities revealed the average operating hours of compact fluorescent lamps was higher than reported; the average operating hours was 4.2 hours per day, greater than the reporting value approximately 3 hours per day. The verified energy savings analysis of Energy Star clothes washers found the program overestimated ex-ante per-unit saving values largely due to multiple fuel shares for water heaters.

Residential Home Energy Improvement Program:

Utility billing analysis found the verified energy savings for whole home (bundled) was lower than reported, largely because reported estimates were optimistic. Additionally, savings for insulation measures were found to be lower than planned estimates. Finally, net-to-gross values for individual

measures (unbundled) were found to be high, due to higher freeridership and lower program influence.

Residential Water Heating Program:

Verified energy savings were very close to program reported savings (realization rate = 97%). Net-to-gross ratios were found to be higher than 1.0, because of program spillover savings.

Residential Refrigerator Recycling Program:

On-site measurement activities revealed the in-situ energy consumption of removed appliances to be higher than expected. However, the net-to-gross ratio indicates that a moderate share of the participants would have disposed of their appliances in manner than would have kept them from consuming energy.

Residential High Efficiency New Home Program:

Verification and energy modeling analysis found a realization rate of 85%. A realization rate less than 100% was primarily caused by multi-family homes with HVAC equipment slightly better than or equal to code and single-family homes where efficient lighting required by code was not installed. Net-to-gross research found limited freeridership and some spillover, enough to raise the net-to-gross greater than 100%.

1.5 COST EFFECTIVENESS RESULTS

This report contains estimates of program cost effectiveness in accordance with the California Standard Practice Manual[1]. Table 1-8 displays the results of the cost effectiveness assessment for the sector and portfolio.

[1] California Standard Practice Manual: Economic Analysis of Demand-Side Program and Project, July 2002, Governor's Office of Planning and Research with Attachment 9, correction memo, published 2007

Table 1-8: GPC 2011 Program Year Cost Effectiveness Summary

Cost Effectiveness	Commercial	Residential	Portfolio
Program Administrator Cost (PAC)			
PAC Costs	$4,803,956	$10,018,687	$14,822,642
PAC Benefits	$57,966,440	$27,250,500	$85,216,941
PAC Net Benefits ($)	$53,162,485	$17,231,814	$70,394,299
PAC Net Benefit (Ratio)	12.07	2.72	5.75
Ratepayer Impact Measure (RIM)			
RIM Costs	$95,923,616	$48,337,622	$144,261,238
RIM Benefits	$57,966,440	$27,250,500	$85,216,941
RIM Net Benefits ($)	-$37,957,176	-$21,087,122	-$59,044,298
RIM Net Benefit (Ratio)	0.60	0.56	0.59
Total Resource Cost (TRC)			
TRC Costs	$26,849,422	$12,316,522	$39,165,944
TRC Benefits	$57,966,440	$37,373,055	$95,339,495
TRC Net Benefits ($)	$31,117,018	$25,056,533	$56,173,551
TRC Net Benefit (Ratio)	2.16	3.03	2.43
Levelized Delivery Cost			
$/MWh	$11.99	$41.01	$22.98

All programs were found to be cost-effective when evaluated from the perspective of the program administrator (PAC) and the administrator and participant combined (TRC). However, all programs were full not to be cost effective from the perspective of the ratepayer (RIM).

1.6 RECOMMENDATIONS

The following is a summary of the major recommendations produced by the Evaluation Team, limited to findings of the impact evaluation. A more detailed discussion of these and other recommendations can be found in the main report body and in the process evaluation report.

Commercial Custom Incentive Program:

- Given the large impact of waste energy HVAC savings, consider tracking participating premise pertinent parameters necessary to calculate interactive HVAC savings at a project level.

- To reduce freeridership, consider tightening program processes and project eligibility to avoid 100% freeriders, and ensure program representatives and trade allies follow the program's eligibility requirements. An example of more strict process might include requirements for pre-approval of larger projects.

Commercial Prescriptive Incentive Program:

- Consider segmenting lighting occupancy sensor incentives into two distinct measures, ultrasonic and infrared with different savings values to more accurately reflect expected savings. Consequently, the incentive offered to participating customers may need to be reconsidered.

- Consider creating two energy efficiency tiers, "efficient" and "most efficient" of unitary air conditioning (AC) and heat pump (HP) such as those proposed by the Consortium for Energy Efficiency[1]. Alternatively, consider utilization of a project specific HVAC incentive calculator that would capture site specific effective full load hour (EFLH) operation. This will correctly align savings to actual equipment specification. Consequently, the incentive and/or structure offered to participating customers may need to be reconsidered.

- Clarify equipment eligibility and requirements for commercial kitchen exhaust hood controls. Upon review of the program requirements, it was unclear what exact control equipment was required. Consequently, for some measure installations, no control equipment was installed.

- To reduce freeridership, consider tightening program processes to avoid 100% freeriders, and ensure program representatives and trade allies follow the program's eligibility requirements.

Residential Lighting and Appliance Program:

- Update the per unit energy savings estimates for ENERGY STAR® Clothes Washer. Consequently, the incentive offered to participating customers may need to be reconsidered.

- Offer an increased rebate and have a separate ex ante impact for ENERGY STAR® Most Efficient refrigerators

Residential Home Energy Improvement Program:

- Establish a discounting mechanism and/or verification activity for reporting of contractor estimates for bundled savings. Proposed contractor estimates were optimistic and overstated actual energy savings. Additional QA/QC of large saving estimates and/or use of a deemed value for a generic home sizes, savings and fuel type are potential solutions.

[1] http://www.cee1.org/files/CEE_CommHVAC_UnitarySpec2012.pdf

- Consider updating the per unit energy savings estimates for insulation and air sealing customers per the findings of this evaluation.

Residential Refrigerator Recycling Program:

- Improve the accuracy of the vintage field in implementation program tracking data, as many verified removed appliances were found to be newer than reported.

- Examine differences in equipment consumption degradation rate among pre-1995 and post-1995 units.

Residential High Efficiency New Home Program:

- Encourage compliance with prescriptive code path of current state of Georgia building energy code even if contractors are following the performance path. In particular, homes that complied with or exceeded the 50% high efficacy lighting requirement in the prescriptive section of the 2009 IECC code saw benefits greater than the program estimated per unit energy saving value.
- Consider using on-site spot verification of equipment model numbers, or installed insulation levels, to maintain confidence in project data received by program HERS raters.
- Enforce sampling requirements consistent with ENERGY STAR guidelines for multi-family homes units and discouraging contractor use of a single model for multiple units, because some models are not applicable to orientation and location in the building.

2 INTRODUCTION

Nexant, Inc. (Nexant) and its partners, The Cadmus Group (Cadmus), and Abt SRBI (SRBI), (collectively, the Evaluation Team) have been retained by the Georgia Power Company (Georgia Power or GPC) to evaluate all seven residential and commercial demand side management (DSM) programs that were certified in the 2010 Integrated Resource Plan (IRP) by the Georgia Public Service Commission. The project included both a process and impact evaluation of the 2011 program year activities. This report is limited to the impact evaluation findings and methodology for gross and net energy and demand savings. Findings from the process evaluation of Georgia Power's DSM programs can be found in a companion report titled Process Evaluation Final Report for Georgia Power 2011 DSM report authored by Nexant in partnership with The Cadmus Group dated December 31, 2012.

2.1 2011 PROGRAM PARTICIPATION SUMMARY

As part of it DSM portfolio, Georgia Power Company (GPC) implements a portfolio of seven (7) certified DSM programs to incentivize, encourage and educate GPC residential and commercial customers to adopt energy efficiency practices and acquire energy efficient equipment. These programs aim to overcome typical market barriers associated with demand-side management (DSM) in residences and businesses; largely, the lack the up-front capital and technical assistance needed to implement energy efficiency projects. The portfolio approved target totals 104,099 MWh for program year 2011.

This impact evaluation provides an accurate summary of gross and net energy and demand impacts of the following DSM programs during the 2011 program year:

1. **Commercial Custom Incentive Program:** offers rebates for certain existing fluorescent, high-bay, other ENERGY STAR® qualified lighting and new construction lighting reductions for eligible commercial-rate customers.

2. **Commercial Prescriptive Incentive Program:** offers rebates to promote the purchase of eligible high-efficiency lighting, HVAC equipment, shell improvement and appliances installed at qualifying (new or existing) customer facilities.

3. **Residential Lighting and Appliance Program (L&A)** through customer education, retail partnerships, and sales training, focuses on increasing awareness of the benefits of energy-efficient technologies and promoting the purchase and installation of energy-efficient lighting products and appliances by residential customers through customer and mid-stream incentives.

4. **Residential Home Energy Improvement Program (HEIP):** offers financial incentives, customer education and awareness campaigns, and contractor partnerships and training to promote a comprehensive, whole-building approach to improving the energy-efficiency and comfort of existing single and multi-family homes. Additionally, the

program offers an unbundled, prescriptive path for customers interested in per unit incentives.

5. **Residential Water Heating Program (RWH):** offers free in-home assessments of existing water heating systems for potential energy-efficiency improvements and the opportunity for customs with electric water heaters to have insulating blankets and pipe insulation installed.

6. **Residential Refrigerator Recycling Program (RRP)**: aims to eliminate inefficient or extraneous secondary refrigerators and freezers in an environmentally safe manner by providing eligible customers with convenient, free refrigerator and freezer pickups in addition to cash incentives.

7. **Residential High Efficiency New Home Program (RNH):** provides financial incentives for qualifying new homes to offset the cost of a formal inspection by a certified Home Energy Rating System (HERS) rater, in order to promote the performance of participating homes to at least 15 percent above the existing residential energy code.

Table 2-1 summarizes 2011 GPC reported DSM program accomplishments.

Table 2-1: 2011 Program Accomplishments

Program	Target		Reported Accomplishments	
	Participants	Energy Savings (kWh)	Participants	Energy Savings (kWh)
Custom Incentive	200	61,202,855	418	65,458,200
Prescriptive Incentive		17,274,415	349	16,320,971
Commercial Total	**200**	**78,477,270**	**767**	**81,779,171**
Lighting & Appliances	47,900	13,762,600	219,498	30,355,456
Refrigerator Recycling	7,418	8,167,221	6,649	7,320,549
High Efficiency New Homes	2,750	3,046,000	2,598	2,384,652
Home Energy Improvement	3,031	2,383,583	4,949	8,244,819
Water Heating	800	435,200	588	319,720
Residential Total	**61,899**	**27,794,604**	**234,282**	**48,625,196**
Portfolio Total	**62,099**	**106,271,874**	**235,049**	**130,404,367**

GPC program targets summarized in Table 2-1 are slightly greater than the 104,099 MWh goal approved by the Georgia Public Service Commission. Please refer to individual program sections for more detailed summary of 2011 program participation, including end-use and measure summaries.

2.2 EVALUATION GOALS AND OBJECTIVES

Evaluation goals follow the definition of impact evaluation established in the "Model Energy-Efficiency Program Impact Evaluation Guide – A Resource of the National Action Plan for Energy Efficiency," November 2007:

"Evaluation is the process of determining and documenting the results, benefits, and lessons learned from an energy-efficiency program. Evaluation results can be used in planning future programs and determining the value and potential of a portfolio of energy-efficiency programs in an integrated resource planning process. It can also be used in retrospectively determining the performance (and resulting payments, incentives, or penalties) of contractors and administrators responsible for implementing efficiency programs.

Evaluation has two key objectives:

1. To document and measure the effects of a program and determine whether it met its goals with respect to being a reliable energy resource.

2. *To help understand why those effects occurred and identify ways to improve."*

The following objectives were targeted during this evaluation:

- Develop reliable estimates of program energy and peak demand savings for the seven programs listed above, including net-to-gross ratios and measure level per-unit savings;
- Assess the rate of freeridership, spillover savings resulting from the programs;
- Provide recommendations for program improvements and discuss methods to obtain deeper program savings;
- Calculate program cost-effectiveness using the verified benefits and the program costs, including lost revenue, results presented at the program, sector, and portfolio levels;
- Cost effectiveness tests include the Total Resource Cost (TRC), Program Administrator Cost (PAC), Participant Test and Ratepayer Impact Measure (RIM) test.
- Report on the extent to which program objectives for customer satisfaction are being met;
- Confirm that implementation contractors are performing at a high quality level;
- Review Georgia Power's marketing and promotional efforts;
- Evaluate effectiveness of program incentives in compelling qualifying customer to take action; and
- Evaluate process flow effectiveness to ensure customers are able to participate in the program and receive rebates in a timely manner.

2.3 SUMMARY OF PROGRAM EVALUATION ACTIVITIES

This evaluation project commenced in April, 2011 with the development of the evaluation plan. In June, 2011, the evaluation plan was submitted and presented to the stakeholder group, the DSM working group hosted by the Georgia Public Service Commission (GSPC) for review and comment. Table 2-2 provides a summary of the major project deliverables.

Table 2-2: Summary of Major Project Deliverables

Activities and Deliverables	Completion Date
Project Kick-off Meeting	April, 2011
Draft Evaluation Plan	May, 2011
Presentation of Evaluation Approach to Stakeholders	June, 2011
Final Evaluation Plan	July, 2011
Interim Process Evaluation Findings	October, 2011
Final Impact and Process Evaluation Reports	December, 2012

The evaluation generally comprised the following steps, which are described in further detail throughout this report:

Figure 2-1: Program Impact Evaluation Activities

Table 2-3 summarizes the major survey, interview, measurement and verification (M&V) and analysis activity schedule for the impact evaluation of Georgia Power's programs.

Table 2-3: Schedule Summary of Major Impacts

Program	Database and Project File Review	On-Site Inspections and Participant Surveys	Attribution Surveys	Analysis
Commercial	Spring, 2012	Spring & Summer 2012	Spring & Summer 2012	Fall 2012
L&A	Spring, 2012	Spring & Summer 2012	Spring 2012	Fall 2012
HEIP	Spring, 2012	Spring 2012	Fall 2011	Summer 2012
RWH	Winter, 2011	Spring 2012	Fall 2011	Spring 2012
RRP	Winter, 2011	Winter, Spring & Summer 2012	Winter 2011	Summer, 2012
RNH	Winter, 2011	Spring & Summer 2012	Winter 2011	Summer, 2012

Table 2-4 summarizes the major survey, interview, measurement and verification (M&V) and analysis activity schedule for the impact evaluation of Georgia Power's programs.

Table 2-4: Summary of Executed Evaluation Sample and Activities

Program	Sample Size: Desk Analysis With Telephone Survey Verification Method	Subset Sample Size: On-Site Analysis Verification Method	Subset Sample Size: Utility Bill Regression
Commercial Programs			
Custom Incentive	96	96	-
Prescriptive Incentive	85	85	-
Commercial Totals	**181**	**181**	**-**
Residential Programs			
Lighting and Appliance	79	74	-
Home Energy Improvement	238	33	160
Water Heating	26	11	-
Refrigerator Recycling	31	31	-
High-Efficiency New Home	68	11	-
Residential Totals	**442**	**160**	**-**
Portfolio Total	**623**	**341**	**160**

Some evaluation activities were synergetic between the impact and process evaluations. In particular surveys with participants can be useful for measure installation verification, determining attribution of savings (net-to gross), as well as determining program awareness, satisfaction, decision making processes, etc. Table 2-5 summarizes survey instruments utilized in the project and which evaluation activity they served.

Table 2-5: Summary of Program Evaluation Survey Instruments

Evaluation Tool	Impact	Process
Residential Water Heating		
- Program & Implementation Staff Interviews		√
- Participating Customer Surveys	√	√
Residential Home Energy Improvement		
Program & Implementation Staff Interviews		√
- Participating Customers – Bundled	√	√
- Participating Customers – Unbundled	√	√
- Participating and Nonparticipating Contractors		√
Residential High-Efficiency New Homes		
Program & Implementation Staff Interviews		√
- Participating Builders	√	√
- Non-participating Builders		√
- HERS Raters		√
- Participating Home Buyers	√	√
Residential Lighting and Appliances		
Program & Implementation Staff Interviews		√
- Retailer Interviews		√
- Participating CFL Gen Population Survey	√	√
- General Nonparticipating Population Survey, including questions for non-participating customers regarding all residential programs	√	√
- Appliance Participants Survey	√	√
Residential Refrigerator Recycling		
Program & Implementation Staff Interviews		√
- Market Actor Interviews		√
- Participating Customer Surveys	√	√
- Non-participating Customer Surveys		√
Commercial Custom and Prescriptive		
Program & Implementation Staff Interviews		√
- Participating Customer Surveys	√	√
- Non-participating Customer Surveys	√	√
- Trade Ally Surveys		√

2.4 REPORT OVERVIEW

The remainder of this report contains the following sections:

- **Section 3:** Impact Evaluation – 2011 impact evaluation methodology, overall results, and recommendations.
- **Sections 4 through 10**: Program-Specific Results – discussion of each program, evaluation methodology, impact results, and recommendations.
- **Section 11**: Review of Measure Level Per-Unit Savings Assumptions – review of the measure assumptions used by Georgia Power to report program savings.
- **Section 12:** Cost Effectiveness Analysis – assessment of the net benefits of each program.

3 IMPACT EVALUATION METHODOLOGY

This section provides an overview of core activities and methodology central to an impact evaluation. Sections 4 through 10 provide further detail of sampling, Measurement and Verification (M&V), and analysis methods for each individual program.

3.1 OVERVIEW

The impact evaluation was performed to evaluate the net savings attributable to the GPC energy-efficiency programs. It was divided into two research areas to determine gross and net savings (or impacts). Gross impacts are the energy and demand savings that are found at a customer site as the direct result of a measure implementation. Net impacts are a reflection of the degree to which the gross savings are a result of the program efforts and funds. The net savings were calculated by applying a NTG ratio to the gross savings. This scaling factor, along with the gross savings, were developed using random sampling methods to select and survey representative projects. To estimate these impacts, the Evaluation Team employed telephone and on-site surveys.

The Nexant Evaluation Team has verified the energy and demand savings of Georgia Power's 2011 DSM programs by conducting the following impact evaluation activities:

- Reviewed program data records,
- Sampled projects from each of the seven residential and commercial,
- Performed project-level evaluations on selected samples sites,
- Compared Georgia Power-reported savings to savings verified during project-level evaluations to determine verified gross savings, and
- Estimated net-to-gross ratios using participant attribution surveys.

The following narrative provides further detail on each of these activities:

3.2 OBTAINING PROGRAM DATA RECORDS

The first significant step of the evaluation activities was to obtain comprehensive program records for each of the seven (7) programs. Specifically, the following types of data records were utilized to complete a review of the programs:

- Program manuals which detail processes and energy savings justifications,
- Program tracking databases/spreadsheets,
- Program project files,
- Project documents from external sources, such as documents from customers, program consultants, or implementation contractors, and

- Customer utility bill and consumption records, as applicable

The Evaluation Team utilized these documents, databases and spreadsheets to compile a comprehensive list of program participants and specific project data for each participant, including name, site address, reported savings, project schedule, incentives paid, etc. These databases were utilized by the Evaluation Team to:

- Confirm aggregate and project-specific reported program saving impacts, and
- Establish and execute program sampling strategy

Once participant projects were selected as a probable candidate for audit within the sample populations, the Evaluation Team requested project specific files from each of the program managers. Project files include documents the program maintains for each project and include the application documents, savings calculations, and any additional supporting documentation on the history of the project. This information is required to conduct a credible project audit.

Finally, depending on the program and the project, additional supporting information was requested from third-party consultants, customers, and implementation contractors. These included detailed project calculations, measurement and verification data, trend data, possible revisions to projects, equipment inventories, and equipment specifications. The information obtained from these other sources can be very useful as it can provide a more accurate and comprehensive understanding of the retrofit that occurred.

3.3 SAMPLING APPROACH

In order to provide the most cost-effective sample, the Evaluation Team employed a Value of Information (VOI) approach. VOI is used to balance cost and rigor and follows a process to allocate the bulk of the evaluation funds to programs and projects with high impact and high uncertainty. Because of the need for cost-effective yet reliable evaluation methods, coupled with the expectations for regulatory scrutiny, the sampling plans are guided by VOI algorithms to supplement the deterministic sample sizing that follows from more routine statistical sampling methods. The VOI metric enabled the Evaluation Team to focus on the data points and samples with the greatest impact and uncertainty.

The greater the deviation of the observed savings value from the reported value, the greater is the variance in the sample pool. A greater variance in the sample pool indicates poor correlation between ex-ante and ex-post savings and the need to sample more data points in order to reduce the error ratios in the sample pools, which is critical to the sampling process. If a greater variance is expected for one end use type compared to another, the Coefficient of Variance (CV) is set at a higher value at the beginning of the sampling process, resulting in a larger sample pool. Conversely, if the confidence in the program reported impacts is high, a lower CV can be used to reduce the sample pool, resulting in a significant decrease in the sample size. The CV was initially set at 0.5 for each end use.

3.3.1 Sampling Execution

Random sampling of projects within each program was based on the program contribution to overall portfolio savings and developed with the following objectives in mind:

- Portfolio and program confidence/precision targets of 90/10, and
- Sub-stratification by measure category and/or project size – allocation of greater resources to the measures within each program that contribute more to program savings

Because the Evaluation Team understood that Georgia Power would be utilizing net-to-gross values and per unit energy benefits of measures established from this evaluation for future program years, planned stratification methods and measurement and verification (M&V) activities were carefully selected. The impact evaluation sampling methodology utilized a nested approach to provide a high level of measure verification coupled with an efficient use of on-site activities. This approach provides an industry-standard level of measurement rigor. Verification of energy savings and attribution surveys were conducted through participant telephone surveys with detailed desk review and analysis of project documentation for the entire sample population. A smaller sub-set of the sample population of projects was selected for on-site inspections.

Table 3-1: Summary of Planned Evaluation Sample Design

Program	% of Planned Portfolio Savings	Desk Analysis With Telephone Survey Verification Method		On-Site Analysis Verification Method (Subset-Sample)	
		Target Confidence / Precision	Anticipated Sample Size	Target Confidence / Precision	Anticipated Subset-Sample Size
Commercial Programs					
Custom Incentive	57.6%	90/10	68	90/10	68
Prescriptive Incentive	16.3%	90/10	81(2)	90/10	67
Commercial Totals	**73.8%**		**149**		**135**
Residential Programs					
Lighting and Appliance	13.0%	90/10	90(2)	90/20	74
Home Energy Improvement	2.2%	90/10	86(2)	90/15	31
Water Heating	0.4%	90/15	31	80/20	11
Refrigerator Recycling	7.7%	90/10	68	90/15	31
High-Efficiency New Home	2.9%	90/10	68	80/20	11
Residential Totals	**26.2%**		**343**		**158**

(1) C/P = Statistical Confidence / Precision at assumed Cv of 0.5

(2) Oversampling to account for variety of measures

The anticipated sample sizes for on-site activities were established upon the expected magnitude of programs impact, expected participation, level of certainty of savings, and variety of measures. For instance, the Residential Home Energy Improvement Program on-site sample size is larger than other residential program samples due to the large number of possible measures. Additionally, both commercial programs had higher on-site confidence/precision targets due to the higher expected total savings achieved and uncertainty of performance.

Once program evaluation activities commenced, the final executed sample frame is not identical to the planned sample frame, due available data from the programs, participant and recruitment efforts. The evaluation team successfully met the planned sample frame in some cases the sample frame exceeded planned activities. Table 3-2 summarizes the final executed sample frame and evaluation activities.

Table 3-2: Summary of Executed Evaluation Sample and Activities

Program	Sample Size: Desk Analysis With Telephone Survey Verification Method	Subset Sample Size: On-Site Analysis Verification Method	Subset Sample Size: Utility Bill Regression
Commercial Programs			
Custom Incentive	96	96	-
Prescriptive Incentive	85	85	-
Commercial Totals	**181**	**181**	**-**
Residential Programs			
Lighting and Appliance	79	74	-
Home Energy Improvement	238	33	160
Water Heating	26	11	-
Refrigerator Recycling	31	31	-
High-Efficiency New Home	68	11	-
Residential Totals	**442**	**160**	**-**
Portfolio Total	**623**	**341**	**160**

3.4 VERIFYING THE SAMPLE

The next step in the impact evaluation process is to verify the gross impacts of the sample projects, which are the energy and demand savings that are found at a customer site as the direct result of a program's operation, while net impacts are the result of customer and market behavior that can add to or subtract from a program's direct results.

The impact evaluation activities resulted in adjustment factors (realization rates), which are applied to the reported savings documented in the program tracking records. The ratio of the savings determined from the site inspections, M&V activities, or engineering calculations to the program-reported savings is the project realization rate; the program realization rate is the weighted average for all projects in the sample. The verified savings are obtained by multiplying the program realization rates by the program-reported savings are termed the adjusted or verified gross savings, and they reflect the direct energy and demand impact of the program's operations. These verified savings do not account for customer or market behavior that may have resulted in greater or lesser savings; these market effects are captured through tasks carried out in net impact analysis.

Total program gross savings are generally adjusted using the following equation, unless noted otherwise in program specific methodology.

$$kWh_{adj} = kWh_{rep} x\ Realization\ Rate$$

Where

kWh_{ver} = kWh verified by the impact team for the program, the gross impact

kWh_{rep} = kWh reported for the program

Realization rate = kWh_{ver} / kWh_{rep} for the research sample

3.4.1 Design Survey Instruments

Standard data collection input forms were developed for use by telephone/field survey engineers and for ease of input into a data collection database. The approach used for this project includes:

1. Select information to perform the needed impact evaluation tasks.
2. Build a database form within the database to allow for quick and easy population of tables with data and information.
3. The field data collection was completed using direct input into the database via laptop computer.
4. Coordinate survey analysis plan and survey designs with process team.

The Evaluation Team provided Georgia Power with draft survey instruments for review to ensure that all program data and/or any requested secondary data is captured. All customer facing materials had Georgia Power review and approval prior to commencement of activities. For the commercial programs, the participant attribution and process surveys were integrated into on-site surveys for willing participants. These surveys were administered utilizing a digital device, such as a handheld tablet or PC, which allows for expeditious interviews.

3.4.2 Project File Review (All Projects)

After participant sample projects were selected, the Evaluation Team performed a desk review of the project file requested from each program stream. The project specific documents for the sampled projects included the customer applications, savings declarations performed by third-party contractors (if applicable), post project audits, etc.

The Evaluation Team conducted an engineering file review to answer the following questions:

- Do the sample projects meet all process and eligibility requirements, including the applicant, building, measure, and project cost eligibility?
- Are data files of sample projects complete, well-documented, and adequate to calculate and report savings? (This enabled the inspector to build check lists for data collection and develop data logging plans.)

- Are measures properly installed as described in the program tracking and reporting system?
- Are the M&V Plans followed correctly for reporting savings, if applicable?
- Are program tracking and reporting system reported energy and demand benefits the same as noted in project applications and/or applicable ex-ante estimates?

The file review for all sampled and reviewed projects concluded with a telephone survey with the participant. For those projects where no site inspection was conducted, the participant was asked questions to verify measure installation and provide parameter data that was utilized in the analysis. For those projects where site inspections were conducted, the telephone survey contained limited questions only necessary to schedule the site inspections, as the more detailed surveys were conducted on-site.

3.4.3 Develop Program Specific M&V Approach

Desk reviews of projects were conducted in preparation for all anticipated site inspections. Upon review of the program documents, a unique M&V plan will be developed for each program and measure, including a metering protocol, as applicable. M&V methods for each measure type were developed with adherence to the International Performance Measurement and Verification Protocol (IPMVP). The broad categories of the IPMVP are as follows:

- ***Option A, Retrofit Isolation: Key Parameter Measurement*** – This method uses engineering calculations, along with partial site measurements, to verify the savings resulting from specific measures.
- ***Option B, Retrofit Isolation: All Parameter Measurement –*** This method uses engineering calculations, along with on-going site measurements, to verify the savings resulting from specific measures.
- ***Option C, Whole-Facility –*** This method utilizes whole-facility energy usage information, most often focusing on a utility bill analysis, to evaluate savings.
- ***Option D, Calibrated Simulation –*** Computer energy models are employed to calculate savings as a function of the important independent variables. The models must include verified inputs that accurately characterize the project and must be calibrated to match actual energy usage.

Figure 3-1 presents a flowchart summarizing the selection of the IPMVP M&V Options.

Figure 3-1: IPMVP Methodology Selection Process

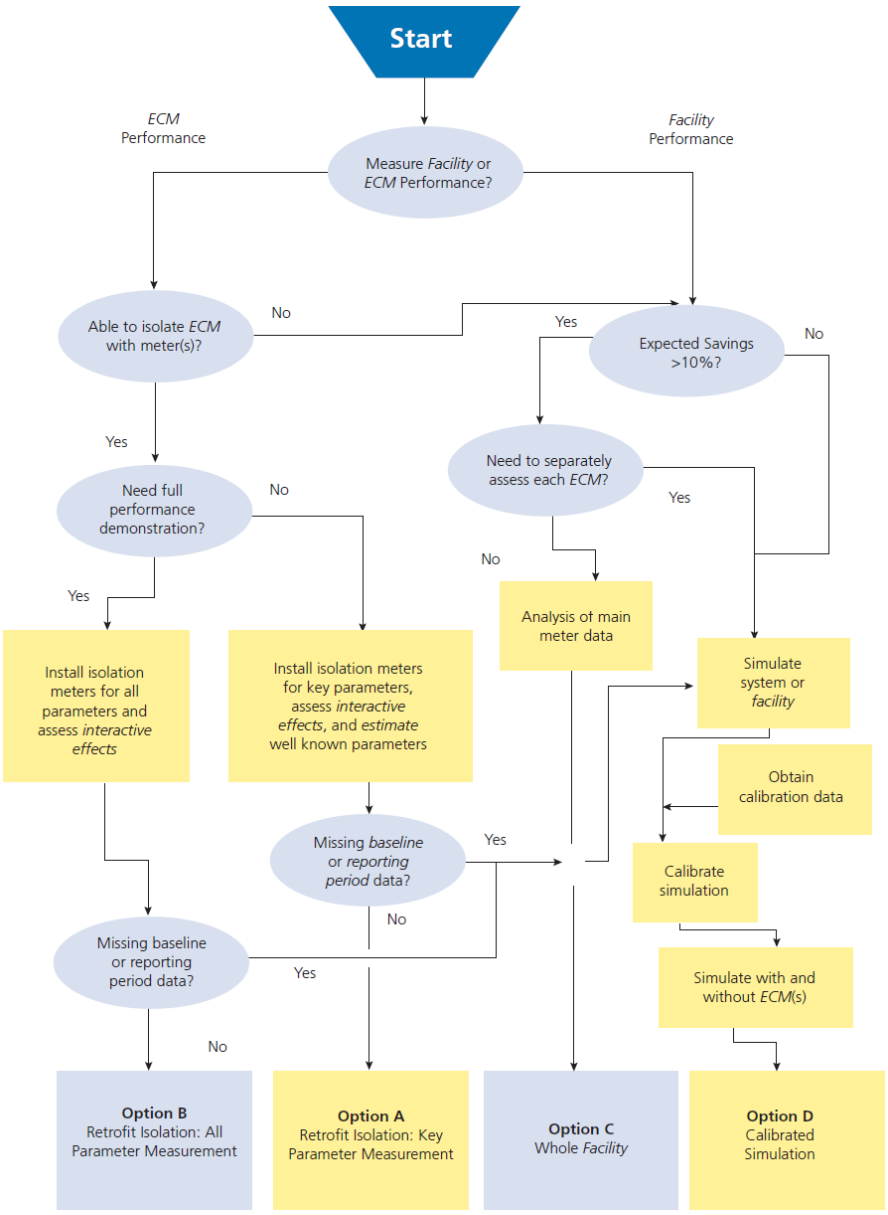


Table 3-3 summarizes the selected measurement & verification approach by each program. In many cases, multiple approaches were used in the same program due to the variety of measures and available data. Sections 4 through 10 further details the application of methods for each program and measure.

Table 3-3: Summary of Measurement & Verification Approach by Program

Programs	IPMVP A	IPMVP B	IPMVP C	IPMVP D	Engineering Analysis
Commercial Custom	X				X
Commercial Prescriptive	X	X			X
Residential Lighting and Appliance	X	X			X
Residential Home Energy Improvement	X		X		X
Residential Water Heater					X
Residential High Efficiency New Homes				X	
Residential Refrigerator Recycling	X				X

3.4.4 On-site Inspections

On-site inspections built on the information obtained during the file review. When the participant's ability to self-report critical parameters is uncertain, site inspections provide a more accurate evaluation of the project and represent a significant portion of the effort. Because of the importance of the task, our team will work to ensure that site inspections are carefully planned and are cost effectively executed. On-site inspection activities will include:

- Collecting baseline and retrofit equipment information;
- Obtaining the operating parameters;
- Conducting a visual inspection;
- Gathering equipment nameplate information;
- Metering and data logging activities conducted per the program and site-specific M&V plan; and
- Conducting brief on-site interviews with relevant parties to understand the building operation, load shapes, equipment operating specifics, and other input parameters needed to calculate energy savings.

In cases where available, non-biased continuous or long-term metered data is available from the customer or in the project files, no additional measured data was collected. Additionally, sites where measure performance has limited uncertainty, such as continuous 8,760 operating schedules, no measurements were necessary.

3.4.4.1 Customer Interface Protocols

Customers were contacted by the Evaluation Team to arrange on-site inspections no earlier than five business days after program staff dispatched notification letters. After several attempts to reach customers, alternative projects were selected to replace the primary samples. A preliminary telephone survey served as a participant introduction to evaluation M&V activities; confirmation that the customer participated in the program, and verification of basic information such as building type and building size. On-site recruitments were made during the telephone survey and will be scheduled with a field engineer.

When interfacing with premise customers, Evaluation Team members adhered to the following protocols to ensure Georgia Power's relationship with its customers is protected.

- The inspector attempted to schedule the inspection. Up to three attempts to call will be made, and no more than two email attempts. Voice messages were considered an attempt.
- Inspectors identified themselves as a contractor hired by Georgia Power to evaluate the savings of the respective program.
- Inspectors ensured the contact understood that evaluation activities had no effect on the incentive they received. Inspectors also confirmed the contact understood they were randomly selected as part of a study Georgia Power was performing on the effectiveness of the program, and their assistance would be greatly appreciated.

3.4.5 Establish the Baseline Condition

The Evaluation Team has extensive tools and experience in determining project baselines. In many cases, the assessment of an accurate baseline presents more challenges than evaluating installed equipment as the equipment or conditions have been replaced. To provide an accurate and defensible evaluation of baseline characteristics, a triangulation approach was often utilized. The Evaluation Team gathered and reviewed data from a variety of sources and reconciled the results to ensure that an accurate representation of the baseline characteristics is obtained. The following approaches were utilized:

- **Application or contract documents**. Efficiency projects receiving rebates or grants often included calculations of energy savings, which generally include a description of the baseline equipment.
- **End-user interviews.** As part of the evaluation process, the Evaluation Team surveyed with facility staff and operators involved with the project to assess baseline equipment, as well as operating conditions and parameters.

- **Observation of similar locations.** Projects may only involve upgrades to a portion of a building, leaving the remainder of the space untouched. In these scenarios, it was possible to observe the remaining equipment to gain an understanding of conditions and operation.

- **Utility bills.** Where appropriate and available, the Evaluation Team gathered historical utility bills to assess the feasibility and accuracy of claimed baseline characteristics.

- **Local code requirements.** If applicable, the Evaluation Team benchmarked all findings against local energy and building codes to validate results and provide an additional source in the event of non-characterized equipment. The applicable code was generally the International Energy Conservation Code (IECC) 2009 and/or ASHRAE 90.1-2007, as this was adopted in the state of Georgia January 1, 2011.

Each of these sources were carefully evaluated and weighed to provide a complete assessment of the baseline conditions. The weight applied to each source depended on the nature of the project, as well as the Evaluation Team's assessment of the quality of the source. Several types of baselines may be appropriate, depending on the nature of the program:

- **Codes and standards.** In the case of new building construction, the baseline condition required that the facility was constructed to meet but not exceed local building codes. Similarly, in the case of new appliance purchases or "burnout" measures, the baseline condition may require that the customer purchase a standard efficiency appliance.

- **Pre-project existing conditions.** For projects that improve efficiency of existing buildings, the baseline condition is that the building would have continued to operate under its pre-project efficiency.

- **Base level of knowledge.** In the case of education programs, the baseline condition is what the customer would have done without having the new information.

Each of these sources were carefully evaluated and weighed to provide a complete assessment of the baseline conditions. The weight applied to each source depended on the nature of the project, as well as the assessment of the quality of the source.

3.4.6 Gross Impact Analysis

The general approach will be to try to avoid 'reinventing the wheel' when there are calculations and methods that are available for review that are presented in a transparent and complete way. The Evaluation Team will utilize standard, published savings formulas and approaches to calculating energy impacts, including those published by:

- DSM Technical Reference Manuals (TRM) available in the United States

- ASHRAE

- IESNA California Database for Energy Efficient Resources (DEER)
- Northwest Power and Conservation Council (NPCC) Regional Technical Forum (RTF)

Annual energy savings for any energy-efficiency measure can be calculated from the following formula:

$$Annual\ \ Energy\ \ Savings = (BPC - RPC) * (BAOH - RAOH)$$

where

BPC = Baseline Power Consumption
RPC = Retrofit Power Consumption
BAOH = Baseline Annual Operating Hours
RAOH = Retrofit Annual Operating Hours, where different than baseline operating hours.

Tools used to perform analysis may include DOE-2 computer simulation modeling, commonly available tools such as Motor Master, Energy Star Calculators, and others. In some cases, we may conclude that savings estimates and reports are either not adequately supported or are not appropriate to the project and/or measure. In these cases, we provided ground-up methods and calculations. Algorithms utilized to calculate energy savings are summarized in Appendix B.

3.4.6.1 Load Shape Analysis

Load shapes are vital in calculating avoided costs for cost effectiveness testing and system on-peak demand savings, especially when the measures installed have daily and seasonal variations in the operating schedule. As a primary data source, the Evaluation Team used the operating schedules and metered data gathered during the on-site inspections to construct 8,760 hourly load shapes for each sampled project. From this, a weighted average load shape was created for each impact stratum for the purposes of calculating annual avoided costs for cost effectiveness testing. Based on the sampling data points, this was only executed for residential and commercial lighting projects.

For those measures where analysis methods utilized were unable to support 8,760 analysis or stipulated savings were used, Evaluation Team worked with Georgia Power to utilize pre-existing load shapes based on EnerSim simulation modeling, which is based on Department of Energy (DOE) modeling criteria.

3.4.6.2 Entirely Stipulated and Deemed Savings

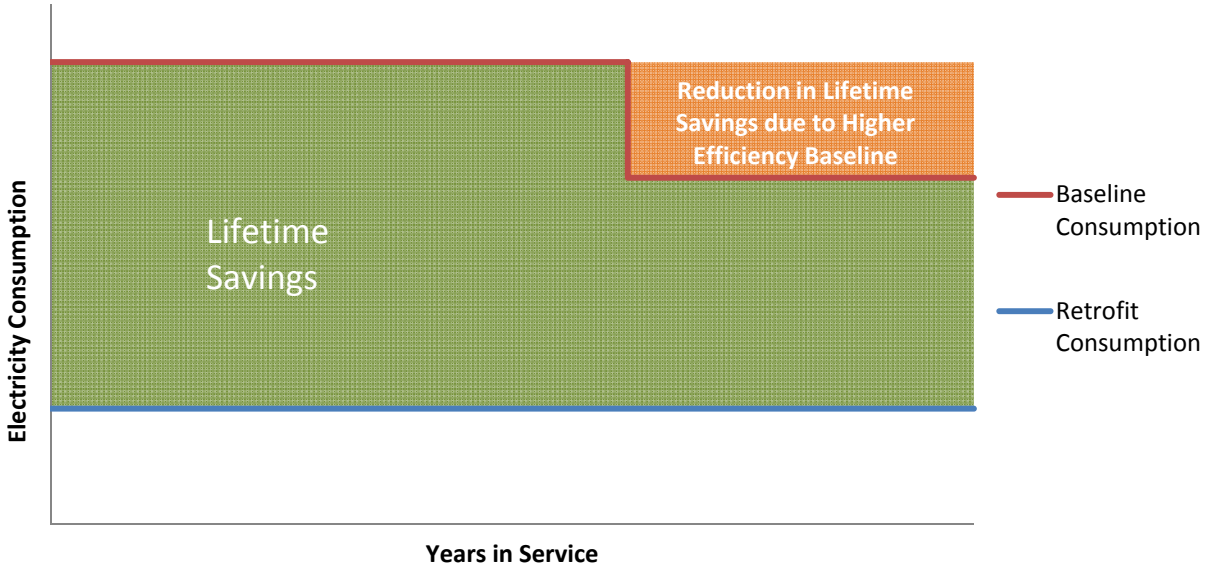
In cases where sufficient data is not available or the specific end use technology does not warrant a metering approach, an entirely stipulated or deemed savings approach may be used. IPMVP recognizes that there are instances when measurement and verification of the savings is not justified and the likelihood performance can be demonstrated to the participant in another manner, such as in cases where the cost of measurement is too high compared to the savings, where the parameters preclude accurate measurements, or where the confidence of the savings projections is

high. Deemed values and parameters are identified and included in the appendix of this report for transparency.

3.4.6.3 Lifetime Savings

Current and upcoming changes to energy efficiency regulations will affect the availability of specific lighting technologies in the future marketplace. Specifically, they will begin to phase out the use of certain incandescent general service lamps and general service fluorescent technologies. In the commercial and residential lighting and appliance programs, there were a number of projects that assume a baseline technology that will eventually be phased out. Thus, the measure may not receive the full credit for achieving the first year annual energy and demand savings over the lifetime of the measure. In these cases, the evaluation team reduced the future savings by increasing the assumed efficiency of the baseline technology at a certain point in the measure life, as illustrated in **Error! Reference source not found.**.

Figure 3-2: Calculation of Lifetime Energy Savings with Future Baseline Adjustment



The length of time a measure receives annual credit for the full first year energy and demand savings values depends on the timing of the market baseline shift (not the timing of the regulation implementation). Refer to the appendix for more information on the assumptions used to adjust future savings values.

3.4.7 Net Impact Analysis

To develop a net-to-gross (NTG) ratio, two components must be assessed: freeridership and spillover. Freeridership equals the percentage of savings that would have occurred in the program's absence due to participants purchasing the same measures without the program's influence.

Spillover refers to additional savings generated by customers (participants or nonparticipants) influenced by program activities, but not captured by program records. Savings received from installation of additional measures could be considered spillover savings if the program significantly influenced customer decisions to purchase the equipment (and they did not receive additional rebates for those measures).

Various methods can be used to estimate program freeridership and spillover. The team used a baseline evaluation approach, relying on self-reports from participant surveys to determine a freeridership score by asking a series of questions about actions that would have been taken in the program's absence. The team also used self-reports to calculate participant and nonparticipant spillover by estimating savings attributable to additional measures installed, and whether respondents credited Georgia Power with influencing the decision. Measures were counted if eligible for program incentives, even if incentives were not requested.

The following calculation was used for each program's NTG estimate:

Program NTG = 1 - Freeridership + Participant Spillover + Nonparticipant Spillover

To estimate freeridership, the evaluation team asked participants a standard battery of 7 to 12 questions (varying by response) to assess the program's degree of influence on purchasing decisions. The survey asked if the customer had taken, or would have taken, the following actions:

- Purchased equipment prior to hearing about the program.
- Included the purchase in a recent capital budget before participating in the program.
- Purchased the same type of equipment before the program.
- Would have purchased the equipment had the rebate not been available.
- Would have purchased equipment with the same efficiency level and in the same quantity.
- Purchased it sooner, at the same time, later in the year, or in the near future.

Participant and nonparticipant spillover questions asked customers whether they decided to install another energy-efficient measure or undertake some other energy-efficiency improving activity due to the program (without receiving incentives). The survey asked whether customers installed energy-efficient products similar to those offered in Georgia Power's DSM portfolio.

If respondents indicated they made energy-efficient improvements or purchased products, they were asked how important the program was on their purchasing decisions. Response options included: "not at all important", "not very important", "somewhat important", or "very important."

Only measures where participants indicated their participation in the program as very important on their purchasing decision were attributed to program spillover.

For additional information about the NTG analysis methodology, please refer to process evaluation report.

4 COMMERCIAL CUSTOM INCENTIVE PROGRAM

4.1 PROGRAM OVERVIEW

In January 2011, Georgia Power launched the EarthCents Commercial Energy Efficiency Program (CEEP). Implemented by ICF International, CEEP provides incentives for business customers that upgrade or retrofit their facilities with high-efficiency equipment and systems. Customers can choose from two incentive approaches: Prescriptive Measures (prescriptive program), or Custom Lighting for New Construction and Existing Properties (custom program). The custom program only offers lighting measures, such as fluorescent lighting fixtures, high bay lighting, and other lighting upgrades. For new construction (or large building retrofits), the program determines custom lighting incentives by calculating the Lighting Power Density (LPD) of the facility.[1] A commercial audit service, part of the general customer service offering, also refers eligible customers to the commercial prescriptive and custom programs. Customers on any commercial rate are eligible to participate.

The prescriptive and custom program's primary target markets include the following:

- Managed Commercial: Commercial customers with annual demand over 1,000 kW, or multi-site accounts, assigned to Georgia Power Key Account or Nation Account Managers;
- Mid-tier: Commercial customers with demand between 500 to 1,000 kWh, assigned to a Georgia Power Mid-Tier Account Manager, but not actively managed; and
- Non-Managed Commercial: Small commercial customers with demand less than 500 kW, not assigned to Georgia Power account managers.

Examples of managed and mid-tier commercial customers include: hospitals, universities, government facilities, schools, distribution centers, corporate complexes, and national accounts. Small commercial customers typically represent: restaurants, fast food, convenience stores, commercial kitchens, hotels, retail stores, dry cleaners, schools, office buildings, and grocery stores.

4.1.1 Program Measures

The Custom program offers rebates for both retrofit and new construction projects. Retrofit projects on existing buildings are grouped into the following categories:

- Existing - Fluorescent Lighting fixtures. Fixture must be listed on Consortium for Energy-Efficiency Website. This site covers only 4' T8 lamps and ballasts. 17w, 2' T8 lamps must have a minimum efficacy of 75 mean lumens/watt. 32w, U-bend T8 lamps must have a minimum efficacy of 79 mean lumens/watt. T5 lamps are also eligible under this measure.

[1] LPD must be less than or equal to the applicable Maximum Eligible LPD watt per square foot. The proposed LPD also must be 30% below ASHRAE 90.1-2007 standards, and determined by the facility type. Additional information can be found at http://www.georgiapower.com/earthcents/business/pdf/new-construction-eligibility-standards.pdf.

- Existing - High Bay Lighting. All high bay lighting must be pulse start HID technology or high efficient fluorescent.
- Existing - Other lighting. This consists of lighting fixtures not included in Measure 1 or Measure 2. Common to this category is LED lighting, which must meet ENERGY STAR® standards, a list of which is provided on the ENERGY STAR® Website. Other lighting sources and fixtures may qualify but require pre-approval.
- New Construction – Building lighting: Lighting power density must exceed requirements of ASHRAE 90.1-2007 by at least 30%.

Program eligibility structure includes the following:

- Any custom lighting retrofit application with an incentive over $1,000 and/or any application that utilizes Measure 3 requires pre-approval.
- Custom lighting retrofit incentives are available to help offset the cost of new fixtures. Incentives are not available for "De-lamping."

Commercial facilities meeting these program eligibility rules may be eligible for federal or state tax incentives. In addition to tax incentives or credits available, the Custom Incentive program will provide the following incentives to participating facilities:

Table 4-1: Commercial Custom Incentive Program Incentive Schedule

Facility Vintage	Facility Type	Incentive	Maximum per facility
Existing	Commercial Facility (taxable)	$0.20/kWh	$5,000
Existing	Tax Exempt Commercial Facility	$0.20/kWh	$10,000
New	Commercial Facility (taxable)	$0.05/kWh	$5,000
New	Tax Exempt Commercial Facility[1]	$0.05/kWh	$10,000

4.1.1 Planned Targets

The Commercial Custom Incentive program had established the following unit energy savings, participation expectations, and estimated energy and demand savings consistent with Georgia Power program approved dockets for the program year 2011:

[1] Tax-exempt facilities are understood to have a higher maximum incentive amount because they are not eligible for existing federal and state tax incentives to help offset the cost of implementing eligible measures.

Table 4-2: Commercial Custom Incentive Program 2011 Goals

Measure	Unit	Energy Savings (kWh/Unit)	2011 Program Participation
Lighting	facility	256,399	200
Incremental Energy Savings (kWh):			61,202,855

To calculate actual reported energy savings from program participation, the commercial custom program utilizes a site-specific application spreadsheet tool to calculate energy savings, including, site specific hours of operation, baseline lamp/ballast configuration and retrofit baseline lamp/ballast configuration. Consequently, this program does not utilize a "per unit" or "per site" energy saving metric as could be inferred from Table 4-2.

4.1.2 Program Participation

A total of 497 measure projects were completed within the custom program in 2011 on 300 premises. A premise is defined as single Georgia Power customer account number; in some cases, a single customer may be a campus with multiple buildings on a single meter. A single project is defined as a single measure category application submitted for a specific Georgia Power premise. Table 4-3 summarizes the commercial program participation by project record, premise and applicant (applicant premise name) for both custom and prescriptive tracks.

Table 4-3: 2011 Commercial Program Participation Summary

Program Track	Project Records	Premise	Applicant
Custom	497	230	71
Prescriptive	895	206	50
Both Programs	n/a	70	66
Total	**1371**	**506**	**187**

Within the commercial custom track, 23% of the premises also had a prescriptive measure installed at that premises. Additionally 48% of the applicants also participated in the prescriptive track. This significant overlapping participation posed some benefits and challenges within the measurement & verification of sampled projects discussed in later sections. Reported energy savings for individual projects ranged from 93 kWh to nearly 3 GWh, with a reported average site savings of 134,519 kWh. Figure 4-1 shows a histogram of project size for the 2011 custom program.

Figure 4-1: Histogram of Commercial Custom Projects

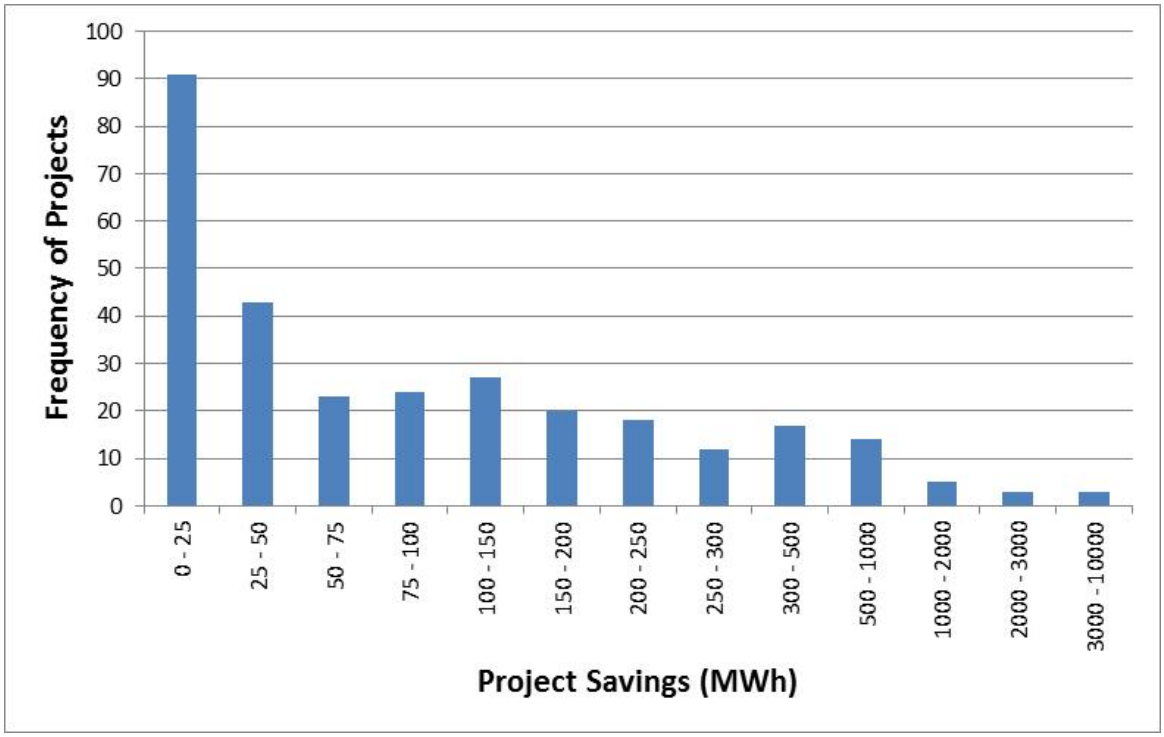
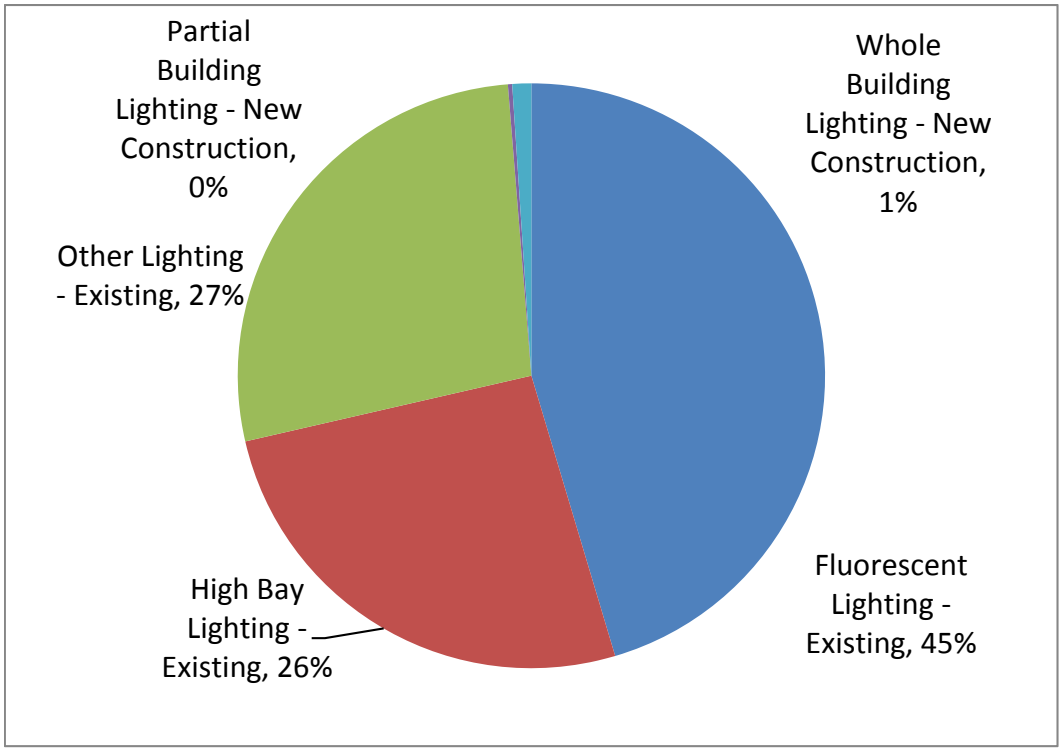


Table 4-4 summarizes participation by reported energy savings for measure types and **Error! Reference source not found.** shows measure savings shares for the 2011 commercial custom program.

Table 4-4: 2011 Commercial Program Measure Summary

Custom Program Measure Type	Total kW	Total kWh
Fluorescent Lighting - Existing	7,099.85	29,251,496
High Bay Lighting - Existing	2,742.81	16,747,293
Other Lighting - Existing	3,391.71	17,610,074
Partial Building Lighting - New Construction	34.92	152,525
Whole Building Lighting - New Construction	136.46	673,291
Commercial Custom Total	**13,405.75**	**64,434,679**

Figure 4-2: Commercial Program Measure Savings Share



4.2 PROGRAM IMPACT EVALUATION METHODOLOGY

4.2.1 Overview

The impact evaluation for the lighting measures followed IPMVP Option A (Retrofit Isolation: Key Parameter Measurement) methods, and engineering activities included installation verification, determination of operational hours, spot-metering of fixture energy consumption, and savings calculations. Information was typically gathered on:

- Baseline/retrofit power consumption
- Operating Hours
- Controls and Sequence of Operation

4.2.2 Sampling Approach

The sample criterion for the commercial custom program was established to meet a 90% confidence and 10% precision level for measurement and verification activities, including on-site inspections. The confidence/precision level was based on the large energy savings share of the portfolio energy savings impacts and certainty of savings.

To mitigate a potential bias of small projects that might occur in natural random sampling, the Evaluation Team controlled the large variation in the size of projects by stratifying the impact

sample by size. Large projects were sampled at a higher rate than smaller projects to ensure that the Evaluation Team focused evaluation efforts on the projects which contributed the most uncertainty to the overall savings estimate. Table 4-5 summarizes the target and final achieved sample strata.

Table 4-5: Commercial Custom Sample Design

	Lower Bound (kWh)	Upper Bound (kWh)	Premise Population	Target Sample	Achieved Sample	Case Weights
Strata 1	-	132,600	202	9	10	13.7%
Strata 2	132,601	512,200	73	34	49	27.6%
Strata 3	512,201	2,087,800	19	19	11	24.6%
Strata 4	2,087,801	6,159,400	6	6	3	34.1%
Total	**N/A**	**N/A**	**300**	**68**	**73**	**100%**

It should be noted that the evaluation team did not meet its target sample size strata 3 and 4. These strata target a census within that sample frame to maximize the value of information; however, census recruitment is often very difficult given a participant's willingness to participate a second time in program evaluation activities. This was understood at the time of sample design and the evaluation team believes this approach was successful with a 56% successful recruitment rate for these two strata. Additionally, sampling was conducted at the premise level and not the project or applicant levels. This approach allowed the evaluation team to measure and verify multiple projects on a single premise and survey a large share of the applicants. Table 4-6 summarizes the completed sample metrics, with regards to project, premises, applicants and energy savings, surveying one-third of the applicants and reviewing over 40% of the program savings.

Table 4-6: Completed Commercial Custom Sample Summary

	Project Records	Premise	Applicant	Energy Savings (kWh)
Sample	96	73	45	27,407,121
Program Population	476	300	137	65,458,200
Sample Share of Program Population	20%	24%	33%	42%

4.2.3 Project Audits

After sample projects were selected, the Evaluation Team performed a desk review of project files. Reviews consisted of a desk review of project documentation, such as applications, savings worksheets, savings calculations performed by participants or third-party contractors (if applicable), audits, equipment catalog cut-sheets, metered data, invoices for equipment or contracting services, and any other documentation submitted to ICF/GPC.

The Evaluation Team conducted a documentation review to answer the following questions:

- Are data files of sample projects complete, well documented, and adequate to calculate and report savings? (This enabled the Evaluation Team to build checklists for data collection and develop measure or site-specific M&V plans, when necessary.)
- Are the worksheets clear and easy to use, and are they being used properly?
- Does the project file data align with the program database?

4.2.4 On-site Data Collection Methods

Before the Evaluation Team contacted any customers, GPC distributed letters to each customer to inform them of the intent of the evaluation and the role of the Evaluation Team. This improved the Evaluation Team's ability to schedule site-visits, while at the same time reassuring customers that their rebates and equipment would not be affected and that all information would be held confidential.

The telephone surveys served as an introduction to the evaluation activities and were used to confirm that the customer participated in the program and to verify basic information such as building type and building size. On-site recruitments were made during the telephone survey and scheduled to be performed by a field engineer. Inspections lasted between 2 – 4 hours depending on the type of project installed and the willingness of the customer to participate in additional survey questions.

Table 4-7 summarizes the general information collected on-site for each custom project. Since lighting savings are generally the product of wattage reduction and operating hours, particular attention was given to those parameters with a significant impact on calculated wattage, and metering with lighting on/off data loggers was used to develop and accurate estimate of operating hours.

Table 4-7: Commercial Custom Incentive Program On-Site Checklist

BASELINE	RETROFIT
Year facility was built Number of occupants Number of stories Business type Operating Hours, posted or otherwise Total conditioned square footage Heating system type/age/efficiency/size/condition Cooling system type/age/efficiency/size/condition	
Lamp Type (e.g., T8, T12) Ballast Type (mag. or elec.) and Factor Lamp Size (e.g., 4 ft.) Quantity of Lamps per Fixture Wattage per Lamp Fixture Quantity **Operating Hours**	Lamp Type Confirm Electronic Ballast and Factor Lamp Size Quantity of Lamps per Fixture Wattage per Lamp Fixture Quantity **Operating Hours** Confirm ENERGY STAR Rating, if applicable

As is typical in many evaluations, baseline equipment data was not always available at the time of the site visit because the equipment had already been removed. When baseline data was not readily available on-site, it was assumed that baseline equipment and quantities matched that defined in the measure description and the project files.

The Evaluation Team determined that the annual operating hours variable had the highest uncertainty of any variable in the savings equations. To minimize this uncertainty, HOBO® U9-002 light on/off or HOBO® U12-006 light intensity data loggers were placed in facilities in addition to asking the site contact about operating schedules. The number of loggers placed in each facility was determined by the visiting engineer according to the number of space types with different operating schedules. The loggers were left in place for at least seven days to determine how measured operating hours and usage differed from reported hours. On-site lighting trend measurements were compared to lighting operating hours as determined through on-site interviews and surveys of control strategies (dimmers, timers, etc.) to inform the balance of the yearly operating hours.

4.2.5 Gross Impact Analysis

To calculate the verified energy savings of a lighting retrofit, the Evaluation Team utilized the following:

$$\Delta kWh = \left(\#\ fixtures_{base}\ x\ kW_{base}\ -\ \#\ fixtures_{retrofit}\ *\ kW_{retrofit}\right) x\ Hours$$

Where:

fixtures$_{base\ or\ retrofit}$ = Quantity of fixtures installed in baseline or retrofit of a project

Hours = Annual hours of fixture operation

The equations above are based on per fixture energy savings determined by:

$$kW_{base} = \frac{\#\ lamps_{base} * Watts_{base}\ x\ BF_{base}}{1000}$$

Where:

lamps$_{base\ or\ retrofit}$ = Quantity of lamps installed in a baseline or retrofit fixture

Watts$_{base\ or\ retrofit}$ = Wattage of baseline or retrofit lamp

BF$_{base\ or\ retrofit}$ = Ballast factor of baseline or retrofit light fixture

4.2.5.1 Interactive Equipment Energy Changes for Lighting Retrofits

The Custom program incentivizes the implementation of lighting equipment whose efficiency is above that which a customer might otherwise install. By definition, this equipment should consume less input energy per unit of output energy. However, the energy consumption of lighting equipment in an enclosed space cannot be viewed in isolation. Building systems interact with one another and a change in one system can affect the energy consumption of another. This interaction is important to consider when calculating the benefits provided by programs because it adopts a comprehensive view of societal-level energy changes rather than limiting the analysis to the energy change directly related to the modified equipment

See Appendix D for a more detailed review of how interactive energy changes were calculated for lighting retrofits.

4.3 PROGRAM IMPACT RESULTS

Two adjustments were made to Georgia Power's ex ante savings values as a result of the Evaluation. The Impact Evaluation Team calculated the gross, or verified, savings based on a review of a sample of projects from the program and the independent savings calculations performed on those projects. The ratio of the verified savings to the reported savings, or realization rate, for sampled projects was applied to all projects in the appropriate measure category. A second adjustment was applied to these figures in order to calculate net savings. The net verified savings total is the savings which are attributable to the program.

4.3.1 Gross Program Savings

The data collected as a result of desk review and on-site data collection activities allowed the Evaluation Team to recalculate energy and demand savings for each sampled project – this will be termed "gross verified savings." The ratio of gross verified savings to the reported savings is the

project "realization rate," or adjustment factor. For each stratum identified in the sampling plan, the Evaluation Team calculated a stratum-level realization rate as the weighted average of the sampled project-level realization rates. Table 4-8 summarizes the findings of the realization for each commercial program strata and Table 4-9 summarizes the application of the realization rate to the application strata population energy savings.

Table 4-8: 2011 GPC Commercial Custom Realization Rate Summary

Stratum	Energy Realization Rate	# projects in strata population	Energy RR Relative Precision	Energy RR Coefficient of Variation
Strata 1	78.7%	202	1.8%	0.17
Strata 2	85.3%	73	3.1%	0.28
Strata 3	91.9%	19	3.6%	0.14
Strata 4	108.6%	6	19.9%	0.21
Total	**94.0%**	**300**	**7.9%**	**0.50**

Table 4-9: 2011 GPC Commercial Custom Gross Verified Results

Stratum	Energy Realization Rate	Interactive Waste Energy Factor	Total Realization Rate	Total strata population reported energy savings (kWh)	Total strata population verified energy savings (kWh)
Strata 1	78.7%	16.90%	95.6%	8,797,942	8,411,401
Strata 2	85.3%	16.90%	102.2%	17,786,433	18,185,459
Strata 3	91.9%	16.90%	108.8%	15,856,981	17,253,395
Strata 4	108.6%	16.90%	125.5%	21,993,323	27,595,333
Total	**94.0%**	**16.90%**	**110.9%**	**64,434,679**	**71,445,588**

The interactive waste energy factor was found to be substantive; it includes electric energy cooling savings and heating penalties. The evaluation team benchmarked the additional 16.9% credit applied and found it to be reasonably conservative and well within other waste energy factors.

The Evaluation Team examined each project to determine the cause of the discrepancy between the verified, calculated savings value and GPC' program reported value. 53% of the individual projects had a realization rate lower than 90% and greater than 110%. The primary reasons, ranked in order of causality, include:

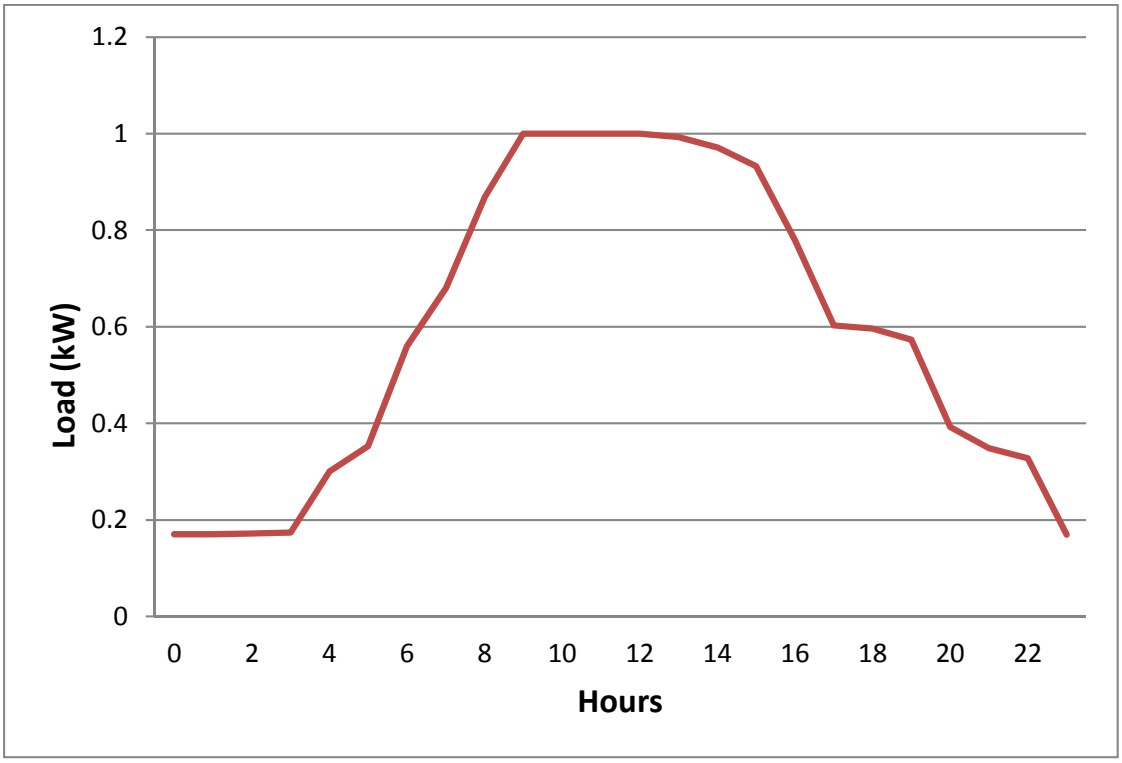
- **Operating hours**: In many cases, the Evaluation Team found that the measured operating hours varied from assumed values. Operating hours are a major driver of energy savings as well as an important factor in determining average summer demand savings.

- **Input wattage assumptions:** There was a disparity between program reported input wattages and the Evaluation Team's determined input wattages. In some cases, it was found that the installed equipment differed from the equipment listed in the project applications. For example, the project application might have indicated 1,000 1-lamp fixtures; however, the evaluation found 500 2-lamp fixtures, which resulted in only a minor adjustment to the project realization rate. In other, more limited cases, the evaluation found more substantive differences in the project applications and the verified equipment baseline or retrofit wattage technologies. For example, one application indicated 1,000-watt metal halide lamps as the baseline, but the actual baseline was determined to be 400-watt metal halide lamps.
- **Missing or extra equipment:** For some projects the Evaluation Team's engineers found that the number of fixtures differed from the number listed in the project database. In the most cases, these quantity discrepancies were not substantive.

4.3.1.1 Load Shapes

Figure 4-3 shows the results of the weighted average hourly energy savings for an average summer weekday based on on-site measurement & verification.

Figure 4-3: Normalized Average Peak Day Hourly Lighting Load Shape

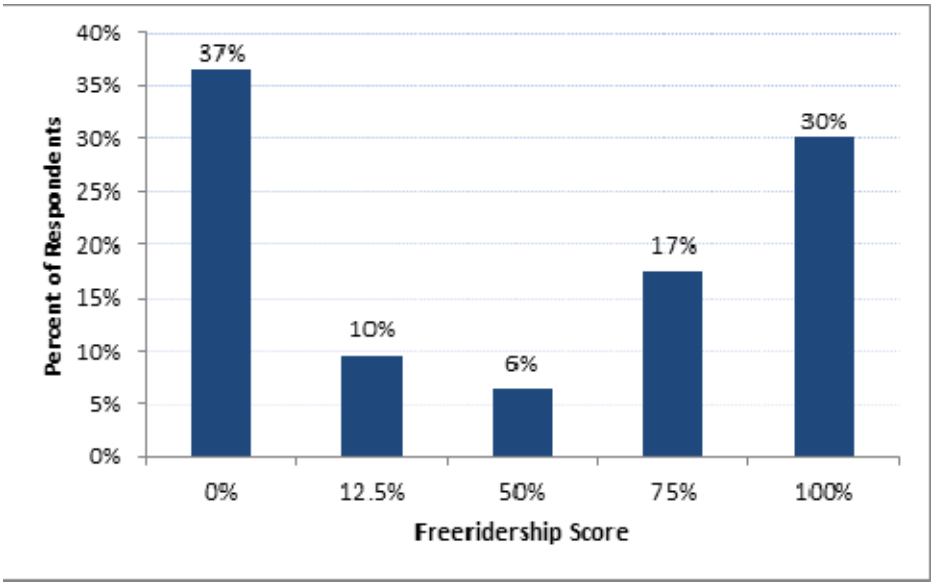


4.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

Freeridership data analysis from participants self-reports indicated nearly 47% of customers had already purchased or installed energy-efficient equipment prior to learning about the program. Of these, about 30% could be classified as 100% freeriders. For equipment already purchased, many considered the incentive an added bonus, and reported the program had no influence on their decisions to purchase equipment. About 17% were not sure what influence level the program had on equipment purchases, hence were classified as 75% freeriders. About 37% of participants could not be classified as freeriders (scoring 0% freeridership). Figure 4-4 shows distributions of survey respondents by freeridership scores assigned to each.

Figure 4-4: Frequency of Freeridership Scoring Combinations (n=72)



As shown in Table 4-10, the commercial program had average weighted freeridership of approximately 44.8%.[1] Although freeridership scores have been presented at the custom and prescriptive levels, precision should be considered less due to small sample sizes.

Table 4-10: Freeridership Results

	Respondents	Weighted FR	Weighted FR Standard Error	FR Absolute Precision
Commercial Program	72	44.8%	11%	18.3%
Custom	46	47.4%	12%	20.3%
Prescriptive	26	34.6%	25%	41.6%

Table 4-11 presents the program's participant spillover estimate. Spillover was calculated by dividing total verified spillover kWh savings attributable to the program (obtained from surveyed participants) by verified kWh savings associated with measures rebated through the program.

1 In all cases, freeridership was calculated using a size-stratified ratio estimator. Stratum weights were calculated as the number of reported projects, divided by the number of sampled projects within each stratum. Freeridership was calculated as the weighted sum of freeriding savings, divided by the weighted sum of reported savings. For example, if 10 out of 50 projects were sampled from a particular stratum, each participant sampled from this stratum would have weight w = 50/10 =5. If one of these had 1,000 kWh in reported savings and a 50% freeridership score, that participant's contribution to the FR numerator would be 5*0.50*1,000 kWh, and its contribution to the denominator would be 5*1,000 kWh.

Table 4-11: Participant Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
70,622	37,744,772	0.2%

4.3.2.1 NTG Estimate

Using the (NTG = 1 – Freeridership + Participant Spillover + Nonparticipant Spillover) equation, the team estimated a 62% NTG ratio for the program overall for the 2011 program year only.

Table 4-12: NTG Estimate

Freeridership	Participant Spillover	Nonparticipant Spillover	NTG Estimate
44.8%	0.2%	6.73%	62.1%

To examine how freeridership might change in the future as the program matures, the evaluation team calculated an alternative freeridership scenario, setting aside 100% freeriders. As shown in Table 4-13, the CEEP freeridership score drops substantially (from 45% to 29%) upon removing 100% freeriders from the program.

Table 4-13: Freeridership Results with 100% Freeriders Removed

Excluding 100% Freeriders	Weighted FR	Weighted FR Standard Error	FR Absolute Precision
Commercial Program	29.2%	15%	24.1%
Custom	31.1%	17%	27.2%
Prescriptive	22.0%	31%	51.6%

Based on information gathered in this this evaluation and other external benchmarking from similar programs, a prospective commercial program NTG ratio would be estimated in the range of 70-80%.

4.4 PROGRAM RECOMMENDATIONS

- Given the large impact of waste energy HVAC savings, consider tracking participating premise pertinent parameters necessary to calculate interactive HVAC savings at a project level.

- To reduce freeridership, consider tightening program processes to avoid 100% freeriders, and ensure program representatives and trade allies follow the program's eligibility requirements. An example of more strict process might include requirements for pre-approval of larger projects.

- Consider expanding the program to include non-lighting measures, especially measures that do not fit easily into prescriptive measures, including chilled water systems or process loads.

5 COMMERCIAL PRESCRIPTIVE INCENTIVE PROGRAM

5.1 PROGRAM OVERVIEW

In January 2011, Georgia Power launched the EarthCents Commercial Energy Efficiency Program (CEEP or program). Implemented by ICF International, CEEP provides incentives for business customers that upgrade or retrofit their facilities with high-efficiency equipment and systems. Customers can choose from two incentive approaches: Prescriptive Measures (prescriptive program), or Custom Lighting for New Construction and Existing Properties (custom program). The prescriptive measure offerings include: HVAC; building envelopment; high-efficiency equipment and controls; and lighting (compact fluorescent lamps [CFLs] and light-emitting diodes [LEDs]). A commercial audit service, part of the general customer service offering from GPC, also refers eligible customers to the commercial prescriptive and custom programs. Customers on a commercial rate are eligible to participate.

The prescriptive and custom program's primary target markets include the following:

- Managed Commercial: Commercial customers with annual demand over 1,000 kW, or multi-site accounts, assigned to Georgia Power Key Account or Nation Account Managers;
- Mid-tier: Commercial customers with demand between 500 to 1,000 kWh, assigned to a Georgia Power Mid-Tier Account Manager, but not actively managed; and
- Non-Managed Commercial: Small commercial customers with demand less than 500 kW, not assigned to Georgia Power account managers.

Examples of managed and mid-tier commercial customers include: hospitals, universities, government facilities, schools, distribution centers, corporate complexes, and national accounts. Small commercial customers typically represent: restaurants, fast food, convenience stores, commercial kitchens, hotels, retail stores, dry cleaners, schools, office buildings, and grocery stores.

5.1.1 Program Measures

The eligible measures for the Prescriptive Incentive program are grouped into four general categories:

- High-efficiency lighting
- High-efficiency HVAC equipment
- Building envelope
- High-efficiency equipment and controls

The following tables list the eligible measures and proposed efficiency and incentive levels within each category.

Table 5-1: Eligible Lighting Equipment**

Category	Pre – Retrofit	Post - Retrofit	Estimated Customer Incentive	Unit
Other Interior Lighting				
Compact Fluorescents (CFLs) (retrofit or new construction)	Incandescent	CFL - screw-in	$1.25	lamp
	Incandescent	CFL - hardwired	$6.50	Fixture
LED Exit Sign (Retrofit Only)	Incandescent or fluorescent exit sign	Light Emitting Diode (LED) or Electro luminescent (EL) Exit Sign – 1 or 2 faced	$7	Fixture
Lighting Controls				
Occupancy Sensor (Retrofit or New Construction)	Wall switch or no control	Wall or Ceiling Mounted Occupancy Sensor (<500 watts)	$10	Sensor
	No control	Fixture-Integrated occupancy sensor	$10	Sensor

** Combined Custom and Prescriptive Track Lighting incentives are capped at $5,000 for tax-paying customers and $10,000 for non-tax-paying customers.

Table 5-2: HVAC Equipment

Size	System Type	Minimum Requirements	Estimated Customer Incentive
Air-Cooled Unitary Air Conditioners			
<65,000 Btu/h	Split System	14.0 SEER 12.0 EER	$20/ton
	Single Package	14.0 SEER 11.6 EER	$20/ton
≥65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	11.5 EER	$20/ton
≥135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	11.5 EER	$20/ton
≥240,000 Btu/h and <760,000 Btu/h	Split System and Single Package	10.5 EER	$20/ton
≥760,000 Btu/h	Split System and Single Package	9.7 EER	$20/ton
Air-to-Air Unitary Heat Pumps			
<65,000 Btu/h	Split System	14.0 SEER 12.0 EER 8.5 HSPF	$40/ton
	Single Package	14.0 SEER 11.6 EER 8.0 HSPF	$40/ton
≥65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	11.5 EER 3.4 COP[1] 2.4 COP[2]	$40/ton
≥135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	11.5 EER 3.2 COP[1] 2.1 COP[2]	$40/ton
≥240,000 Btu/h	Split System and Single Package	10.5 EER 3.2 COP[1] 2.1 COP[2]	$40/ton

[1] At 47°F db/43°F wb outside air
[2] At 17°F db/15°F wb outside air

Table 5-3: Building Envelope

Equipment Type	Minimum Requirements	Estimated Customer Incentive
Duct Sealing	≤ 15% duct leakage	25% of project cost with $1,000 cap
Reflective Roof**	Energy Star Qualified	$0.05/sq ft of applicable roof area

** Reflective roofing is capped at $5,000 for taxable customers and $10,000 for non-tax customers.

Table 5-4: High-Efficiency Equipment and Controls

Equipment Type		Minimum Requirements	Estimated Customer Incentive
Water Heating			
Electric Storage Water Heater		EF > 0.94	$40/unit
Heat Pump Water Heater		EF > 2.20	$250/cooling ton
Water Heater Pipe Insulation		> 1" thickness, electric water heating system	$1.00/ln ft
Water Heater Heat Exchanger		Minimum water temperature difference of 80° F, electric water heating system	$150/water heating system
Grocery Measures			
Grocery Anti-Sweat Control		--	$15/door
Grocery Display Case LED Lighting		≥ 5 ft. fixture	$40/door
Grocery Case Door Gaskets		Replacement gaskets in existing facilities only	$2/ln ft
Commercial Refrigeration Pipe Insulation for Bare Suction Lines		R-4 insulation	$0.50/ln ft
Kitchen Appliances			
Electric Steam Cooker		ENERGY STAR Qualified	$150/cooker
Electric Fryer		ENERGY STAR Qualified	$75/vat
Insulated Holding Cabinet	Full Size	ENERGY STAR Qualified	$300/unit
	¾ Size		$250/unit
	½ Size		$200/unit
Electric Griddle		>70% cooking efficiency (tested in accordance with ASTM F1275)	$25/unit
Commercial Kitchen Ventilation Control		--	$200/exhaust fan hp
Commercial Glass-, Mixed-, or Solid-Door Commercial Refrigerator or Freezer		ENERGY STAR Qualified	$75/unit
Commercial Dishwasher		ENERGY STAR Qualified	$250/unit
Commercial Ice Machines	101 - 500 lbs ice/day	ENERGY STAR Qualified	$50/unit
	501-1000 lbs ice/day		$100/unit
	>1000 lbs ice/day		$150/unit

5.1.1 Program Participation

A total of 895 measure projects were completed within the prescriptive program in 2011 on 276 premises. A premise is defined as single Georgia Power customer account number; in some cases, a single customer may be a campus with multiple buildings on a single meter. A single project is defined as a single measure category application submitted for a specific Georgia Power premise. Table 5-5 summarizes the commercial program participation by project record, premise and applicant (applicant premise name) for both custom and prescriptive tracks.

Table 5-5: 2011 Commercial Program Participation Summary

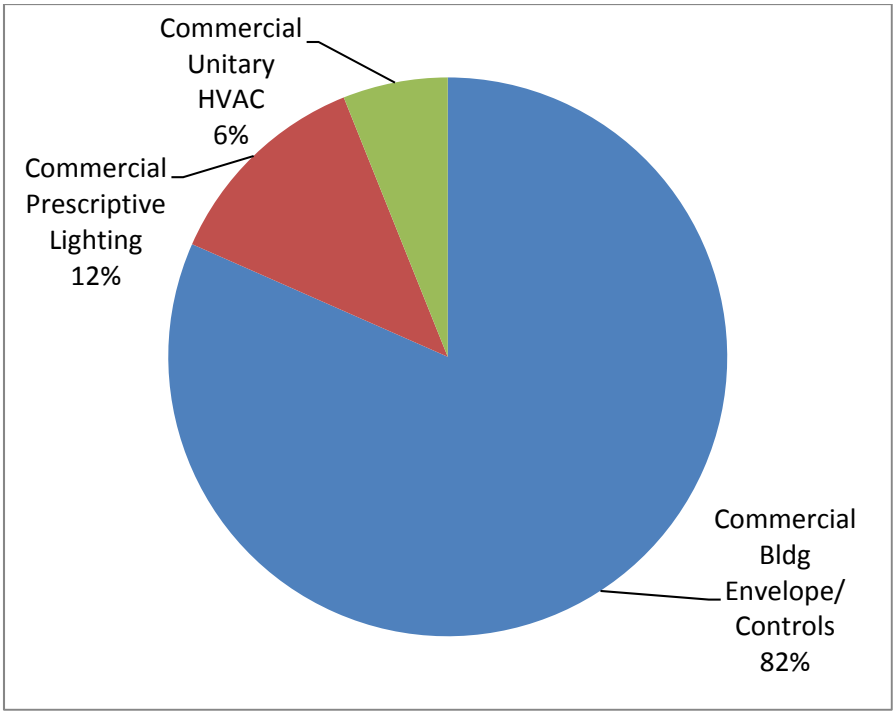
Program Track	Project Records	Premise	Applicant
Custom	497	230	71
Prescriptive	895	206	50
Both Programs	n/a	70	66
Total	**1,371**	**506**	**187**

Within the prescriptive track, 25% of the premises also had a custom measure installed at that premises. Additionally 57% of the prescriptive applicants also participated in the custom track. This significant overlapping participation posed some benefits and challenges within the measurement & verification of sampled projects discussed in later sections. Table 5-6 summarizes participation by reported energy savings for measure types and Figure 5-1 shows measure savings shares for the 2011 commercial prescriptive program.

Table 5-6: 2011 Commercial Prescriptive Program Measure Summary

Prescriptive Program Name	Total kW	Total kWh
Commercial Bldg Envelope/ Controls	4,281.42	13,318,966
Commercial Prescriptive Lighting	525.13	2,011,134
Commercial Unitary HVAC	449.66	990,871
Commercial Prescriptive Total	**5,256.21**	**16,320,971**

Figure 5-1: 2011 Commercial Prescriptive Program Measure Savings Share



In the 2011 commercial prescriptive program, one measure, lighting occupancy sensors accounted for 71% of the overall commercial prescriptive program savings. Additionally, only seven measures accounted for 91% of the overall commercial prescriptive program savings. Table 5-7 summarizes the top seven individual measures for the 2011 commercial prescriptive program savings.

Table 5-7: 2011 Commercial Prescriptive Program Top 7 Measures

Prescriptive High Impact Measures	Unique Projects	Total kWh	% of Presc kWh
Lighting Occupancy Sensor	170	11,547,793	71%
CFL - screw-in	25	1,171,728	7%
Commercial Kitchen Ventilation Control	4	611,814	4%
Reflective Roof	38	559,595	3%
Unitary AC	40	486,391	3%
LED or EL Exit Sign - 1 or 2 faced	42	272,709	2%
Water Source HP	1	242,115	1%
Prescriptive High Impact Measures Total	**320**	**14,892,145**	**91%**

5.2 PROGRAM IMPACT EVALUATION METHODOLOGY

5.2.1 Overview

The impact evaluation for Commercial Prescriptive measures followed IPMVP Option A (Retrofit Isolation: Key Parameter Measurement) methods and/or engineering analysis based on observed parameter performance. Engineering activities included installation verification, determination of operational hours, spot-metering of fixture energy consumption, and savings calculations.

5.2.2 Sampling Approach

The sample criterion for the commercial prescriptive program was established to meet a 90% confidence and 10% precision level for measurement and verification activities, including on-site inspections. The confidence/precision level was based on the large energy savings share of the portfolio energy savings impacts and certainty of savings.

To mitigate a potential bias of small projects that might occur in natural random sampling, the Evaluation Team controlled for the large variation in the size of projects by stratifying the impact sample by size. Large projects were sampled at a higher rate than smaller projects to ensure that the Evaluation Team focused evaluation efforts on the projects which contributed the most uncertainty to the overall initiative-level savings estimate. Table 5-8 summarizes the target and final achieved sample strata.

Table 5-8: Commercial Prescriptive Sample Design

	Lower Bound (kWh)	Upper Bound (kWh)	Premise Population	Target Sample	Strata Share
Strata 1	-	40,920	213	7	10.4%
Strata 2	40,921	184,450	41	39	23.0%
Strata 3	184,451	611,010	15	15	30.5%
Strata 4	611,010	1,351,290	7	7	35.1%
Total	**N/A**	**N/A**	**276**	**68**	**100%**

Sampling was conducted at the premise level and not the project or applicant levels. This approach allowed the evaluation team to measure and verify multiple projects on a single premise and survey a large share of the applicants. Table 5-9 summarizes the completed sample metrics, with regards to project, premises, applicants and energy savings, surveying one-third of the applicants and reviewing over 55% of the program savings.

Table 5-9: Completed Commercial Prescriptive Sample Summary

	Project Records	Premise	Applicant	Energy Savings (kWh)
Sample	85	43	36	8,985,978
Program Population	895	276	116	16,320,971
Sample Share of Program Population	10%	16%	31%	55%

Additionally, the evaluation team reviewed the recruited sample end-use distribution to insure that the sample was representative of the program population. To evaluate the large number of unique prescriptive measure, measures were grouped into five end-use categories:

- Lighting
- HVAC
- Envelope Measures
- Water Heating and Appliances
- Refrigeration

5.2.3 Data Collection Methods

The Prescriptive Program was assigned a specific number of telephone surveys, desk reviews, and site inspections based on overall portfolio savings. Once the samples were identified, desk reviews of project files verified basic information and informed telephone surveys, on-site inspections, and M&V activities.

Table 5-10 shows the general information that was collected for each prescriptive project based on end use category. Engineering judgment led to collection of additional information when needed.

Table 5-10: Commercial Prescriptive Incentive Program Inspection Checklist

END USE CATEGORY	BASELINE	RETROFIT
All Facilities	Year facility was built Number of occupants Number of stories Business Type Operating Hours, posted or otherwise Total conditioned square footage Heating system type/age/efficiency/size/condition Cooling system type/age/efficiency/size/condition	
Lighting	Lamp Type (e.g., T8, T12) Ballast Type (mag. or elec.) Lamp Size (4 ft. or 8 ft.) Quantity of Lamps per Fixture Wattage per Lamp Fixture Quantity **Operating Hours**	Lamp Type Confirm Electronic Ballast and Factor Lamp Size Quantity of Lamps per Fixture Wattage per Lamp Fixture Quantity **Operating Hours** Confirm ENERGY STAR rating
HVAC	Type (e.g., DX, heat pump) Capacity Efficiency **Operating Hours** **Operating Temperatures (space, supply, return, including info on setbacks)** **Features (e.g., economizer)**	Type Capacity Efficiency **Operating Hours** **Operating Temperatures** **Features**
Water Heating	Tank Size Heating Capacity **Water Temperatures** Energy Factor Fuel Type Location and Thickness of Insulation Pipe Diameter **Operating Hours**	Tank Size Heating Capacity **Water Temperatures** Energy Factor Confirm Electric Location and Thickness of Insulation Pipe Diameter **Operating Hours**

END USE CATEGORY	BASELINE	RETROFIT
Refrigeration	Type of Equipment (e.g., open reach-in refrigerated case, closed freezer) **Operating Temperatures** Capacity Efficiency **Operating Hours** Other Parameters (e.g., linear feet of gaskets, thickness of suction line insulation)	Type of Equipment **Operating Temperatures** Capacity Efficiency **Operating Hours** Other Parameters
Appliances	Type of Equipment (e.g., dishwasher, fryer) Operating Parameters Capacity Efficiency **Operating Hours**	Type of Equipment Operating Parameters Capacity Efficiency Confirm ENERGY STAR Rating **Operating Hours**

Metering activities focused on parameters with the highest uncertainty, shown in bold in Table 5-10. Based on the Evaluation Team's experience evaluating customer projects in the commercial sector and the measures offered in Georgia Power's Prescriptive Program, only HVAC projects and 50% of the lighting projects required on-site trend measurements, because the certainty of the variables of the other measured end-uses. For lighting projects, the majority share of projects, the Evaluation Team determined that the annual operating hours variable had the highest uncertainty of any variable in the savings equations. To minimize this uncertainty, HOBO® U9-002 light on/off or HOBO® U12-006 light intensity data loggers were placed in facilities in addition to asking the site contact about operating schedules. The number of loggers placed in each facility was determined by the visiting engineer according to the number of space types with different operating schedules. The loggers were left in place for at least seven days to determine how measured operating hours and usage differed from reported hours.

The Evaluation Team conducted interviews with program staff, implementers and auditors to understand any available documented baseline data noted above. Surveys and site inspections also attempted to gather information to address gaps in baseline data for each measure.

5.2.4 Gross Impact Analysis

Project level analyses were executed consistent with the algorithms outlined in Appendix B. Energy-efficiency measure vintages reviewed in the program, including three measure vintage types, early replacement, new and replace-on-burnout, as described below:

- **Early Replacement:** Refers to an efficiency measure that seeks to encourage the replacement of functional equipment before the end of its operating life with higher-efficiency

units. The measures included in this program are lighting and HVAC controls, envelope and existing lighting equipment.

- **New:** An energy-efficiency measure that is implemented at the time of first construction or major remodel. The measures included in this program are HVAC equipment and appliances.

- **Replace-on-burnout:** An energy-efficiency measure is not implemented until the existing technology it is replacing fails or burns out. An example would be a unitary air conditioning rooftop unit being purchased after the failure of the existing rooftop unit at the end of its useful life. The measures included in this program are HVAC equipment and appliances.

For new and replace-on-burnout measures, the equipment baseline is often the manufacturing standard or building code. Where building code was utilized as a baseline, values are based on, 2011 Georgia state energy code, which is 2009 International Energy Conservation Code (IECC), in accordance with statewide Georgia legislation. Refer to Appendix table C-1 for the commercial HVAC minimum code requirements

5.2.4.1 Interactive Equipment Energy Changes for Lighting Retrofits

The prescriptive program incentivizes the implementation of lighting equipment whose efficiency is above that which a customer might otherwise install. By definition, this equipment should consume less input energy per unit of output energy. However, the energy consumption of lighting equipment in an enclosed space cannot be viewed in isolation. Building systems interact with one another and a change in one system can affect the energy consumption of another. This interaction is important to consider when calculating the benefits provided by programs because it adopts a comprehensive view of societal-level energy changes rather than limiting the analysis to the energy change directly related to the modified equipment

See Appendix D for a more detailed review of how interactive energy changes were calculated for lighting retrofits.

5.3 PROGRAM IMPACT RESULTS

Two adjustments were made to Georgia Power's ex-ante savings values as a result of the Evaluation. The Impact Evaluation Team calculated the gross, or verified, savings based on a review of a sample of projects from the program and the independent savings calculations performed on those projects. The ratio of the verified savings to the reported savings, or realization rate, for sampled projects was applied to all projects in the appropriate measure category. A second adjustment was applied to these figures in order to calculate net savings. The net verified savings total is the savings which are attributable to the program.

5.3.1 Gross Program Savings

The data collected as a result of desk review and on-site data collection activities allowed the Evaluation Team to recalculate energy and demand savings for each sampled project – this will be

termed "gross verified savings." The ratio of gross verified savings to the reported savings is the project "realization rate," or adjustment factor. For each stratum identified in the sampling plan, the Evaluation Team calculated a stratum-level realization rate as the weighted average of the sampled project-level realization rates. Table 5-11 summarizes the findings of the realization for each commercial program measure category and program gross verified energy savings.

Table 5-11: 2011 GPC Commercial Prescriptive Gross Verified Results

Prescriptive Program Name	Reported Energy Savings (kWh)	Realization Rate	Verified Energy Savings (kWh)
Commercial Bldg Envelope/ Controls	13,318,966	52.9%	7,041,841
Commercial Prescriptive Lighting	2,011,134	102.5%	2,062,085
Commercial Unitary HVAC	990,871	64.0%	634,313
Commercial Prescriptive Total	**16,320,971**	**59.7%**	**9,738,239**

Table 5-12 summarizes the realization rate of the top seven energy-efficiency measures in the prescriptive program as ranked by reported energy savings.

Table 5-12: Top 7 Measures 2011 GPC Commercial Prescriptive Realization Rates

Prescriptive High Impact Measures	Reported Energy Savings (kWh)	Realization Rate	Verified Energy Savings (kWh)
Lighting Occupancy Sensor	11,547,793	49.6%	5,730,516
CFL - screw-in	1,171,728	102.5%	1,200,880
Commercial Kitchen Ventilation Control	611,814	44.4%	271,446
Reflective Roof	559,595	100.0%	559,595
Unitary AC	486,391	68.1%	331,232
LED or EL Exit Sign - 1 or 2 faced	272,709	105.0%	286,356
Water Source HP	242,115	89.0%	215,482

The primary reasons include:

- **Occupancy Sensors**: The main cause of the low realization rate was the average controlled load was found to be low, 370 watts, essentially (4) 2x4 troffers. Additionally, 63% of the inspected sensors were passive infrared versus 37% ultrasonic technology. Upon review of commercially available product cutsheet, passive infrared sensors are normally designed to

operate in 300-500 sq.ft. and ultrasonic sensors are normally designed to operate in 500-2000 sq.ft.

- Quick external check: If the average commercial operating hours are 4,000 (sample verified average of custom was 3,850) and reduction is approximately 30%, then (0.30*4000hours*0.370kW = 444 kWh). Georgia Power per unit ex-ante assumption is 720 kWh.

- **Commercial Kitchen Ventilation Control:** There were two significant issues found upon site inspections: no controls installed and presence of prior baseline controls. For 33% of the site inspections with kitchen ventilation control measures, no control devices were found, only a new exhaust fan was installed. For 50% of the site inspections with kitchen ventilation control measures, there was significant evidence of an existing baseline demand control ventilation system.

  - Quick external check: 2012 Illinois TRM value is 4,486 kWh[1]; Georgia Power per unit ex-ante assumption is 9,600 kWh.

- **Unitary Air Conditioning (AC):** Essentially we found that participating units were only one efficiency level higher than 2011 Georgia State energy code. In one case, the incentivized equipment was the same as code.

  - Quick External Check: To calculate energy savings from cooling, the following formula can be used:

$$\Delta kWh_{cool} = \frac{BTU_{cool}}{1000} * \left(\frac{1}{EER_{base}} - \frac{1}{EER_{eff}}\right) * EFLH_{cool}$$

Where:

BTU_{cool} = Cooling capacity of air conditioner or heat pump unit in (BTU/hr)

EER_{base} = Energy Efficiency Ratio value of the baseline unit (BTU/W-hr). All baseline EERs are taken from IECC 2009.

EER_{eff} = Energy Efficiency Ratio value of the new efficient unit (BTU/W-hr)

$EFLH_{cool}$ = Effective Full Load Hours in cooling mode (hr), determined using the building's HVAC schedules and location

1000 = Factor to convert Watts to kilowatts

$$\Delta kWh_{cool} = \frac{12{,}000/\text{ton}}{1000} * \left(\frac{1}{11} - \frac{1}{12}\right) * 2{,}000\ hours = 164 kWh/ton$$

[1] State of Illinois Energy Efficiency Technical Reference Manual; Page 122

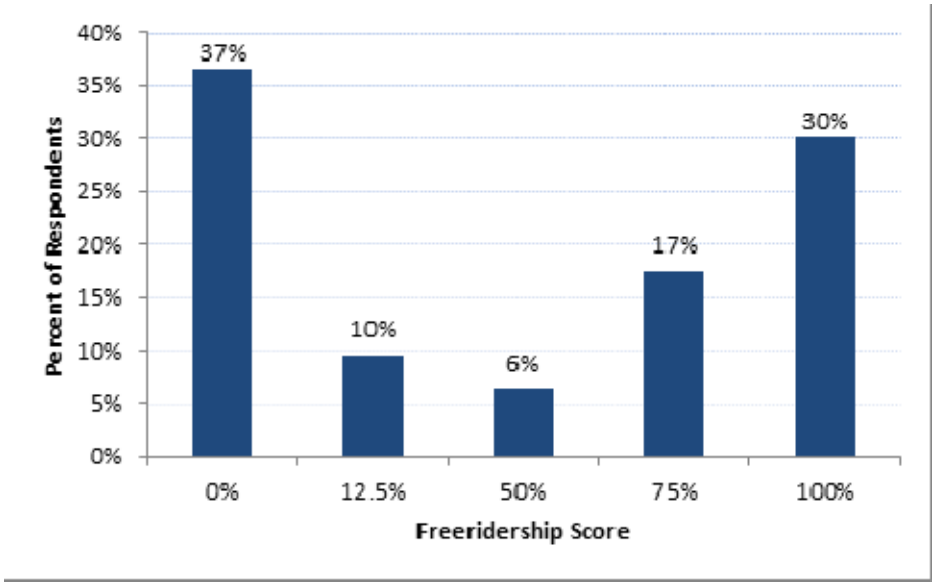
Georgia Power per unit ex-ante assumption is 305 kWh.

5.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

Freeridership data analysis from participants self-reports indicated nearly 47% of customers had already purchased or installed energy-efficient equipment prior to learning about the program. Of these, about 30% could be classified as 100% freeriders. For equipment already purchased, many considered the incentive an added bonus, and reported the program had no influence on their decisions to purchase equipment. About 17% were not sure what influence level the program had on equipment purchases, hence were classified as 75% freeriders. About 37% of participants could not be classified as freeriders (scoring 0% freeridership). Figure 5-2 shows distributions of survey respondents by freeridership scores assigned to each.

Figure 5-2: Frequency of Freeridership Scoring Combinations (n=72)



As shown in Table 5-13, the commercial program had average weighted freeridership of approximately 44.8%.[1] Although freeridership scores have been presented at the custom and prescriptive levels, precision should be considered less due to small sample sizes.

Table 5-13: Freeridership Results

	Respondents	Weighted FR	Weighted FR Standard Error	FR Absolute Precision
Commercial Program	72	44.8%	11%	18.3%
Custom	46	47.4%	12%	20.3%
Prescriptive	26	34.6%	25%	41.6%

Table 5-14 presents the program's participant spillover estimate. Spillover was calculated by dividing total verified spillover kWh savings attributable to the program (obtained from surveyed participants) by verified kWh savings associated with measures rebated through the program.

Table 5-14: Participant Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
70,622	37,744,772	0.2%

5.3.2.1 NTG Estimate

Using the (NTG = 1 – Freeridership + Participant Spillover + Nonparticipant Spillover) equation, the team estimated a 62.1% NTG ratio for the program overall for the 2011 program year only.

Table 5-15: NTG Estimate

Freeridership	Participant Spillover	Nonparticipant Spillover	NTG Estimate
44.8%	0.2%	6.73%	62.1%

1 In all cases, freeridership was calculated using a size-stratified ratio estimator. Stratum weights were calculated as the number of reported projects, divided by the number of sampled projects within each stratum. Freeridership was calculated as the weighted sum of freeriding savings, divided by the weighted sum of reported savings. For example, if 10 out of 50 projects were sampled from a particular stratum, each participant sampled from this stratum would have weight w = 50/10 =5. If one of these had 1,000 kWh in reported savings and a 50% freeridership score, that participant's contribution to the FR numerator would be 5*0.50*1,000 kWh, and its contribution to the denominator would be 5*1,000 kWh.

To examine how freeridership might change in the future as the program matures, the evaluation team calculated an alternative freeridership scenario, setting aside 100% freeriders. As shown in Table 5-16, the CEEP freeridership score drops substantially (from 45% to 29%) upon removing 100% freeriders from the program.

Table 5-16: Freeridership Results with 100% Freeriders Removed

Excluding 100% Freeriders	Weighted FR	Weighted FR Standard Error	FR Absolute Precision
Commercial Program	29.2%	15%	24.1%
Custom	31.1%	17%	27.2%
Prescriptive	22.0%	31%	51.6%

Based on information gathered in this this evaluation and other external benchmarking from similar programs, a prospective commercial program NTG ratio would be estimated in the range of 70-80%.

5.4 PROGRAM RECOMMENDATIONS

- Consider segmenting lighting occupancy sensor incentives into two distinct measures, based on ultrasonic and infrared technologies with different savings values to more accurately reflect expected savings. Consequently, the incentive offered to participating customers may need to be reconsidered.

- Clarify equipment eligibility and requirements for commercial kitchen exhaust hood controls. Upon review of the program requirements, it was unclear what exact control equipment was required. Consequently, for some measure installations, no control equipment was installed.

- Consider creating two energy efficiency tiers, "efficient" and "most efficient" of unitary air conditioning (AC) and heat pump (HP) such as those proposed by the Consortium for Energy Efficiency[1]. Alternatively, consider utilization of a project specific HVAC incentive calculator that would capture site specific effective full load hour (EFLH) operation. This will correctly align savings to actual equipment specification. Consequently, the incentive and/or structure offered to participating customers may need to be reconsidered.

- To reduce freeridership, consider tightening program processes to avoid 100% freeriders, and ensure program representatives and trade allies follow the program's eligibility requirements.

[1] http://www.cee1.org/files/CEE_CommHVAC_UnitarySpec2012.pdf

6 RESIDENTIAL LIGHTING AND APPLIANCE PROGRAM

6.1 PROGRAM OVERVIEW

The Residential Lighting and Appliance Program promotes the purchase and installation of energy-efficient products and equipment by Georgia Power residential customers. This program builds on the existing tools, outreach efforts, and trade ally networks of Georgia Power, the federal ENERGY STAR® program, and the existing Georgia Energy Efficient Appliance Rebate Program[1]. Through customer education, retail partnerships, and sales training, the program focuses on increasing awareness of the benefits of energy-efficient technologies for customers' homes. Additionally, the program offers both promotional distribution of compact fluorescent lamps (CFLs) and direct financial incentives for eligible equipment. These incentives include customer rebates for ENERGY STAR® appliances and a CFL give-away campaign

During 2011, Georgia Power continued its free-CFL Giveaway Program by providing 130,000 free CFLs to consumers across a variety of events. In June, 2011, rebates for ENERGY STAR® refrigerators and clothes washers were made available through the appliance rebate program. Starting in Fall, 2012, a CFL buy-down program went into effect, where Georgia Power provided buy-down incentives to retailer/manufacturers for approximately 383,000 CFLs in 2012 and 1.145 million in 2013.

The Residential Lighting and Appliance Program goals include:

- Increasing customer awareness of the benefits of energy efficient products in the residential market
- Increasing the availability of energy efficient products in local retail stores
- Training retailers to increase their understanding of the benefits of energy efficient lighting and appliances
- Increasing the local market penetration of energy efficient products, helping customers save energy and money
- Educating customers on available tax credits and other financial incentives for ENERGY STAR® products
- Pursuing industry leadership initiatives and leverage to increase knowledge and develop strategic partnerships to strengthen local program effectiveness

6.1.1 Program Measures

The Residential Lighting and Appliance program promotes ENERGY STAR® qualified lighting and appliances with incentives offered for the following ENERGY STAR® qualifying products and equipment:

[1] http://www.georgiarebate.com/

Table 6-1: Residential Lighting and Appliance Program Incentive Structure

Equipment Type	Minimum Requirements/ Equipment Description	Estimated Incentive
CFL (Promotional Giveaways)	Single-lamp packs	N/A
CFL Multi-Pack (Vendor Buy-down)	Pre-approved 4-lamp multi-pack	$3/pack vendor reimbursement
ENERGY STAR® Refrigerator	≥7.75 cubic feet, ENERGY STAR® qualified	$30 customer rebate
ENERGY STAR® Freezer	≥7.75 cubic feet, ENERGY STAR® qualified	$20 customer rebate
ENERGY STAR® Clothes Washer	ENERGY STAR® qualified	$75 customer rebate
ENERGY STAR® Room Air-Conditioner (≤8,000 BTU)	ENERGY STAR® qualified	$30 customer rebate
ENERGY STAR® Room Air-Conditioner (>8,000 BTU)	ENERGY STAR® qualified	$40 customer rebate

Table includes modifications to from the 2010 IRP filing during program implementation

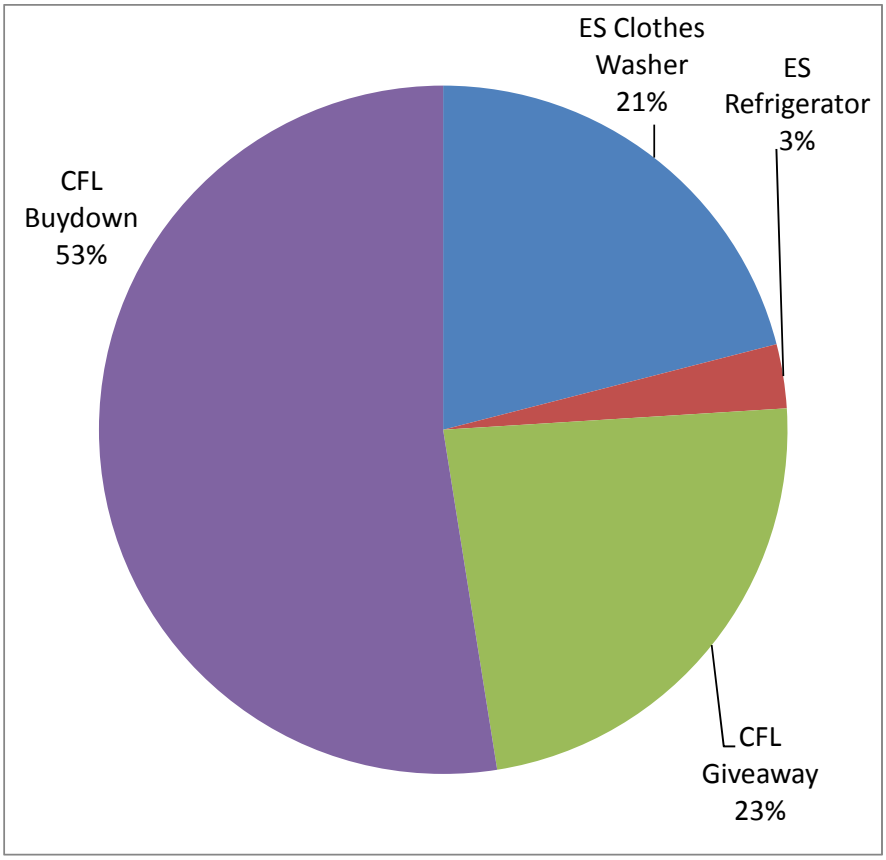
6.1.2 Program Participation

During 2011, Georgia Power continued its free-CFL Giveaway Program by providing 130,000 free CFLs to consumers across a variety of events. In June, 2011, rebates for ENERGY STAR® refrigerators and clothes washers were made available through the appliance rebate program. Starting in Fall, 2012, a CFL buy-down program went into effect, where Georgia Power provided buy-down incentives to retailer/manufacturers for approximately 280,000 CFLs in 2011. A total of 895 measure projects were completed within the prescriptive program in 2011 on 276 premises. Table 6-2 summarizes the lighting and appliance program year 2011 participation by measure and Figure 6-1 summarizes aggregate measure type with CFLs accounting for over 75% of program savings.

Table 6-2: Lighting and Appliance Program Participation Summary - 2011

Measure Group	GPC Measures	2011 Counts	Program Total Ex Ante (kWh)
Appliances	ES Clothes Washer	9,309	6,367,356
	ES Refrigerator	5,657	910,777
CFL Giveaway	13W CFL	134,360	7,121,080
CFL Buydown	9W CFL (4-pack)	5,257	749,485
	13W CFL (4-pack)	11,342	2,451,607
	14W CFL (4-pack)	42,219	8,931,598
	18W CFL (4-pack)	499	130,809
	19W CFL(4-pack)	1,939	499,378
	23W CFL (4-pack)	8,916	3,157,361
Total		**219,498**	**30,319,451**

Figure 6-1: Lighting and Appliance Program Participation Shares



6.2 PROGRAM IMPACT EVALUATION METHODOLOGY

6.2.1 Overview

The impact evaluation of the Residential Lighting and Appliance program used several different M&V approaches. The compact fluorescent (CFL) measures were evaluated using an Option A – Partially Measured Retrofit Isolation technique. Option A involves measuring key parameters which affect the variable of interest. Option A is an ideal approach for lighting measures because accurate stipulated wattage values are available for the baseline and retrofit bulbs so it is typically not necessary to the actual meter power consumption. The uncertainty in a lighting project comes from the hours of operation, so this parameter is measured with lighting loggers and the hours of operation are used to calculate energy consumption. The Evaluation Team deployed a total of 89 lighting loggers in 68 homes which received CFLs through one of Georgia Power's distribution streams.

The impact evaluation of the ENERGY STAR® clothes washer measure used a combination of an Option A – Retrofit Isolation approach and engineering calculations to develop verified savings impacts. The parameter of interest – energy consumption – was measured for a sample of six customers who received a rebate for the purchase of their new clothes washer. However, the

reduction in the energy consumption of the washer itself is only a small portion of the savings produced by an ENERGY STAR® clothes washer. These washers use less water so there is a reduction in demand on the water heater if the participant washes clothes in warm or hot water. Clothes also come out of an ENERGY STAR® clothes washer less damp than a less efficient clothes washer so the energy used by the clothes dryer is reduced. Secondary research and engineering calculations were used to estimate water heater and clothes dryer savings.

The impact evaluation of ENERGY STAR® refrigerators and freezers was based on secondary research and engineering analysis. Accurate at-manufacture unit energy consumption (UEC) values are available for ENERGY STAR® refrigerator and freezer models which are currently sold. The savings for this measure are based on the difference in energy consumption of the ENERGY STAR® unit and the standard unit which a customer would have purchased in the absence of the program.

6.2.2 Sampling Approach

Due to the wide variety of eligible measures within the Lighting and Appliance Program, sub-strata confidence/precision targets were established to ensure all measures were verified and analyzed at a per-unit resolution. Due to the low level of uncertainty of measure performance, the efforts for on-site activities were reduced when compared to other Georgia Power programs.

Along with verification and monitoring of 89 CFL bulbs installed in 68 homes, the evaluation team metered plug loads of six ENERGY STAR® clothes washers and conducted another five phone interviews with owners of ENERGY STAR® washers. **Error! Reference source not found.** illustrates the sample design for the Residential Lighting and Appliance Program.

Table 6-3: Residential Lighting and Appliance Program Sample Design

Equipment Type	Population Count	Site Visits	Desk Reviews	Total Sample Size
CFL Giveaways – Local Office & Events	~130,000	11	0	11
CFL Giveaways - Audits	3,566	57	0	57
ENERGY STAR® Clothes Washer	9,309	6	5	11
TOTAL	**~143,000**	**74**	**5**	**79**

A random sample of ENERGY STAR® clothes washer owners were recruited with letters. CFL program participants were recruited for the sample partially via emails sent to customers who visited their local GPC office during the promotional giveaway period between October-December 2011, and partially via recruiting letters to customers who received a CFL through their participation in the in-home audit program. In instances where a customer received two promotional CFL bulbs and the bulbs were not controlled by the same switch, both bulbs were metered as part of the sample.

The Evaluation Team did not attempt to contact participants from the CFL buy-down portion of the Residential Lighting and Appliance Program because participation in this program is tracked by the participating vendor and customer information is not recorded at the point of sale. Hours of use (HOU) values gathered from the lighting logger study conducted with CFL Giveaway customers were used to calculate the gross verified savings from the CFL buy-down segment of the program.

The Evaluation Team did not sample from the ENERGY STAR® refrigerator and freezer population as part of its evaluation activities due to the low level of uncertainty associated with these measures.

6.2.3 Data Collection Methods

Two different measure verification methods, desk reviews and on-site inspections, were used to assess measure adoption rates and savings values of the participant sample.

6.2.3.1 Desk Reviews

Telephone surveys were used to collect information used in savings calculations. Impact evaluation questions that were asked over the telephone were specific to each applicable measure. Impact evaluation questions were not asked for all participants, as the impact sample population is smaller than the process sample population. The Evaluation Team also used project documentation provided by Georgia Power, including audit reports and other project records to confirm and augment data gathered over the phone.

6.2.3.2 Field Inspections

The telephone surveys were used to recruit a sub-sample for on-site inspection verification. These on-site inspections are a more rigorous way of verifying energy savings, allowing the Evaluation Team to note discrepancies between what they find on site and the information gathered through the telephone surveys and project documentation. A data collection form was designed for ENERGY STAR® clothes washer site inspections which included information on the clothes washer, water heater and dryer as well as laundry settings and patterns.

The sub-sample of ENERGY STAR® clothes washer participants who were selected for site inspections were incented with a $50 gift card to allow the Evaluation Team to install a Watts Up? PRO® data logger on their clothes washer for 2-3 weeks. This device records the energy consumed by the appliance in five-minute intervals and allows the Evaluation Team to determine the exact time of use, number of loads washed and the energy consumed by the clothes washer.

6.2.3.3 CFL Giveaways and Buy-downs

Data analysis for CFLs followed an Option A analysis approach, with measured operating hours. It can be difficult to gather detailed project information for these measures, because customers did not have to submit a rebate application. Hence, the sample was drawn from recruiting efforts focused on customers who visited their local Georgia Power offices while a bulb giveaway was occurring and customers who received a CFL from Georgia Power during an in-home audit.

A variable number of HOBO® U9-002 light on/off and HOBO® U12-012 light intensity data loggers were placed in customer's homes in addition to asking the occupant about operating schedules. The number of loggers placed in each home was determined by the visiting engineer according to the number of lighting circuits with different operating schedules. The loggers were left in place for 2-3 weeks to determine how measured operating schedules differed from reported schedules. The metered data was then extrapolated to the full year using occupant self-reports of how the schedule may or may not have changed over time.

In addition to an estimate of average annual operating hours, the metering study was designed to provide Georgia Power with additional important information, as outlined below.

- Baseline conditions – lamp type and wattage
- Retrofit conditions – lamp type and wattage
- Verbal confirmation of operating hours by space type
- Lighting fixture type
- The presence of air conditioning
- Installation Rate – the percent of CFLs bought that were actually installed
- Installation Location – the residential areas where CFLs were installed and corresponding operating hours
- System peak coincidence factors for each end use where metering is conducted

6.2.3.4 ENERGY STAR® Refrigerators

Data analysis for ENERGY STAR® refrigerators followed a deemed savings approach with limited verification. This approach utilized the program documentation including the sizes, makes and model numbers of qualified units. The Evaluation Team utilized energy savings amounts identified by ENERGY STAR® for each qualified refrigerator. Secondary data from energy-efficient databases and Technical Reference Manuals was utilized to supplement and triangulate per-unit savings.

6.2.3.5 ENERGY STAR® Freezers

Because there were no participants for the 2011 program year, the Evaluation Team reviewed the program tracking database for the first six months of 2012 to verify the per-unit assumptions. Data analysis for ENERGY STAR® freezers followed a deemed savings approach. This approach utilizes the program tracking database including the make and model number of each rebated unit. If this data was missing, the Evaluation utilized energy savings amounts identified by ENERGY STAR® for each qualified freezer. Secondary data from energy-efficiency databases and Technical Reference Manuals was also utilized to supplement and triangulate per-unit savings.

6.2.3.6 ENERGY STAR® Clothes Washers

Telephone surveys and on-site inspections for ENERGY STAR® clothes washers gathered the following data:

- Verification of installation and operation of the clothes washer,
- Approximate age and condition of the old clothes washer,
- Use of the clothes washer (duration, water type) and clothes dryer,
- Type, age, and size of clothes dryer, and
- Type, age, efficiency, and temperature set point of water heater

On-site inspections for clothes washer replacements followed IPMVP Option B (Retrofit Isolation – Key Parameter Measurement). ENERGY STAR® clothes washers also reduce the required use of clothes dryers and water heaters, thus, data gathering activities focused on all three pieces of equipment.

Data loggers were installed to measure the clothes washer energy consumption and verify the self-reported frequency of use. This data was compared to other clothes washer energy consumption studies. Energy savings from reduced hot water usage and clothes dryer usage were calculated by extrapolating information from other sources to the Georgia Power population based on the measured clothes washer behavior.

The baseline condition for this retrofit is a standard efficiency clothes washer. The energy savings for this measure include the reduced electricity usage of the washer, reduced energy use by the water heater, and reduced energy use by the clothes dryer. Water savings from the Energy Star clothes washer were also calculated.

6.2.3.7 ENERGY STAR® Room Air Conditioners

Because there were participants for the 2011 program year, the Evaluation Team reviewed the program tracking database for the first six (6) months of 2012 to verify the per-unit assumptions. Data analysis for ENERGY STAR® room air conditioners followed a deemed savings approach. This approach utilizes the program tracking database including the make and model number of each rebated unit. If this data was missing, the evaluation utilized energy savings amounts identified by Energy Star for each air-conditioning unit. Secondary data from energy-efficiency databases and technical reference manuals was also utilized and adjusted for Georgia Power weather conditions to supplement and triangulate per-unit savings.

6.2.4 Gross Impact Analysis

A mixture of approaches was used to calculate ex post savings for the Residential Lighting and Appliance program. Savings from the CFL measures were calculated based on the results of a lighting logger study. Savings for ENERGY STAR® clothes washers were determined using end-use

metering and engineering calculations. Energy benefits from the installation of ENERGY STAR® refrigerators were assessed using secondary research.

6.2.4.1 Gross Impact Calculation

Compact Fluorescents (CFLs)

The gross impact calculations for the CFL Giveaway and CFL Buy-down measures were based on the results of the lighting logger study conducted in the homes of Georgia Power customers who received a free CFL bulb from the in-home audit program or during a visit to a local office. The average annual hours of operation value determined in the lighting logger study was multiplied by the reduction in connected load for each type of bulb. Table 6-4 shows the baseline wattage assumption the Evaluation Team used to calculate the reduction in connected load for each bulb type.

Table 6-4: Assumed Baseline Wattages

Efficient Lamp	Assumed Baseline Lamp	Change in Connected Load
9 Watt CFL	40 Watt Incandescent	0.031 kW
13 Watt CFL	60 Watt Incandescent	0.047 kW
14 Watt CFL	60 Watt Incandescent	0.046 kW
18 Watt CFL	75 Watt Incandescent	0.057 kW
19 Watt CFL	75 Watt Incandescent	0.056 kW
23 Watt CFL	100 Watt Incandescent	0.077 kW

One of the underlying assumptions in a CFL giveaway or upstream lighting program is that the usage patterns of the fixture will not change with addition of an efficient bulb. This assumption effectively discounts the possibility that a customer will leave a lamp turned on for a greater number of hours per day because the cost of operation is lower. Accordingly the annual energy savings produced when a CFL replaces an incandescent bulb is calculated as follows:

$$Annual\ kWh\ Savings = 365.25 * \Delta_{Connected\ Load} * HOU_{Daily}$$

Where:

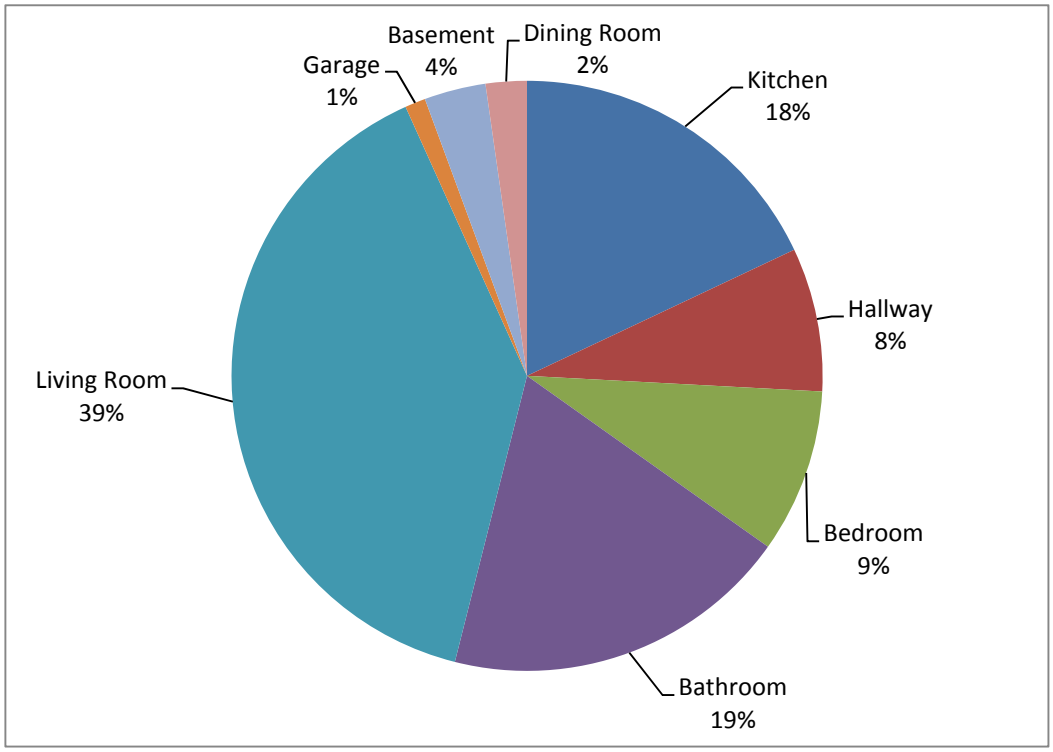
$Annual\ kWh\ Savings$ = The average annual energy savings from replacing the incandescent bulb with a more efficient compact fluorescent bulb

$\Delta_{Connected\ Load}$ = The change in connected load

HOU_{Daily} = The average number of hours per day the light is turned on

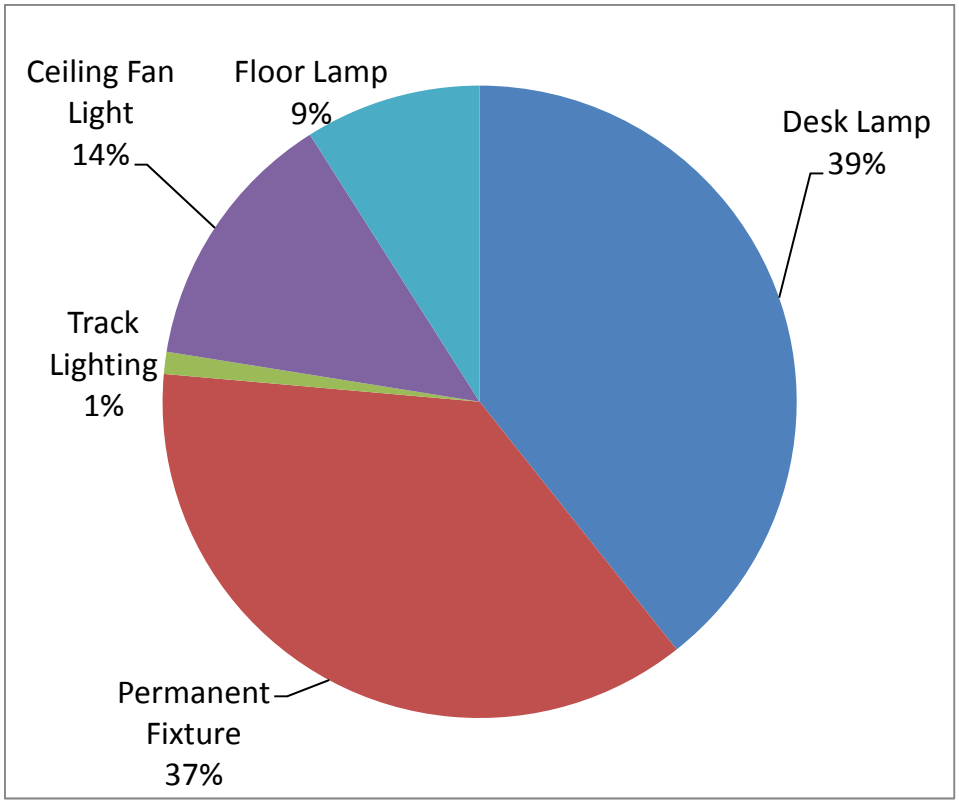
The purpose of the lighting logger study was to provide the Evaluation Team with an accurate estimate of the HOU_{Daily} of the bulbs in the 2011 Residential Lighting and Appliance Program. A total of 89 light loggers were installed in the homes of 68 Georgia Power customers to capture the operating patterns of CFL bulbs which were received through one of the program distribution channels. Figure 6-2 shows the distribution of the 89 bulbs which were metered by the location in the home.

Figure 6-2: Distribution of Installed Loggers by Residence Location



The Evaluation Team had procedures in place, both during the logger installation and the analysis of collected data, to ensure that the logger captured only the operation of the fixture of interest. These checks are important in lighting logger studies because sunlight in the room or ambient light from overhead fixtures can produce an artificially high HOU_{Daily} value if not controlled for. The Evaluation Team also attempted to meter bulbs that installed in a variety of fixture types.

Figure 6-3: Fixture Types in the Lighting Logger Study



An additional term was included in the calculation of ex post savings for the CFL Giveaway measures. An installation rate of 88% was observed during the spring 2012 CFL surveys conducted by the Evaluation Team. This value is consistent with installation rates that have been observed with CFL giveaway programs in other parts of the country. Using this installation rate, the Evaluation Team discounted savings from the Giveaway stream. No surveys were conducted with participants in the Buy-down program and the installation rate is assumed to be significantly higher for a program with an upfront cost to the participant. Therefore an installation rate of 100% was assumed for the Buy-down program.

ENERGY STAR® Clothes Washer

Calculating the energy savings for high-efficiency clothes washers began with determining the overall energy consumption for the entire clothes washing process – water heating, washer operation, and dryer operation. The total energy used was a function of the parameters listed in Table 6-5.

Table 6-5: ENERGY STAR® Clothes Washer Assumptions

Parameter	Value	Notes
Washer capacity (ft^3)	3.5	Available retails models
Cycles/year	392	Deemed Value by ENERGY STAR®
Modified Energy Factor (baseline model)	1.26	Minimum Federal Standard
Modified Energy Factor (efficient model)	2	ENERGY STAR 2011 minimum

Notice in Table 6-5 that the efficiency standard of the baseline unit is the current Federal Standard. This is because the Evaluation Team approached this measure using a 'Replace on Burnout' protocol. This protocol assumes that the effective life of the participant's previous clothes washer was over and a new clothes washer would have been purchased in 2011 independent of the program. The influence of the program is to incent participants to purchase a higher efficiency unit than they would have in the absence of the program.

The equation shown below was used to calculate the difference in total annual energy consumption across the clothes washer itself, the water heater and the dryer:

$$Annual\ kWh\ Savings = Capacity_{Washer} * Cycles * ({}^{1}/_{MEF_{baseline}} - {}^{1}/_{MEF_{efficient}})$$

Once the total energy savings was determined, percentages of it were allocated to each of the three energy consumers – approximately 5% to the clothes washer, 15% to the water heater, and 80% to the dryer. Fuel saturation rates for Georgia were then used to separate the fuel savings from natural gas and electric appliances. Table 6-6 provides the assumed proportions in Georgia Power's service territory and applies them to the 9309 ENERGY STAR® clothes washers which were rebated in 2011.

Table 6-6: Fuel Shares by Appliance

Clothes Washer Fuel	Water Heater Fuel	Dryer Fuel	% of Homes	Number of Clothes Washers
Electric	Electric	Electric	60%	5585
Electric	Natural Gas	Electric	35%	3258
Electric	Natural Gas	Natural Gas	5%	465

ENERGY STAR® Refrigerators

The impact evaluation of the ENERGY STAR® refrigerator measure was focused on collected data from secondary sources. Like clothes washers, ENERGY STAR® refrigerators were considered a

'Replace on Burnout' measure. This means the annual savings is the difference between the efficient that was purchased and the conventional unit the participant would have purchased in the absence of the program. Manufacturer unit-energy-consumption (UEC) values are available for all new units that are sold. These UEC values become less reliable over time as units degrade. Degradation was not a focus of the evaluation efforts for this program because a conventional unit and an ENERGY STAR® unit are expected to degrade and increase annual consumption at a similar rate.

There are two levels of ENERGY STAR® refrigerators: the standard designation and ENERGY STAR® Most Efficient. The Evaluation Team compiled the average consumption values for both types of ENERGY STAR® refrigerators as well as conventional units.

Table 6-7: Annual UEC Comparison ENERGY STAR® Qualified Units

Refrigerator Category	Conventional UEC (kWh/year)[1]	ENERGY STAR® UEC (kWh/year)[2]	Annual Energy Savings (kWh)
Manual Defrost and Partial Automatic Defrost	316	229	87
Top mount freezer without door ice	477	369	108
Side mount freezer without door ice	638	509	129
Bottom mount freezer without door ice	569	448	121
Side mount freezer with door ice	713	557	156
Bottom mount freezer with door ice	691	536	155
Refrigerator only - single door without ice	439	337	102
Refrigerator/Freezer – single door	450	348	102

The ENERGY STAR® Most Efficient designation recognizes the most efficient units among those that qualify for ENERGY STAR®. Table 6-8 shows the average annual energy consumption values of these units by style.

[1] Configurations of qualified models as of August 1, 2012
[2] ENERGY STAR Residential Refrigerators Qualified Products List. August 16, 2012. Average federal standard consumption of all qualifying models by configuration.

Table 6-8: Annual UEC Comparison ENERGY STAR® Most Efficient Qualified Units

Refrigerator Category	Conventional UEC (kWh/year)	ENERGY STAR® Most Efficient UEC (kWh/year)[1]	Annual Energy Savings (kWh)
Top mount freezer without door ice	477	328	149
Side mount freezer without door ice	638	392	246
Bottom mount freezer without door ice	569	403	166
Side mount freezer with door ice	713	457	256
Bottom mount freezer with door ice	691	473	218

Program tracking data provided to the Evaluation Team did not include a field which captured the distinction between the two qualification standards or an indicator of the style of refrigerator that was purchased. The Evaluation Team felt confident that, even though no additional rebate for a Most Efficient model was offered, a portion of the program population would have selected the most efficient model on the market when purchasing a new unit for their home. Based on this research, the Evaluation Team felt that the per-unit ex ante savings value of 161 kWh for this measure was appropriate and did not merit an adjustment for the ex post savings value.

6.3 PROGRAM IMPACT RESULTS

Two adjustments were made to Georgia Power's ex ante savings values as a result of the Evaluation. The Impact Evaluation Team calculated the gross, or verified, savings based on the analysis of the data gathered through various collection activities. The ratio of the verified savings to the reported savings, or realization rate, for sampled projects was applied to all projects in the appropriate measure category. A second adjustment was applied to these figures in order to calculate net savings. The net verified savings total is the savings which are attributable to the program.

6.3.1 Gross Program Savings

The reported impact, realization rate and gross savings of each measure category in the Residential Lighting and Appliance program are shown in Table 6-9. The ENERGY STAR® refrigerator measure category has a realization rate of 1.0 because the Evaluation Team determined the ex ante savings value to be appropriate based on secondary research. The ex post savings value for the ENERGY STAR® clothes washer measure is over 3,000 MWh lower than the ex ante figure due to a low

[1] Average consumption of all qualified units as of June, 2012.

realization rate. However, ex post energy savings for the program are still larger than the ex ante energy savings because of the high realization rates applied to CFL measures.

Table 6-9: Realization Rate and Gross Verified Impact

Measure Category	Reported Impact (kWh)	Realization Rate	Gross Impact (kWh)
ES Clothes Washer	6,367,356	0.527	3,354,964
ES Refrigerator	910,777	1.000	910,777
CFL Giveaway	7,121,080	1.183	8,426,190
CFL Buy-down	15,920,239	1.345	21,412,721
Total	**30,319,452**	**1.125**	**34,104,652**

Compact Fluorescents (CFLs)

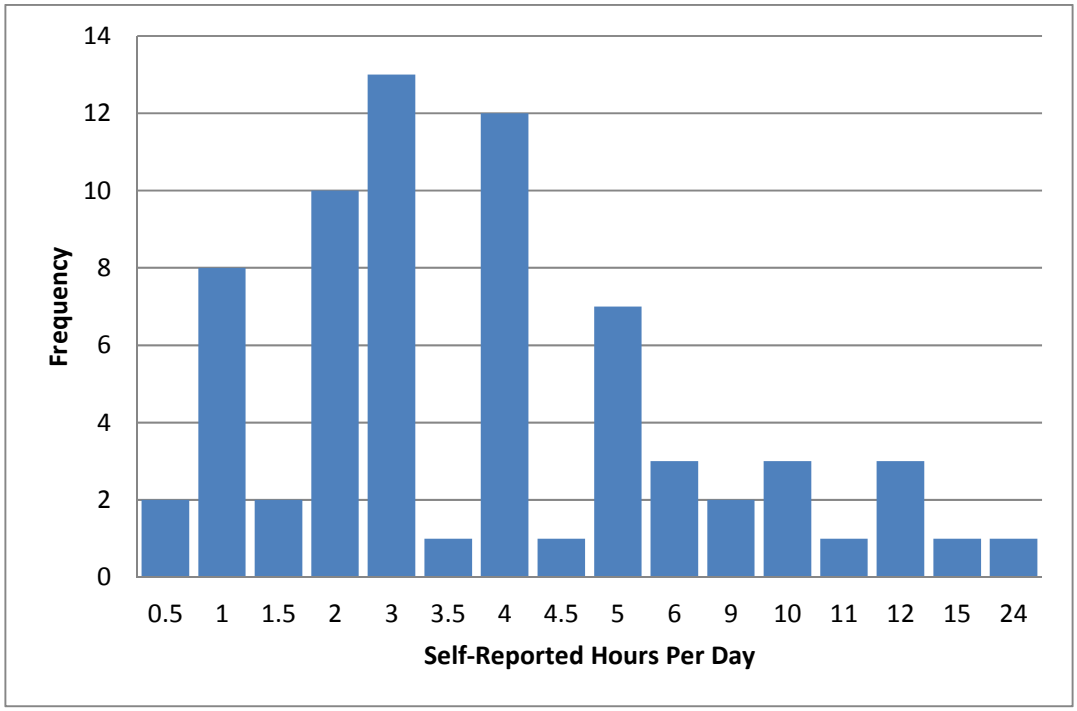
Compact Fluorescents were by far the largest contributor to the ex ante impacts in the Residential Lighting and Appliance Program at almost 76%. The high realization rates for the CFL measures and the low realization rate for ENERGY STAR® clothes washers led to CFLs accounting for 87.5% of the ex post program savings. The reason for realization rates greater than 1 for CFL measures is the high HOU_{Daily} value which was observed in the lighting logger study. The average HOU_{Daily} for the 89 bulbs that were logged as part of the study was 4.154 hours. Recall from Table 6-4 that the assumed change in connected load for a fixture which installed a 13 Watt CFL was 0.047 kW. Using this value in the following calculation:

$$Annual\ kWh\ Savings = 365.25 * 0.047kW * 4.154$$

The average annual energy savings for a 13 Watt CFL is calculated to be 71.265 kWh. The ex ante savings impact used for a 13 Watt CFL in Georgia Power's tracking database was 53 kWh. The ratio of ex post to ex ante savings for 13 Watt CFLs was 1.345 and this realization rate was applied to the ex ante impacts for each of the bulb types in the CFL Buy-down program. Due to the 88% installation rate adjustment which was made to 13 Watt CFLs in the Giveaway stream, the observed realization rate for that program in Table 6-9 is (1.345*0.88) = 1.183.

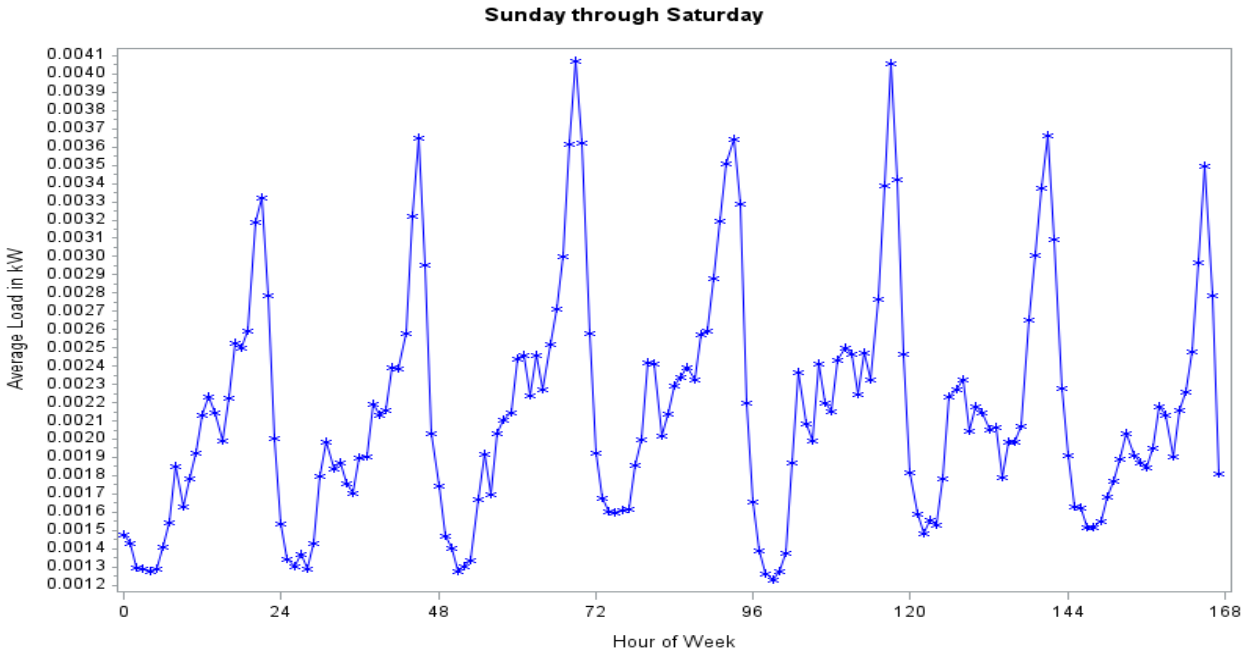
During the logger installation process, customers were asked to estimate the number of hours per day the bulb being logged was turned on. The average self-reported hours of use for the 89 bulbs for which estimates were provided was slightly higher than the logged data indicated at 4.75 hours per day. The histogram shown in Figure 6-4 shows the frequency of the various responses recorded by the Evaluation Team. The most common values were between one and five hours per day, but nine of the 89 responses indicated that the lamp was used ten or more hours per day.

Figure 6-4: Distribution of Self-Reported Daily Hours of Use



One additional benefit of a lighting logger study is that it allows for calculation of a load shape. This load shape is used to determine the peak demand reduction and subsequent avoided cost of capacity that the CFL programs produce. Figure 6-5 shows the average weekly load profile of a 13 CFL that was calculated using data collected during the metering study. Notice that the bulbs are most likely to be used in evening between 7:00 pm and 10:00 pm. While the average load is not as large on weekday afternoons when system peak demand typically occurs, a lamp still has about a 15% likelihood of being used. This means that CFL measures are contributing significant peak demand reduction as well as energy savings.

Figure 6-5: Weekly Load Shape – CFL

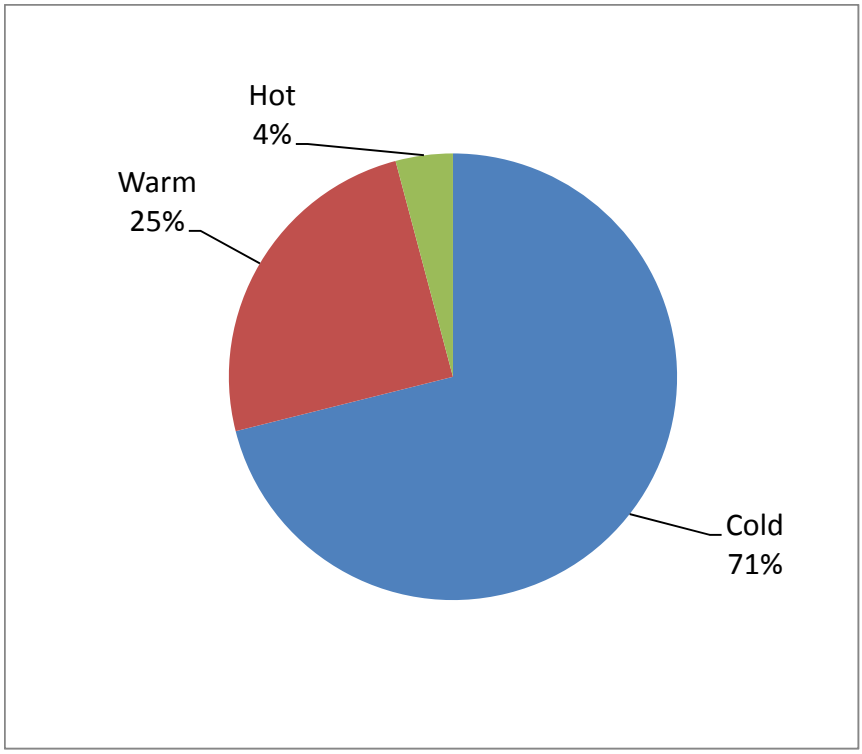


ENERGY STAR® Clothes Washers

The ex post per unit annual energy savings for an ENERGY STAR® clothes washer was 360 kWh. This is significantly lower than the ex ante impact of 684 kWh. The Evaluation Team elected to use the ENERGY STAR® recommended value for cycles per year of 392 in the saving calculations. However, the self-reported and metered loads in the evaluation sample, when extrapolated to a full year, produce an average number of loads figure of approximately 300. Because the savings produced by this measure is highly dependent on this assumed number of loads per year, the Evaluation Team recommends additional surveys be conducted in order to develop an estimate that is specific to Georgia Power's service territory. The saturation rate of natural gas dryers is another data point which can be used to refine the expected savings from high efficiency washers.

Electric water heater savings are only observed when clothes are washed in warm or hot water. During phone interviews and site inspections conducted in the evaluation of the ENERGY STAR® clothes washer measure, participants were asked to report the number of loads per week they washed in cold, warm and hot water. The distribution of these responses is shown in Figure 6-6.

Figure 6-6: Clothes Washer Water Temperature Settings in Evaluation Sample



ENERGY STAR® Refrigerators

A total of 5,657 ENERGY STAR® refrigerators were rebated in 2011 in the Residential Lighting and Appliance Program. The Evaluation Team elected to pass through the per-unit ex ante annual savings value 161 kWh through to the ex post program total without modification. 161 kWh is slightly higher than the average savings that can be expected from an ENERGY STAR® qualified model but lower than the savings which can be expected from an ENERGY STAR® Most Efficient model. Since the program population likely contained a mix of these two qualification standards, the Evaluation Team found no evidence to conclude that the per-unit value should be adjusted.

If ENERGY STAR® refrigerators are rebated in future program offerings the Evaluation Team recommends that make, model and style of the rebated units be captured in EERT. An increased rebate with a separate deemed savings value for ENERGY STAR® Most Efficient units is possible program design change that should be considered.

6.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

Compact Fluorescents (CFLs)

As the CFL giveaway program component distributed CFLs at no charge, traditional freeridership definitions (participants would have purchased the same product at the same time in the program's absence) did not apply, with NTG assumed to be 1.0. However, as bulbs were given away, one cannot guarantee customers actually installed and used the bulbs. Therefore, gross savings were adjusted to account for an installation rate less than 100%.

Energy Star® Clothes Washers

After converting survey responses into matrix terminology, a freeridership scoring matrix could be created; so combinations of each participant's responses to the seven questions could be assigned a freeridership score. Creating the matrix required determining every combination of possible responses to the seven survey questions, and then assigning freeridership scores between 0% and 100% for each combination. Table 6-10 shows freeridership calculations results for Appliance rebate program survey respondents.

Table 6-10: Appliance Rebate Program Freeridership Results

Response Group	Responses (N)	FR Estimate	± Absolute Precision
Appliance rebate program	72	53%	6% at the 90% confidence level

Using the (NTG = 1 – Freeridership + Spillover) equation, previously specified, provides a program NTG ratio of 50.6%.

Table 6-11: Appliance Rebate Program NTG Estimates

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
Appliance Rebate Program	52.8 %	3.4%	50.6%

6.4 PROGRAM RECOMMENDATIONS

- Update the per unit energy savings estimates for ENERGY STAR® Clothes Washer. Consequently, the incentive offered to participating customers may need to be reconsidered.
- Consider offering an increased rebate and have a separate ex ante impact for ENERGY STAR® Most Efficient refrigerators.
- Track the make, model and style of participating appliances in Georgia Power tracking database (EERT) for more precise results.
- Improve collection of customer data who receive bulbs at Giveaway events.

7 RESIDENTIAL HOME ENERGY IMPROVEMENT PROGRAM (RHEIP)

7.1 PROGRAM OVERVIEW

Georgia Power's Residential Home Energy Improvement (RHEIP) Program promotes a comprehensive, whole-building approach to improving the energy-efficiency and comfort of existing homes and includes multiple participation paths to appeal to a wide range of residential customers. The program incorporates elements of the proposed federal Home Star Energy-Efficiency Retrofit Program and provides financial incentives for implementing eligible energy-efficiency measures. The program builds on Georgia Power's existing tools and residential trade ally networks, established from the pilot Home Performance with ENERGY STAR® program that has been available to Georgia Power customers in the metro-Atlanta region since 2007. The program offers financial incentives, customer education and awareness campaigns, and contractor partnerships and training.

The RHEIP goals include:

- Increasing the awareness of energy-efficiency practices and services among Georgia Power's customers and local contractors to ensure the sustainability of the program's energy-efficiency efforts,
- Increasing achievable energy savings in existing homes by helping customers save energy while lowering their utility bills, and
- Encouraging the use of ENERGY STAR® rated and similar energy-efficiency measures and increasing their market share

7.1.1 Program Measures

The RHEIP offers customers two participation options:

- Whole-House (or Bundled) – Consists of the installation of a combination of energy savings measures that target whole home energy reduction with rebates based on the overall reduction in the homes electrical energy consumption. The three measures offered to homeowners who select the whole-house approach are a 20% Home Energy Reduction, a 25% Home Energy Reduction and a 30% Home Energy Reduction.

For customers participating in the Whole-House program option, all home improvements must be installed by program-registered contractors. All energy savings measures that demonstrate an improvement in energy-efficiency and contribute to an overall reduction in their home's electrical energy consumption are eligible, including envelope improvements, high-efficiency appliances, and HVAC and electric water heating improvements or replacement. Reduction in whole home energy consumption is determined by a comparison of the simulated energy consumption of the home before and after the retrofit of the home.

- Individual Improvements (or Unbundled) - includes installation of one or more individual energy savings measures, with rebates provided per measure installed.

The Individual Improvements participation option includes the energy-efficiency measures listed in Table 7-1 Home energy assessments and energy savings measures requiring performance testing must be performed by program-registered contractors. Other measures may be installed by any contractor or directly by the homeowner.

Table 7-1: RHEIP Participation Options and Incentives

Whole-House Reduction Levels & Rebates for Homes Served by Georgia Power		
Energy Reduction Levels	**Rebate Cap (% Cost)**	**Installers Permitted Program Participating Contractor**
BPI Assessment	50% up to $200	X
20% Home Energy Reduction	50% up to $1,250	X
25% Home Energy Reduction	50% up to $1,450	X
30% Home Energy Reduction	50% up to $1,850	X
Programmable Thermostat	50% up to $100	X
Electric Water Heater Wrap	50% up to $50	X
Maximum Potential Rebate	$2,200	

Individual Improvements & Rebates for Homes Served by Georgia Power				
Improvements	**Rebate Cap (% Cost)**	**Installers Permitted**		
		Program Participating Contractor	**Industry-Specific State Licensed Contractor**	**Home Owner**
BPI Assessment	50% up to $200	X		
Air Sealing	50% up to $400	X		
Attic Insulation	50% up to $300	X	X	X
Knee Wall Insulation	50% up to $150	X	X	X
Floor/Foundation/Un-Vented Crawlspace Insulation	50% up to $200	X	X	X
Rim Joist Insulation	50% up to $100	X	X	X
Duct Sealing	50% up to $400	X	X	
Replace Central A/C with ≥ 16 SEER	$50	X	X	
Replace Heat Pump with ≥ 15 SEER	$100	X	X	
Solar Water Heater	$250	X	X	
Heat Pump Water Heater	$250	X	X	
Programmable Thermostat	50% up to $200	X	X	X
Electric Water Heater Tank Wrap	50% up to $200	X	x	X

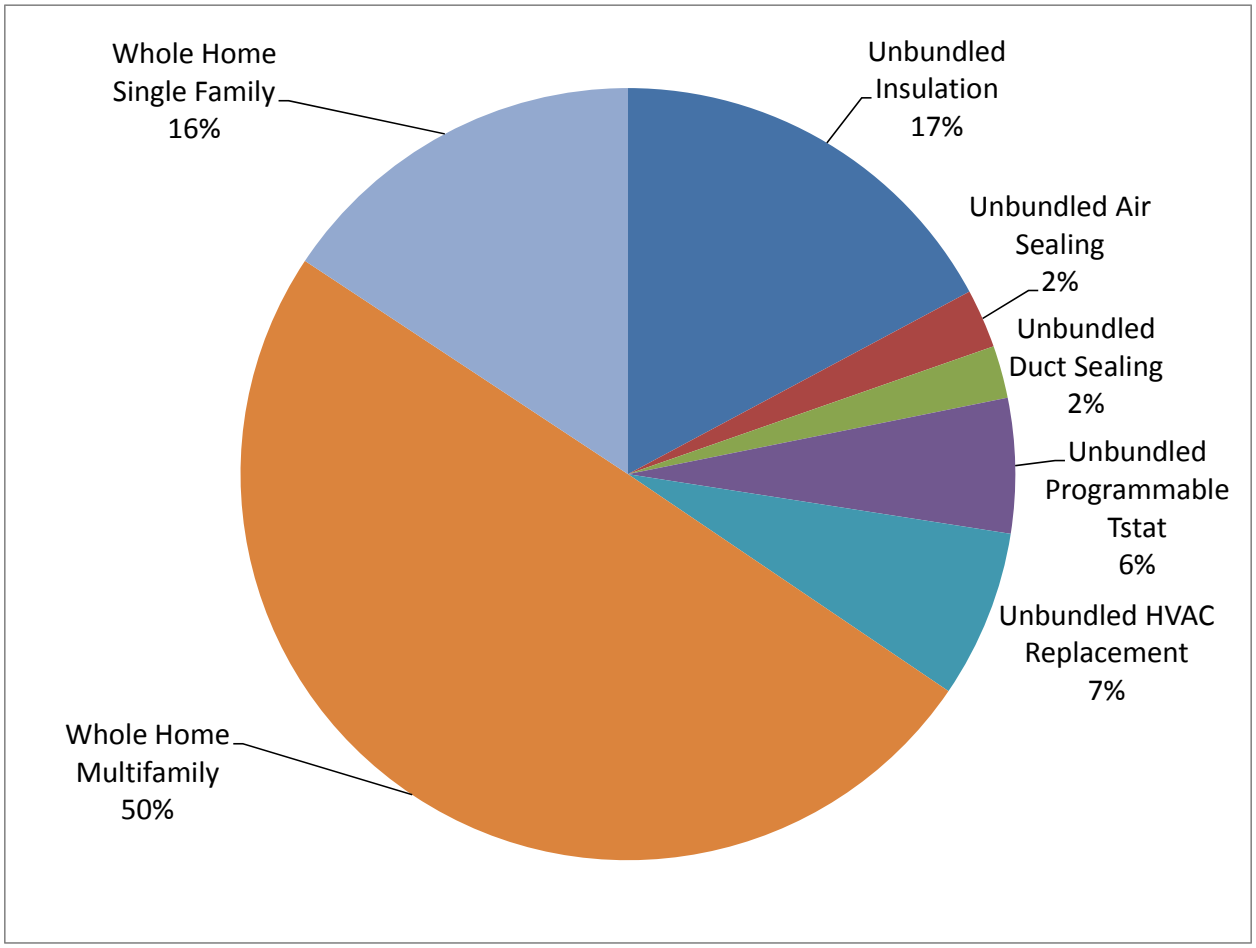
7.1.1 Program Participation

A total of 4,949 measure projects were completed within the Home Energy Improvement program in 2011 at just over 3,000 residences and premises. Table 7-2 summarizes the lighting and appliance program year 2011 participation by measure and Figure 7-1 summarizes aggregate measure type with bundled multi-family projects 50% of program savings.

Table 7-2: Home Energy Improvement Program Participation Summary - 2011

Measure Group	Gross Reported Savings (kWh)
Unbundled Insulation	1,414,849
Unbundled Air Sealing	203,167
Unbundled Duct Sealing	181,314
Unbundled Programmable Tstat	465,087
Unbundled HVAC Replacement	579,072
Whole Home Multifamily	4,105,813
Whole Home Single Family	1,292,834
Total	8,242,136

Figure 7-1: Lighting and Appliance Program Participation Shares



7.2 PROGRAM IMPACT EVALUATION METHODOLOGY

The impact evaluation of the RHEIP program utilized both the Option A and Option C M&V approaches in order to develop verified savings estimates for the improvements offered. Monthly utility bill records were collected for single family homes which selected the whole-house participation option. The energy impact in these homes was calculated by comparing the energy consumption in these homes during the period prior to the improvements being installed to the energy consumption in the home after the measures were installed. Several large multi-family complexes participated in the bundled measure path. An Option C analysis was not conducted for these projects because of the number of separate billing accounts involved and inconsistent occupancy of units within the complex. Instead, an Option A methodology was used for these projects, where a combination of measured and stipulated values is used to calculate savings.

Individual improvements were also evaluated using an Option A approach. Information on key parameters which affect the savings produced by the installed measures were collected via a review of project files, phone interviews with participating customers and on-site inspections. Individual rebated improvements were grouped into measure categories for evaluation purposes. Separate site inspection and phone interview scripts were designed for each measure category to capture the necessary inputs for savings calculations. The measure categories for the RHEIP program were:

- Insulation Improvements
- Air Sealing and Infiltration Improvement
- Duct Sealing
- HVAC Replacement
- Programmable Thermostat
- Water Heater Blanket

7.2.1 Sampling Approach

Site inspections were completed for 33 RHEIP projects, and phone interviews were conducted for an additional 45 projects. All 78 projects received a desk review. Program participants frequently implemented multiple unbundled measures within the unbundled Home Energy Reduction track and homes which employed the bundled approach typically installed improvements from several measure categories. Each unique measure was audited, enabling the evaluation team to surpass the planned sample sizes. Table 7-3 shows the relative contribution of each measure category to the program savings and the number of rebated measures in the evaluation sample. The number of measures available for analysis was actually larger than the figures shown in Table 7-3 because the whole-house energy reduction was typically achieved through HVAC replacement and infiltration improvements.

Table 7-3: Reported Savings by Measure in the Evaluation Sample

Measure Category	Percent of Program kWh Savings	Evaluation Sample Size[1] [2]	Sampling Method
Whole-House Energy Reduction	69.3%	29	Stratified
Insulation Improvements	17.6%	58	SRS
Programmable Thermostat	6.0%	10	SRS
Infiltration Improvements and Duct Sealing	4.9%	43	SRS
HVAC Replacement	1.2%	2	SRS
Water Heating	1.0%	12[3]	SRS
Total	**100%**	**154**	**SRS**

(1) Evaluation sample sizes do not include homes which received a billing analysis.
(2) Sample sizes are for measure quantities and not for an individual premise. Multiple measures were reviewed at the same premise.
(3) Overlap with Residential Water Heater Program.
(4) SRS = simple random sampling

Simple random sampling (SRS) was used for all RHEIP projects except those in the Home Energy Reduction tracks. For projects in the Whole Home tracks, a stratified sampling approach with Neyman Allocation was used to sample from three sub-strata based on relative contribution to program energy savings, regardless of whether the projects were part of the 20%, 25%, or 30% reduction tracks. This stratified sampling approach was applied after screening out residential water heating projects and customers with invalid contact information. The Evaluation Team excluded participants from the Residential Water Heating program to ensure that the same customer was not recruited twice as a result of the evaluation two different programs. The projects in sub-stratum 3 were all large multi-family complexes.

Table 7-4 shows sample sizes for RHEIP Whole Home (Bundled) projects.

Table 7-4: Whole Home Projects within the RHEIP Program

Sub-Stratum	Range of Reported Energy Savings	Population Count	Percentage of Bundled kWh	Sample Size
1	0 – 10,200 kWh	195	15.6%	5
2	10,200 – 155,000 kWh	31	16.1%	20
3	> 155,000 kWh	8	68.4%	4

7.2.2 Data Collection Methods

Four different measure verification methods—desk reviews, phone interviews, on-site inspections and historical utility bills–were used to assess measure adoption rates and savings values of the participant sample.

7.2.2.1 Desk Reviews

The Evaluation Team requested project documentation from the program implementer, including assessment reports, work order forms and other project records to gather detailed information on the installed measures and the baseline condition of the participating home. Several program measures required performance measurements – such as blower door or duct blaster testing – be conducted in the home before and after the retrofit. The results of these tests were key inputs in the analysis of infiltration improvement and air sealing measures.

7.2.2.2 Field Inspections

A recruiting letter followed by a telephone call was used to recruit a sub-sample for on-site inspection verification. These on-site inspections are a more rigorous way of verifying energy savings, allowing the Evaluation Team to note discrepancies between what they find on site and the information gathered through the project documentation. Table 7-5 summarizes the data points gathered during on-site inspections.

7.2.2.3 Phone Interviews

Telephone surveys were used to collect information used in savings calculations. Impact evaluation questions that were asked over the telephone were specific to each applicable measure category. Impact evaluation questions are designed to confirm measure installation and gather information about the equipment which was replaced and behavior which affects energy savings. The Evaluation Team also sought to confirm the accuracy of data gathered during a review of the project documentation.

7.2.2.4 Monthly Utility Bills

The Evaluation Team requested monthly utility bills of all single family participants who participated in the Whole-House Energy Reduction track. Georgia Power provided the unique site ID (premise), the unique customer ID (account number), the starting and ending meter read date and the consumption amount (kWh) for each billing period from January 2010 through July 2012. This provided the Evaluation Team with insight into the home's energy consumption during the heating and cooling seasons both before and after the improvements.

Table 7-5: RHEIP Site Inspection Checklist

End-Use	Baseline Information	Retrofit Information
All Residences	Year home was built Number of occupants Home square footage Number of bedrooms Number of bathrooms Total conditioned square footage Current heating system type/age/efficiency/size/condition Current cooling system type/age/efficiency/size/condition Heating/cooling temperature set back and time periods	
Whole-House Energy Reduction	1 year of utility bills pre-retrofit	1 year of utility bills post-retrofit
Air/Duct Sealing	Visual confirmation of sealing Duct size measurements Location of duct work (e.g., attic, crawlspace, etc.) Residence HVAC system type and heating fuel type HVAC system setpoints and occupancy schedules	
Insulation	Baseline insulation levels Baseline insulation type	Retrofit insulation levels Retrofit insulation type Estimated square footage of installed insulation Self-installed or contractor-installed?
Air-conditioning/Heat Pump Replacement	Nameplate information (brand, model, SEER, HPSF)	Nameplate information (brand, model, SEER, HPSF) Full-load hours from: Occupied set temps for winter/summer Unoccupied set temp for winter/summer Occupied hours Unoccupied hours
Water Heating	Tank make/model number/capacity Annual energy consumption Temperature setpoint Confirm insulation levels Energy Factor	Tank make/model number/ capacity Annual energy consumption Energy Factor Temperature setpoint Jacket insulation type and thickness Room air temperature Adequate space around heat pump?
Programmable Thermostat	Baseline thermostat type Location Quantity	Retrofit thermostat type Location Retrofit thermostat brand/model Retrofit thermostat Energy Star? Is the thermostat programmed? Occupied set temps for winter/summer Unoccupied set temp for winter/summer Occupied hours Unoccupied hours Quantity installed

The Evaluation Team conducted interviews with program staff, implementers and energy auditors to understand any available documented baseline data noted above.

7.2.3 Gross Impact Analysis

Two separate approaches were used to calculate gross savings for the Home Energy Improvement Program. Single family homes which participated in the whole-house measures, 20%, 25% or 30% Home Energy Reduction – were evaluated using an Option C utility bill analysis. Option C analysis is typically reserved for projects which achieve energy savings of 10% or more of the annual energy consumption of a home. There were no stipulations in these rebate offerings as to how the energy reduction was to be achieved. Consequently, a wide variety of different energy conservation techniques were observed in participating homes. An Option C utility bill analysis is appropriate when examining a heterogeneous population because each residence is treated identically regardless of the measures which were implemented.

An Option C analysis may not yield accurate results for projects which do not achieve 10% savings because it frequently proves difficult to separate energy savings from natural variations in customer behavior. The Individual Improvements incented by the Home Energy Improvement fall in this category. A billing analysis also does not offer a way to disaggregate the savings produced by individual measures in a home which implemented multiple individual improvements. Savings from individual improvements were determined using an Option A or engineering analysis. In an engineering analysis, a combination of measured and stipulated values is used as inputs in an algorithm which calculates savings values. Measured values, such as conditioned square footage, thermostat settings or equipment size, are gathered from project files, phone interviews and site inspections. Stipulated values, such as the SEER value of the Central AC unit a customer would have purchased in the absence of the program or the Effective Full Load Hours (EFLH) of the unit are selected based on a variety of factors. Individual rebated improvements were grouped into measure categories for evaluation purposes. The measure categories for the RHEIP program were:

- Insulation Improvements,
- Air Sealing and Infiltration Improvement,
- Duct Sealing,
- HVAC Replacement,
- Programmable Thermostat, and
- Water Heater Blanket

7.2.3.1 Whole-House Billing Analysis

Option C billing analysis involves creating separate pre-retrofit and post-retrofit regression models for each home in the evaluation sample. The dependent variable in the model is the average daily consumption (kWh) for the billing period. The independent variables are the average number of cooling degree days and the average number of heating degree days in the billing period. The basic form of the model is shown below:

$$Daily\ kWh = \beta_0 + \beta_1 * AveCDD + \beta_2 * AveHDD$$

Where:

$Daily\ kWh$ = The energy (kWh) consumed during the billing period divided by the number of days in the billing period.

B_0 = The intercept term in the regression model. This represents the energy which would be consumed in the home if no heating or cooling load were present, or the non-weather dependent load.

B_1 = Cooling coefficient determined during the modeling process. This represents the daily kWh the home uses per cooling degree day.

$AveCDD$ = Average number of cooling degree days observed in the billing period.

B_2 = Heating coefficient determined during the modeling process. This represents the number of daily kWh the home uses per heating degree day. This term is usually not significant in homes with natural gas heat.

$AveHDD$ = Average number of heating degree days observed in the billing period.

Historical weather data was collected for 5 different National Weather Service stations and each participant in the analysis was mapped to the closest weather station based on the 'Region' variable in the program tracking database. Table 7-6 provides the weather station used for each region. The Evaluation Team summed the observed heating degree days and cooling degree days at the appropriate weather station during each billing period. The date of the meter read was both the end of a billing period and the beginning of the subsequent period in the file provided by Georgia Power to the Evaluation Team. To avoid double-counting weather from days which the meter was read, CDD and HDD from the first day in a billing cycle were not included in the sum and CDD and HDD from the final day in the billing cycle were.

Table 7-6: Weather Data Used for Billing Analysis

Georgia Power Region	NWS Station
Metro (East, West, North and South)	Atlanta
Northeast	Athens
Central	Macon
Coastal	Savannah
East	Augusta
Northwest	Chattanooga
West	Columbus

Traditionally a fixed 65 degree (F) base is used for the calculation of heating degree days and cooling degree days. If the average temperature for a day is 80 degrees (F), that day is considered to have 15 CDD and if the average temperature is 55 degrees, that day is considered to have 10 HDD. The Evaluation Team explored calculating a customer-specific degree base for each home to better reflect the energy consumption dynamics of the site but found that the degree base which produced the best fitting model was frequently different for the pre-retrofit and post-retrofit periods. Rather than introduce a possible source of uncertainty into the analysis, a base of 65 degrees was used for all homes.

The independent and dependent variables in each customer's regression model are calculated using the location and period specific weather and the number of days in each billing cycle. Each billing period is classified as either pre-retrofit or post-retrofit. The billing cycle during which the improvements occurred were excluded from the analysis. The regression is run separately for the pre-retrofit and post-retrofit periods and the coefficients are stored in table and used to calculate Normalized Annual Consumption (NAC). This calculation is shown in the following example:

Table 7-7: Site-Specific Regression Coefficients

Pre/Post Indicator	Intercept (β_0)	CDD Coefficient (β_1)	HDD Coefficient (β_2)	Adjusted R-Square
0	42.81	3.196	2.617	0.848
1	43.27	2.734	1.706	0.965

Notice that while the intercept term (β_0) is very similar in the two models, the weather-sensitive coefficients have dropped noticeably. We can also tell that the home shown in Table 7-7 has electric heat because of the size of the β_2 term. Home with natural gas heat will have very small β_2 coefficients because they are not using any additional kWh as the number of HDD increases. The desired outcome from a billing analysis is a weather normalized savings value. Normalized Annual Consumption is calculated for the two periods by applying normal weather values for the area to the

regression coefficients. The home in this example is from the Metro East region so typical annual values from the Atlanta area were used. The 30-year average for the Atlanta area from 1971-2000 was 1810 cooling degree days and 2827 heating degree days per year. The pre-retrofit NAC and post-retrofit NAC are calculated as follows:

$$NAC_{period} = 365.25 * \beta_0 + \beta_1 * 1810 + \beta_2 * 2827$$

Using the values from Table 7-7:

$$NAC_{pre} = 365.25 * 42.81 + 3.196 * 1810 + 2.617 * 2827$$

$$NAC_{pre} = 28,819\ kWh$$

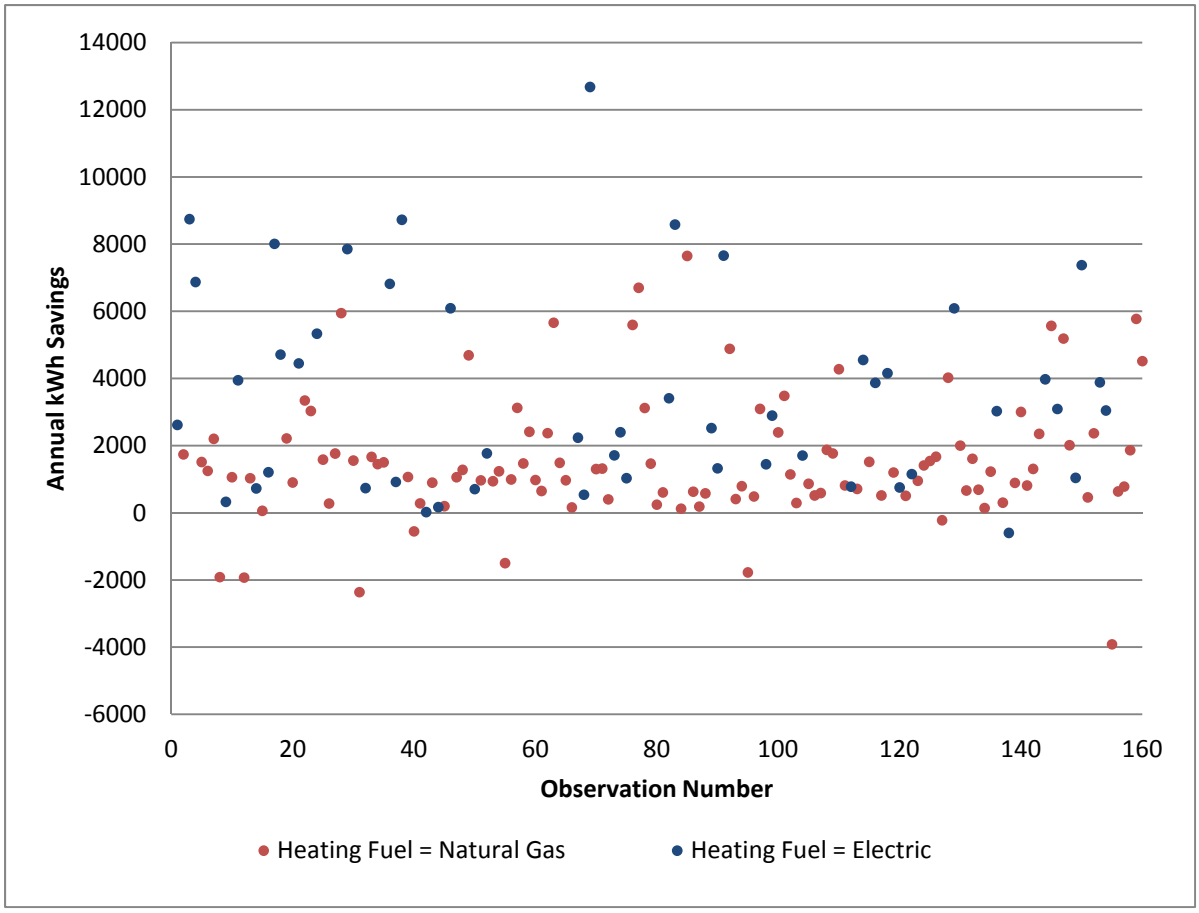
$$NAC_{post} = 365.25 * 43.27 + 2.734 * 1810 + 1.706 * 2827$$

$$NAC_{post} = 25,576\ kWh$$

The savings estimate for this home is difference between the pre-retrofit NAC and the post-retrofit NAC, or 3,243 kWh. This annual savings estimate can also be expressed as a percent of the pre-retrofit NAC. This home, which implemented the 25% Home Energy Reduction measure, saw an 11.25% energy reduction at the electric meter. This type of analysis cannot tell us about changes in customer behavior of comfort levels. It is possible that this home is actually 25% more efficient since the improvements but that the homeowner is choosing to keep the home a few degrees cooler in the summer and a few degrees warmer in the winter. In this case, the program is producing lower energy savings, but increasing the comfort of the participant.

The evaluation team received billing data for all 223 single family participants in the bundled path of the Home Energy Improvement Program. The data was scrubbed for duplicate reads, missing data overlapping read and inconsistent occupancy. Only homes which had nine months or more of billing data before and after the improvement with a single Account Number/Premise Number combination were eligible for the billing analysis. Homes which showed suspiciously low consumptions during periods of extreme weather were also excluded. The final analysis included 160 of the 223 possible homes. Figure 7-2 shows a scatterplot of the annual kWh savings estimates for each of these homes by heating fuel.

Figure 7-2: Scatterplot of Savings Estimates From Billing Analysis



As shown in Figure 7-2, a wide range of annual savings values were observed in participating homes. This is typical of a billing analysis because customer behavior is a major driver of energy consumption. Children moving in or out of the home, changes in household income and the work schedule of occupants can have dramatic effects on energy consumption. These factors can inflate or deflate the savings values for a given home, but when results are examined in aggregate large population sizes, these exogenous factors often cancel out. In this particular scatterplot, 9 residences had negative savings and 9 residences had savings greater than 7,000 kWh in savings.

7.2.3.2 Measure Level Engineering Analysis

Georgia Power customers that elected to implement individual improvements, or unbundled measures, targeted a specific aspect of their home for increased efficiency. When analyzing the savings produced by these unbundled measures, the Evaluation Team also narrowed its focus to the end-use affected by the installed measure. Key parameters of the affected system both before and after the retrofit were collected during desk reviews of project files, phone interviews with participating customers and site inspections. Appendix B contains the savings algorithms which were used to calculate verified savings for each measure category.

Insulation Improvements

Georgia Power offered rebates for a variety of insulation measures in its 2011 portfolio. Ceiling insulation was the most commonly implemented insulation measure, but customers also took advantage of rebates on knee wall, floor, and crawlspace insulation. The Evaluation Team did not have sufficient sample points to provide verified savings estimates for each possible combination of insulation measure and heating fuel. Instead, the energy savings resulting from insulation improvements were calculated for each home in the sample and compared to the sum of the reported savings from insulation measures for the home. This methodology produced a realization rate for the insulation measure category as a whole.

Savings from insulation improvements are observed in the reduced cooling and heating loads in the home. Detailed HVAC equipment information was gathered for each home in the insulation sample including age, tonnage and efficiency of the condensing unit. The expected number of annual heating degree days and cooling days was assigned to each home in the insulation sample by mapping the Region variable from the program tracking database to the closest weather station.

The algorithm used to calculate energy savings from insulation improvements is based on the change in the thermal resistance of the affected space in the home. Thermal resistance of a space is expressed by the R-value ($ft^2 * F^o * h/BTU$) of the space. This creates a challenge for the evaluation because R-value is difficulty to measure. Project files, interviews with customers and even site inspections typically provide the type of insulation in the space and the number of inches present. Table 7-8 shows the assumptions made by the Evaluation Team to convert inches of insulation to R-values.

Table 7-8: Assumed R-value per Inch of Observed Insulation[1]

Insulation Type	R-Value per Inch
Cellulose Fiber	3.2
Fiberglass	3.7
Rockwool	3
Vermiculite	2.7
Blanket Batts	3
Rigid Foam	5

Certain insulation contractors provided the exact R-value for the insulating material installed in the project files. Requiring this information for all insulation projects in future program years would reduce the uncertainty in insulation savings calculations. For several projects it was unclear from the

[1] Building Performance Institute Technical Standards for Certified Building Analysts. http://www.ableideas.net/BPI_Building_Analyst_Standards.pdf

project files whether the existing attic insulation was removed prior to adding new insulation or the new insulation was blown on top of the existing insulation. The Evaluation Team observed both scenarios during site inspections. Adding an additional field to the insulation rebate form which captures this distinction is a recommendation for this measure group.

Another key component in the energy savings from insulation improvement is the size of the space that was insulated. The Evaluation Team discovered several cases where this key data point was missing from the project files and was forced to rely on an estimate supplied by the customer. Requiring this information prior to rebate payment and capturing it as a field in the program tracking database (EERT) would streamline future evaluations of this measure category.

Air Sealing and Infiltration Improvements

Verified savings estimates for homes which implemented the Infiltration Controls/Air Sealing measure relied heavily on the results of the required performance testing. Blower door testing was required by a program participating contractor before and after the retrofit and these values were collected by the Evaluation Team during the desk review of project files. Information on the size of the home and the type and efficiency of HVAC equipment were used. Gross savings estimates were weather normalized using the 30-year average CDD and HDD values from the closest weather station to the participating home. Cooling savings and heating savings are calculated separately for air sealing. Homes with natural gas heat were assumed to have no heating savings at the electric meter.

The Evaluation Team observed considerable variation in the units program participating contractors used to report blower door test results. Cubic feet per minute ($CFM_{natural,}$ CFM_{25}, CFM_{50}) and air change per hour ($ACH_{natural}$ and ACH_{50}) were all found in the completed rebate forms and contractor invoices. The algorithm used by the Evaluation Team shown in Appendix B uses CFM_{50} so a number of conversions were required. Standardizing the reporting of these key fields and tracking them in EERT would give program staff and evaluators considerable insight into the effectiveness of this measure because savings are directly correlated to the percent improvement in the leakage of conditioned air from the home. In several cases, the project files for a home in the evaluation sample only contained blower door test results from before or after the infiltration improvements. The Evaluation Team chose to omit these homes from the savings calculations rather than make an assumption about the state of the home.

Duct Sealing

The savings analysis of the Duct Sealing measure also relied heavily on performance testing results from program participating contractors. Contractors expressed test-in and test-out results as '% Leakage' on rebate forms and difference between these two figures was the basis for the annual energy savings calculation. Other key parameters include the capacity and efficiency of the condensing unit and the expected number of hours the unit will run in cooling and heating mode per year. Annual run hours were estimated based on region and the assumed values are contained in Table 7-9.

Table 7-9: Annual Run Hour Values by Location[1]

Location	Cooling	Heating
GA-Athens	1,493	1,655
GA-Atlanta	1,484	1,686
GA-Augusta	1,548	1,467
GA-Columbus	1,845	1,379
GA-Macon	1,900	1,367
GA-Savannah	1,963	1,213

HVAC Replacement

The Evaluation Team approached the Central AC Replacement and High Efficiency Heat Pump Replacement measures as a 'Replace on Burnout' measure. This means that the useful life of the existing unit was over and the homeowner was going to replace the unit whether the Georgia Power program was in place or not. The program offers an incentive to the participant to purchase a unit that is more efficient than what would have been purchased in the absence of the program. Consistent with this approach, the energy savings algorithm doesn't look at the difference in energy consumption between the unit that was installed and the unit that was replaced. Instead, savings are calculated based on the difference in energy consumption between the unit that was installed and the unit the customer would have purchased in the absence of the program.

The 2011 Georgia state energy code, which is 2009 International Energy Conservation Code (IECC) for a new central air conditioning unit is 13 SEER and the standard for a new heat pump is HSPF 7.7. These values were used to calculate the baseline energy consumption values for homes in the evaluation sample. The SEER or HSPF value used in the retrofit energy consumption calculation were taken from the nameplate of the unit or the invoice for the equipment. Average annual run hours in heating and cooling mode were stipulated using the values contained in Table 7-9 and the participant's corresponding region in the program tracking database.

It is important to note the evaluation sample for the HVAC replacement measure category included customers who participated in the Individual Improvements track and the Whole-House Energy Reduction track of the program. Table 7-3 shows a sample size of just two homes for this measure category. An additional eight homes which replaced a central AC unit or heat pump as part of a

[1] Energy Star Calculator for Air Source Heat Pump – Assumptions tab.
http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing

bundled approach were included in the analysis. For these eight participants, which were all single family homes, the verified savings figure for the measure was compared to the impact which would have been reported had the participant elected the unbundled path. These values are shown in Table 7-10.

Table 7-10: Ex Ante Savings Values for HVAC Replacement Measures

HVAC Replacement Measure	Energy Savings (kWh)	Demand Savings (kW)
Energy Star CAC	123	0.122
Energy Star Heat Pump	271	0.13

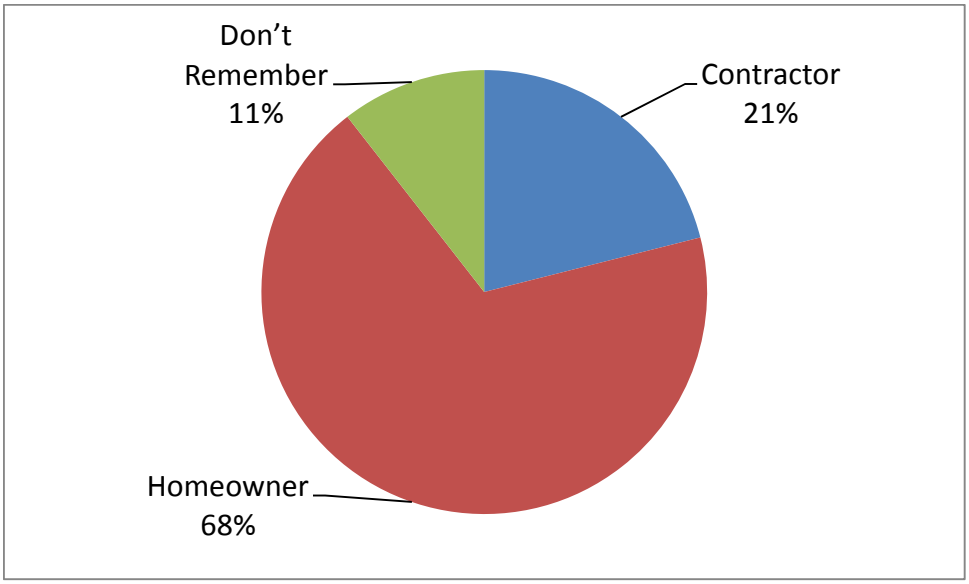
Because the energy and demand savings figures for this measure category follow a 'Replace on Burnout' protocol, it is important that costs be handled accordingly. The appropriate participant cost for this measure is the difference in price between a unit which meets federal standards and the unit that was actually installed.

Programmable Thermostat

The savings produced by a programmable thermostat are highly dependent on the behavior of the customer who operates the device. The device itself will produce no savings unless programmed to increase thermostat setpoints during the cooling season and decrease thermostat setpoints during the heating season. The Evaluation Team gathered detailed information regarding the size and efficiency of HVAC equipment controlled by the replaced thermostat and the temperature set points before and after installing the device.

Members of the evaluation sample for this measure were asked during phone interviews and site inspection to provide information about the summer weekday, summer weekend, winter weekday and winter weekday thermostat settings before and after installing the new device. For each type of day, customers were asked to provide the daytime, evening and overnight temperature settings. Customer were typically programming the devices to increase thermostat settings an average of four degrees (F) during summer afternoons and decrease thermostat setting by seven degrees (F) overnight during the heating season. Figure 7-3 shows who was responsible for programming the thermostat after installation in the evaluation sample.

Figure 7-3: Party Responsible for Programming Thermostat



Water Heater Blanket

Water heater blankets from the Home Energy Improvement program were analyzed in conjunction with water heater blankets installed in the Residential Water Heating program. This allowed the Evaluation Team to produce a larger sample size for this measure category than would have been possible considering them separately. A total of 42 water heaters were examined in the calculation of verified savings for this measure category. Additional detail on the savings calculation methodology can be found in Section 8.

Bundled Multi-Family

For each multi-family building, data points were collected from the following sources: submitted invoices, submitted Beacon reports, and on-site inspections. Reviewing submitted invoices provided a time-effective manner in determining the exact specifications of on-site improvements. Invoices that included HVAC, appliance, and building materials were particularly useful as they tended to contain quantities ordered, model numbers, and unit/material specifications.

Beacon reports submitted for each multi-family project were also reviewed and used to determine baselines and upgrade measures. However, the reports seemed to lack accuracy across units in the same building complex. For example, one report listed units having floor areas ranging from approximately 1,100 to 2,800 square feet, yet all having 3 bedrooms and 4 occupants per unit while also using the same size hot water tank of 30 gallon capacity. The significant difference in reported floor areas similar occupancies and water tank sizes led the Evaluation Team to believe there was a error in data entry. In another case, the baseline heating equipment for multiple living units was listed as "80 AFUE Electricity Furnace" and "6 HSPF Natural Gas Heat Pump." The units of efficiency or fuel source reported in each of these scenarios do not align with the piece of equipment they

describe. Thus, it was difficult to accurately estimate energy savings for these cases. To mitigate these issues, perhaps future iterations of the Beacon reporting system would benefit from providing the program's users with an available range of equipment types and menu of corresponding efficiencies to select from.

On-site inspections were conducted at four of the largest multi-family sites. Data covering a wide array of measures were collected and verified by site inspectors. Examples of data collected on-site are equipment manufacturers, model numbers, building material properties (i.e. window types), and temperature settings for hot water and thermostats. When applicable and accessible, insulation types and thicknesses were also noted.

Single family homes that utilized the whole home energy reduction, or bundled, strategy were evaluated using a utility bill analysis. However, this approach was not feasible for multi-family buildings due to the number of individual bill analyses needed to be performed and the inconsistent occupancy of units over the pre-retrofit and post-retrofit periods. Thus, the data from the sources mentioned above were collected into spreadsheet models to calculate the estimated savings for each unit type/measure type combination in the project. Finally, the various combinations of unit type/measure energy savings were totaled to arrive at the project's total estimated energy savings.

This approach allowed for a more robust analysis because each project's model was tailored to its individual characteristics and available data. For example, each analysis could easily take into account the occupancy rates, down to the unit type level, that was reported by site contacts during on-site inspection interviews. Calculating energy savings at the granularity of the unit type/conservation measure level enabled the analyses to take into consideration individual project nuances.

Two of the four evaluated bundled multi-family project involved natural gas heaters being retired and replaced by high efficiency heat pumps. The Evaluation Team approached the savings calculations for these projects as if the heating fuel switch would have occurred independent of the program. With the program's incentives, more efficient heat pumps were able to be purchased. Therefore, the energy savings calculation only accounted for the decreased energy consumption between the high efficiency heat pump that was installed and a heat pump that meets current Federal Standards.

7.3 PROGRAM IMPACT RESULTS

Two adjustments were made to Georgia Power's ex ante savings values as a result of the Evaluation. The Impact Evaluation Team calculated the gross, or verified, savings based on a review of a sample of projects from the program and the independent savings calculations performed on those projects. The ratio of the verified savings to the reported savings, or realization rate, for sampled projects was applied to all projects in the appropriate measure category. A second adjustment was applied to these figures in order to calculate net savings. The net verified savings total is the savings which are attributable to the program.

7.3.1 Gross Program Savings

The reported impact, realization rate and gross savings of each measure category in the Home Energy Improvement programs are shown in Table 7-11. Two measure categories have a realization of 1.0 in Table 7-11. The Heat Pump Conversion measure was the only measure in the RHEIP program that was not implemented by ICF. Georgia Power field sales employees encourage customers who are purchasing a new heat pump to opt for a higher efficiency level by educating them on the benefits of a higher efficiency unit and offering a $100 incentive. The Evaluation Team learned of this measure path late in the evaluation and was not able to include it in the evaluation sample. The Evaluation Team was also unable to gather a sufficient sample size for the Solar Water Heater and Heat Pump Water Heater measures. For each of these three measures, the Evaluation Team passed the reported impact of the measure into the gross verified savings total for the program unchanged by assuming a realization rate of 1.

Table 7-11: Realization Rate and Gross Impact

Measure Category	Reported Impact (kWh)	Realization Rate	Gross Impact (kWh)
Bundled Multi-Family	4,105,813	93.8%	3,851,253
20% Home Energy Reduction	133,691	53.0%	70,856
25% Home Energy Reduction	190,928	57.0%	108,829
30% Home Energy Reduction	968,215	36.9%	357,271
Water Heater Blanket	38,080	97.3%	37,052
Insulation Measures	1,376,769	40.5%	557,591
Air Sealing	203,167	286.3%	581,667
Duct Sealing	181,314	103.3%	187,297
Programmable Thermostat	465,087	97.9%	455,320
HVAC Replacement	579,072	168.0%	972,979
Total	**8,242,136**	**87.1%**	**7,180,116**

Nearly half of the ex ante savings for the Home Energy Improvement Program came from just 11 projects. These 11 projects were multi-family complexes which participated in the bundled measure path. The total number of units retrofitted as part of these 11 projects was close to 1,500. The Evaluation Team performed a detailed desk review and site inspection on four of these projects and developed an independent estimate of the annual energy savings achieved by the retrofit. Table 7-12 provides the reported and verified savings values for each of the four projects in this measure category.

Table 7-12: Project Level Savings for Bundled Multi-Family Projects

Project Number	Reported kWh	Gross Verified kWh	Realization Rate
Project 1	473,213	164,417	0.347
Project 2	595,027	593,583	0.998
Project 3	484,074	610,738	1.262
Project 4	614,640	664,937	1.082
Total	**2,166,954**	**2,033,674**	**0.938**

Three of the four projects that were evaluated produced gross verified annual kWh savings very close to or greater than the reported figures. The analysis of Project 1 yielded a much smaller

savings figure than the reported impact. This project consisted of a retrofit of 91 units in a Metro Atlanta complex. The retrofit was very comprehensive and included replacement of the condensing unit, air sealing, attic insulation for 3rd floor units and a high efficiency water heater. The average verified savings per unit in the complex was 1807 kWh, which is an impressive savings value for a multi-family unit. Despite the strong performance of the project, the low realization rate is observed because the reported savings value for this project of 473,213 kWh claims an average of 5,200 kWh savings per unit.

This project highlights one of the issues associated with using contractor-supplied calculations for a reported savings estimate. Contractors are often optimistic about the amount of energy and money that will be saved as a result of their work. The Georgia Power IRP filing for the Whole House Multi-Family (HP) measure was a much more conservative estimate of 1063 kWh. If a decision is made to continue using contractor estimates in future program offerings, the results of completed projects should be compared to established figures prior to committing the values into EERT. The project discussed above would be flagged for review because the per-unit energy savings of 5,200 kWh was almost five times the filed value of 1,063 kWh. The recommendation of the Evaluation Team is to consider using filed values rather than contractor estimates for projects where savings estimates exceed a higher threshold, thus eliminating any outliers. This would likely reduce the possible upward bias from program participating contractors.

Optimistic savings values produced by contractors also led to low realization rates for the single family bundled measures despite strong performance in participating homes. Table 7-13 provides a comparison of the various measures by heating fuel. Recall that the Evaluation Team excluded homes from the billing analysis if a change in occupancy was observed or fewer than nine months of post-retrofit billing data was available. Consequently, the final analysis only included 160 of the 223 homes which participated in this measure track.

Table 7-13: Summary of Single Family Bundled Impacts

GPC Measure	Heating Fuel	Average Weather Normalized Annual kWh Pre-Retrofit	Average Reported kWh	Average Gross Verified kWh	Average Percent Reduction in Annual kWh
20% Home Energy Reduction	ELEC	22,803	4,319	2,436	11%
25% Home Energy Reduction	ELEC	18,430	4,789	3,223	17%
30% Home Energy Reduction	ELEC	20,116	8,886	4,020	20%
20% Home Energy Reduction	GAS	16,413	3,113	1,596	10%
25% Home Energy Reduction	GAS	13,836	3,797	1,755	13%
30% Home Energy Reduction	GAS	13,512	4,745	1,462	11%

Notice in Table 7-13 that the average gross kWh savings estimate for the 28 homes with electric heat who selected the 30% Home Energy Reduction measure was 4,020 kWh. This figure is reasonably close the IRP Filing for this measure category of 4,551 kWh. However, the average reported savings for this group was 8,886 kWh. It is possible that contractors are including aggressive savings estimates in assessments of homes in order to encourage homeowners to participate in the program. A typical Georgia homeowner is much more likely to implement the recommended measures if they believe the annual bill savings will be $1,000 rather than $500.

The reported savings value for one home with electric heat that implemented the 30% Home Energy Reduction was 36,667 kWh. The square footage of the home was 1,550 and a review of the billing history showed that the home was using an average of approximately 11,000 kWh per year prior to the improvements. Clearly, the retrofit cannot save more energy than the home uses. A review of the project files shows that the retrofit in this home included replacing an existing gas furnace with a high efficiency heat pump. The Energy Audit Report for the home actually showed that the electric consumption in the home was expected to *increase* in the home by 36,667 kWh because of a conversion error between therms and kWh. The Total Project Savings field of the Audit Report appears to have been captured as a positive (savings) value in the program tracking data.

Table 7-14 compares the average gross verified annual energy savings estimates from the Option C billing analysis to the comparable values from the 2010 IRP filing. On average, participating homes with electric heat are falling short of the IRP values. Homes with natural gas heat that selected the bundled approach are dramatically exceeding the IRP values. This was a theme that is observed throughout the evaluation of the unbundled track of the Home Energy Improvement Program as well.

Table 7-14: Comparison of Gross and Filed Energy Savings – SF Bundled

Heating Fuel	Filed Savings Value (kWh)	Gross Verified (kWh)	Ratio
Electric (Heat Pump)	4,551	3,543	0.78
Natural Gas	416	1,534	3.69

The gross verified savings produced by water heater blankets in the RHEIP program was slightly lower than the reported values. This is partially a result of combining the evaluation sample for this measure with the evaluation sample from the Residential Water Heating Program to increase precision. The verified savings value per unit for this measure would have been 634 kWh, but the Evaluation Team discovered several cases where a water heater blanket was reported, but not actually installed. After discounting impacts based on these failed verifications, the per unit energy impact for this measure dropped to 529 kWh. It is noteworthy that for each of the 12 water heater wraps in the evaluation sample from the RHEIP program, installation was verified. For program planning purposes the Evaluation Team feels that the 634 kWh per wrap estimate can be used provided steps are taken by the program implementer to ensure that the wrap was installed.

The insulation measure group had the lowest realization rate of the unbundled measures at just above 40%. The Evaluation Team did not have sufficient sample size to calculate verified savings estimates at the measure level, but a few trends were observed. The Floor Insulation/ Foundation Wall/ Un-Vented Crawlspace Insulation measure used a reported savings value of 4176 kWh for homes with electric heat and -283 kWh for homes with natural gas heat. Verified savings estimates for homes with electric heat in the evaluation sample that implemented this measure were considerably lower than the reported figure. Homes with natural gas heat that implemented this measure did show a small savings rather than a consumption increase.

The most prevalent measure in the insulation group was Ceiling Insulation, accounting for over 70% of the reported savings. The ex ante savings value for this measure for homes with natural gas heat is 532 kWh. This was near the middle of the range calculated by the Evaluation Team. Verified savings estimates for homes with electric heat typically fell below the reported value of 1,737 kWh an average of about 1,000 kWh.

Air Sealing and Infiltration Improvement was a large contributor to the gross verified savings of program because of a high realization rate. The average percent improvement in blower door test results of homes in the evaluation sample that underwent infiltration improvement was 28.9%. This means improvement translates directly into reduced demand on the HVAC system in the home because the conditioned air that was escaping the home is now retained in the home and does not need to be replaced by outdoor air which requires conditioning. Homes with electric heat in the evaluation sample typically produced slightly higher savings values than the reported impact of 1,866 kWh per home and homes with gas savings drastically outperformed the reported savings value of 155 kWh. The Evaluation Team recommends the Georgia Power consider using a larger

reported savings value for air sealing in homes with gas heat due to the significant reduction in cooling load that this measure produces.

The overall realization for the Duct Sealing measure category was very close to 1. This means that the sum of the verified savings for evaluated projects was roughly equal to the sum of the reported savings for those projects. Of the 12 evaluated projects in the evaluation sample for this measure category, 8 had natural gas heat and 4 had an air source heat pump. The average verified savings estimate of the 4 homes with electric heat was 1,922 kWh and the average verified savings estimate of the 8 homes with natural gas heat was 1,055 kWh – over five times the reported savings value for the measure of 210 kWh. Based on these findings in a relative small number of homes and due to the warm climate and heavy cooling loads in Georgia Power's service territory, the Evaluation Team recommends that Georgia Power examine the relative contribution of heating and cooling savings in its reported impacts.

The programmable thermostat measure was one of the largest contributors of energy savings in the unbundled measure track and the total gross verified savings for the measure were very close to the total reported savings. Reported impacts for homes with electric heat and gas heat appeared to be proportioned more accurately for this measure. The ex ante impact for homes with natural gas heat was 237 kWh and the ex ante impact for homes with electric heat was 535. Since a home with gas heat will only save electricity during the cooling season, the ratio of the natural gas ex ante impact to the electric heat ex ante impact can be thought of as the percent of savings observed during the cooling season. That ratio for this measure is:

$$\frac{237\ kWh}{535\ kWh} = 44.2\%\ Cooling\ Savings$$

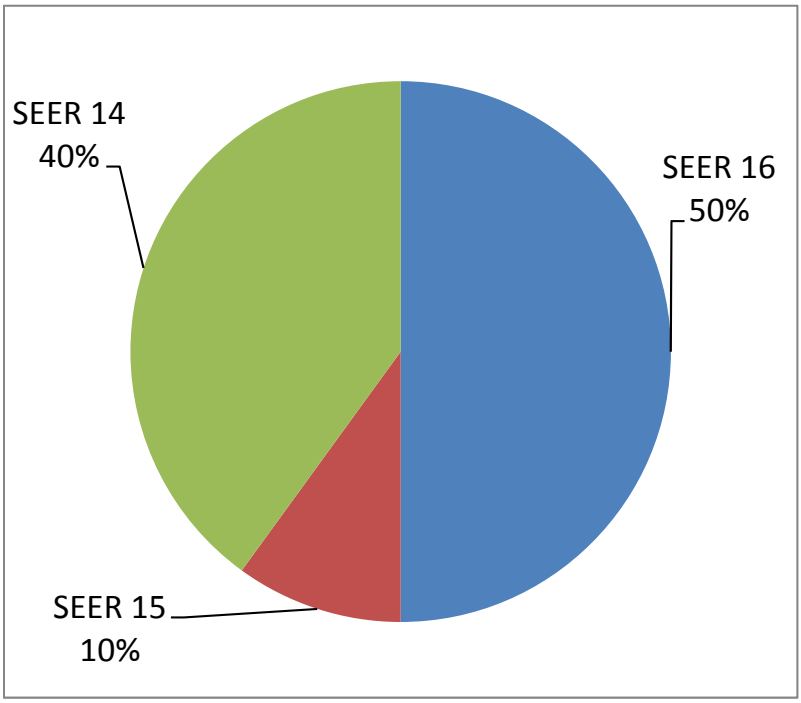
This is a much more equitable distribution of cooling and heating savings than was observed in the reported impacts for air sealing, duct sealing and insulation measures and more in line with the distribution observed by the Evaluation Team for HVAC-related measures during the course of the evaluation.

The Evaluation Team gathered detailed thermostat set point information from participants and used these as inputs in the savings calculation. Customers who programmed the device for aggressive setbacks saw the largest savings. There were actually several customers in the evaluation sample who installed the programmable thermostat but set it up to hold a single temperature 24 hours per day. Increased customer education on the benefits of programming the device to reduce HVAC demand when the home is unoccupied can help minimize this type of lost opportunity.

The Central AC Replacement and Air Source Heat Pump Replacement measures were evaluated using a 'Replace on Burnout' methodology. The realization rate for this measure was 5.85. Several factors which contributed to this were the size of the homes in the evaluation sample and the efficiency of the equipment that was installed. Figure 7-4 shows that half of the homes in the

evaluation sample installed a 16 SEER condensing unit which is considerably more efficient than the 14 SEER value required for a program rebate.

Figure 7-4: Distribution of SEER Values in the Evaluation Sample



The average size of the homes in the evaluation sample was 2,721 square feet and the average capacity of the installed unit was 3.4 tons. This means that the heating and cooling loads in these homes from which to draw savings are large as well. On average, the Evaluation Team calculated 1,686 kWh annual savings for the five homes in the evaluation sample which installed efficient air source heat pumps and 619 kWh annual savings for the five homes which installed an efficient central air conditioning unit.

7.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

The team developed a scoring matrix to convert every combination of possible responses to the seven survey questions into a freeridership score of 0 to 100% for each combination. Separate scoring matrices were developed for the bundled and unbundled survey participants.

Figure 7-5 shows a distribution of HEIP bundled survey respondents by the freeridership score assigned to each. Just over three quarters (76%) were considered 0% freeriders. Additionally, 6% indicated low levels of freeridership (12.5% to 25%), while moderate levels of freeridership (50%)

were observed for 8% of respondents. Eleven percent of HEIP bundled survey respondents were 75% freeriders, and none received a 100% freeridership score.

Figure 7-5: Frequency of Freeridership Scoring Combinations – HEIP Bundled (n=37)

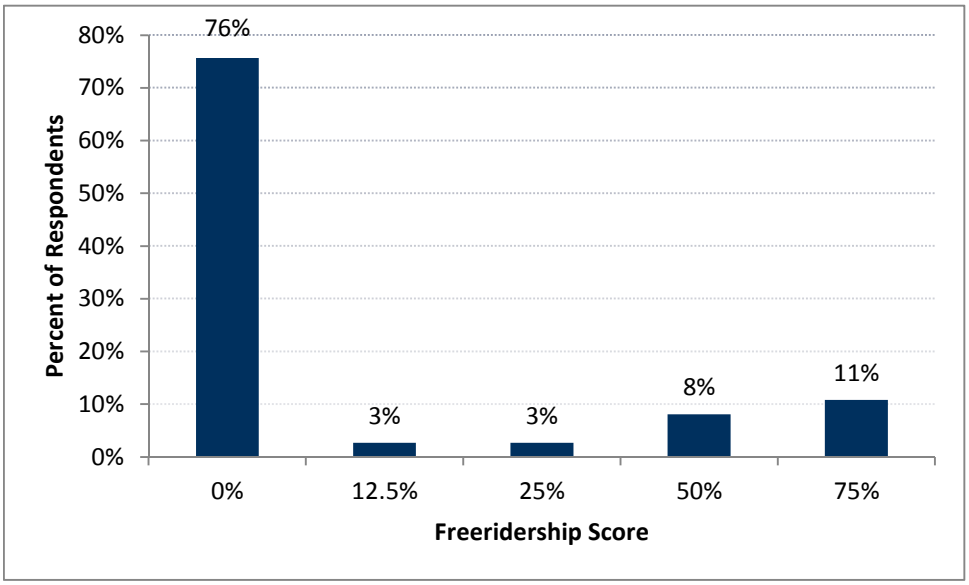


Figure 7-6 shows a distribution of HEIP unbundled survey respondents by the freeridership score assigned to each. Approximately one third (31%) of HEIP unbundled survey respondents were 100% freeriders. Additionally, almost half (47%) of respondents were considered 0% freeriders, while only 2% indicated low levels of freeridership (25%), and moderate levels of freeridership (50% to 75%) were observed for 20% of respondents.

Figure 7-6: Frequency of Freeridership Scoring Combinations – HEIP unbundled (n=55)

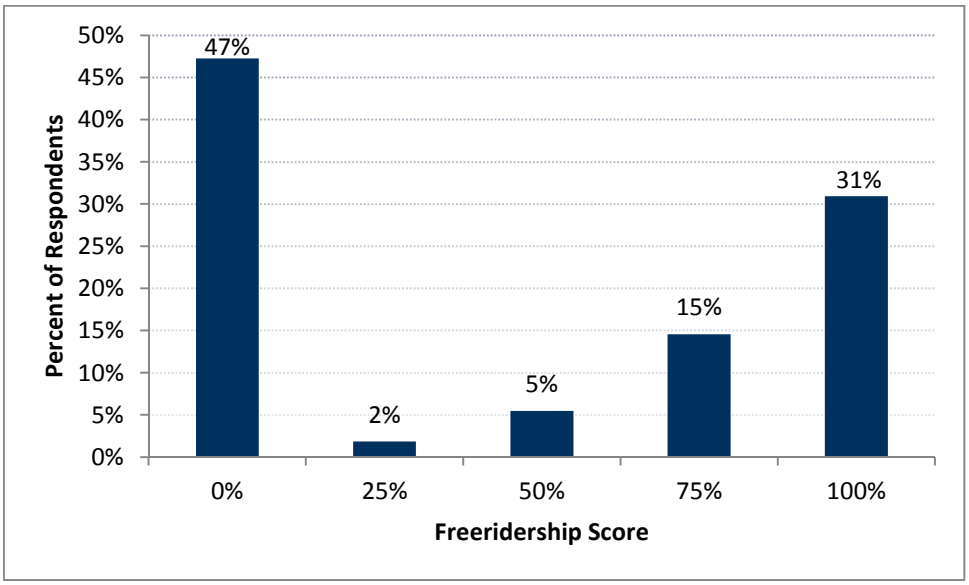


Table 7-15 shows the results of freeridership calculations for both HEIP survey respondent groups.

Table 7-15: HEIP Freeridership Results

Response Group	Responses (N)	FR Estimate	± Absolute Precision
HEIP bundled	37	13%	± 7%
HEIP unbundled	55	45%	± 10%

7.3.2.1 Spillover Findings

HEIP participants made additional energy efficiency improvements to their homes without receiving other rebates (40% bundled; 57% unbundled).

The spillover estimate for the HEIP bundled program is provided in Table 7-16. The estimate is calculated by dividing the total evaluated spillover kWh savings attributable to the program obtained from surveyed participants by the evaluated kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 7-16: HEIP bundled Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
2,037	65,515	3%

The spillover estimate for the HEIP unbundled program is provided in Table 7-17 below. The estimate is calculated by dividing the total spillover kWh savings attributable to the program obtained from surveyed participants by the kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 7-17: HEIP Unbundled Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
6,776	66,101	10%

7.3.2.2 NTG Findings

Using the (NTG = 1 – Freeridership + Spillover) equation, the team estimated the NTG ratio for program overall is 78%.

Table 7-18: HEIP Program NTG Estimates

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
HEIP Bundled	13%	3%	90%
HEIP Unbundled	45%	10%	65%
Combined	29%*	7%	78%

* Combined freeridership ratio has been weighted by the survey sample's evaluated program kWh.

7.4 PROGRAM RECOMMENDATIONS

- Establish a discounting mechanism and/or verification activity for reporting of contractor estimates for bundled savings. Proposed contractor estimates were optimistic and overstated actual energy savings. Additional QA/QC of large saving estimates and/or use of a deemed value for a generic home sizes, savings and fuel type are potential solutions.
- Consider updating the per unit energy savings estimates for insulation and air sealing customers per the findings of this evaluation.
- Utilize consistent units on blower door testing and duct testing.
- Select a control group for the Bundled HEIP customers to control for exogenous change.

8 RESIDENTIAL WATER HEATING PROGRAM

8.1 PROGRAM OVERVIEW

The Residential Water Heating Program offers free in-home assessments of existing water heating systems for potential energy-efficiency improvements and the opportunity for customers with electric water heaters to have insulating water heater blankets and pipe insulation installed. All Georgia Power customers with electric water heating systems in unconditioned spaces are eligible to participate. The program is marketed through the Georgia Power Website and during in-home energy audits. Georgia Power personnel carry out the audits and installations and provide customer education. Customers also can obtain a reimbursement for the blanket and insulation costs through the residential Home Energy Improvement program.

8.1.1 Program Measures

Customers may have a free in-home energy audit performed by Georgia Power personnel, which includes the direct installation of insulation and recommendations on improving the efficiency of water heating systems. Typical energy conservation opportunities include:

- Educating the customer about the benefits of reducing temperature set-point to 120° F;
- Educating the customer about the benefits of installing low-flow showerheads and faucet aerators;
- Installing a water heater insulating blanket;
- Insulating water heater piping, particularly the exposed hot water piping leaving the water heater; and
- Receiving two (2) free compact fluorescent bulbs (savings are reported through the residential Lighting and Appliance program via the CFL Giveaway delivery stream).

8.1.2 Program Participation

A total of 516 distinct customers in the tracking database received water heater blankets in the RWH Program as summarized in Table 8-1.

Table 8-1: Residential Water Heater Program Participation - 2011

Measure Category	Participation	Reported Impact (kWh)
Water Heater Tank Wrap	516	319,872

8.2 PROGRAM IMPACT EVALUATION METHODOLOGY

8.2.1 Overview

The impact evaluation of the Residential Water Heating Program measures followed an engineering analysis approach based on observed parameter performance. Engineering activities included installation verification, determination of operating parameters, and savings calculations. A total of 588 water heater blankets were reported via the Residential Water Heating Program in 2011, 70 water heater blankets were rebated in the unbundled track of the Residential Home Energy Improvement Program and an additional sum of water heater blankets were installed in homes which selected the Whole-House approach in the Residential Home Energy Improvement Program. The Evaluation Team opted to combine the water heater blankets from each of these three program delivery mechanisms into a single group for analysis because the measure, and the energy and demand savings it produces, should be identical across the three program paths. This also allowed the Evaluation Team to present verified savings impacts for the measure at a higher level of precision than if water heater blankets from the two programs had been analyzed separately.

8.2.2 Sampling Approach

Table 8-2 summarizes the confidence/precision level and sample sizes for the Residential Water Heating Program (RWH). Samples were selected to meet a 90% confidence and 15% precision level for the aggregate program and an 80% confidence and 20% precision level for more detailed site inspections. The lower confidence/precision level is due to the small composition of the portfolio impacts and certainty of savings.

Eleven site inspections and 15 desk reviews were completed for the Residential Water Heating Program. Sixteen additional water heater blanket recipients were audited as part of RHEIP. Six of the RHEIP participants received an on-site verification and 10 were selected for telephone survey verification.

Table 8-2: RWHP Sampling Approach

Program	Desk Analysis With Telephone Survey Verification Method		On-Site Analysis Verification Method (Subset-Sample)	
	Confidence / Precision[1]	Sample Size[2]	Confidence / Precision	Subset-Sample Size
Residential Programs				
Water Heating	90/15	42	80/20	17

[1] C/P = Statistical Confidence / Precision at assumed Cv of 0.5

[2] Includes 16 customers in the Home Energy Improvement Program who received a water heater insulation blanket. Anticipated sample size was 31.

A total of 516 distinct customers in the tracking database received water heater blankets in the RWH Program. A subset of these customers also participated in the Residential Home Energy

Improvement Program (RHEIP). To avoid contacting the same customer twice for the evaluation of separate programs, RHEIP participants were removed from the Residential Water Heating Program sample pool. Participants without valid contact information were also excluded, resulting in a revised sample pool of around 500 customers. Seventy-five customers comprised the simple random sample (31 samples and 44 alternates). After a recruitment letter was mailed to each of these customers, phone calls determined the final sample of participants.

8.2.3 Data Collection Methods

Two different measure verification methods—desk reviews and on-site inspections –were used to assess measure adoption rates and savings values of the participant sample.

8.2.3.1 Telephone Surveys

Data from telephone surveys was used to collect information used in savings calculations. Impact evaluation questions that were asked over the telephone include:

- During the free in-home audit, did the auditor install a water heater blanket?
- Is the insulating blanket currently installed on your water heater?
- How many people occupy your home?
- How many bathrooms do you have in your home?
- Do any of the occupants remain in the home the entire day (do not work outside of the home?
- What capacity is your water heater? (Gather make and model information of the tank, if available)
- If your water heater temperature set point was higher than 120°F, have you reduced it to 120°F?
- Have you installed low-flow showerheads and/or faucet aerators?
- Was water heater pipe insulation installed? If so, approximately what length was installed?
- Have you installed the two free CFLs that you were given? If so, what bulb did it replace? Approximately how many hours per day are the CFLs in use? Is the space conditioned?

The Evaluation Team also used project documentation provided by Georgia Power, including auditor reports, to augment data gathered over the phone. Georgia Power transitioned to an electronic data collection tool for its in-home audits in 2011. The Evaluation Team noted some inconsistencies in the audit data during the first few months the tool was implemented. Fewer inconsistencies were observed during the final months of 2011 – likely because auditors had become accustomed to using the tool.

8.2.3.2 Field Inspections

The telephone surveys were used to recruit a sub-sample for on-site inspection verification. These on-site inspections are a more rigorous way of verifying energy savings, allowing the Evaluation

Team to note any discrepancies between what they find on site and the information gathered through the telephone surveys and project documentation. Table 8-3 summarizes the data points gathered during on-site inspections.

8.2.4 Gross Impact Analysis

The impact evaluation of the Residential Water Heating Program measures followed an engineering analysis approach based on observed parameter performance. Engineering activities included installation verification, determination of operational parameters, and savings calculations.

Table 8-3: RWHP Site Inspection Checklist

Measure	Baseline Information	Retrofit Information
All Water Heating Measures	Number of Occupants Number of Bathrooms Tank Make, Model Number, and Capacity (Gallons) Annual Energy Consumption (If displayed) Temperature Setpoint	
Temperature Setback Education	Previous Temp Setpoint Tank Insulation Water Heater Efficiency	Current Temp Setpoint Room Air Temperature
Low-Flow Showerheads and Faucet Aerator Education	Baseline Gallon per Minute (GPM)	Retrofit Aerator GPM Quantity Water Heater Efficiency
Water Heater Blanket	Confirm No Jacket Insulation Water Heater Efficiency	Jacket Insulation Type and Thickness Room Air Temperature
Water Pipe Insulation	Confirm No Pipe Insulation Water Heater Efficiency Length of Un-insulated Pipe Pipe Diameter	Pipe Insulation Type and Thickness Length of Insulated Pipe Room Air Temperature
CFLs	Lamp type and wattage Operating hours	Lamp type and wattage CFL Spillover Presence of Air Conditioning

Other data points used for savings calculations, such as annual water use, were estimated from questions asked on-site and reviews of available research. The Evaluation Team conducted interviews with program staff, implementers and auditors to understand any available documented baseline data noted above. The Evaluation Team used parameters collected during site inspections, telephone interviews and reviews of auditor data to estimate values for any missing values in the savings calculation. For example, if the Evaluation Team was unable to identify the exact efficiency

value of a water heater that received an insulating blanket, the efficiency was estimated based on the age and size of the unit. This technique is especially important for participants who are selected for telephone surveys because homeowners are usually not familiar with the technical details of the equipment in their homes.

The algorithm used to calculate annual energy savings from the installation of a water heater blanket is shown in Appendix B. Key parameters which affect the savings calculation are:

- The capacity of the tank (gallons).
- The temperature of the water inside the tank (setpoint).
- The temperature outside of the tank (ambient temperature). This term is a function of the location of the unit.
- The thermal resistance of the tank before the installation of the insulating blanket.
- The thermal resistance of the insulating blanket

The average capacity of the of the domestic hot water heaters in the evaluation sample was 47.5 gallons. The most common temperature set points were 125 degrees (F) and 130 degrees (F). Table 8-4 shows the distribution of water heaters, by room in the home, for the evaluation sample. Table 8-4 also provides the ambient temperature assumption for each location type. Units located in garages were assumed to have the lowest average ambient temperature. Average ambient temperatures for units located in the basement were assumed to be higher than garage units but cooler than units in the primary conditioned space of the home.

Table 8-4: Water Heater Location and Ambient Temperature

Location	Percent of Evaluated Units	Assumed Ambient Temperature (F)
Garage	20.0%	65
Basement	12.5%	70
Under Stairs	32.5%	70
Closet	20.0%	75
Laundry Room	15.0%	75

A variety of different thermal resistance values for existing tanks were observed in the evaluation sample – from R-7 to R-16. Tanks which were insulated at R-16 from the factory have a lower standby loss and subsequently, a lower potential for energy savings than units which have less existing tank insulation. A similar distribution of R-values was observed among the insulting jackets that were installed. The blanket with the lowest thermal resistance in the sample was R-6 and the

highest value was R-12. All of the inspected blankets were 'Fiberglass and Foil' or 'Fiberglass and Vinyl' style wraps.

8.2.5 Net-to-Gross Analysis

8.2.5.1 Program spillover

Evaluators used on-site and telephone surveys to inquire regarding the fate of the distributed CFL lamps provided with the audit:

Customers were asked: (i) if they received bulbs through the audit; (ii) if the bulbs were installed (and by whom); and (iii) if the bulbs were still installed and functioning.

Additionally customers were surveyed to determine if additional CFL lamps were purchased as a result of the program:

Customers were asked: (i) how many CFLs they had installed in their home prior to participating in the program, (ii) how many CFLs they have purchased after participating in the program and the relative influence of the program on the additional purchases; and (iii) how many CFLs they have currently installed in their home.

8.3 PROGRAM IMPACT RESULTS

8.3.1 Gross Program Savings

The reported impact, realization rate and gross savings of the Residential Water Heating Program are shown in Table 8-5. Insulating blankets for electric water heaters was the only measure which reported savings for the program and carried an ex ante savings value of 544 kWh. Georgia Power auditors also encouraged homeowners to lower the temperature set point of the water heater and install low-flow showerheads and faucet aerators. No ex ante savings values were attributed to these recommendations and the Evaluation Team only encountered a small number of customers who decided to follow the auditor's advice and implement the recommended measures.

Table 8-5: Realization Rate and Gross Impact

Measure Category	Reported Impact (kWh)	Realization Rate	Gross Impact (kWh)
Water Heater Tank Wrap	319,872	97.3%	311,129

The realization rate of 97.3% shown in Table 8-5 is less than 100% because of several installation verification issues. The realization rate for the measure is calculated using the following ratio:

$$Realization\ Rate = \frac{\sum verified\ kWh_{sample}}{\sum reported\ kWh_{sample}}$$

Water heater wraps which were reported in program tracking data, but found not to be installed during the evaluation contribute 0 kWh to the sum in the numerator of the equation shown above and contribute 544 kWh to the sum in the denominator. Consequently, each sample point for which the installation is not verified has a noticeable effect on the realization rate. The low verification rate for this measure is a function of several contributing factors.

The Evaluation Team feels that the primary cause of the low verification rate is the system used to track ex ante impacts. The Residential Water Heating Program was implemented in conjunction with the in-home audit program and the mechanism by which auditor reports were gathered and compiled underwent a change in 2011. During the first part of the year auditors captured information using a paper-based system and this data was later entered into Georgia Power's customer account system database (RMIS). Auditors transitioned to an electronic collection tool in the middle of 2011. This tool streamlined the data collection process and will ultimately improve data accuracy, but there was a learning curve associated with the conversion.

The Evaluation Team attempted to confirm the installation of 42 water heater tank wraps between the Residential Water Heating and Home Energy Improvement Programs. The verification activity was a visual inspection of the water heater for 17 units and a phone interview with the homeowner for the remaining 25 units. Of the 42 reported wraps, a total of 7 were either never installed or no longer installed. One participant said that the auditor told her he would come back and wrap the water heater, but never returned. Several customers indicated that the water heater was never wrapped by the auditor.

The Evaluation Team also observed discrepancies in the water heater fuel type between the audit and the evaluation. This indicates possible tracking issues because neither the Georgia Power auditor nor the evaluator should have difficulty correctly identifying the water heater fuel type. Twenty of the 588 (3.4%) water heater blankets that were installed in the RWH Program were listed as having a natural gas heater in the associated audit record. Auditors are only supposed to install tank wraps on electric water heaters so either the number of water heater wraps installed (should be zero) or the water heater fuel type was captured incorrectly for these twenty records. If the number of water heater wraps are not being captured correctly by auditors or customer records are being stored improperly in the tracking database, a possibility exists that customers who were reported as not having received a water heater wrap actually did receive the measure. This possibility was not addressed by the evaluation because the sample was designed to only include audit recipients who were reported as having received a water heater tank wrap.

Three of the seven measures installations which were not verified occurred in the home of a single participant. Program tracking data stated that three water heater blankets were installed in this home, but a phone interview with the customer revealed that there was only one water heater in the home and it was not wrapped by the auditor. The homeowner also stated that the water heater fuel type in his home was electric. A review of the data collected by the auditor at this home

indicates that the water heater fuel type is natural gas and that the home is 2,400 square feet. A home of this size will very rarely require three domestic hot water heaters.

The quality of the installed tank wrap was another contributing factor in the low verification rate for this measure. One customer mentioned during a site inspection that the auditor installed the insulating jacket but that it fell off about two days after it was installed. The participant did not bother to reinstall the tank wrap after it fell off and discarded the insulating material. Increased auditor training on wrap installation could help avert this type of lost opportunity and ensure that savings persist over the useful life of the measure.

Recall that the evaluation sample for this measure included participants from both the Residential Water Heating Program and the Home Energy Improvement Program. The Evaluation Team found it noteworthy that the installation verification issues were exclusive to members from the Residential Water Heating Program. If Georgia Power plans to continue offering free water heater blankets in conjunction with the audit program procedures should be put in place to ensure accurate reporting. Requiring auditors to submit a photo of the installed water heater wrap or having participating customers sign a form stating that the measure was installed are potential solutions. The Evaluation Team also encourages periodic testing of the electronic collection tool to ensure audit reports and water heater wrap counts are being transmitted from the field to the appropriate data warehouse accurately and completely. Any record which indicates a tank wrap installed in a home with a water heating fuel type of natural gas should be flagged for review prior to being accepted into the data warehouse.

Despite the installation verification issues listed above, the overall realization was still only slightly less than 1.0. This is because the water heater tank wraps which were verified produced an average ex post energy savings estimate of 634 kWh. This is 90 kWh (16.5%) higher than the ex ante savings assumption for the measure of 544 kWh. On average, the Evaluation Team estimated the annual energy consumption of the electric water heaters in the sample to be approximately 2730 kWh per year prior to the installation of the water heater wrap and about 2100 kWh per year after the installation of the tank wrap. Larger units and units with low initial thermal efficiency ratings have larger pre-retrofit annual energy consumption estimates and produce larger savings estimates.

Currently auditors use the following criteria to determine whether or not to offer a water heater blanket:

- Electric power only,
- Accessibility,
- No visible signs of rust or leaking,
- No un-floored rooms (e.g., attics),
- Not in conditioned spaces, and
- Wires must be covered

Adding an additional criterion of "Thermal Efficiency less than R-16" would increase the per-unit savings this measure achieves. Newer models that are well insulated at-manufacture produce lower savings values because the water heater jacket has an incrementally lower benefit to the overall thermal efficiency of the unit. The average ex post savings estimate for units with a baseline thermal efficiency of R-16 was 379 kWh per year. Increasing the R-value of the water heater blankets installed would also improve the effectiveness of the program. If space permits, an R-12 insulated should be installed in each home.

8.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

After conducting participant surveys, the team converted responses into a freeridership score for each participant, using the matrix approach described in the previous freeridership methodology section. Each participant's freerider score was derived by translating their responses into a matrix value, and then using a rules-based calculation to obtain the final score. Averaging all respondents freeridership scores resulted in a 1% freeridership estimate for the RWH program, overall.

8.3.2.1 Spillover

Due to the RWH program's implementation alongside the in-home free audit program, it proved difficult to state definitively whether spillover resulted from experience with the RWH program or the audit. In fact, spillover more likely resulted from recommendations made by the auditor.

Table8-6: RWH Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
4,544	37,038	12%

8.3.2.2 NTG Estimate

Using the (NTG = 1 – Freeridership + Spillover) equation previously specified, the program's NTG ratio is 111%, as presented in Table8-7.

Table8-7: RWH Program NTG Estimate

Freeridership Ratio	Spillover Ratio	NTG Ratio
1%	12%	111%

8.4 PROGRAM RECOMMENDATIONS

- Continue to follow Improve the tracking of installed water heater wraps through use of portfolio tracking database, EERT.

- Add program rules so that existing water heaters with high insulation values (e.g. R-16) are not included in program.
- Consistently utilize same blanket r-value, such as R-12, for all installations
- Consider adding audit recipients low-flow showerheads and faucet aerators.

9 RESIDENTIAL REFRIGERATOR RECYCLING PROGRAM

9.1 PROGRAM OVERVIEW

The Residential Refrigerator Recycling Program (RRR) aims to eliminate inefficient or extraneous refrigerators and freezers in an environmentally safe manner and produce cost-effective long-term energy and peak demand savings in the residential sector. The program focuses on increasing customer awareness of the economic and environmental costs associated with running inefficient, older appliances in a household, and provides eligible customers with convenient, free refrigerator and freezer pickup services in addition to a cash incentive. All Georgia Power customers who own a working refrigerator or freezer of 10-30 cubic feet are eligible to participate. The program is being implemented and tracked by JACO Environmental, Inc. (JACO) although customers can make appointments through the Georgia Power Website or call center. The program is marketed through the GPC Website, direct mail, postcards, bill inserts, door hangers and customer newsletters, in-store materials and outreach through the other Georgia Power residential DSM programs.

This program is an expansion of Georgia Power's previous pilot program, which was initiated in 2008 and available to customers only in the metro-Atlanta area. During the Pilot Program, Georgia Power averaged collecting approximately 6,000 appliances per year in 2009 and 2010 program years.

9.1.1 Program Measures

Program criteria for an eligible refrigerator or freezer are: unit must be in working condition, between 10 and 30 cubic feet in size, and owned by the customer. Each residential address is eligible to recycle no more than two units per year.

The program provides incentives in the form of a free pick-up service for eligible refrigerators and freezers and a check for $35 paid directly to participating customers during the participation period.

9.1.2 Program Participation

In the program year 2011, a total of 6,642 distinct residential refrigerator recycling program participants as summarized in Table 9-1.

Table 9-1: Residential Refrigerator Recycling Program Participation - 2011

Equipment Type	2011 Population Count	2011 Reported Energy Savings (kWh)
Refrigerator	5,286	5,628,312
Freezer	1,356	1,464,330
TOTAL	**6,642**	**7,092,642**

9.2 PROGRAM IMPACT EVALUATION METHODOLOGY

The impact evaluation of Residential Refrigerator Recycling Program used the IPMVP Option A (Retrofit Isolation: Key Parameter Measurement) approach to develop energy and demand savings estimates. The verified gross savings impact for this type of program is an estimate of how much energy the recycled units would have used annually if they had not been decommissioned by the program. The two components of this savings value are the rate at which the unit uses energy when operating and the fraction of the year the unit would have been plugged in if it had not been recycled.

The Evaluation Team conducted a metering study of 31 participating refrigerators and freezers to estimate the annual energy consumption of units in the program population. The relationship between the size of the unit (ft^3), the age of the unit (years), the type of unit (refrigerator or freezer) and energy consumption (kWh) observed among the metering sample were used to develop a regression model. The coefficients determined during the modeling process and the size, age and unit type data collected by JACO were used to predict the annual energy consumption of each unit in the 2011 program population. Some inconsistencies were observed in unit ages captured in the program tracking data, so the Evaluation Team made a vintage adjustment to a portion of the population based on commercially available database.

The fraction of the year the unit would have been plugged in, or part-use factor, was established during the process interviews with participating customers. A total of 69 participants in the 2011 RRR Program were interviewed and their responses were used to estimate the typical operating schedule of the unit prior to decommissioning. This information was then used to calculate a part-use factor for the program. The majority of the units were plugged in and running year-round, but six respondents indicated that the unit was only used for special occasions or during certain parts of the year.

9.2.1 Sampling Approach

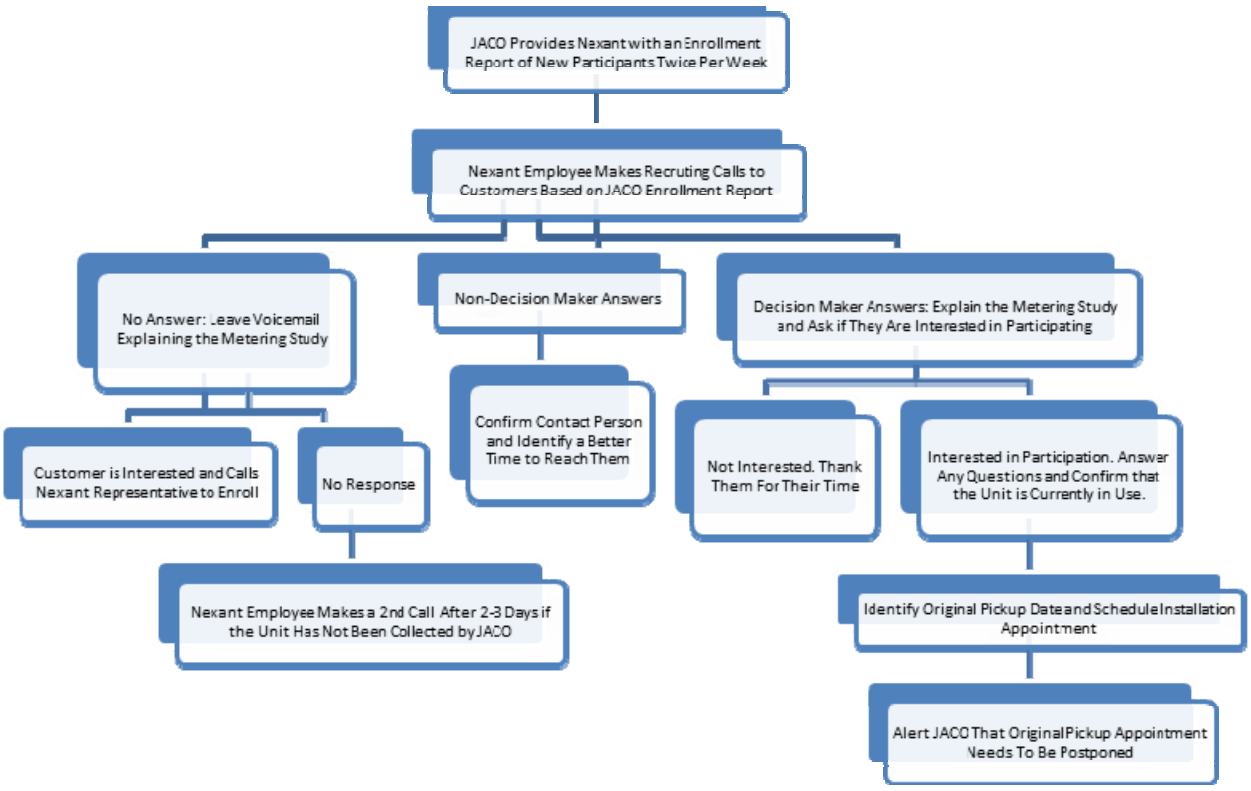
The Refrigerator Recycling Program sample was divided into refrigerator and freezer sub-groups. The sample of 31 metering participants (24 refrigerators, 7 freezers) was allocated based on the relative number of reported refrigerator and freezer replacements in 2011 (5,286 refrigerators and 1,356 freezers). Table 9-2 shows the Refrigerator Recycling Program sample design.

Table 9-2: Refrigerator Recycling Program Sample Design

Equipment Type	2011 Population Count	Site Visits and Metering	Sample Size
Refrigerator	5,286	24	24
Freezer	1,356	7	7
TOTAL	**6,642**	**31**	**31**

Designing a sample for the Refrigerator Recycling Program presented unique challenges, as customers had to be recruited after enrollment in the program, but before their old refrigerator or freezer was removed. For this reason, all Refrigerator Recycling Program participants in our sample participated in the program during 2012. The recruitment process detailed in Figure 9-1 below enabled the evaluation team to select a sample from which to develop accurate measurements of baseline energy and demand.

Figure 9-1: Process Map of Refrigerator/Freezer Metering Recruitment



9.2.2 Data Collection Methods

Two different measure verification methods, desk review and on-site inspections were used to assess measure adoption rates and savings values after a participant sample was selected.

9.2.2.1 Telephone Surveys and Desk Reviews

Data from telephone participant surveys in the process evaluation was used to verify participation in the program and collect information used in savings calculations. For a refrigerator recycling program, the appliance's energy savings were calculated based on forecasted benefits, so impact questions focused on what would have happened in the absence of the program and expected use. The savings calculations followed the following equation for Unit Energy Consumption (UEC):

$Savings_{Gross}$ = In Situ UEC x Part-Use Factor

Where

$Savings_{Gross}$	= Appliance UEC Savings at time of removal (kWh)
Part-Use Factor	= Fraction of the year that appliances would have been in use
In Situ UEC	= Appliance UEC based on in situ metering results. This is generally higher than the At-Manufacture UEC because of degradation and on-site conditions such as door openings

The part-use factor is a measure of the fraction of the hours in a year that a refrigerator or freezer operates. The part-use factor is important in establishing the gross savings of the program because a subset of the units recycled in the program would have been operational for fewer than 12 months per year, usually during the holidays or hunting season. The gross full year UEC is adjusted by the part-use factor to reflect the decrease in yearly energy usage. The value is calculated using the equation below:

$$U = (Months) / (12)$$

Where

U	= Part-Use Factor
Months	= Number of months appliance is in use
12	= Number of months in a year

The participant survey asked customers to estimate how many months out of the following year they would have operated (plugged in and running) the appliance if it had not been removed by the program, as well as how many months out of the past year the appliance was running. These two responses were compared for consistency; however, the usage from the previous year is used as the part-use factor.

The in-situ UEC was established using actual measurements taken for a sample of participants. A regression model was developed based on the observed consumption of actual units and key parameters such as age and size. Coefficients from the regression model were applied to the 2011 program tracking data and an in-situ UEC value was calculated for each unit recycled during the program year.

Information collected from non-participants was combined with the self-reported participant NTG to mitigate potential bias and result in a more accurate assessment of the program's NTG. Indeed, using both participant and non-participant responses to determine the program's NTG ratio increases the reliability of final net savings estimates and aligns this evaluation with industry standard approaches.

9.2.2.2 Field Inspections

The Evaluation Team worked with JACO to recruit a sample of program participants to participate in an *in situ* measurement study, prior to having their appliance picked up.

Past evaluations of similar appliance recycling programs have found that the manufacturer energy use data, which is based on Department of Energy (DOE) testing methods, underestimates the actual energy usage of appliances that are installed in the home. This evaluation incorporated *in situ* field monitoring in order to develop accurate estimates of the energy which would have been consumed by the appliance if it had not been removed from the grid.

In situ monitoring was performed to gain actual energy consumption values of appliances that are in operation in customer's homes. In situ monitoring involves taking spot measurements and long term measurements of appliance usage for 14-28 days. Each refrigerator included in the on-site verification was be fitted with four measurement devices. Table 9-3 outlines the devices, what data was be collected, and where each was installed.

Table 9-3: Metering Equipment Overview

Equipment	Measurement	Installation Location
HOBO U10-001 (or similar) Temperature Gauge	Refrigerator temperature	Rear wall of appliance interior
HOBO U9-002 Light On/Off Logger	Frequency & duration of door openings	Near refrigerator light
HOBO U10-001 (or similar) Temperature Gauge	Ambient temperature	Side of appliance (exterior)
Watts Up Pro ES Power Meter	Energy consumption (watts, cumulative watt-hours)	Top of appliance

HOBO U10-001 Temperature Gauge

Both internal refrigerator and ambient temperature was measured using HOBO U10-001 Temperature gauges. Loggers were initialized through the following steps:

- Ensure that the battery was sufficiently charged,
- Selected a logging interval of 5 minutes, and
- Selected the "At Interval" launch option.

Internal temperature data was used to verify that the refrigerator is functional and in-use. Significant dips in internal temperature could also indicate a power outage. The HOBO was installed near the back of the refrigerator using either an adhesive strip or a zip tie with a plastic bag.

Ambient temperature data was used to determine whether the refrigerator was located in a conditioned or unconditioned space, and was also be used to determine the effect of ambient

temperature on appliance energy use. The HOBO was installed on the side of the appliance, away from the refrigerator's heat exhaust for the most accuracy.

HOBO U9-002 Light On/Off Logger

A HOBO U9-002 Light On/Off sensor measured the frequency and duration of door openings. Data from this meter was used to investigate frequency of use, which was helpful in classifying the appliance as a primary or secondary refrigerator within the residence. The HOBO was installed so that the optic sensor is near the refrigerator's light, using either an adhesive strip or a zip tie with a plastic bag. The sensitivity dial on the front face of the HOBO was adjusted so that the red LED blinks when the light is off and the green LED blinks when the light is on.

Watts Up? Pro ES Power Meter

A Watts Up? Pro ES Power Meter collected the refrigerator's cumulative energy consumption. This measurement was used to directly calculate refrigerator unit energy consumption (UEC) as well as inform residential refrigerator load shapes. For meter initialization, the following meter settings were selected:

- Logging Interval: 1 minute
- Logged Items: Watts, Volts, Amps, Watt Hours

The meter was installed in line with the refrigerator power supply.

The energy consumption data gathered using the Watts Up? PRO® device was the primary data source. Temperature and door opening information are secondary data sources which help the Evaluation Team to better understand and explain the energy consumption patterns.

9.2.3 Gross Impact Analysis

Gross verified savings estimates for the program were calculated using a regression model that was developed from end-use metering refrigerators and freezers in participating homes. Because the units which reported savings as part of 2011 program were no longer operational, metering was conducted with participants in the 2012 program year. In addition to installing logging devices, the Evaluation Team collected a number of addition data points about the units selected for metering. Make, model, size, style, year of manufacture and whether the unit was used as a primary or secondary unit in the home were recorded for each home.

Logging equipment was deployed for at least two weeks in each participating home and then retrieved by JACO, the implementation contractor, along with the appliance. Logger data was collected and analyzed for inconsistencies before the Evaluation Team extrapolated the energy consumption observed during the metering period to an annual consumption figure. As expected, this in-situ UEC was typically higher than the at-manufacture UEC. At-manufacture UEC values were not found for all members in the metering sample, but when available, the in-situ UEC was typically higher than the at-manufacture UEC.

The Evaluation Team requested tracking records from the program implementer for the 31 members of the metering study. The makes, models and sizes of the units recorded by the Evaluation Team matched the values recorded by the JACO technicians in each case. Differences were noted between the two sources in the age of the unit which was recycled. This was a concerning observation for the Evaluation Team because unit age is one of the strongest predictors of energy consumption. A decision was made to use the vintage information collected by the Evaluation Team from the nameplate of the appliance as an input in the regression model rather than the vintage recorded in the program tracking data.

The regression equation that the Evaluation Team used to model in-situ UEC is shown below:

$$In\ Situ\ UEC = \beta_0 + \beta_1 * Age + \beta_2 * Size + \beta_3 * Freezer\ Indicator$$

Where:

$In\ Situ\ UEC$	=	The annual kWh consumption of the unit extrapolated from the consumption recorded during the metering period
β_0	=	The intercept term of the regression equation
β_1	=	Coefficient determined during the modeling process. This represents the additional number of kilowatt hours a unit is expected to consume for each additional year of age
Age	=	The age of the unit in years. Equal to 2011 – Vintage.
β_2	=	Coefficient determined during the modeling process. This represents the additional number of kilowatt hours a unit is expected to consume for each cubic foot of interior space
$Size$	=	The size of the unit in cubic feet.
β_3	=	Coefficient determined during the modeling process. This term accounts for observed differences in consumption between refrigerators and freezers.
$Freezer\ Indicator$	=	If the unit is a freezer, this term is equal to 1. If the unit is a refrigerator, it is equal to 0.

The Evaluation Team considered including a number of different predictor variables in the regression model before selecting the form shown above. The style of the unit, whether it was located in a conditioned or unconditioned space and whether the unit was a primary or secondary unit were other parameters that were tested, but ultimately excluded from the regression model. Models which included these characteristics saw only nominal gains in predictive accuracy and the

Evaluation Team felt that the more parsimonious model was sufficient to explain the variation in consumption values observed in the metering sample. The regression coefficients from the selected model are shown below in Table 9-4.

Table 9-4: Regression Coefficients

B_0 (Intercept)	B_1 (Age Coefficient)	B_2 (Size Coefficient)	B_3 (Freezer Adjustment)
-704.81	35.21	59.86	78.37

Notice that the β_3 coefficient shown in Table 9-4 is equal to 78.37. This means that a freezer is expected to use 78.37 more kWh per year than a refrigerator the same age and size. This makes sense because the temperature difference between the interior and exterior of a freezer is greater than that of a refrigerator which means the unit will have to work harder to maintain the desired set point. A sample calculation of in-situ UEC based on these coefficients for a unit in the 2011 program population is shown below. Consider an 18 cubic foot refrigerator that was manufactured in 1989 and was therefore 22 years old when retired.

$$In\ Situ\ UEC = \beta_0 + \beta_1 * Age + \beta_2 * Size + \beta_3 * Freezer\ Indicator$$

$$In\ Situ\ UEC = -704.81 + 35.21 * 22 + 59.86 * 18 + 78.37 * 0$$

$$In\ Situ\ UEC = -704.81 + 774.62 + 1077.48$$

$$In\ Situ\ UEC = 1147.29\ kWh$$

Recall that discrepancies were noted between the unit age recorded by the Evaluation Team and the program tracking data. Before applying the regression coefficients to the 2011 program population, the Evaluation Team adjusted the age variable using make and model information from the program tracking data and the publicly available Waptac[1] database of refrigerators and freezers. The Evaluation Team was able to match 1,064 of the 6,642 units recycled in the 2011 RRR Program in the Waptac database by make and model number. The first year the unit was manufactured, last year it was manufactured and the average of two, or middle year, was identified for each of the matching units. Manufacturers typically offer a particular make and model for 3 to 5 years before phasing it out of production. The first, middle and last year of manufacture from the Waptac database for each of the 1064 units was compared to the vintage recorded in the program tracking system EERT.

[1] Weatherization Assistance Program Technical Assistance Center. http://www.waptac.org/Refrigerator-Guide/Energy-Use-Data.aspx

Table 9-5: Average Vintage Comparison

Vintage in EERT	First Year of Manufacture (Waptac)	Middle Year of Manufacture (Waptac)	Final Year of Manufacture (Waptac)
1980.8	1986.4	1987.2	1987.9

As shown in Table 9-5, the vintage estimates recorded by the program implementer and captured in Georgia Power's EERT system were older than actual year of manufacture by an average of about six years. Improving the accuracy of this field in program tracking will be important to calculating accurate savings in future program years. In cases where the vintage recorded in the program tracking data was outside of the range of years during which the appliance was manufactured, the Evaluation Team replaced the tracking vintage with the middle year of manufacture prior to calculating the age of the unit using the regression coefficients to calculate gross verified savings.

During phone interviews with 69 participating customers, the Evaluation Team asked if the decommissioned unit was being used as a primary or secondary appliance. Units which were identified as primary were assumed to be operational 12 months per year. If the participant indicated that the unit was a spare, or secondary, unit they were asked whether the unit was used all the time, during special occasions only, during certain months or not at all. Participants who did not answer "all the time" were asked to report the number of months that the unit was running during the year before it was recycled. Based on these responses an estimated months-of-operation figure was calculated for each respondent. On average these units were operational 11.28 months during the year before they were recycled which corresponds to a 0.94 part-use factor. This part-use factor was applied to each unit in the 2011 along with the regression coefficients during the calculation of gross verified savings.

9.3 PROGRAM IMPACT RESULTS

9.3.1 Gross Program Savings

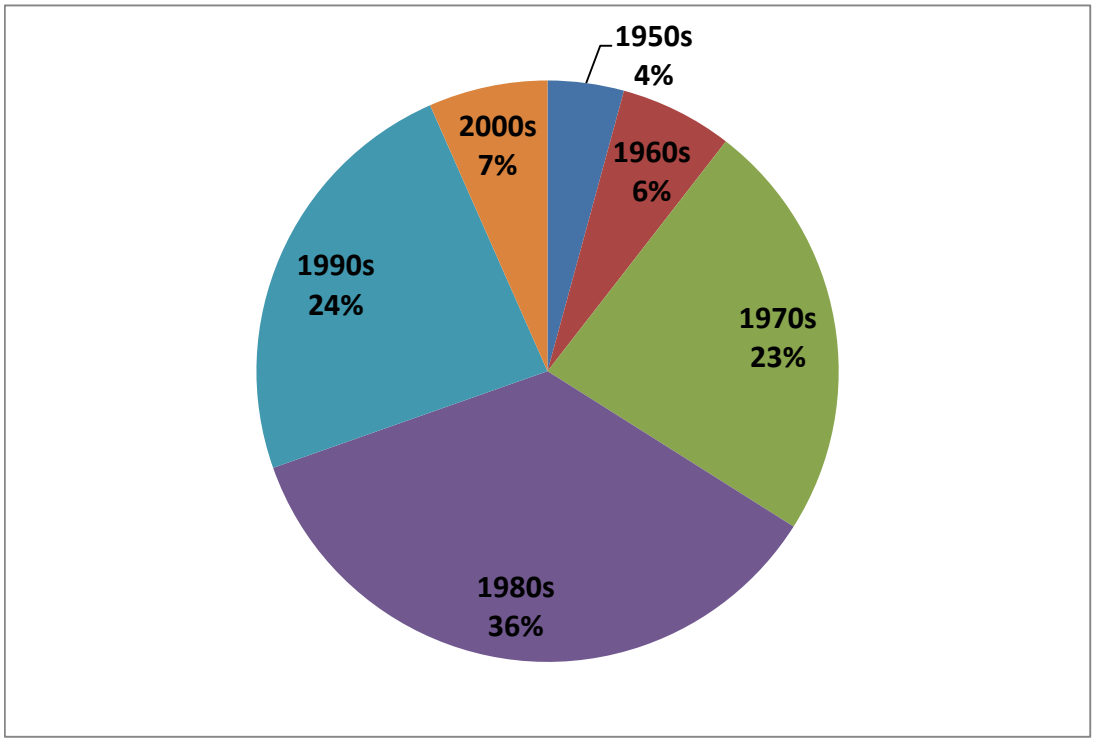
The number of refrigerators and freezers decommissioned in 2011, reported impacts, realization rate and gross verified savings for the Residential Refrigerator Recycling Program are shown below in Table 9-6. An ex ante savings value of 1,101 kWh per unit was used in program planning and program tracking for both refrigerators and freezers. The Evaluation Team calculated an average gross savings value of 1,265.7 kWh for refrigerators and 1,383.5 kWh for freezers.

Table 9-6: Realization Rate and Gross Impact

Measure	2011 Counts	Reported Impact (kWh)	Realization Rate	Gross Impact (kWh)
Refrigerator Recycling	5286	5,628,312	115%	6,690,315
Freezer Recycling	1356	1,464,330	126%	1,875,415
Total	**6642**	**7,092,642**	**121%**	**8,565,730**

The age of the units in the 2011 program population was the primary reason for the high realization rates shown in Table 9-6. The Evaluation Team adjusted vintages for a number a units when secondary research showed that the vintage estimate provided by the program implementer did not appear to be accurate. The distribution of these adjusted vintages, by decade, is presented in Figure 9-2. Over half of the units decommissioned in 2011 were manufactured in the 1970s and 1980s. These models produce the largest energy savings because efficiency standards for new units manufactured in the United States were increased substantially in the 1990s and newer units have had fewer years of operation for degradation to occur.

Figure 9-2: Decade of Manufacture – RRP Population 2011



As the Residential Refrigerator Recycling Program continues to operate in Georgia Power's service territory more and more old units will be removed from the grid. The Evaluation Team expects the population of participating units to become younger during future program years. The regression model shown in Table 9-4 and the part-use factor of 0.94 can be applied to program tracking data in order to refine ex ante savings assumptions as the program matures and the demographics of

recycled units change. A calculation field using the regression coefficients and part-use factor could also be added to EERT to provide a gross savings estimate for each unit as soon as the tracking record is entered into the data warehouse.

U.S. manufacturers were required to begin selling CFC-free refrigerators as of January 1, 1996. This requirement led to an increase in at-manufacture efficiency as well as a reduction in the amount of degradation the unit will experience over its useful life. Several of the 31 refrigerators and freezer included in the in-situ metering study conducted by the Evaluation Team were manufactured after this date, but the Evaluation Team did not have sufficient sample size to create a separate regression model for units manufactured before and after this date. Units manufactured after this change in efficiency standards accounted for 12.5% of the total program population in 2011, but this proportion is expected to increase in future program years. Georgia Power may want to consider additional metering of units manufactured since 1996 to determine if a separate savings protocol is necessary.

The Evaluation Team discussed the inconsistent tracking of appliance vintage with the program implementation contractor during a teleconference. The program implementer had also identified the issue and taken steps to improve the reliability of vintage estimates. Many units do not identify the year of manufacture on the appliance nameplate and nameplates on older units are frequently missing or illegible. Field technicians are trained to identify the refrigerant type in collected units. This is especially important in placing a unit on the correct side of the January 1, 1996 efficiency change. Technicians are also provided with a tool which they can input the make and model of the unit and see the years during which it was manufactured.

9.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

Table 9-7 presents results of the four possible scenarios discussed in the process evaluation report. Scenarios 1 and 3 indicate freeridership.

Table 9-7: Freeridership Scenarios

Scenario Independent of Program	Scenario	Indicative of Freeridership	Percent of Refrigerator/Freezer Participants (n=61)
Unit Kept but Not Used	1	Yes	2%
Unit Kept and Used	2	No	7%
Unit Discarded and Destroyed[1, 2]	3	Yes	40%
Unit Discarded, Transferred, Used[3]	4	No	52%

The freeridership calculations outlined above yielded measure level and overall freeridership ratios, presented in Table 9-8.

Table 9-8: Measure Level Freeridership Ratios

Participants/Cancellation customers Combined	Number of Respondents	Freeridership Ratio	Absolute Precision at 90% Confidence
Refrigerator	43	42%	12%
Freezer	18	31%	19%
Overall	**61**	**39%**	**10%**

9.3.2.1 Spillover

Surveys specifically asked Refrigerator Recycling Program participants whether they installed energy-efficiency measures since participating in the program. If installing one or more energy-efficiency measures, surveys asked the year of purchase and whether participants received an incentive. If applicable, the survey asked participants how influential the Appliance Recycling Program was on their purchasing decisions (participants could answer: not at all, not very, somewhat, or very influential). No surveyed participants attributed their participation in the Appliance Recycling Program as important in their decisions to purchase or install additional energy-efficient measures in their homes, resulting in a 0% spillover estimate for the program.

[1] Note that while Scenario 3 would have led to the destruction of the appliance, the unit probably would not have been decommissioned in the environmentally responsible manner undertaken by the program. As a result, while energy impacts may be equivalent, larger environmental and societal impacts differ.
[2] Percentage estimate for Scenario 3 integrates information obtained from market retailer interviews concerning the reselling of refrigerators collected.
[3] Percentage estimate for Scenario 4 integrates information obtained from market retailer interviews concerning the reselling of refrigerators collected.

9.3.2.2 Unit Replacement

As no surveyed participants reported they would not have purchased a replacement unit without the $35 Georgia Power incentive for recycling old unit no adjustments for unit replacements were necessary.

9.3.2.3 Final Net-to-Gross

Estimated NTG analysis for recycled appliances used the following formula:

$$NTG = (1 - Freeridership\ Ratio + Spillover\ Ratio) - (Replacement\ kWh * Induced\ Replacment\ Proportion)$$

Table 9-9 summarizes the results, comparable to NTG calculated for the RRP pilot program (63%).

Table 9-9: Measure Level Freeridership Ratios

Participants	Freeridership Ratio	Spillover Ratio	Induced Replacement kWh	NTG	Absolute Precision at 90% Confidence
Refrigerator	42%	0%	0	58%	12%
Freezer	31%	0%	0	69%	19%
Overall	**39%**	**0%**	**0**	**61%**	**10%**

The 2011 NTG ratio is consistent with the pilot program's 0.63 NTG.

9.4 PROGRAM RECOMMENDATIONS

- Improve the accuracy of the vintage field in implementation program tracking data, as many verified removed appliances were found to be newer than reported.
- Examine differences in equipment consumption degradation rate among pre-1995 and post-1995 units.

10 RESIDENTIAL HIGH EFFICIENCY NEW HOME PROGRAM

10.1 PROGRAM OVERVIEW

The Residential High-Efficiency New Homes Program focuses on a whole-building approach to improving the energy efficiency of new homes. Modeled after the current ENERGY STAR® New Homes Program developed by the U.S. Environmental Protection Agency (EPA), the program promotes the installation of energy-efficient measures in new home construction to improve the performance of participating homes to at least 15 percent above the existing residential energy code[1]. As such, the financial incentives for qualifying new homes are applied for and paid to the home building contractor to offset the cost of a formal inspection by a certified Home Energy Rating System (HERS) rater and to assist with the incremental cost of installing the efficiency measures.

Establishing trade ally relationships with home builders and developers is essential for this program. The trade ally communications will keep builders informed of the program and its benefits both to them and to the eventual home buyer, Georgia Power's customers. This is especially important in the present new home construction market, where fewer homes are being built, and in more single-lot locations rather than in large subdivisions.

This program also provides builders the opportunity to differentiate themselves from the competition, particularly beneficial in the current building market.

The High-Efficiency New Homes Program goals include:

- Maximizing achievable energy savings in new homes by helping homebuyers save energy while lowering projected utility bills,
- Increasing the awareness of energy-efficiency practices and services among Georgia Power's customers, contractors, builders, and developers to ensure the sustainability of the program's energy-efficiency efforts,
- Encouraging the use of ENERGY STAR® rated and similar energy-efficiency measures and bring them into the mainstream market, and
- Increasing the number of energy-efficient new homes built in Georgia

Georgia Power's long term program goal is 20-25 percent High-Efficiency New Home market penetration in Georgia Power's service territory.

10.1.1 Program Measures

Table 10-1 shows program-eligible residences and incentive levels:

[1] Currently Georgia Power's High-Efficiency New Homes program and the federal ENERGY STAR New Homes program is based on Energy Star version 2.0 and use the 2004 International Residential Code (IRC) as the baseline for calculating energy savings and Home Energy Rating System (HERS) Index.

Table 10-1: Residential High-Efficiency New Homes Program Incentive Structure

Measure	Incentive	Unit
Program Compliant Single Family	$300	home
Program Compliant Multi-family	$150	unit

In addition to the standard incentive amounts listed above, the program may offer short-term bonus incentives, such as:

- Additional incentives per participating home,
- An increased incentive for first High-Efficiency New Home built by new participating builders, and
- Payment of Parade of Homes fees for High-Efficiency New Homes

Similar to the current federal ENERGY STAR® program, builders may choose to demonstrate compliance with program requirements via one of two options:

1. Prescriptive path - Requires that the home is constructed following a defined list of energy-efficiency measures listed in the National Builder Option Package ("BOP")[1]; or
2. Performance path - Allows for a variety of energy-efficiency measures to be installed, and the overall performance of the home is calculated through a home energy rating. The results of the rating, known as the home's HERS Index[2], must meet the target score for the program of 85 or less to qualify.

Program compliance for both paths is determined by qualified, third-party HERS Raters.

10.1.2 Program Participation

In the program year 2011, a total of 2,597 distinct residential refrigerator recycling program participants as summarized in Table 10-2.

Table 10-2: Residential New Homes Program Participation - 2011

GPC Measures	2011 Participation	Ex Ante (kWh)	Reported Energy Savings (kWh)
Single Family	736	1223	900,128
Multi-Family	1,861	800	1,488,800
Total	**2,597**		**2,388,928**

[1] http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/Nat_BOP_Final.pdf
[2] http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS

10.2 PROGRAM IMPACT EVALUATION METHODOLOGY

10.2.1 Overview

The impact evaluation for the High-Efficiency New Homes Program followed IPMVP Option D (Calibrated Simulation) approach to calculate gross energy savings. Computer energy models were employed to calculate savings as a function of the important independent variables. The models included verified inputs that accurately characterized the project and were calibrated to match actual energy usage. The Evaluation Team completed the evaluation through a tiered series of activities:

- Obtain a REM/Rate or EnergyGauge computer simulation model for each sampled residence (n=68);
- Gathered monthly utility bill data for each sampled residence commencing with the residence's completion date (n=68);
- Metered each sampled residence for one-hour interval consumption data (n=68);
- Calibrated the computer simulation model for each sampled residence based on both sets of consumption data (n=68); and
- When high uncertainty existed, on-site inspections were performed to gather additional data for a sub-set of the sample population (n=11).

Blower testing was not included for on-site inspections due to the third party nature and rigor of the HERS rating system.

10.2.2 Sampling Approach

Sixty-eight residences were audited during evaluation of the Residential High Efficiency New Home Program. Samples were designed to meet a 90% confidence and 10% precision level on energy savings and an 80% confidence and 20% precision level for more detailed site inspections. The lower confidence/precision level is due to the small composition of the portfolio impacts and the rigor of the analysis. Table 10-3 shows the sample design for this program.

Table 10-3: Residential High Efficiency New Home Program Sample Design

Residence Type	Site Visits	Desk Reviews	Total Sample Size
Single Family	6	29	35
Multifamily	5	28	33
Total	**11**	**57**	**68**

The High Efficiency New Home Program sample was designed to capture the relative savings contributions of single- and multi-family homes; sample weights were a combined function of

participation, savings and expected uncertainty, resulting in almost equal sample allocation to single family and multi-family homes. Billing and occupant information was used to screen out unoccupied residences before sending recruiting letters to a random sample of program participants. Homes without available REM/Rate or EnergyGauge home energy models were removed from the sample. The database was screened to ensure each project entering the sample contained all the information necessary to complete the analysis, including a focus on occupancy and ownership. Because the program offered incentives to home builders there were a number of SF homes in the database that listed a contractor or a LLC as the homeowner. These projects were removed from the sample with the assumption they were unoccupied.

Table 10-4: Distribution of Sample Homes by Georgia Power Region

Home Type	Coastal	East	Metro	Northeast	South	West
SF	18	-	-	2	-	15
MF	-	-	20	-	13	-
Total	**18**	**-**	**20**	**2**	**13**	**15**

10.2.3 Data Collection Methods

10.2.3.1 Metering Data

Two additional data points (average monthly kWh consumption and number of billing months) were merged into the project information. Homes were screened for inconsistencies in billing data like multiple bills within a single month, duplicated billing data, or variations in billing that showed an inconsistent occupancy pattern in the home. Projects were removed when these anomalies were discovered. Billing data for the homes fell into four separate categories.

- If a homeowner/tenant had lived in the residence for more than 12 consecutive months the most recent 12 month period was taken as the annual electricity consumption for their home.
- If homes didn't reach 12 months of billing data, but there was enough billing information to run a regression analysis using local weather data that determined an accurate correlation between available billing months and the remainder of the year. These homes received annual consumption values based on the regression analysis.

The third group of homes also fell short of the 12 month billing requirement, and also fared poorly in the regression analysis. If these homes were just short of 12 months billing data the average across the available months was used to provide an annual consumption value. The final group of homes only had a few months of billing data available and the regression analysis could not provide a strong correlation. These homes were removed from the sample.

10.2.3.2 Program Materials Review

Once the sample was established, the Evaluation Team commenced analysis activities by requesting all available project file data including data from the program tracking database and HERS ratings.

Next, the REM/Rate® or EnergyGauge® computer simulation model created by the HERS rater was requested for each sampled residence.[1] These computer simulation models were reviewed and carefully scrutinized for accuracy with specific attention to verify that the applicable residential energy code had been selected.

The program database provided basic information (address, account number, billing data, HERS rating for SF only, HERS provider) on each of the homes, but the calibrated simulation model required by IPMVP Option D was provided by HERS raters. Six different HERS raters were contacted to request energy models for each of the homes, and if an energy model was not available it was removed from the sample. Five of the six HERS raters provided an electronic REM/Rate file to the evaluation team; a copy of the energy model used when each home was certified under the HERS rating process. The final HERS rater did not use REM/*Rate* as their certification software and opted to use EnergyGauge. Instead of providing an electronic EnergyGauge file, hard copies of input and result *r*eports were shared for each of the evaluated homes. Using the data contained in these reports, an electronic EnergyGauge file was recreated to be analyzed. Although EnergyGauge was only used by one HERS rater it was a large share of software used in the final sample and accounted for 39 of the 68 homes.

10.2.3.3 Telephone Surveys

Inputs to the energy models were refined and verified through telephone surveys of homeowners/tenants and on-site visits. Phone surveys for SF and MF homes followed a script pre-approved by Georgia Power. Surveys focused on the number of occupants, occupancy percentage, thermostat set-points (heating and cooling) and setback, high efficiency lighting, and miscellaneous plug loads. These variables helped account for variations in homes with large differences between model annual consumption estimates and actual usage. Responses from the survey were used to bring the annual usage within the desired range of +/- 10% of the actual billing data. Surveys were completed for all homes in the sample unless the residence already achieved the +/- 10% target. Energy models within the target range were accepted as representative of actual usage and were passed into the final sample.

Home Type	+/- 10% (No survey)	Survey only	Survey and site visit	Total
SF	15	14	6	35
MF	9	19	5	33

In addition to providing project specific energy usage data, surveys also helped recruit homeowners for on-site inspections. On-sites were completed on eleven homes in total, divided into six single family homes and five multifamily units to keep consistent with the SF/MF segmentation of the full sample. Each of these visits allowed for verification of information received during the phone survey

[1] Rem/Rate Version 12.99, EnergyGaugeUSA version 2.8.05

or presented in the energy models, collection of additional data points (model numbers of appliances, HVAC and DHW equipment specifications, insulation values), and provided a glance into how individual home owners used electricity. Phone surveys continued with participating homes until the program sample of 35 SF/33 MF homes was fulfilled.

Data collected during phone interviews and on-site visits was incorporated back into the energy models for each specific home to improve the accuracy of the energy model output consumption. Many variables impacted the total electric usage in a home, but the most sensitive parameters were the HVAC temperature set-points, the number of occupants, occupancy schedule in a home, and plug loads often related to electronics. Modifications to each home's energy model, based on surveys and on-site inspections where applicable, changed the electricity consumption for the home and created an energy model that differed from the one used by the HERS rater during certification. Major parameters of the home were not modified (unless inspections turned up unexpected differences), but the addition of how individuals used energy their homes calibrated energy models in line with measured annual electricity usage.

Where high uncertainty existed, on-site inspections were performed to gather additional data for a sub-set of the sample population to refine and/or amend the computer simulation model. Table 10-5 lists information gathered at for on-site inspections to collect both general and measure-specific information about the residence.

Table 10-5: Residential High-Efficiency New Home Program Site Inspection Checklist

Measure	Baseline Information	Retrofit Information
General Information	Year Home was Built Number of Occupants Home Square Footage Number of Bedrooms Number of Bathrooms	
Energy Star Certification	None	Envelope Information Energy Star Appliances Non-Energy Star Appliances HVAC System Programmable T-Stat Information/Schedule Domestic Hot Water Lighting Occupancy HERS Rating
Energy Star Lighting Package	None	Retrofit Lamp Type Wattage/Quantity/Location of Each Retrofit Fixture Type Quantity/Location of Each
Foundation/Slab Insulation	None	Insulation Sq Ft Insulation Type Insulation R value
Windows	None	U-value of Windows Window Type: Frame, Panes, Glass, etc. Window Square Footage Are windows located in finished conditioned space?
Programmable T-stats	None	Quantity and Location of Thermostats Brand and Model Numbers of T-Stat Heating System Type/Age/Efficiency/Size/Condition Cooling System Type/Age/Efficiency/Size/Condition T-Stat Programming: Occupied T-Stat Set Temp Unoccupied T-Stat Set Temp Occupied 'On' Hours for T-Stat Unoccupied 'off' hours for t-stat

Measure	Baseline Information	Retrofit Information
Electric water heater	None	Water Heating Set Temp Proper Installation?

10.2.3.4 Verification of Energy Model Outputs

An engineering check was applied to verify the accuracy of energy model consumption outputs using additional heat loss calculations. Individual parameters of each home such as insulation levels, glazing thermal specifications, and total wall/ceiling/window areas were utilized in ASHRAE heat loss calculations. These calculations provided an expected annual heat loss based on regionally specific normalized weather data in TMY3 format. Utilizing the efficiency levels of installed HVAC equipment to removed the heat loss, estimated annual electric consumption used to heat and cool a home. The estimated annual electric consumption were compared to the heating and cooling outputs from the energy modeling programs and provided an additional level of confidence for the results. A similar calculation was completed for water heating units based on estimated annual hot water consumption and standby tank losses.

10.2.4 Gross Impact Analysis

Gross savings for the Residential High Efficiency New Home program were obtained using REM/Rate or EnergyGauge models obtained from the HERS raters who completed the ENERGY STAR® for Homes certification for each project. When necessary, the computer simulation models were amended to calibrate to the monthly utility bill and metered consumption data. Once calibration was complete, the computer simulation models allowed the incremental energy consumption benefits to be calculated by changing the parameters to baseline energy code conditions.

10.2.4.1 IECC Code Comparison

All savings values are based on 2009 International Energy Conservation Code (IECC), in accordance with statewide Georgia legislation. The 2009 IECC code comparison provides savings values for heating, cooling and domestic hot water usage. The residence under analysis was compared to the 2009 IECC minimum requirements and any improvement over code minimums results in energy savings for the program. Along with the three outputs listed above, the 2009 IECC introduced high-efficacy (HE) lighting requirements of at least 50 percent in all homes. Consequently, any home with less than 50 percent HE lighting accounted for a loss of savings while homes with over 50 percent HE lighting led to a savings benefit. The sum of the four savings outputs (heating, cooling, DWH, lighting) is the gross impact of the program for the home under analysis.

10.3 PROGRAM IMPACT RESULTS

Two adjustments were made to Georgia Power's ex ante savings values as a result of the Evaluation. The Impact Evaluation Team calculated the gross, or verified, savings based on a review of a sample of projects from the program and the independent savings calculations performed on those

projects. The ratio of the verified savings to the reported savings, or realization rate, for sampled projects was applied to all projects in the appropriate measure category. A second adjustment was applied to these figures in order to calculate net savings. The net verified savings total is the savings which would not have occurred in the absence of the program.

10.3.1 Gross Program Savings

Individual project gross verified savings were calculated using the IECC comparison output available in the modeling programs. This calculation is used to comply with the performance path of the IECC and compares the annual electricity consumption of a home modeled in the program to an identical reference home constructed to minimum IECC requirements. This savings estimate provided an output for three components of the home; heating, cooling, and domestic hot water. Savings are gathered from areas where the modeled home exceeds the expected performance of the 2009 IECC, and heating, cooling , and domestic hot water savings are added together to determine three of the four savings segments of each projects gross verified savings. Table 10-6 summarizes and Figure 10-1 illustrates the energy savings by end-use and Table 10-7 summarizes 2011 new homes verified energy savings.

Table 10-6: Verified New Homes Energy Savings by End-Use (kWh)

	Cooling	Heating	DHW	Lighting	Total	GPC Deemed Savings (
SF Averages	838	507	18	-46	1,316	1,223
MF Averages	87	104	10	430	575	800

Figure 10-1: Verified New Homes Energy Savings by End-Use

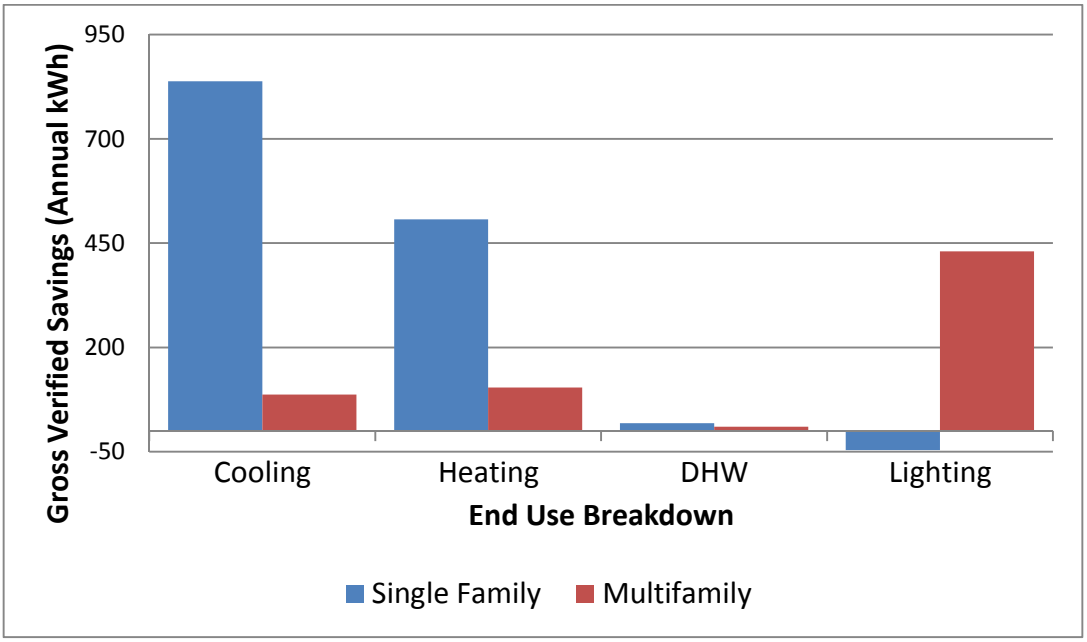


Table 10-7: GPC New Homes 2011 Verified Energy Savings

GPC Measures	2011 Participation	Ex Post (kWh)	Realization Rate	Verified Energy Savings (kWh) Post
Single Family	736	1,316	107.6%	968,576
Multi-Family	1,861	575	71.9%	1,070,075
Total	**2,597**		**85.3%**	**2,038,651**

The final calculated segment of gross verified savings is correlated to the high efficacy lighting installed in the homes. The 2009 IECC added a high efficacy lighting requirement to the prescriptive section of the energy code, requiring at least 50% of all lamps in permanently installed lighting fixtures be high efficacy. Each energy model was reviewed and the amount of electricity attributed to lighting was compared to the 50% high efficacy requirement. If a home had exactly 50% high efficacy lighting in permanently installed fixtures it received no savings from the lighting segment of the analysis. If a home exceeded 50% high efficacy there was a positive savings estimate applied to the project, but conversely if the home had less than 50% high efficacy lighting a reduction in estimated savings was applied.

The four components related to gross verified saving (heating, cooling, domestic hot water, and lighting) were added together provided the gross verified savings for a single project. The gross verified savings for the SF and MF stratum of the program was determined by taking the average of all the projects in each stratum. This process resulted in single family gross verified savings of 1,316 annual kWh per home and multifamily gross verified savings of 575 annual kWh per living unit.

10.3.1.1 Additional Findings

On January 1, 2011 the 2009 IECC was adopted as the energy code for the State of Georgia. While the 2009 IECC formed the basis of the energy code the state also adopted supplements and amendments to the 2009 IECC. The most recent version of the amendments and supplements applicable to this 2011 evaluation was enacted on January 1, 2011. Segments of supplements and amendments that can be applied to this evaluation include lowering the required U-factor for windows in IECC Climate Zone 2 (0.5 max from 0.65 max), adding a SHGC requirement to Climate Zone 4 (0.30 max from *No Requirement*), and removing the slab insulation requirement in Climate Zone 4 (*No Requirement* from R-10/2' deep). Refer to Appendix C for more detailed energy code requirements.

The ENERGY STAR® for Homes program limited the amount of high efficacy lighting in a given project to 20%. Additional reductions in the HERS rating due to a high efficacy lighting input above 20% is not allowed. This is in place to prevent homes from collecting too much of a HERS benefit on a non-permanent section of the home, but it also removed an incentive for a builder in the ENERGY® STAR program to install additional high efficacy lighting. Analysis completed as part of the 2011 evaluation of the High-Efficiency New Homes Program showed that the 50% high efficacy lighting requirement had a large positive or negative impact on electricity savings estimates.

Multifamily complexes exhibited a much wider variation in modeled versus measured electricity consumption. This can be attributed to a number of factors including a larger consumption of electricity through non-HVAC end uses due to smaller living areas, more inconsistent living patterns, variation of unit types (ground level, top level, north facing, south facing, corner units with larger wall areas exposed to unconditioned space), and an inadequate sampling of multifamily energy models.

On-site verification was used to check the inputs from the energy modeling programs and provided confidence that the information accurately represented the homes as built. Almost all the on-site verified information matched the expected values of the models, but there was one multi-family location where inaccuracies were found. Energy models provided by the project's HERS rater used 14 SEER but the equipment was verified to be 13 SEER based on model numbers collected during the on-site inspection, and research into the operational efficiencies of the heat pump coil/air handler combination. This issue appeared on 13 of the 33 living units in the multifamily sample, and each of the affected energy models was modified to include the correct heat pump SEER values. This change had a negative influence on the savings expected from each of the models, and the expected savings reduction is 10% per living unit.

10.3.2 Net Program Savings

The following text is a partial extract from the process evaluation report as needed to summarize the net-to-gross analysis approach and findings. Please refer to the process evaluation report for the full narrative.

The average unweighted freeridership score for the 5 builders interviewed was 8%. The team applied a weighting scheme based on the number of homes completed for each builder. The final recommended freeridership estimate of 3% accounts for weighted individual builder freeridership scores by the percent of total rebated homes.

Table 10-8: Efficient New Homes Program Freeridership Ratio

Response Group	Freeridership Ratio
Efficient New Homes	3%

10.3.2.1 Spillover Estimate

Table 10-9 provides the ENH program spillover estimate, calculated by dividing total evaluated spillover kWh savings attributable to the program, obtained from surveyed participants, by evaluated kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 10-9: Efficient New Homes Program Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover Percent Estimate
16,294	222,404	7%

10.3.2.2 NTG Estimate

Using the (NTG = 1 – Freeridership + Spillover) equation, the NTG ratio for program is 104%.

Table 10-10: Efficient New Homes Program Freeridership Ratio

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
Efficient New Homes Builders	3%	7%	104%

10.4 PROGRAM RECOMMENDATIONS

- Encourage compliance with prescriptive code path of current state of Georgia building energy code even if contractors and following the performance path. In particular, homes that complied with or exceeded the 50% high efficacy lighting requirement in the prescriptive section of the 2009 IECC code saw benefits greater than the program estimated per unit energy saving value.
- Consider using on-site spot verification of equipment model numbers, or installed insulation levels, to maintain confidence in project data received by program HERS raters.

- Enforce sampling requirements consistent with ENERGY STAR guidelines for multi-family homes units and discouraging contractor use of a single model for multiple units, because some models are not applicable to orientation and location in the building.

11 REVIEW OF MEASURE LEVEL PER-UNIT SAVINGS ASSUMPTIONS

This section provides both a summary of the per unit savings estimates included in the Georgia Power filing and the findings of this evaluation. In some cases "n/a" is listed. In most cases, this represents a lack of alignment of the evaluation findings, often with the evaluation determining the savings at a less granular level than the filings. For instance, for the HEIP program, whole home delivery method, savings for a unique measure with a unique heating and cooling system were listed individually for the GPC filing. However, the evaluation determined savings only at the "per home" level. All measures were reviewed as described in earlier sections of this report.

Table 11-1: Water Heater Program Per Unit Energy Savings

Measure	GPC Filing (kWh)	Nexant Verified (kWh)
WH Audit	544	529

Table 11-2: Home Energy Improvement Program – Whole House Per Unit Energy Savings

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
RHEIP Whole House Single Family (Heat Pump)	Whole House	4,551	n/a
	Air Sealing	1,866	n/a
	Duct Sealing	2,464	n/a
	Ceiling Insulation	1,737	n/a
	ENERGY STAR® Heat Pump	271	n/a
	Floor Insulation	4,176	n/a
	Wall Insulation	377	n/a
	Solar Water Heater	1,375	n/a
	Heat Pump Water Heater	1,585	n/a
	20% Home Energy Reduction	n/a	2,436
	25% Home Energy Reduction	n/a	3,223
	30% Home Energy Reduction	n/a	4,020
RHEIP Whole House Single Family (Gas)	Whole House	416	n/a
	Air Sealing	155	n/a
	Duct Sealing	210	n/a
	Ceiling Insulation	532	n/a
	ENERGY STAR® CAC	123	n/a
	Floor Insulation	-283	n/a
	Wall Insulation	-7	n/a
	Solar Water Heater	1,375	n/a
	Heat Pump Water Heater	1,585	n/a

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
	20% Home Energy Reduction	n/a	1,596
	25% Home Energy Reduction	n/a	1,755
	30% Home Energy Reduction	n/a	1,462
RHEIP Whole House Multi Family (Both Fuels)	Whole House (Heat Pump)	1,063	n/a
	Whole House (Gas)	149	n/a
	Air Sealing (Heat Pump)	989	n/a

Table 11-3: Home Energy Improvement Program – Unbundled Per Unit Energy Savings

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
RHEIP Unbundled Multi Family (Both Fuels)	Air Sealing (Gas)	127	n/a
	Duct Sealing (Heat Pump)	1,306	n/a
	Duct Sealing (Gas)	172	n/a
	Ceiling Insulation (Heat Pump)	921	n/a
	Ceiling Insulation (Gas)	436	n/a
	ENERGY STAR® Heat Pump)	144	n/a
	ENERGY STAR® CAC (Gas)	101	n/a
	Floor Insulation (Heat Pump)	2,213	n/a
	Floor Insulation (Gas)	-232	n/a
	Wall Insulation (Heat Pump)	200	n/a
	Wall Insulation (Gas)	-6	n/a
	Solar Water Heater (Heat Pump)	1,375	n/a
	Solar Water Heater (Gas)	1,375	n/a
	Heat Pump Water Heater (Heat Pump)	1,585	n/a
	Heat Pump Water Heater (Gas)	1,585	n/a
	30% Home Energy Reduction (Both Fuels)	n/a	2,670
RHEIP Unbundled Single Family (Both Fuels)	Air Sealing (Heat Pump)	1,866	3,035
	Air Sealing (Gas)	155	2,984
	Duct Sealing (Heat Pump)	2,464	1,922
	Duct Sealing (Gas)	210	1,010
	Ceiling Insulation (Heat Pump)	1,737	n/a
	Ceiling Insulation (Gas)	532	n/a
	Ceiling Insulation (Both Fuels)	n/a	413
	ENERGY STAR® Heat Pump	271	1,686
	ENERGY STAR® CAC (Gas)	123	619

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
	Floor Insulation (Heat Pump)	4,176	n/a
	Floor Insulation (Gas)	-283	n/a
	Floor Insulation (Both Fuels)	n/a	798
	Wall Insulation (Heat Pump)	377	n/a
	Wall Insulation (Gas)	-7	n/a
	Wall Insulation (Both Fuels)	n/a	755
	Solar Water Heater (Heat Pump)	1,375	n/a
RHEIP Unbundled Single Family (Both Fuels)	Solar Water Heater (Gas)	1,375	n/a
	Solar Water Heater (Both Fuels)	n/a	1,375
	Heat Pump Water Heater (Heat Pump)	1,585	n/a
	Heat Pump Water Heater (Gas)	1,585	n/a
	Heat Pump Water Heater (Both Fuels)	n/a	1,585
RHEIP Unbundled Multi Family (Heat Pump)	Air Sealing	522	n/a
	Duct Sealing	690	n/a
	Ceiling Insulation	486	n/a
	ENERGY STAR® Heat Pump	76	n/a
	Floor Insulation	1,169	n/a
	Wall Insulation	106	n/a
	Solar Water Heater	1,375	n/a
	Heat Pump Water Heater	1,585	n/a
RHEIP Unbundled Multi Family (Gas)	Air Sealing	70	n/a
	Duct Sealing	95	n/a
	Ceiling Insulation	239	n/a
	ENERGY STAR® CAC	55	n/a
	Floor Insulation	-127	n/a
	Wall Insulation	-3	n/a

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
	Solar Water Heater	1,375	n/a
	Heat Pump Water Heater	1,585	n/a
RHEIP Unbundled Home Assessments	Single Family (HP) – Thermostat	535	426
	Single Family (Gas) – Thermostat	237	245
	Multi Family (HP) – Thermostat	344	n/a
	Multi Family (Gas) – Thermostat	144	n/a
	Single Family (HP) – Knee Wall	685	n/a
	Single Family (Gas) – Knee Wall	323	n/a
	Single Family (Both Fuels) – Knee Wall	n/a	208
	Single Family (HP) – Rim Joist	14	n/a
	Single Family (Gas) – Rim Joist	0	n/a
	Single Family (Both Fuels) – Rim Joist	n/a	50

Table 11-4: New Homes Program – Per Unit Energy Savings

Measure	GPC Filing (kWh)	Nexant Verified (kWh)
Single Family – Tier 1 – HP & Electric WH	1,223	1,316
Single Family – Tier 2 – Tax Credit Compliant	4,600	n/a
Multi Family – Tier 1 – HP & Electric WH	800	575

Table 11-5: Residential Lighting and Appliance Per Unit Energy Savings

Program	Measure	GPC Filing (kWh)	Nexant Verified (kWh)
Lighting and Appliance	ENERGY STAR® Refrigerators	161	161
	ENERGY STAR® Freezers	138	n/a
	ENERGY STAR® Clothes Washers	684	360
	ENERGY STAR® Dishwashers	191	n/a
	ENERGY STAR® Room A/C	133	n/a
	High Efficiency Pool Pump	1,600	n/a
	Pool Pump Timer	1,104	n/a
	CFLs – 4 Pack Giveaway	212	284
	CFLs – Mfgr. Markdown	212	227
	ES Interior Fixture	153	n/a
	ES Exterior Lighting	359	n/a
	Exterior Lighting Controls	473	n/a
	9W CFL Retrofit	n/a	48
	13W CFL Retrofit	n/a	71
	14W CFL Retrofit	n/a	71
	18W CFL Retrofit	n/a	88
	19W CFL Retrofit	n/a	87
	23W CFL Retrofit	n/a	119

Table 11-6: Residential Refrigerator Recyling Per Unit Energy Savings

Measure	GPC Filing (kWh)	Nexant Verified (kWh)
Refrigerator Recycling	1,101	1,266
Freezer Recycling	1,101	1,383

Table 11-7: Commercial Prescriptive Per Unit Energy Savings

Measure	GPC Filing (kWh)	Nexant Verified (kWh)
T8 Linear Fluorescent	111	111
Occupancy Sensor	730	490
High Bay Light Change	2,262	N/A
LED Exit Sign	322	283
Packaged A/C	305	207
Packaged ASHP	737	244
Reflective Roof	0.3	0.3
Duct & Air Sealing	2	2.1
High Efficiency Electric Storage Water Heater	168	168
Heat Pump Water Heater	9,122	n/a
Pipe Insulation	9	9
Heat Exchanger	4,233	n/a
Grocery Case LED Lighting	335	n/a
Grocery Case Night Cover	896	n/a
Grocery Anti-Sweat Control	939	940
Grocery Door Gaskets	281	346
Grocery Pipe Insulation	18	18
ENERGY STAR® Ice Machines	591	591
Restaurant DC Vent Hoods	9,800	4,486
Restaurant ENERGY STAR® Holding Cabinet	7,429	7,429
Restaurant ENERGY STAR® Electric Fryer	1,231	1,231
Restaurant ENERGY STAR® Steam Cookers	2,676	2,676
Restaurant High Efficiency Griddles	2,606	2,606
Restaurant ENERGY STAR® Refrig./Freezer	5,120	1,000

Measure	GPC Filing (kWh)	Nexant Verified (kWh)
Restaurant ENERGY STAR® Dishwasher	16,131	16,131

12 COST EFFECTIVENESS ANALYSIS

This section considers program cost-effectiveness in terms of the total resource cost test (TRC), the program administrator cost test (PAC), and the levelized program delivery costs.

12.1 METHODOLOGY

12.1.1 Lifetime Savings

The effective useful life (EUL) of retrofit equipment is an important consideration in the assessment of initiative effectiveness because the avoided energy, demand, and cost benefits continue to accrue over the lifetime of the measure.

An EUL was calculated for each impact stratum by weighting the individual project EUL values by the annual net verified energy savings. Individual project EULs were assigned based on the retrofit measure type using values sourced from the Database for Energy Efficient Resources[1]. For most measures, the lifetime energy savings were then calculated as:

$$Lifetime\ Energy\ Savings = EUL * Annual\ Energy\ Savings$$

12.1.2 Total Resource Cost

The TRC test measures the net costs of a program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.[2] In general, it is the ratio of the discounted total benefits of the program to the discounted total costs over a specified time period. A benefit-cost ratio greater than one indicates that the program is beneficial to the utility and its ratepayers on a total resource cost basis.

The benefits calculated in the TRC test are the avoided supply costs, the reduction in transmission, distribution, generation, and energy costs valued at marginal cost for the periods when there is a load reduction. The costs associated with this test are the net programs costs paid by both the utility and the participants; this includes administration costs, non-freerider equipment costs, and freerider incentives.

In algebraic form[3]:

$$Benefits = \sum_{t=1}^{n} \frac{UAC_t}{(1+d)^{t-1}}$$

[1] The Database for Energy Efficient Resources (DEER). Database maintained by the California Public Utilities Commission and the California Energy Commission. http://www.energy.ca.gov/deer/. Accessed 7/9/2012.
[2] *California Standard Practice Manual: Economic Analysis of Demand-Side Management Programs and Projects.* July 2002.
[3] According to California Standard Practice Manual 2007 Clarification Memo. D.07-09-043.

$$Costs = \sum_{t=1}^{n} \frac{PRC_t + PCN_t + FRINC_t}{(1+d)^{t-1}}$$

$$TRC\ Ratio = \frac{Benefits}{Costs}$$

where

UAC_t	=	Utility net avoided supply costs in year t
PRC_t	=	Program administrator program costs in year t
PCN_t	=	Net participant costs (equipment costs) in year t
$FRINC_t$	=	Incentives paid to freeriders in year t
d	=	Nominal discount rate[1]

12.1.3 Program Administrator Cost

The PAC test measures the net costs of a program as a resource option based on the costs incurred by the program administrator and excluding any net costs incurred by the participant. A benefit to cost ratio above one indicates that the program would benefit the administrator's cost environment.

Similar to the TRC test, the benefits calculated in the PAC test are the avoided supply costs of energy and demand. However, the net avoided supply costs for the PAC test include only the avoided costs of supplying electricity, not the avoided societal costs of natural gas, propane, or water. The costs associated with this test are the program costs incurred by the administrator and the incentives paid to the customers.

In algebraic form:

$$Benefits = \sum_{t=1}^{n} \frac{UAC_t}{(1+d)^{t-1}}$$

$$Costs = \sum_{t=1}^{n} \frac{PRC_t + INC_t}{(1+d)^{t-1}}$$

$$PAC\ Ratio = \frac{Benefits}{Costs}$$

where

UAC_t	=	Utility net avoided supply costs in year t

[1] Based on the information provided to the Evaluation Team by GPC, the real discount rate = 4% and the inflation rate = 1.9%. Using the exact form of the Fisher Equation, or (1+nominal rate) = (1+real rate)*(1+inflation rate), the nominal rate is thus 5.98%.

PRC_t = Program administrator program costs in year t
INC_t = Incentives paid to participants in year t
d = Nominal discount rate

12.1.4 Ratepayer Impact Measure Test (RIM)

The RIM test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program[1]. This test adopts the perspective of all ratepayers, including program participants and non-participants. In general, the test is the ratio of the discounted total benefits of the program to the discounted total costs over a specified time period. A benefit-cost ratio above one indicates that the program is beneficial to the ratepayers.

The benefits calculated in the RIM test are the avoided supply costs, the reduction in transmission, distribution, generation, and energy costs valued at marginal cost for the periods when there is a load reduction. The costs associated with this test are the gross incentive costs of the program, the net bill reductions experienced by participants (which can be thought of as the lost revenue to the utility from implementing the conservation program), and the program administration costs.

In algebraic form:

$$Benefits = \sum_{t=1}^{n} \frac{UAC_t}{(1+d)^{t-1}}$$

$$Costs = \sum_{t=1}^{n} \frac{RL_t + PRC_t + INC_t}{(1+d)^{t-1}}$$

$$TRC\ Ratio = \frac{Benefits}{Costs}$$

where

UAC_t = Utility avoided supply costs in year t
RL_t = Revenue loss from reduced sales in year t
PRC_t = Program administrator costs in year t
INC_t = Incentives paid to participants in year t
d = discount rate

[1] *California Standard Practice Manual: Economic Analysis of Demand-Side Management Programs and Projects*. California Energy Commission. October 2001.

12.1.5 Levelized Delivery Cost

Levelizing the delivery costs of each initiative is a useful way to express the program delivery costs per unit of energy or capacity savings. Levelized delivery costs are useful when comparing programs within a demand-side management portfolio.

Initiative delivery costs are the sum of program administrator costs and incentives paid to the participants. To levelize these costs for energy and demand savings, the following formula is used[1]:

$$Levelized\ Delivery\ Costs = \frac{Delivery\ Costs}{\sum_{t=1}^{n} \frac{Q_t}{(1+d)^{t-1}}}$$

where

Q_t = Energy or capacity savings in year t

d = Nominal discount rate

12.2 SECTOR AND PORTFOLIO SUMMARY

Table 12-1 shows the total costs and benefits used as inputs into the cost-effectiveness tests. All programs were found to be cost-effective when evaluated from the perspective of the program administrator (PAC) and the administrator and participant combined (TRC). However, all programs were full not to be cost effective from the perspective of the ratepayer (RIM).

[1] Short, Walter, et.al. *A Manual for the Economic Evaluation of Energy Efficiency and Renewable Energy Technologies.* National Renewable Energy Laboratory. March 1995.

Table 12-1: GPC 2011 Program Year Cost Effectiveness Summary

Cost Effectiveness	Commercial	Residential	Portfolio
Program Administrator Cost (PAC)			
PAC Costs	$4,803,956	$10,018,687	$14,822,642
PAC Benefits	$57,966,440	$27,250,500	$85,216,941
PAC Net Benefits ($)	$53,162,485	$17,231,814	$70,394,299
PAC Net Benefit (Ratio)	12.07	2.72	5.75
Ratepayer Impact Measure (RIM)			
RIM Costs	$95,923,616	$48,337,622	$144,261,238
RIM Benefits	$57,966,440	$27,250,500	$85,216,941
RIM Net Benefits ($)	-$37,957,176	-$21,087,122	-$59,044,298
RIM Net Benefit (Ratio)	0.60	0.56	0.59
Total Resource Cost (TRC)			
TRC Costs	$26,849,422	$12,316,522	$39,165,944
TRC Benefits	$57,966,440	$37,373,055	$95,339,495
TRC Net Benefits ($)	$31,117,018	$25,056,533	$56,173,551
TRC Net Benefit (Ratio)	2.16	3.03	2.43
Levelized Delivery Cost			
$/MWh	$11.99	$41.01	$22.98

12.3 PROGRAM SUMMARY RESULTS

12.3.1 Commercial Programs

Table 12-2 displays the cost effectiveness results for the 2011 program year for commercial programs. The Custom program stream program administrator cost analysis reveals large benefits due to the ceiling on incentive payments.

Table 12-2: GPC 2011 Cost Effectiveness Commercial Program Summary

Cost Effectiveness	Custom	Prescriptive	Commercial
Program Administrator Cost (PAC)			
PAC Costs	$2,659,256	$2,144,699	$4,803,956
PAC Benefits	$52,140,554	$5,825,887	$57,966,440
PAC Net Benefits ($)	$49,481,297	$3,681,187	$53,162,485
PAC Net Benefit (Ratio)	19.61	2.72	12.07
Ratepayer Impact Measure (RIM)			
RIM Costs	$85,001,010	$10,922,606	$95,923,616
RIM Benefits	$52,140,554	$5,825,887	$57,966,440
RIM Net Benefits ($)	-$32,860,456	-$5,096,720	-$37,957,176
RIM Net Benefit (Ratio)	0.61	0.53	0.60
Total Resource Cost (TRC)			
TRC Costs	$22,927,260	$3,922,162	$26,849,422
TRC Benefits	$52,140,554	$5,825,887	$57,966,440
TRC Net Benefits ($)	$29,213,293	$1,903,725	$31,117,018
TRC Net Benefit (Ratio)	2.27	1.49	2.16
Levelized Delivery Cost			
$/MWh	$7.47	$49.61	$11.99

12.3.1 Residential Programs

Table 12-3 and Table 12-4 display the cost effectiveness results for the 2011 program year for residential programs. The lighting and appliance, home energy improvement and new home programs include benefits for the gas utility within the Total Resource Cost (TRC) test.

Table 12-3: GPC 2011 Cost Effectiveness Residential (L&A, HEIP, RWH) Summary

Cost Effectiveness	L&A	HEIP	RWH
Program Administrator Cost (PAC)			
PAC Costs	$2,329,012	$4,861,171	$55,607
PAC Benefits	$14,801,090	$7,286,108	$240,399
PAC Net Benefits ($)	$12,472,078	$2,424,937	$184,792
PAC Net Benefit (Ratio)	6.36	1.50	4.32
Ratepayer Impact Measure (RIM)			
RIM Costs	$20,241,754	$15,522,390	$376,100
RIM Benefits	$14,801,090	$7,286,108	$240,399
RIM Net Benefits ($)	-$5,440,665	-$8,236,283	-$135,701
RIM Net Benefit (Ratio)	0.73	0.47	0.64
Total Resource Cost (TRC)			
TRC Costs	$2,010,935	$6,708,900	$114,340
TRC Benefits	$11,219,990	$17,558,021	$240,399
TRC Net Benefits ($)	$9,209,055	$10,849,121	$126,059
TRC Net Benefit (Ratio)	5.58	2.62	2.10
Levelized Delivery Cost			
$/MWh	$17.27	$74.82	$35.81

Table 12-4: GPC 2011 Cost Effectiveness Residential (RNH, RRP, Total) Summary

Cost Effectiveness	RNH	RRP	Residential (Total)
Program Administrator Cost (PAC)			
PAC Costs	$1,473,113	$1,299,783	$10,018,687
PAC Benefits	$2,562,165	$2,360,740	$27,250,500
PAC Net Benefits ($)	$1,089,052	$1,060,956	$17,231,814
PAC Net Benefit (Ratio)	1.74	1.82	2.72
Ratepayer Impact Measure (RIM)			
RIM Costs	$4,333,412	$7,863,966	$48,337,622
RIM Benefits	$2,562,165	$2,360,740	$27,250,500
RIM Net Benefits ($)	-$1,771,247	-$5,503,226	-$21,087,122
RIM Net Benefit (Ratio)	0.59	0.30	0.56
Total Resource Cost (TRC)			
TRC Costs	$2,421,995	$1,060,353	$12,316,522
TRC Benefits	$5,993,905	$2,360,740	$37,373,055
TRC Net Benefits ($)	$3,571,911	$1,300,386	$25,056,533
TRC Net Benefit (Ratio)	2.47	2.23	3.03
Levelized Delivery Cost			
$/MWh	$56.78	$56.78	$41.01

Appendix A GLOSSARY

Within the body of this report, there are several technical terms that require explanation. Additionally, some of the terms may appear to be similar at first review; however, have very different means. Terms such as "reported" and "verified" can easily be confused by the reader and are thus defined as following:

Attribution The process of determining the percentage of a program's savings that are directly related to the programs influences. Its value is determined through the use of survey techniques, and the Attribution Survey used for this project can be found in the process evaluation report.

Baseline The expected energy usage level of a specific measure or project before improvements are implemented. This becomes the comparison value for all energy savings calculations.

Deemed Savings Amount of savings for a particular measure provided by documented and validated sources or reference materials. Often used when confidence is high for a specific measure, databases lack sufficient information, or costs of measurement and verification greatly outweigh the benefits.

Early Replacement Refers to an efficiency measure or efficiency program that seeks to encourage the replacement of functional equipment before the end of its operating life with higher-efficiency units.

Freerider A participant who, on some level, would have acquired in the energy efficiency measure regardless of the program influence. Determining freeridership values is a large component in calculating the Net-to-Gross ratio.

Gross Savings Total amount of a parameter of interest (kWh or kW) saved by a project/program.

Net-to-Gross Ratio A ratio value determined through the process of surveying decision makers who implemented projects in order to account for freeridership and other attribution effects. The net-to-gross (NTG) ratio is multiplied by gross verified savings to produce net savings. (NTG is typically calculated for a statistically significant sample of projects and then extrapolated to the population as a whole)

Net Savings Total amount of a parameter of interest (kWh, kW) saved by a program that is directly related to the program. It takes into account the realization rate, as well as results of the attribution analysis (freeriders), to provide a value of energy savings directly related to the program influence. Net Savings is calculated by multiplying the gross verified savings by the net-to-gross (NTG) ratio.

Nonparticipant Spillover Savings from efficiency projects implemented by those who did not directly participate in a program, but which nonetheless occurred due to the influence of the program.

Participant Cost The cost to the participant to participate in an energy efficiency program.

Participant Spillover Additional energy efficiency actions taken by program participants as a result of program influence, but actions that go beyond those directly subsidized or required by the program.[1]

Project A single activity (lighting retrofit, refrigeration replacement, HVAC replacement, insulation install, etc.).

Program A group of projects with similar technology characteristics that are installed in similar applications.

Realization Rate A measure of the amount of verified saving for a project/program compared to the reported savings. It is defined as the ratio of Gross Verified Savings to Gross Reported Savings.

$$Realization\ Rate\ (\%) = \frac{Gross\ Verified\ Savings}{Gross\ Reported\ Savings}$$

Replace-on-burnout: A DSM measure is not implemented until the existing technology it is replacing fails or burns out. An example would be a unitary air conditioning rooftop unit being purchased after the failure of the existing rooftop unit at the end of its useful life.

Reported Savings Savings calculated and reported by GPC.

Stratify The process of breaking down a population of projects into groups with similar characteristics (technical, financial, size, location, etc.). This is used during population sampling and allows projects with greater uncertainty or higher budgets to be accurately weighted to assess their impact on a program.

Sub-Strata The individual groups remaining once a population has been stratified.

Stipulated Savings Same as *Deemed Savings*

Verified Savings Savings determined by the evaluation team through the collection of data at on-site inspections, phone surveys, and engineering analysis.

[1] The definitions of participant and nonparticipant spillover were obtained from the National Action Plan for Energy Efficiency Report titled "Model Energy Efficiency Program Impact Evaluation Guide", November 2007, page ES-4.

Appendix B SUPPORTING CALCULATION METHODOLOGY

B.1 RESIDENTIAL WATER HEATING PROGRAM - WATER HEATER BLANKET

The base case annual energy consumption of an electric water heater can be calculated with the following equations:

$$r_{tank} = \sqrt{\frac{\frac{V}{7.48}}{\pi * h}}$$

where:

r_{tank} = radius of the water tank (ft)

V = volume of the tank (gallons)

h = height of the tank (ft)

$$A_{tank\ walls} = 2 * \pi * r_{tank} * h$$

where:

$A_{tank\ walls}$ = surface area of the walls of the tank (the area of the tank excluding the base and the top) (ft^2)

$$q_{base} = \frac{A_{tank\ walls} * (T_{water} - T_{ambient})}{R_{tank}}$$

where:

q_{base} = base case heat loss through the walls of the tank (Btu/hr)

T = temperature (°F)

R_{tank} = thermal resistance of the water heater ($hr*ft^2*°F/Btu$)

Then, the base case annual energy consumption becomes:

$$AEC_{base} = \frac{q_{base} * H}{\eta * 3412}$$

where:

AEC_{base} = Base case annual energy consumption (kWh)

H = Hours of use (assumed to be 8760)

η = efficiency of the hot water heater (energy factor)

For the retrofit case, we make the following changes:

$$A_{retrofit} = 2 * \pi * (r_{tank} + t) * h$$

where:

$A_{retrofit}$ = surface area of the outer edge of the water heater blanket (ft^2)

t = thickness of the insulation (ft)

$$q_{retrofit} = \frac{A_{retrofit} * (T_{water} - T_{ambient})}{R_{tank} + R_{blanket}}$$

where:

$q_{retrofit}$ = retrofit case heat loss through the insulation (Btu/hr)

$R_{blanket}$ = thermal resistance of the water heater blanket (hr * ft^2 * °F/Btu)

Then, the retrofit annual energy consumption becomes:

$$AEC_{retrofit} = \frac{q_{retrofit} * H}{\eta * 3412}$$

where:

$AEC_{retrofit}$ = Retrofit case annual energy consumption (kWh)

Thus, annual energy savings are the difference between the base case annual energy consumption and the retrofit case annual energy consumption, or:

$$Annual\ Energy\ Savings = AEC_{base} - AEC_{retrofit}$$

B.2 RESIDENTIAL WATER HEATING PROGRAM - WATER PIPE INSULATION

Calculating energy savings for water pipe insulation from on-site observations is very difficult without a long metering study that captures both pre and post retrofit energy consumption. Therefore, the Evaluation Team will use deemed values. The following formula will be used to calculate energy savings:

$$Annual\ Energy\ Savings = \frac{Annual\ Energy\ Consumption * Length\ of\ Insulation\ (ft) * 3\%}{10}$$

If annual energy consumption is displayed on the water heater, or it can be found by looking up the make and model number, it will be used in the above equation. If not, a value of 2,763 kWh[1] will be used.

[1] Average annual energy consumption for a residential hot water heater in the "South" region from the 2005 Residential Energy Consumption Survey. U.S. Energy Information Administration.

The deemed savings value of 3% used in the above equation represents the annual energy savings as reported in the Pennsylvania Technical Reference Manual for a 10ft length of pipe insulation[1].

B.3 RESIDENTIAL WATER HEATING PROGRAM - TEMPERATURE SETBACK

The base case energy consumption calculation for a water heater temperature setback will follow the following formulas:

$$r_{tank} = \sqrt{\frac{V}{7.48}}{\pi * h}$$

where:

r_{tank} = radius of the water tank (ft)

V = volume of the tank (gallons)

h = height of the tank (ft)

$$A_{tank} = 2 * \pi * r_{tank} * h + 2 * \pi * r_{tank}^2$$

where:

A_{tank} = surface area of the tank (ft^2)

$$q_{base} = \frac{A_{tank} * (T_{water,base} - T_{ambient})}{R_{tank}}$$

where:

q_{base} = base case heat loss through the walls of the tank (Btu/hr)

$T_{water,in}$ = Base case water temperature setpoint (°F)

$T_{ambient}$ = Ambient temperature of the room (°F)

R_{tank} = thermal resistance of the water heater ($hr*ft^2*°F/Btu$)

Then, the base case annual energy consumption becomes:

$$AEC_{base} = \frac{q_{base} * H}{\eta * 3412}$$

where:

AEC_{base} = Base case annual energy consumption (kWh)

[1] Pennsylvania Public Utility Commission Technical Reference Manual. June 2011. Pg. 63. http://www.puc.state.pa.us/electric/Act129/TRM.aspx

H = Hours of use (assumed to be 8760)

η = efficiency of the hot water heater (energy factor)

For the retrofit case, we make the following changes:

$$q_{retrofit} = \frac{A_{tank} * \left(T_{water,r} - T_{ambient}\right)}{R_{tank}}$$

where:

$q_{retrofit}$ = retrofit case heat loss through the walls of the tank (Btu/hr)

$T_{water,r}$ = the new temperature setpoint of the water heater

Then, the retrofit annual energy consumption becomes:

$$AEC_{retrofit} = \frac{q_{retrofit} * H}{\eta * 3412}$$

where:

$AEC_{retrofit}$ = Retrofit case annual energy consumption (kWh)

Thus, annual energy savings are the difference between the base case annual energy consumption and the retrofit case annual energy consumption, or:

$$Annual\ Energy\ Savings = AEC_{base} - AEC_{retrofit}$$

B.4 RESIDENTIAL LIGHTING AND APPLIANCE PROGRAMS - CFL INSTALLATION

The energy savings of CFLs can be calculated by the following:

$$Annual\ Energy\ Savings\ (kWh) = \frac{Wattage_{base} - Wattage_{CFL}}{1000} * \frac{Hours}{Day} * 365$$

where:

$wattage_{base}$ = wattage of the pre-retrofit lamp

$wattage_{CFL}$ = wattage of the installed CFL

hours/day = hours of CFL operation per day

Table 12-5 contains deemed values that can be used in case they cannot be obtained during telephone calls or on-site visits.

Table 12-5: CFL Parameters

Variable	Deemed Value	
$Wattage_{base}$	If CFL wattage is: 9 to 13 13 to 15 18 to 25 23 to 30 30 to 52	Base case wattage is[1]: 40 60 75 100 150
$Wattage_{CFL}$	If neither the base case nor retrofit case wattage is known, use 45.7[2] watts as the change in wattage	
Hours/day	3[3]	
$WHCF_{energy}$	1.17[4]	

B.5 LIGHTING AND APPLIANCE PROGRAM - REFRIGERATORS AND FREEZERS

If make and model number information can be obtained, the energy savings values will be calculated as the difference between the Energy Star listed annual energy use and the federal standard energy use[5].

If the model number cannot be ascertained, the savings values in the following table will be applied.

[1] Energy Star purchasing tips. http://www.energystar.gov/index.cfm?c=cfls.pr_tips_cfls. Accessed 4/22/2011.
[2] RLW Analytics, New England Residential Lighting Markdown Impact Evaluation, January 20, 2009.
[3] US Department of Energy, Energy Star Calculator. Accessed 4/22/2011.
[4] The value is estimated at 1.17 (calculated as 1 + (0.96*(0.45) / 2.5)). Based on 0.45 ASHRAE Lighting waste heat cooling factor for Washington DC (http://lighting.bki.com/pubs/b6_tab1.htm) and assuming typical cooling system operating efficiency of 2.5 COP (accounting for distribution losses, inadequate airflow etc). Assuming 96% of homes in South have cooling (from EIA).
[5] Refrigerators - http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=RF
Freezers - http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=FRZ

Table 12-6: Residential Refrigerator and Freezer Baseline

Type	Energy Savings[1]
Refrigerators	
Manual Defrost	72 kWh
Partial Automatic Defrost	72 kWh
Top Mount Freezer without door ice	80 kWh
Side Mount Freezer without door ice	95 kWh
Bottom Mount Freezer without door ice	87 kWh
Top Mount Freezer with door ice	94 kWh
Side Mount Freezer with door ice	100 kWh
Freezers	
Upright with manual defrost	55 kWh
Upright with automatic defrost	80 kWh
Chest Freezer	52 kWh
Compact Upright with manual defrost	62 kWh
Compact Upright with automatic defrost	83 kWh
Compact Chest Freezer	55 kWh

B.6 LIGHTING AND APPLIANCE PROGRAM - ROOM AIR CONDITIONERS

If make and model number information can be obtained, the energy savings values will be calculated using the Energy Star savings calculator for room air conditioners[2]. The closest major city listed in the calculator to the residence will be used as a reference for full load cooling hours.

[1] Values taken from Pennsylvania Public Utility Commission Technical Reference Manual. June 2011. Pg. 104. http://www.puc.state.pa.us/electric/Act129/TRM.aspx

[2] http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=AC

If the model number and/or capacity cannot be ascertained, the Evaluation Team will choose another participant in the sample for evaluation.

B.7 CENTRAL AIR CONDITIONER OR HEAT PUMP REPLACEMENT

The energy savings for replacing a central air conditioner or heat pump can be calculated by the following:

$$\Delta kWh = \Delta kWh_{cool} + \Delta kWh_{heat}$$

Where:

ΔkWh_{cool} = energy savings from cooling (kWh)

ΔkWh_{heat} = energy savings from heating (kWh)

To calculate energy savings from cooling, the following formula can be used:

$$\Delta kWh_{cool} = \frac{BTU_{cool}}{1000} * \left(\frac{1}{SEER_{base}} - \frac{1}{SEER_{eff}}\right) * RunHours_{cool}$$

Where:

BTU_{cool} = Cooling capacity of air conditioner or heat pump unit in (BTU/hr)

$SEER_{base}$ = Seasonal Energy Efficiency Ratio value of the baseline unit (BTU/W-hr)

$SEER_{eff}$ = Seasonal Energy Efficiency Ratio value of the new efficient unit (BTU/W-hr)

$RunHours_{cool}$ = number of run hours the unit runs in cooling mode (hr)

1000 = Factor to convert Watts to kilowatts

$$\Delta kWh_{heat} = \frac{BTU_{heat}}{1000} * \left(\frac{1}{HSPF_{base}} - \frac{1}{HSPF_{eff}}\right) * RunHours_{heat}$$

Where:

BTU_{heat} = Heating capacity of heat pump unit in (BTU/hr)

$HSPF_{base}$ = Heating Seasonal Performance Factor value of the baseline unit (BTU/W-hr)

$HSPF_{eff}$ = Heating Seasonal Performance Factor value of the new efficient unit (BTU/W-hr)

$RunHours_{heat}$ = number of run hours the unit runs in heating mode. Run hours values are contained in Table 7-9.

Table 12-7 contains deemed values that can be used in case they cannot be obtained during telephone calls

Table 12-7: Baseline SEER and HSPF Values

Unit	Before 2006[1]	2006 to Present[2]
SEER	10	13
HSPF	6.8	7.7

B.8 DUCT SEALING

The energy savings for replacing a sealing ductwork can be calculated by the following:

$$\Delta kWh = \Delta kWh_{cool} + \Delta kWh_{heat}$$

Where:

ΔkWh_{cool} = energy savings when cooling (kWh)

ΔkWh_{heat} = energy savings when heating (kWh)

$$\Delta kWh_{cool} = \frac{BTU_{cool} * RunHours_{cool} * (\%\, Leakage_{test-in} - \%Leakage_{test-out})}{1000 * SEER}$$

Where:

BTU_{cool} = Cooling capacity of air conditioner or heat pump unit in (BTU/hr)

$RunHours_{cool}$ = Number of run hours in cooling mode (hr)

$\%Leakage_{test\text{-}in}$ = Percent of total air flow through the ducts that is leaked at test in (%)

[1] Federal Register, Vol. 67, No. 100, May 23, 2002, http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/cac_finalrule.pdf

[2] Energy Conservation Standards for Residential Central Air Conditioners and Heat Pumps, http://www1.eere.energy.gov/buildings/appliance_standards/residential/residential_cac_hp.html

$\%Leakage_{test\text{-}out}$ = Percent of total air flow through the ducts that is leaked at test out (%)

SEER = Seasonal Energy Efficiency Ratio of the central air conditioner or heat pump (BTU/W-hr)

1000 = Factor to convert Watts to kiloWatts

$$\Delta kWh_{heat} = \frac{BTU_{heat} * RunHours_{heat} * (\%\,Leakage_{test-in} - \%Leakage_{test-out})}{1000 * HSPF}$$

Where:

BTU_{heat} = Heating capacity of the central heat pump (BTU/hr)

$RunHours_{heat}$ = Number of run hours in heating mode (hr)

HSPF = Heating Seasonal Performance Factor value of the central heat pump (BTU/W-hr)

If heating and cooling run hours are unknown, use the values listed in Table 7-9. If duct air leakage percentages are unknown, use 18% as the default change in percent air leakage ($\%Leakage_{test\text{-}in}$ - $\%Leakage_{test\text{-}out}$)[1]

B.9 BUILDING ENVELOPE AIR SEALING

The energy savings from sealing a building's envelope can be calculated by the following:

$$\Delta kWh = \Delta kWh_{cool} + \Delta kWh_{heat}$$

Where:

ΔkWh_{cool} = energy savings when cooling (kWh)

ΔkWh_{heat} = energy savings when heating (kWh)

$$\Delta kWh_{cool} = \frac{\left(CFM_{50,old} - CFM_{50,new}\right) * 60 * 24 * CDD * C_{air} * LM}{N - factor * SEER * 1000}$$

[1] Northeast Energy Efficiency Partnerships, Inc., "Benefits of HVAC Contractor Training", (February 2006): Appendix C Benefits of HVAC Contractor Training: Field Research Results 03-STAC-01

Where:

$CFM_{50,old}$ = Air flow needed to depressurize the home to -50 Pascals with respect to outside before upgrades (ft^3/min)

$CFM_{50,new}$ = Air flow needed to depressurize the home to -50 Pascals with respect to outside after upgrades (ft^3/min)

60 = Factor to convert minutes to hours

24 = Factor to convert hours to days

CDD = cooling degree days (°F – Day)

C_{air} = specific heat of air (BTU/ft^3 · °F)

LM = Latent Multiplier (takes into account latent cooling performed by air conditioning unit)

N-Factor = Conversion factor between CFM50 and Natural Airflow. Must be multiplied by the height correction factor listed in

SEER = Seasonal Energy Efficiency Ratio of the central air conditioner or heat pump (BTU/W-hr)

1000 = Factor to convert Watts to kiloWatts

$$\Delta kWh_{heat} = \frac{\left(CFM_{50,old} - CFM_{50,new}\right) * 60 * 24 * HDD * C_{air} * 293.1}{N - factor * COP * 1{,}000{,}000}$$

Where:

HDD = heating degree days (°F – Day)

293.1 = Factor to convert kilowatt-hours (kWh) to millions of BTUs (MMBTU)

COP = Coefficient of Performance of the Heat Pump

1,000,000 = Factor to convert millions of BTUs (MMBTU) to BTUs

Table 12-8: Building Envelope Sealing Parameters

Variable	Deemed Value	Units
Specific Heat of Air (C_{air})	0.018	BTU/($ft^3 \cdot °F$)
N-Factor	23[1]	

Table 12-9: N-Factor Multipliers[2]

Number of Stories	Height Correction Factor
1	1.00
1.5	0.89
2	0.81
2.5	0.76
3	0.72

[2] Converting between CFM50 and natural airflow" Building Performance Institute, January, 2012.

Table 12-10: Heating and Cooling Degree Days

Location	Cooling[1]	Heating[2]
Athens	1,790	2,832
Atlanta	1,810	2,827
Augusta	2,016	2,508
Columbus	2,297	2,153
Macon	2,213	2,241
Savannah	2,417	1,766

Table 12-11: Latent Multipliers[3]

Location	Latent Multiplier
Athens	8.1
Atlanta	7.9
Augusta	6.9
Columbus	7.1
Macon	6.7
Savannah	7.7

[1] "Normal Monthly Cooling Degree Days," National Climate Data Center, accessed September 18, 2012
[2] "Normal Monthly Heating Degree Days," National Climate Data Center, accessed September 18, 2012
[3] "Dehumidification and Cooling Loads from Ventilation Air," Harriman, Lewis, ASHRAE Journal, November, 1997.

Table 12-12: COP Values for Heat Pumps

	Before 2006	2006 to Present
HSPF	6.8[1]	7.7[2]
Corresponding COP	2.0	2.3

B.10 BUILDING ENVELOPE INSULATION

The energy savings for replacing adding building envelope insulation can be calculated by the following:

$$\Delta kWh = \Delta kWh_{cool} + \Delta kWh_{heat}$$

Where:

ΔkWh_{cool} = energy savings when cooling (kWh). This is calculated two ways below: central air conditioner or room air conditioner.

ΔkWh_{heat} = energy savings when heating (kWh). This is calculated two ways below: central heat pump or electric furnace/baseboard.

$$\Delta kWh_{cool,Central\ AC} = \frac{CDD * 24 * "AR"}{SEER * 1000}$$

Where:

CDD = cooling degree days (°F – Day)

24 = Factor to convert days to hours

"AR" = Aggregate R-value for all R-value upgrades. See calculation below.

SEER = Seasonal Energy Efficiency Ratio of the central air conditioner or heat pump (BTU/W-hr)

1000 = Factor to convert Watts to kiloWatts

[1] Federal Register, Vol. 67, No. 100, May 23, 2002, http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/cac_finalrule.pdf

[2] Energy Conservation Standards for Residential Central Air Conditioners and Heat Pumps, http://www1.eere.energy.gov/buildings/appliance_standards/residential/residential_cac_hp.html

$$\Delta kWh_{cool,Room\ AC} = \frac{CDD * 24 * F_{room\ AC} * "AR"}{SEER * 1000}$$

Where:

$F_{room\ AC}$ = 0.38[1] , adjustment factor to relate insulated area to area served by room AC units

$$\Delta kWh_{heat,Central\ HP} = \frac{HDD * 24 * "AR"}{HSPF * 1000}$$

Where:

HDD = heating degree days (°F – Day)

HSPF = Heating Seasonal Performance Factor value of the central heat pump (BTU/W-hr)

$$\Delta kWh_{heat,Central\ HP} = \frac{HDD * 24 * "AR"}{3412}$$

Where:

3412 = Factor to convert BTUs to kilowatt-hour

$$"AR" = \left[A\left(\frac{1}{R_{old}} - \frac{1}{R_{new}}\right)\right]_{Attic} + \left[A\left(\frac{1}{R_{old}} - \frac{1}{R_{new}}\right)\right]_{Knee\ Wall} + \left[A\left(\frac{1}{R_{old}} - \frac{1}{R_{new}}\right)\right]_{Crawlspace} + \left[A\left(\frac{1}{R_{old}} - \frac{1}{R_{new}}\right)\right]_{Rim\ Joist}$$

Where:

A = Surface area covered by insulation for each respective area

R_{old} = Baseline insulation R-value for each respective area

R_{new} = Post-uprade insulation R-value for each respective area

[1] Pennsylvania Public Utility Commission Technical Reference Manual. June 2012. Pg. 89

B.11 PROGRAMMABLE THERMOSTAT

The energy savings for replacing a non-programmable thermostat with a programmable thermostat were calculated by using the ENERGYSTAR Calculator. The calculator is accessible for free at http://www.energystar.gov/index.cfm?c=bulk_purchasing.bus_purchasing.

B.12 COMMERCIAL LIGHTING RETROFIT

The energy savings a lighting retrofit is calculated using the following:

$$\Delta kWh = \left(\#\ fixtures_{base} * kW_{base} - \#\ fixtures_{retrofit} * kW_{retrofit}\right) * Hours$$

$$\Delta kW = \left(\#\ fixtures_{base} * kW_{base} - \#\ fixtures_{retrofit} * kW_{retrofit}\right)$$

Where:

$\#\ fixtures_{base\ or\ retrofit}$ = Quantity of fixtures installed in baseline or retrofit of a project

Hours = Annual hours of fixture operation

The equations above are based on per fixture energy savings determined by:

$$kW_{base} = \frac{\#\ lamps_{base} * Watts_{base} * BF_{base}}{1000}$$

$$kW_{retrofit} = \frac{\#\ lamps_{retrofit} * Watts_{retrofit} * BF_{retrofit}}{1000}$$

Where:

$\#\ lamps_{base\ or\ retrofit}$ = Quantity of lamps installed in a baseline or retrofit fixture

$Watts_{base\ or\ retrofit}$ = Wattage of baseline or retrofit lamp

$BF_{base\ or\ retrofit}$ = Ballast factor of baseline or retrofit light fixture

B.13 COMMERCIAL LIGHTING OCCUPANCY SENSORS

The energy savings for occupancy sensors is calculated using the following:

$$\Delta kWh = kWh_{base} - kWh_{sensors}$$

$$\Delta kW = kW_{base} - kW_{sensors}$$

Where:

$$kWh_{base} = Total\ lighting\ load\ controlled * Annual\ Operating\ Hours$$

$$kWh_{sensors} = Total\ lighting\ load\ controlled * \%\ Occupied * Annual\ Operating\ Hours$$

$$kW_{base} = Total\ lighting\ load\ controlled$$

$$kW_{sensors} = Total\ lighting\ load\ controlled * \%\ Occupied$$

B.14 COMMERCIAL LIGHTING EXIT SIGNS

The energy savings per exit sign is calculated using the following:

$$\Delta kW = \frac{Watts_{base} - Watts_{retrofit}}{1000}$$

$$\Delta kWh = \left(\frac{Watts_{base} - Watts_{retrofit}}{1000}\right) * 8760$$

Where:

$Watts_{base\ or\ retrofit}$ = Operating wattage of baseline or retrofit exit sign

8760 = Number of operating hours in one year assuming continuous operation

B.15 COMMERCIAL PRESCRIPTIVE HVAC

The energy savings for installing unitary packaged or split-system air conditioners or heat pumps can be calculated by the following:

$$\Delta kWh = \Delta kWh_{cool} + \Delta kWh_{heat}$$

Where:

ΔkWh_{cool} = energy savings from cooling (kWh)

ΔkWh_{heat} = energy savings from heating (kWh)

To calculate energy savings from cooling, the following formula can be used:

$$\Delta kWh_{cool} = \frac{BTU_{cool}}{1000} * \left(\frac{1}{EER_{base}} - \frac{1}{EER_{eff}}\right) * EFLH_{cool}$$

Where:

BTU_{cool} = Cooling capacity of air conditioner or heat pump unit in (BTU/hr)

EER_{base} = Energy Efficiency Ratio value of the baseline unit (BTU/W-hr). All baseline EERs are taken from IECC 2009.

EER_{eff} = Energy Efficiency Ratio value of the new efficient unit (BTU/W-hr)

$EFLH_{cool}$ = Effective Full Load Hours in cooling mode (hr), determined using the building's HVAC schedules and location

1000 = Factor to convert Watts to kilowatts

For heat pumps only, additional energy savings may be calculated for heating, using the following formulas:

$$\Delta kWh_{heat} = \frac{BTU_{heat}}{1000} * \left(\frac{1}{HSPF_{base}} - \frac{1}{HSPF_{eff}}\right) * EFLH_{heat}$$

Where:

BTU_{heat} = Heating capacity of heat pump unit in (BTU/hr)

$HSPF_{base}$ = Heating Seasonal Performance Factor value of the baseline unit (BTU/W-hr). All baseline HSPFs are taken from IECC 2009.

$HSPF_{eff}$ = Heating Seasonal Performance Factor value of the new efficient unit (BTU/W-hr)

$EFLH_{heat}$ = Effective Full Load Hours in cooling mode (hr), determined using the building's HVAC schedules and location.

B.16 COMMERCIAL REFLECTIVE ROOF

The energy savings for installing reflective roofing were calculated by using the DOE Cool Roof Calculator. Inputs including installed roofing material properties were taken from on-site data collection and project application files. The calculator is accessible for free at http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm

B.17 COMMERCIAL KITCHEN EQUIPMENT

The energy savings installing new commercial kitchen equipment, including dishwashers, freezers, refrigerators, and ice machines, were calculated by using the ENERGYSTAR Savings Calculator for ENERGYSTAR Qualified Commercial Kitchen Equipment. Inputs to the calculator were adjusted to most accurately reflect the actual installed equipment and its usage. The calculator is accessible for free at http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/commercial_kitchen_equipment_calculator.xls?cd4f-07d4

Appendix C CODE REQUIREMENTS

Table C-1: HVAC Commercial Code Summary Comparison

Size	System Type	Heating Section Type	Minimum Requirements
Air-Cooled Unitary Air Conditioners			
<65,000 Btu/h	Split System	All	13.0 SEER
	Single Package	All	13.0 SEER
≥65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	11.2 EER
		All other	11.0 EER
≥135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	11.0 EER
		All other	10.8 EER
≥240,000 Btu/h and <760,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	10.0 EER 9.7 IPLV
		All	9.8 EER 9.5 IPLV
≥760,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	9.7 EER 9.4 IPLV
		All other	9.5 EER 9.2 IPLV
Air-to-Air Unitary Heat Pumps			
<65,000 Btu/h	Split System	All	13.0 SEER
	Single Package	All	13.0 SEER
≥65,000 Btu/h and <135,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	11.0 EER
		All other	11.8 EER
≥135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	10.6 EER
		All other	10.4 EER
≥240,000 Btu/h	Split System and Single Package	Electric Resistance (or none)	9.5 EER 9.2 IPLV
		All other	9.3 EER

			9.0 IPLV

Table E-2: 2004/06/09 IECC Requirements for Georgia

Measure	IECC Climate Zone	IECC Code Year Minimum Requirements		
		2004	2006	2009
Air source heat pump, heating (HSPF)[1]	2, 3, 4	6.8 HSPF	7.7 HSPF	7.7 HSPF
Air source heat pump (SEER)[1]	2, 3, 4	10.0 SEER	13.0 SEER	13.0 SEER
Thermostat, heating	2, 3, 4	68 °F	68 °F	72 °F
Thermostat, cooling	2, 3, 4	78 °F	78 °F	75 °F
DHW - electric, storage[2]	2, 3, 4	0.93 - (0.00132 * Volume)	0.93 - (0.00132 * Volume)	0.93 - (0.00132 * Volume)
Window U-value	2	0.75	0.75	0.5
Window U-value	3	0.65	0.65	0.5
Window U-value	4	0.4	0.4	0.35
Ceiling R-value	2, 3	R-30	R-30	R-30
Ceiling R-value	4	R-38	R-38	R-38
Wall R-value	2	R-13	R-13	R-13
Wall R-value	3, 4	R-15	R-13	R-13
Floor R-value	2	R-13	R-13	R-13
Floor R-value	3, 4	R-19	R-19	R-19
Basement Wall R-value	2	No Requirement	No Requirement	No Requirement
Basement Wall R-value	3	No Requirement	No Requirement	R-5/13
Basement Wall R-value	4	R-10/13[3]	R-10/13[3]	R-10/13[3]
Slab Perimeter R-value, and depth	2, 3	No Requirement	No Requirement	No Requirement
Slab Perimeter R-value, and depth	4	R-10, 2 ft.	R-10, 2 ft.	No Requirement
Crawl Space Wall R-value	2	No Requirement	No Requirement	No Requirement
Crawl Space Wall R-value	3	R-5/13	R-5/13	R-5/13
Crawl Space Wall R-value	4	R-10/13	R-10/13	R-10/13

[1] Based on Federal Minimum Standard enacted January 23, 2006, previous minimum standard was 6.8 HSPF/10.0 SEER

[2] Based of Federal Minimum Standard enacted on January 20, 2004. Most recent minimum standard was enacted June 15, 2010 and requires EF ≥ 0.96 - (0.0003 * Volume) for < 55 gallon tanks and 2.057 - (0.00113 * Volume) for > 55 gallon tanks

[3] First R-value applies to continuous insulation, second to framed insulation, either insulation meets requirement

Appendix D INTERACTIVE ENERGY CHANGES FOR LIGHTING RETROFITS

Based on the information that is currently tracked by the GPC, the Evaluation Team determined that the most defensible methodology would calculate interactive energy changes for lighting retrofits only. These energy changes have been included in verified savings estimates and cost effectiveness assessments.

D.1 INTRODUCTION

Georgia Power DSM programs incentivize the implementation of equipment whose efficiency is above that which a customer might otherwise install. By definition, this equipment should consume less input energy per unit of output energy. However, the energy consumption of equipment in an enclosed space cannot be viewed in isolation. Building systems interact with one another and a change in one system can affect the energy consumption of another. This interaction is important to consider when calculating the benefits provided by programs because it adopts a comprehensive view of societal-level energy changes rather than limiting the analysis to the energy change directly related to the modified equipment.

Interactive energy changes can come in a number of forms. For the purposes of this evaluation, lighting end-use measures were the only measures that were considered for interactive waste energy impacts. For these measures, the interactive impacts lowers summer air conditioning load (electrical), but raises winter heating load (electrical or fossil fuel).

However, interactive energy changes are neither calculated nor tracked on a consistent basis by participants or the program. This makes it very difficult for an evaluator to produce estimates of total interactive energy changes for the overall population of participant retrofits because there are no reported savings values from which to create realization rates. Thus, the Evaluation Team have agreed that the most defensible methodology for the 2011-2013 evaluation cycle is to produce estimates of interactive energy changes for lighting projects only. Lighting projects represent the largest measure category by reported savings across commercial programs, and produce relatively predictable interactive energy changes for the participant population as a whole. This predictability has allowed the Evaluation Team to adopt a stipulated approach that will produce defensible estimates of interactive energy changes at the strata-level.

D.2 METHODOLOGY

To reflect differences in typical equipment saturations and lighting project characteristics by project size and measure track, the Evaluation Team chose to conduct a separate analysis for each lighting stratum in the 2011 impact sample. The following steps were taken for each stratum:

- Import 8760 lighting load shape and total lighting savings information into the Evaluation Team's purpose-built analysis tool.

- Import 8,760 weather information for the city of Atlanta (assumed to represent the average conditions faced by participant buildings).
- Screen lighting savings to only those hours where outdoor temperature exceeds an assumed cooling threshold, or falls below an assumed heating threshold.
- Create an interactive cooling energy change load profile by assuming a cooling efficiency, the percent of total lighting savings occurring in conditioned spaces, and a cooling interactive factor which relates the percent of total lighting energy that is converted to heat and must be removed by the cooling equipment.
- Create an interactive electrical heating energy change load profile by assuming a heating coefficient of performance (COP), the percent of total lighting savings occurring in conditioned spaces, a heating interactive factor which relates the percent of total lighting energy that is converted to heat and offsets heating plant load, and the saturation of electric space heating. Total annual natural gas heating energy changes were calculated in the same way, while taking into consideration the different end-use saturation and heating system efficiency.

Table 12-13 and Table 12-14 list the assumptions used in the interactive energy analysis by project size and measure track.

Table 12-13 Interactive Energy Changes for Lighting Retrofits – Common Assumptions

Metric	Value
Cooling Above (°F)	55
Cooling Interactive Factor*	60%
Heating Below (°F)	55
Electrical Heating System Efficiency (COP)	0.98
Saturation of Electric Space Heating	25%
Natural Gas Heating Efficiency (AFUE)	80%
Saturation of Natural Gas Space Heating	75%
Heating Interactive Factor*	29%

*Cooling and Heating Interactive Factors represent the amount of lighting energy turned to heat that must be removed by the cooling system or offsets the load on the heating system. Factors taken from "Interactions between lighting and space conditioning energy use in U.S. Commercial Buildings" LBNL-39795. April 1998.

Table 12-14 Interactive Energy Changes for Lighting Retrofits – Assumptions by Stratum

Lighting Stratum	% of Overall Lighting Savings in Conditioned Spaces	Cooling Efficiency (kW/ton)
All	100%	1.165[1]

[1] Efficiency for a Rooftop Unit – 9.0 EER

The interactive energy change analysis was performed on an hourly basis for the entire year so that load shapes could be incorporated into the initiative cost effectiveness analysis.

D.3 RESULTS

Table 12-15 displays the resulting savings factors used by the Evaluation Team to calculate total interactive energy changes at the stratum level. All values are expressed in terms of a unit of savings in interactive equipment energy per unit savings in lighting energy consumption.

Table 12-15 Analysis Results: Interactive Equipment Energy Savings

Lighting Stratum	Space Cooling Electrical Energy	Space Heating Electrical Energy	Space Heating Natural Gas Energy
ALL	**0.171**	**-0.02**	**-0.077**
LBNL Study[1]	0.19	-0.09	-0.32

[1] "Interactions between lighting and space conditioning energy use in U.S. Commercial Buildings" LBNL-39795. April 1998.

The results of the analysis show that, on average, a decrease in lighting energy consumption by 1 kWh will reduce total building energy consumption by approximately 1.08 equivalent-kWh (includes energy changes from natural gas heating). In other words, the decrease in lighting energy consumption is partially offset by a net increase in energy consumption from the interactive building equipment.

Values from the LBNL study of lighting interactive energy changes in the United States were included in Table 12-15 for comparison purposes. The results of our analysis prove to be conservative when one considers the lower overall energy increase despite a longer cooling season in the South-East

Appendix E LIFETIME SAVINGS: ADJUSTED FUTURE BASELINES

In the typical early replacement scenario, the baseline is often defined as the existing equipment. But, the remaining useful life (RUL) of the existing equipment is often less than the effective useful life (EUL) of the retrofit equipment. Therefore, in the absence of the retrofit project, the participant would have had to replace the existing equipment anyway sometime during the timeframe of the retrofit EUL.

If the baseline equipment efficiency is expected to change during the RUL of the existing equipment because of a market shift, then the lifetime savings calculation should account for this shift in order to accurately reflect what would have happened in absence of the program. This assumed new baseline can be defined by the equipment option that the average market participant would adopt in the absence of the rebate program – but what that option is can be influenced by a number of factors that change over time, including typical consumer behavior and government regulations.

In the case of lighting retrofit measures, upcoming and recently implemented efficiency code changes are expected to accelerate a baseline shift for certain technologies.

It is important to note that the timing of baseline adjustments is not fixed by the implementation date of government regulations. It may take some time for the stock of inefficient equipment to remove itself from retailer distribution pipelines, and even longer to remove itself from service in Canadian facilities. Therefore, in the case of code changes, the baseline shift occurs when a certain technology is no longer available to the average consumer.

E.1 ENERGY EFFICIENCY REGULATIONS

Existing and upcoming regulations issued by Department of Energy (DOE) for compact and linear fluorescent lamps may have a significant impact on the market for efficient equipment in Georgia. Those regulations are detailed below.

Linear Fluorescent Lighting

U.S. Energy Policy Act of 2005 (EPAct 2005) set minimum ballast efficacy factors (BEF) levels that took effect in April 2005. The intent of these regulations was to eliminate the use of inefficient T12 fluorescent magnetic ballasts, such as those used to operate 4-foot 40-watt or 8-foot 75-watt T12 lamps.

The effect of this legislation has been to reduce the saturation of magnetic ballasts in the United States. As old ballasts fail, facility managers must upgrade their equipment to more efficient electronic ballasts. However, the useful lives of most ballasts are on the order of 50,000 hours. Therefore, under this standard alone, magnetic ballasts may persist in service for many years to come.

DOE has also proposed to amend the United States Energy Efficiency Regulations for general service fluorescent lamps. The regulations would apply to most 2-foot, 4-foot, and 8-foot lamps, and were supposed to be effective for lamps manufactured on or after July 14, 2012[1],

According to Sylvania, one of the largest lighting equipment manufacturers in the world, the proposed regulations would eliminate the manufacture and sale of most T12 lamps and even some lower performing T8 lamps[2].

Incandescent and Compact Fluorescent Lighting

The Energy Independence and Security Act was enacted that would affect general service lighting (GSL) manufactured for sale in 2012. The amendment aimed to move the lighting market away from inefficient technologies. In practice, the standards will eliminate the manufacture of many traditional incandescent technologies in favor of more efficient alternatives, such as halogen or compact fluorescent lamps (CFL). The implementation date for these standards has recently been delayed to January 1, 2014 for 100W and 75W bulbs, and December 31, 2014 for 60W and 40W bulbs[3]. Table 12-16 below details the standards and technologies affected.

Table 12-16 General Service Lamp Standards

Rated Lumens	Min Rated Lifetime	Effective Date	Wattage of Traditional Incandescent that will not Meet Requirements
1490-2600	1000 hours	1/1/2012	100
1050-1489	1000 hours	1/1/2013	75
750-1049	1000 hours	12/31/2015	60
310-749	1000 hours	12/31/2015	40

E.2 BASELINE ADJUSTMENTS

Linear Fluorescent Lighting

The timing of the baseline shift is difficult to determine because of the uncertainty surrounding the adoption of the code changes and the uncertainty around when T12 technology will truly be removed from the marketplace. Once manufacturing stops, it will still take time for the inventory to be removed from distribution pipelines, and therefore the implementation of the code changes will not coincide with their removal from the marketplace. Furthermore, once installed, a T12 lamp still has many years of RUL in which it still acts as a viable baseline to T8s.

1

2 http://assets.sylvania.com/assets/Documents/Prod%20%20Leg%20%20-%20DOE%20rulemaking%204-14-11.c0d4e84f-f7ac-493b-bdb7-a04bce0bcbeb.pdf

3

A number of jurisdictions in the United States have been grappling with this issue. The following table details when some of these jurisdictions have chosen to adjust the baseline of T12 technologies.

Table 12-17 Timing of Linear Fluorescent Baseline Shift for Other Jurisdictions

Jurisdiction	Timing of Baseline Shift
Vermont	2015
Northwest Regional Technical Forum	2016
Oregon	2017

For this evaluation, the Evaluation Team first assumed that the RUL of the T12 equipment is the life of the lamp at 20,000 hours. With approximately 4,000 hours of use per year, this translates to an RUL of 5 years from the installation year of 2011 (baseline shift in 2016). Consequently, Evaluation Team chose to adopt a more conservative approach and adjust the baseline in 2016.

Once the baseline shift occurs, the applicable minimum efficiency is assumed to be a standard-performance T8 fixture with 32 watt lamps.

Incandescent and Compact Fluorescent Lighting

The Evaluation Team adopted a similar methodology when estimating baseline adjustments for compact fluorescent lighting. However, because the existing baseline technology (incandescent or halogen lamps) has a very short lifetime, the baseline shifts will occur much sooner.

Incandescent and halogen lamps have lifetimes on the order of 1,000 to 2,000 hours. Assuming 2,500 hours of operating per year for a commercial facility, the RUL on these lamps is less than 1 year. To account for the time it will take for inventory to sell, the Evaluation Team assumed that 1 year after the code changes take effect, the market baseline will shift. The following table shows the assumed timing for the baseline shifts.

Table 12-18 Timing of Compact Fluorescent Baseline Shift

Wattage of Traditional Incandescent that will not Meet Requirements	Rated Lumens	Code Effective Date	Assumed Baseline Shift
100	1490-2600	1/1/2012	2013
75	1050-1489	1/1/2013	2014
60	750-1049	12/31/2014	2015
40	310-749	12/31/2014	2015

To estimate the wattage of the adjusted baseline condition, the Evaluation Team used the definition included in the adopted codes. The formula is 4.0357 * natural logarithm[lumen output] – 7.1345.

E.3 LIFETIME SAVINGS CALCULATION

Once the timing of the baseline adjustments and the adjusted power consumption were determined, the lifetime savings calculation was modified to account for the adjustments. The resulting calculation is illustrated in Figure 12-1below.

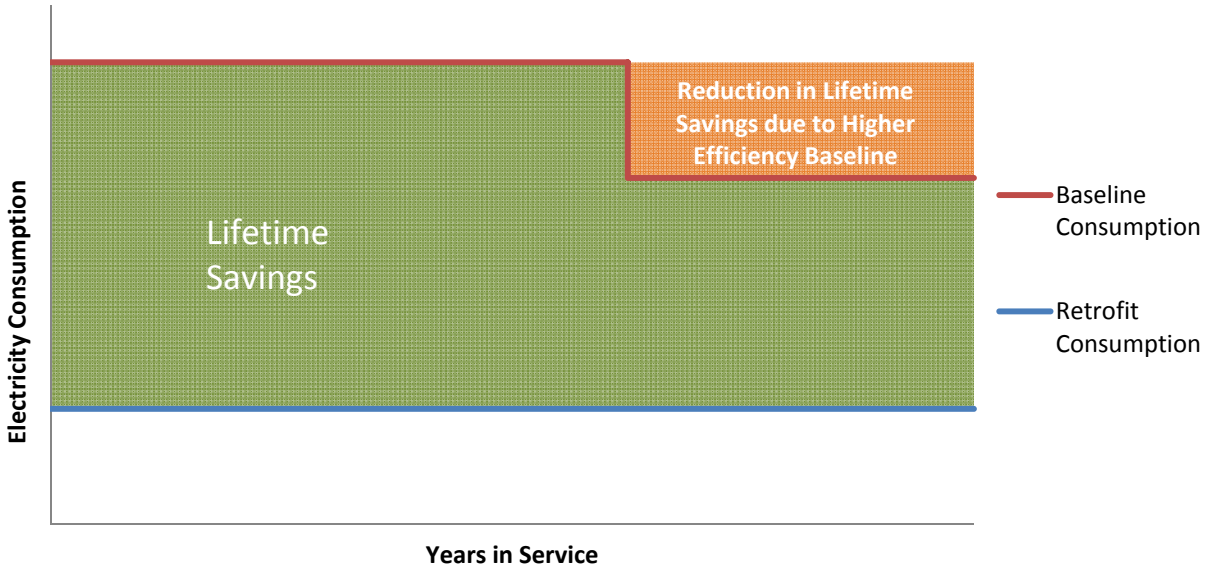


Figure 12-1 Illustration of Adjusted Lifetime Savings Calculation

The formula used in the calculations is reproduced below:

$$Lifetime\ Savings = RUL * 1st\ Yr\ Savings + (EUL - RUL) * Adj.Savings$$

where

RUL = Remaining useful life of existing equipment
EUL = Effective useful life of retrofit equipment
1st Yr Savings = verified savings in first year of measure installation
Adj. Savings = savings of measure after the assumed baseline adjusts to a higher efficiency

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Process Evaluation Final Report for Georgia Power 2011 DSM Programs

Submitted to Georgia Power

Submitted By Nexant

In partnership with: The Cadmus Group

December 12, 2012

THE CADMUS GROUP, INC.

Nexant

CONTENTS

1 EXECUTIVE SUMMARY

Nexant, Inc., in association with The Cadmus Group (Cadmus) and Abt SRBI (SRBI) (collectively, the "Evaluation Team") have been retained by Georgia Power Company to conduct an impact and process evaluation of its demand side management (DSM) certified programs for the 2011 program year. This is the first year Georgia Power is evaluating its DSM programs. This report presents the methodology and results of the process evaluation findings, summary of activities and methodology for net energy. Findings from the impact evaluation of Georgia Power's DSM programs can be found in a companion report titled Impact Evaluation Final Report for Georgia Power 2011 DSM report authored by Nexant in partnership with The Cadmus Group dated December 31, 2012.

1.1 PROCESS EVALUATION INTRODUCTION

The evaluation team prepared and presented an "initial process evaluation" report in Fall 2011; so Georgia Power could access findings prior to planning the next cycle of DSM programs and use the result to enhance its implementation of 2012-2013 DSM programs. As part of the initial process evaluation, the team interviewed program and implementation team staff, conducted surveys, reviewed current program databases, and reviewed program and marketing materials.

This report includes information drawn from the initial findings as well as information derived from surveys conducted, following the initial findings report.

1.2 EVALUATION GOALS AND OBJECTIVES

Evaluation goals follow the definition of impact evaluation established in the "Model Energy-Efficiency Program Impact Evaluation Guide – A Resource of the National Action Plan for Energy Efficiency," November 2007:

"Evaluation is the process of determining and documenting the results, benefits, and lessons learned from an energy-efficiency program. Evaluation results can be used in planning future programs and determining the value and potential of a portfolio of energy-efficiency programs in an integrated resource planning process. It can also be used in retrospectively determining the performance (and resulting payments, incentives, or penalties) of contractors and administrators responsible for implementing efficiency programs.

Evaluation has two key objectives:

1. To document and measure the effects of a program and determine whether it met its goals with respect to being a reliable energy resource.

2. To help understand why those effects occurred and identify ways to improve."

1.3 EVALUATED GEORGIA POWER DSM PROGRAMS

Georgia Power Company (GPC) implements a portfolio of seven (7) certified DSM programs to incentivize, encourage and educate GPC residential and commercial customers to adopt energy efficiency practices and acquire energy efficient equipment. These programs aim to overcome

typical market barriers associated with demand-side management (DSM) in residences and businesses; largely, the lack of up-front capital and technical assistance needed to implement energy efficiency projects. The combined portfolio approved goals total 104,099 MWh for program year 2011.

Georgia Power implements two of the programs, with the remaining five implemented by Applied Proactive Technologies (APT), ICF International, and JACO Environmental. The following are GPC DSM programs:

1. **Commercial Custom Incentive Program (CEEP[1]):** offers rebates for certain fluorescent, high-bay and other ENERGY STAR® qualified lighting for eligible commercial-rate customers.

2. **Commercial Prescriptive Incentive Program:** offers rebates to eligible commercial-rate customers for specific fluorescent, high-bay, other ENERGY STAR® qualified lighting, both in existing facilities and in new construction

3. **Residential Lighting and Appliance Program (L&A):** through customer education, retail incentives and partnerships, sales training, and customer incentives, focuses on increasing awareness of the benefits of energy-efficient technologies and promoting the purchase and installation of energy-efficient lighting products and appliances by residential customers.

4. **Residential Home Energy Improvement Program (HEIP):** offers financial incentives, customer education and awareness campaigns, and contractor partnerships and training to promote a comprehensive, whole-building approach to improving the energy-efficiency and comfort of existing homes. The program also provides incentives to customers who make qualified individual energy-saving improvements to their homes.

5. **Residential Water Heating Program (RWH):** offers free in-home assessments of existing water heating systems for potential energy-efficiency improvements and the opportunity for customers with electric water heaters to have insulating blankets and pipe insulation installed.

6. **Residential Refrigerator Recycling Program (RRP)**: aims to eliminate inefficient or extraneous refrigerators and freezers in an environmentally safe manner by providing eligible customers with convenient, free refrigerator and freezer pickups in addition to cash incentives.

7. **Residential High Efficiency New Home Program (ENH):** provides financial incentives for qualifying new homes to offset the cost of a formal inspection by a certified Home Energy Rating System (HERS) rater, in order to promote the performance of participating homes to at least 15 percent above the existing state residential energy code.

1.4 SUMMARIZED CONCLUSIONS AND RECOMMENDATIONS

[1] CEEP = Commercial Energy Efficiency Programs

Summarized conclusions and recommendations follow for each program. These conclusions have been based on findings detailed in Sections 2 through 9.

1.4.1 Commercial Programs (CEEP) Conclusions and Recommendations

In many respects, Georgia Power's commercial program contain elements of best practices such as a well-organized trade ally network, comprehensive program guidelines, and a comprehensive data tracking system. This section briefly summarizes some areas of the commercial program that could be improved.

Initial feedback during CEEP program launch among customers, trade allies, and account representatives indicated some confusion about program incentives and eligibility requirements. Although Georgia Power's implementation team clarified these areas, feedback from trade allies and account representatives suggest that further efforts to educate, motivate, and involve these groups will be needed if the program is to meet its future goals.

Recommendation**:**

- *Expand training for account representatives and trade allies regarding program eligibility, requirements, incentive offerings, and customer recruiting; further emphasize the program's benefits to customers, to trade allies, and to account representatives*. Consider holding monthly working sessions with account representatives and trade allies to address program concerns.

Although CEEP met its program targets in 2011, key account managers and customer service staff in the various sales divisions report they were not aware of energy-efficiency goals at the regional level. With savings targets nearly doubling in 2012, consistent emphasis across regions will be needed.

Recommendation:

- *Given the importance of these program actors, and their lack of awareness of CEEP savings goals, Georgia Power should continue emphasizing energy-efficiency targets across regions through monthly sales meetings and workshops.* In addition, some utilities offer individual performance bonuses for meeting quarterly and annual targets within regions. Georgia Power may want to consider this approach.

Despite trade ally willingness to register in the CEEP network, the program design does not meet best practices for custom programs or trade ally expectations. Typically, custom programs include a comprehensive set of measures, applicable to a range of commercial customers. Trade allies indicated incentives and offerings did not match those of neighboring power service companies.

Recommendation:

- *Continue plans to expand custom program offerings to include a more comprehensive suite of program measures.* In addition to lighting, measure offerings may include: heating and cooling equipment, high-efficiency motors, shell measures, and controls.

CEEP outreach and program design does not appear to be reaching small business customers (non-managed accounts), since they had very low awareness of the program and the availability of energy audits.

Recommendation:

- *Consider whether small business customers are suitable targets for CEEP or whether small businesses need a different program approach. If Georgia Power wants CEEP i to serve small businesses effectively, the utility should consider expanding targeted outreach for these customers.* In addition explore ways to motivate trade ally program involvement through recruiting bonuses, or through additional program elements that are more likely to appeal to small- and medium-sized customers (for example, self-direct or prescriptive express programs).

To avoid survey fatigue, Georgia Power requested the evaluation exclude its largest customers (managed accounts) from the nonparticipant research. While ensuring the satisfaction of large customers is important, this request resulted in evaluators being unable to provide feedback about how these customers perceive CEEP and their reasons for nonparticipation.

Recommendation:

- *Given the size of potential savings from this customer group, determine how they can be included in future evaluation research*. For instance, consider what timing would work to allow both evaluation and sales division research to occur without survey fatigue.

Participating customers and trade allies found the application process, forms, and online worksheets complex and sometimes cumbersome to complete.

Recommendation:

- *Georgia Power, in collaboration with ICF, has been improving application forms and online submission requirements based on customer and trade ally feedback.* Efforts at streamlining forms and processes should continue. In addition:
  - To ensure customers have adequate application assistance, provide customers and trade allies with training opportunities such as workshops, or "lunch and learn" meetings to walk customers through the application process.
  - Consider adding "Frequently Asked Questions" section online or to bill inserts, with an energy-efficiency program information Weblink or hotline to provide additional assistance to commercial customers.
- In addition to information about the rebate on the application, inform customers and contractors of the timeline for disbursing rebates and offer tips for reducing common application errors that may result in longer rebate wait times.

The commercial program's freeridership rate indicates nearly one-half of participating customers installed energy-efficiency equipment before learning of the program. Benchmarking with other

custom efficiency programs, some of which are more mature, shows this to be a high level of free ridership. Some of the freeridership can be attributed to the program's start-up phase.

Recommendation:

- *To reduce freeridership, Georgia Power should consider tightening CEEP program processes and eligibility requirements to avoid incentivizing projects without program influence.*

1.4.2 Lighting and Appliances (L&A) Conclusions and Recommendations

The L&A Program can account for a higher percentage of Georgia Power's portfolio savings. Georgia Power's first foray into a comprehensive L&A Program has succeeded. In 2011, the L&A Program exceeded its energy savings goals by 120%. The total 2011 L&A Program savings accounted for 29% of the total residential program portfolio's energy savings. The L&A Program goals were met through a highly successful CFL upstream incentive pilot program that sold 126,000 CFLs in less than three months, and an appliance rebate program that that was popular with retailers, both independent and corporate, as well as customers. The L&A program is currently projected to meet its aggressive 2012 energy saving goals.

Recommendations:

- Increase retailer participation to provide more opportunities for customers to purchase energy-efficient products.
- Assess the cost-effectiveness of additional lighting and appliance measures, and consider adding new measures to the program to enhance potential program savings.
- Consider assessing the cost-effectiveness of consumer electronic measures to determine whether it makes sense to include them in the program.

Streamlined communication and internal processes can increase the program's effectiveness.

Recommendations:

- Utilize a more automated process to improve reporting and rebate retention.
- Consider piloting point-of-sale rebates with select retailers to make the customers' participation process easier and quicker.
- Provide retailers with more lead time regarding significant program changes.
- Communicate program changes and opportunities to corporate retailers directly.

CFL Giveaway participants should be tracked to better enable evaluation activities.

Recommendation:

- Ask recipients to agree to be contacted for follow-up communications by the program.

1.4.3 Home Energy Improvement Program (HEIP) Conclusions and Recommendations

Overall, HEIP works well, but room for improvement exists. The program exceeded its goals and achieved high satisfaction among participants. Customers expressed concerns about wait times for rebate checks.

Recommendations

- Continue to implement the program as designed, keeping processes and incentive levels intact.
- In addition to information about the rebate on the application, inform customers and contractors of the timeline for disbursing rebates and offer tips for reducing common application errors that may result in longer rebate wait times.

The EarthCents® umbrella campaign launch effectively created a centralized brand identity, but enhancements could increase specific program awareness. Launch of the successful campaign likely contributed to increased participation at the end of the year.

Recommendations

- Continue marketing the program under the EarthCents umbrella campaign, directing customers to information available on Georgia Power's Website.
- As the e-mail campaign in the latter months of 2011 yielded positive results, consider ways to build on this method, such as capturing additional e-mail addresses from Website visitors, or through other promotional events.
- Continue outreach and informal training opportunities with contractors, making them aware of other Georgia Power programs, such as the walk-through energy audit and electric water heater tank wrap.
- Continue developing cross-marketing opportunities with the water heater program and other prescriptive rebate programs, leveraging participation in multiple programs.
- Consider conducting research on customer preferences for program nomenclature ("audit," "assessment," "retrofit," "evaluation," "checkup"), and maintain consistency when referring to program services.

While program participation in 2011 exceeded savings goals set for the program, opportunities for greater savings remain. Unbundled participants, unaware of the bundled or whole house program, might have opted for more comprehensive participation levels had they known about or understood the process and incentives available for whole house improvements. Also, many participants in both paths (40% of bundled and 57% of unbundled) made additional energy-efficient changes to their homes.

Recommendations:

- Consider enhancing the Website and program material with information addressing the decision-making process for bundled versus unbundled.

- Consider developing marketing segments, focusing marketing on early adopters and on demographic profiles most likely to participate.

The new EERT system greatly improves the data tracking system. Small additions could further improve data tracking.

Recommendations:

Track participation information for easy summary and reporting. Monthly updates could include participation information for the unbundled and bundled programs, in addition to HEIP as a whole.

1.4.4 Residential Water Heating (RWH) Conclusions and Recommendations

Enrollment of customers through the audit program has not procured sufficient RWH participants in 2011 to meet goals. Regional variability suggests inconsistent blanket promotion levels by auditors. While auditors received training about when to install the wrap, not all auditors clearly understood the program's 2011 goals for the regions. In 2012, goals have been met or exceeded.

Recommendations:

- Continue distributing monthly reports, and maintain efforts to update program information through communications with regional representatives and through regional meetings, as initiated in 2012.
- Provide the RWH program manual to all auditors, clarifying and expanding auditors' roles and responsibilities.
- If Georgia Power must increase participation, it should consider citing the free water heater wrap on its Website, and in energy audit bill inserts, and request the call center cite this when discussing in-home audits with customers. Customers should be informed wraps can only be provided under appropriate conditions.

Increased program savings could be achieved by providing, additional free measures.

Recommendation:

- Include low-flow showerheads and faucet aerators as an optional part of the giveaway package. Auditors can discuss benefits, and let customers choose this as an option. If so, auditors can install the measures. Georgia Power should first evaluate costs and benefits of including these measures in the program.

Opportunities exist to track customer enrollment and satisfaction indicators in the EERT database.

Recommendations:

- Georgia Power should consider adding additional data fields to procure more information about participants and the program. (Data field provided in the relevant chapter.)
- Include RWH questions on the in-home audit customer satisfaction postcard.

RWH and HEIP:

- **The RWH program essentially serves as a measure, rather than a full program.**
- **While Georgia Power believes cross-marketing between HEIP and RWH is a good idea, very little cross-marketing appears to be taking place.**

Recommendation:

- The WH wrap should be included in the HEIP program, beginning in January 2013 if possible. Customers could still receive wraps form an auditor, but the measure should be included under HEIP, rather than considered separately.
- Georgia Power should take more explicit steps to inform HEIP customers about the water heater wrap, and to ensure all customers receiving water heater wraps receive HEIP materials and some follow-up about that program.

1.4.5 Refrigerator Recycling Program (RRP) Conclusions and Recommendations

Overall, the RRP has been well-designed, functions effectively, and came close to (but did not achieve) its 2011 goal of 7,418 units recycled. (The program recycled 6,642 units, or 90%.) Most customers expressed satisfaction with the program, and participation levels followed JACO's expected monthly trends. The program attracted a sufficient number of participants in 2011 to meet its goals, though the program continues to experience high drop-out rates (24%, compared to 32% in the pilot program).[2] For comparison, JACO's national average drop-out rate is 15%.

Recommendations:

- Consider investigating ways to address customer scheduling conflicts.
- Consider tracking indicators in the Energy Efficiency Reporting Tool (EERT), related to pick-up experience (e.g., whether the unit was picked up during the targeted time period).
- Request summaries of collected JACO Customer Satisfaction data.

The program uses a broad range of marketing channels. Georgia Power uses a variety of channels to reach potential customers, and program staff reported more marketing spending may be required to meet program goals.

Recommendations:

- Develop and document a comprehensive marketing plan.
- Consider analyzing those participating (or not) to target outreach at more local levels, using low-cost approaches to reaching customers.

[2] Not counting units no longer working, not qualified, or inaccessible. Details provided in Section 8.3.4.2.

- Consider analyzing 2011 and 2012 participant demographics to understand how higher 2012 rebates may have attracted different customers. If the program attracts new demographic groups, Georgia Power can use this information to better target its program marketing.
- Continue to promote the annual energy-savings messages strongly across all marketing channels.

Though Implementation has been effective, room remains for improvements. While the program runs smoothly overall, Georgia Power can take several steps above to bring it more in line with best practices.

Recommendation:

- Develop and document a comprehensive internal program implementation manual, according to best practices.

1.4.6 Residential High Efficiency New Homes (ENH) Conclusions and Recommendations

Despite coming up short of its overall program savings goal, multifamily participation carried the weight for the program in 2011. The ENH program achieved 94% of its participation goal and 78% of the savings goal. Participation by multifamily homes ran significantly above its target, at 248% of goal, while single-family homes achieved just over one-third (37%) of goal. The program contended with a slower housing market in general and also launched several new efforts in 2011 to market the program and increase builder participation.

Recommendations:

- Continue support and outreach efforts with multifamily builders, as these offer high program participation potential.
- Consider increasing multifamily participation goals and adjusting single-family participation goals downward, better reflecting participation levels in the market. Georgia Power already has taken steps to address this in the Metro area.

As roughly half of home buyers surveyed played a limited role in the design decisions of their homes, builders appear to drive program participation for 2011.

Recommendations:

- Continue training and networking with builders, in addition to conducting mass market campaigns, to raise program awareness among potential home buyers.
- Consider developing additional printed materials aimed at customers, helping builders more effectively promote the value of efficient new homes to prospective buyers.

Participating builders and homebuyers indicated a need for more marketing and promotion to increase awareness of the program.

Recommendations:

- Consider revising the program logic chart to reflect strategies connecting to objectives and barriers identified, regarding lack of builder awareness and participation.
- Consider offering an online source of program information specific to builders
- Consider conducting additional research to assess awareness program levels, and to gauge the EarthCents campaign's effectiveness for raising awareness among homebuyers and builders.

Data tracking proved problematic because: builder contact information was often incorrect or not available; database records for homes completed did not initially match reporting; and data was organized inconsistently at the record level—in some cases by builder and in others by HERS rater.

Recommendations:

- Consider database enhancements allowing identification of builders for each record, in addition to parties filing applications and receiving incentives.
- Consider developing data tracking procedures or standards to eliminate possible variations in data reporting methods.

1.4.7 Marketing and Outreach- Portfolio wide Conclusions and Recommendations

The EarthCents umbrella brand provides a consistent look and feel for marketing and communications materials.

Recommendation:

- Georgia Power should continue to use it on all internal and external marketing communications materials.

The Website's content, design and user experience are mostly positive. However, program page content cannot be easily and quickly scanned, and headlines do not lead with compelling messages answering the question: "What's in it for me?"

Recommendations:

- Within program pages, consider increasing font sizes, and decreasing word counts of program descriptions.
- Edit headings within program pages to ensure they include compelling messages for customers, such as benefits related to saving money, saving energy, health, or comfort.

While Georgia Power uses its social media channels to spread information about its programs, and blogs and forums generate some online conversations and communications regarding EarthCents, the volume of online mentions remained relatively low as recently as February 2012.

Recommendations:

- Regularly scrutinize social media analytics to determine types of posts and times of day generating the greatest reach and engagement to inform strategies.
- Identify and engage with targeted blogs and forums, offering the best targets for "earned" media.

2 INTRODUCTION

2.1 OVERVIEW

This process evaluation primarily focuses on Georgia Power's DSM program activities for the 2011 program year. The programs are being implemented by Applied Proactive Technologies (APT), ICF, and JACO, as indicated below. Georgia Power's DSM programs include (with implementers included in parentheses):

- Commercial Custom Incentive and Prescriptive (ICF)
- L&A: Residential Lighting and Appliances (APT)
- HEIP: Residential Home Energy Improvement (ICF)
- RWH: Residential Water Heating (GPC)
- RRP: Residential Refrigerator Recycling (JACO)
- ENH: Residential High-Efficiency New Home (GPC)

At Georgia Power's request, the evaluation team presented an "initial evaluation" report in Fall 2011; so the company could review findings prior to planning for the next cycle of DSM programs and use these findings to enhance the implementation of its GPC programs in 2012-2013. Thus, the team conducted a thorough, early process evaluation for Georgia Power in Fall 2011.

As part of the initial process evaluation, the team interviewed program and implementation team staff, conducted surveys, reviewed current program databases, and reviewed program and marketing materials. **Error! Not a valid bookmark self-reference.** presents process evaluation activities and timelines in 2011 (as part of the initial report findings) or in 2012. Table 2-2 presents a detailed list of surveys and stakeholder interviews conducted as part of initial evaluation activities and the second phase of evaluation activities.

This report includes information drawn from the initial findings as well as information from surveys conducted following the initial findings report. Since last fall's evaluation, Georgia Power has transitioned to a new database tracking system, changed its marketing strategies, and implemented some recommendations from the fall report. The team conducted follow-up interviews with Georgia Power program managers to determine changes made to the program, determine if recommendations had been implemented, and identify remaining challenges.

Table 2-1: Research Activities and Timing Across All Programs

Program	Program Staff/Implementer/Market Actor Interviews	Surveys	Marketing Review	Materials Review	Database Review
Commercial	2011/12	2012	2011	2011	2011
L&A	2011/12	2011/12	2011	2011	2011
HEIP	2011/12	2011	2011	2011	2011
RWH	2011/12	2012	2011	2011	2011
RRP	2011/12	2012	2011	2011	2011
ENH	2011/12	2011	2011	2011	2011

Table 2-2: Surveys and Trade Ally Interviews (# of completes)

Program	Surveys Conducted In 2011 (# Of Completes)	Surveys Conducted Post 2011 Initial Report
Commercial		• Participating customers (67) • Nonparticipating customers (140) • Trade Ally Interviews (11)
L&A	• CFL Giveaway Program Non- Participants (148) • CFL Participant Survey (70)	• Appliance participants (70) • CFL Participant Survey (68) • Appliance participating retailers (interviews) (9) • Lighting participating retailers (interviews) (2)
HEIP	• HEIP Whole House Participants (37) • HEIP Unbundled Participants (70)	• Participating contractor (30) • Nonparticipating contractor (30)
RWH		• Participating customers (70)
RRP	• Market Actor Interviews (20)	• Participating customers (70) • Partial participating customers (70)
ENH	• ENH Participants (48)	• Participating builder (7) • Nonparticipating builder (50)

2.2 PROCESS EVALUATION OBJECTIVES AND METHODS

2.2.1 Overarching Research Questions

At the beginning of the evaluation process, the team established five key overarching research questions. Listed below, these questions guided the team in developing and executing individual program evaluations.

- Are program goals being met?

- How well are program goals being communicated to staff and implementation partners?
- Are implementation contractors (ICF, JACO, APT) performing at a high-quality level?
- Are marketing and promotional efforts effective?
- Are program incentives effective?
- Is the process flow effective?
  - Program management
  - Customer recruitment
  - Rebate processing
  - Data tracking

2.2.2 Summary of Data Collection Activities

As shown in At Georgia Power's request, the evaluation team presented an "initial evaluation" report in Fall 2011; so the company could review findings prior to planning for the next cycle of DSM programs and use these findings to enhance the implementation of its GPC programs in 2012-2013. Thus, the team conducted a thorough, early process evaluation for Georgia Power in Fall 2011.

As part of the initial process evaluation, the team interviewed program and implementation team staff, conducted surveys, reviewed current program databases, and reviewed program and marketing materials. **Error! Not a valid bookmark self-reference.** presents process evaluation activities and timelines in 2011 (as part of the initial report findings) or in 2012. Table 2-2 presents a detailed list of surveys and stakeholder interviews conducted as part of initial evaluation activities and the second phase of evaluation activities.

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Table 2-1 and Table 2-2, the evaluation required a wide range of interviews, surveys, and program material reviews. Interviews with program staff coincided with reviews of various materials and databases, providing a broad view of how each program had been implemented, operated day-to-day, and monitored by Georgia Power and its program partners. Surveys with participants, nonparticipants, and trade allies (such as contractors and retailers) provided insights into implementation process strengths and weaknesses. Finally, as part of the CFL lighting evaluation, the evaluation team conducted a random customer survey that provided nonparticipant information across all programs.

3 CROSS-CUTTING TOPICS

The team carried out reviews in two areas applying across all programs discussed below. These cross-cutting items include: an overarching logic model review, and a cross-portfolio marketing and communications materials review.

3.1 LOGIC MODELS

Logic models summarize the flow of and relationships between critical program components, including inputs, activities, outputs, and desired outcomes, seeking to document assumptions about a program and its working methods to solve identified problems (e.g., insufficient saturation of energy-efficiency equipment in the marketplace).

In the initial stages of evaluation planning, logic models also help guide evaluation research and discussions with program staff and implementers, and offer a means to identify and establish metrics for program progress. In planning stages, program managers identify program activities leading to expected outputs, which are required to accomplish expected short-, medium- and long-term outcomes. Inputs and outputs remain under a program sponsor's control. Outcomes, however, while intended to be influenced by the program, also likely experience influences by external factors, outside of program control, including customer responses and market changes. By clarifying program design elements and how they work together, a logic model provides insights into reasons why outcomes may or may not be achieved.

Typical logic model elements include:

- External influences
- Resources
- Activities
- Market actors
- Outputs
- Customers reached
- Outcomes (short, intermediate, and long-term)
- Metrics to measure outcomes

Logic models especially prove valuable for exposing assumptions, and stating these clearly. Though development of a logic model cannot ensure program success, it can help identify logical or program gaps at the program's outset, enhancing their resolution. In addition, models provide frameworks for program monitoring and evaluation activities. Appendix A contains detailed information about the development and use of a logic model, which GPC can use to expand the current logic charts into logic models. A brief review and feedback on each logic chart accompanies each original program description within the program evaluation sections below.

3.2 PORTFOLIO MARKETING AND COMMUNICATIONS REVIEW

While Georgia Power conducts marketing and communications at the individual program and portfolio levels, this section reviews and provides recommendations for marketing and communications at the portfolio level, specifically analyzing the following four topics:

- General Portfolio Marketing
- EarthCents Brand
- Website
- Online Conversation and Social Media

Reviews and recommendations regarding marketing and communications at the program level can be found in each of this report's program sections.

3.2.1 Research Questions

In addition to the overarching, evaluation objectives, presented in Section 2.2.1, the following, specific research questions guided our review of marketing and communications activities:

- Is the marketing process effective?
- Do marketing messages reach the appropriate program targets?
- Does Georgia Power's portfolio marketing reflect industry best practices?
- What can Georgia Power do to extend its market reach, where desired?

3.2.2 Research Activities

To address the research questions, the evaluation team reviewed marketing and communications materials, conducted interviews with key stakeholders, and researched online conversations about Georgia Power and the EarthCents brand, using Radian 6, a social monitoring tool. Table 3-1 outlines specific research activities. Unless otherwise noted, all of this report's findings, conclusions, and recommendations have been based on research conducted in 2011.

Table 3-1. Portfolio Marketing and Communications Research Activity

Research Activities	Fall 2011	Spring 2012
Materials Review		
Website (http://www.georgiapower.com/)	•	
Social Media	•	•
Collateral	•	
Paid Media	•	
Marketing Metrics (as available)	•	
Social Media	•	
Interviews		
Utility Program Managers	•	
Utility Corporate Communications Staff	•	
Market Research Staff	•	
Implementer Staff	•	
Research		
Industry Best Practices Research	•	
Radian 6 social media monitoring tool	•	•

3.2.3 General Portfolio Marketing

In mid-2011, the evaluation team reviewed Georgia Power's marketing and communications materials across the full program portfolio. The team's conclusions reflect best practices in energy-efficiency utility marketing as well as general marketing best practices.

Georgia Power conducts local market research to drive messaging for most programs. Market research allows Georgia Power to identify target audiences and to tailor marketing and communications to most efficiently and effectively meet its customers' needs. Additionally, Georgia Power uses multiple media sources to reach customers, ensuring information reaches a full range of customers, with varying habits and preferences.

Georgia Power educates and trains key staff, trade allies, and implementers about its programs, extending program reach, and providing a communication channel between stakeholders and Georgia Power staff. Additionally, trade ally and/or channel partner programs support most program marketing and education efforts. As trade allies and partners work directly with program participants and potential participants, they often provide a trusted information source for customers, and, therefore, offer an important voice for programs.

The program and communication staff structure encourages collaboration and efficiency. Georgia Power's program managers and senior energy-efficiency staff track performance against goals. Given they monitor program performance so closely, staff knows when to increase or decrease marketing, as needed.

3.2.4 EarthCents Brand

The evaluation team reviewed the EarthCents brand in late 2011, just as Georgia Power launched the brand[3]. EarthCents embodies key energy-efficiency motivators: savings ("Cents"); the environment ("Earth"); and smart choices (the play-on-word "Sense"). The brand ensures marketing materials have a consistent look and feel across programs, increasing customer recognition of energy-efficient opportunities across all sectors. The umbrella brand also allows promotion of multiple programs through a single advertisement or campaign, leveraging economies of scale. Additionally, it provides a market advantage for any new energy-efficiency programs Georgia Power may choose to launch, through recognition of the existing brand.

As of last fall, not all trade allies used EarthCents branded materials in customer communications. This is not unexpected due to how recently Georgia Power had launched the EarthCents brand. Georgia Power staff has worked with them since then to increase consistency, which proves important in messaging as it supports customer adoption of energy-efficiency behaviors.

3.2.5 Website

The evaluation team reviewed Georgia Power's EarthCents Website in late 2011. The team analyzed content, design, and user experiences to assess how well the Website engages customers, makes program information easily accessible, and facilitates program participation.

Georgia Power's Website includes general program information, and explains how to participate in each portfolio program. Navigation from the home page to program pages mostly operates intuitively and logically, helping customers easily find program information. Program detail can be accessed via multiple points on a page, facilitating visits to program pages. Downloadable program and rebate application forms in various formats housed on each program page offers customers convenient access. However, text within each program page is small, light grey, and in paragraph form, making it difficult to quickly scan for key program information.

Within program pages, program descriptions should lead with compelling messages for customers (addressing: "What's in it for me?") to encourage them to learn more about the program and, hence, participate. While most Georgia Power program pages sufficiently highlight benefits to customers in the program description, the point could be enhanced with clear and compelling messages in each program page header, since visitors often read this content first. For example, the EarthCents New Homes page (http://www.georgiapower.com/earthcents/residential/new-home/) leads with the headline "EarthCents New Homes" rather than a call to action.

The Website has a clean consistent look and feel across most portfolio program pages. Program "post-it" images, found throughout the Website, present friendly, approachable, and consistent features for the viewer, adding to a positive Website experience.

[3] Cadmus did not review the EarthCents brand guidelines because they were still under development at the time of the marketing materials review in Fall 2011.

3.2.6 Online Conversation and Social Media

From January through November 2011, the team monitored online conversations regarding the EarthCents brand and Georgia Power's energy-efficiency programs, using Radian 6, a social media monitoring tool. Online conversation analysis for the EarthCents brand continued through February 2012. Radian 6 provided detailed information about relevant conversations mentioning EarthCents and specific energy-efficiency programs, such as volume, sentiment (positive versus negative), associated keywords, media type (blog, Facebook, and mainstream news), and examples of specific conversations.

Overall, the team found a relatively low volume of conversations mentioning the EarthCents brand or any of portfolio programs (about 500 per month), with fewer than 50 mentions per month specifically of the EarthCents brand. Since Georgia Power relaunched the brand during the monitoring period, volume seemed unusually low. Total online conversations included all press release reposts, posts including "EarthCents," and all program mentions.

Most conversations were positive or neutral. Blogs, mainstream news, and forums provided the top three media avenues for online conversations. A high volume of conversations did occur regarding savings/thrift, environmental concerns, efficiency, energy use and home economics. This suggests Georgia Power may be able to insert energy-efficiency programs into the online conversations.

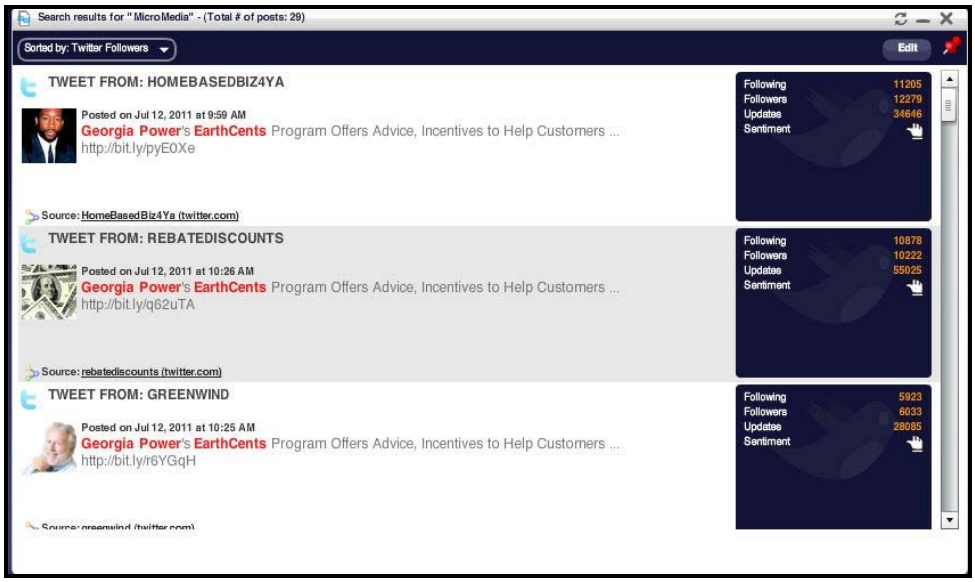
Georgia Power can increase positive online conversation—and thus brand and program awareness, leading to increased customer participation—through optimized social media activity. In late 2011, the evaluation team recommended Georgia Power take additional steps to increase customers' interactions with social media contacts, and to help spread the word about the EarthCents brand and programs. Suggestions included:

- Changing Georgia Power's Facebook page to include the brand name, EarthCents;
- Posting and tweeting content regularly;
- Increasing the number of Facebook fans and Twitter followers; and
- "Tagging" and actively engaging with other relevant pages.

A follow-up review of the Georgia Power's Facebook and Twitter pages (@GeorgiaPower) in Spring 2012 showed Georgia Power changed its Facebook page to "Georgia Power EarthCents," and Georgia Power posts and tweets daily. Based on previous experience, the team expects both these changes will considerably increase online conversations about EarthCents and Georgia Power's programs.

The following, sample tweets about the EarthCents brand reached 31,000 followers, showing how valuable Twitter can be for spreading information to a wide audience (Figure 3-1).

Figure 3-1. Sample EarthCents Tweets



Because blogs and forums provide the top media types for online conversations, Georgia Power has an opportunity to build those relationships and target them for outreach. Georgia Power should concentrate on blogs and forums focusing on popular online conversation themes associated with EarthCents and portfolio programs, such as savings/thrift, environmental concerns, efficiency, energy use, and home economics.

The following are two examples of how blogs and forums generate earned media for Georgia Power and its EarthCents brand.

Error! Not a valid bookmark self-reference., a blog post from AugustaShopping.com (which offers daily deals in Augusta), provides an effective example of a blog reaching people interested in money-saving deals online, and educating them about Georgia Power programs.

Figure 3-2. August Shopping Blog Post

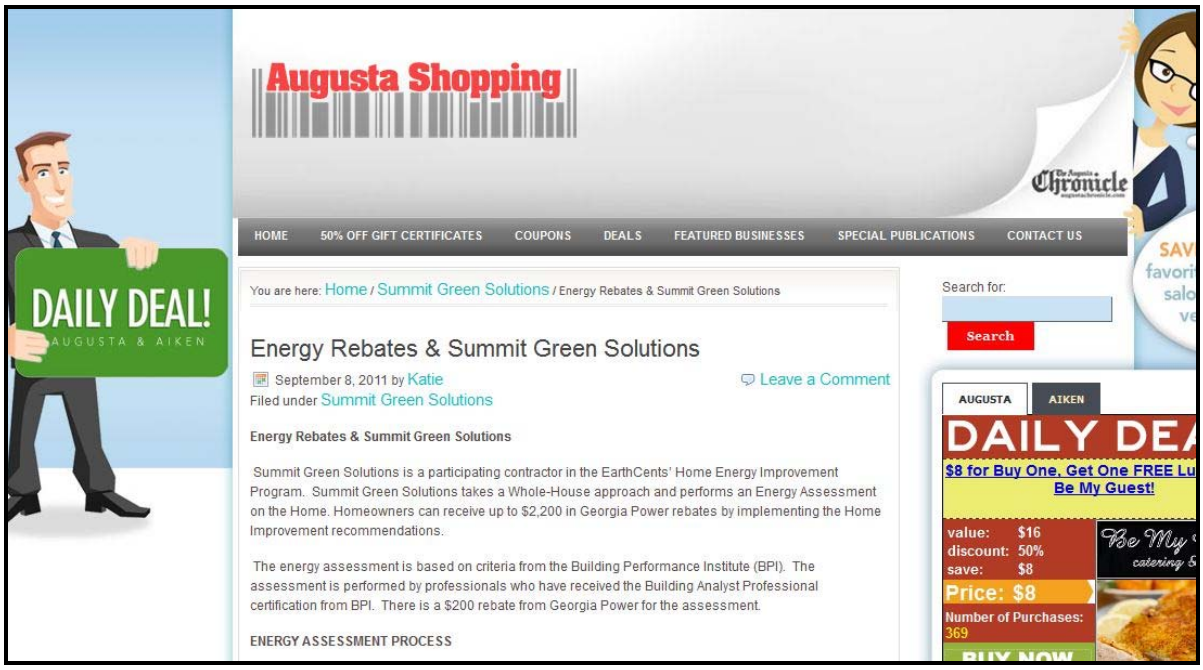


Figure 3-3, a post on AtlantaRealEstateForum.com (a real estate forum that shares real estate trends and news in Atlanta), provides a second example of a blog reaching key audiences – in this case, homeowners and real estate professionals, and spreading awareness of Georgia Power programs.

Figure 3-3. Post on Active Rain - Real Estate Professional Blog

3.2.7 Conclusions and Recommendations

The EarthCents umbrella brand provides a consistent look and feel for marketing and communications materials.

Recommendation:

- Georgia Power should continue to use it on all internal and external marketing communications materials.

The Website's content, design and user experience are mostly positive. However, program page content cannot be easily and quickly scanned, and headlines do not lead with compelling messages answering the question: "What's in it for me?"

Recommendations:

- Within program pages, consider increasing font sizes, and decreasing word counts of program descriptions. Also consider shortening paragraphs, and placing text in bullets, where possible.
- Edit headings within program pages to ensure they include compelling messages for customers, such as benefits related to saving money, saving energy, health, or comfort.

While Georgia Power uses its social media channels to spread information about its programs, and blogs and forums generate some online conversations and communications regarding EarthCents, the volume of online mentions remained relatively low as recently as February 2012. Georgia Power should increase its social media efforts and outreach to blogs and forums, helping increase online conversations about the programs.

Recommendations:

- Regularly scrutinize social media analytics (such as those provided by Facebook) to determine types of posts and times of day generating the greatest reach and engagement to inform strategies. "Tag" partners and other community members in posts, and engage with other relevant pages.
- Identify and engage with targeted blogs and forums, offering the best targets for "earned" media. Ways to engage forums and blogs include: "sharing" a blog post or a link to a conversation thread via social media, providing program content and promotions, and communicating directly with respective blogs or forums.

4 COMMERCIAL PROGRAMS

4.1 PROGRAM OVERVIEW

In January 2011, Georgia Power launched the EarthCents Commercial Energy Efficiency Program (CEEP or program). Implemented by ICF International, CEEP provides incentives for business customers that upgrade or retrofit their facilities with high-efficiency equipment and systems. Customers can choose from two incentive approaches: Prescriptive Measures (prescriptive program); or Custom Lighting for New Construction and Existing Properties (custom program). The prescriptive measure offerings include: HVAC, building envelope, high-efficiency equipment and controls, and lighting (compact fluorescent lamps [CFLs] and light-emitting diodes [LEDs]). The custom program only offers lighting measures, such as fluorescent lighting fixtures, high bay lighting, and other lighting upgrades. For new construction (or building retrofits), the program determines custom lighting incentives by calculating the Lighting Power Density (LPD) of the facility.[4]

The Georgia Power CEEP incentive caps the custom lighting approach at $10,000 for a not-for-profit facility, and $5,000 for a for-profit facility. Most measures under the prescriptive approach do not have incentive caps, except for: reflective roofing, which has a cap of $10,000 for a not-for-profit facility and $5,000 for a for-profit facility, and duct sealing which has a cap of $1,000 for all facilities.[5]

The prescriptive and custom program's primary target markets include the following:

- Managed Commercial: Commercial customers with annual demand over 1000 kW, or multi-site accounts, assigned to Georgia Power Key Account Managers;
- Mid-tier: Commercial customers with demand between 500 to 1,000 kW assigned to a Georgia Power Mid-Tier Account Manager, but not actively managed; and
- Non-Managed Commercial: Small commercial customers with demand less than 500 kW, not assigned to Georgia Power account managers.

Examples of managed and mid-tier commercial customers include: hospitals, universities, government facilities, schools, distribution centers, corporate complexes, and national accounts. Small commercial customers typically represent: restaurants, fast food, convenience stores, commercial kitchens, hotels, retail stores, dry cleaners, schools, office buildings, and grocery stores.

Georgia Power's CEEP program objectives include achieving energy savings goals within budget, while improving customer satisfaction. The program sought to achieve energy savings goals of 78,477 MWh in 2011, with targets nearly doubling in 2012, to 151,481 MWh. To meet this challenge, the program's marketing strategy assumes trade allies, key account managers (KAMs),

[4] LPD must be less than or equal to the applicable Maximum Eligible LPD watt per square foot. The proposed LPD also must be 30% below ASHRAE 90.1-2007 standards, and determined by the facility type. Additional information can be found at http://www.georgiapower.com/earthcents/business/pdf/new-construction-eligibility-standards.pdf.

[5] In 2012, all incentives caps were raised to $10,000.

and customer service relationships can be leveraged to maximize promotional opportunities within Georgia Power's region.

CEEP's overall marketing strategies focus on: educating customers and stakeholders about program benefits, engaging peer influencers through customer testimonials, and implementing a clear call to action through outreach messaging. A commercial audit service, part of the general customer service offering, also refers eligible customers to the prescriptive and custom programs.

4.2 EVALUATION OBJECTIVES AND METHODOLOGY

4.2.1 Research Questions

Primarily, the CEEP process evaluation sought to understand and document how the program works in practice, and to analyze important influences on its operations and achievements. The evaluation addressed the following, overarching questions:

- Does the program, as implemented, reach its participation goals?
- Are commercial customers aware of program incentives and federal tax incentives[6] available for efficiency improvements?
- How well did the program affect participants' satisfaction with GPC? What aspects of the program were they most interested in? Are there suggested improvements?
- Do customers find the program offering easy to understand and the participation process straightforward?
- How well does the marketing and outreach strategy promote program awareness and types of eligible equipment among the target population?
- How effective are the implementer's record-keeping practices?
- What was the customers' decision-making timeframes (for example, how long from the time they learned about the program before they installed equipment)?
- Have resources been allocated appropriately across the programs, and does sufficient staff implement the program?
- How large are their businesses? (A question designed to determine participation differentials between large and small commercial customers.) What is the decision-making process in their organization?
- Are contractors and equipment vendors incorporating the rebate offering into their sales and marketing activities?

[6] Available through the end of 2011

4.2.2 Data Collection Methods

4.2.2.1 Research Activities

In Summer and Fall of 2011, the evaluation team[7] interviewed: Georgia Power's program and support staff, account managers, auditors, and the ICF International implementation team. Interviews sought to gather a complete picture of CEEP, from launch to implementation. Interviews also helped clarify key researchable issues to be examined during the evaluation. In Spring 2012, the team conducted follow-up interviews with Georgia Power's commercial program staff, identifying changes occurring since the original interview. In Summer 2012, the team surveyed a sample of program participants and nonparticipants, and interviewed its registered trade allies.[8]

Table 4-1 lists interviews and surveys conducted during the commercial program's process evaluation.

Table 4-1: Commercial Programs Interviews and Surveys

Research Activities	Fall 2011	Spring 2012
Interviews		
Utility Program Managers	2	1
Utility Database Manager & Staff	2	
ICF Implementation Staff	3	
Utility Key Account Managers	3	
Utility Auditors	2	
Trade Allies*	NA	11
Surveys		
Participating Customers	NA	67
Nonparticipating Customers	NA	140

*The 11 trade ally interviews represent only those conducted by the evaluation team.

The participant survey gathered information on the following issues:

- Satisfaction with various program components;
- How customers learned about the program, and how best to inform them about incentives and program updates;
- Behaviors and decision-making practices regarding energy-efficiency equipment installation;
- Benefits and barriers to program participation;
- Responses to new federal lighting regulations (for lighting participants); and
- Freeridership and spillover.

[7] The evaluation teams included staff from Nexant and Cadmus.

[8] See Section 4.2.2.2 for more information on the sampling approach for these three groups.

Nonparticipants are customers who may be aware of the Georgia Power CEEP, but have not taken advantage of the incentives. The nonparticipant customer survey, in addition to asking questions regarding spillover, gathered data on: outreach strategies, market barriers, decision-making practices regarding energy-efficiency technology adoption' and reasons for nonparticipation.

Trade ally phone interviews assessed: program experiences, impressions of factors motivating customers to install energy-efficiency equipment, market barriers, responses to new federal lighting standards, and changes to business practices. Georgia Power also recruited and sponsored two focus groups with registered and nonregistered trade allies and made the results of those groups available for this evaluation.[9] For more detailed information about the focus groups, see Appendix J.

The evaluation team also reviewed program materials at several points during the process evaluation. In Fall 2011, this involved: reviewing and analyzing tracking and operational materials used for the program's implementation, and any program materials provided to customers, trade allies, or field staff during the program's launch. In Spring 2012, the team reviewed new program materials developed by Georgia Power in response to customer and trade ally feedback received during the prior year.

Georgia Power and ICF provided much of the program materials, though some were located on Georgia Power's business Website. Table 4-2 lists materials reviewed during the CEEP evaluation.

Table 4-2: Commercial Program Materials

Materials Review	Fall 2011	Spring 2012
Implementation Manual	•	•
Enrollment Forms	•	
Quality Assurance Documents	•	
Program Database	•	•
Customer Satisfaction Surveys	•	
Trade Ally Workshop Presentation	•	•
Trade Ally Q&A and Application Form	•	•
Trade Ally Focus Group Report		•
Marketing Brochure	•	•
Website	•	•

4.2.2.2 Sampling

The evaluation team developed customer survey samples to account for differences in rate class, energy savings, program involvement, and equipment installations. While the team conducted

[9] Georgia Power sponsored trade ally focus groups, contracting with the New South Research Marketing Services (NSR) to moderate, analyze data, and report results. This process report briefly summarizes the results of NSR's research in Appendix J. The total number of focus group participants is not included in Table 4-1.

participant surveys primarily on site during impact verification site visits, the team conducted nonparticipant customer surveys and trade ally interviews by telephone. If decision makers proved unavailable during site visits, the team followed up with phone calls to complete surveys, conducting about 15 follow-up phone surveys.

To accommodate both the impact and process evaluation's analysis needs, the team stratified the participant survey sample to capture effects from various measure groups and at various levels of energy savings, while representing customers with experiences in both prescriptive and custom programs. To avoid duplicating feedback, the process evaluation required completed surveys from individual decision makers. As shown in Table 4-3, out of 1,371 projects, only 507 unique sites had measures installed. In many of these locations, decision makers were the same, reducing the pool of unique participating customers. The limited pool of decision makers participating in 2011, resulted in completing 67 process surveys (less than one-half the initial survey target).

Table 4-3: Completed Process Evaluation Surveys and Targets

Participating Customer Surveys	Project Records	Unique Premise Number	Unique Decision-Makers	Target	Actual	Precision
Custom	476	300	137	70	45	10.1%
Prescriptive	895	276	116	70	22	15.9%
Total	**1371**	**507**	**187**	**140**	**67**	**NA**

Note: Premise and decision maker totals in population and sample do not sum from the custom and prescriptive value due to participation overlap between two streams.

The team drew a random stratified sample of nonparticipants from the utility customer database, to represent 140 small, medium, and large energy users in Georgia Power's service territory,[10] achieving the initial sample target. However, Georgia Power requested exclusion of managed accounts from the survey sample to avoid potential survey fatigue, as managed accounts had participated in several satisfaction surveys in the first half of 2012.

The trade ally survey sample resulted from a list of about 70 registered trade allies, provided by Georgia Power. Of these registered trade allies, about 15 had participated in the focus groups sponsored by Georgia Power.[11] The team e-mailed and called remaining trade allies, with 31 agreeing to take the survey. Of these, 11 actively worked with Georgia Power's customers, received rebates, and could complete the survey.

[10] Customers are categorized by energy demand and rate at Georgia Power's business website: http://www.georgiapower.com/pricing/business/. Small customers have energy-demand requirements less than 30 kW; medium customer demand requirements fall between 30 kW and 500 kW; and large customers require energy demand greater than 500kWh.

[11] Georgia Power sponsored focus groups and five in-depth interviews as separate evaluation activities (conducted by NSR).

4.2.3 Net-to-Gross Analysis Method

To develop a net-to-gross (NTG) ratio, two components must be assessed: freeridership and spillover. Freeridership equals the percentage of savings that would have occurred in the program's absence due to participants purchasing the same measures without the program's influence. Spillover refers to additional savings generated by customers (participants or nonparticipants) influenced by program activities, but not captured by program records. Savings received from installation of additional measures could be considered spillover savings if the program significantly influenced customer decisions to purchase the equipment (and they did not receive additional rebates for those measures).

Various methods can be used to estimate program freeridership and spillover. The team used a baseline evaluation approach, relying on self-reports from participant surveys to determine a freeridership score by asking a series of questions about actions that would have been taken in the program's absence. The team also used self-reports to calculate participant and nonparticipant spillover by estimating savings attributable to additional measures installed, and whether respondents credited Georgia Power with influencing the decision. Measures were counted if eligible for program incentives, even if incentives were not requested.

The following calculation was used for each program's NTG estimate:

Program NTG = 1 - Freeridership + Participant Spillover + Nonparticipant Spillover

To estimate freeridership, the evaluation team asked participants a standard battery of 7 to 12 questions (varying by response) to assess the program's degree of influence on purchasing decisions. The survey asked if the customer had taken, or would have taken, the following actions:

- Purchased equipment prior to hearing about the program.
- Included the purchase in a recent capital budget before participating in the program.
- Purchased the same type of equipment before the program.
- Would have purchased the equipment had the rebate not been available.
- Would have purchased equipment with the same efficiency level and in the same quantity.
- Purchased it sooner, at the same time, later in the year, or in the near future.

Participant and nonparticipant spillover questions asked customers whether they decided to install another energy-efficient measure or undertake some other energy-efficiency-improving activity due to the program (without receiving incentives). The survey asked whether customers installed energy-efficient products similar to those offered in Georgia Power's CEEP measure portfolio.

If respondents indicated they made energy-efficient improvements or purchased products, they were asked how important the program was on their purchasing decisions. Response options included: "not at all important"; "not very important"; "somewhat important"; or "very important."

Only measures where participants indicated their participation in the program as very important on their purchasing decision were attributed to program spillover.[12]

For additional information about the NTG analysis methodology, please refer to Appendix I.

4.3 KEY PROCESS FINDINGS

4.3.1 Program Outcomes

This section discusses program performance outcomes, and explores customer satisfaction during the program's first year of operations. Table 4-4 lists research questions considered in evaluating program outcomes.

Table 4-4: Commercial Program Outcomes Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Are program targets being met?	• Does the program achieve participation and energy savings goals?	4.3.1.1
Are customer satisfaction goals being met?	• Are customers satisfied with the various program components? • Do customers perceive program benefits?	4.3.1.2

4.3.1.1 Program Achievements

In 2011, the Georgia Power CEEP exceeded its reported energy savings goals of 78,477 MWh for the combined prescriptive and custom programs.[13] ICF reported Georgia Power's total CEEP achievement at 102% of savings targets (80,755.65 MWh).[14]

When asked about meeting future savings goals, the GPC manager reported it may be more challenging to meet the targets in 2012, which are nearly double those in 2011 (from 78 GWh to 151 GWh). The higher targets require a considerable increase in the volume of incentive applications and project installations. Despite the challenge, the manager expressed confidence in meeting goals due to increases in applications in early 2012. During the first few months of 2011, the program processed an average of 40 applications per month. The applications' volume has tripled to about 120 per month.

[12] Spillover is calculated using a conservative methodology in which savings is attributed only to those responses identified as "very important."

[13] Goals derived from: Georgia Power Service Commission Docket 31082, Appendix B.

[14] Georgia Power Company: Commercial Energy Efficiency Program, 2011 Program Review. March 15, 2012. ICF International presentation.

4.3.1.2 Customer Satisfaction

As shown in **Error! Not a valid bookmark self-reference.**, few participants voiced dissatisfaction about the program. The majority of participants reported being very satisfied with their overall program experience, and many program elements, including: vendors, equipment performance, rebate processing time, and communication with Georgia Power staff. Participants were more likely to be "somewhat satisfied" with incentive amounts offered, the application process, the clarity of application requirements, and selection of eligible, energy-efficiency equipment options.

Figure 4-1: Participant Satisfaction with Program Components

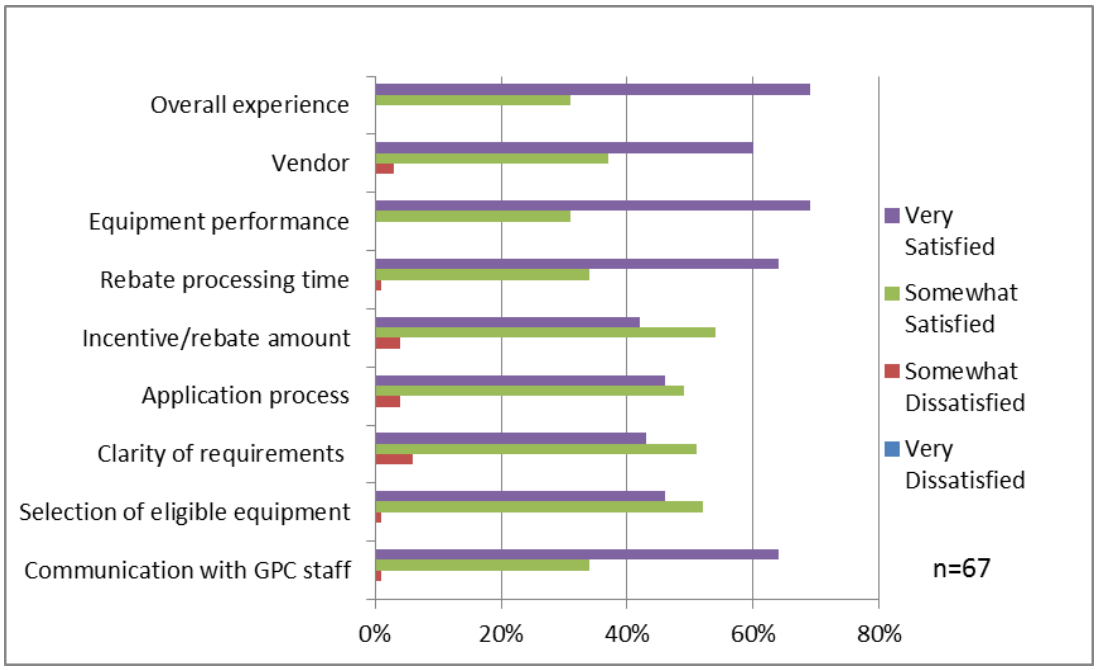


Table 4-5 lists reasons why a small number of participants expressed dissatisfaction with vendors, rebate amounts, the application process, and the clarity of application requirements.

Table 4-5: Participants Somewhat Dissatisfied with Program Components

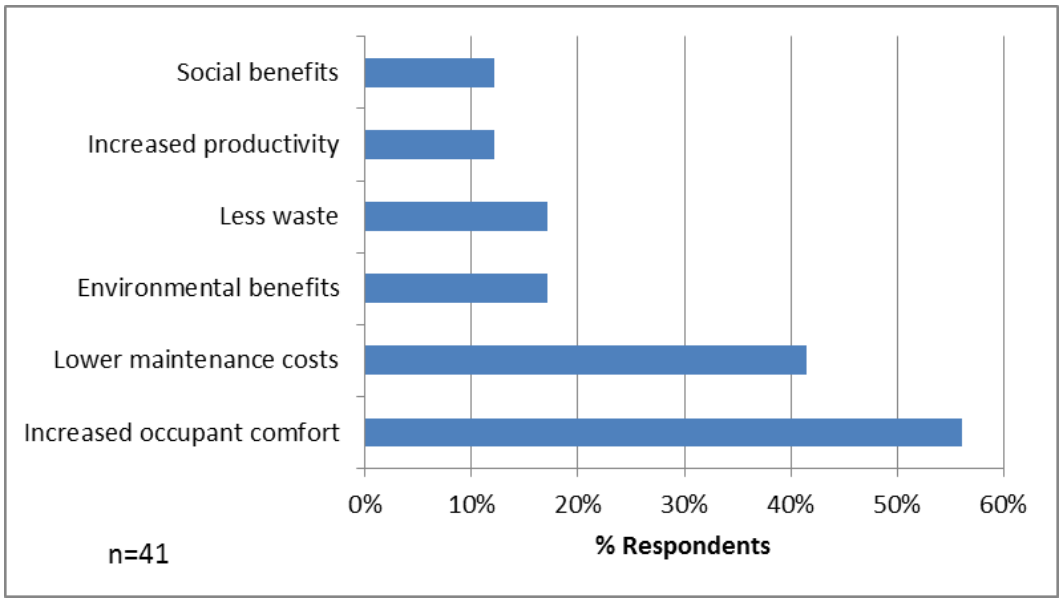
Trade Ally Vendors	Rebate Amount	Application Process	Clarity of Program Requirements
Had doubts about technical expertise	Costs a lot with very little help	Much effort to acquire the needed information (e-mails, specs, on-site visits)	Excel spreadsheet naming convention inconsistent with old and new lighting
Scheduling and installation took a lot of time	Would have liked more help	Another company had to help figure it out, difficult to do alone	Difficult to pick out correct fixture type from the list
	Could use more	Excel spreadsheet not	Submittal was difficult to figure

Trade Ally Vendors	Rebate Amount	Application Process	Clarity of Program Requirements
	money	working properly	out
			Called many times before finding someone to help

Participant Benefits of Energy-Efficiency Projects

Participants reported increased occupant comfort (56%) and lower maintenance costs (41%) as key benefits provided by energy-efficiency projects. Figure 4-2 shows other reported benefits.

Figure 4-2: Benefits Provided by Energy-Efficiency Projects



4.3.2 Program Design

The team reviewed the program's logic chart, and interviewed staff and implementers to assess challenges during or following the program launch. The team assessed customer and trade impressions of program design through feedback about program barriers to participation, incentives and measure offerings, and impacts of federal tax credits or American Recovery and Reinvestment Act (ARRA) funding.

Table 4-6 identifies research questions assessing the commercial program design and factors that might have affected Georgia Power's ability to meet the program's various goals.

Table 4-6: Commercial Program Design Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section

Is the program's design appropriate to meet its goals?	• Does the logic chart reflect program design as implemented?	4.3.2.1
	• Were challenges identified with program design after launch? How were these addressed?	4.3.2.2
	• What are the customer barriers to participation?	4.3.2.3
	• What factors affect customer energy-efficiency installation decision-making?	4.3.2.4
	• Are incentives and program offerings appropriate for commercial customers in the region?	4.3.2.5
	• How do federal tax credits and ARRA funding affect participation?	

4.3.2.1 Program Logic Chart Review

In Georgia Power's initial program plans,[15] the logic charts were distinguished by prescriptive and custom programs. The team found (through materials reviews, interviews, and surveys) that many objectives, market barriers, strategies, and outcomes in the logic charts applied across both programs. Customers and trade allies reported experiences with the program or measure applications, and appeared not to differentiate by prescriptive or custom projects.

Georgia Power's program manager and implementer reported program delivery began in 2011 under one umbrella. As the program matures, prescriptive and custom paths should become more distinct, as additional program features and measures enter the market. For example, the custom program currently consists only of lighting measures. In the future, the custom program could be expanded to include additional measures. Georgia Power plans to continue building the trade ally network, resources, and training to meet program objectives.

As shown in Appendix A (Figure A-3), the evaluation team consolidated prescriptive and custom logic models for simplification purposes, signifying a single, commercial umbrella.

4.3.2.2 Program Launch Challenges

In staff interviews, Georgia Power's program manager and implementer reported design completion in 2010 and program launch in January 2011 However, Georgia Power's KAMs and sales staff noted some confusion among customers and trade allies regarding the program's eligibility, application process, and calculation of the lighting incentives. In response to this, Georgia Power moved many lighting incentives to the custom program. By April 2011, changes had been finalized and the program's launch completed.

Revisions to program design changed the business Website, customer and trade ally program materials, and online enrollment forms. Some Georgia Power field staff reported hesitancy in promoting the commercial energy-efficiency programs during early program launch stages, while the program remained in flux. Staff expressed concerns about sending customers mixed messages about incentives and program eligibility, while the program underwent refinements.

[15] Evaluation Plan for 2011 Demand Side Management Programs. Submitted to Georgia Power Company by Nexant in Partnership with Cadmus Group and SRBI. May 6, 2011.

Follow-up interviews with Georgia Power's program manager reported the program addressed customer and trade ally concerns by offering additional training in the field to KAMs, sales representatives, and trade allies. Training, held during regional sales meetings or trade ally workshops, sought to provide more clarification about program eligibility, incentive requirements, and enrollment processes.

4.3.2.3 Program Barriers to Participation

CEEP program logic charts included in the 2011 evaluation plan[16] identified market barriers faced by Georgia Power's business customers. These included:

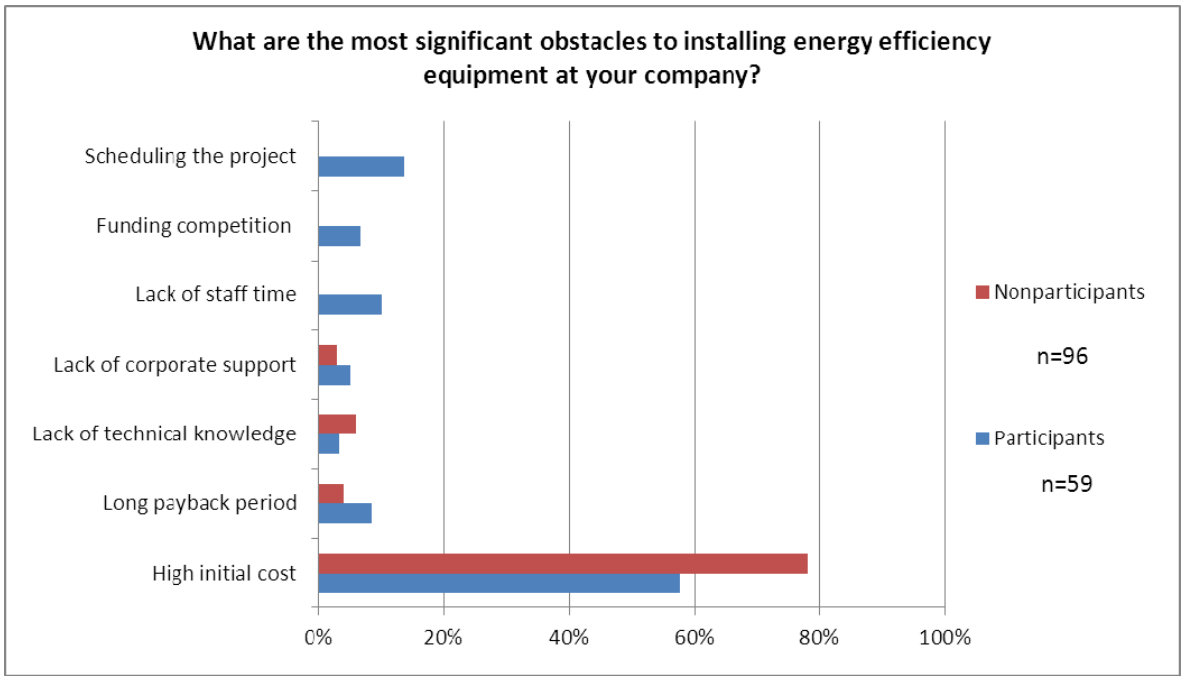
- High initial technology costs,
- Lack of in-house staff resources to manage energy-efficiency projects, particularly for small companies,
- Lack of awareness of costs and benefits,
- Access to capital,
- Competing priorities;
- Lack of an Energy Services Company network,
- The economic downturn,
- Need for short-term paybacks (e.g., less than two years), and
- Reaching decision makers.

Barriers to Customer Participation

As shown in Figure 4-3, when participants and nonparticipants were asked about barriers to program participation, both reported high initial costs of energy-efficiency improvements as the most significant participation barrier.

[16] Evaluation Plan for 2011 Demand Side Management Programs. Submitted to Georgia Power Company by Nexant in Partnership with Cadmus Group and SRBI. May 6, 2011.

Figure 4-3: Most Significant Obstacles to Installing Energy-Efficiency Equipment



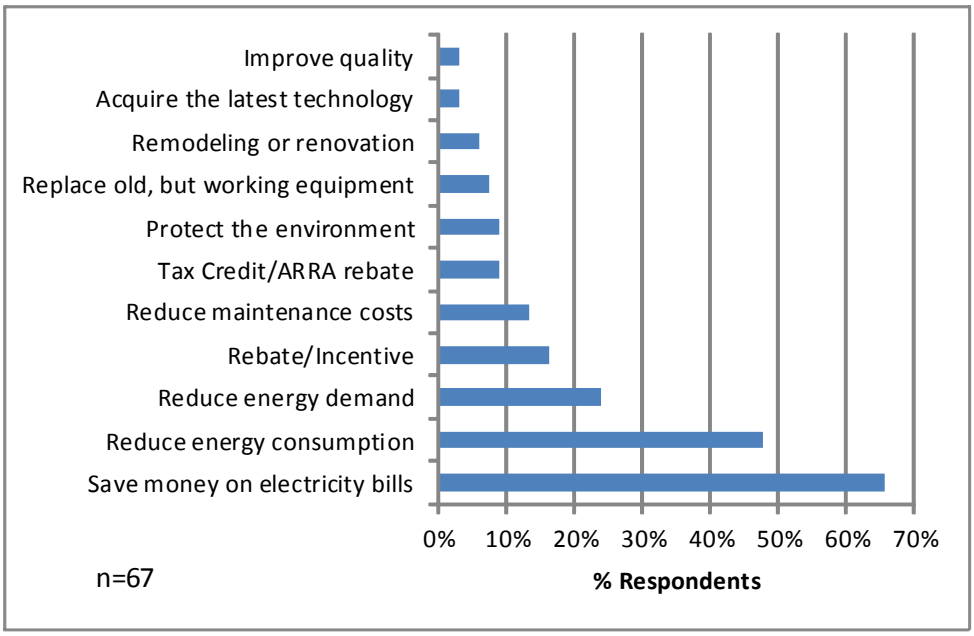
Both participants and nonparticipants felt Georgia Power could help to overcome these obstacles through the following areas:

- Provide more education about available programs and incentives,
- Partner with manufactures to improve rebates and technologies,
- Improve communication,
- Create adaptive programs for lessors and lessees; require building owners undertake upgrades,
- Offer reduced rates for energy-efficiency installations,
- Overpayment or financing options, such as: free financing, shared payback funding, subsidized offerings, or lease-to-buy programs,
- Allow power purchase agreements, and
- Provide more grants to schools.

Factors Affecting Energy-Efficiency Equipment Installation

Figure 4-4 depicts participant decision-making factors, from least to most important. Participants reported saving money on electricity bills and reducing energy as the most important factors contributing to their decisions to install energy-efficiency equipment.

Figure 4-4: Most Important Factors in Decision to Install Energy-Efficiency Equipment



4.3.2.4 Program Incentives and Offerings

During interviews, KAMs reported some incentives proved insufficient to motivate large customers (particularly for lighting and HVAC). For small commercial customers, lighting incentives provided a bigger portion of funding sources required, than they did for facilities requiring large capital sums. One KAM noted schools may require installation of more lighting than would qualify under the custom lighting program's LPD requirements.[17]

Trade ally interviews suggested improvements for the program's incentives and equipment offerings, with some incentives considered too low compared to other utilities' commercial energy-efficiency programs (including new construction, HVAC, lighting, and building envelopes). In focus groups, trade allies expressed pleasure with the incentive cap's rise from the original design to $10,000, and the cap becoming applicable to "per building, per calendar year." Though they reported $0.20/watt sufficient, trade allies suggested a higher per-watt incentive would work better.

Trade allies suggested additional measures to enhance the program, although some respondents may not have known of current offerings. Suggestions included:

- Big chillers,
- Electronically commutated motors,
- LEDs and LED case lighting,
- Fan controllers,

[17] The program pays custom lighting incentives at a portion of savings 30% greater than LPD standards listed on the ASHRAE Website: http://www.georgiapower.com/earthcents/business/pdf/new-construction-eligibility-standards.pdf.

- Night curtains and doors,
- More emphasis on controls (such as demand control ventilation and energy recovery units),,
- Exterior pole lights,
- Solar installations, and
- Variant refrigerant flow.

Participant survey respondents felt the program could be improved by increasing incentive amounts and removing caps. Customers expressed interest in installing the following equipment (but did not believe incentives were available):

- Commercial kitchen equipment,
- Chillers,
- Variable frequency drives motors,
- Refrigeration, such as heating and cooling systems,
- Solar electric,
- Replace T8 with LEDs,
- Building controls other than occupancy sensors,
- Large mechanical equipment, and
- Spray foam insulation.

4.3.2.5 Response to Tax Credits and ARRA Funding

During a follow-up interview, the Georgia Power program manager noted a large number of commercial energy-efficiency projects in 2011 received ARRA funding. About 80% of public institutions, such as universities, colleges, technical schools, and some municipalities, may have received ARRA funding. Although Georgia Power's commercial participant database did not specifically track ARRA projects, the survey assessed the relative importance of ARRA funding in the decision to install energy-efficiency equipment. Only a small portion of respondents (6 of 67) cited ARRA funding or tax credits as important in the decision-making process.

4.3.3 Program Implementation

ICF staff assisted with the new Commercial program launch, working closely with Georgia Power's program manager and KAMs to implement the program in early 2011. ICF primarily recruited and trained trade allies to work with customers, and provided technical support to Georgia Power's customers and KAMs maintaining large customer accounts in the region. Georgia Power's implementation strategy largely relied on KAMs and trade allies to promote the program and to assist customers in participation.

As shown in Table 4-7, implementation research questions examined program management and resources, marketing and outreach, program partner activities, and enrollment processes.

Table 4-7: Commercial Program Implementation Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the overall implementation process effective?	• Are staff resources sufficient and allocated appropriately across the program? • How effective is communication between GPC program staff and implementation teams? Are goals communicated?	4.3.3.1 4.3.3.2
Is marketing effective?	• Do customers have the necessary materials and resources to make informed program decisions? • How well does the outreach strategy promote customer program awareness and participation among the target population? • How well does the outreach strategy promote trade ally involvement?	4.3.3.3 4.3.3.4
Are program partner activities effective?	• Are trade allies satisfied with the program and training efforts? • Do trade allies perceive program value? • Are trade allies promoting the program? • What are the trade ally barriers to participation?	4.3.3.5

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the enrollment process effective?	• Do customers find the program enrollment process straightforward and easy to understand? • Are the tracking processes effective? • Are there verification protocols in place?	4.3.3.6

4.3.3.1 Program Management and Resources

During 2011 interviews, Georgia Power's program management, support staff, and implementation team reported some concerns in keeping up with the Commercial programs' growing demands. However, Georgia Power and ICF plans for adding staff resulted in acquiring several new hires before the end of the year. Georgia Power brought on a new commercial program manager to handle the state's southern regions. ICF successfully recruited several new account managers to support trade ally networking efforts, and to provide technical assistance to customers and Georgia Power's KAMs.

The evaluation team reviewed Georgia Power's commercial program implementation manual, developed by ICF.[18] The very comprehensive program manual contained the essential elements of a commercial program operational guide, including:

- A program overview, with information about measures, incentives, and application processing;
- A marketing plan, detailing target audiences and outreach strategies;
- Trade ally participation requirements and guidelines;
- Data processing system requirements;
- Rebate application processing, data tracking, and reporting guidelines;
- Customer assistance guidelines;
- Quality assurance, verification, and inspection guidelines; and
- Payment processing guidelines and records retention.

4.3.3.2 Program Communication

The program's implementation strategy relied on strong working relationships with the CEEP program staff, implementation team, and Georgia Power's customer service and sales regions to promote the program and recruit participants. The program manager, along with ICF commercial account representatives, informed Georgia Power's KAMs and customer service staff about the program; they then informed customers with whom they had existing relationships about the program, within their respective regions.

[18] The Georgia Power EarthCents Commercial Energy Efficiency Program Implementation Manual.

Georgia Power's program manager held regular meetings with energy-efficiency program staff, and attended regional sales meetings throughout 2011, disseminating program information, updates, and technical training about measure offerings, incentives, and eligibility requirements. The CEEP program manager reported communications with KAMs, customer service representatives, and ICF support staff worked well, occurring on a regular basis through monthly meetings, periodic phone calls, and e-mails.

During the 2011 interviews, Georgia Power KAMs and ICF account representatives reported close working relationships, resulting in mutual information sharing, aimed at assisting customers with their energy-efficiency project needs. While Georgia Power's KAMs maintained direct client communication and generate customer project leads, ICF's account managers provided technical support for application processing, and assistance with pre- and post-project inspections.

Communication of Goals

Georgia Power's program managers and support staff reported communicating energy-savings goals during presentations to KAMs, sales, and other field staff in the early stages of the program's launch (at the end of 2010 and in early 2011). However, interviews with KAMs and field staff indicated that, although they knew of the program's savings goals, they did not know actual targets at the regional level. KAMs reported current individual goals based on customer satisfaction, and equipment sales using electricity rather than natural gas. Some KAMs and field staff noted savings targets would be emphasized more in years following the program's first year of operations (2012 and beyond).

During a follow-up interview in early 2012, the commercial program manager reported corporate management emphasized the CEEP goals and importance of achieving energy-efficiency program targets with the Georgia Power sales regions, ensuring communications of savings targets at the regional level for all KAMs and customer service staff. Although KAMs do not have individual energy-efficiency targets, Georgia Power is considering establishing these.

4.3.3.3 Customer Outreach and Communications

Customer Website and Other Resources

Georgia Power provides a comprehensive Website, enabling business customers interested in saving money and energy to access content appropriate for their industries and facilities. For example, a customer with a grocery facility can click a link, and view quick facts about energy and cost savings potentials. Customers can then review case studies, and identify available rebates and incentives.

Upon further investigation, business customers can find information regarding the energy-efficiency programs and products by equipment type, and find installation contractors by region. The energy-efficiency program's information can be accessed through a separate portal (linked from the business home Website), providing information about eligible measures, incentive details, and program requirements. Customers can also watch short, informative, high-profile customer testimonial videos, discussing program experience issues (such as ease of use, types of measures installed, and energy savings).

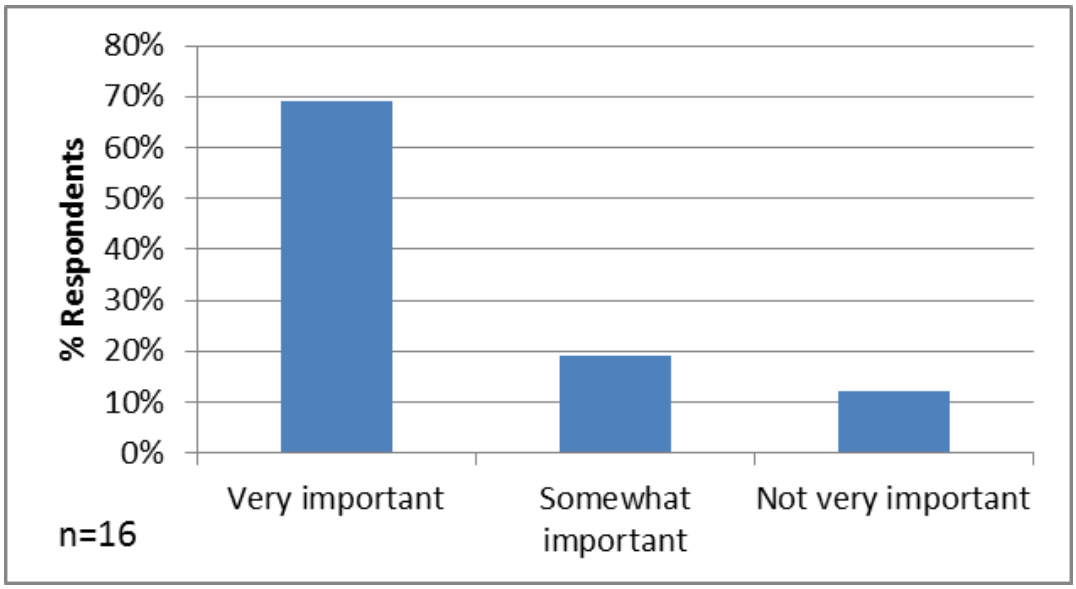
The evaluation team reviewed a color program brochure, expanded in early 2012 from a two- to four-page fold-out, providing a detailed overview of the commercial prescriptive and custom energy-efficiency incentives. Although this brochure did not appear to be available online, Georgia Power's program manager reported the brochure as a resource provided to customers or trade allies inquiring about the program.

Customer Awareness about Commercial Energy Audits and Incentives

To investigate outreach efforts in promoting awareness of Georgia Power's commercial energy-efficiency program and features, the surveys asked participating and nonparticipating customers whether they knew of the free energy audits. Questions also asked nonparticipants whether they were aware of Georgia Power's energy-efficiency incentives for business customers.

Most participants knew of Georgia Power's free energy audits (81%), but only 40% received one before implementing their energy-efficiency projects. Figure 4-5 demonstrates the importance of energy audits in decisions to install energy-efficiency equipment. The majority of participants (11 of 16) found it very important, and a few (three of 16) thought it somewhat important.

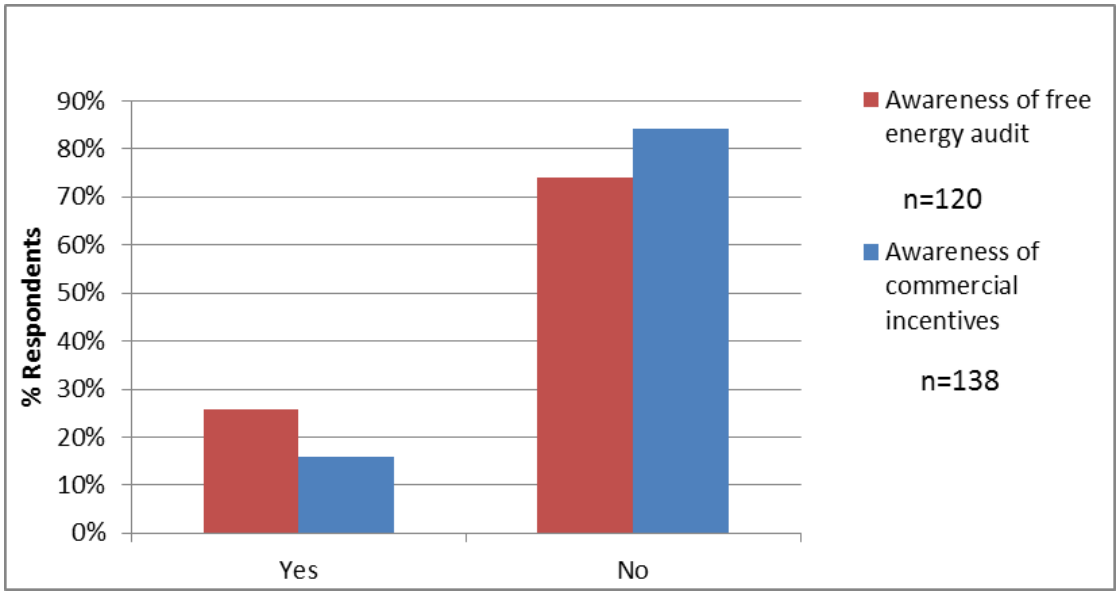
Figure 4-5: Importance of the Energy Audit for Participating Customers



As shown in Figure 4-6, about one-fourth of Georgia Power's nonparticipating customers (31 of 120) knew of the free energy audits, while only 16% (22 of 138) were aware of the commercial program's energy-efficiency incentives.[19] Of the 31 nonparticipants aware of energy audits, only five elected to receive the audit, with three customers installing some or all recommendations. All nonparticipants installing recommendations found the energy audit very useful for encouraging their businesses to implement energy-saving ideas.

[19] Respondents differ depending on number of those who refused or who answered "don't know."

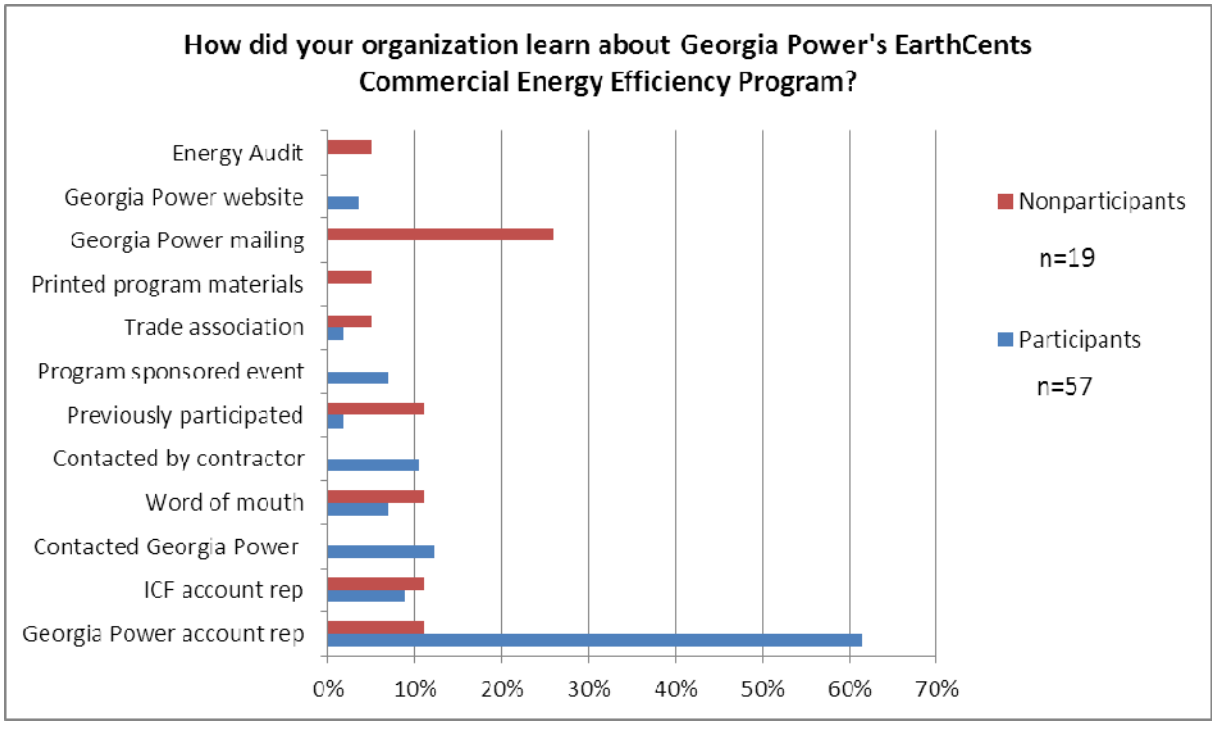
Figure 4-6: Nonparticipant Program and Energy Audit Awareness



Communicating Program Information to Participants and Nonparticipants

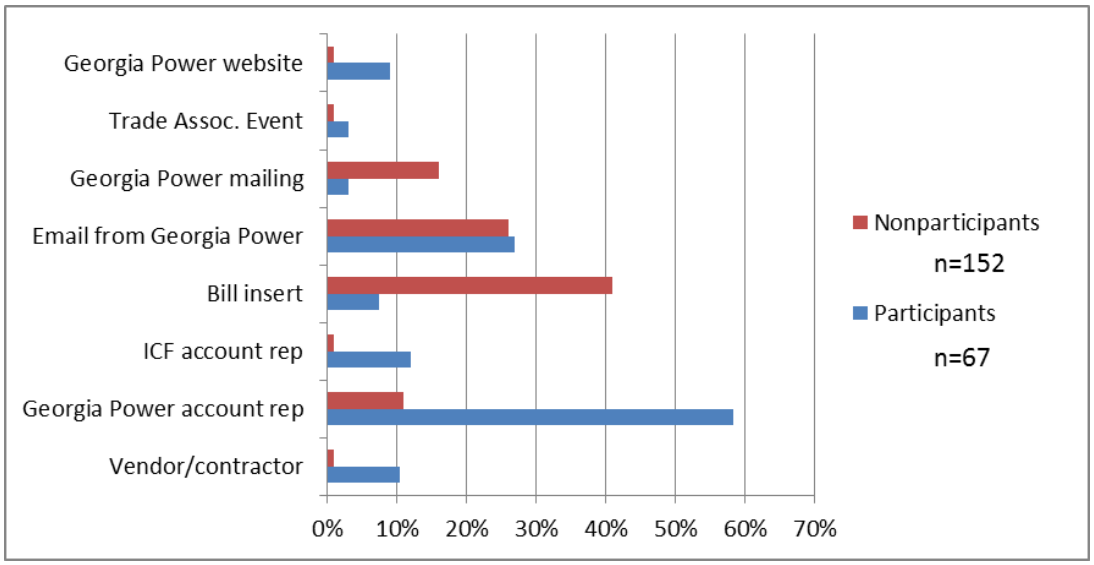
As shown in Figure 4-7, participants and nonparticipants learned about the program through a variety of sources. More than one-half of participants (61%) learned of the program through their Georgia Power account representatives, while 26 % of nonparticipants reported learning about it through a Georgia Power mailing.

Figure 4-7: How Customers Learned about the Program



Questions asked participants and nonparticipants how best to inform businesses about the incentive program. Participants most frequently cited Georgia Power account representatives, while nonparticipants preferred contacts through billing inserts. Figure 4-8 demonstrates participants' and nonparticipants' equal interest in hearing about the program through e-mail.

Figure 4-8: Best Way to Inform Customers about Program Incentives



4.3.3.4 Trade Ally Outreach and Communications

The commercial programs utilize a key outreach strategy of recruiting local trade allies and providing them with program materials and information to help them promote the program. During the program's launch, ICF reported they held numerous meetings across Georgia Power's service territory to recruit and register trade allies. Trade ally meetings informed contractors and vendors about Georgia Power's program opportunities and participation requirements. Georgia Power also sponsored trade ally workshops for registered trade allies, providing training about program incentives, eligibility, application processing, and technical information about the measures.

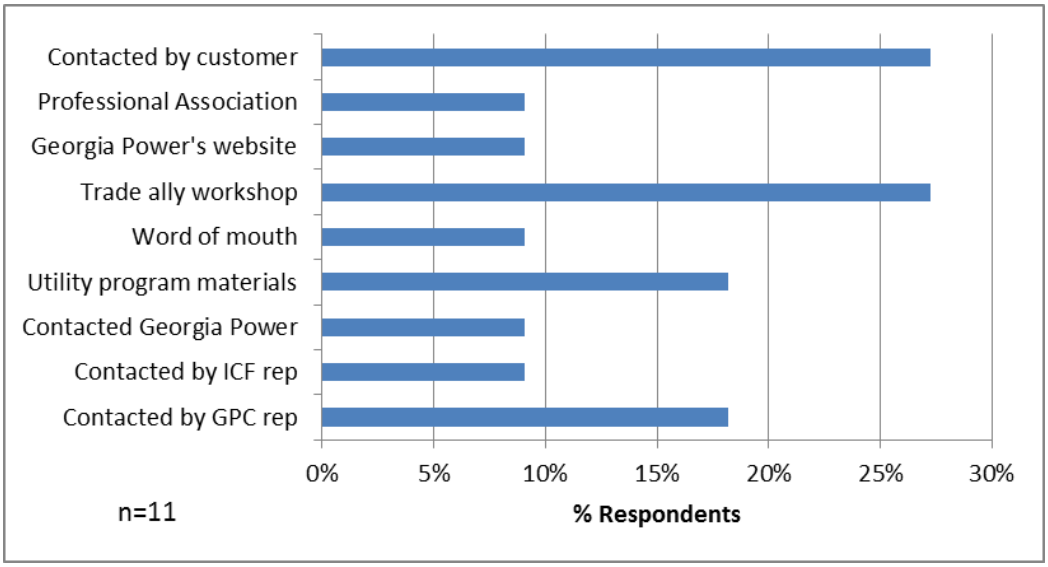
To increase outreach opportunities throughout the state's large urban and rural areas, Georgia Power and ICF developed a dedicated trade ally Website, designed to recruit, train, and register trade allies online. At the Website, trade allies can download and submit applications online after reviewing the training workshop, and agreeing to Georgia Power's terms and conditions.

Trade ally interviews revealed most used the online resources to procure program information and calculation worksheets, and to submit applications for customers. About one-half found the online resources very useful, while the other half found them somewhat useful. A couple trade allies suggested the online resources could be more useful by adding hyperlinks to participating contractors' Websites, and finding ways for simplifying the application process.

Communicating Program Information to Trade Allies

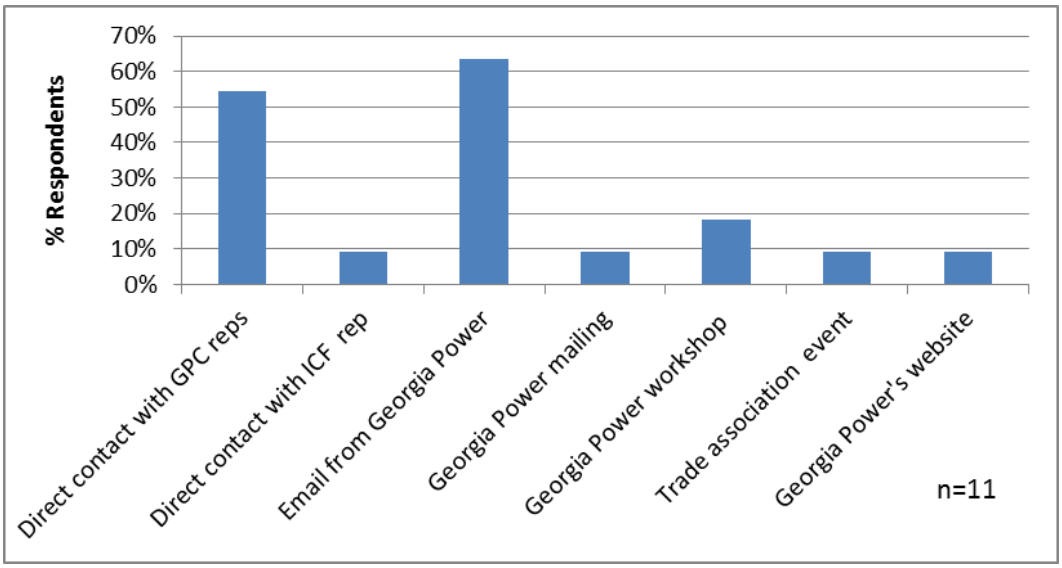
Of 11 trade allies responding to the phone survey, three reported learning about the program primarily by attending a trade ally workshop. Customers contacted another three directly, and Georgia Power contacted two. Remaining trade allies learned of the program through a variety of modes, listed in Figure 4-9.

Figure 4-9: How Trade Allies Learned about the Program



Trade allies preferred learning about program opportunities by e-mail (seven of 11) or through direct contacts with Georgia Power representatives (six of 11). Figure 4-10 illustrates other preferred contact methods.

Figure 4-10: Most Effective Way to Inform Trade Allies about Program Opportunities

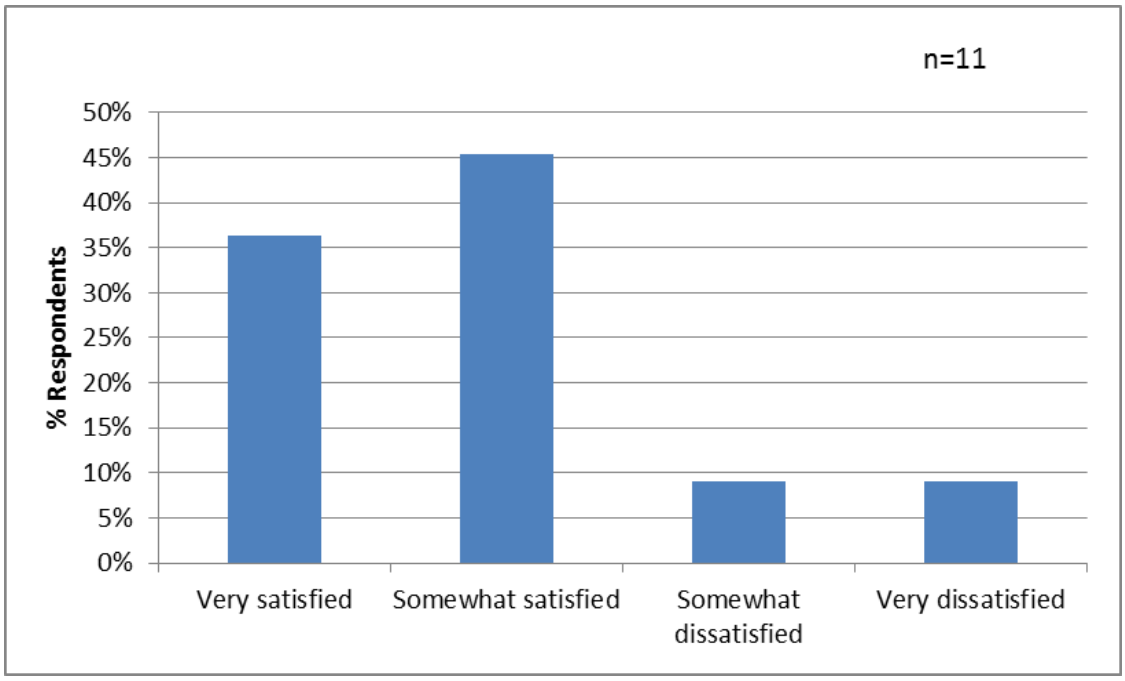


4.3.3.5 Program Partner Activities: Trade Ally Response

Trade Ally Program Satisfaction

As shown in Figure 4-11, more trade ally respondents reported being somewhat satisfied (five of 11) than very satisfied (four of 11). Two trade allies reported being either somewhat dissatisfied or very dissatisfied. These respondents suggested: offering incentives to industrial customers; and improving the program by emphasizing the benefits of not operating peak power plants.

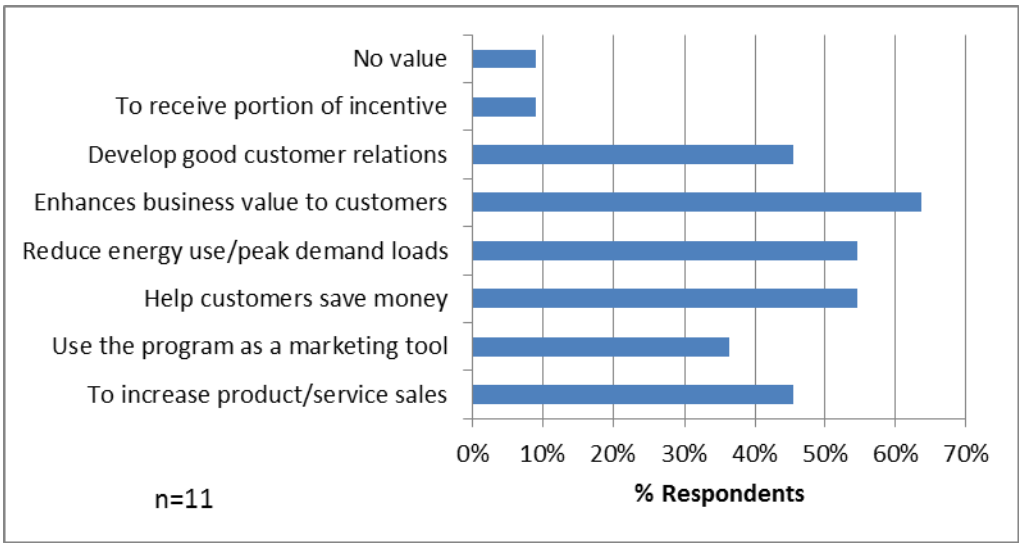
Figure 4-11: Trade Ally Program Satisfaction



Perceived Program Value

More than one-half of trade allies believed Georgia Power's commercial energy-efficiency programs enhanced the business value to customers, reduced energy use, and helped customers save money. Figure 4-12 shows other highly ranking values, such as developing good customer relations, increasing product sales, and using the program as a marketing tool.

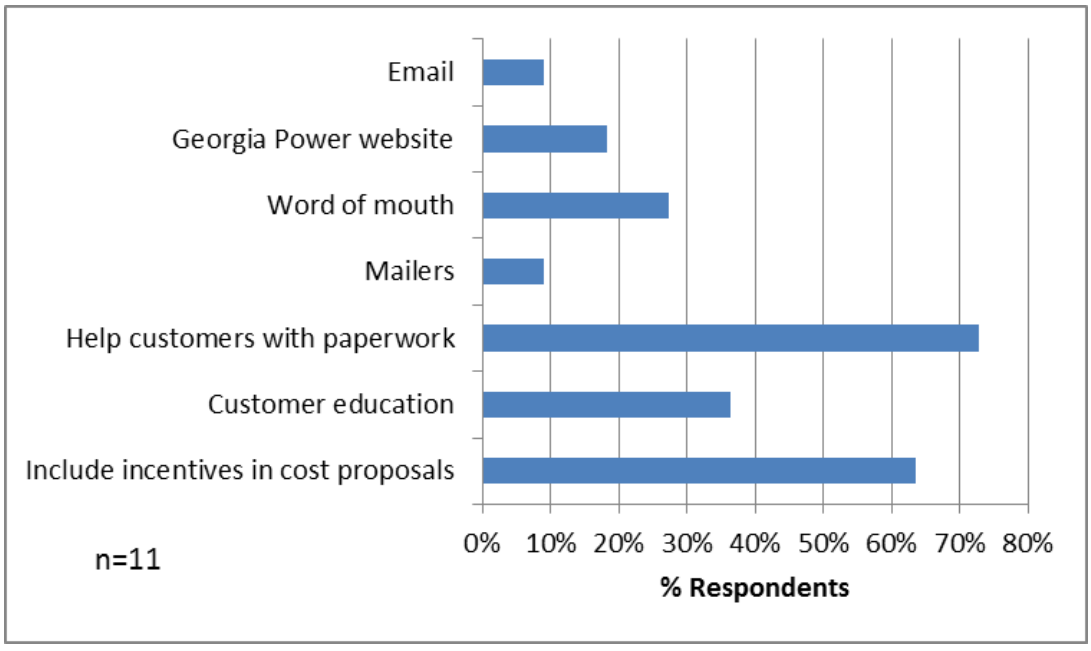
Figure 4-12: Value of Georgia Power's Programs to Trade Allies



How Trade Allies Promote the Program

The majority of trade allies (seven of 11) said they always promoted Georgia Power's energy-efficiency programs. The remaining trade allies reported often or occasionally promoting efforts. Trade allies primarily promoted the program by helping customers fill out paperwork (eight of 11), or including program incentive information in project cost proposals. Figure 4-13 shows other responses for program promotion.

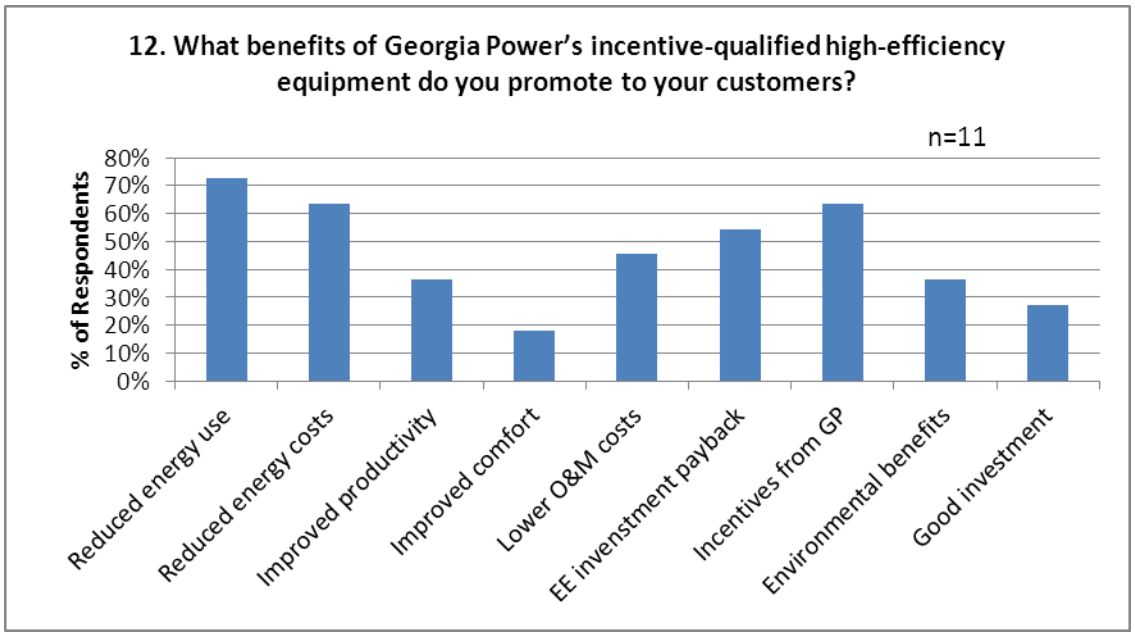
Figure 4-13: How Trade Allies Promote Energy-Efficiency Programs



Trade allies promoted a variety of benefits to customers, with the majority of trade allies promoting reduced energy use and costs. More than one-half promoted incentives offered by Georgia Power,

and energy-efficiency investment payback benefits. Figure 4-14 demonstrates other high-ranking benefits, such as lower operations and maintenance costs, improved productivity, and environmental benefits.

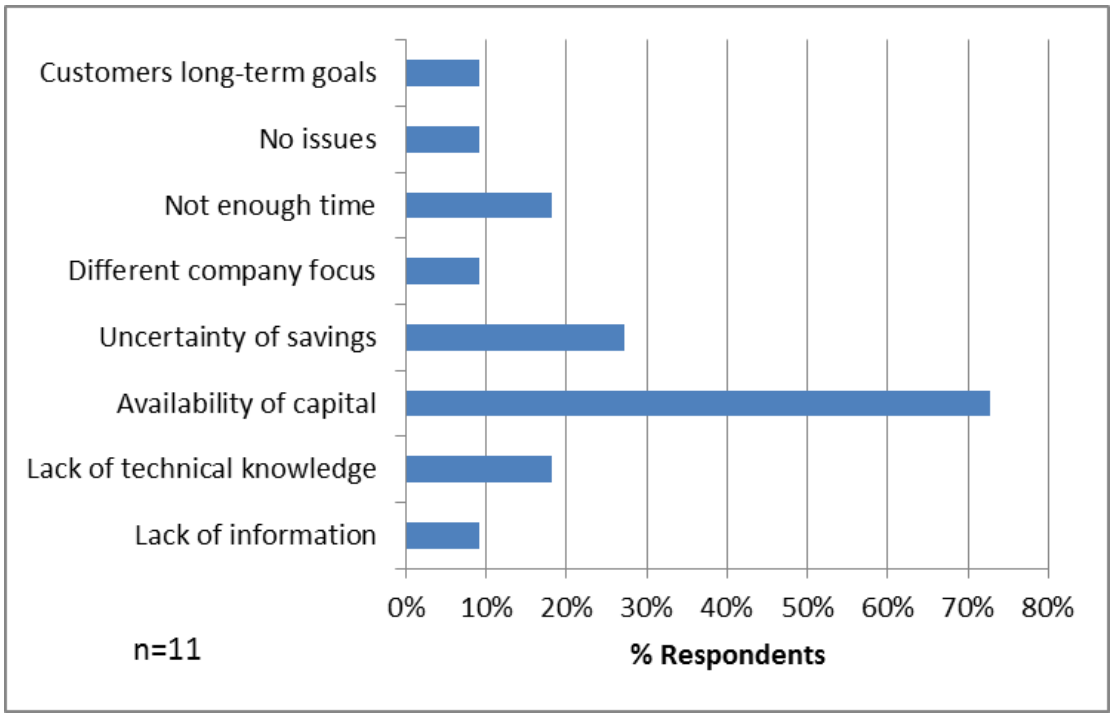
Figure 4-14: Program Benefits Promoted by Trade Allies



Barriers to Trade Ally Participation

Questions asked trade allies what obstacles prevented business customers from installing energy-efficiency equipment. As shown in Figure 4-15, capital availability emerged as the most significant obstacle.

Figure 4-15: Most Significant Obstacles for Business Customers Reported by Trade Allies



Trade ally suggestions for overcoming these obstacles included offering additional equipment incentives, increasing the rebate and incentive cap, and offering financing mechanisms, such as on-bill financing. One trade ally thought Georgia Power should demonstrate a greater commitment to saving energy.

Trade Ally Suggestions for Program Improvements

Trade allies were asked to provide suggestions for program improvements. Suggestions centered on incentive levels, program assistance, and the application process. The following list of program improvements has been consolidated from trade ally phone survey and focus group respondents:

- The scale of Georgia Power rebates appears low, compared to incentives from other utility programs.
- Representatives need to know more about how to save energy, not just how to fill out paperwork.
- Rebates could be increased to help drive purchases.
- Offer more incentives for HVAC and air conditioning.
- Trade ally Website links should be easier to find.
- Georgia Power should increase promotion and educate businesses within the community.
- Specific areas could be expanded for new construction, and a longer list of qualifying brands and products could be provided.

- Energy audits could be incentivized.
- Offer more trade ally continuing education opportunities.

4.3.3.6 Enrollment Process and Program Tracking

Early in 2011, program staff, account managers, and auditors reported customer and trade ally feedback, indicating an overly complicated commercial application process. At least one KAM noted it difficult to calculate program incentives, and suggested more application assistance would be helpful. Another KAM found application forms available online time consuming, due to different sets of forms for each measure and customers needing to review each form to determine the necessary information. As a remedy, the KAM downloaded and consolidated all online forms into one PDF, and handed these to customers during scheduled visits.

Respondents from participant surveys and trade ally interviews substantiated program staff and KAM perceptions of the application process. Many trade allies found the application process cumbersome, and could be simplified. One trade ally suggested tracking the project application process flow would be helpful.

Participating customers suggested the following enrollment process improvements:

- Expedite the preapproval process;
- Make the application requirements more user friendly;
- Clarify the application process, and provide more instructions; and
- Increase the calculation spreadsheet inputs' consistency, and update the forms to reflect program changes.

In 2012, the program manager reported Georgia Power worked with ICF to simplify the enrollment processing and online forms. Although verifying program eligibility, savings, and costs requires a certain documentation level, simplifying the application process and ensuring customers have positive experiences served as collaboration goals.

Program Tracking

ICF collects and manages commercial participant and project data, processes applications, and sends incentive payments. Upon approval by Georgia Power, weekly payment processing enables customers to receive timely incentive payments, within six to eight weeks. Georgia Power then receives data in monthly spreadsheet summaries and a monthly status report, which includes detailed charts identifying the number of applications and projects in the pipeline, and progress toward annual targets. The team reviewed several monthly reports, along with the final 2011 year-end report, and found these comprehensive and informative.

The team reviewed the commercial participant database compiled by ICF, and a sample compiled and maintained by Georgia Power. Discrepancies identified between the two data sets mostly had to do with time differences in data transfers and reporting. Although the participant database contained some blank cells or missing phone numbers, the team found participant tracking

comprehensive, complete, and containing most required fields appropriate for commercial programs.

Over the past year, Georgia Power has developed a new data tracking system: Energy Efficiency Reporting Tool (EERT). Using multiple data field options, program and data managers can determine data points required for collection. ICF-gathered data uploads through a file transfer protocol into EERT overnight. Georgia Power has developed detailed protocols with data quality control processes as a priority.

Program Verification

ICF manages the project verification for Georgia Power's commercial programs. The implementation plan contains a verification protocol, outlining pre- and post-installation inspection procedures. Verification procedures only describe general requirements, with a portion of applications chosen for pre- and post-inspection, based on the application's size and the inspectors' workloads. Though not all applications require on-site inspections, Georgia Power's program manager reported projects over $1,000 required pre-approval and approximately 10% went through pre-inspections. Inspection forms collect project information obtained from pre- and post-inspections, storing this in ICF's Vision database system.

4.3.4 Special Research: New Commercial Lighting Standards

New federal regulations and efficiency standards will affect Georgia Power's commercial customers and their lighting incentive programs. Customers may no longer be able to buy widely used lighting technologies, including magnetic ballasts, low-performance T-12 fluorescent tubes, and high-wattage, conventional incandescent light bulbs. As lighting represents a major portion of Georgia Power's commercial portfolio electricity savings, increased standards (and associated non-program baselines) could significantly impact Georgia Power's future energy savings.

Understanding impact levels resulting from these lighting market changes will prove critical for future program planning. To better understand customer and trade ally responses to the new federal commercial lighting standards, survey questions sought to assess perceptions in the market. Georgia Power requested lighting research questions only target the program's lighting participants (and not all customers), limiting research to a select group of customers.

Trade ally interviews assessed awareness and responses to the new lighting standards, and perceptions about how changing standards would affect business practices. Customer surveys incorporated questions to identify the following objectives:

- Assess awareness of T-12 phase-outs and new lighting standards,
- Understand current use of T-12 tubes and inventories in facilities,
- Identify sources of energy-efficient lighting information, and
- Identify the most important factors influencing lighting purchases at this time.

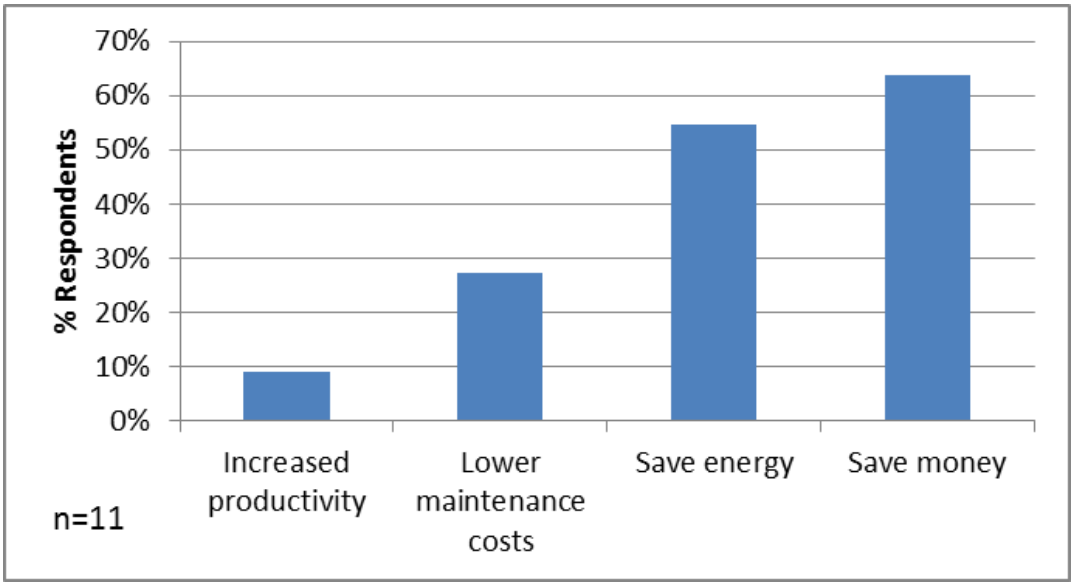
Trade Ally Response to New Lighting Standards

Most trade allies knew of the new lighting standards, and tried to educate customers about the pending manufacturing phase out of less-efficient T-12s. Trade allies reported that, although many of their customers knew about the new incandescent lighting standards, not all were aware of new requirements resulting in T-12 phase outs. Trade allies believed customer incentives will help customers, but many will not have the capital to change to more efficient, fluorescent bulbs.

The new standards affect trade ally business practices by enabling more opportunities for educating customers about energy efficiency. Although trade allies reported incentives helped, educating customers about the new standards and phase out interested them more, and resulted in more sales.

As shown in Figure 4-16, trade allies reported saving money and energy as the top benefits from higher-efficiency standards.

Figure 4-16: Benefits to Higher Efficiency Standards

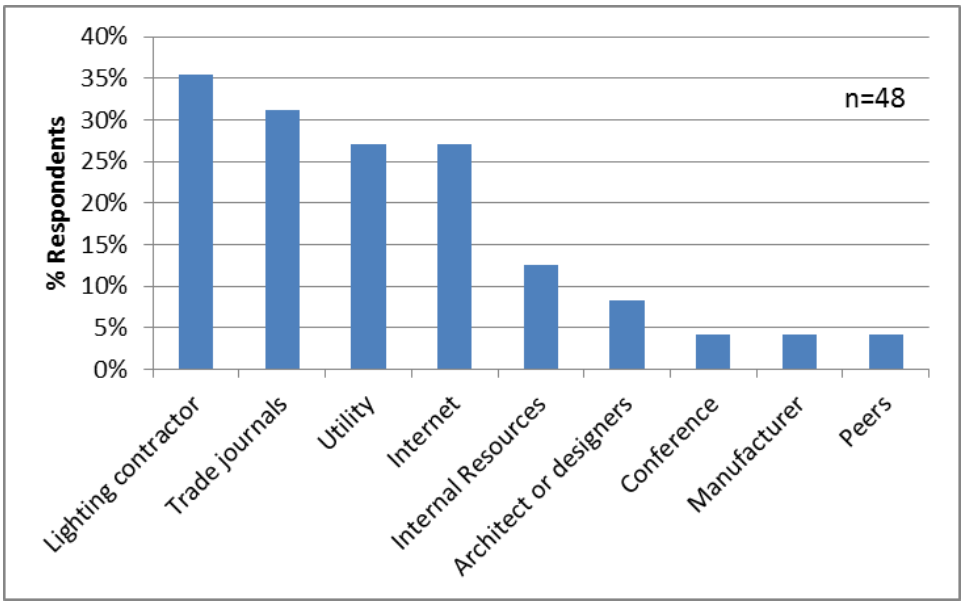


Customer Response to New Lighting Standards

Most lighting program participants (89%) knew of the new federal lighting standards, and only 27% (13 of 49) of lighting program participants reported T-12s installed in their facilities, with more than one-half of these magnetic ballasts (the T-12s most impacted by lighting standards). A majority with T-12s installed (nine of 13) said they retained replacement bulbs in storage.

Surveys asked lighting participants where they typically received information about energy-efficient lighting. As shown in Figure 4-17, respondents most commonly reported lighting contractors provided the best source for learning how to save money on lighting-related energy costs. Trade journals, the Internet, and local utilities also served as important information sources about efficient lighting.

Figure 4-17: Sources of Customer Information about Energy-Efficient Lighting Technologies



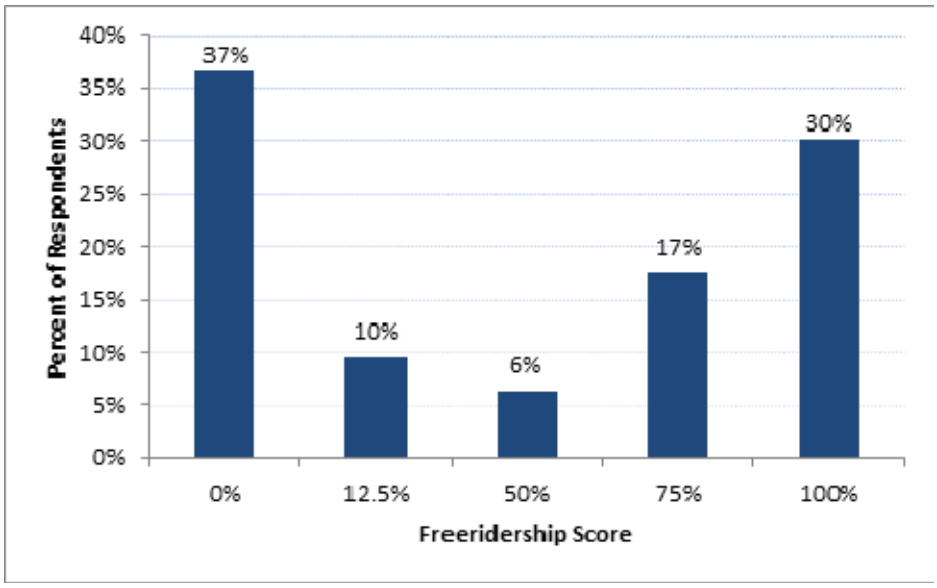
Upon asking respondents the factors they considered most important when purchasing lighting, results, in order of preference, included:

- Energy efficiency,
- Total project cost,
- Return on investment,
- Lighting quality, and
- Energy savings pay for the project.

4.3.5 Freeridership and Spillover

Initial freeridership analysis results indicated nearly 47% of customers had already purchased or installed energy-efficient equipment prior to learning about the program. Of these, about 30% could be classified as 100% freeriders. For equipment already purchased, many considered the incentive an added bonus, and reported the program had no influence on their decisions to purchase equipment. About 17% were not sure what influence level the program had on equipment purchases, hence were classified at a 75% freeridership level. About 37% of participants could not be classified as freeriders (scoring 0% freeridership). Figure 4-18 shows distributions of survey respondents by freeridership scores assigned to each.

Figure 4-18: Frequency of Freeridership Scoring Combinations (n=72)



As shown in Table 4-8, the commercial program had average weighted freeridership of approximately 44.8%.[20] Although freeridership scores have been presented at the custom and prescriptive levels, precision is reduced for smaller sample sizes.

Table 4-8: Freeridership Results

	Respondents	Weighted FR	Weighted FR Standard Error	FR Absolute Precision	FR Relative Precision
Commercial Program	72	44.8%	11%	18.3%	40.8%
Custom	46	47.4%	12%	20.3%	42.9%
Prescriptive	26	34.6%	25%	41.6%	120.2%

To examine how freeridership might change in the future as the program matures, the evaluation team calculated an alternative freeridership scenario, setting aside 100% freeriders. As shown in Table 4-9, the CEEP freeridership score drops substantially upon removing 100% freeriders from the program.

20 In all cases, freeridership was calculated using a size-stratified ratio estimator. Stratum weights were calculated as the number of reported projects, divided by the number of sampled projects within each stratum. Freeridership was calculated as the weighted sum of freeriding savings, divided by the weighted sum of reported savings. For example, if 10 out of 50 projects were sampled from a particular stratum, each participant sampled from this stratum would have weight w = 50/10 =5. If one of these had 1,000 kWh in reported savings and a 50% freeridership score, that participant's contribution to the FR numerator would be 5*0.50*1,000 kWh, and its contribution to the denominator would be 5*1,000 kWh.

Table 4-9: Freeridership Results with 100% Freeriders Removed

Excluding 100% Freeriders	Weighted FR	Weighted FR Standard Error	FR Absolute Precision	FR Relative Precision
Commercial Program	29.2%	15%	24.1%	82.4%
Custom	31.1%	17%	27.2%	87.7%
Prescriptive	22.0%	31%	51.6%	234.4%

The team conducted secondary research to identify evidence of new programs indicating high freeridership. At least one commercial utility program avoided assigning freeridership scores during the program's startup year to allow jump-starting market acceptance in the region.[21]

To benchmark CEEP's freeridership scores with comparable commercial programs at other utilities, the team reviewed utility evaluation reports from 2011 and earlier. **Error! Reference source not found.** lists scores available from a number of utilities. Due to limitations of publicly available freeridership metrics, some data has been provided with the utility's name concealed.

Table 4-10: Benchmarking Freeridership Scores

Utility	Grouping	Program Year	FR
Efficiency Maine – 2010*	Prescriptive & Custom	8	34%
PacifiCorp–UT - 2005–2008**	Prescriptive	10+	21%
PacifiCorp–UT - 2005–2008	Custom	10+	13%
PacifiCorp–ID - 2006-2008***	Prescriptive	5+	59%
PacifiCorp–ID - 2006-2008	Custom	1	25%
Confidential-Southwest U.S. - 2011	Prescriptive	3	35%
Confidential-Southwest U.S. - 2011	Custom	3	13%
Confidential-Eastern U.S. - 2010	Prescriptive	2	28%
PPL – 2011****	Custom (lighting)	2	15%
PPL - 2011	Custom (non-lighting)	2	47%

*http://www.efficiencymaine.com/docs/reports/EMT-Business-Program-Report-FY2011-FINAL.pdf
**http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/DSM_UT_FinExp.pdf
***http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/ID_FinAnswer_Express_Report.pdf
**** http://www.pplelectric.com/NR/rdonlyres/AAADC505-0C80-4B28-8304-138190FDD1D2/0/PPL_PY2_Annual_Report_corrected.pdf

[21] "It is often accepted in other jurisdictions that energy efficiency programs just starting out will often have high free ridership, particular in the C/I sectors. Gaining customer support for new programs is critical to their future success. In such a market, freeridership can be positive providing a jump-start to market acceptance and ultimately market transformation." Navigant Impact & Process Evaluation of Rocky Mountain Power's WY FinAnswer Express Program, p. 10. 2010.

4.3.5.1 Spillover

Participant and nonparticipant surveys asked whether customers installed energy-efficient products, similar to those offered in Georgia Power's CEEP, without receiving incentives from the program. Specially, the survey inquired about the following measures:

- CFLs or LEDs,
- Fluorescent tubes,
- Efficient lighting controls or fixtures,
- Building control measures,
- Clothes washers,
- Demand control systems,
- Economizers,
- Food service equipment,
- HVAC equipment,
- High efficiency motors, and
- Building envelope measures.

Participant survey respondents reported installation of most measures listed above. However, only a small group of respondents indicated the program very important in their decisions to install LEDs, fluorescent tubes, occupancy sensors, efficient lighting fixtures, or HVAC equipment. **Error! Reference source not found.** displays measures participants installed that qualified as spillover and where the team could quantify savings estimates.

Table 4-11: Participant Spillover Measures

Measure	Total kWh Savings
LEDs	63.017
Roof Top Units (RTUs)	7,245
Total	70,622

Table 4-12 presents the program's participant spillover estimate. Spillover was calculated by dividing total verified spillover kWh savings attributable to the program (obtained from surveyed participants) by verified kWh savings associated with measures rebated through the program.

Table 4-12: Participant Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
70,622	37,744,772	0.2%

About 15 nonparticipants, who were unaware of the program, installed equipment such as: CFLs, LEDs, florescent tubes, efficient lighting fixtures, food service equipment, and HVAC measures. Only four nonparticipants who were aware of the program installed the high-efficiency equipment referenced, and only a few of these measures could be attributed to the program (these include: CFLs, efficient lighting fixtures, and high-efficiency motors). Table 4-13 displays additional measures nonparticipants installed that qualified as spillover, and where the team could quantify savings estimates.

Table 4-13: Nonparticipant Spillover Measures

Measure	Quantity	Total kWh Savings
Efficient Lighting Fixtures	10	2,259
High Efficiency Motors	1	200
Total	11	224 avg per unit *(Variable C)*

As seen in Table 4-8 , two respondents purchased high-efficiency measures similar to measures Georgia Power offers rebates, and knew Georgia Power offered energy-efficiency programs. Their knowledge of Georgia Power's energy-efficiency programs proved "very important" on their decisions to make energy-efficient purchases. The team calculated a weighted average of the 11 units attributed to nonparticipant spillover, and arrived at a spillover unit savings estimate of 224 kWh (Variable C from Table 4-13). This represented the average kWh savings per spillover unit than could be attributed to Georgia Power's program.

Table 4-14, below, contains nonparticipant spillover analysis results for the CEEP program as a whole. The following variables should be noted:

- Variable A derives from nonparticipant survey data, and represents the number of spillover measures attributed to the program.
- Variable B equals the number of nonparticipating customers surveyed for the nonparticipant survey, for which the comparable spillover mentions were obtained.
- Variable C equals the weighted average kWh savings per spillover response obtained from Table 4-13.
- Variable D equals the total commercial customer population, obtained from the customer databases.
- Variable E, nonparticipant spillover kWh savings extrapolated to the customer population, was calculated by dividing Variable A by Variable B, then multiplying the result by Variable C and Variable D.

- Variable F equals total gross verified savings for the 2011 program year.
- Variable G equals nonparticipant spillover as a percentage of total gross verified savings. This percentage was used in the NTG calculations.

Table 4-14: Nonparticipant Spillover Calculations

Variable	Metric	Value	Source
A	Number of like spillover nonparticipant measures	11	Survey data
B	Number surveyed	140	Survey disposition
C	Weighted average of per unit measures savings in kWh	224	Variable C from Table 4-13
D	Total commercial population	272,841	Customer database
E	Nonparticipant Spillover kWh savings applied to population	4,791,670	((A÷B)×C)) × D
F	Total evaluated savings	71,229,750	2011 Evaluation
G	Nonparticipant spillover as a percentage of total evaluated savings	6.73%	F ÷ G

4.3.5.2 NTG Estimate

Using the (NTG = 1 – Freeridership + Participant Spillover + Nonparticipant Spillover) equation, the team estimated a 62.13% NTG ratio for the program overall.

Table 4-15: NTG Estimate

Freeridership	Participant Spillover	Nonparticipant Spillover	NTG Estimate
44.8%	0.2%	6.73%	62.13%

4.4 PROGRAM CONCLUSIONS AND RECOMMENDATIONS

Initial feedback during CEEP program launch among customers, trade allies, and account representatives indicated some confusion about program incentives and eligibility requirements. Although Georgia Power's implementation team clarified these areas, feedback from trade allies and account representatives suggest that further efforts to educate, motivate, and involve these groups will be needed if the program is to meet its future goals.

Recommendation:

- *Expand training for account representatives and trade allies regarding program eligibility, requirements, incentive offerings, and customer recruiting; further emphasize the program's benefits to customers, to trade allies, and to account representatives*. Consider holding monthly working sessions with account representatives and trade allies to address program concerns.

Although CEEP met its program targets in 2011, key account managers and customer service staff in the various sales regions report they were not aware of energy-efficiency goals at the regional level. With savings targets nearly doubling in 2012, consistent emphasis across regions will be needed.

Recommendation:

- *Given the importance of these program actors, and their lack of awareness of CEEP savings goals, Georgia Power should continue emphasizing energy-efficiency efficiency targets across - regions through monthly sales meetings and workshops.* In addition, consider individual performance bonuses for meeting quarterly and annual targets within regions.

Despite trade ally willingness to register in the CEEP network, the program design does not meet best practices for custom programs or trade ally expectations. Typically, custom programs include a comprehensive set of measures, applicable to a range of commercial customers. Trade allies indicated incentives and offerings did not match those of neighboring power service companies.

Recommendation:

- *Continue plans to expand custom program offerings to include a more comprehensive suite of program measures.* In addition to lighting, measure offerings may include heating and cooling equipment, high-efficiency motors, shell measures, and controls.

CEEP outreach and program design does not appear to be reaching small business customers (non-managed accounts), since they had very low awareness of the program and the availability of energy audits.

Recommendation:

- *Consider if small business customers are suitable targets for CEEP or if a different program approach is needed. If small businesses are to be effectively served through CEEP, consider expanding targeted outreach for these customers.* In addition explore ways to motivate trade ally program involvement through recruiting bonuses, or through additional program elements that are more likely to appeal to small- and medium-sized customers (for example, self-direct or prescriptive express programs).

To avoid survey fatigue, Georgia Power requested the evaluation exclude its largest customers (managed accounts) from the nonparticipant research. While ensuring the satisfaction of large customers is important, this request resulted in evaluators being unable to provide feedback about how these customers perceive CEEP and their reasons for nonparticipation.

Recommendation:

- *Given the size of potential savings from this customer group, determine how they can be included in future evaluation research*. For instance, consider what timing would work to allow both evaluation and sales division research to occur without survey fatigue.

Participating customers and trade allies found the application process, forms, and online worksheets complex and sometimes cumbersome to complete.

Recommendation:

- *Georgia Power, in collaboration with ICF, has started improving the application forms and online submission requirements.* Efforts at streamlining forms and processes should continue. In addition:
- To ensure customers have adequate application assistance, provide regular customer and trade ally with training opportunities such as workshops, or "lunch and learn" meetings to walk customers through the application process.
- Consider adding Frequently Asked Questions online or to bill inserts, with an energy-efficiency program information Weblink or hotline to provide additional assistance to commercial customers.

The commercial program's freeridership rate indicates nearly one-half of participating customers installed energy-efficiency equipment before learning of the program. Benchmarking with other custom efficiency programs shows this to be a high level of free ridership.

Recommendation:

- *To reduce freeridership, Georgia Power should consider tightening CEEP program processes to avoid 100% freeriders, and ensure program representatives and trade allies follow the program's eligibility requirements.* For example, Georgia Power may want to specify that customers must apply before purchasing the program-qualifying equipment.

5 LIGHTING AND APPLIANCES

5.1 PROGRAM OVERVIEW

The Residential EarthCents Lighting and Appliance Program (L&A Program) promotes purchases and installations of energy-efficient products and equipment by Georgia Power residential customers. Through customer education, retail partnerships, and sales staff training, the program focuses on increasing customer awareness of benefits from energy-efficient technologies, driving subsequent purchases at retail stores throughout Georgia. Additionally, the program offers promotional distributions of compact fluorescent lamps (CFLs) and financial incentives for eligible equipment. These incentives include customer rebates for ENERGY STAR® appliances, a targeted CFL giveaway campaign, and point-of-sale discounts for CFLs at eligible retail locations.

In June 2011, ENERGY STAR refrigerator and clothes washer rebates became available through the appliance rebate program. Close to 15,000 Georgia Power customers participated in the mail-in rebate program over a seven-month period. In October 2011, the first CFL upstream program began, with one participating national retailer, operating in 89 stores, offering a $3.00 price reduction on all ENERGY STAR-qualified four-pack CFLs. During the pilot phase, over 126,000 CFLs sold in less than three months.

In 2012, the L&A Program grew in scope, with goals substantially increasing compared to 2011, and a second retailer joining in. Consequently, Georgia Power continued to implement aggressive $3.00 CFL upstream incentives on four-pack CFLs, and oversold its 2012 projected goal. As a result, Georgia Power limited the CFL upstream program to only a few products, thus pacing sales throughout the year's remainder. The appliance rebate program experienced similar customer demand. In response to the success of the appliance rebate program, program staff restructured the rebate amounts to serve more customers while also limiting the program's liability to oversubscription.

In addition to quantifiable energy savings, L&A Program goals include:

- Increasing customer awareness of benefits from energy-efficient products in the residential market;
- Increasing availability of energy-efficient products in local retail stores;
- Through training, increasing retailers' understanding of benefits from energy-efficient lighting and appliances;
- Increasing local market penetration of energy-efficient products, helping customers save energy and money;
- Educating customers about available tax credits and other financial incentives for ENERGY STAR products; and

- Pursuing industry leadership initiatives to increase knowledge and develop strategic partnerships to strengthen local program effectiveness.

5.2 EVALUATION OBJECTIVES AND METHODOLOGY

5.2.1 Research Questions

In addition to the overarching evaluation objectives presented in Section 5.1,, the program evaluation addressed the following, program-specific research questions:

- Does the program, as implemented, reach its participation and energy savings goals?
- Are consumers becoming more aware of energy-efficient equipment benefits due to program outreach efforts?
- Will program intervention contribute to penetration of energy-efficient products in homes within Georgia Power's service territory?
- How well does the program address barriers, as identified in the logic chart?
- Are retailers stocking more energy-efficient products?
- Are CFL and ENERGY STAR appliance users satisfied with their products?
- Are retailer training sessions effective in increasing the energy-efficient product promotion by retailers?
- Are manufacturers offering a greater variety of energy-efficient products?
- Are CFL giveaway events successful in encouraging additional CFL purchases?
- What gross and net savings result from the program?
- How can the program achieve deeper energy savings? Should additional measures be offered by the program? What actions can increase program participation?

The evaluation frame work combines and presents the general evaluation objectives and the specific research questions (Table 5-1). The first column presents general evaluation goals, and the second presents specific program questions. The third column indicates report sections discussing the findings.

Table 5-1: Evaluation Framework

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Are program process targets being met?	Is the program, as implemented, reaching its participation and energy savings goals? Is the program, attracting sufficient retailer participation?	5.2.2.1
Are customers and retailers satisfied?	Are customers satisfied with the program overall? Are retailers satisfied with the program?	5.2.2.2

Are market transformation goals being met?	Are retailers stocking more ENERGY STAR products? Are retailers seeing increases in customer demand for ENERGY STAR products? Do CFL giveaway programs result in additional CFLs being purchased?	5.2.2.3

5.2.2 Data Collection Methods

5.2.2.1 Research Activities

Collecting data necessary to conduct a process evaluation for the L&A Program required completing three types of research activities: (1) a program materials review, (2) interviews with participating retailers and L&A Program staff, and (3) surveys with appliance rebate and CFL giveaway program participants. The materials review examined all aspects of the L&A Program in Fall 2011. A review of program database and marketing materials sought to understand how Georgia Power collected information, implemented the program, and communicated to its customers.

In Fall 2011 and Spring 2012, the team completed interviews with: the program manager, implementation staff, and participating retailers. Questions assessed the program's internal and external operations, and its retail impacts. Also in Fall 2011 and Spring 2012, customer surveys sought to determine customer satisfaction. Table 5-2 presents a complete listing of these research activities.

Table 5-2: L&A Program Research Activity

Research Activities	Fall 2011	Spring 2012
Materials Review		
Program Database	•	•
Program Materials	•	
Marketing Materials	•	
Interviews		
Utility Program Manager(s)	1	1
Implementation Staff	1	
Program Participating Appliance Retailers		9
Program Participating Lighting Retailers		2
Surveys		
Participating Appliance Rebate Customers		70
CFL Giveaway Program Participants	70	68
CFL Giveaway Program Nonparticipants	150	

5.2.2.2 Sampling

A sample of 70 participating appliance rebate customers were pulled from a listing of the over 14,000 appliance rebate program participants provided by the program implementer, Applied Proactive Technologies (APT), to achieve 90% confidence with plus or minus 10% precision. Outreach to CFL giveaway participants was conducted in both Fall 2011 and Spring 2012 through two different approaches. In the fall, the team contacted a random sample of 7,036 customers who live in areas where giveaway events occurred, obtaining 70 responses from those who indicated they had received a free CFL bulb from GPC (participants), and 150 from those who had not (nonparticipants). In Spring 2012, a list of customers who visited Georgia Power offices and may have received free CFLs as part of the GPC's annual CFL giveaway event in October, was obtained. From this list, 7,385 customers were contacted through e-mail and 500 contacted through direct mail were asked to complete the survey. Of this sample, only 11 customers completed the survey. To reach the goal of 68 completes, approximately 57 customers receiving CFLs through the audit program were surveyed.

APT provided a complete listing of program participating retailers, both independent and corporate. To collect multiple perspectives from retailers using varying business models, Georgia Power's program management requested dividing interviews among:

- Independent appliance retailers (a total of five),
- Corporate lighting retailers (a total of two), and
- Corporate appliance retailers (a total of three).

Table 5-3 summarizes the survey and sampling efforts.

Table 5-3: L&A Program Survey & Interview Activity

Survey and Interview Activity	Estimated 2011 Population	Target Sample	Number of Completes
Spring 2012 – Participating Appliance Rebate Customers	14,876	70	70
Fall 2011 – CFL Giveaway Program Participants	74,560	70	70
Fall 2011 – CFL Giveaway Program Nonparticipants	NA	150	150
Spring 2012 – CFL Giveaway Program Participants	7,835	68	68
Spring 2012 – Program Participating Retailers	336	10	11

5.2.3 Net-to-Gross Analysis

Appliances Rebate Program: Developing the NTG ratio for the appliance rebate program required assessing two components: freeridership and spillover. Freeridership occurs when, in the program's

absence, participants purchase the same measures they would have without influence of the program, that is without the benefit of a rebate or incentive to the manufacturer or retailer. Spillover occurs when customers, influenced by their interaction with a utility program, purchase energy-efficient measures or adopt energy-efficient building practices without that program. NTG can be calculated as:

Program NTG = 1 - Freeridership + Spillover

The evaluation relied on self-reports from participant surveys to establish freeridership scores through a series of questions that asked what participants' actions would have been in the program's absence. The evaluation utilized the following freeridership questions:

- FR1. When did you first hear about the Georgia Power rebate for [Refrigerator/Clothes Washer]? Was it…before shopping, while shopping and deciding on the product, after deciding to purchase the product, or after purchasing the product?
- FR2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific [Refrigerator/Clothes Washer]?
- FR3. Before you knew about the rebate, were you already planning to purchase a new [Refrigerator/Clothes Washer]?
- FR4. If the rebate had not been available, would you still have purchased the exact same make and model of [Refrigerator/Clothes Washer] for your home?
- FR5. Without the rebate, would you have purchased a [Refrigerator/Clothes Washer] with the level of efficiency, or would it have been more efficient, or less efficient?
- FR6. And without the rebate, would you have purchased this [Refrigerator/Clothes Washer]... at the same time, later in the same year, or in one or two years?

If a respondent answered "after deciding to purchase the product" or "after purchasing the product" to Question 1, they skipped to Question FR3. Question FR2 applied only if a respondent answered "before shopping" or "while shopping and deciding on the product" to question FR1. Question FR5 applied only if a respondent answered: "No," "Don't Know," or "Refused" to Question FR4.

The evaluation assessed freeridership at three levels, first converting each participant survey response into a freeridership scoring matrix terminology (in terms of whether their answer indicated freeridership). Upon combining each participant's responses, a freeridership score was assigned from a scoring matrix containing all possible response permutations. Finally, the evaluation aggregated participants into an average freeridership score using the arithmetic mean of the freeridership estimates for the entire program category. A mix of customers purchasing refrigerators and clothes washers completed the surveys; however, the sample sought to achieve precision levels plus or minus 10% at the program level.

The study independently evaluated each survey question's response to assess participants' freeridership levels for each question. Each survey response option was converted into a value of

"Yes" (indicative of freeridership), "No" (not indicative of freeridership), or "Partial" (partially indicative of freeridership). Table 5-4, below, lists the six Appliance rebate program freeridership survey questions, their corresponding response options, and value they converted to (in parentheses).

Table 5-4: Assignments of Appliance Rebate Program Response Options into Matrix Terminology

FR1. When did you first hear about the Georgia Power rebate for [Refrigerator/Clothes Washer]? Was it…	FR2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific [Refrigerator/Clothes Washer]?	FR3. Before you knew about the rebate, were you already planning to purchase a new [Refrigerator/Clothes Washer]?	FR4. If the rebate had not been available, would you still have purchased the exact same make and model of [Refrigerator/Clothes Washer] for your home?	FR5. Without the rebate, would you have purchased a [Refrigerator/Clothes Washer] with the level of efficiency, or would it have been more efficient, or less efficient?	FR6. And without the rebate, would you have purchased this [Refrigerator/Clothes Washer]...
Before Shopping (No)	Yes (Yes)	Yes (Yes)	Yes (Yes)	More efficient (Yes)	At the same (Yes)
While shopping and deciding on the product (Partial)	No (No)	No (No)	No (No)	Less efficient (No)	Later in the same year (Partial)
After deciding to purchase the product (Yes)	Don't Know (Partial)	Don't Know (Partial)	Don't Know (Partial)	Same level of efficiency (Yes)	In one or two years (No)
After purchase (Yes)	Refused (Partial)	Refused (Partial)	Refused (Partial)	Don't Know (Partial)	Not at all (No)
Don't Know (Partial)				Refused (Partial)	Don't Know (Partial)
Refused (Partial)					Refused (Partial)

Self-report customer surveys also allowed spillover to be assessed, by asking Appliance rebate program participants if, as a result of the program, they installed another energy-efficient measure or undertook another energy-efficiency improving activity. Survey questions included asking participants, from a list of energy-efficient products, if they installed any of these products in their home or business since participating in the program. If respondents indicated they made such improvements or purchased products, surveys asked how important a role the program played in their purchasing decisions.

Response options included: "not at all important," "not too important," "somewhat important," or "very important." Measures where participants indicated participation in the program proved very important to their purchasing decisions could be attributed to program spillover.

Spillover savings then could be calculated as a percent of total savings, using deemed savings values, consistent with those used in calculating the gross program savings value. These savings values applied to spillover measures for participants indicating the program very influential in their decisions.

The following equation calculated the program's spillover percentage by dividing the sum of additional evaluated gross spillover savings reported by respondents by total rebated evaluated gross savings achieved by all respondents in the program survey sample:

$$Spillover\ \%\ Estimate = \frac{\sum Survey\ Sample\ Evaluated\ Spillover\ Gross\ kWh}{\sum Survey\ Sample\ Evaluated\ Program\ Gross\ kWh}$$

The sum of spillover savings values divided by savings achieved through the program for each relevant measure yielded spillover savings as a percentage of total savings, which then could be extrapolated to the population of program participants.

CFL Giveaway Program: As the CFL giveaway program component distributed CFLs at no charge, traditional freeridership definitions (participants would have purchased the same product at the same time in the program's absence) did not apply, with NTG assumed to be 1.0. However, as bulbs were given away, one cannot guarantee customers actually installed and used the bulbs. Therefore, gross savings were adjusted to account for an installation rate less than 100%.

CFL Upstream Program: The scope of this evaluation did not include a NTG analysis, as the CFL Upstream program did not serve as a planned 2011 program.

5.3 KEY PROCESS FINDINGS

Overall, the three segments of the L&A Program (appliance rebates, CFL giveaways, and CFL upstream) functioned effectively, and met its short-term participation goals. Customers expressed

satisfaction with the appliance rebate and CFL giveaway programs, which maintain strong participation levels. Customers also reported high, unaided awareness levels for ENERGY STAR.

Independent and corporate appliance retailers expressed less satisfaction with the program, compared to customers. These retailers preferred increased rebate levels, more products, such as dishwashers and water heaters, eligible for rebates, and better communication practices regarding program changes and updates from Georgia Power. Corporate lighting retailers expressed satisfaction with the program, but wanted to increase the number of products eligible for incentives. Regardless of suggested program enhancements, all retailers planned to participate in the program's future iterations.

Georgia Power program staff monitored program activity, and made changes to incentives and rebate levels when necessary to maintain a balance between maintaining participation without exceeding program goals and final authorized budgets.

One area of challenge for Georgia Power program staff has been with their EERT database. Georgia Power tracked data through spreadsheets in the past primarily through its contractors. The goal of implementing an automated database system was to reduce labor necessary to collect information and to increase reporting capabilities. At the time of data collection for this research, Georgia Power program staff was still using these initial systems to track program performance and other key metrics due to their familiarity with this practice, and the challenges associated with transitioning to using an automated system. Georgia Power anticipates EERT will be beneficial in the long term.

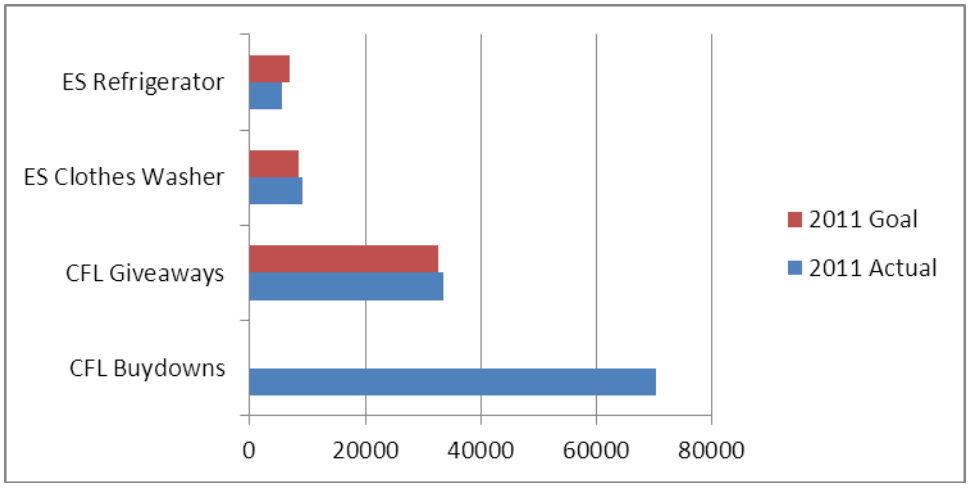
5.3.1 Program Outcomes

The L&A Program met customer participation and energy saving goals for all three segments in 2011. The appliance rebate and CFL upstream program segments used a network of 336 lighting and appliance retail partners (94 selling lighting, 331 selling appliances, and 89 selling both lighting and appliances). Retailers expressed satisfaction with the appliance rebate program, but requested higher rebates, and for more products to be added to the eligible product list. Georgia Power limits participation among retailers in its CFL upstream program to control its incentives budget. Only the Home Depot (89 stores) participated in the 2011 program. In 2012, the CFL upstream program added a second retailer (Costco) to the program to increase participating retail locations to 94 stores (Home Depot 89 and Costco 5). The number of retail locations participating in Georgia Power's CFL upstream program accounted for 28% of all retail locations partnering with Georgia Power on either the appliance rebate or CFL upstream down program.

5.3.1.1 Results by Product

In 2011, the L&A Program met all its goals, which included increased energy savings from 7 GWh to 30 GWh. Achieving the increased program goal resulted in the L&A Program contributing approximately 29% of total residential energy-efficiency portfolio goal. Currently, 2012 goals for appliance rebates and CFL sales remain on track. A summary of 2011 L&A Program goals compared to actual performance is below in **Error! Not a valid bookmark self-reference.**.

Figure 5-1: 2011 L&A Program Goals vs. Actual Performance



Georgia Power decided to begin implementation of the CFL upstream program in late 2011 although it was not included in their 2011 savings goals. **Error! Not a valid bookmark self-reference.** outlines 2011 goals and actual performance:

Table 5-5: 2011 L&A Program Goal vs. Performance Metrics

Measure	2011 Per Unit Goal	2011 Per Unit Actual	2011 GWh Savings Goal	2011 GWh Savings Actual
CFL Buydowns	-	280,688	-	15.92
CFL Giveaways	32,500	33,590	6.89	7.12
ES Clothes Washer	8,400	9,257	5.74	6.33
ES Refrigerator	7,000	5,620	1.12	0.90
		Totals	13.76	30.27

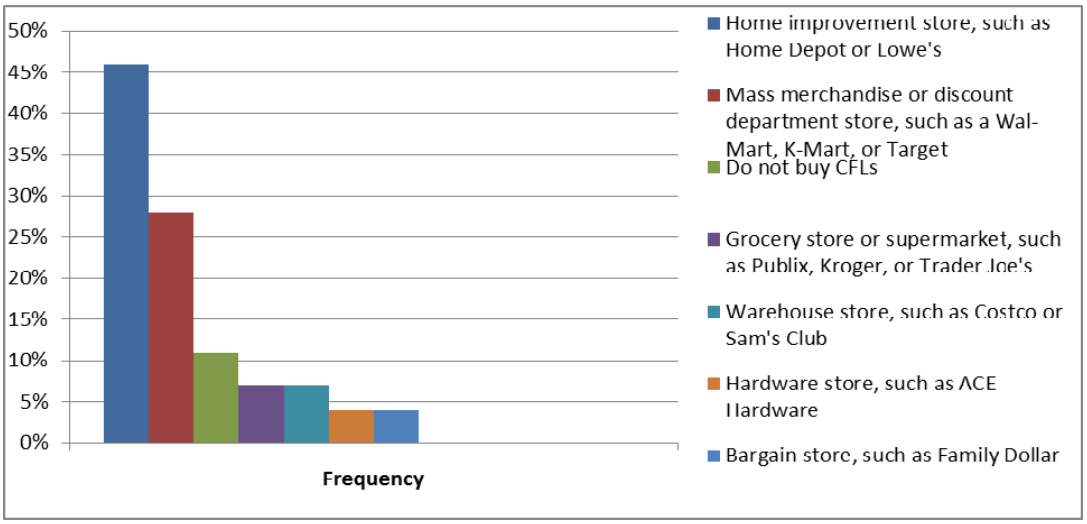
CFL Giveaway Program: The CFL giveaway program distributed a total of 33,590 13 Watt CFL four-packs (a total of 134,360 CFLs) to its customers surpassing its planned 2011 goal of 32,500 four-packs (a total of 130,000 CFLs). The CFL four-packs were distributed to customers who visited one of Georgia Power's local offices or participated in a local giveaway event throughout the state.

Appliance Rebate Program: The 5,620 rebates received for ENERGY STAR qualified refrigerators did not meet the 2011 program goal of 7,000 rebates. However, the 9,257 rebates submitted for ENERGY STAR qualified clothes washers surpassed the 2011 program goal of 8,400 rebates. High clothes washer rebate redemptions offset the lower than anticipated refrigerator rebate redemptions allowing Georgia Power to surpass its appliance savings goals by 364,008 kWhs.

CFL Upstream Program: Participating lighting retailers reported high sales of ENERGY STAR CFLs. Based on the CFL survey from 2011, where the study addressed 220 customers in specific zip codes

of GPC territory, 53% of these customers purchased CFLs at home improvement or warehouse stores, which comprise the retail segments that currently participate in the CFL upstream program. Mass merchandisers that account for 28% of Georgia Power customer CFL purchase locations are not currently included in the CFL upstream program.

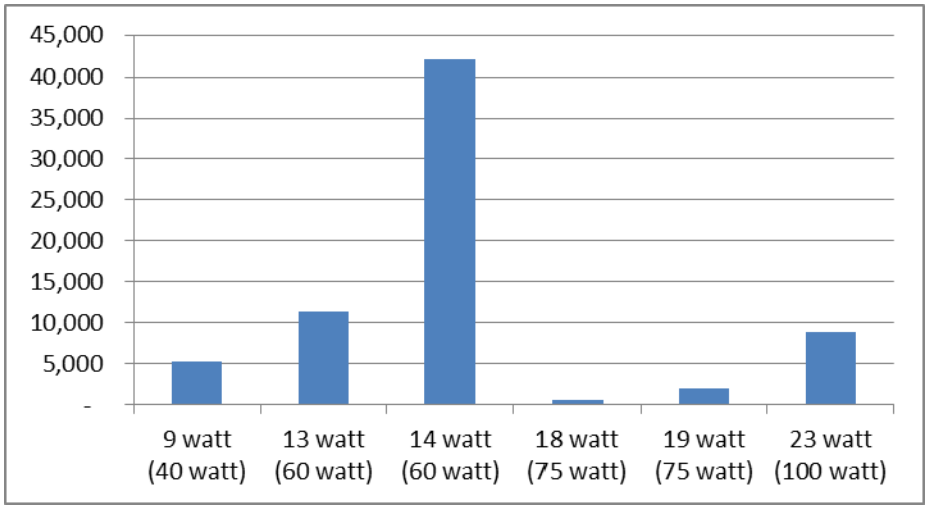
Figure 5-2: Georgia Power CFL Purchases by Retail Segment*



*Fall 2011 CFL Participant & Nonparticipant Survey

As a result of one national retailer participating in the 2011 CFL upstream program, 70,172 CFL four-packs were sold during fourth quarter 2011. A second national retailer was added to the CFL upstream program in 2012 to help further increase sales. **Error! Reference source not found.** provides an overview of CFL four-pack wattages sold during the 2011 CFL upstream program, with such distribution expected as 14W bulbs replace the most common, 60 W incandescent bulbs.

Figure 5-3: 2011 CFL Four-Pack Sales by Wattage



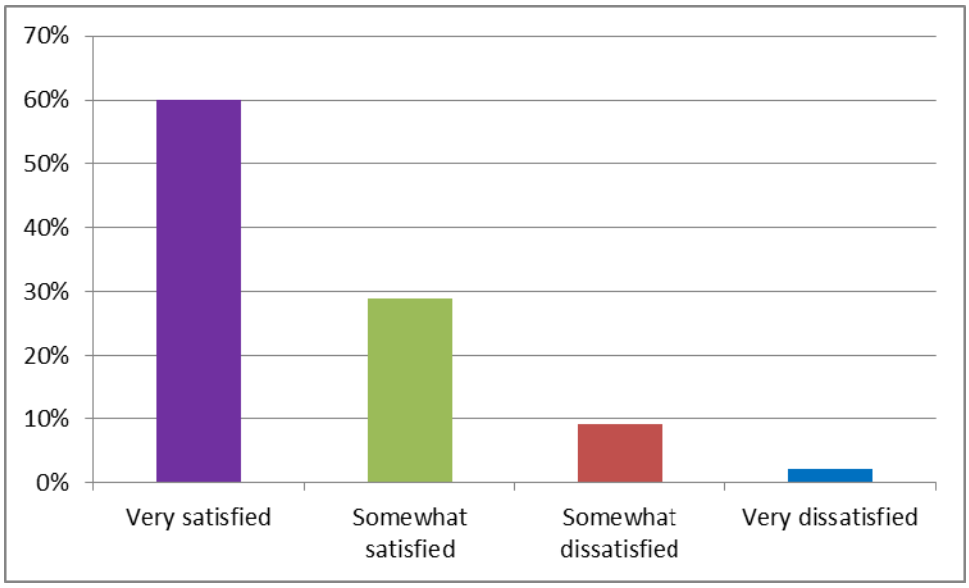
**Equivalent incandescent wattages are stated in parenthesis.*

5.3.1.2 Customer and Retailer Satisfaction

CFL Giveaway Program: Seventy-three percent of the free CFL customers surveyed in late 2011 said they were "very satisfied" with the CFLs received, while the remaining 27% said they were "somewhat satisfied." A smaller number of those surveyed in early 2012 indicated they were "very satisfied" with CFLs received (43%), while approximately 50% were "somewhat satisfied." The remaining 2% of customers were "very dissatisfied" because they only received one bulb from Georgia Power and wanted to receive more.

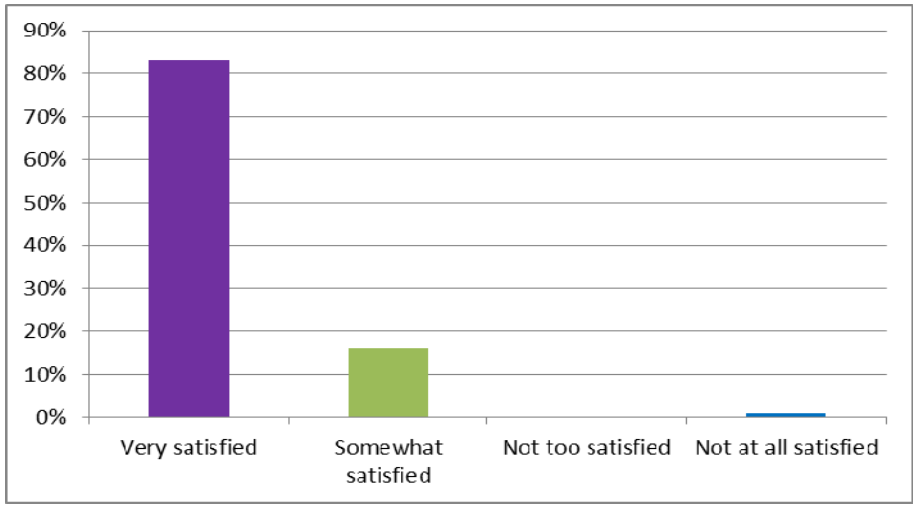
When asked about general satisfaction with CFLs, 89% of all customers surveyed (116 of 131 survey respondents) indicated they were "very" or "somewhat" satisfied with CFLs used in their homes (**Error! Not a valid bookmark self-reference.**). Customers indicating they were "somewhat" or "very" dissatisfied with CFLs did not indicate reasons for their dissatisfaction.

Figure 5-4: Customer Satisfaction with the CFLs



Appliance Rebate Program: As shown in Figure 5-5, approximately 83% of customers reported being "very satisfied" and 16% being "somewhat satisfied" with the appliance rebate program. Only one respondent expressed being "not at all satisfied" with the program due to the lack of rebates available for other appliances they expressed interest in purchasing. Customers also reported being "very satisfied" with the rate at which they received rebates for ENERGY STAR-certified refrigerators (84%) and clothes washers (91%).

Figure 5-5: Participant Satisfaction with Georgia Power's Appliance Rebate Program



Interviews of both independent and corporate appliance retailers found that retailers were less satisfied with the program. Independent retailers in particular were primarily only "somewhat satisfied" with the appliance rebate program. Respondents indicated that there is a need for more rebate eligible products and higher rebates, but reported that the program provided a lot of value to their customers and those interviewed all plan to continue to participate in the program.

Two of three corporate appliance retailers interviewed reporting being "somewhat satisfied" with the program. A third corporate retailer expressed being "somewhat dissatisfied" with the program. All three retailers reported not understanding the program due to lack of communications with program staff. Two of three corporate retailers expressed frustration in not fully understanding the program or having access to program staff to discuss promotional opportunities and programmatic updates. They also sought higher rebates to decrease the incremental prices of ENERGY STAR clothes washer and refrigerators, thus providing customers with greater values. All corporate appliance retailers interviewed intended to participate in the program in the future.

CFL Upstream Program: Corporate lighting retailers reported being "very satisfied" with the program. One retailer noted the CFL upstream program increased sales 300% over previous years. In comparison to corporate appliance retailers, corporate lighting retailers experienced strong communications with program staff, and remained aware of program changes. Both corporate lighting retailers indicated they would participate in the program in the future, but hoped more niche products, such as specialty CFLs and LEDs, would become eligible for incentives.

5.3.1.3 Retailer Stocking and Customer Demand

To assess whether the program causes market transformation, retailers were asked about their stocking practices and customer demand for ENERGY STAR products compared to June, 2011, when the program began. Notable comments from retailers interviewed include the following:

- All independent appliance retailers reported that they have about the same level of stock for ENERGY STAR appliances as of June 2012 that they did on June 2011.

- All corporate appliance retailers interviewed reported that their stock of ENERGY STAR appliances increased a marginal amount from June, 2011 to June 2012. Corporate lighting retailers indicated that their stock of ENERGY STAR CFLs has increased as well in 2012 in relative to one year prior.
- Both independent and corporate appliance retailers surveyed indicated that they would maintain the same stock of ENERGY STAR certified appliances even if the rebates were not available.
- Several corporate lighting and appliance retailers commented that their stock of ENERGY STAR qualified CFLs and appliances may have marginally increased in 2012 to carry more ENERGY STAR qualified products, but it was not due to Georgia Power program influence.
- Two independent appliance retailers noted updated ENERGY STAR specifications for refrigerators and room air conditioners caused their rebate-qualified stocks to decrease (since several products were removed from the ENERGY STAR-qualified list), but they intended to maintain high levels of ENERGY STAR-certified products, once their inventory turned.
- Lighting retailers reported Georgia Power incentives lowered final retail prices customers paid for multipack CFLs.

Corporate appliance retailers saw increased demand for ENERGY STAR appliances during the first half of 2012. One-half of independent retailers surveyed saw increases in demand for ENERGY STAR appliances, since the beginning of 2012 with the other half reporting demand remaining consistent. Lighting retailers did not have conclusive answers regarding customers' demand for ENERGY STAR-certified CFLs. Both noted over 90% of CFLs they sold had ENERGY STAR-certifications.

For the appliances segment, Georgia Power recruits only retailers who currently sell ENERGY STAR-qualified appliances. While this has allowed it to develop a reliable network of retail partners relatively quickly, it also limits Georgia Power's potential to transform the appliance market for any retailers not already selling ENERGY STAR products.[22]

Georgia Power customers reported high awareness levels regarding the ENERGY STAR label (73%). The top three Georgia Power customer responses to "what does the ENERGY STAR label mean to you" included:

- Energy-efficiency and savings (68%);
- Energy conservation (17%); and
- Saving money on operation (10%).

According to the Fall 2011 CFL surveys, participants in the CFL giveaway program purchased fewer CFLs than nonparticipants. Approximately 72% of CFL giveaway participants purchased at least one

[22] It is unknown at this point whether or not there are a significant number of appliance retailers in Georgia who don't sell ENERGY STAR qualified appliances.

CFL in comparison to 89% of nonparticipants. While these differences are statistically different, reasons for these results remain inconclusive. It may be due to the fact receiving free bulbs (and obviously no need to purchase), or due to income differences, smaller homes, and other differences between the populations that we found in our analysis. Georgia Power targets the CFL giveaway program to those visiting Georgia Power offices because these customers tend to belong to a lower-income population.

5.3.2 Program Design

The program's design used industry best practices for appliance rebate and lighting incentive programs, drawn from APT's experience.

The appliance rebate program consists of downstream, mail-in customer rebates for refrigerators, freezers, clothes washers, and room air conditioners. The CFL upstream program consists of a retail price reduction on ENERGY STAR-qualified four-pack CFLs, occurring at the midstream, retail level. In addition to the CFL upstream program, Georgia Power implements a CFL giveaway program targeting hard-to-reach[23] customers, who can visit 132 Georgia Power local offices to receive a free CFL. In addition, approximately 288 annual events reach customers not visiting a local office to receive a CFL, and to market Georgia Power's programs and services.

The following sections provide insights into customer awareness of energy-efficient products, the program's influence on the penetration of energy-efficient equipment, and potential program design enhancements. Specific researchable questions for are listed below in **Error! Not a valid bookmark self-reference.**.

Table 5-6: L&A Program Design Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the program design appropriate to meet goals?	• Is the logic chart representative of the program's implementation?	5.3.2.1
	• Are consumers becoming more aware of the benefits of energy-efficient equipment as a result of program outreach efforts? • Will program intervention contribute to the penetration of energy-efficient products in homes within Georgia Power's service territory?	5.3.2.2
	• Are there additional measures that should be offered by the program?	5.3.2.3
	• What can be done to increase participation?	5.3.2.4

[23] "Hard-to-reach" can be defined as a segment of the population either not impacted or slightly impacted by a program's implementation or marketing efforts. Geographic locations, purchasing behaviors, and other factors contribute to populations being labeled as hard-to-reach.

5.3.2.1 Program Logic

The logic chart developed for the L&A Program represents the program's deployment method. This could be updated to include more, longer-term impacts for other energy-efficient products, such as LED bulbs, if Georgia Power chooses to include them in future program offerings. The L&A Program Logic Chart is presented below in Appendix A (Figure A-4).

5.3.2.2 Customer Awareness

According to the 2011 CFL survey, approximately 34% of Georgia Power customers have been to the Georgia Power website (22 of 65 customers). All of them stated that they found what they were looking for when using the website. When asked which energy-saving actions they completed at home (sample size of 114 customers):

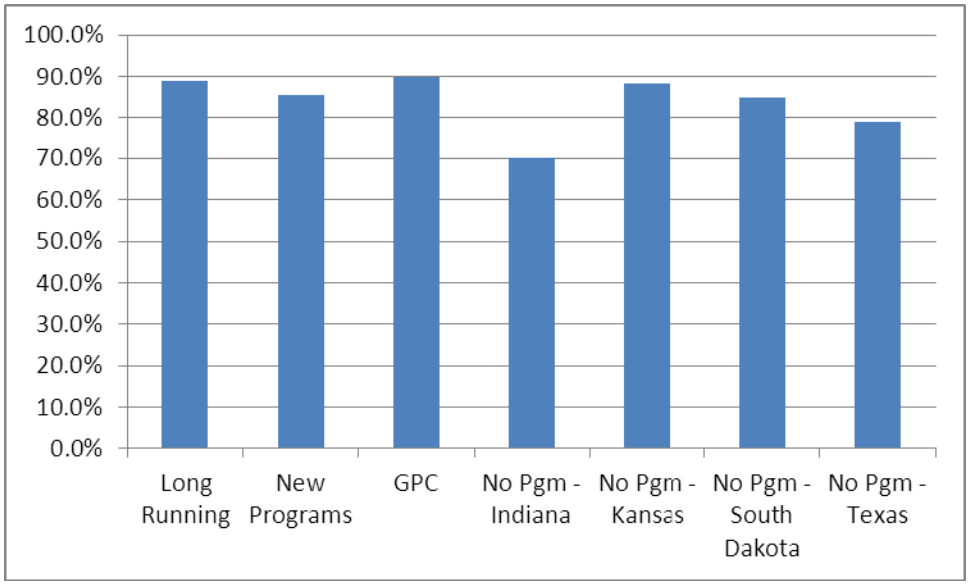
- 54% of customers replaced light bulbs with CFLs;
- 26% turned lights off when not in use; 26% manually set-back their thermostats; and
- 21% purchased ENERGY STAR appliances.

Approximately 17% of the Georgia Power customers surveyed in 2011 had completed the ENERGY STAR "Change a Light" pledge.[24] That figure decreased to 13% among those customers surveyed in 2012. Georgia Power customers are knowledgeable about CFLs and are currently using them in their homes. Approximately 76% of customers responded that they are familiar with CFLs. Over 90% of customers have at least one CFL installed in an interior or exterior fixture. This is consistent with areas of the country that have offered CFL programs for a long time, and higher than those without previous programs. Approximately 56% of customers surveyed in 2011 reported that they had five or more CFLs in their home. That figure was 60% among customers surveyed in 2012. [25]**Error! Not a valid bookmark self-reference.** illustrates how Georgia Power's CFL market penetration compares to other areas with long running programs, newer programs, and no previous programs.

[24] The ENERGY STAR 'Change a Light' Pledge serves as a marketing and awareness program Georgia Power implements to educate customers about energy-efficient lighting, in conjunction with the national ENERGY STAR program's campaign. The pledge consists of a series of energy-saving options customers pledge to take in their homes to save energy. Customers completing the pledge receive a free CFL.

[25] This difference may not be indicative of growth in CFL saturation since the two surveys were of two different populations.

Figure 5-6: Georgia Power CFL Penetration Comparison

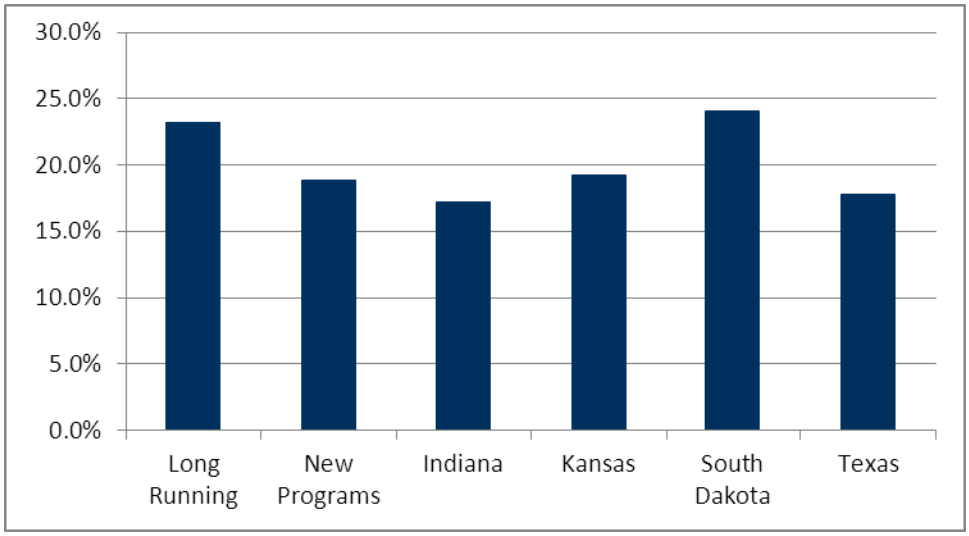


*Source: 2010 Multistate CFL Study

While customers using CFLs in homes express familiarity with their benefits, investigations in other areas suggest Georgia Power can increase CFL saturations (percentage of sockets containing CFLs) through its CFL programs.

Error! Not a valid bookmark self-reference. compares other utility CFL saturations in relationship to program activity. Georgia Power does not have comparable data due to how other utility saturation estimates were determined (in-home inventories). However, **Error! Not a valid bookmark self-reference.** indicates program activity affects CFL saturations.

Figure 5-7: CFL Saturation Comparison



5.3.2.3 Potential Additional Measures

Several retailers suggested Georgia Power consider adding additional appliance products such as dishwashers, with one corporate retailer suggesting to add domestic water heaters to the appliance rebate program, and specifically noting the success the retailer experienced with other programs regarding that measure. The team's investigations have found dishwashers already experience high ENERGY STAR saturations, and typically do not offer cost-effective measures, though efficient water heaters have been successfully implemented elsewhere.

Lighting retailers suggested increasing numbers of available CFL SKUs (stock keeping units) in the upstream program with specialty CFLs, which would include: dimmable, Parabolic Reflector (PAR), covered, globe, and three-way style products. One lighting retailer requested Georgia Power consider adding ENERGY STAR fluorescent fixtures to the program.

Both retailers suggested adding LED bulbs to the upstream program, even if offering a minimal incentive. According to retailers, retail demand has shifted for LED bulbs. When asked about potential future program enhancements, Georgia Power's program manager indicated they are considering including LED bulbs in the 2013 program. The team has found that measures offered with a small incentive, relative to purchase prices, tend to experience higher freeridership than measures offering significant incentives.

5.3.2.4 Increasing Program Participation

Georgia Power's appliance rebate program and CFL upstream program have successfully met their respective customer participation and energy savings goals.

Program participation also could be increased through greater numbers of retail locations which Georgia Power partners, especially for lighting. Currently, Georgia Power only partners with two national retailers for the CFL upstream promotion (to better control upstreamprogram activity and to effectively manage the approved program funding level). If program participation had to be increased, the upstream program opportunity could be expanded to other retailers.

5.3.3 Program Implementation

Georgia Power staff working on the L&A Program oversees the CFL upstream, CFL giveaway, appliance rebate, "Change a Light" pledge, and refrigerator recycling programs (including associated program marketing efforts). In addition to oversight and management of these programs, program reporting requirements and tracking account for a significant portion of program staff time. Once transition to the EERT database becomes complete, reporting requirements can be met more easily, and internal staff can potentially reallocate time spent on reporting to other project tasks. Although Georgia Power's L&A program manager has implemented cross-functional teams and other management tactics to overcome some reporting and time management challenges, Georgia Power staff interviewed said additional resources may be necessary to assist with these programs' delivery.

Georgia Power's implementation manual offers program staff a valuable tool, in the event of transition from an incumbent implementation contractor to a new implementation contractor. Training APT provided to independent appliances retailers has been well received. These trainings occur in stores during business hours as informal or ad hoc training on the sales floor, or after hours in a more formal, group sessions. Store management help facilitate group trainings provided to corporate lighting and appliance retailers. Lack of communication regarding program changes and additional collaboration opportunities between corporate appliance retailers and Georgia Power remains a point of contention. Two of three corporate appliance retailers interviewed lacked a complete understanding of the appliance rebate program and its goals.[26] Independent appliance retailers expressed satisfaction with interaction levels with field staff.

The following discussion addresses the L&A Program's implementation process, which includes program management tools and data tracking systems, retailer training, and other program partner activities, and program communication with retailers and internal staff. Specific researchable questions for the implementation process are listed below in Table 5-7.

Table 5-7: L&A Program Implementation Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the marketing effective?	• Does the CFL Giveaway Program increase knowledge and awareness of ENERGY STAR?	5.3.3.1
Is the enrollment process effective?	• Is the rebate fulfillment process effective for the appliance program?	5.3.3.2
Is the implementation process effective?	• Are program management tools in place and being used? • Is data tracking effective?	5.3.3.2 5.3.3.3
Are program partner activities effective?	• Recipients of training are satisfied with training efforts • Utility experience with partners	5.3.3.4
Did the program have clear goals and objectives?	• Were program goals and objectives communicated to and understood by GPC staff and implementers? • Were revisions to program goals and objectives communicated to and understood by GPC staff and implementers?	5.3.3.5

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the marketing effective?	• Does the CFL Giveaway Program increase knowledge and awareness of ENERGY STAR?	5.3.3.1

[26] This may be due to corporate staff not receiving the training, since APT conducts training directly at participating stores.

Is the enrollment process effective?	• No Enrollment process	
Is the implementation process effective?	• Are program management tools in place and being used? • Is data tracking effective?	5.3.3.2 5.3.3.3
Are program partner activities effective?	• Recipients of training are satisfied with training efforts • Utility experience with partners	5.3.3.4
Did the program have clear goals and objectives?	• Were program goals and objectives communicated to and understood by GPC staff and implementers? • Were revisions to program goals and objectives communicated to and understood by GPC staff and implementers?	5.3.3.5

5.3.3.1 Marketing Effectiveness

The CFL giveaway program was designed to increase the awareness of ENERGY STAR qualified CFLs through the provision of free CFLs to Georgia Power customers who visit their local Georgia Power office or one of the hundreds of events annually that Georgia Power staff participates in throughout the year. The target audience of the CFL giveaway program is Georgia Power's hard-to-reach customers based on how the program is deployed through local Georgia Power offices and community events.

According to the Fall CFL 2011 survey in which customers were randomly called from zip codes where free give-away events took place, customers receiving a free CFL had bought an average of 6 CFLs in addition to the free CFL they received. Those customers who did not receive a free CFL purchased an average of 8 CFLs in comparison. Only 5% of participants who received a free CFL recalled making any ENERGY STAR pledge. Approximately 38% of customers who received a CFL were aware of Georgia Power programs in comparison to 29% of nonparticipants. In addition, 77% of customers who received a free CFL exhibited unaided awareness of ENERGY STAR compared to 71% of nonparticipants.

Deploying the CFL giveaway program through special events may provide other benefits for Georgia Power, such as opportunities to meet directly with customers, and general public relations, which would justify its continuance. As the evaluation team could not secure enough survey participants from CFL giveaway recipients receiving a free CFL by visiting a local office, conclusions about the program effectiveness could not be drawn, in that regard. Challenges in reaching those clients, however, remain consistent with challenges in reaching hard-to-reach customers, and, therefore, may indicate the program reaches its targeted population.

5.3.3.2 Implementation Process and Program Oversight

The rebate fulfillment process consists of coordination between the fulfillment contractor, EFI, and Georgia Power customers. EFI receives completed rebate applications from GPC customers to manually process. EFI has approved protocols in place with GPC to contact customers to collect

missing information that may prevent them from providing a rebate. Rebates are fulfilled in weekly batch payments. GPC customers can expect to receive their rebate four-to-six weeks after submission. This timeframe is consistent with other appliance rebate programs offered throughout the country.

The L&A Program Implementation Manual provides a step-wise overview of program implementation among contractors, coordinating varying tasks, which includes field implementation, rebate fulfillment, and an incentive program. The manual has been structured to outline approved processes for implementing the L&A Program in collaboration with a team of contractors. This ensures all contractors working on the L&A Program remain within its policies and procedures, leading to successful implementation.

Program staff constantly worked to incorporate system, process, and strategy refinements, as frequently as possible, to improve program delivery and reporting. Regular biweekly meetings by program management have sought feedback regarding ways to improve internal and external processes. In addition to process improvements, program staff has focused on increasing the effectiveness of cross-functional teams through refining communications, enhancing meeting effectiveness, defining roles and responsibilities, and adding Corporate Communication resources and efficiencies.

A theme reoccurring throughout all corporate lighting and appliance retailers' interviews was: they did not receive sufficient communication on changes in the program. Communication issues emerged most notably among corporate appliance retailers, with two of three corporate appliance retailers responding that they were "somewhat dissatisfied" with in-store coordination on product placement, and with Georgia Power's marketing of energy-efficient appliances. After further questioning, both retailers admitted they had very little interaction with Georgia Power staff and APT regarding the program's structure, updated rebate levels occurring during the program year, or marketing opportunities.[27]

5.3.3.3 Data Systems

The EERT database served as a reporting tool, , to track the activity of Georgia Power's DSM program portfolio. Though maintained by Georgia Power staff, implementation contractors upload the program data. APT takes responsibility for uploading all information related to the CFL upstream program, and Energy Federation Incorporated (EFI) takes responsibility for uploading information related to the appliance rebate program, as the L&A Program's fulfillment contractor.

The transition to automated reporting through the EERT database has challenged program staff. Uploading 2011 program data was not complete until the end of the first quarter 2012. Success rates for 2012 data uploads improved, but remain challenging, according to program staff. Collaboration between reporting and implementation teams closely manages the efforts. Manual

[27] Most of APT's retailer interactions occur at the store level on an ongoing basis.

reporting systems support automated metrics, implemented by program managers through respective spreadsheet processes. Program staff provides reports twice a month, both manually and automated, for two programs – the L&A and refrigerator recycling program. .[28]

5.3.3.4 Program Partner Activities

In 2012, APT added seven field representatives to service appliance retailers throughout the state. Field representatives visited retailers to place point-of-purchase materials and to train retail staff on program offerings. Only independent appliance retailers received Georgia Power sales staff training. Overall retailers interviewed indicated having been extremely satisfied with training, and had no suggestions for improvements. Since January 2012, over 8,800 retail associates and customers have received training on all program offerings as well as product features and benefits.

Program staff received positive feedback from participating independent appliance retailers. The retailers expressed appreciation of field staff visiting stores, educating their sales staff on the benefits of ENERGY STAR appliances, and delivering program updates and other useful information. Field staff concentrated on developing new partnerships with independent retail stores as well as on strengthening existing relationships with independent retail stores to ensure future program participation and success.

Corporate lighting and appliance retailers developed a slightly different relationship with the program, given their business models. Corporate retailers received group trainings, facilitated by APT in coordination with the corporate retailer office, instead of coordination with the store owner or manager for an independent retail location. Corporate retailers may, but will not always, review training materials before group training implementation.

5.3.3.5 Communicating Goals

Georgia Power's program management firmly understood program goals. As cited in Section 5.3.1.1, the program achieved nearly all of its goals in 2011. Georgia Power program management placed a premium on internal communication with program staff, and maintained frequent meetings with APT, seeking to ensure meeting goals without exceeding targets, and determining programmatic changes, if necessary.

5.3.4 Freeridership, Spillover, and CFL Giveaway Installation Rate

After converting survey responses into matrix terminology, a freeridership scoring matrix was created so combinations of each participant's responses to the seven questions could be assigned a freeridership score. Creating the matrix required determining every combination of possible responses to the seven survey questions, and then assigning freeridership scores between 0% and 100% for each combination. Bundled and unbundled survey participants required development of

[28] Georgia Power indicates that EERT was more challenging to design and implement for residential programs to account for unique needs such as returns and negative incentives.

separate scoring matrices. **Error! Not a valid bookmark self-reference.** shows freeridership calculations results for Appliance rebate program survey respondents.

Table 5-8: Appliance Rebate Program Freeridership Results

Response Group	Responses (N)	FR Estimate	± Absolute Precision
Appliance rebate program	72	53%	6% at the 90% confidence level

Table H–1 (in Appendix H) shows:

- Unique response combinations from Appliance rebate program participants,
- Freeridership scores assigned to each combination, and
- The number of responses for each combination. Matrix values have been expressed in terms of whether the survey participant's response indicated freeridership.

In their own words, interviewed participants were asked to describe the influence the program rebate had on their decisions to purchase high-efficiency equipment. In situations where respondents' answers contradicted freeridership scores derived from the scoring matrix, a freeridership value of 50% was assigned to the participant. Table H–2 (in Appendix H) shows the number of responses with freeridership scores were adjusted to 50%, based on their open ended responses.

Figure 5-8: Frequency of Appliance Rebate Program Freeridership Scoring Combinations

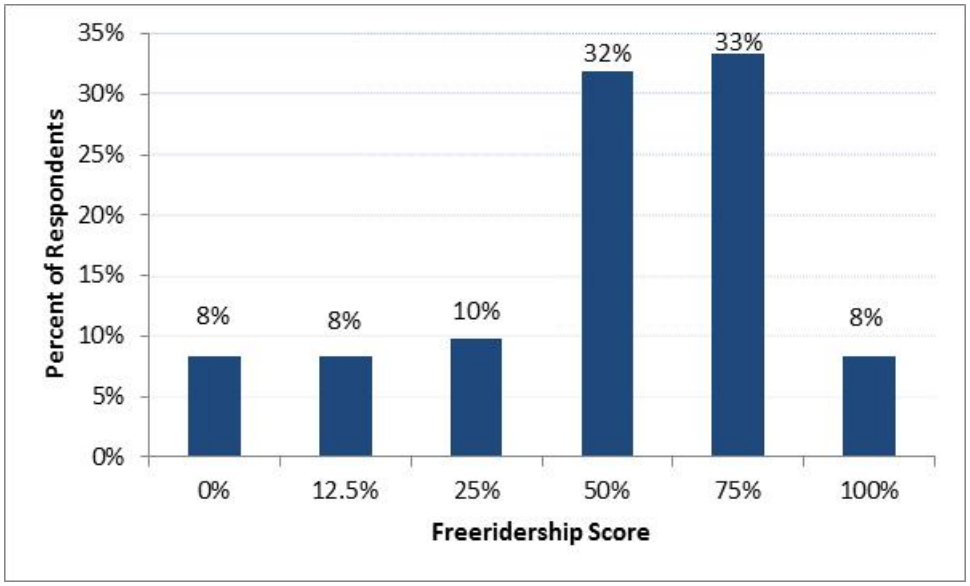


Table 5-9 displays additional measures appliance rebate program participants installed, which qualified as spillover.

Table 5-9: Appliance Rebate Program Spillover Measures

Measure	Quantity	Per Unit kWh Savings	Total kWh Savings
CFLs	7	71.265	499
ENERGY STAR Refrigerator	1	161	161
Total	**-**	**-**	**660**

Table 5-10 provides the spillover estimate for the appliance rebate program, which has been estimated by dividing total spillover kWh savings attributable to the program, obtained from surveyed participants, by kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 5-10: Appliance Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
660	19,169	3.4%

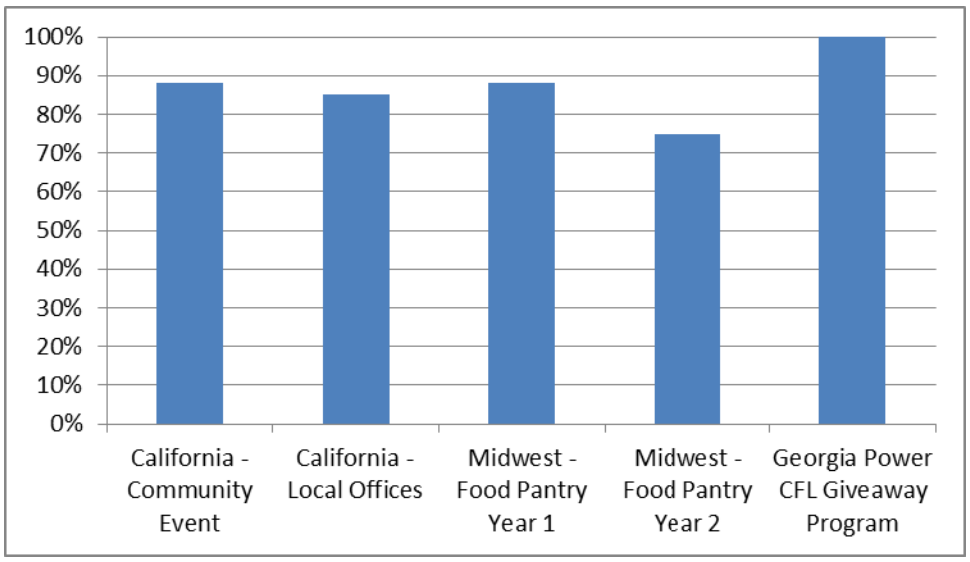
Using the (NTG = 1 – Freeridership + Spillover) equation, previously specified, provides a program NTG ratio of 50.6%.

Table 5-11: Appliance Rebate Program NTG Estimates

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
Appliance Rebate Program	52.8 %	3.4%	50.6%

We apply a NTG ratio of 1.0 for CFL Giveaway programs because these programs target low income customers and because they do not actually purchase the item. Since the CFLs are free, some programs have found that customers do not always install the CFLs. Our participant survey found that all customers receiving CFLs did install them, however. **Error! Not a valid bookmark self-reference.** shows installation rates for other comparable CFL giveaway programs throughout the country.

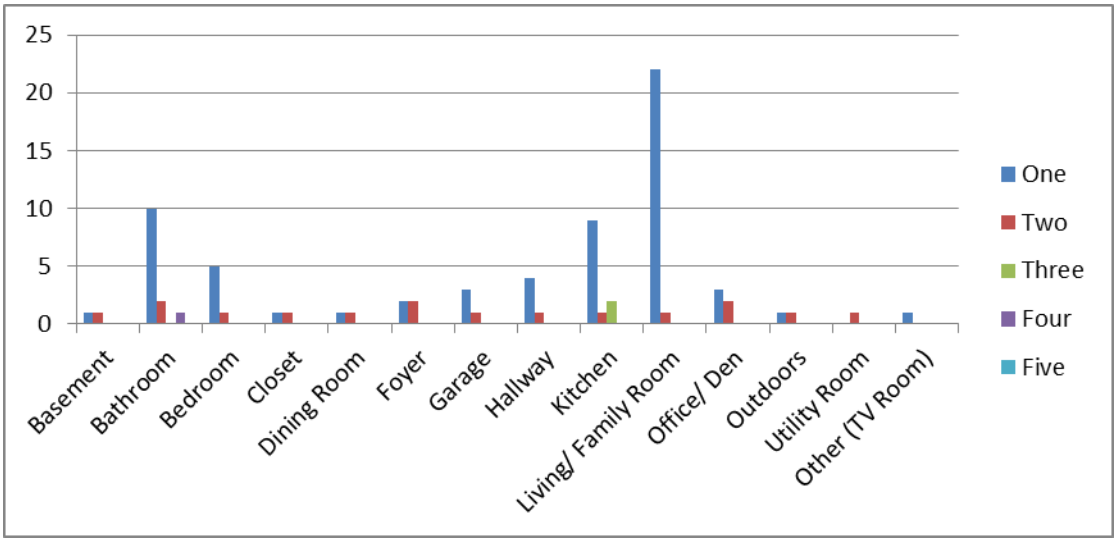
Figure 5-9: CFL Giveaway Program Installation Rates



Although 100% of participants in the Spring 2012 CFL survey indicated they installed their CFLs, the team recommends applying an 88% installation rate, which remains consistent with other CFL giveaway programs. This recommendation factored in a small survey sample (n=9), and potential factors such as moving and snapback.

Those interviewed for the Spring 2012 CFL Survey also indiciated where they installed CFLs in their homes. Figure 5-10 shows the number of bulbs customers installed in each specified location, with living rooms the most popular location: 22 respondents installed one living room bulb, and one respondent installed two living room bulbs.

Figure 5-10: CFL Installations by Room



As a separate research activity in 2011 through the Residential Water Heater Program evaluation, the team followed up with 67 Residential Water Heater Program recipients who participated in In-Home Audits about their receipt and installation of CFLs. Of these survey respondents 57% indicated they had been offered CFLs through the program and 25% of those (13% of all participants surveyed) had CFLs installed by the auditors.

5.3.5 Program Conclusions and Recommendations

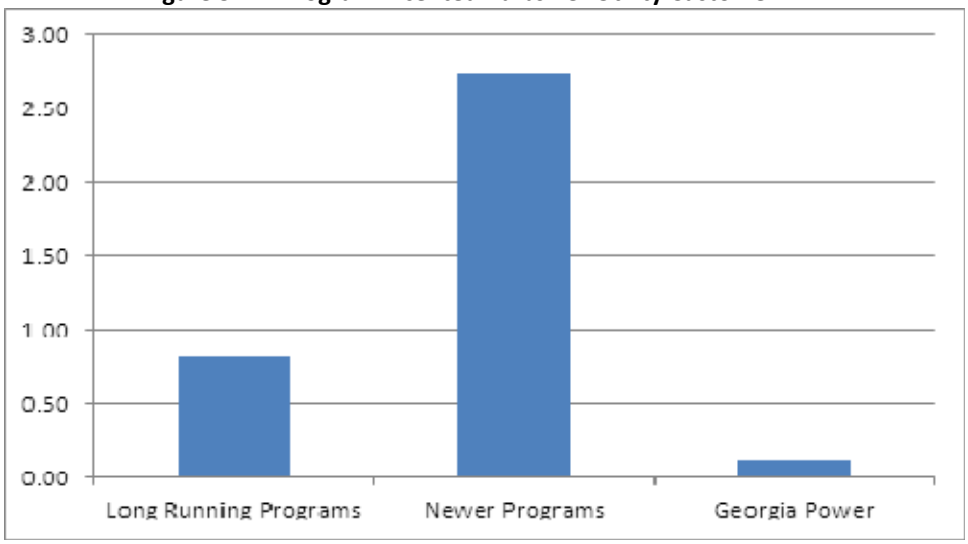
As noted, the L&A Program has been designed well, meeting its goals and satisfying the needs of customers and participating trade allies. Despite these strengths, opportunities exist for the program to provide greater value to Georgia Power and its customers through continued growth.

The L&A Program has room to expand and account for a higher percentage of Georgia Power's portfolio savings.

Recommendations:

- *Georgia Power's first foray into a comprehensive L&A Program has succeeded.* With any new, successful program, opportunities, such as growth in a scalable fashion, providing greater returns for Georgia Power and its customers. The team finds there is considerable opportunity to expand the program across more stores and products. Having a wide variety of stores selling discounted CFLs will allow access by a greater diversity of Georgia Power customers. Figure 5-11 compares Georgia Power's CFL sales in 2011 to 2010 programs ran by 11 other program administrators. As seen, Georgia Power's program is smaller than other utility programs reviewed.

Figure 5-11: Program Incented Bulbs Per Utility Customer



- *Increase retailer participation*. Since all appliance retailers already sold ENERGY STAR units before the program, they reported no significant changes in stocking and therefore availability

of energy efficient units. The team recommends Georgia Power recruit retailers that do not sell ENERGY STAR to further make strides in market transformation.

- *Assess the cost-effectiveness of additional lighting measures.* Additional measures, such as light emitting diode (LED) bulbs, can be brought into the program to diversify the mix of quality energy-efficient lighting products at retailers, and to educate Georgia Power customers on LEDs' benefits. Most utilities offer programs with that include discount specialty CFLs, LEDs, and ENERGY STAR fixtures to complement their existing portfolio available energy-efficient lighting technologies.
- *Assess the cost-effectiveness of additional appliance measures.* Programs with a wide variety of measures prove more attractive to retailers. Measures successfully implemented at other utilities have included dehumidifiers, air purifiers, and efficient water heaters.
- *Consider assessing the cost-effectiveness of consumer electronic measures.* Midstream consumer electronics programs could complement the existing appliance rebate and CFL upstream program, providing greater opportunities for energy savings. Measures successfully implemented at other utilities have included: televisions, computers, monitors, and advanced power strips. The L&A Program may want to consider assessing a direct install advanced power strip program, which will allow it to better verify measure-specific energy savings.[29]
- *Participants in the CFL giveaway program have only a slightly higher understanding of Georgia Power programs and ENERGY STAR than do nonparticipants*. Georgia Power should weigh the costs and benefits of the CFL giveaway program through the community events. Georgia Power customers' overall high CFL awareness indicates little need to introduce CFLs. Georgia Power should consider discontinuing the CFL giveaway program by allocating resources towards its CFL Upstream program to reach a broader customer base.

Streamlining communication and internal processes can increase the program's effectiveness.

Georgia Power emphasizes internal communication and coordination with its staff and external contractors. Its processes can be streamlined to provide more efficient use of resources. Further, communication with participating retailers can be improved to provide more lead time on programmatic changes and to notify them of marketing and promotional opportunities that may increase customer participation in Georgia Power programs.

Recommendations:

- *Utilize more automated processes to improve reporting and rebate retention.* Complete a 360 degree feedback session, including internal Georgia Power staff, including developers, and external contractors, to determine the necessary updates that need to be made to the functionality of the EERT database. Implement training on EERT for internal and external staff to complete the transition to automated reporting.[30]

[29] Georgia Power notes that this recommendation has been addressed in their 2013 Integrated Resource Plan filing.

[30] Georgia Power notes that this recommendation has already been addressed.

- *Consider piloting point-of-sale rebates with select retailers to make the process easier and quicker for customer participation.* Work with retailers to ensure data will be available to support evaluation.
- *Provide retailers with more lead time regarding significant program changes.* Repeat messages several times to ensure all retailers become aware of changes. Consider adding a regular communication system with retailers, such as e-mail alerts or another system.
- *Communicate program changes and opportunities to corporate retailers directly.* Corporate retailers can assist with marketing programs, and could potentially increase stock for seasonal programs (e.g., summer to promote room air conditioners).

If Georgia Power continues the CFL Giveaway program, participants should be tracked to enable evaluation activities.

As Georgia Power did not maintain a contact list for those receiving free CFLs, it was challenging to identify and contact CFL Giveaway program participants. Therefore, firm conclusions could not be drawn about the effectiveness of this distribution approach, or gather primary data on installation rates for Georgia Power.

Recommendation:

- *For future program years, recipients should be asked to agree to be contacted for follow-ups.* Other programs have had success by offering those participants the opportunity to compete in a raffle for a free grocery card.

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6 HOME ENERGY IMPROVEMENT PROGRAM

6.1 PROGRAM OVERVIEW

The Home Energy Improvement Program (HEIP) promotes a comprehensive, whole-building approach to improving the energy efficiency and comfort of existing homes. It also offers multiple participation paths, bundled also known as whole house) and unbundled (also known as individual improvements), to appeal to a range of residential customers.

The bundled option uses a comprehensive approach, assessing all systems within a home. A Building Performance Institute (BPI) certified participating contractor uses diagnostic equipment and software to perform a comprehensive, home energy assessment, and to identify specific energy-saving improvements to reduce energy costs. Once home owners working with participating contractors complete recommended improvements, a follow up assessment determines the resulting energy performance. Customers receive a rebate based on energy savings achieved.

Rebates can also be received through the unbundled option, with the amount depending on the type and number of improvements made. Installation of improvements such as air sealing, insulation, duct sealing, HVAC equipment, programmable thermostats, and electric water heater tank wraps qualify for individual rebates. Homeowners, non-BPI certified contractors, and/or BPI certified contractors may perform the installation for unbundled option measures.

The program incorporates elements of the proposed Federal Home Star Retrofit Rebate Program, providing financial incentives for implementing eligible energy-efficiency measures. In addition to single-family homes, the 2011 program launch included multifamily homes, allowing improvements to units within multifamily dwellings.

The program builds on Georgia Power's residential trade ally networks, program staffing, and tools developed for the Home Performance with ENERGY STAR® (HPwES) pilot, available since 2007 for Georgia Power customers in the metro-Atlanta area. In addition to financial incentives offered, the program includes customer education and awareness campaigns, and contractor partnerships and training. ICF implements the program on behalf of Georgia Power.

As of August 2011, the program has been promoted under the EarthCents umbrella as the Home Energy Improvement Program, with a whole-house option or individual improvements.

6.2 EVALUATION OBJECTIVES AND METHODOLOGY

6.2.1 Research Questions

In addition to the overarching evaluation objectives, presented in Section 2.2.1, the following lists program-specific research questions addressed through this program evaluation:

- Is the program design appropriate to meet its goals?
- Are program participation targets being met for bundled and unbundled?
- Are customers satisfied with the program and with services provided by contractors?
- Are contractors delivering quality customer service?
- Are customers aware of the program?
- How do customers learn about the program?
- Are participation paths, eligible measures, and contractor requirements clearly understood?
- What are the program's non-energy benefits?
- How does branding the program without the ENERGY STAR label affect perceptions of the program?
- Are incentives effective?
- Is program marketing and outreach effective?
- How do contractors perceive marketing materials?
- How satisfied are customers with the enrollment process?
- Is the implementation and tracking process effective?
- Are contractors satisfied with training?
- Are contractors satisfied with support provided by GPC and/or ICF?
- Are program impact targets being met?

6.2.2 Data Collection Methods

6.2.2.1 Research Activities

The evaluation team collected primary data from stakeholders and customers in Fall 2011, and from contractors in Spring 2012. Table 6-1 lists HEIP evaluation data collection activities and timing.

Table 6-1: HEIP Research Activities

Research Activities	Fall 2011	Spring 2012
MATERIALS REVIEW		
Program Database	•	•
Program Materials	•	
Marketing Materials	•	
INTERVIEWS		
Utility Program Manager(s)	2	1

Research Activities	Fall 2011	Spring 2012
Utility Database Manager	1	
Implementation Staff	2	
SURVEYS		
Participating Customers (bundled)	37	
Participating Customers (Unbundled)	70	
Participating contractors		30
Nonparticipating contractors		30

6.2.2.2 Sampling

The evaluation team coordinated the process evaluation sampling approach with the impact team, ensuring data provided from surveys yielded results at the 90/10 confidence and precision levels. The evaluation team surveyed 107 participating customers in the HEIP: 37 for the bundled option, and 70 for the unbundled option. Another survey included 60 contractors: 30 participating, and 30 nonparticipating. The team completed customer surveys in Fall 2011 and contractor surveys in Spring 2012.

6.2.3 Net-to-Gross Method

To develop the NTG ratio for the HEIP program the team assessed two components, freeridership and spillover. Freeridership represented the percentage of savings that would have occurred in the program's absence due to participants behaving the same (purchasing the same measures) without the program's influence. Spillover occurred when customers purchased energy-efficient measures or adopted energy-efficient building practices, and the program influenced them to make the purchasing decision, though they received no rebates. Each program's NTG estimate can be calculated simply as:

Program NTG = 1 - Freeridership + Spillover

The evaluation team relies on self-report from participant surveys to determine a freeridership score by asking a series of questions about what participants' actions would have been in the absence of the program. The freeridership questions that were utilized for the HEIP bundled freeridership analysis are listed below:

- FR1. Regarding the energy-saving improvements you made to your home, would you have made the same improvements if this program had not been available?
- FR2. Let me make sure I understand. When you say you would have made the same improvements, would you have made all the improvements at the same efficiency level?
- FR3. And would you have made the same improvements: at the same time or within three months of when you actually made the upgrades, within three to six months, six to 12 months, more than a year, or never?

- FR4. Let me make sure I understand. When you say you would not have made the same improvements, do you mean you would not have made any of the improvements?
- FR5. Would you have made some of the improvements at a lower efficiency level?
- FR6. And, would you have made those improvements: at the same time or within three months of when you actually made the upgrades, within three to six months, six to 12 months, more than a year, or never?
- FR7. How important was the incentive in influencing your decision to invest in energy efficient upgrades? Would you say it was not at all important, not too important, somewhat important, or very important?

If a respondent answered 'No' to Question FR1 they are skipped to Question FR4. Question FR4 was only asked if a respondent answered 'No' to Question FR1. Questions FR5 and FR6 were asked only if a respondent answered 'No' to Question FR4. Question FR7 was asked of all respondents.

The freeridership questions that were utilized for the HEIP unbundled freeridership analysis are listed below:

- FR1. Would you have made the same improvements if the program rebates had not been available?
- FR2. Let me make sure I understand. When you say you would have made the same improvements, would you have made all, some or none of the improvements?
- FR3. Would any of the improvements you made have been less efficient? By less efficient, we mean a Lower R-value for insulation, lower AFUE for furnace, lower SEER or EER for AC.
- FR4. And with respect to timing, without the program, would you have made the same improvements: at the same time or within three months of when you actually made the upgrades , within three to six months, six to 12 months, more than a year, or never?
- FR5. Let me make sure I understand. When you say you would not have made the same energy efficient upgrades, do you mean you would not have made any of the improvements?
- FR6. Would you have made some of the improvements but at a lower efficiency level?
- FR7. And, with respect to timing, without the program, would you have installed those measures: at the same time or within three months of when you actually made the upgrades, within three to six months, six to 12 months, more than a year, or never?

If a respondent answered "No" to Question FR1, they skipped to Question FR5. Questions FR6 and FR7 only applied if a respondent answered "No" to Question FR5. All respondents answered Question FR8. Question FR2 only applied if the respondent answered "Yes" to FR1 and was a multiple rebate participant.

The team assessed freeridership at three levels. First, each participant survey response was converted into freeridership scoring matrix terminology, in terms of whether their answer was indicative of freeridership. Once each participant's responses have been combined, a freeridership score could be assigned from a scoring matrix containing all possible response permutations. Finally, all participants were aggregated into an average freeridership score for the entire program category.

The team independently evaluated each survey question's response to assess participants freeridership levels for each question, converting each survey response option into a value of "Yes" (indicative of freeridership), "No" (not indicative of freeridership), or "Partial" (partially indicative of freeridership).

Table H–3 (in Appendix H) lists the seven HEIP bundled freeridership survey questions, their corresponding response options, and the value to which they were converted to (in parentheses).

Table H–4 (in Appendix H) lists the seven HEIP unbundled freeridership survey questions, their corresponding response options, and the assigned value in parentheses.

The team also used self-report customer surveys to assess spillover by asking HEIP participants if the program prompted a decision to install other energy-efficient measures or make other energy-efficient home improvements. Participants reported making improvements in response to an energy-efficient products list. Those indicating they made energy-efficient improvements were asked how important the program was on their purchasing decisions. Response options include: "not at all important," "not too important," "somewhat important," or "very important." Only measures where the participant indicated that their participation in the program was very important on their purchasing decision were attributed to program spillover.

The team calculated spillover savings as a percent of total savings using deemed savings values, consistent with those used in calculating the gross program savings value, and applied these savings values to the spillover measures for those participants who indicated the program was very influential in their decision. For some measures, respondents did not provide sufficient information required for providing a spillover savings estimate.

The spillover percentage for the program was calculated by dividing the sum of the additional spillover evaluated gross savings reported by respondents by the total rebated evaluated gross savings achieved by all respondents in the program survey sample:

$$\text{Spillover \% Estimate} = \frac{\sum \text{Survey Sample Evaluated Spillover Gross kWh}}{\sum \text{Survey Sample Evaluated Program Gross kWh}}$$

The sum of these spillover savings values, divided by savings achieved through the program for each relevant measure, yields spillover savings as a percentage of total savings, which the team then extrapolated to the population of program participants.

6.3 KEY PROCESS FINDNGS

6.3.1 Program Outcomes

Table 6-2: HEIP Program Outcome Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Are program process targets being met?	• Meeting participation and energy savings goals? • How many measures are being installed on average?	6.3.1.1
Are customer satisfaction goals being met?	• Are customers satisfied with the program overall? • Are customers satisfied with the auditors/contractors/services? • Are contractors delivering quality customer service?	6.3.1.2
Are market transformation goals being met?	• Increased customer knowledge of energy-efficient measures • What is the level of program awareness? • How do customers find out about the program? • Are contractors promoting more high efficiency options? • Increased knowledge and practice of energy-saving behaviors	6.3.1.3

6.3.1.1 Program Achievements

The HEIP program well exceeded energy savings target filed with the Georgia Public Service Commission. Table 6-3 shows goals and gross savings achieved by the program in 2011. The program exceeded its energy savings goals by over 300%; demand savings achieved nearly seven times the original goal.

In 2011 (at the time of the interim report), savings logged fell below mid-year targets. Subsequently, Georgia Power launched the EarthCents marketing campaign, implemented an e-mail campaign, and encouraged contractors to promote the program, driving participation through the end of 2011. The program database did not track participation levels, as only savings goals had been set for the program.

Table 6-3: Savings Goals and Accomplishments

	Participant's Distinct Account #	kW	kWh
Goal	NA	130.64	2,384,000
Actual	2,954	875.89	7,790,425

Per a year-end program data extract, 2,954 participants installed 4,328 measures. Measures recorded in the data extract indicated the bundled program made up a small proportion (8%) of HEIP participants. Unbundled participants installed a maximum of seven measures, and averaged two measures per household. Two thirds (66%) of bundled participants participated at the 30% or greater home energy reduction level. The remaining bundled third split equally (17% of bundled participants) between the 20% and 25% home energy reduction participation levels. Bundled

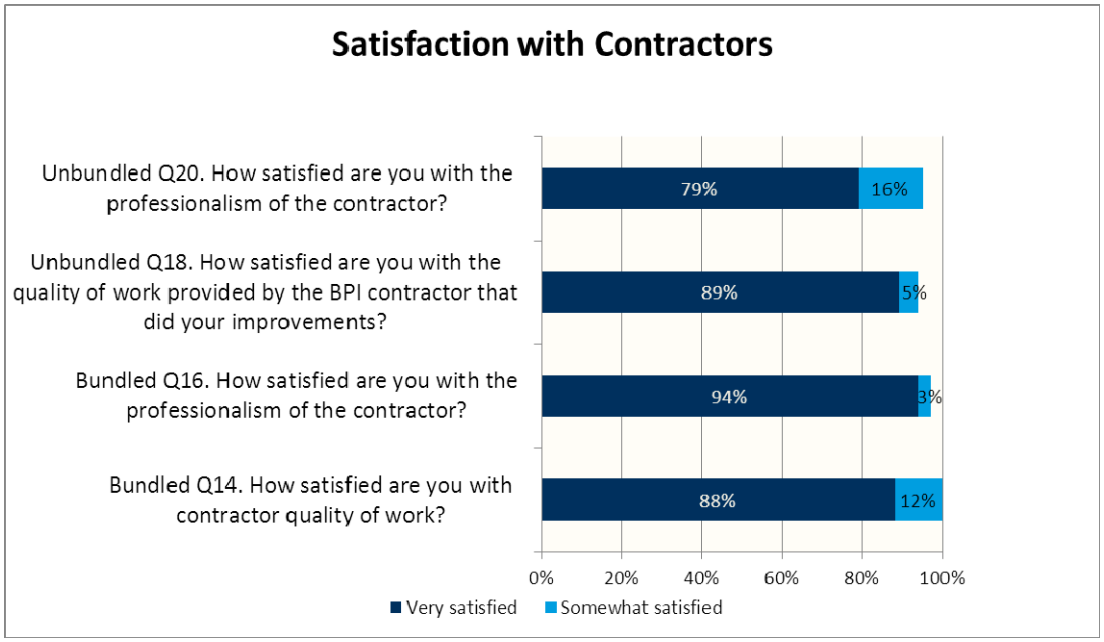
participants accounted for 5% of the measure-level participation and 69% of HEIP program total savings. Unbundled participants made up 95% of the measure-level participation, and accounted for less than one-third (31%) of total HEIP program savings in 2011.

6.3.1.2 Customer Satisfaction

The majority of HEIP participants expressed satisfaction with the program overall, rebate amount, and finding a contractor. Three-quarters of unbundled and bundled (73% and 76%) participants expressed being "very satisfied" with the program overall, with another 20% "somewhat satisfied." A few customers voiced complaints about rebate problems and working with uninformed contractors. While 97% of participants expressed satisfaction with rebate amounts received, some dissatisfaction arose regarding the time required to receive rebates, despite the six-to-eight week time frame displayed on the application.

Customers expressed satisfaction with contractors' work overall, with 88% being very satisfied with the quality of work, and 94% very satisfied with contractors' professionalism. The team observed no statistically significant satisfaction differences between customers in the two participation paths.

Figure 6-1: Participant Satisfaction with Contractors (n=107)



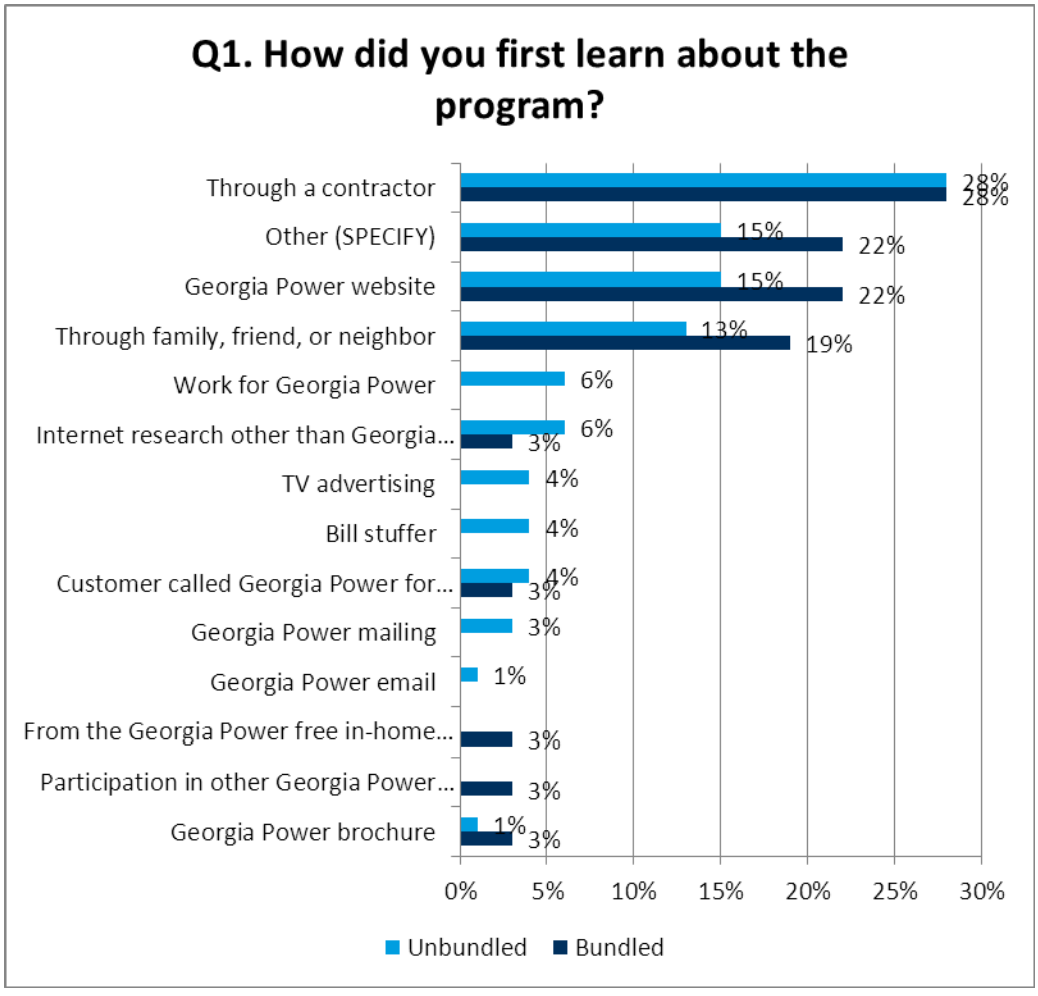
6.3.1.3 Market Transformation

In a survey of randomly selected, general population customers, about one-third (31%) of respondents knew of a program offered by Georgia Power that "helps you save energy." Of those expressing awareness, 15% could identify the HEIP program without prompts, and more than half (57%) knew of the HEIP program when prompted.

Information sources about the program depended on whether or not customers participated. Nonparticipating customers learned of the program through a variety of advertising sources, including bill inserts, Georgia Power newsletters, and newspaper ads. HEIP participants reported learning about the program most frequently through contractors (28%). More bundled participants learned about the program through Georgia Power's Website or a referral than did unbundled participants, as shown in Figure 6-2.

These findings differed from the 2009 Participant Experience Research[31] survey Georgia Power conducted with HPwES program participants. More HPwES respondents learned of the program through Georgia Power's Website than from any other source. This shift in awareness sources may be associated with the transition to the new EarthCents brand and Program Webpage. It could also arise from contractors playing a more effective role in raising awareness of the program.

Figure 6-2: Q1. How did you first learn about the program? (n=107)



[31] Southern Company Marketing Research, "Georgia Power Home Performance with ENERGY STAR: Participant Experience Research," May 22, 2009.

While contractors' services, regardless of program participation, increasingly include energy efficiency, familiarity with the HEIP program remains limited to participating contractors.

A majority (70%) of nonparticipating contractors surveyed promoted energy-efficiency home improvement services, which differed little from the 80% of participating contractors promoting home energy-efficiency improvements. Though most nonparticipating contractors promoted these services, few knew of Georgia Power's program. Significantly fewer nonparticipating contractors (17%) expressed being "very familiar" with the program, compared to more than three-quarters (77%) of participating contractors. Yet significantly more nonparticipating contractors (27% vs. 7%) knew of the free Georgia Power "walk-through" home energy audit.

Regardless of program participation, opportunities remain for increasing awareness and knowledge of the program among both types of contractors.

6.3.2 Program Design

Table 6-4: HEIP Program Design Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section

Is the program design appropriate to meet goals?	• Logic Chart review
	  • Are the participation paths, eligible measures, and contractor requirements clearly understood?
	  • Why do customers want to participate? What are the program's non-energy benefits? How much influence do they have relative to energy and bill savings?
	• How does branding the program without the ENERGY STAR label affect perceptions of the program?
	• Utility's resources assigned sufficient?
	• What are the barriers to participation?
	• What can be done to increase program participation?
	• Are incentives effective?
	• How do federal program incentives affect program participation?
		6.3.2.1
		6.3.2.2
		6.3.2.3
		6.3.2.4

6.3.2.1 Program Logic Chart

Though the program documented participation processes using a process flow diagram, program management did not use a program logic chart. The process flow diagram shows steps involved in delivering the program from the point of first customer contact, through incentive fulfillments for bundled and unbundled participation.

6.3.2.2 Participation Paths

In stakeholder interviews, GPC program staff indicated wanting to improve communication regarding the HEIP program's different participation paths. Participant survey responses confirmed

customers' confusion or lack of awareness regarding the two paths. Just under half (48%) of unbundled participating customers knew of the bundled option before choosing the unbundled option. Of those unaware, approximately one-third (31%) indicated they might have chosen the bundled option, had they known about it. Additionally, respondents indicated some confusion between the free Energy Check Up and In-Home Audit services and the HEIP program's bundled BPI-certified assessment.

Although Georgia Power designed the Website and marketing materials to provide information about the two paths, materials did not include effective guidance to help customers decide which option would be best suited for their particular needs.

Also, without participation goals for the two program paths, staff members lacked indicators for determining participation status, and ultimately how marketing efforts may need to change throughout the year.

6.3.2.3 Participation Motives

While customers in the unbundled option most frequently participated to save money, the rebate also played a role in their decisions;: 23% of unbundled participants (compared to 8% of bundled participants) reported the rebate motivated their participation.

BundledBundled participants indicated choosing the bundled option because their home needed multiple improvements. Similarly, unbundled participants most commonly chose the unbundled path because they did not need the measures involved in bundled improvements (35%), and bundled improvements proved too expensive (16%). Unbundled participants, however, may not have known of the number and types of improvements needed before deciding on the unbundled path.

After deciding to participate in the program, customers found value in the energy assessment component, which motivated them to undertake home improvements. Nearly all participants (95% for both bundled and unbundled) found energy assessment somewhat to very valuable, and a majority (60%) of unbundled participants intended to complete at least some recommended improvements by the end of 2011. These improvements included: duct sealing, attic insulation, air sealing, basement/crawlspace insulation, ENERGY STAR appliances, cooling system, and window/door replacements.

A vast majority (89% and 86%) of unbundled and bundled participants reported their homes more comfortable following improvements, with even temperatures throughout the home, temperatures easier-to-control automatically, and reduced drafts.

6.3.2.4 Participation Barriers

Approximately one-fourth (23%) of participants expressed concerns about the program before participating, primarily regarding upfront program costs (including the assessment), rebate amounts, and what measures rebates would cover.

The rebate process presented difficulties for 25% of participants in both participation paths. Participants stated the process took too long to complete, with delays throughout the process. Respondents also reported a lack of coordination and communication among program staff, and some difficulties in receiving answers to their questions.

6.3.2.5 Increasing Program Participation

Overall, program participation exceeded expectations in terms of savings achieved. Program participation steadily climbed through Fall 2011, ultimately exceeding its energy savings goal by 226%. Contractor participation also increased during the year. Program managers stated the number of BPI-certified contractors increased from approximately 70 in 2011 to more than 100 by July 2012. Dramatic participation level increases toward the year end indicated many efforts employed in 2011, such as a targeted e-mail campaign, special promotional events, contractor promotion, and mass market advertising, successfully drove participation in the program.

In 2011, participating contractors proved very important to the program, with more than three-quarters (80%) of contractors stating they actively promoted their energy-efficient home improvements and/or energy assessment work. Over two-thirds (69%) of the contractors reported their customers learned about the program through Georgia Power's Website. Other reported sources of customer awareness included: word-of-mouth, Georgia Power advertising, and contractors' Websites. Notably, contractors did not cite the importance of their own marketing and promotion as a primary program awareness source for their customers. This stands in contrast to the customer survey, indicating contractors as the most commonly attributed as the source of customers' program awareness.

6.3.3 Program Implementation

Table 6-5: HEIP Program Implementation Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is marketing effective?	• Is program marketing and outreach effective? • Market channels selection appropriate • Marketing timing targeted appropriately • Do marketing materials address customer motivations for participating • Contractor methods of promoting the program • Are HEIP contractors aware of the water heating program?	6.3.3.1

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the enrollment process effective?	• Customer satisfaction with enrollment process • Contractor satisfaction with rebate filing process • Forms easy to read, use, and understand?	6.3.3.2
Is the implementation process effective?	• Are program processes followed? • Are program management tools in place and being used? • Is data tracking effective? • Quality and completeness of data • Are marketing metrics tracked?	6.3.3.3 6.3.3.4
Are program partner activities effective?	• Education/marketing materials well-received? • Certifications, training, eligibility requirements met? • Are contractors satisfied with support provided by utility or implementation partner? • Utility program staff satisfied with partners/contractors? • How are goals communicated to stakeholders?	6.3.3.5

6.3.3.1 Program Marketing

Prior to implementing the EarthCents brand campaign, the company conducted limited individual HEIP program promotions, relying on general information pieces developed for the previous HPwES program. In the first few months of 2011, ICF indicated having one flyer and limited budget with which to promote the program (at the time, Georgia Power was rebranding all its energy-efficiency programs). Customers expressed discontent with the program's relatively limited marketing presence in the first half of 2011; one customer noted: "Georgia Power should advertise the program more; I stumbled upon it."

The EarthCents August 2011 launch, however, produced new collateral, a rebranded Website page, and advertising that included HEIP. Call volume and participation rates between the launch and the end of 2011 suggest rebranding and marketing effectively increased awareness and drove participation. Marketing materials used in the EarthCents effort included: print, online, and radio features, allowing the program to access customers through multiple channels, as well as targeted bill inserts to access high-potential customers in an effective and low-cost manner. Further, the program delivered an e-mail program promotion campaign to customers with e-mail addresses on file. Campaign responses resulted in a participation lift toward the end of 2011.

In addition to advertising, trade ally support continued to drive customer awareness. Most contractors (87%) informed customers about the program prior to assessment; contractors indicated that telling customers about the energy-saving opportunities associated with improvements provided the most effective way to encourage customers to implement changes. A majority (67%) of participating and nonparticipating contractors, however, did not know of the

water heater tank wrap offered to electric customers through the in-home walk-through audits offered by Georgia Power.

6.3.3.2 Enrollment Process

Despite concerns from program staff regarding the application's length (four pages), most customers (84% of bundled and 87% of unbundled) found the application easy to complete. Additionally, contractors played a large role in the application process. Three-quarters (75%) of participating contractors stated they provided rebate forms to their customers, and all contractors provided forms offered assistance to customers in completing the application.

Three-quarters (76%) of bundled participants also found it easy to find contractors to perform their home energy assessments, and over two-thirds (68%) of bundled participants eventually used the same contractor to perform the improvement work. Most unbundled participants, however, selected contractors other than those used for the assessment to perform the necessary installations.

Some customers indicated dissatisfaction (19% unbundled, 31% bundled) with the time required between submitting the application and receiving a rebate check. A majority (67%) of unbundled respondents reported not being satisfied with the time required to receive the rebate; these customers reported waiting three to four months from application submissions to receipt of rebates. Dissatisfied bundled participants waited five to eight weeks.

Although most unbundled participants (86%) reported having the necessary information, types of application details difficult to obtain included: meter numbers, tax identification numbers, business identification numbers, detailed project information from contractors, and information about program requirements and incentives.

6.3.3.3 Program Implementation Processes

ICF implements the HEIP program on behalf of Georgia Power marketing the program through contractor networking, trade shows, special events, and informal "lunch and learn" trainings. ICF receives calls from interested customers, processes rebate applications, tracks and reports program participation and savings data, distributes rebate checks, and performs quality assurance (QA) inspections on 5% of each contractor's work.

Overall, program implementation experienced few interruptions and elicited positive satisfaction from customers and contractors. Program implementer staff stated that, despite a change in Georgia Power management staff in early 2011, the program continued to operate effectively. The HEIP program provides a thorough implementation manual, containing sufficient detail, and providing a useful resource for training new staff and enabling staff to implement the program as designed.

ICF reported nearly all contractors completed required work in a quality manner. The program's QA process requires inspections for 5% of each contractor's work, and 100% of underperforming contractors' jobs. At the time of the interviews, only one contractor exhibited quality issues necessitating 100% inspection.

Program requirements for the home energy assessment process require more time for contractors to complete the required testing and analysis than for assessments outside the program . Contractors indicated that, despite the additional time required, the process resulted in quality improvements. All participating contractors stated the initial assessment took over two hours (22 of 23 contractors); by contrast, times varied from a half-hour to two or more hours across the nine nonparticipating contractors performing assessments. Five of nine nonparticipating contractors said their initial assessment took less than 1.5 hours. The thoroughness of participating contractors' assessments reflected the tools they used, significantly more participating contractors used blower door tests (100%), duct blasters (91%), and infrared cameras (61%) than nonparticipating contractors.

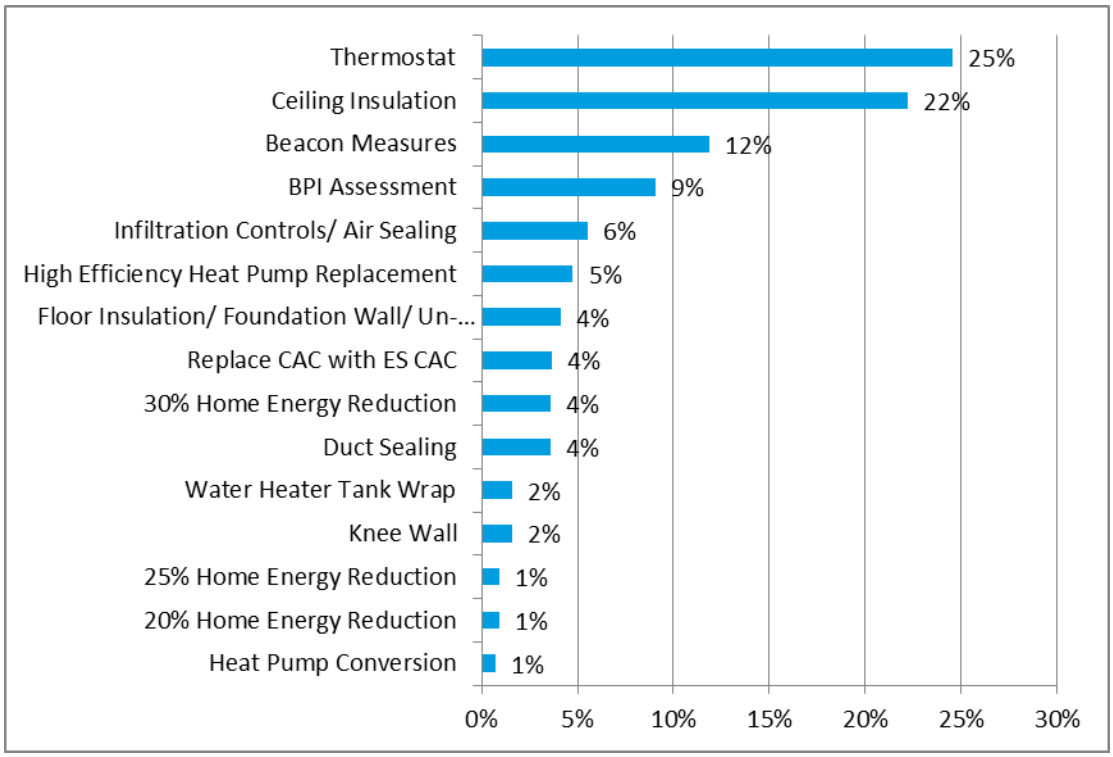
All nine (100%) nonparticipating contractors performing assessments reported following up with customers after assessments to gauge their interest in making the recommended improvements. Only 70% of participating contractors followed up after assessments.

6.3.3.4 Data Tracking

ICF implementation staff maintains a tracking database with sufficient information on program data. In an initial July 2011 data extraction, the team found missing and duplicated information which caused difficulties in setting up survey samples and assessing participation types. Implementation of the new EERT system addressed most data quality issues. ICF also provides a monthly update on overall program participation and progress toward savings goals. The report shows savings for the overall program, but does not break out participation by the two paths.

A final year-end program database extract listed each individual rebated measure as a separate record. Participation in bundled or unbundled required a data query, as a record level database flag/indicator did not identify or summarize this information. As shown in **Error! Not a valid bookmark self-reference.**, installed measures most commonly included: thermostats, ceiling insulation, and Beacon measures. Beacon measures are a subset of 85 measures that combine to obtain the 20%, 25% or 30+% whole house savings.

Figure 6-3: Database Review of HEIP Installed Measures



6.3.3.5 Program Partner Activities

Georgia Power and its program partners largely experienced positive interactions. Participating contractors expressed their increased business activities and competitive advantage over nonparticipating contractors as two key benefits provided by the program. Contractors expressed concerns, however, over changes in program requirements and rebate delays reportedly connected to introduction of the program implementer. In communicating with Georgia Power, one contractor indicated having trouble reaching a program representative to receive answers. Two others, however, reported program representatives as responsive and proactive with program updates.

Contractors suggested greater marketing as a program improvement, with this suggestion made several months following the EarthCents campaign's launch.

6.3.4 Freeridership and Spillover

6.3.4.1 Freeridership Findings

The team developed a scoring matrix to convert every combination of possible responses to the seven survey questions into a freeridership score of 0 to 100% for each combination. Separate scoring matrices were developed for the bundled and unbundled survey participants.

Matrix values in Table H-5 (Appendix H) show the unique response combinations from the HEIP bundled participants, the freeridership score assigned to each combination, and the number of

responses for each combination. After converting survey responses into a scoring matrix, a freeridership score was assigned to the combination of each participant's responses to the seven freeridership survey questions.

Figure 6-4 shows a distribution of HEIP bundled survey respondents by the freeridership score assigned to each. Just over three quarters (76%) were considered 0% freeriders. Additionally, 6% indicated low levels of freeridership (12.5% to 25%), while moderate levels of freeridership (50%) were observed for 8% of respondents. Eleven percent of HEIP bundled survey respondents were 75% freeriders, and none received a 100% freeridership score.

Figure 6-4: Frequency of Freeridership Scoring Combinations – HEIP Bundled (n=37)

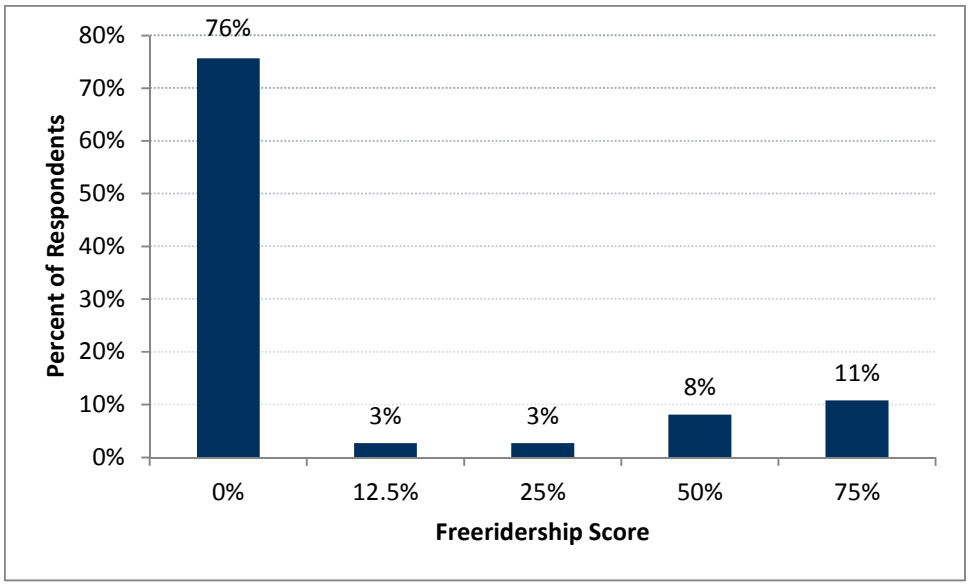


Figure H-6 (Appendix H) shows the unique response combinations from the HEIP unbundled participants, the freeridership score assigned to each combination, and the number of responses for each combination.

Figure 6-5 shows a distribution of HEIP unbundled survey respondents by the freeridership score assigned to each. Approximately one third (31%) of HEIP unbundled survey respondents were 100% freeriders. Additionally, almost half (47%) of respondents were considered 0% freeriders, while only 2% indicated low levels of freeridership (25%), and moderate levels of freeridership (50% to 75%) were observed for 20% of respondents.

Figure 6-5: Frequency of Freeridership Scoring Combinations – HEIP unbundled (n=55)

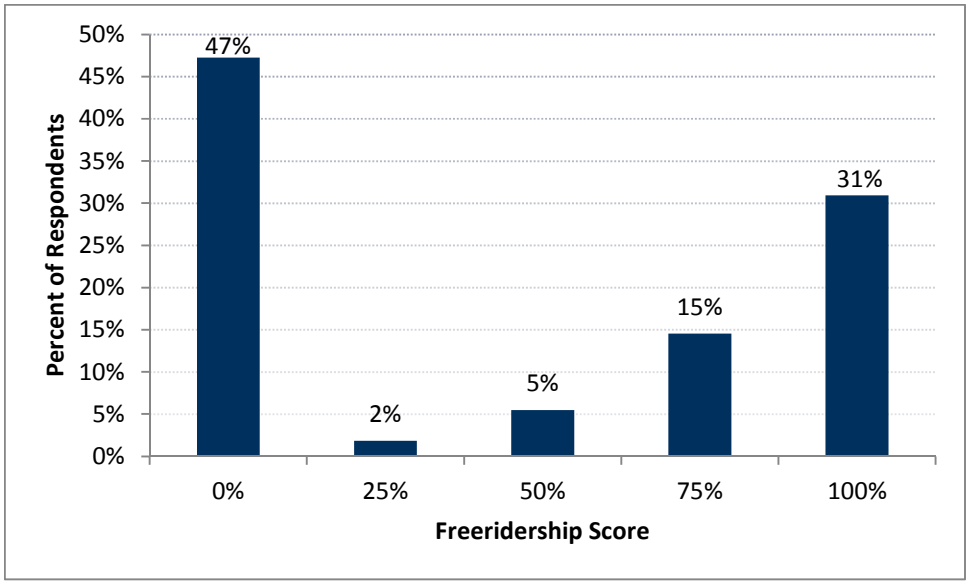


Table 6-6 shows the results of freeridership calculations for both HEIP survey respondent groups.

Table 6-6: HEIP Freeridership Results

Response Group	Responses (N)	FR Estimate	± Absolute Precision
HEIP bundled	37	13%	± 7%
HEIP unbundled	55	45%	± 10%

6.3.4.2 Spillover Findings

HEIP participants made additional energy efficiency improvements to their homes without receiving other rebates (40% bundled, 57% unbundled). **Error! Not a valid bookmark self-reference.** displays the additional measures HEIP bundled participants installed that qualified as spillover and where Nexant could quantify savings estimates.

Table 6-7: HEIP bundled Spillover Measures

Measure	Total kWh Savings
Insulation	408
Air Sealing	1,010
Central AC	619
Total	**2,037**

The spillover estimate for the HEIP bundled program is provided in Table 6-8. The estimate is calculated by dividing the total evaluated spillover kWh savings attributable to the program obtained from surveyed participants by the evaluated kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 6-8: HEIP bundled Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
2,037	65,515	3%

Table 6-9 displays the additional measures HEIP unbundled measures HEIP participants installed that qualified as spillover and where Nexant could quantify savings estimates.

Table 6-9: HEIP unbundled Spillover Measures

Measure	Total kWh Savings
Insulation	2,281
Air sealing	4,495
Total	**6,776**

The spillover estimate for the HEIP unbundled program is provided in Table 6-10 below. The estimate is calculated by dividing the total spillover kWh savings attributable to the program obtained from surveyed participants by the kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 6-10: HEIP Unbundled Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
6,776	66,101	10%

6.3.4.3 NTG Findings

Using the (NTG = 1 – Freeridership + Spillover) equation, the team estimated the NTG ratio for program overall is 78%.

Table 6-11: HEIP Program NTG Estimates

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
HEIP Bundled	13%	3%	90%
HEIP Unbundled	45%	10%	65%
Combined	29%*	7%	78%

* Combined freeridership ratio has been weighted by the survey sample's evaluated program kWh.

6.3.5 Program Conclusions and Recommendations

Overall, HEIP functions effectively, but additional steps could be taken to improve communications with customers. By the year's end, the program exceeded its energy savings goal, and experienced high satisfaction levels among customers and contractors. Customers expressed concerns about rebate wait times, with 20% to 30% of participants in both paths expressing dissatisfaction with time required to receive rebates.

Recommendations:

- *Continue to implement the program as designed, keeping processes and incentive levels intact.* Maintaining stability around incentive levels and program requirements will enable contractors to invest in the program, build their knowledge base, and continue to confidently promote the program to customers.
- *In addition to information about the rebate application, apprise customers and contractors of timelines for processing and disbursing rebates.* Consider including tips for avoiding common application errors, obtaining difficult information details, and actions to ensure timely delivery of incentives[32].

The August 2011 EarthCents umbrella campaign launch effectively created a centralized brand identity, but some enhancements could increase specific program awareness.

Recommendations:

- *The EarthCents launch likely contributed to a HEIP participation lift through the end of the year.* Sustaining the variety of marketing approaches will drive participation to HEIP, as participants reported a variety of channels prompted program awareness and motivations to participate.
- *Continue marketing the program under the EarthCents umbrella campaign, and direct customers to information available on Georgia Power's Website*.
- *As the e-mail campaign in the latter part of 2011 yielded positive results, consider ways to build on this method, such as capturing additional e-mail addresses from Website visitors or other promotional events.*

[32] Georgia Power is moving to Residdential online applications for the 2013 program year. The online process will allow customers to track their application through the system, including the incentive payment.

- *Continue outreach and informal training opportunities with contractors.* Provide contractors with materials they can provide to customers, promoting the program, and deepen participation levels. Continue to make contractors aware of the in-home audit service and electric water heater tank wrap offered free to Georgia Power customers.
- *Consider cross-marketing opportunities with the water heater program and other prescriptive rebate programs to leverage participation in multiple programs.* Participants may be more likely to make additional improvements if they know of rebates available through other programs.
- *As customers indicated confusion between services provided within HEIP and between other Georgia Power programs, consider conducting research on customer preferences for program nomenclature (audit, retrofit, assessment, evaluation, checkup), and maintain consistency when referring to program services.* Communicate these preferences through contractor training, so they develop effective ways to communicate program services to customers.

While program participation in 2011 resulted in exceeding the savings goals for the program, opportunities for greater savings remain.

Unbundled participants unaware of the bundled program may have opted for a more comprehensive participation level, had they known about or understood processes and incentives available for bundled improvements. As might be expected, unbundled participants showed higher levels of freeridership, indicating they may have proceeded with the improvement without the program incentive. Many participants in both paths (40% of bundled and 57% of unbundled) also made additional energy-efficient changes to their homes. Greater savings may be attributable to the program by encouraging greater participation in the bundled path and by tracking additional energy saving measures not rebated by the program.

Recommendations:

- *Consider enhancing the Website and program material with information addressing decision processes for bundled versus unbundled.* The Website clearly presents the two participation options, but does not offer guidance that helps customers decide which path best meets their needs. As the current approach assumes customers will know the approach they need before starting the participation process, some unbundled participants may not recognize the benefits they could achieve by participating in the bundled path.
- *Consider developing marketing segments, focusing marketing campaigns on early adopters and demographic profiles more likely to participate.* Targeted advertising to high-potential customers cost-effectively reaches customers more receptive to program messaging. For the bundled program, consider implementing a segmented marketing approach for customers with older homes and with longer-term residencies in the same homes.

Though the data tracking system greatly improved with the new EERT system, small additions could further improve data tracking.

Recommendation:

- *Consider tracking participation information for easy summary and reporting.* Monthly updates could include information on unbundled and bundled programs participation in addition to HEIP as a whole, enabling staff to track participation levels throughout the year, and more effectively monitor potential participation lifts attributable to program marketing efforts.

7 RESIDENTIAL WATER HEATING PROGRAM

7.1 PROGRAM OVERVIEW

The Residential Water Heating (RWH) program offers and installs free water heater wraps and pipe insulation to eligible customers. In 2011, the program sought to install 800 water heater wraps, primarily through Georgia Power's free in-home audit program. Customers qualify if they are in detached or attached single family homes, if they have an electric (rather than gas) water heater no more than five years old that does not already have an insulating tank jacket, and if it is located in an unconditioned space safe to access. A maximum of two blankets are available per home. If there is no insulation around the pipes leading to the tank, an auditor will also offer pipe insulation. The water heater program is intended to serve as feeder program into other Georgia Power DSM programs.

Georgia Power trains its auditors to, during on-site visits, increase customer knowledge about home energy-efficiency opportunities, benefits of water heater wraps and other water heating savings opportunities, and other energy-efficient programs and incentives Georgia Power offers. Auditors also receive training about new energy-efficient technologies to share with customers, as appropriate.

The utility assumes customers have limited knowledge about savings associated with water heater insulation, and have limited exposure to contractors and new technologies. Therefore, providing the free in-home energy audit allows Georgia Power to inform customers about new products and their benefits, while connecting customers with trade allies and contractors. Georgia Power expects increased knowledge will push customers to choose more efficient options, and modify their water-heating practices.

7.2 EVALUATION OBJECTIVES AND METHODOLOGY

7.2.1 Program-Specific Evaluation Issues

In addition to the evaluation's overarching objectives, presented in Section 2.2.1, the evaluation addressed the following program-specific research questions:

- Does the program, as implemented, reach its participation and energy savings goals?
- Are HEIP participants and free in-home audit customers aware of opportunities to participate in the RWH program?
- Are HEIP contractors aware of the RWH program?
- Do customers modify their water heating practices, based on audit findings and recommendations (e.g., do they change temperature set points or reduce water use?)

- Do customers receive and use program-provided giveaways (e.g., CFL bulbs or)?[33]
- What percentage of audits results in direct installation of water heater blankets and pipe insulation? What criteria are used by Georgia Power's auditors to determine whether a blanket or insulation will be installed?
- Are customers satisfied with the program overall?
- How can the program achieve deeper energy savings? Should additional measures be offered by the program? What would increase program participation?
- Were program goals and objectives communicated to and understood by Georgia Power staff and implementers?

7.2.2 Data Collection Methods

7.2.2.1 Research Activities

Table 7-1 shows all research activities carried out through the process evaluation. Table 7-2 provides the full list of materials reviewed for the initial report in October 2011 and for the final 2012 report.

Table 7-1: Residential Water Heating Program Research Activities

Research Activities	Fall 2011	Spring 2012
Materials Review		
Program Database	•	•
Program Materials	•	
Marketing Materials	•	
Interviews		
Utility Program Manager	•	•
Utility Database Manager	•	
Georgia Power Auditors	3	
Surveys		
Participating Customers		**70**

[33] Because the audit program is not part of Georgia Power's energy efficiency portfolio, this evaluation did not examine the audit process.

Table 7-2: Residential Water Heating Program—Materials Reviewed

Type	RWH Program Documents Received	Fall 2011	Spring 2012
Program Material	Program Description	•	
	Logic Chart		•
	Process Flow Chart (Visio Doc)	•	
	Draft Implementation Manual	•	
	Final Implementation Manual		•
Reporting	First-Quarter PSC Report	•	
	Management Info: Energy-Efficiency Program Performance	•	
	Results through April 30, 2011	•	
	Water Heater Jacket Tracking Summary Report	•	
	Performance Results through December, 2011		•
Marketing	Website: Free In-Home Audit	•	•
	Website: Free In-Home Audit Application	•	•
	Bill Insert: Free In-Home Audit	•	
Communications	General Energy-Efficiency Program Update, March 11, 2011	•	
	Energy Audit Course Materials	•	
Goals	2011 Expected MWH Savings Forecast, Excel Table	•	
	2011 Region Water Heating Goals	•	
Data	Database of WH Jacket Summary(date and region) Jan–Jun 2011	•	
		•	
	In-home Audits Database: Jan–June, 2011		•
	EERT Data Extract for Full Year 2011		•
	Audit Database: Full Year 2011		•
	HEIP Customer Overlap Data Sheet		•

7.2.2.2 Sampling

In June 2012, the team surveyed program year 2011 RWH participants, beginning with a participating customer list obtained from Georgia Power's in-home audit database, which included 515 unique customers who received water heater wraps. After removing individuals selected for site visits, the survey examined a population of 500, and achieved 70 complete responses (see Table 7-3). Not all customers responded to all questions; the report indicates response numbers less than 70.

Table 7-3: Residential Water Heating Participating Customer Survey Sample and Results

Survey activity	2011 population	Target Sample	Number of completes	Notes
Participating Customers	516	70	70	Customers selected for on-site inspections removed from the sample

7.2.3 Net-to-Gross Analysis

Developing the NTG ratio for the RWH program involved assessing two components: freeridership and spillover. Freeridership results when participants would have purchased the same measures in

the program's absence. Spillover occurs when customers purchase energy-efficient measures or adopt energy-efficient building practices without participating in a utility sponsored program. The following equation provided estimated NTG:

Program NTG = 1 – Freeridership + Spillover

The evaluation used self-reports from the participant surveys to determine freeridership scores by asking a series of questions about participants' actions in the program's absence. Aggregated scores determined total program freeridership. The freeridership questions utilized for the RWH freeridership analysis follow below:

- Did you make an appointment for a free in-home energy audit in order to receive the free water heater wrap?
- BEFORE you heard about the Georgia Power's EarthCents water heater program, had you already been planning to purchase and install a water heater wrap?
- Would you have installed a water heater wrap on your own without the Georgia Power program?
- If you had not received the water heater wrap from Georgia Power, when would you have purchased and installed a new water heater wrap?
- [FOR MEASURES WITH QUANTITY>1] Our records show you received [quantity >1] water heater wraps. Would you have installed the same quantity of wraps without the program?

The team assessed freeridership at three levels. First, each participant survey response was converted into freeridership scoring matrix terminology, in terms of whether answers indicated freeridership. Once each participant's responses could be combined, a freeridership score could be assigned from a scoring matrix, containing all possible response permutations. Finally, all participants could be aggregated into an average freeridership score for the entire program category.

Similarly, the evaluation used self-report customer surveys to assess spillover, asking participants receiving a water heating blanket if, due to the program, they installed other energy-efficient measures or conducted other energy-efficiency-improving activities. Survey questions asked participants if they installed specific energy-efficient products in their homes or businesses since program participation. If respondents made energy-efficient improvements or purchased products, questions asked how important the program was on their purchasing decisions. Responses included: "not at all," "not very," "somewhat," or "very" important. Only measures where participants indicated their participation in the program as very important on their purchasing decisions were attributed to program spillover.

Spillover savings could be calculated as a percentage of total savings, using evaluated savings values consistent with those used in calculating gross program savings value, and applying these savings values to spillover measures for participants indicating the program very influential in their

decisions. For some measures, respondent did not provide sufficient information, and spillover savings could not be estimated.

The program's spillover percentage was calculated by dividing the sum of additional evaluated spillover savings reported by respondents by total rebated evaluated savings achieved by all respondents in the program survey sample:

$$\text{Spillover \% Estimate} = \frac{\sum \text{Survey Sample Evaluated Spillover Gross kWh}}{\sum \text{Survey Sample Evaluated Program Gross kWh}}$$

The sum of these spillover savings values, divided by savings achieved through the program for each relevant measure, yielded spillover savings as a percentage of total savings, which could then be extrapolated to program's participant population.

7.3 KEY PROCESS FINDINGS

The report presents process findings to researchable questions, structured around three key finding areas:

- Program Outcomes,
- Program Design , and
- Program Implementation

The beginning of each section organizes researchable questions and program-specific evaluation issues into a table, indicating the report sections that include participant answers.

7.3.1 Program Outcomes

In 2011, the RWH program did not reach its expected water heater blanket distribution goal. Georgia Power planned to distribute 800 wraps in 2011, but distributed only 588, achieving 74% of its goal. While a relatively simple design, the RWH program relies on a non-energy-efficiency program for customer enrollment: the free in-home audit. This dependent relationship complicated the evaluation process, as the evaluation did not formally address that program. The RWH program could not function without the audit program, which trains Georgia Power auditors to promote and implement the RWH program. Little marketing occurs outside of the audits.

Table 7-4 maps researchable questions about program outcomes to the relevant report sections.

Table 7-4: RWH Program Outcome Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Are program process targets being met?	• Is the program, as implemented, reaching its participation and energy savings goals?	7.3.1 7.3.1.1

Are customer satisfaction goals being met?	• Are customers satisfied with the program overall? • Are auditors providing customers with water heating tips and information about other Georgia Power programs?	7.3.1.2
Are market transformation goals being met?	• Are customers modifying their water heating practices, based on audit findings and recommendations? • Are customer receiving and using program-provided giveaways?	7.3.1.2

7.3.1.1 Results by Region

As shown in Some regions exceeded their goals (Central and Northeast), while others fell far behind (Metro regions combined and West). Overall, about 21% of audited homes with electric water heating received a wrap. Interviews with the program manager suggested some inconsistency in results across regions may result from program's relative youth and changes in the audit program, for example, institutional memory of not touching equipment, the implementing of a new data collection system and intensive training events taking place in mid-2011.

Table 7-5: Goals Achieved vs. Percent of Audited Homes Receiving Wraps

Region	2011 Goal Achieved	Audited Electric Water Heating Homes that Received a Wrap
Central	169%	23%
Coastal	73%	26%
East	48%	20%
Metro Comb	28%	14%
Northeast	110%	28%
Northwest	82%	23%
Savannah	N.A.	24%
South	41%	18%

and Figure 7-1, a great deal of variation occurred across the regions in terms of numbers of audits implemented, blankets distributed, and percentages of goal achieved.

Some regions exceeded their goals (Central and Northeast), while others fell far behind (Metro regions combined and West). Overall, about 21% of audited homes with electric water heating received a wrap.[34] Interviews with the program manager suggested some inconsistency in results across regions may result from program's relative youth and changes in the audit program, for example, institutional memory of not touching equipment, the implementing of a new data collection system and intensive training events taking place in mid-2011.

[34] Though the new EERT RWH database does not capture heating types (electric vs. gas), Georgia Power staff provided this information to the evaluation team manually. Six records listed in the RWH database extract did not have heating sources assigned (1.2%).

Table 7-5: Goals Achieved vs. Percent of Audited Homes Receiving Wraps

Region	2011 Goal Achieved	Audited Electric Water Heating Homes that Received a Wrap
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Coastal	73%	26%
East	48%	20%
Metro Comb	28%	14%
Northeast	110%	28%
Northwest	82%	23%
Savannah	N.A.	24%
South	41%	18%

Figure 7-1: Water Heater Wraps Distributed vs. Goals for 2011

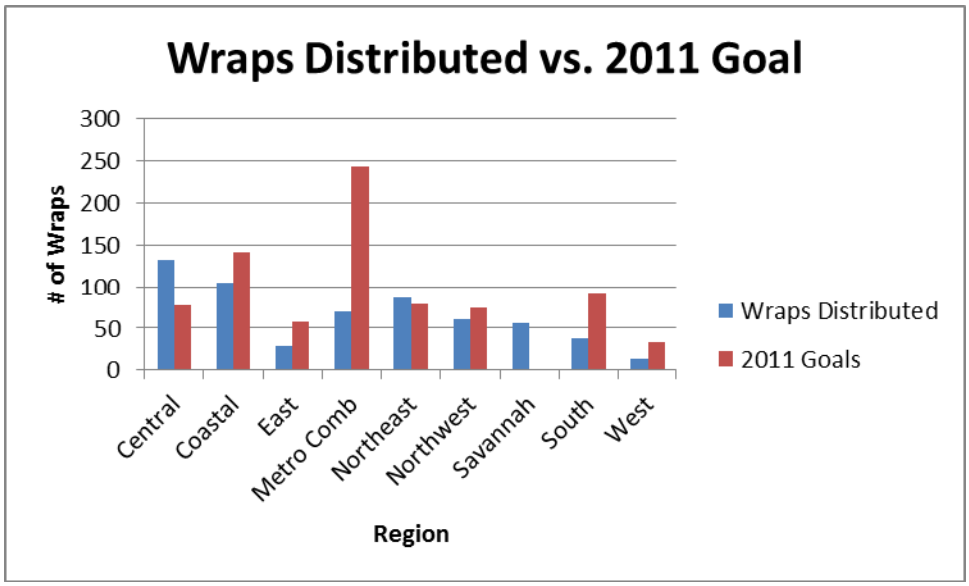
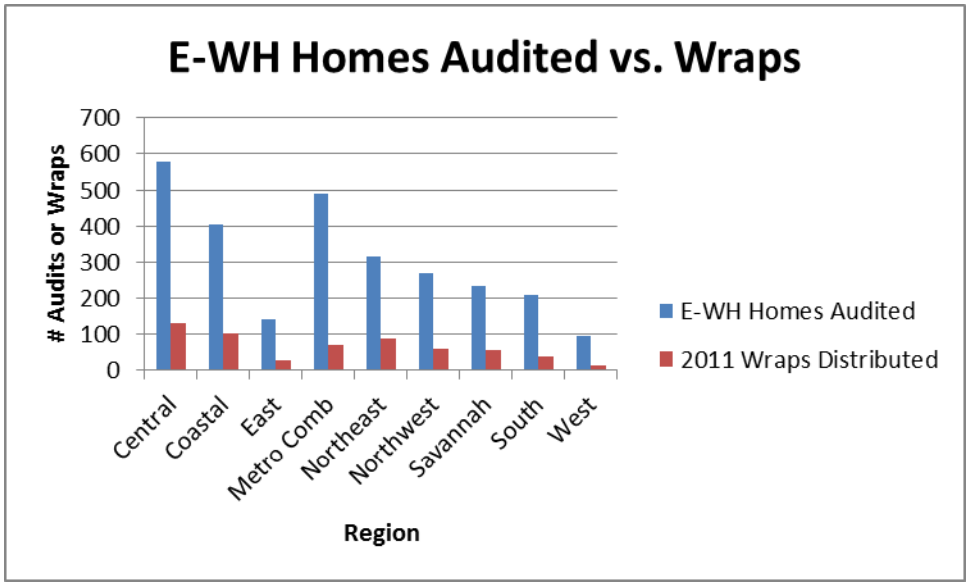


Figure 7-2: Number of Wraps Distributed to Electric Water Heating Homes (E-WH) Audited in 2011



7.3.1.2 Participant Satisfaction

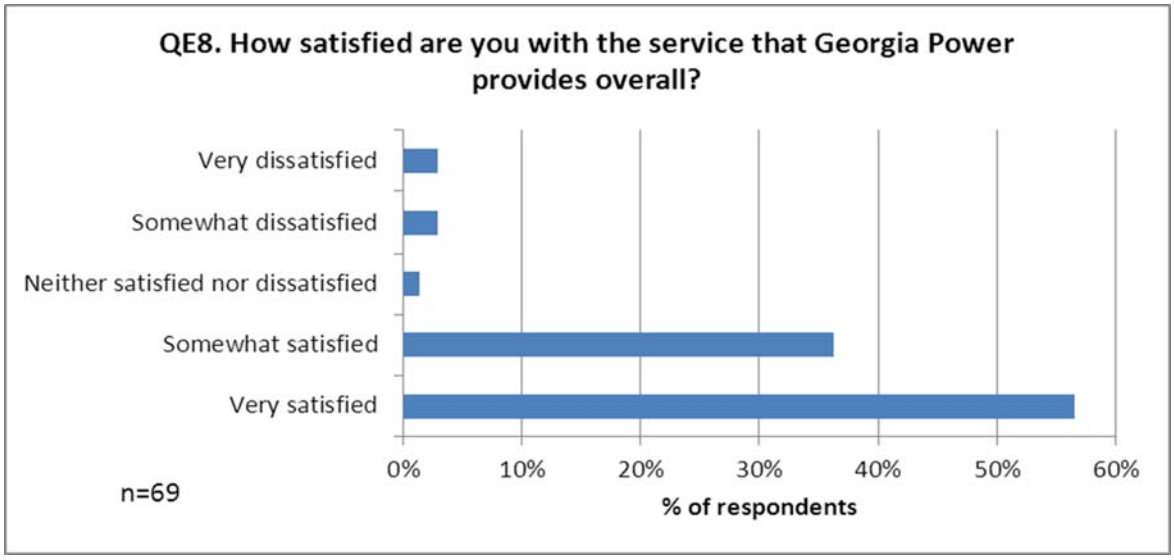
Figure 7-3 shows RWH participant satisfaction with Georgia Power's services. Most expressed being either very satisfied (56%) or satisfied (36%) with the program. Ninety-six percent of respondents would recommend the RWH program to friends and family members; over 90% expressed satisfaction with the wrap. As the wrap intertwines and depends on the in-home audit program, it proved difficult to distinguish RWH customer satisfaction from in-home audit customer satisfaction. Two of the three participants who said they would not recommend the program explained they did not notice a benefit, and "they" (the auditors presumably) did not show the customer how to see reductions in their bills.[35] Five customers expressed unhappiness with the wrap for these reasons:

- *"It is ridiculously heavy and the tape didn't stay put on the heater and wrap. I have a big water heater and we had to piece it together, so I don't [know how] efficient it is."*
- *"It's starting to come off so we had to try to re-tape it."*[36]
- *"When the guy came out, he wrapped the water heater first, then came to talk to us. He had to piece together two wraps to cover the heater and it now covers all the dials. So we have to remove the wraps to change settings."*
- *"Never received wrap."*
- *"The water is still cold in the winter."*

[35] Savings associated with water heater wraps are too small to readily appear in a customer's bill.

[36] Georgia Power has indicated that better tape has been provided to address this issue prior to this report being distributed.

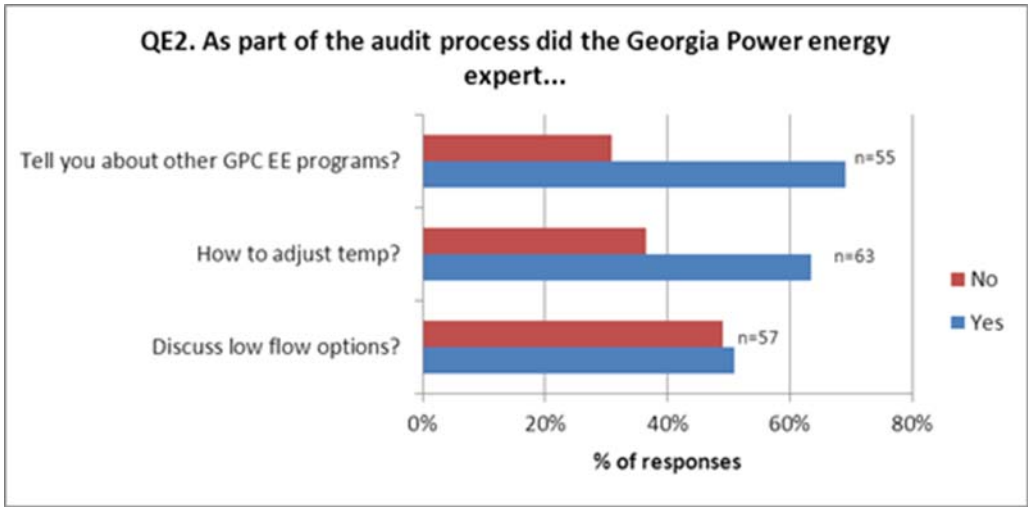
Figure 7-3: RWH Customers Overall Satisfaction with Georgia Power



Customer Education

As shown in **Error! Not a valid bookmark self-reference.** RWH customers reported mixed results when asked about types of information auditors provided; 70% said their auditor discussed other Georgia Power energy-efficiency programs, 65% said they discussed how to adjust temperatures, and 52% said auditors discussed low-flow technology options. Fewer than 50% of respondents reported auditors did not discuss low-flow options, and 38% reported no discussions regarding how to adjust temperatures. About 30% said auditors did not discuss other Georgia Power programs. Interviews with auditors indicated that they tailor their discussion to the needs of each individual customer.

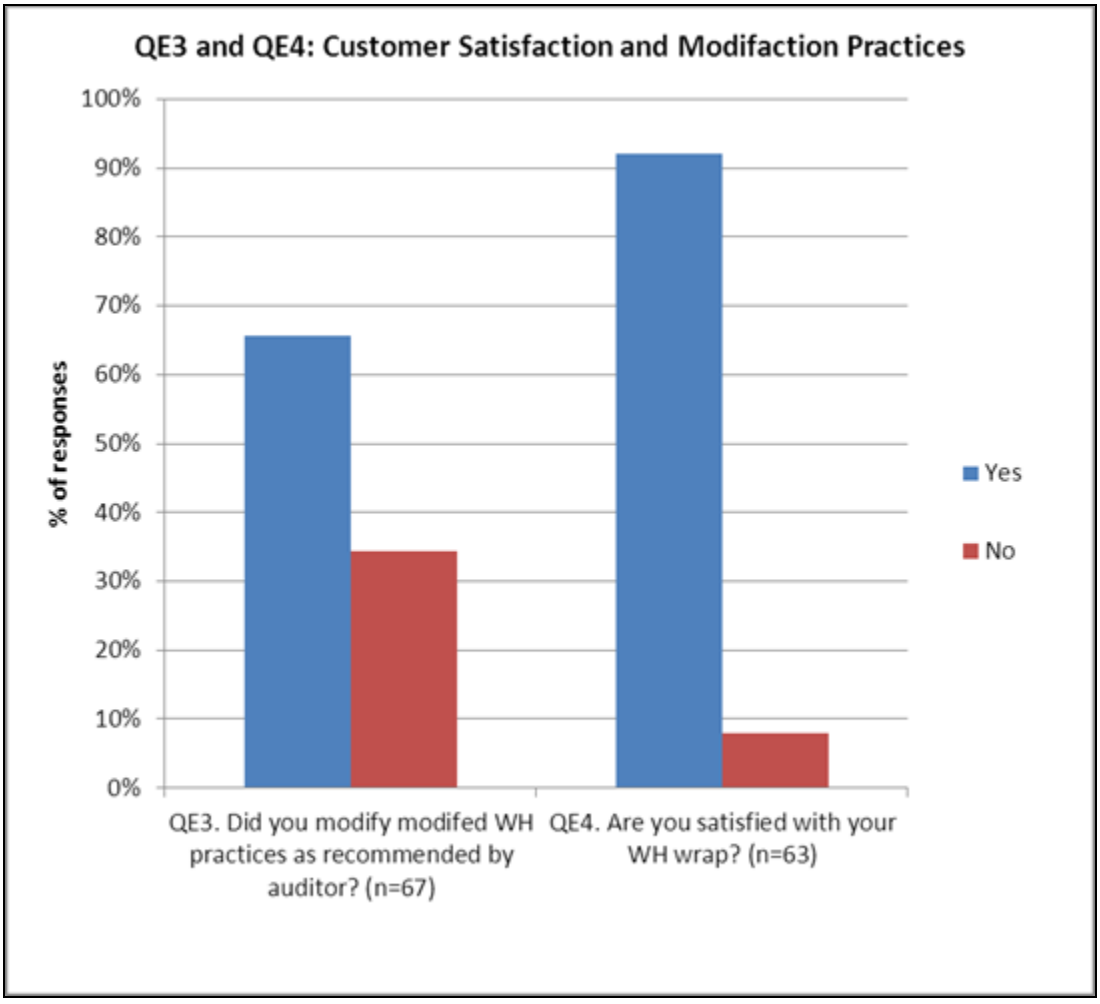
Figure 7-4: RWH Auditor Education Provided to Customer



Customer Modification of Water Heating Practices

Ninety-two percent of respondents (n=67) said they modified their water heating practices, based on auditor recommendations (QE3, Figure 7-5). Of 18 responding to the follow up question on how they modified their water-heating practices, 72% (n=13) reduced temperature set points and 17% (n=3) made an effort to use less water (QE3A).

Figure 7-5: RWH Customer Satisfaction and Water Heating Practices



7.3.2 Program Design

The study examined program design by reviewing the logic chart, particularly in relationship to participant enrollment, and by considering why and where additional measures or other design elements could be used to increase program participation. Table 7-6 presents researchable questions related to program design.

Table 7-6: RWH Program Design Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the program design appropriate to meet goals?	• Is the free in-home audit an effective mechanism for drawing in the target number of customers?	7.3.2.1
	• How can the program achieve deeper energy savings? Are there	7.3.2.2

	additional measures that should be offered by the program? What can be done to increase participation?	Conclusions

7.3.2.1 Program Logic and Participant Enrollment

The implemented RWH program does not exactly follow the design presented in the logic chart. Auditors do not consistently market other Georgia Power energy efficiency programs, and Georgia Power staff members seem to be confused about how their activities contribute to meeting RWH program goals, audit program goals, and CFL program goals.

Interviews with Georgia Power management very clearly identified the audit program as separate from the water heating program. The audit program, however, serves as the primary mechanism for customer enrollment in the RWH program, and the logic chart references the audit program in several places. The logic chart shows the main program marketing strategy to be efforts that increase public awareness about the free in-home audits. While the call center does not market the free water heater blanket when customers call with questions about their bill, the Website markets the audit program, as do bill inserts and other channels. Program staff reported the call center offers the in-home audit to customers if call staff cannot handle the complaint by phone. Clearly, the free in-home audit program and the RWH program link strongly, even though during the evaluation process, Georgia Power staff emphasized the evaluation should focus only on the RWH program and not the audit program.

Most customers (62%) learned about the water heater wrap option during the free in-home audit (**Error! Not a valid bookmark self-reference.**). Most customers learned about the audit when they called Georgia Power regarding their utility bills (see Figure 7-7 and Figure 7-8).

While many audits occurred in each region, on average only about 21% of homes with electric water heating obtained a water heater wrap (see Figure 7-8 and Some regions exceeded their goals (Central and Northeast), while others fell far behind (Metro regions combined and West). Overall, about 21% of audited homes with electric water heating received a wrap. Interviews with the program manager suggested some inconsistency in results across regions may result from program's relative youth and changes in the audit program, for example, institutional memory of not touching equipment, the implementing of a new data collection system and intensive training events taking place in mid-2011.

Table 7-5: Goals Achieved vs. Percent of Audited Homes Receiving Wraps

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Region	2011 Goal Achieved	Audited Electric Water Heating Homes that Received a Wrap
Metro Comb	28%	14%
Northeast	110%	28%
Northwest	82%	23%
Savannah	N.A.	24%
South	41%	18%

). Customers were not offered wraps for multiple reasons, including: they already had a wrap, their water heater was too new, it was unsafe to wrap the water heater due to space or other conditions (such as exposed wires), the customer did not want the wrap, and no time was available to install the wrap.

Figure 7-6: How Respondents First Learned about the RWH Program

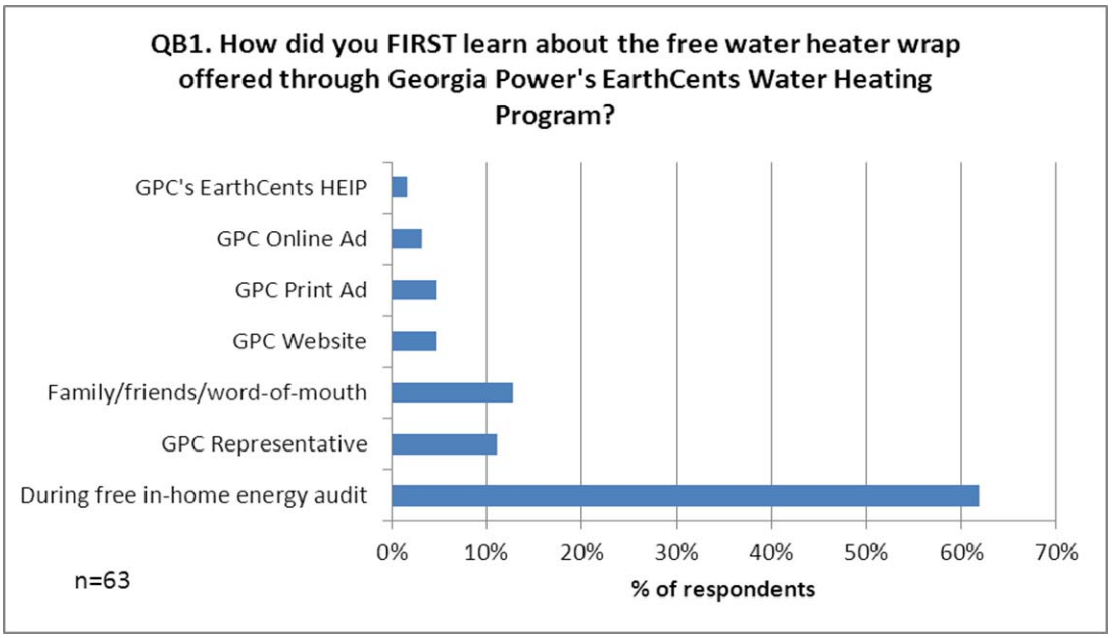


Figure 7-7: How Respondents First Learned of the Free In-Home Audit

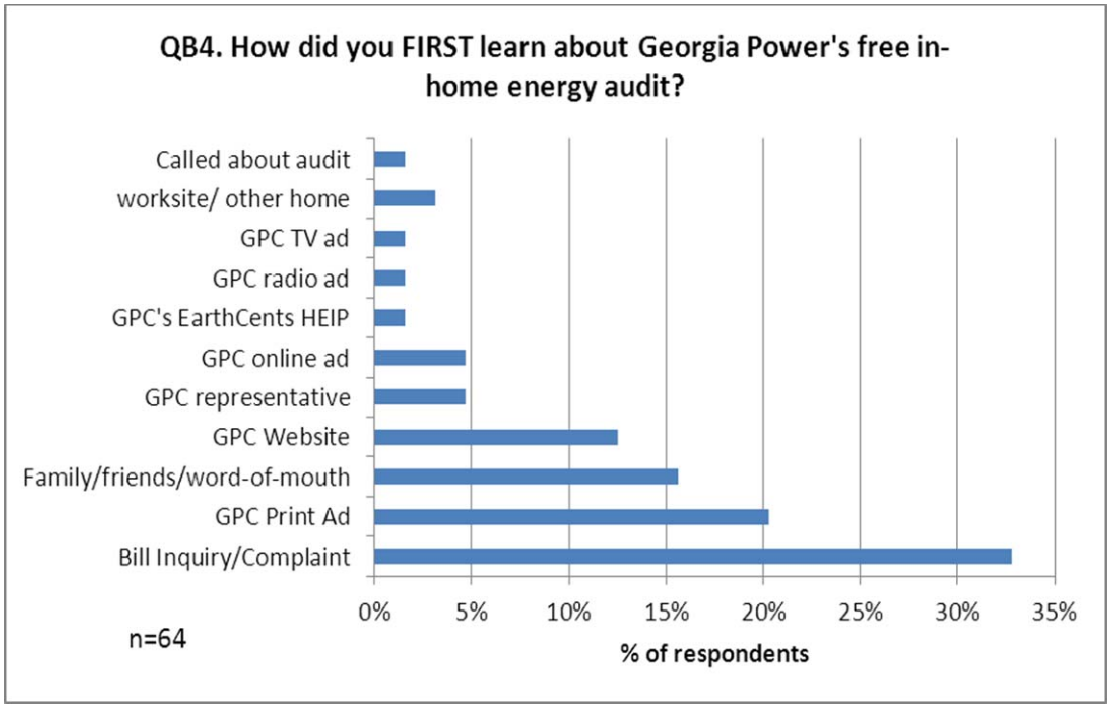
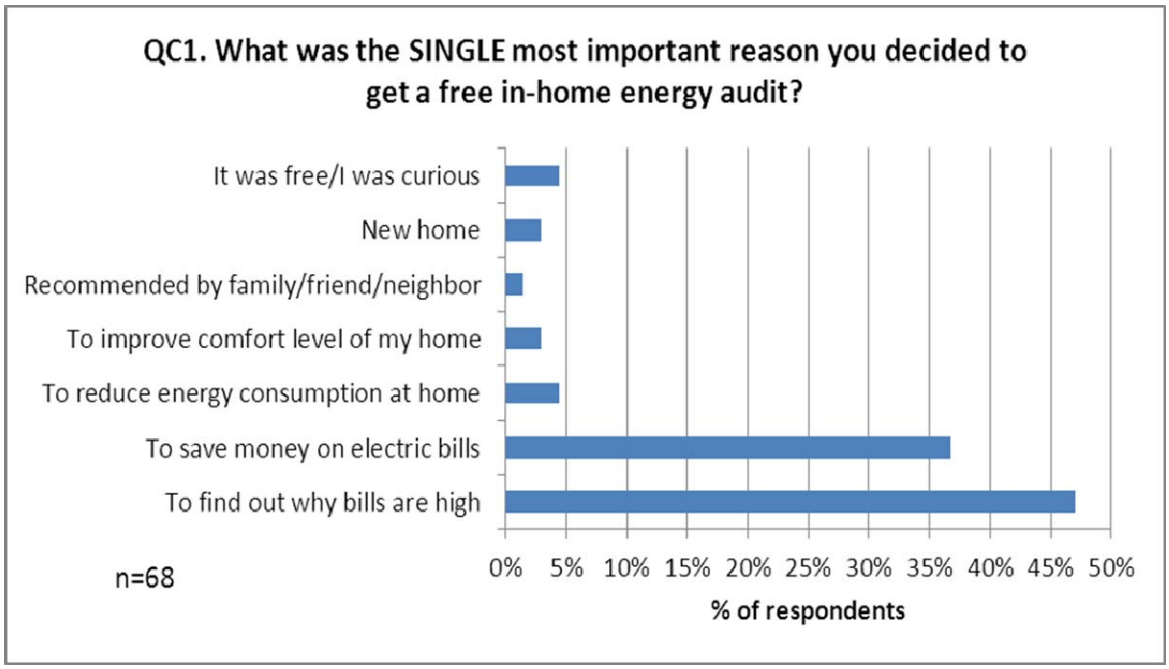


Figure 7-8: Why Respondents Signed Up for Free Audit



7.3.2.2 Potential Additional Measures

Programs based on water heating energy savings can achieve additional savings by increasing participation (particularly for customers with older WHs), or increasing numbers of measures

installed in participant homes that reduce heated water consumption. While Georgia Power does not currently offer customers low-flow showerheads and faucet aerators along with the water heater wrap, these are being considered for the future depending on the results economic analysis. Auditors interviewed through the evaluation used their judgment to determine whether to inform customers about water-saving devices. If customers already had these, or had limited time and chose to focus on their specific billing issues, auditors did not inform customers about them. About 50% of survey respondents said auditors told them about low-flow options (see As shown in **Error! Not a valid bookmark self-reference.** RWH customers reported mixed results when asked about types of information auditors provided; 70% said their auditor discussed other Georgia Power energy-efficiency programs, 65% said they discussed how to adjust temperatures, and 52% said auditors discussed low-flow technology options. Fewer than 50% of respondents reported auditors did not discuss low-flow options, and 38% reported no discussions regarding how to adjust temperatures. About 30% said auditors did not discuss other Georgia Power programs. Interviews with auditors indicated that they tailor their discussion to the needs of each individual customer.

Figure 7-4). The program manager indicated auditors should tell customers about low-flow options.

7.3.3 Program Implementation

To evaluate program implementation effectiveness, the evaluation examined: program awareness, management, data tracking tools, and communication quality. Table 7-7 presents researchable questions associated with program implementation.

Table 7-7: RWH Program Implementation Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the marketing/ enrollment process effective?	• Is the free in-home audit an effective mechanism for drawing in the target number of customers? • Are HEIP participants and free in-home audit customers aware of the opportunity to participate in the RWH program? • Are HEIP contractors aware of the water heating program?	7.3.3.1
Is the implementation process effective?	• Are program management tools in place and being used • Is data tracking effective? • What percentage of audits results in direct installation of water heater blankets and pipe insulation?	7.3.3.2
Did the program have clear goals and objectives?	• Were program goals and objectives communicated to and understood by Georgia Power staff and implementers? • Were revisions to program goals and objectives communicated to and understood by Georgia Power staff and implementers? Do Georgia Power auditors know what their regionals goals are? • What criteria do auditors use to determine if blankets and insulation be installed?	7.3.3.3

7.3.3.1 RWH Program Marketing and Enrollment

As discussed in Section 7.3.2.1, participants primarily learn about the RWH program through the free in-home audit. Outside of the audit, active marketing of the RWH program does not take place, and program staff members report the call center does not actively market the RWH program. While the program did not achieve goals in 2011, as of June 2012 it is achieving or exceeding them for this year, following more aggressive communications with auditors and region customer service managers regarding program goals at the start of 2012. This suggests communicating goals to auditors (rather than sufficient enrollment through the call center) played an important role in meeting goals.

Georgia Power expressed interest in knowing whether HEIP customers were coming from the RWH program, and whether contractors knew of the RWH program. The evaluation team asked HEIP and RWH customers whether they heard about the other program, and asked HEIP contractors whether they knew of RWH. The evaluation reviewed HEIP and RWH program databases to determine how many customers took part in both programs. Also, the team asked RWH survey participants whether auditors told them about other Georgia Power programs.

Only one of the 36 bundled HEIP customers surveyed had learned about HEIP through RWH; none of the 70 unbundled HEIP customers surveyed learned about HEIP through RWH. Of RWH customers

surveyed, one respondent of 63 learned about the RWH program through HEIP. Of 515 unique participants in the RWH program, 10 (2%) participated in the HEIP program.[37]

HEIP contractors exhibited high awareness levels of the free in-home audit program (see **Error! Not a valid bookmark self-reference.**). and some awareness of the water heater wrap (see Figure 7-10). Significantly more participating contractors than nonparticipating contractors knew of the audit program (93% vs. 73%). About one-third of contractors knew of the free water heater wrap, with no significant differences between participating and nonparticipating contractors.

[37] Of 4,975 free in-home audits performed, 94 (2%) overlapped with the HEIP program.

Figure 7-9: HEIP Contractor Awareness of In-Home Audits

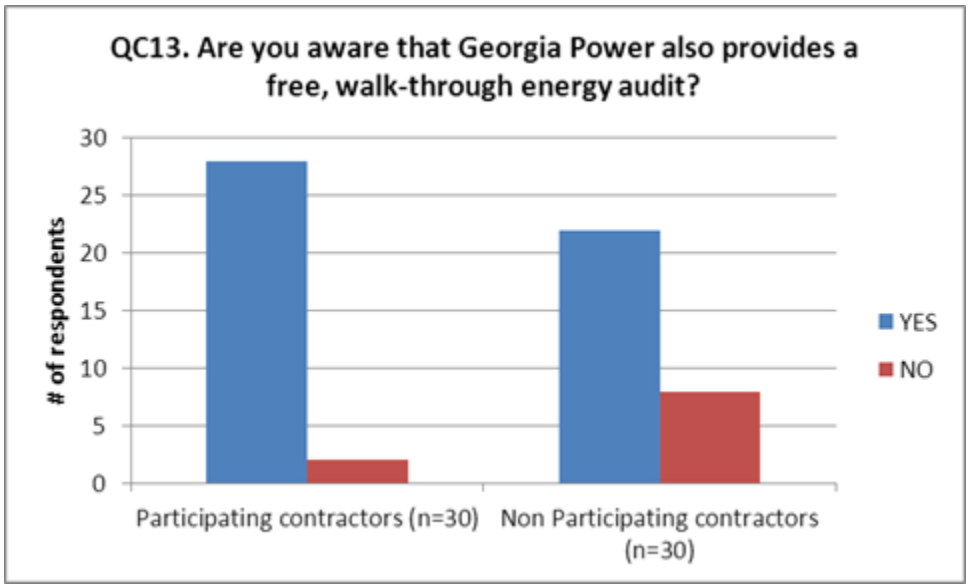
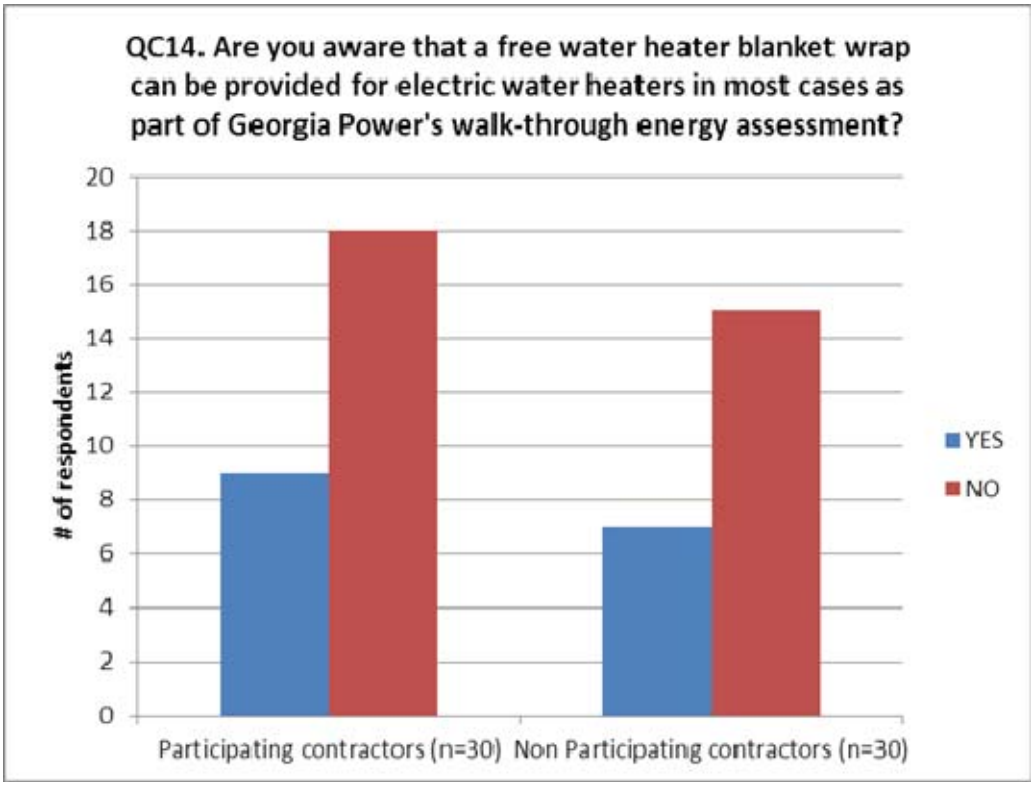


Figure 7-10: HEIP Contractor Awareness of the RWH Program



7.3.3.2 Program Management and Data Tracking

Program Management

As the smallest program in Georgia Power's energy-efficiency portfolio, RWH does not require much program management time. Georgia Power brought on board a new program manager last fall; the new manager responded to early evaluation findings, and met with regional representatives to discuss water heater wrap installations. He also began providing Region Reports in January 2012 to communicate program goals and year-to-date figures. Due to these activities, the program manager reports tank wrap installations remain on target for 2012.

Since the mid-term evaluation, RWH's program manual has been drafted and updated. It includes a summary, work scope (customer education, customer eligibility, and process participation steps), and a description of performance goals and metrics, with reference to 10-year program plans filed with GPSC to obtain specifics on goals and costs. The manual update also includes a discussion of how HEIP interacts with RWH.

The RWH program manual is missing several components usually included in a utility program manual, including: program logic, participation goals, enumerated measures and savings, roles and responsibilities of each individual implementing the program, QAQC, customer support, a flow chart with timing (e.g., scheduling appointment within 48 hours), and a budget.

Data Tracking

The RWH data tracking process changed during 2011. Initially, auditors tracked audit requests and recommendations using a paper-based system. This data would be entered into Georgia Power's customer account system database (CSS), and an extract of this information populated the in-home audit database, which also contained information about water heating jackets and CFL bulbs distributed. In mid-2011, all Georgia Power audit activities began utilizing a new, automated data tracking system utilizing an iPad. The automated system allows automated data entry, immediate sharing of audit results with customers, and e-mailing recommendations to customers. This information can then be uploaded to the CSS and audit database.

Currently, EERT pulls specific data fields from the audit database to track RWH progress (see Table 7-8). Updated every day at midnight, EERT uses an automated system to identify successful data uploads. The audit database did not include a column for the type of fuel (gas or electric), at the time of the evaluation. This information is important to understanding RWH's participant intake potential from audits, as gas-fired water heaters do not receive blankets, as according to Georgia Power it will be included in the EERT.

Auditors seem to be pleased with the new automated system and its benefits; when interviewed in late 2011, they said liked it, but were still getting used to it. They indicated that, while management provided good support of the overall program, no mechanism existed to provide managers with feedback regarding ways to improve the data collection system's design. While auditors occasionally

provide feedback regarding the tool, there is no specific feedback process. For example, auditors indicated initial issues with connectivity that prevented them from uploading results on site. Subsequent software adjustments allowed the program to upload, provided strong enough signals could be located.

Table 7-8: RWH EERT Data Collected

Customer Information	Program/Process Information	Measure Information
Customer Account Number	Status	Measure Type
Customer Name	Enrollment Date	Measure Quantity
Enrollment Op Center	Auditor Name	
	Region	

7.3.3.3 Communication of Goals

Auditors' Understanding of Goals

Mid-term evaluation interviews suggested auditors received inconsistent communications about RWH program goals. Some auditors knew of their specific region's goal, others did not. During the same interviews, some auditors said they did not know that raising customers' energy-efficiency awareness is a specific RWH program goal. They reported audits primarily responded to customer calls and complaints and, depending on customer needs, time, and interest, auditors decided whether a quick or full assessment was appropriate.

Program management confirmed that auditors may use their judgment in responding to customer calls. Customers can enter the program if requesting the audit or referred into the program after making a complaint. If falling into the latter category, the auditor may not perform a full in-home audit, but will attempt to inform customers about energy-efficiency opportunities.

Overall, auditors seem to understand Georgia Power's focus on customer satisfaction. Auditors said they rarely receive complaints, and almost always make contact within 48 hours of a customer call to schedule an appointment. Because they want customers to be satisfied, auditors adapt the audit to fit each customer's needs, speeding them up for customers in a hurry, or expanding on specific issues. Auditors reported that about 70% of audits focused on specific customer issues or complaints. Auditors understood criteria required prior to installing the water heater blanket; the RWH program manual also clearly established these criteria.

Auditors use the following criteria to determine whether or not to offer a water heater blanket:

- Electric power only,
- Accessibility,
- No visible signs of rust or leaking,

- No un-floored rooms (e.g., attics),
- Not in conditioned spaces, or
- Wires must be covered.

Communication of Goals through Auditor Training and Reports

All Georgia Power auditors attended an intensive energy audit training program in mid-2011. This five-day, intensive program covered: billing issues and questions, technical aspects of carrying out energy audits, ways to respond to customer questions, understanding of a whole house as a system, audit technology and tools, safety, and Georgia Power executives' expectations of audit staff performance. While the training materials included sections on Energy Efficiency Best Practices, the water heaters section did not address the RWH program or the free wrap. The "Billing Resolution" section presents information on DSM Residential, which includes a set of energy audit expectations, a list of the energy-efficiency DSM residential programs, and highlights DSM programs relevant for each issue, and new technology (e.g., Marathon/High Performance Water Heater, conversion to electric ENERGY STAR appliances).

Georgia Power took several steps to better communicate RWH goals to auditors in 2012:

- The project manager met twice with regional team leaders, about six times with the sales team, and once with regional customer service managers.
- During the regional team meetings, the project manager emphasized and explained program goals.
- The project manager delivers monthly reports to all regions, showing their status in regard to their goals.
- Water heater wrap goals have now been shared with each Region.

Georgia Power now uses regional meetings to provide an overview of the entire energy-efficiency portfolio, and to bring regional staff up-to-date on changes implemented or forthcoming.

As of July 2012, all regions remained on track to meet (West and Metro East) or far exceed goals (particularly Northwest, Northeast, Coastal, South and Central regions).[38]

7.3.3.4 Response to Recommendations from the Mid-Term Evaluation

Georgia Power immediately addressed the following, initial, interim evaluation recommendation:

- Take steps to ensure consistent and effective RWH program delivery across the service territories by finalizing the program manual, communicating goals more clearly to auditors, or considering revisiting regional targets

As noted, the Program Manager now clearly communicates program goals to regional staff.

[38] Georgia Power's July 2012 Energy Efficiency Program Updates, Energy Efficiency Organization.

7.3.4 Freeridership and Spillover

7.3.4.1 Freeridership

After conducting participant surveys, the team converted responses into a freeridership score for each participant, using the matrix approach described in the previous freeridership methodology section. Each participant's freerider score was derived by translating their responses into a matrix value, and then using a rules-based calculation to obtain the final score.

Table H–7 (in Appendix H) lists five survey questions, their corresponding response options, and values to which they were converted (in parentheses). "Don't know" and "refused" responses were converted to a "partial" matrix value.

Table H–8 (in Appendix H) shows unique response combinations from the RWH participant survey, freeridership scores assigned to each combination, and the number of responses for each combination.

Averaging all respondents freeridership scores resulted in a 1% freeridership estimate for the RWH program, overall.

7.3.4.2 Spillover

Table7-9 displays additional measures residential participants installed that qualified as spillover, and where the team could quantify savings estimates. However, due to the RWH program's implementation alongside the in-home audit program, it proved difficult to state definitively whether spillover resulted from experience with the RWH program or the audit. In fact, spillover more likely resulted from recommendations made by the auditor.

Table7-9: RWH Spillover Measures*

Measure	Quantity	Per Unit kWh Savings	Total kWh Savings
Central A/C	2	619	1,238
CFLs	25	71	1,775
Clothes Washer	1	360	360
Air sealing	1	1,010	1,010
Refrigerator	1	161	161
Total	-	-	**4,544**

* Survey questions were specifically worded to ask customers for actions taken outside of the GPC programs.

Table7-10 provides spillover estimates for the RWH program. The estimate has been calculated by dividing total spillover kWh savings attributable to the program (obtained from surveyed participants) by kWh savings associated with water heater wraps received in the same survey participant sample.

Table7-10: RWH Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover % Estimate
4,544	37,038	12%

7.3.4.3 NTG Estimate

Using the (NTG = 1 – Freeridership + Spillover) equation previously specified, the program's NTG ratio is 111%, as presented in Table7-11.

Table7-11: RWH Program NTG Estimate

Freeridership Ratio	Spillover Ratio	NTG Ratio
1%	12%	111%

7.4 PROGRAM CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been drawn from observation and analysis of data collected in 2011, and from surveys conducted in 2012 for 2011 participants. While the evaluation did not intend to analyze the 2012 program, recommendations from last year have been implemented in 2012, and seem to have improved regional results.

The program cannot meet all regional goals without clearly communicating those goals to auditors. Customer enrollment through the audit program obtained a sufficient pool of potential RWH participants; however, 2011 regional variability suggests auditors did not promote water heater wraps consistently, and did not achieve goals consistently.

Recommendations:

- *Continue distributing monthly reports, and maintain efforts to update program information through communication to regional representatives, and at all regional meetings, as initiated in 2012.*
- *Provide the RWH program manual to all auditors; clarify and expand on roles and responsibilities in the program manual.*
- *Include information about customer satisfaction postcards in the program manual.*
- *If Georgia Power needs to increase program participation, it should consider promoting the free wrap on its Website, energy audit bill inserts, and the call center.* Customers should be informed that wraps can only be provided under appropriate conditions.

The RWH program essentially serves as a measure, rather than a full program.

Recommendations:

- *The WH wrap should be included in the HEIP program as soon as possible, preferably beginning in 2013.* Customers could still receive wraps from an auditor, but the measure should be included under HEIP, rather than considered separately.

While Georgia Power considers cross-marketing between HEIP and RWH a good idea, little cross-marketing appears to take place.

Recommendation:

- *Georgia Power should take more explicit steps to inform HEIP customers about the free water heater wrap, and to make certain all customers receiving the wraps receive HEIP materials and follow up about the program.*

The program could increase savings by providing additional free measures. Savings associated with water heating can be achieved by reducing water flow. The logic chart suggests customer reluctance to reduce flow, and survey results show auditors do not consistently discuss this option. Often distributed with weatherization kits, low-flow devices can yield additional energy-savings opportunities, and can be distributed to gas as well as electricity customers.

Recommendation:

- *Georgia Power should evaluate costs and benefits of including low-flow showerheads and faucet aerators as optional giveaways.* Auditors can discuss benefits, and let customers choose whether they want these measures installed. Georgia Power will need to consider how more efficient hot water use will impact savings calculations.

The new EERT database contains key information needed to effectively track basic progress in WH wrap installation by region and by auditor. However, Georgia Power should consider adding a few additional data fields to track RWH indicators within the in-home audit program.

Recommendations:

- *Include RWH-specific questions on the audit leave-behind customer satisfaction postcard, such as whether the auditor informed customers about: other Georgia Power programs, low-flow water saving devices, high-efficiency equipment, and other options.*
- *Consider adding the following fields to the RWH EERT data tracking system to more closely monitor customer awareness and auditor education activities*:
  - Customers' information sources about the water heater wrap.
  - Was a water-heater wrap recommended? (e.g., all criteria fit).
  - Was the customer informed about: low-flow devices, energy-efficiency programs, HEIP in particular and other energy-efficiency opportunities?

8 REFRIGERATOR RECYCLING PROGRAM

8.1 PROGRAM OVERVIEW

The Refrigerator Recycling Program (RRP) offered customers free pick-up and a $35 incentive, for 2011, to customers to retire their operating old, inefficient, secondary refrigerators or stand-alone freezers. JACO Environmental implements the program for Georgia Power. Each customer may have two units (either refrigerators or freezers) picked up per year from an address; only secondary units are eligible. Each unit must be in working condition, owned by the customer, and between 10 and 30 cubic feet in size. In 2011, Georgia Power's goal was to collect 7,418 units.

8.2 EVALUATION OBJECTIVES AND METHODOLOGY

8.2.1 Research Questions

In addition to overarching evaluation objectives presented in Section 2.2.1, the following list presents program-specific research questions addressed in this program evaluation:

- Does the program, as implemented, reach its participating and energy savings goals?
- Are customers happy with the program and implementer?
- What can be done to increase participation?
- What happens in the refrigerator recycling market, outside of the program?
- Do marketing resources and selected marketing channels reach appropriate audiences?
- Is the incentive amount sufficient to encourage program participation?
- What additional marketing channels might Georgia Power and JACO use to reach customers cost-effectively?
- Has recruitment been effective, attracting the desired number of participants?
- Have program goals and objectives been communicated to and understood by Georgia Power staff and implementers?
- Have program processes been revised to address recommendations from the pilot evaluation, minimizing dropouts and bottlenecks, and maximizing participation?

8.2.2 Data Collection Methods

8.2.2.1 Research Activities

Table 8-1 presents an overview of research activities carried out through the program process evaluation. Some activities, conducted in Fall 2011 as part of the initial process evaluation, have had information updated possible in 2012, upon receipt of new materials or data. Table 8-1 and Table 8-2 provide a full list of materials reviewed. The team surveyed 2011 participants and cancellation customers in June 2012. Cancellation customers are those who initially signed up, but then dropped

out of the program before the unit could be picked up. The participating customer list derived from Georgia Power's program database and the cancellation customer list from JACO's records.

Table 8-1: Refrigerator Recycling Program Research Activities

Research Activities	Fall 2011	Spring 2012
MATERIAL REVIEWS		
Program Database	•	•
Program Materials	•	
Marketing Materials	•	
INTERVIEWS		
Utility Program Manager	•	•
Utility Database Manager	•	
Implementation Staff	•	
Market Actors	10 Haulers 10 Retailers	
SURVEYS		
Participating Customers		70
Partial Participating Customers		70

Table 8-2: Refrigerator Recycling Program List of Materials Reviewed

Type	RRP Program Documents Received	Fall 2011	Spring 2012
Program Material	Program Description	•	
	Logic Chart	•	
	Process Flow Chart	•	
	JACO QAQC Protocol		•
	Program Implementation Manual		•
Reporting	1st Quarter Public Service Commission Report	•	
	EE Program Performance Results through April 30, 2011	•	
	Jan – June 2011 JACO monthly reports to Georgia Power	•	
	Full year 2011 JACO reports		•
Marketing	Marketing Schedule (JACO)	•	
	Marketing Plan (Schedule) Update		•
	Green Energy Facebook Site with posts about RRR program	•	
	Georgia Power tweet about RRR program	•	
	Local office flier and poster (Old style)	•	
	Local office flier and bill insert (New Style)		•
Surveys	Participant Survey for Pilot Program	•	
	Nonparticipant Survey for Pilot Program	•	
	Cancellation Survey for Pilot Program	•	
Past Evaluations	March, 2011 Draft Process Evaluation on Pilot Program	•	
	JACO Operational Changes post Evaluation	•	
Communications	Local Office Letter dated May 17, 2010	•	
Goals	2011 Expected MWH Savings Forecast – Excel Table	•	
	JACO Monthly Goals included in reports to June 2011	•	
Database	JACO Customer Call-in Data 2010-July, 2011	•	
	JACO Call-in Data Database Dictionary	•	
	JACO Monthly performance tracking data	•	
	JACO Annual Tracking Data for 2011 and drop out data		•
	EERT Data Extract		•

8.2.2.2 Sampling

The team drew upon a complete database of participating RRP customers to implement the participating customer survey, and JACO's list of customers who dropped out of the program for the cancellation customer survey. Sampling targeted 70 completes for each survey to achieve 90/10 confidence and precision levels. While Nexant originally planned to survey the general population to identify non-participating customers who recycled or removed a refrigerator during 2011, it proved much harder to identify these customers in Georgia than in comparable areas. (It is possible that Georgia Power's customers replace refrigerators and freezers at a lower rate than do other areas.) The team the team revised its approach to focus on program dropouts, defined here has "cancellation customers."

Because these cancellation customers knew about the program already, the survey did not ask this group about program awareness or about why they had not turned to Georgia Power to dispose of their appliance. These customers were able to offer more detailed feedback on their program

experiences, on why they dropped out, and on whether they would participate in the program at a later date. Table 8-3 provides details on the survey sample and number of completes.

Table 8-3: Refrigerator Recycling Research Activities

Survey Activity	2011 Population	Sample Frame	Number of Completes
Participating Customers	6,642*	366	70
Cancellation Customers	1,946**	262	70

* Based on the EERT data extract for Jan-Dec 2011.

** Non-qualifying, nonworking units or homes difficult to access due to road conditions were removed from the original population.

8.2.3 NTG Analysis

The Refrigerator Recycling program's NTG contains three components: freeridership, replacement, and spillover.

Assessing freeridership can prove challenging for appliance recycling programs, which seek not only to remove inefficient appliances from customers' homes, but also to remove them from the utility grid. Thus, freeridership must be based on participant reports of what would have happened to the appliance in the program's absence.

Table 8-4 presents four possible scenarios for participating appliances, not recycled through the program. Scenarios 1 and 3 indicate freeridership; Scenarios 2 and 4 do not.

Table 8-4: Potential Freeridership Scenarios

Scenario Independent of Program	Scenario	Indicative of Freeridership
Unit Kept but Not Used	1	Yes
Unit Kept and Used	2	No
Unit Discarded and Destroyed*	3	Yes
Unit Discarded, Transferred, Used	4	No

* Note that while Scenario 3 would have led to the destruction of the appliance, the unit probably would not have been decommissioned in the environmentally responsible manner undertaken by the program. Consequently, while energy impacts may have been equivalent, larger environmental and societal impacts likely differ.

8.2.3.1 Scenarios 1 and 2

For participants reporting they would have kept units, had they not participated in the program, the evaluator asked if they would have used the unit or stored it unplugged. Those who would have kept the unit but not used it would not have drawn electricity from the grid, and, therefore, indicated freeridership (Scenario 1). Those that would have kept the unit, and continued to use it could not be considered freeriders (Scenario 2).

8.2.3.2 Scenarios 3 and 4

Calculating freeridership associated with Scenarios 3 and 4 (in the program's absence, units would be discarded and destroyed, or units would be transferred to another owner) proved slightly more complex, as they included several different, hypothetical actions.

Table 8-5 presents participants' Scenario 3 and 4 responses, indicating actions participants claimed they would have taken, had the program not been available, and actions cancellation customers actually chose, rather than recycling their unit through the Refrigerator Recycling Program.

Table 8-5: Freeridership Scenarios 3 and 4

Hypothetical Method of Disposal in Absence of Program	Indicative of Freeridership
Sell it to a private party, either by running an ad or to someone you know	No
Sell it to a used appliance dealer	Possibly[39]
Give it away to a private party, such as a friend or neighbor	No
Give it away to a charity organization, such as Goodwill Industries or a church	No
Have it removed by the dealer you got your new or replacement appliance from	Possibly[40]
Haul it to the dump or recycling center yourself	Yes
Hire someone else to haul it away for junking or dumping	Yes

Induced replacement presents another NTG component for appliance recycling programs. This occurs when a non-freerider purchases a replacement unit due to the program. Surveys determined the percentage of participants fitting this profile.

Averaging freeridership ratio estimates for participating and cancellation customers resulted in final, measure-level freeridership ratios.

Analysis estimating NTG for recycled appliances used the following formula:

$$\text{NTG}=1-Freeridership\ Ratio+Spillover\ Ratio-Replacement\ kWh \times Induced\ Replacment\ Proportion$$

Where:

Freeridership Ratio = the proportion of program savings that would have occurred in the program's absence

Spillover = non-programmatic savings induced by the program, expressed as a proportion of gross savings

[39] Freeridership determination depends on information obtained from market retailer interviews concerning the reselling of refrigerators and freezers collected

[40] ibid

Replacement kWh = the deemed Unit Energy Consumption (UEC) for the average replacement unit, adjusted for part-use

Induced Replacement Proportion = the proportion of participants reporting they purchased a replacement unit due to the program.

8.3 KEY PROCESS FINDINGS

Overall, the RRP has been well-designed, functions effectively, and came close to (but, at 89%, did not achieve) its 2011 goal of 7,418 units recycled. Most customers expressed satisfaction with the program and participation levels have followed JACO's expected monthly trends, despite the program's 19% drop rate (somewhat high for refrigerator recycling programs). JACO program managers indicated an expected 14% to 17% drop rate, whereas similar programs nationwide have targeted or achieved less than 5% drop rates. Had the drop rate been 5%, Georgia Power would have achieved its goal. Cancellation customers indicated that they dropped out primarily either because the pickup schedule was not convenient or because they wanted to keep the appliance for themselves or a friend. The following section provides details on these findings. Appendix D presents detailed survey results.

8.3.1 Program Outcomes

The team evaluated program outcomes by looking at both overall customer satisfaction for participants and cancellation customers, and at the number of units recycled relative to the program's 2011 goals. Table 8-6 presents researchable questions relevant for the RRP, and corresponding sections discussing those research areas.

Table 8-6: RRP Program Achievement Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Are program process targets being met?	Is the program, as implemented, reaching its participating and energy savings goals?	8.3.1.1
Are customer satisfaction goals being met?	Are customers happy with the program?	8.3.1.2

8.3.1.1 Performance against Goals

Georgia Power set a goal of recycling 7,418 refrigerator or freezer units by the end of 2011. According to Georgia Power's EERT database, the program recycled 6,642 units (from 6,274 distinct participants), reaching 89% of its target. The program also had achieved gross energy savings of 89% or 7,320 MWh out of 8,167 MWh energy saving target.

JACO developed and tracked its own performance indicators (Section 0), and shared this information with Georgia Power through monthly and annual reports. In 2011:

- JACO reported no customer complaints.
- Overall, JACO met its pick-up window goal 93% of the time overall (for a goal of ≥ 95% of the time, achieved in April through to July and November through December).
- JACO met 99% of its incentive check processing time goal.

  At the mid-year evaluation, the team noted JACO set monthly targets different from Georgia Power's targets, although having the same annual goals. The report recommended these targets be aligned, reducing confusion when tracking progress. Follow-up interviews with the program manager indicated Georgia Power and JACO have aligned their monthly projections.

8.3.1.2 Customer Satisfaction with Program

Overall, customers expressed strong satisfaction with the program—more than 80% rating "very satisfied" for all categories, except rebate amounts (as shown in Only six customers reported being less than "very satisfied" with various program aspects. Three of these six thought by "recycle," the refrigerator would be rehabbed and reused, which they preferred (see Appendix D.1). One was dissatisfied because they thought the incentive was too low, and two expressed dissatisfaction with the amount time required to receive the rebate.

Finally, 81% of respondents reported being very likely to recommend the program to a friend or relative (see Appendix D.1), with another 12% somewhat likely, and only 2% being not at all likely to recommend the program.

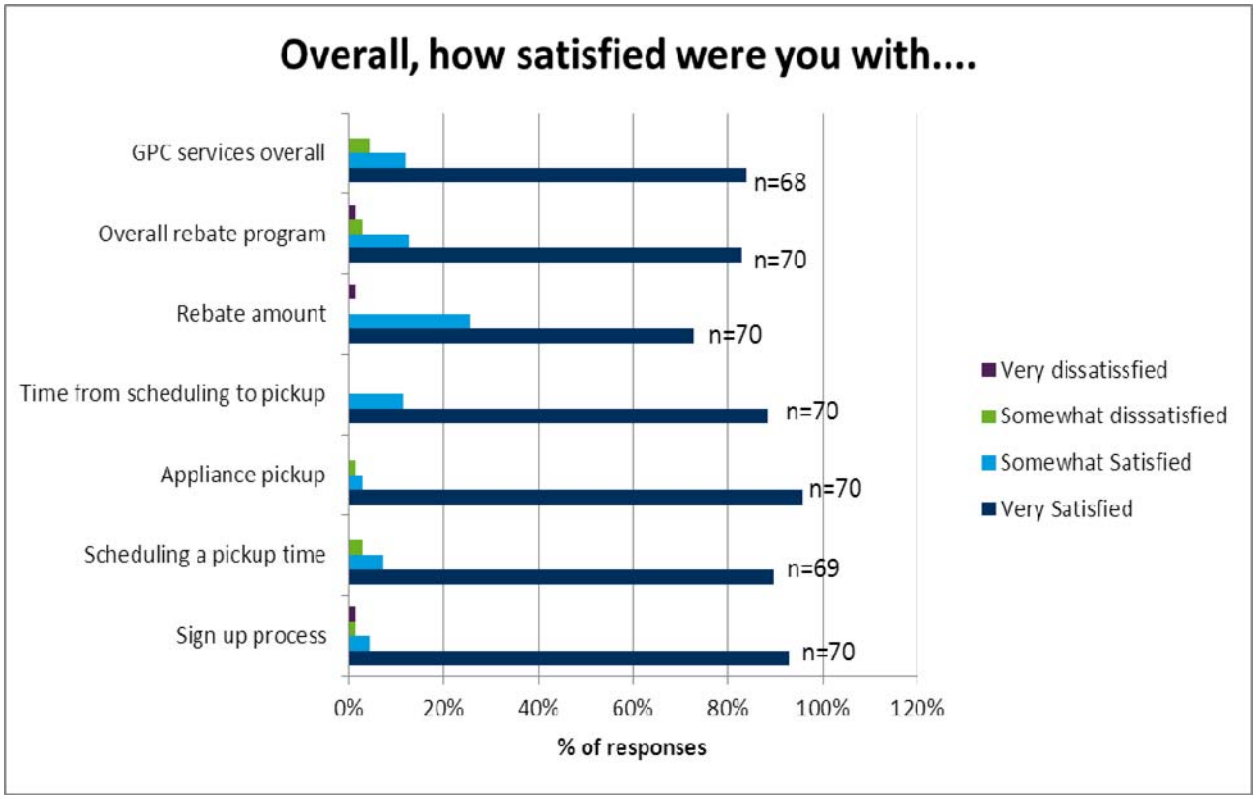
Figure 8-1). Nearly one-quarter of respondents reporting being less than very satisfied with rebate amounts. Still, about 85% (Figure 8-5) of customers said they would have participated without a rebate or with a lower amount. Respondents also overwhelmingly (close to 100%) said they received a call alerting them to the four-hour window, one to two days prior to pick-ups, and 100% said the pick-up crews came within that time.

Only six customers reported being less than "very satisfied" with various program aspects. Three of these six thought by "recycle," the refrigerator would be rehabbed and reused[41], which they preferred (see Appendix D.1). One was dissatisfied because they thought the incentive was too low, and two expressed dissatisfaction with the amount time required to receive the rebate.

Finally, 81% of respondents reported being very likely to recommend the program to a friend or relative (see Appendix D.1), with another 12% somewhat likely, and only 2% being not at all likely to recommend the program.

[41] Georgia Power is aware of this problem and clarified in 2012 marketing materials that the refrigerators are not being re-used.

Figure 8-1: Participating Customer Satisfaction



8.3.2 Program Design

Analysis of the program logic chart included determining ways to increase participation as a basis for evaluating program design. Surveys also asked for participants' views on how Georgia Power could improve the program. Table 8-7 presents researchable questions related to program design.

Table 8-7: RRP Program-Design Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the program design appropriate to meet goals?	• Does the logic chart reflect program design and as implemented?	8.3.2.1
	• What can be done to increase participation? • Is the incentive sufficient?	8.3.2.2

8.3.2.1 Program Logic

Section 3.1 presents a general review and discussion of logic models overall. The RRP logic chart accurately reflects the program as implemented and could be expanded to include additional elements normally used in a program logic model (see Section 3.1 and Appendix A for details).

Georgia Power's logic chart presents the program's objective, market barriers, strategies, expected short- and long-term customer behavior changes and market effects, and metrics for tracking progress. Converting this chart to a logic model would involve including information about program resources, activity outcomes, external forces, target markets and clear linkages between activities, outputs, and outcomes.

The program manager indicates that as part of program implementation, the program's logic is evaluated on a weekly basis; the program's cross-functional team members look for opportunities to improve performance, based on market response.

8.3.2.2 Program Participation

Customer Participation

Georgia Power carefully controlled its marketing efforts to prevent overshooting its goal earlier in the year. By early fall, the program manager increased marketing efforts as participation fell below anticipated levels. Underperformance in 2011 may have been affected by high cancellation rates (19%, after removing ineligible participants).

Georgia Power program staff considers regional cultural influences, such as the "cooling focused" and rural nature of Georgia's population, negatively affect program performance. According to Georgia Power program staff, these cultural influences make many customers unwilling to relinquish a second refrigerator; rural Georgians want cold drinks and need places to store food grown or hunted.

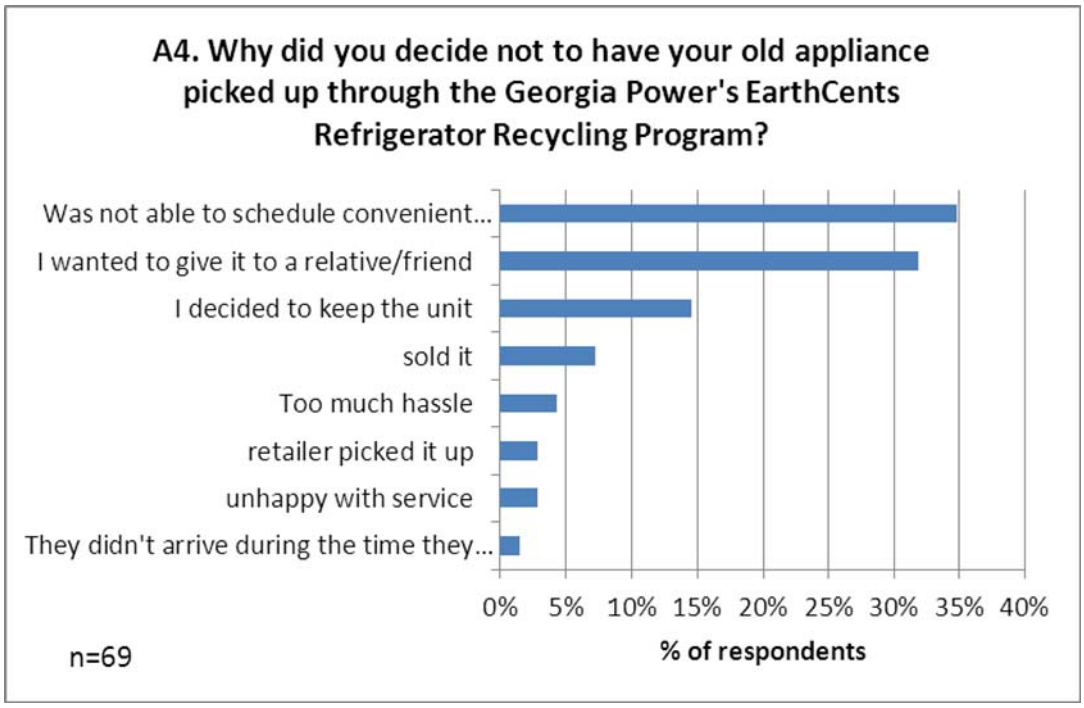
To control costs, the RRP program management team tracked and managed marketing efforts closely. In 2011, Georgia Power staff noted the $35 incentive level might be insufficient to achieve the program's target. When the program did not meet its 2011 goals, and continued to lag in the first half of 2012, Georgia Power increased the incentive to $50 per unit in July 2012, and program staff reports participation increased. Survey results (Figure 8-5) suggest that the incentive may not have been the primary motivator for 2011 participants; nearly 90% of participants say they would have participated if the rebate check was lower or not offered at all. Keeping in mind that a survey of participants tends to exhibit a "social desirability bias,"[42] Georgia Power should investigate this relationship in future evaluations.

JACO's tracking data indicated key reasons customers cancelled appointments in 2011 were due to missed appointments (23%), customers deciding to keep units (22%), or units no longer available for pickup (21%). Another 16% said they sold or gave away the unit. However, the 2011 cancellation customer survey found: 35% cancelled as they could not schedule convenient times, and 33% wanted to give the unit to a relative or friend (as shown in **Error! Not a valid bookmark self-**

[42] Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. Journal of Consulting Psychology, 24, 349-354.

reference.). Only 15% decided to keep the unit. Of dropout customers surveyed, 75% said they sold or gave away the unit they had intended to recycle through Georgia Power.

Figure 8-2: Reasons for Not Recycling Old Appliance Through Georgia Power RRP (Partial Parts)



The $35 incentive seems to have motivated program participants more than convenience; in contrast, convenience seems to be more important to the cancellation customers (41% vs. 13%, see Figure 8-3 and Figure 8-4). These results differ from the RRP pilot program evaluation findings. The free appliance pickup motivated more of those customers (32%); only 10% of that group said they participated to obtain the rebate. Differences in influence may result from timing and geography, the economy may prove a stronger motivator for the current population than for the 2009–2010 population, and the pilot was implemented only in Atlanta rather than throughout Georgia Power's service territory.

Figure 8-3: Reasons for Participants Choosing to Dispose of Unit Through Georgia Power RRP

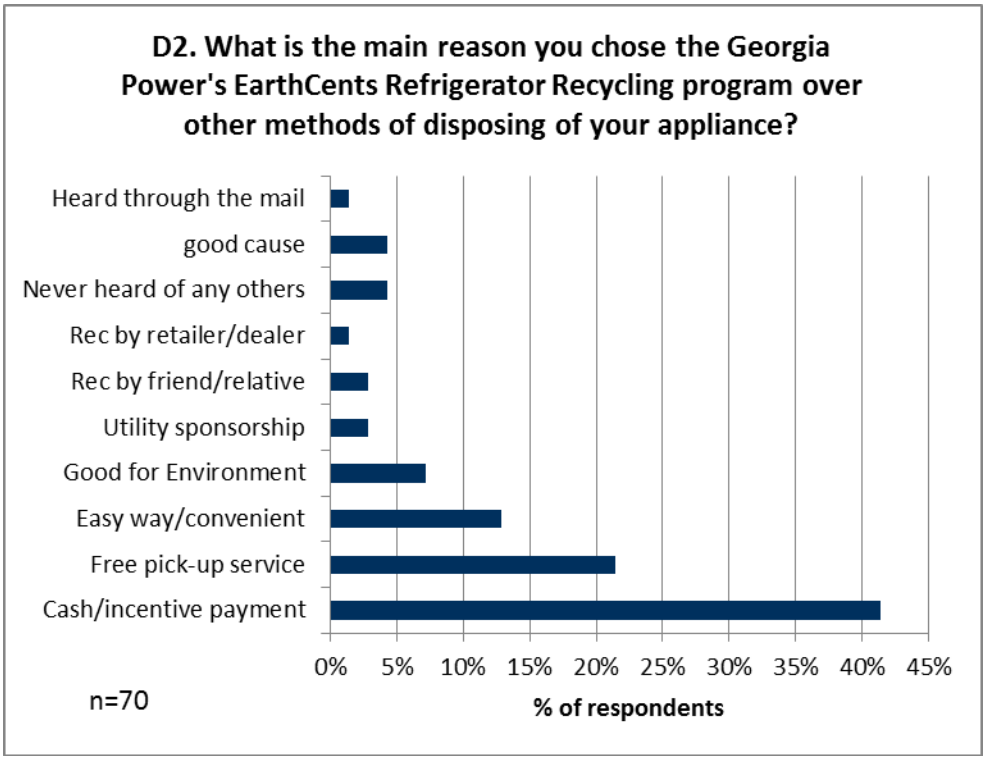
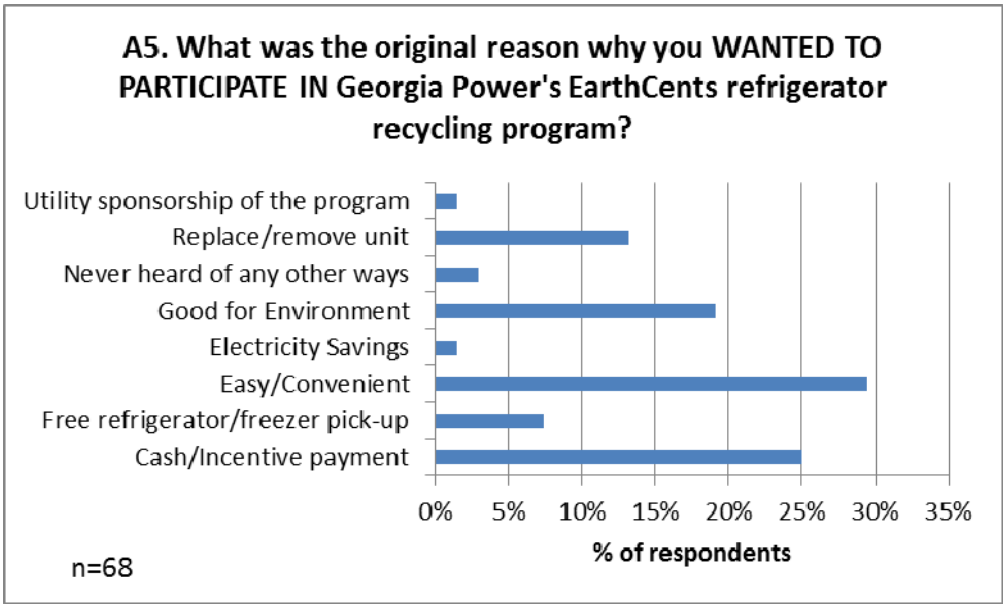


Figure 8-4: Reasons for Cancellation customers Choosing to Dispose of Unit Through Georgia Power RRP



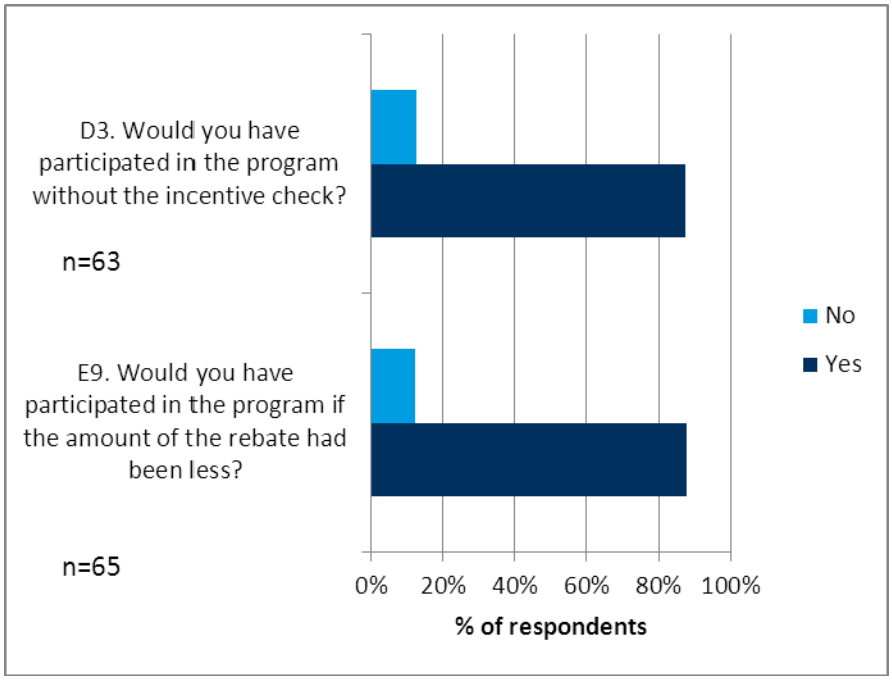
The survey asked all participating customers for RRP improvement suggestions (Appendix D). Of 10 responding, four said other appliances should be included (such as washers and dryers); two suggested Georgia Power misinformed customers about destination of refrigerators and should not

be doing so; and two had scheduling issues (more flexibility, smaller pick-up window, earlier pick-ups).

Rebate Level Influence

Survey questions investigated whether the dollar amount generated sufficient customer interest in appliance recycling among both participants and cancellation customers. The results suggest that these customers might have participated with a lower incentive or even, for some, without any incentive at all. Ninety percent of the cancellation customers surveyed say they would have participated at the $35 rebate level; the same number of participants said they would have participated had the rebate been less (see Figure 8-5). Most participants (>40%), however, also said the incentive was their main reason for participating (see Figure 8-3). Contradictions in these answers can be answered by referencing the tendency of people surveyed to answer in a socially desirable manner, referred to as "social desirability bias."[43]

Figure 8-5: Influence of Rebate Check on Participating Customers



A series of questions asked cancellation customers to determine the extent to which rebate levels might influence their future participation. Figure 8-6 presents these questions in one graph; most (88%, n=66) said they would participate at the $35 level. However, the fact that these customers dropped out of the program suggests the incentive was not sufficient to overcome other barriers, such as scheduling issues or the desire to keep the unit.

[43] Crowne, D. P., & Marlowe, D. (1960). A New Scale of Social Desirability Independent of Psychopathology. Journal of Consulting Psychology, 24, 349-354.

Figure 8-6: Cancellation customers Rebate Requirements

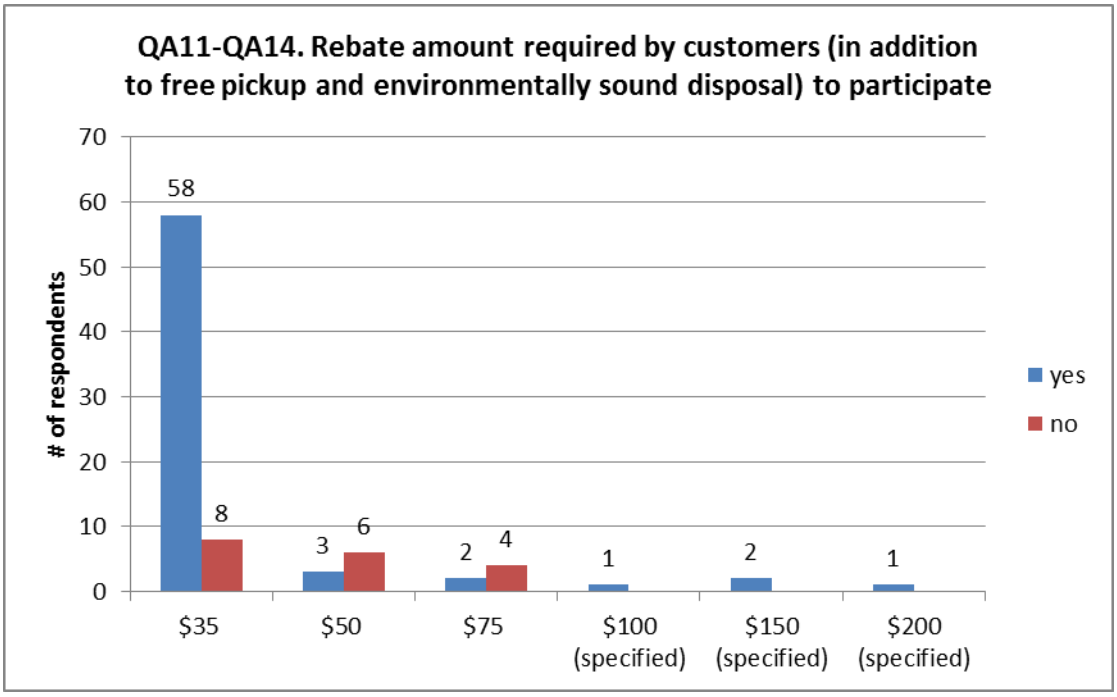
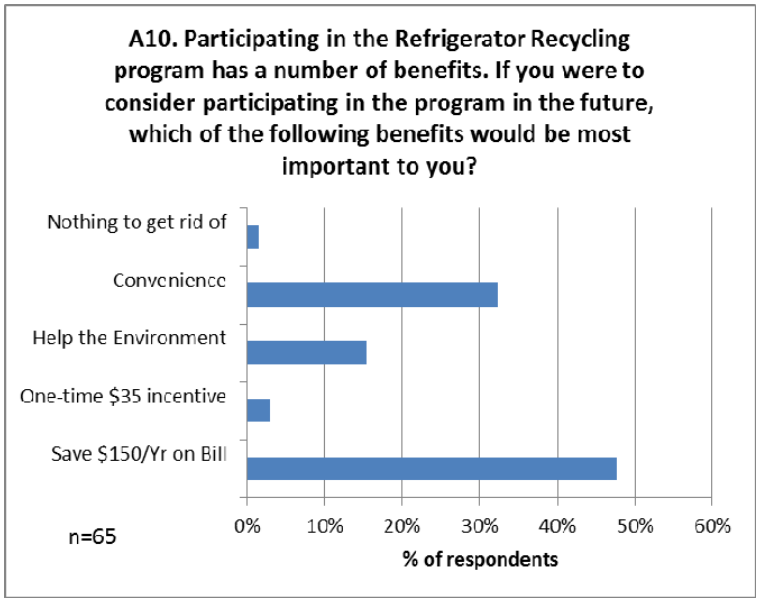


Figure 8-7 presents the four key marketing messages that Georgia Power uses to promote the program. Cancellation customers indicated their top reasons for future participation would be the potential to save $150/year on their bills (48%) and the convenience of having the appliance hauled away (32%). Other reasons included protecting the environment (16%) and receiving the $35, one-time incentive (4%).

Figure 8-7: Key Reasons why Cancellation Customers Would Consider Future Participation



The results presented in Figure 8-7 suggest that saving money is even more important for cancellation customers than is convenience, so Georgia Power's decision to focus its marketing on dollar savings seems to be right on target.

8.3.3 The Used Appliance Market outside of RRP

The evaluation team interviewed 20 market actors involved with hauling away or recycling refrigerators: 10 haulers, and 10 retailers picking up refrigerators when selling new ones. Of the haulers interviewed, three (30%) knew of the RRP, as did six retailers (60%). Haulers learned of the program from customers or bill inserts; retailers learned of it from Georgia Power representatives.[44] Table 8-8 summarizes the local used appliance market, as described by haulers and retailers interviewed.

[44] Georgia Power launched an appliance rebate program late in 2011. Since that time, Georgia Power has coordinated its RRP program marketing with the appliance rebate program marketing through APT, which implements the latter. Therefore, those "Georgia Power" representatives probably were APT employees visiting retailers to promote Georgia Power's appliance program.

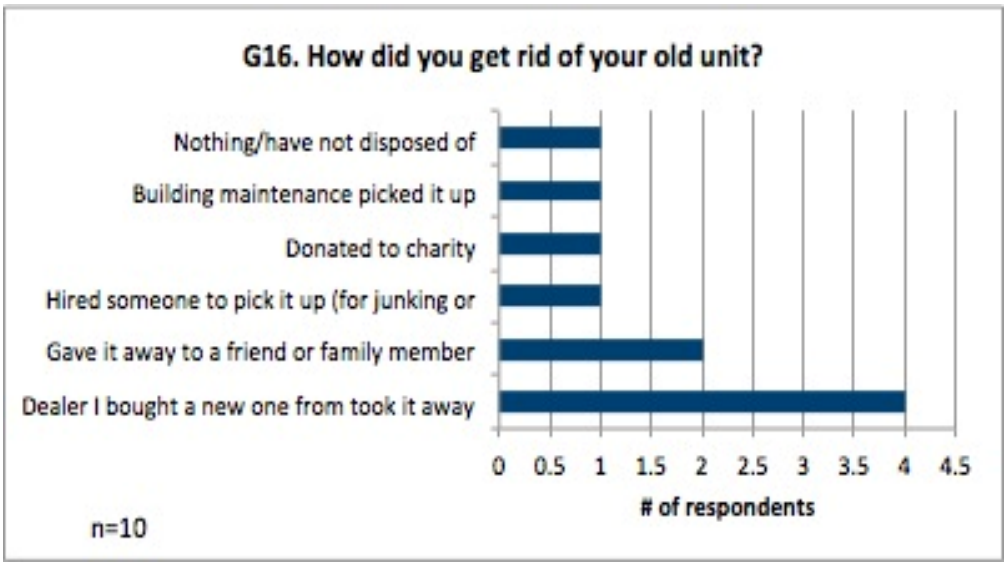
Table 8-8: Used Appliance Market Participant Characteristics

Question	Haulers	Retailers
Pick-up cost	• Nine out of ten charge a fee • Between $50-80 depending on size • 2 have arrangements to pick up from retailers	• 2 out of 10 charge a fee ($10, $50) • 5 subcontract it out
Destination of units	• 2 out of 10 resell or store working units • 1 company defines itself as green and recycles • 3 out of10 say hazmat removed	• 4 resell; the number of units resold ranges from 5 to 400 • 4 said nonworking units are recycled in some way; 6 do not recycle them
Annual number	• 6 pick up 100-200/yr • 1 picks up 110/month on average	• Annual pick up numbers range from less than 50 (2) to more than 500 (4)
Replaced? Secondary unit?	• Three said secondary units account for 10-25% • Three said secondary unit account for 60-75% of the units they pick up • Three had no idea	• Six out of 8 said 80-100% they pick up are replaced by new units • Two retailers estimate that number to be between 60-80% • Two did not respond to the question.

These results suggest that many people will pay to have their appliances removed.

As part of the lighting and appliance baseline survey, the evaluation team also asked a series of questions to randomly selected customers who had disposed of a refrigerator or freezer in 2011. Out of 216 surveyed, 16 customers disposed of their unit without the Georgia Power program. Though the small sample size did not yield statistically significant results, it provided some qualitative information. Of these 16 customers, ten customers provided information about how they disposed of their unit. Figure 8-8 shows these responses. .

Figure 8-8: How Baseline Customers Disposed of Unit



8.3.4 Program Implementation

Most of the evaluation team's research focused on program implementation. Findings follow below, organized by researchable questions. Because JACO implements the program, Section 0 discusses implementation effectiveness and implementation partner effectiveness together. Table 8-9 presents researchable questions related to program implementation.

Table 8-9: RRP Program Implementation Researchable Questions

Overarching Researchable Question	Program-Specific Evaluation Issues	Report Section
Is the marketing effective?	• Are marketing sources and selected marketing channels reaching the appropriate audience? • Is the program based on an accurate understanding of customer preferences and education? • What additional marketing channels might Georgia Power and JACO use to reach customers cost-effectively?	8.3.4.1 Conclusions Conclusions
Is the enrollment process effective?	• Is recruitment effective and attracting the right number of participants?	8.3.4.2
Is the implementation process / partner effective?	• Were program goals and objectives communicated to and understood by Georgia Power staff and implementers? • Are customers satisfied with the program implementer? • Are program processes being revised to address recommendations from the pilot evaluation to minimize dropouts and bottlenecks and to maximize participation	0

8.3.4.1 Marketing Channel Effectiveness

Program Marketing

Georgia Power works closely together with JACO to strategize and monitor marketing activities' impact over the course of the year. Georgia Power and JACO develop a list of marketing activities that they then review and adapt as needed to increase or decrease participation. It is unusual for the utility to be so highly involved in marketing planning and strategy; most utilities run similar programs through an implementer using a complete turnkey approach.

JACO markets RRP through a wide variety of channels, including bill inserts and print advertising. The latter, with a short exposure window, helps manage demand. To supplement and coordinate with JACO's efforts, Georgia Power markets the program through Website, social media, internal messaging, Web banners, on-line ad networks, and truck wraps. Georgia Power also uses APT to market the RRP to retailers.

Georgia Power designs its marketing materials to reach all Georgia Power residential customers, and does not target certain customer segments. Given that, as of August/September 2011, the program could not meet its participation goals, the program team added new marketing channels, such as: Pandora and Yahoo digital advertisements; newspaper advertisements in Augusta, Columbus, and Macon; and television and radio spots. Without this marketing boost, the program would have achieved only 55% of its goals.

In 2011, Georgia Power found customers harder to reach than anticipated, particularly rural populations. Program staff hypothesized that the 2011 marketing budget, at $20 to $30 per unit, may not have been sufficient. The 2009-2010 pilot program[45] achieved its goals, but spent $90 for marketing per unit picked up because they tested different marketing channels. Further, the pilot evaluation reported: "High marketing costs during the 2009 program year caused concern over the cost effectiveness of the project," and "… these high marketing costs are mostly attributable to market research efforts and the limited program rollout (Greater Atlanta area only), every effort should be made to stream-line future marketing efforts in order to free up budget."

Participant Awareness

The general population survey included an RRP awareness question, and the RRP surveys asked participants and cancellation customers about marketing materials they received. Thirty-one percent of the general customer population surveyed (n=216) knew of Georgia Power programs helping to save energy, though only five of those customers (2%) could recall the RRP program name on their own. When asked specifically about each program, however, 31 customers (14%) reported hearing of the refrigerator recycling program. Five customers (2%) learned about the program through bill inserts; three others learned of it through print media or Georgia Power's Website.

Sixty-six percent of participants (n=72) and 62% of cancellation customers (n= 66) learned about the program primarily through bill inserts (see **Error! Not a valid bookmark self-reference.** and Figure 8-10). The evaluation team has seen similar results across the country. One utility, for example reported that "bill inserts typically provide a spike in program activity, so the timing of bill inserts is coordinated to times when increased volume is needed." Participating customers found information from bill inserts, news advertisements and Georgia Power representatives more useful than that obtained from television or radio (see Figure 8-11). Most cancellation customers (83%) found the Georgia Power information they received to be very useful (see Appendix D.2).

[45] The pilot program began in August 2008; the pilot evaluation was based on the first two full program years: 2009-2010.

Figure 8-9: Participating Customers—How They Heard of the Program

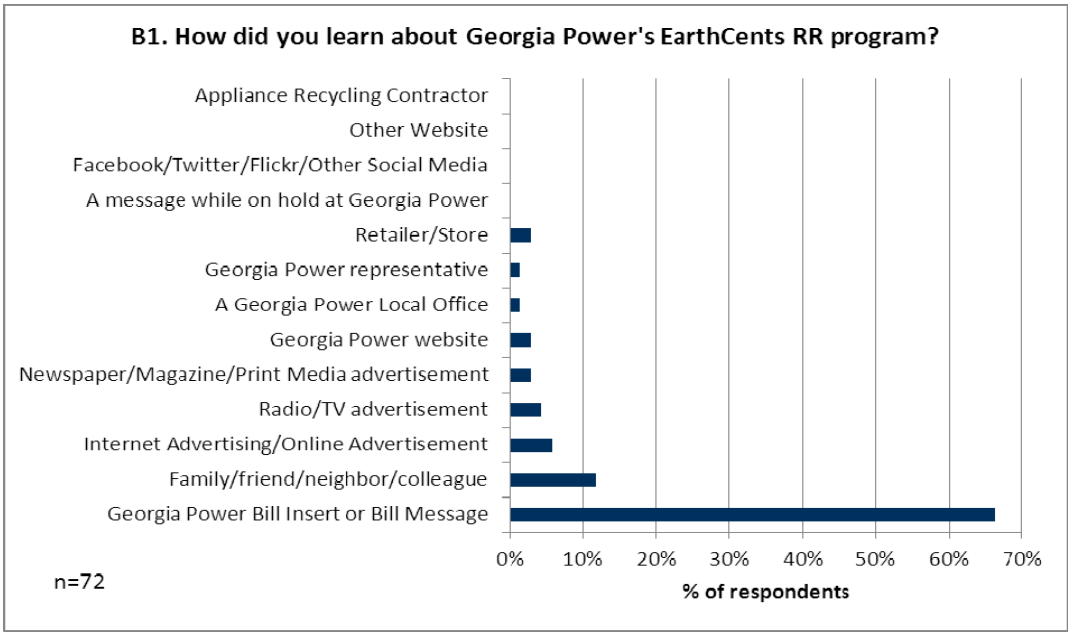
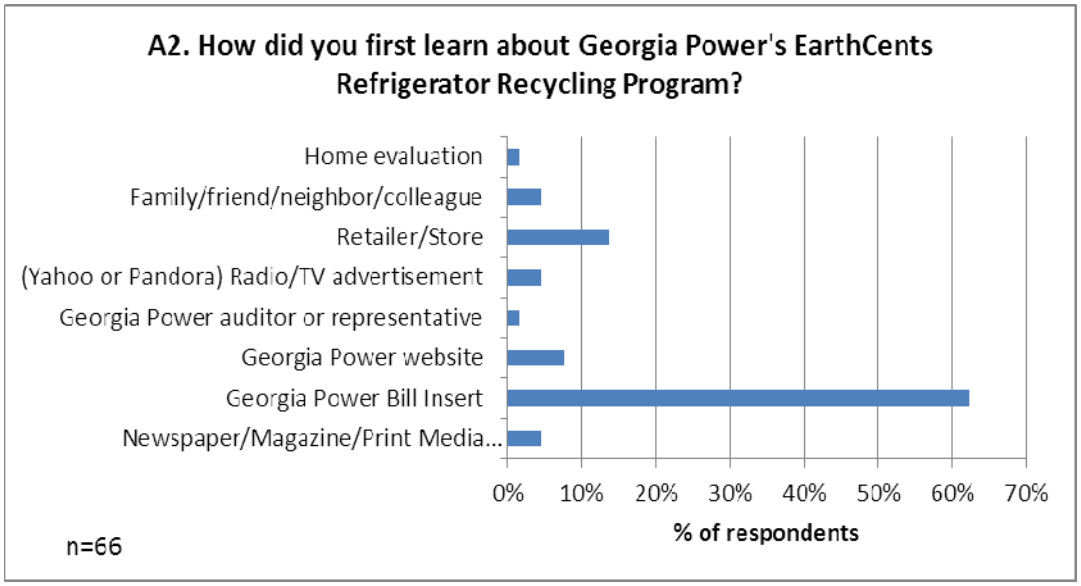


Figure 8-10: Cancellation Customers—How They Heard of the Program



Participant Suggestions for Improvements

A few participating customers offered suggestions for reaching more customers, focusing on television advertising (though the program already uses television advertisements). The 45 customers who found out through a bill insert ranked its usefulness very highly (3.9 out of 4).

Overall, participants (76%) and cancellation customers (52%) preferred Georgia Power to inform them of programs through bill inserts (see Figure 8-11 and Figure 8-12).

Figure 8-11: Participating Customers—Best Ways to Inform

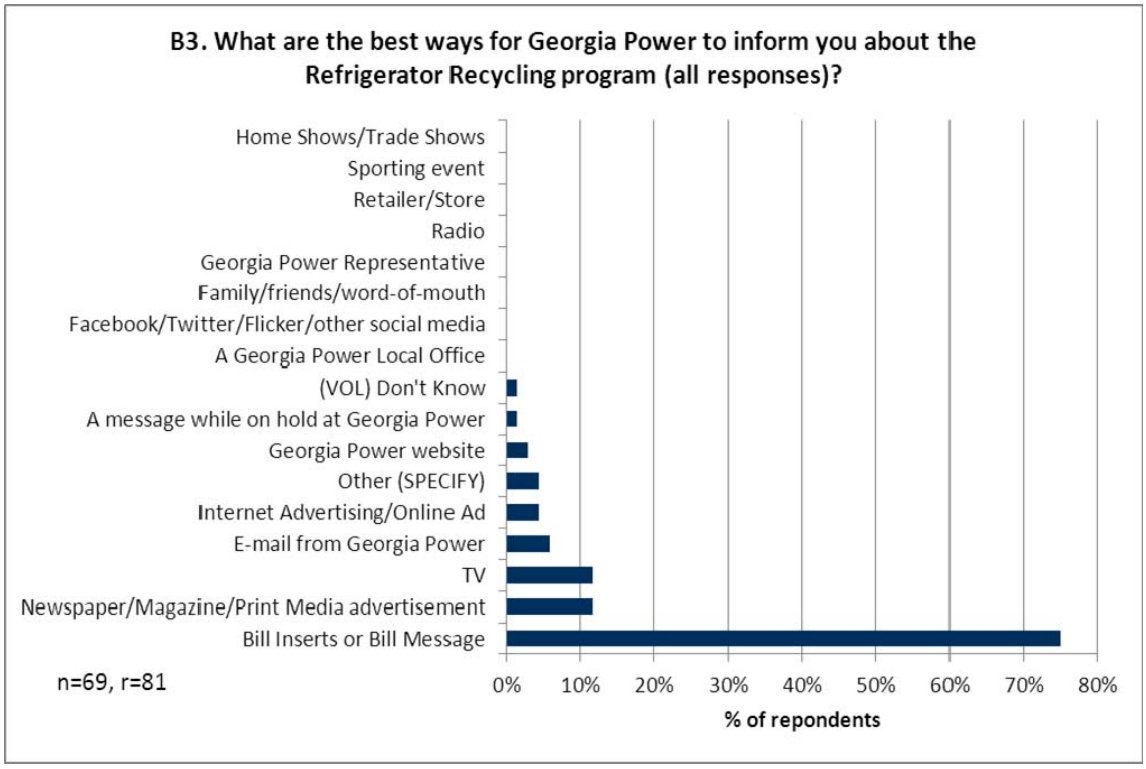
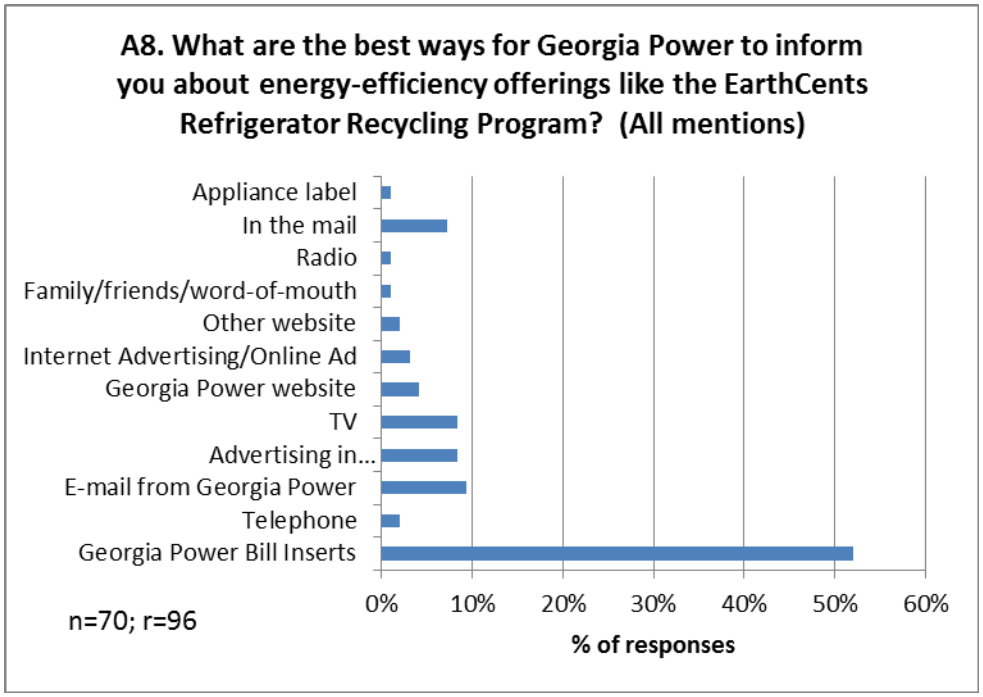


Figure 8-12: Cancellation Customers—Best Ways to Inform



8.3.4.2 Participant Recruitment and Retention

JACO recruited sufficient participants to reach the program's 2011 goals, but the program had an unusually high dropout rate of 24%, which may have contributed to its underperformance.[46] Had the program dropout rate been more consistent with JACO's national average (15%), the program would have hit 98% of its goal, rather than 80%. The information JACO provided to the 2009-2010 pilot program evaluation indicated that 32% of customers who signed up for the pilot program later dropped out.

Most 2011 program cancellation customers surveyed dropped out because they could not find convenient times to schedule appliance pick-ups. JACO's cancellation database for 2011 Georgia Power customers indicates that 38% of the cancellation customers dropped from the program because they decided to keep the unit, sell it or give it away, and 31% of this group missed or cancelled their appointment. Only 4% cancelled because the unit was not working or unqualified.

The evaluation team investigated cancellation reasons in similar programs across the country. The study identified several predominant reasons why customers cancelled pick up appointments: (i) the requirement that customers be present at pick-up made those appointments harder to schedule, (ii) the requirement that units be plugged in and working at the time of pick up led to cancellations in cases where customers did not have the unit plugged in, (iii) outdated customer information meant a lengthy customer verification process, so some customers dropped out, and (iv) some customers were confused about program requirements.

8.3.4.3 Implementation Performance

Implementation Partner Performance

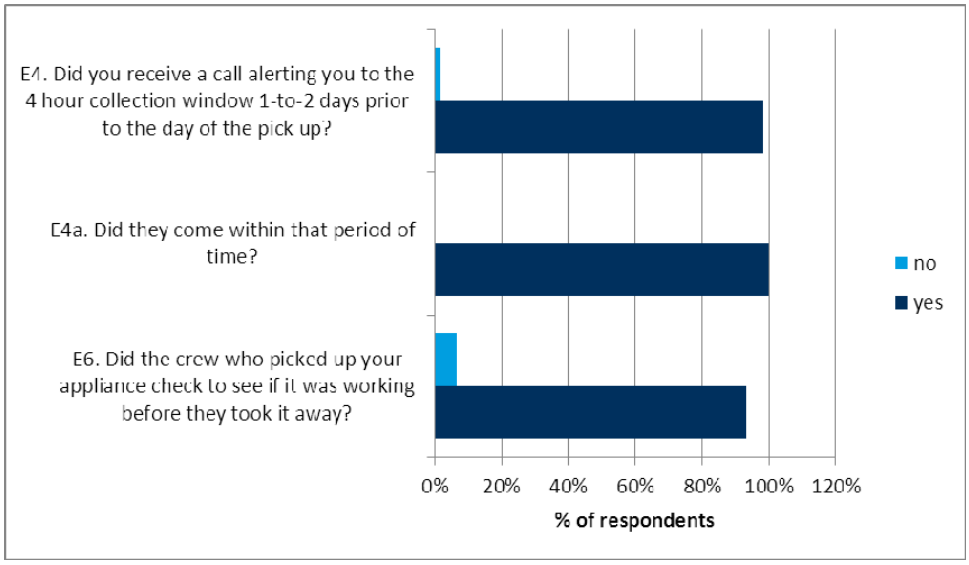
Georgia Power is satisfied with JACO's overall performance, including its reporting, its attention to customer satisfaction, and its understanding of program goals. Participating customers surveyed reported that, in almost all cases, JACO called within the 48-hour time period prior to pick-up, came within the four-hour window scheduled, and checked whether the refrigerator worked before removing it (see JACO's internal systems track and respond to customer complaints. JACO also tracks numerous self-imposed benchmarks, which include: call center wait times, call center responses to voicemails and e-mails, number of missed four-hour pick-up windows, how many incentive checks are processed within four weeks, appliance pick-up wait times, complaint numbers, and complaint response times. JACO's management staff regularly follows drivers to monitor driver safety, and JACO uses a "secret shopper" to test its call center quality. JACO calls 10% of the first 700 customers whose appliances have been picked up each year to determine customer satisfaction.

[46] The team calculated a 24% dropout rate dividing total number signed up for unit collection by the number who cancelled. Cancellations were determined by removing the categories: "could not locate, no answer"; Non-qualify size"; "non-working unit"; "no clear safe path for removal"; "rescheduled"; "unit quit working". When including all participants who dropped out, the dropout rate is still 24%. The pilot evaluation exhibited a dropout rate of 32%, using the methodology that included all units.

Figure 8-13). JACO provides Georgia Power with information to help them understand progress, including a biweekly narrative and a "changes at a glance" report, which contains JACO's assessments of program trends.

JACO's internal systems track and respond to customer complaints. JACO also tracks numerous self-imposed benchmarks, which include: call center wait times, call center responses to voicemails and e-mails, number of missed four-hour pick-up windows, how many incentive checks are processed within four weeks, appliance pick-up wait times, complaint numbers, and complaint response times. JACO's management staff regularly follows drivers to monitor driver safety, and JACO uses a "secret shopper" to test its call center quality. JACO calls 10% of the first 700 customers whose appliances have been picked up each year to determine customer satisfaction.

Figure 8-13: Participating Customer Feedback on JACO Scheduling and Pickup



Program Management and Communications

Georgia Power takes responsibility for internal management, communications, and program tracking, and works closely with JACO on program marketing. Georgia Power staff has found the RRP program to be challenging for both internal and external reasons. Externally, program staff believes RRP is hard to sell because so many Georgia Power customers do not want to give up their second refrigerator or freezer.

Internally, project staff found it challenging to work with non-project GPC staff whose goals do not tie directly to energy-efficiency program success. Program staff also found it time-consuming to communicate program changes to the full range of Georgia Power internal stakeholders.

The RRP program implementation manual provides an overview of the program, and explains how the program should work. It does not, however, contain typical elements of a more comprehensive program implementation manual, such as providing guidance to the program team regarding

program implementation. The program has relied on JACO's experience and management guidelines to assure smooth implementation. It is important for utilities to keep internal program manuals to document all responsibilities, processes and strategies and to ensure no loss of institutional memory in the case of unexpected staff turnover.

Database Review

In 2011, JACO collected and tracked data, and provided monthly reports to Georgia Power. Since Georgia Power rolled out the EERT data tracking system, select JACO data have been integrated into Georgia Power's data tracking system. JACO provides an additional data to Georgia Power upon request. During the transition to EERT, JACO and Georgia Power tracked data manually and through EERT, reconciled the two methods twice a month to ensure consistency.

The EERT database requires the database management team to specify fields to extract from JACO's database. Table 8-10 presents elements included in the EERT database for RRP.

Table 8-10: RRP EERT Data Collected

Customer Information	Program/Process Information	Measure Information
Enrollment #	Program Year	kWh Savings
Reference #	Program Type	S kW Savings
Account #	Enrollment Date	Brand, Model, Type, Year
Customer Name Combined	Activity Date	Defrost Type, Icemaker
Customer Name Last, First	Division (Region)	Location, Use (1^{o} or 2^{o})
Event ID	Status	Seasonal Use
Customer Phone & Alt Phone		Serial/Number
Customer Email		Replaced?

Addressing Recommendations from the Pilot Program Evaluation

The RRP pilot program evaluation made several recommendations to improve RRP. Georgia Power's program team has worked with JACO to implement most of these recommendations:

- **Improve ongoing data collection to aid future evaluation efforts**. JACO now collects information in its database on how customers learn of the program, and also tracks whether pick-ups are rescheduled. To help with overall program marketing, it would be useful for JACO also to collect and include in the database information about why customers chose to participate, and whether they had planned to dispose of the appliance prior to learning about program.
- **Emphasize ease of refrigerator removal in marketing.** Program marketing now incorporates this element.

- **Explore communication of the program's energy and costs benefits.** Program marketing now discusses the potential $150 in annual savings.
- **Scale up to territory-wide program implementation.** The program has scaled up to include all of Georgia Power's service territory.
- **Explore rebates for ENERGY STAR refrigerators and co-marketing opportunities with RRP**. Georgia Power coordinates RRP with the appliance rebate program, and co-markets the programs.
- **Decrease waiting periods to improve customer retention.** JACO does not maintain data on customer wait periods; so this recommendation resulted from several customer complaints in the 2009–2010 program survey regarding long wait times from the call to JACO until JACO staff picked up their refrigerators. While a few customers made the same complaint in 2012, most seemed satisfied with this program aspect.

The midterm process evaluation found JACO and Georgia Power using different monthly program targets, although both had the same annual program targets. The evaluation recommended aligning targets be aligned, which since has been done.

8.3.5 Freeridership and Spillover

8.3.5.1 Freeridership

Table 8-11 presents results of the four possible scenarios discussed in Section 8.2.3 above. Scenarios 1 and 3 indicate freeridership.

Table 8-11: Freeridership Scenarios

Scenario Independent of Program	Scenario	Indicative of Freeridership	Percent of Refrigerator/Freezer Participants (n=61)
Unit Kept but Not Used	1	Yes	2%
Unit Kept and Used	2	No	7%
Unit Discarded and Destroyed[47, 48]	3	Yes	40%
Unit Discarded, Transferred, Used[49]	4	No	52%

Table 8-12 presents Scenario 3 and 4 responses, indicating actions participants claimed they would have taken, had the program not been available.

[47] Note that while Scenario 3 would have led to the destruction of the appliance, the unit probably would not have been decommissioned in the environmentally responsible manner undertaken by the program. As a result, while energy impacts may be equivalent, larger environmental and societal impacts differ.

[48] Percentage estimate for Scenario 3 integrates information obtained from market retailer interviews concerning the reselling of refrigerators collected.

[49] Percentage estimate for Scenario 4 integrates information obtained from market retailer interviews concerning the reselling of refrigerators collected.

Table 8-12: Freeridership Scenarios 3 and 4 (Participant Responses)

Hypothetical Method of Unit Disposal in Absence of Program	Indicative of Freeridership	Percent of Refrigerator/Freezer Participants (n=61)
Sell it to a private party, either by running an ad or to someone you know	No	4%
Sell it to a used appliance dealer	Possibly*	7%
Give it away to a private party, such as a friend or neighbor	No	14%
Give it away to a charity organization, such as Goodwill Industries or a church	No	36%
Have it removed by the dealer you got your new or replacement appliance from	Possibly*	13%
Haul it to the dump or recycling center yourself	Yes	9%
Hire someone else to haul it away for junking or dumping	Yes	18%

* Freeridership identification depends on information obtained from market retailer interviews concerning reselling of refrigerators and freezers collected.

The freeridership calculations outlined above yielded measure level and overall freeridership ratios, presented in Table 8-13.

Table 8-13: Measure Level Freeridership Ratios

Participants/Cancellation customers Combined	Number of Respondents	Freeridership Ratio	Absolute Precision at 90% Confidence
Refrigerator	43	42%	12%
Freezer	18	31%	19%
Overall	**61**	**61%**	**10%**

8.3.5.2 Spillover

Surveys specifically asked RRP participants whether they installed energy-efficiency measures since participating in the program. If installing one or more energy-efficiency measures, surveys asked the year of purchase and whether participants received an incentive. If applicable, the survey asked participants how influential the RRP was on their purchasing decisions (participants could answer: not at all, not very, somewhat, or very influential). No surveyed participants attributed their participation in the RRP as important in their decisions to purchase or install additional energy-efficient measures in their homes, resulting in a 0% spillover estimate for the program.

8.3.5.3 Unit Replacement

As no surveyed participants reported they would not have purchased a replacement unit without the $35 Georgia Power incentive for recycling old unit no adjustments for unit replacements were necessary.

8.3.5.4 Final Net-to-Gross

Estimated NTG analysis for recycled appliances used the following formula:

$$NTG = (1 - Freeridership\ Ratio + Spillover\ Ratio) - (Replacement\ kWh * Induced\ Replacement\ Proportion)$$

Table 8-14 summarizes the results, comparable to NTG calculated for the RRP pilot program (63%).

Table 8-14: Measure Level Freeridership Ratios

Participants	Freeridership Ratio	Spillover Ratio	Induced Replacement kWh	NTG	Absolute Precision at 90% Confidence
Refrigerator	42%	0%	0	58%	12%
Freezer	31%	0%	0	69%	19%
Overall	**34%**	**0%**	**0**	**61%**	**10%**

The 2011 NTG is consistent with the pilot program's 0.63 NTG.

8.4 PROGRAM CONCLUSIONS AND RECOMMENDATIONS

In 2011, the program attracted a sufficient number of participants to meet its goals, but continues to experience high drop-out rates. Dropout rates for similar JACO programs nationwide are 15%; Georgia Power's rate appears high in comparison.

Recommendations:

- ***Consider investigating ways to address customer scheduling conflicts.*** Thirty-five percent of cancellation customers reported dropping out due to scheduling issues. Currently, the program offers pick-ups from 7:00 am to 6:00 pm, Monday through Saturday. Georgia Power should consider more follow up with cancellation customers to determine what issues they had with the scheduling process. Depending on what customer response is, JACO may want to consider shorter pickup windows.
- ***Consider profiling 2011 and 2012 participants to determine whether 2012 customers represent a different demographic.*** If they do, Georgia Power may want to pursue additional research to better target non-participating customer groups.

- ***Continue to promote annual energy-savings messages more strongly across all marketing channels.*** This message resonated strongly with nearly half of the cancellation customers, which indicates its potential power.

- ***Investigate enrollment channels to determine whether any enrollment channels are more likely to produce drop outs.*** Understanding this relationship may assist with understanding the high dropout rate.

- ***Revisit the annual goal to determine if this figure is appropriate for Georgia Power's customer population.***

Most participating customers are very satisfied with the program; scheduling issues were the main reason cancellation customers dropped out.

Recommendations:

- ***Consider tracking indicators related to pick-up experience in EERT.*** If these indicators can be drawn from JACO's dropout database and tracked closer to real-time, Georgia Power may be able to identify persistent issues vs. outliers, and perhaps better understand why scheduling remains an issue, given long pickup hours JACO offers.
- ***Request summarizes of JACO customer satisfaction data derived from follow-up calls.*** Though JACO reports carrying out the initial 700 pickup customer follow-up calls, this information has not been shared with the program manager. Georgia Power should request and review this information to determine whether additional questions regarding scheduling convenience can be added to the follow-up survey to track and prevent dropouts.

While Georgia Power staff remains interested in pursuing additional marketing channels, bill stuffers remain the best way to reach customers.

Recommendations:

- *Georgia Power should review its marketing spend in other areas, since few customers recall learning about the program through the more expensive TV and radio ads.*

NTG/Freeridership. Georgia Power's RRP has experienced relatively moderate NTG during its first program year (61%), and it can expect these rates to increase. Table 8-15 compares NTG ratios for similar appliance recycling programs evaluated over the last decade. As the table shows, the 61% NTG ratio for the 2011 RRP Appliance Recycling Program fell within the middle range of these values and compares with the pilot program NTG of 63%.

Table 8-15: Measure Level Freeridership Ratios*

Study	Study Year	Refrigerator NTG Ratio	Freezer NTG Ratio
Ameren Illinois	2009	51%	63%
Ameren Illinois	2010	79%	82%
Ameren Illinois	2011	79%	82%
Results for Pacific Gas & Electric, from Residential Retrofit High Impact Measure Evaluation Report, California Public Utility Commission, The Cadmus Group	2010	51%	N/A
PowerWise Appliance Recycling Program, Salt River Project, FY 2009 Evaluation, The Cadmus Group	2009	67%	68%
Impact and Process Evaluation of Ontario Power Authority's 2007 Great Refrigerator Roundup Program, The Cadmus Group	2008	48%	52%
EM&V Study of 2004–2005 Statewide Residential Appliance Recycling Program, ADM Associates, Inc.	2008	61%	71%
Residential Appliance Turn-In Program in Wisconsin, PA Consulting Group,	2008	57%	N/A

* Methodologies used to calculate NTG across these studies were not identical.

9 HIGH EFFICIENCY NEW HOMES

9.1 PROGRAM OVERVIEW

The Residential High Efficiency New Homes (ENH) Program applies a whole-building approach to improving the energy efficiency of new homes. This program promotes energy-efficient equipment installation in new home construction, improving performance of participating homes to at least 15% above existing residential codes. As such, home builders receive financial incentives for qualifying new homes to offset costs of formal inspections by a certified Home Energy Rating System (HERS) rater and to assist with incremental costs associated with efficient measures.

Key measures involved with building more efficient homes include: greater insulation in floors, walls, and attics; high-performance windows; tight construction and duct systems; efficient heating and cooling equipment; and efficient lighting, ventilation fans, and appliances.

The ENH program offers builders a $300 incentive for single-family homes and a $150 incentive for each multifamily unit. These incentives attempt to help defray costs of third-party verification HERS rater requirements (approximately $400 to $700 in Georgia Power's market). Participating builders may also qualify for additional rebates for added high-efficiency measures.

Branded as an ENERGY STAR Homes program in past years, the program used U.S. Environmental Protection Agency (EPA) requirements for builder certification and performance. As the EPA made requirements associated with ENERGY STAR Homes 3.0 more stringent, Georgia Power began to focus its new homes program on the newly introduced EarthCents brand. Builders learned of this change in the first few months of 2011, followed by EarthCents branded messaging to consumers in summer 2011.

Nationally, other utilities have moved away from ENERGY STAR 3.0 requirements, as some do not directly involve energy-efficient measures.

9.2 EVALUATION OBJECTIVES AND METHODOLOGY

9.2.1 Research Questions

In addition to the overarching evaluation objectives presented in Section 2.2, the program evaluation addressed the following list of program-specific research questions.

- Is the program, as implemented, reaching its participation and energy savings goals?
- Are builders/HERS raters satisfied with the program overall?
- Are homeowners satisfied with the program overall?
- Do homeowners recognize the value of their efficient new homes?
- Is the network of certified builders and HERS raters increasing to meet demand?
- What participation barriers does the program face?

- What strategies could increase participation?
- Who drives participation decisions (homeowners or builders)?
- Are marketing resources and selected marketing channels reaching the appropriate audiences?
- What impact does the EarthCents brand and marketing have?
- Is the incentive amount sufficient?
- What is the efficiency level of "current practice" homes?
- Have program goals and objectives been communicated to and understood by GPC staff?

9.2.2 Data Collection Methods

9.2.2.1 Research Activities

Evaluators conducted interviews with program management staff, homebuyers, participating and nonparticipating builders, and HERS raters. Homebuyer surveys, conducted in July 2011, preceded the EarthCents brand launch. In February 2021, evaluators surveyed builders.

Table 9-1: ENH Research Activities

Research Activities	Fall 2011	Spring 2012
MATERIALS REVIEW		
Program Database	•	•
Program Materials	•	
Marketing Materials	•	
INTERVIEWS		
Utility Program Manager(s)	4	
Utility Database Manager	1	
Market Actors		5 HERS Raters
SURVEYS		
Homeowners	48	
Participating Builders		7
Nonparticipating Builders		50

9.2.2.2 Sampling

Georgia Power initially provided a list of 16 active, participating builders, who had completed homes through the program by October 2011. The team attempted to survey the full list of participating builders, and exhausted the sample with only four survey completions. Some builders had incorrect contact information or disconnected phone numbers. Additionally, six builders operated under different company names also on the sample list.

The team requested an updated list, including builders with homes in progress, identified a few more builders, and completed three additional surveys. All builders on the list were called and asked to participate. The seven survey respondents represent 25% of homes registered with the program at the time of the survey. Due to the small respondent pool with participating builders, findings should be considered qualitative, and caution should be exercised in generalizing results.

Georgia Power also provided a list of 690 nonparticipating builders. As a larger sample than for participant builders, the team completed the targeted number of nonparticipant builder surveys.

9.2.3 Net-to-Gross Method

The team interviewed participating builders in Georgia Power's ENH program to assess a NTG ratio. Key questions used in the freeridership analysis for the Efficient New Homes program category included the following:

1. About how many homes did you build in GPC Service territory that went through Georgia Power's Efficient New Homes Program since January 2011?
2. About how many more new homes do you expect to complete in Georgia during 2011?
3. How many of these homes that are expected to be completed by the end of 2011 do you think will be evaluated by a HERS rater and eligible for the $300 incentive from Georgia Power?
4. Since you began participating in the program, would you say a larger share of the homes you build in Georgia are going through the program, a smaller share of your homes, or is the proportion about the same?
5. How important was Georgia Power's Efficient New Homes Program in bringing about this increase?

Question 6 referred to multiple energy-efficient measure types that are typically installed in energy-efficient homes.

6. How important was Georgia Power's program in your decision to incorporate these measures in non-participating new homes?

Freeridership survey questions targeted home builders, as they were considered primary participants in the ENH program. The team used the same process to assign freerider scores to builders as those used to create the freerider matrices for the other programs. As there were a limited number of builders, however, the team did not create a matrix of all possible response combinations.

Similarly, the evaluation used self-report home builder surveys to assess spillover, asking participant builders if, due to the program, they installed energy-efficient measures similar to ENH program offerings in non-participating homes during the program year. Survey questions asked participants what percentage of non-participating homes they built during the program year which included energy-efficient products similar to program offerings. If respondents made energy-efficient

improvements or purchased products, questions asked how important the program was in their choice to incorporate those measures in non-participating homes. Responses included: "not at all," "not very," "somewhat," or "very" important. Only measures where participants indicated their program participation proved very important regarding their decision to install high-efficiency measures in non-participating homes could be attributed to program spillover.

Spillover savings were calculated as a percentage of total savings, using evaluated savings values consistent with those used in calculating gross program savings value, and applying these savings values to spillover measures attributable to the program.

The program's spillover percentage was calculated by dividing the sum of additional evaluated spillover savings reported by responding builders, by total evaluated savings achieved by all homes built by the builder participant survey sample during the program year.

$$Spillover\ \%\ Estimate = \frac{\sum Survey\ Evaluated\ Sample\ Spillover\ kWh}{\sum Survey\ Evaluated\ Sample\ Program\ kWh}$$

The sum of these spillover savings values, divided by savings achieved through the program, yielded spillover savings as a percentage of total savings, which could then be extrapolated to program's participant population.

9.3 KEY PROCESS FINDNGS

9.3.1 Program Outcomes

Table 9-2: ENH Program Outcome Researchable Questions

Overarching Researchable Questions	ENH Specific Researchable Questions	Report Section
Are program process targets being met?	• Meeting participation and energy savings goals? • SF versus MF targets • Quality and completeness of data	9.3.1.1
Are customer satisfaction goals being met?	• Are homeowners satisfied with the program overall? • Are builders satisfied with the program overall? • Are builders delivering quality customer service?	9.3.1.2
Are market transformation goals being met?	• Increased customer knowledge of EE measures • What is the level of program awareness? • How do customers find out about the program? • Do homeowners recognize the value of EE new home? • Are builders adopting the program measures? • Increased knowledge of energy-saving building practices • Increased network of certified builders and HERS raters	9.3.1.3

9.3.1.1 Program Achievements

In 2011, the program sought to achieve 2,000 single-family and 750 multifamily, efficient new homes. To keep pace with ongoing residential new construction activity, the program also sought to achieve 25% of the market share, meaning one in four new homes built in 2011 would be 15% more energy-efficient than the current state building code.

As shown in Table 9-3, the High Efficiency New Homes program achieved 94% of its participation goal and 78% of the savings goal. Participation by multifamily homes ran significantly above its target, at 248%, while single-family homes achieved just over one-third (37%) of goal.

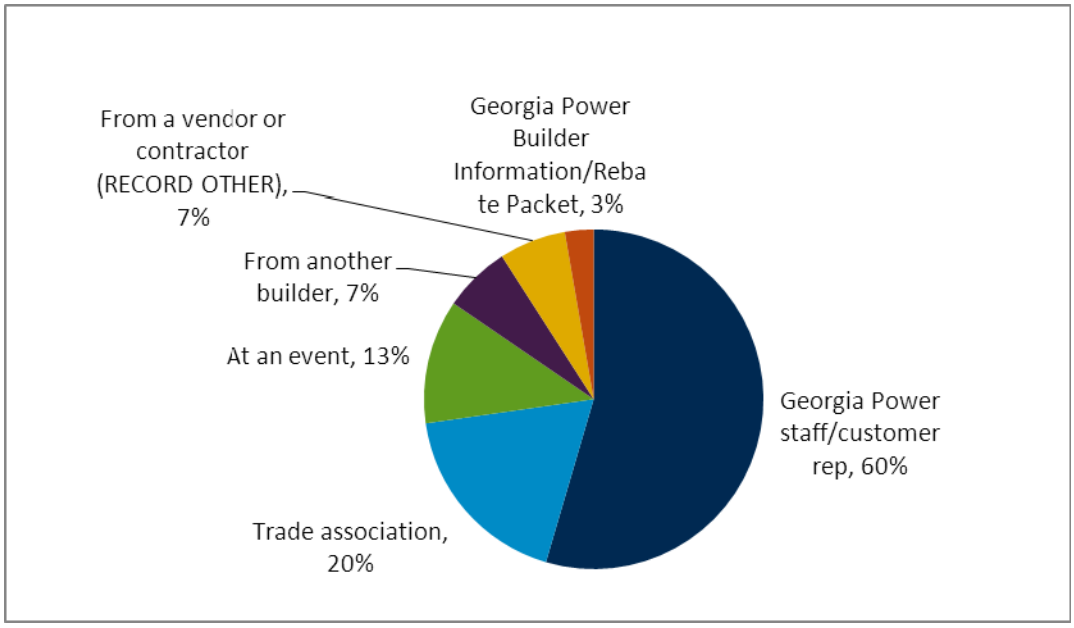
Table 9-3: ENH 2011 Goal Achievement

Measure	Program Savings (kWh/Unit or home)	2011 Program Participation Goal (# of homes)	Year End Actual Participation	% of Participation Goal Completed
Single Family HP & Elec WH	1,223	2,000	736	37%
Multifamily HP & Elec WH	800	750	1,861	248%
Total	3,046,000 kWh	2,750	2,597	94%

The program nearly achieved its goal of 25% of new electric meter installations, achieving 21% market share. Despite the slowdown in the new home market over the past three years, the proportion of the new home market participating in the program keeps pace with about one-quarter of new homes on the market.

The program also sought to launch the new EarthCents brand, enhancing awareness. Over two-thirds (68%) of nonparticipating builders knew of Georgia Power's ENH program, and the majority (60%) aware of the program learned of it through a Georgia Power representative, as shown in Figure 9-1.

Figure 9-1. QB2: How did you first hear about Georgia Power's Efficient New Homes Program? (n=30)



More than half (58%) of nonparticipating builders did not know of the program's name change, and five of 13 aware of the change could recall the EarthCents name without a prompt. When directly prompted with the new name, about the same proportion (56%) did not associate the EarthCents name with the ENH program.

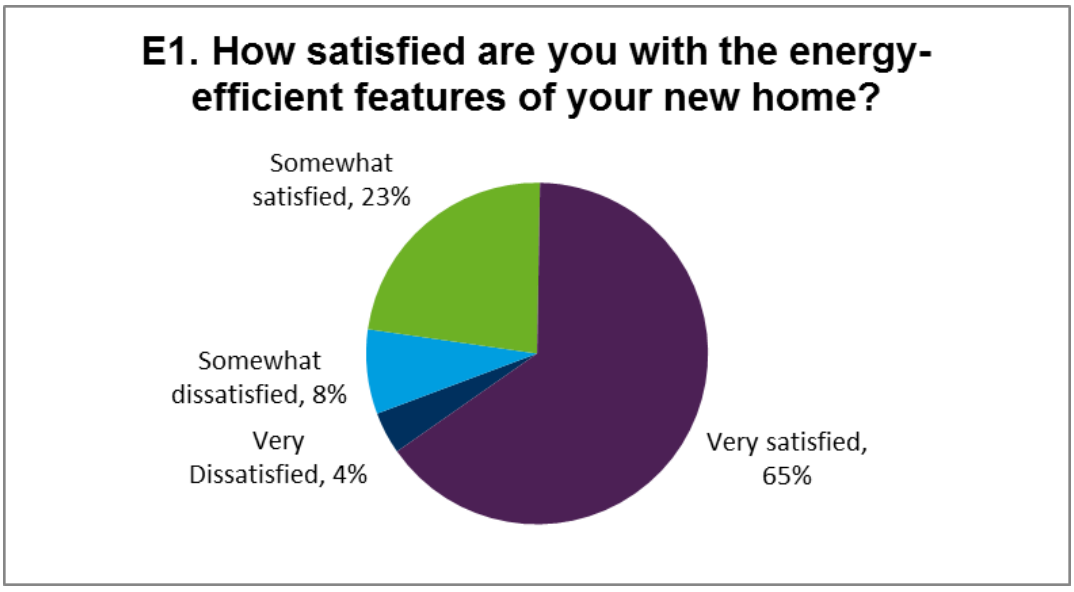
In February 2012, builders' program awareness appeared associated with the previous program and "supply side" program delivery approach. Given the "soft" launch for the EarthCents-branded ENH program, awareness may require more than six months to take effect.

9.3.1.2 Satisfaction

Builders mostly expressed satisfaction with the program, with all but one somewhat to very satisfied. The one very dissatisfied, dissenting builder said it took six to eight months before receiving the incentive.

As many home buyers did not play a direct decision-making role in program participation, surveys asked about satisfaction with the home's energy-efficient features. Nearly two-thirds (65%) of home buyers expressed being very satisfied, and another quarter (23%) reported being somewhat satisfied with their new home's energy efficient features, as shown in Figure 9-2.

Figure 9-2: Homebuyer Satisfaction with New Home's Energy-Efficient Features (n=48)



All HERS rater respondents expressed satisfaction with the REM/rate software required for the program. When asked about training provided by GPC, three HERS raters reported being very to somewhat satisfied, and one was "not at all satisfied." Of three HERS respondents commenting on the certification testing process, three were also very to somewhat satisfied.

9.3.1.3 Market Transformation

In a nonparticipant program awareness baseline survey of Georgia Power residential customers conducted by the evaluation team, about one-quarter (23%) knew of the ENH Program. Given the survey predated the EarthCents launch, awareness questions addressed the ENH program in general.

Most homebuyers (81%) said they were not at all familiar with the ENH program, and one-third (35%) knew their home qualified as an energy-efficient home through the program. Just over one-half (55%) knew their home had energy-efficient features not found in most new homes built to standard building codes. Home buyers' relative lack of familiarity with the program and their home's energy-efficient features may reflect such decisions more frequently being made by builders.

Homebuyers reported builders as the primary source (41%) first informing them of choices regarding energy-efficient features for their homes, with realtors and print ads/brochures cited second (at 15% each). With home buyers less involved in energy feature decisions, program efforts to train builders and realtors in promoting energy-efficiency's long term value to prospective customers are directed to appropriate channels.

HERS raters indicated the program increased the market share of high-efficiency new homes in Georgia. Additionally, four of five respondents found the program somewhat or very effective in

building support for high-efficiency new homes among builders. Most HERS respondents (four) also agreed the program effectively improved their rating skills. Only one thought it "not at all effective," as he believed the program needed to educate customers more about the value of the efficient upgrades.

9.3.2 Program Design

The following table outlines key questions the team explored regarding program design.

Table 9-4: ENH Program Design Researchable Questions

Overarching Researchable Questions	Report Section	Report Section
Is the program design appropriate to meet goals?	• Logic Chart review • Utility's resources assigned sufficient? • What are the barriers to participation? • Are incentives effective? • What can be done to increase program participation? • Who drives the decision for participation?	9.3.2.1 9.3.2.2 9.3.2.3

9.3.2.1 Program Logic Chart

The program's logic chart outlined: key objectives, barriers, activities to address barriers, desired market effects and metrics to measure program success (see Appendix A).

Program designs and outreach strategies shifted since 2008, from focusing on the supply side (the new construction market [builder]) to focusing on demand (homebuyers). Program outreach originally relied on internal Georgia Power regional representatives' direct relationships with builders. Currently, outreach focuses on mass marketing and increasing customers' awareness of energy-efficient building practices. This program design theory assumes that, with increasing awareness for homebuyers and builders, comes increased demand for efficient new homes.

The program logic chart outlines the following key market barriers: high start-up costs for builders, builders' and homebuyers' lack of information and awareness of efficient construction practices, split incentives (with home builders incurring the incremental building expense, and homebuyers benefiting from lower energy bills), and limited equipment options.

Many other factors, however, play significant roles in driving the residential new construction market, notwithstanding the overall economic downturn over the past two to three years. As this logic chart was developed before impacts of the new construction market changes became evident, the new construction home market's overall state did not present a market barrier.

Barriers from limited equipment options or efforts to recruit distributors to stock efficient equipment did not appear in evaluation data collection activities. Builders or HERS raters did not cite

equipment supply as a concern, nor did staff members discuss efforts to recruit distributors. Contrary to the logic chart, limited equipment options did not appear to be a barrier or, if equipment shortages proved a barrier, the program did not address it.

The logic chart outlined a strategy to address customers' lack of information and awareness by providing educational materials to customers, helping them understand long-term benefits of efficient equipment and building practices. The program's EarthCents Website offers such information through testimonial videos and several points outlining program benefits. Although customers did not receive printed materials, builders, realtors, and HERS raters received EarthCents New Homes flyers. In interviews, staff clearly cited outreach to involve builders in the program as a goal; the logic chart strategies, however, did not include recruiting builders, and only referred to training builders on conveying the technical and economic benefits of energy-efficient homes to customers.

Market effects metrics include several relying on effective data tracking for numbers of participating builders and HERS raters, contractors training attendance, and increased availability of energy-efficient equipment. Program data tracking evidenced some challenges (as discussed in the program tracking section).

Recommendation #5 in the conclusions outlines suggestions for updating the logic chart.

9.3.2.2 Participation Barriers

Builders, program staff and HERS raters informed the team of several participation barriers the program faced, ranging from training availability to larger, systemic issues in the housing market. The most common reason nonparticipating builders cited for not participating in the program arose from uncertainty about ways to get involved and needing more information (38%). While five of seven participating builders found it somewhat easy to participate, two found it very difficult; one builder stated training competed with his work time, while another had not received the incentive, with the delay affecting his opinion of the program.

Four of five HERS raters indicated they experienced challenges with the program. Of the four, three cited their ability to get paid. Additional concerns included: not being paid enough to maintain their business, costs incurred by builders, homeowner perceptions on impacts of ratings, and following up with homebuilders.

Builders generally expressed satisfaction with the incentive: four of six respondents being somewhat satisfied, and one very satisfied. The dissatisfied builder cited time required to receive payment.

Beyond builder and HERS Rater concerns, Georgia faces difficulties from a struggling new construction market. Several challenges arose for the program due to the downturn:

- Setting appropriate goals, given uncertainty for new home starts.

- HERS raters became difficult to find. Lack of construction meant many could not sustain business full time, doing only ratings.
- Competition for market share along the Alabama border proved difficult due to differing tax incentives.
- Home Builder's Association membership has declined dramatically since 2007, leaving substantially fewer builders to work with.

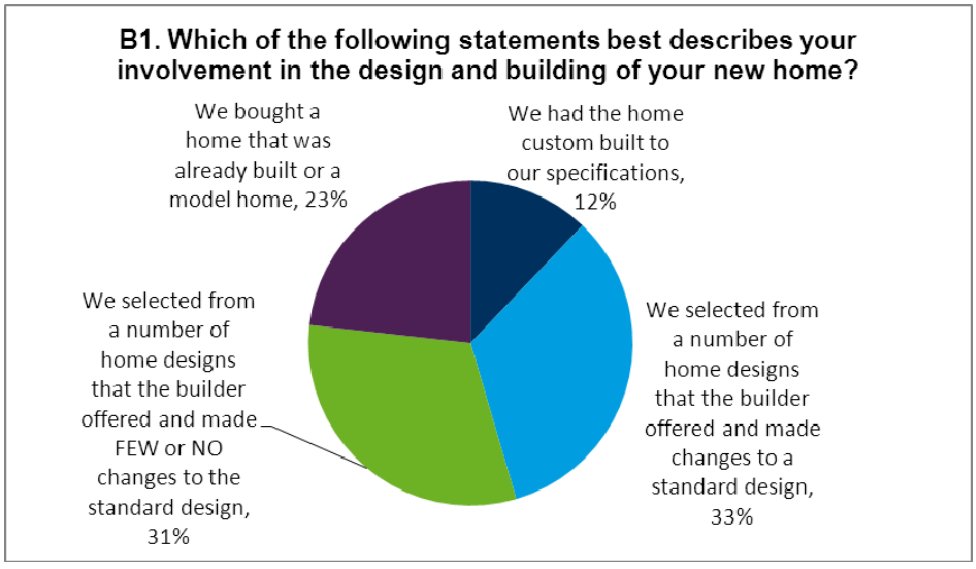
Staff considered geography as a potential barrier in the Atlanta metro area. New construction and builder participation traditionally had been substantially stronger in cities with a large military presence, due to population increases in those cities. Efforts to involve large production builders in the metro area, however, remained challenging.

Staff members reported Georgia recently adopted the 2009 energy building code (the international energy conservation code) statewide, posing some problems for some builders by requiring all builders complete additional testing, certification, and, in some cases, invest in testing equipment. The state allowed an additional six months' time for builders to acquire required training and testing equipment. As some new requirements already fit into the HERS raters and BPI certification processes, builders and raters possessing these credentials did not require additional certification for the 2009 code requirements. The program's requirements actually reduced some barriers for builders in complying with changes in Georgia's statewide building code.

9.3.2.3 Increasing Program Participation

Just under half (45%) of homebuyers played an active role in the design and building of their new homes. For the other half, builders took a lead role in determining features, which may include energy-efficient construction practices and equipment.

Figure 9-3: Homebuyer Involvement in New Home Design Decision (n=48)



Participating builders offered a few suggestions that could lead to increased builder participation. These included: increasing marketing (advertising and promotion) (two), increasing the incentive amount (two), and help builders with advertising (one). Another builder cited too many foreclosures, implying demand for existing homes may compete with efficient new home sales.

Builders' interest level in attaining HERS ratings for their homes offered another indicator of increasing participation. All but one HERS rater respondent stated builder interest in HERS ratings increased in 2011 compared to 2010.

9.3.3 Program Implementation

Table 9-5: ENH Program Implementation Researchable Questions

	ENH Specific Researchable Questions	Report Section
Is marketing effective?	• Is program marketing and outreach effective? • Market channels selection appropriate • Marketing timing targeted appropriately • Builder perception of marketing materials • How do homeowners/builders respond to the ENERGY STAR brand? • What is the impact of EarthCents brand and messaging?	9.3.3.1
Is the enrollment process effective?	• Customer satisfaction with enrollment process • Builder/HERS rater satisfaction with rebate filing process • Forms easy to read, use, and understand?	9.3.3.2
Is the implementation process effective?	• Are program processes followed? • Are program management tools in place and being used? • Is data tracking effective? - Appropriate data fields - Extracts easy - Search/sort • Are marketing metrics tracked? • What is the efficiency level of "current practice" homes?	9.3.3.3 9.3.3.4
Are program partner activities effective?	• Builders satisfied with certification requirements? • How valuable is the training? • Utility program staff satisfied with partners/builders? • Are there enough HERS raters?	9.3.3.5
Did the program have clear goals and objectives?	• Were program goals and objectives (and revisions) communicated to and understood by GPC staff and implementers?	9.3.3.6

9.3.3.1 Program Marketing

Program marketing and outreach initiatives primarily focused on program stakeholders: builders, contractors, HERS raters, and realtors. This marketing approach, relying on relationships with key market actors, reflected a best practice for this type of program.

Marketing materials included: general collateral, events, training materials, site marketing (yard signs, brochures), co-op advertising, and strategically-placed and concurrent consumer advertising.

The EarthCents branded program focuses marketing on customers with a newly designed Webpage, featuring testimonials and other interactive features for customers, allowing them to locate builders and HERS raters. It lacks, however, resources or features specifically targeted to builders.

Participating builders agreed Georgia Power's efforts to market the program to home buyers have been important, yet none surveyed considered the marketing efforts very effective. However, all but one participating builder found Georgia Power's marketing efforts to builders somewhat to very effective.

Most (six of seven) participating builders marketed their homes as energy-efficient or "green," while less than one-half (46%) of nonparticipating contractors marketed their homes as energy-efficient. Participating contractors used their company Website, brochures, leave-behind materials, and word-of-mouth to promote energy-efficient building practices.

While a majority (62%) of nonparticipating contractors maintained the same level of marketing efforts to sell efficient new homes in 2011, four out of seven participating contractors increased marketing efforts.

9.3.3.2 Enrollment Process

Builders did not report specific problems or concerns with program requirements. All but one participating builder reported it somewhat to very easy to participate in the program. The one builder with participation difficulties said: "Georgia Power's lack of knowledge about [its] own programs" made participation difficult.

In many cases, builders turned over the program enrollment processes to HERS raters, who filed the paperwork providing test-out results they conducted, certifying the home's efficiency level.

Completion of a HERS rating (from beginning work with the builder to submission of the paperwork) ranged from a day to more than six weeks, according to respondents. When asked about the EarthCents program paperwork compared to the ENERGY STAR Homes requirements, HERS raters stated it was either "easier" (two of four) or "about the same" (two of four).

9.3.3.3 Implementation Process

Georgia Power staff members implement the program, with primary implementation activities involving: marketing, application processing, and incentive fulfillment.

The EarthCents New Home Program Implementation Manual covers essential topics, describing: program design, purpose and procedures involved, but lacking detail in the following areas:

- **Program process flow diagrams** describing the application process and handoffs between stakeholders. As program staff members also serve as program implementers, a more detailed description of specific tasks, timing, and personnel involved could maintain consistency when bringing new staff on board, or when shifting responsibilities among staff members.
- **Data entry and reporting processes**. The description the manual provides indicates program staff enters information received by HERS raters into a Georgia Power internal tracking database. The description does not include details about: data elements recorded, quality control process for data entry, timing for entry completion, or reporting procedures.

The program includes a comprehensive QA process:

- Builders, trained in energy-efficient practices, are certified by accredited third-parties.
- HERS raters test each home, requiring a rating of 85 or higher for the home to qualify.
- GPC rebate compliance reviews 10% of jobs, and checks to verify heat pumps and electric water heating.
- The RESNET provider also verifies a sample of HERS ratings.

9.3.3.4 Data Tracking

The team reviewed an RMIS database extract and a pivot table, containing final data on homes participating in the program. This review observed types of data collected for the program, the accuracy of content within data fields collected, and verified data extracts provided matched total participation counts reported and filed for 2011.

Goal achievement proved difficult to determine, as program data extracts used for initial *ex ante* savings analysis did not match reported year-end participation counts. After making this known, Georgia Power provided a pivot table extract with records matching the final participation counts.

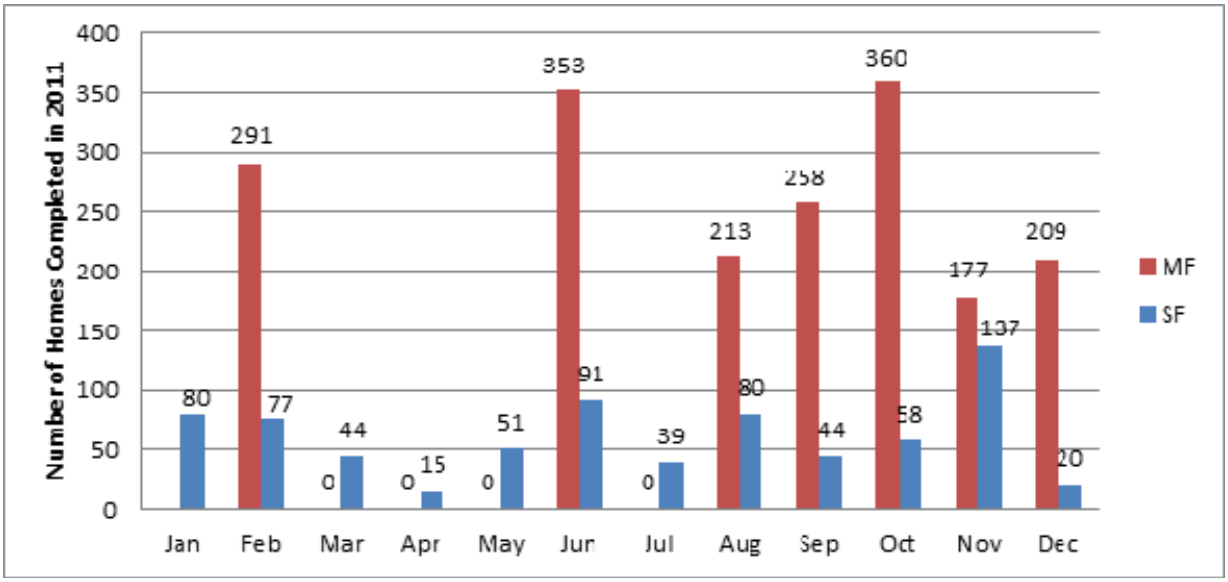
Although the extract indicated Skyetec Environmental Building Solutions served as the highest volume builder, Skyetec was a HERS rater, filing the program paperwork for 654 homes in the program. A subsequent database extract identified actual builders, which initially listed Skyetec. Columbia Residential, LLC had the next-highest volume, with 264 multifamily homes. In 2011, eight multifamily home builders had 100 or more homes participate in the program.

Initially, duplicated records appeared in the home address field. Upon review, Georgia Power determined this resulted from a data truncation issue between the RMIS data source and that used for tracking. In several cases, unit numbers were cut off, making addresses appear the same as others in the data set.

The RMIS extract did not include a SF/MF designator to assess goals by segment. Tracking occurs in a Microsoft Excel Spreadsheet outside of the EERT database. The pivot table data provided had designators for attached and detached homes as well as variables for account identifiers, service addresses, post dates, customer names and phone numbers, builder names and IDs, and regions.

Error! Not a valid bookmark self-reference. shows volumes of single-family and multifamily homes completed in 2011 by month. Activity picked up in the last five months, with October having the highest completion rate (360) for multifamily, and November the highest for single-family homes (137).

Figure 9-4: Number of Homes Completed by 2011 Month



9.3.3.5 Program Partner Activities

Overall builders expressed satisfaction with the GPC program staff's responsiveness. Four of five respondents reported being "very satisfied," and one respondent indicated being "somewhat satisfied."

Builders received training offered by Georgia Power. Over one-half (58%) of nonparticipating builders attended training on energy-efficient building practices offered by Georgia Power, Southface, or the Home Builders Association. All respondents found value in this training, with over one-half (52%) rating them very valuable, and 48% rating them somewhat valuable. When asked about additional training on energy-efficiency building practices, over three-quarters (82%) reported being somewhat (38%) to very interested (44%).

HERS raters indicated possible communication improvements with builders. Only one of five HERS raters was "very satisfied" with relationships between builders and raters, three of five stated they rated relations as "somewhat satisfied," and one rater reporting being "not too satisfied."

9.3.4 Freeridership and Spillover

9.3.4.1 Freeridership Findings

The average unweighted freeridership score for the 5 builders interviewed was 8%. The team applied a weighting scheme based on the number of homes completed for each builder. The final recommended freeridership estimate of 3% accounts for weighted individual builder freeridership scores by the percent of total rebated homes.

Table 9-6: Efficient New Homes Program Freeridership Ratio

Response Group	Freeridership Ratio
Efficient New Homes	3%

Table 9-7 shows builders' responses to freeridership questions and the resulting scores assigned to each builder. Respondents one and two were the largest builders in the sample, accounting for 84% of program homes built by responding builders. Using the percentage from the third column of Table 9-7 as weight values, freeridership scores for respondents one and two were primarily responsible for the ENH program 3% freeridership score.

Table 9-7: Builder Freeridership Scores—Efficient New Homes Program

Builder	Efficient New Homes Built in 2011 Rebated Through the GPC Program	Total Homes Built, as Percent of Total Homes in Sample	Proportion Change Being Rebated Through Program Since Start of Participation	How important was Georgia Power's Efficient New Homes Program in bringing about this increase?	How important was Georgia Power's program in your decision to incorporate these measures in non-participating homes?	FR Score
1	90	52%	A larger share of homes	Very important	Somewhat important	0%
2	55	32%	A larger share of homes	Don't Know	Very important	0%
3	10	6%	Proportion stayed the same	NA	Somewhat important	12.5%
4	13	7%	Proportion stayed the same	NA	NA	25%
5	6	3%	Proportion stayed the same	NA	Somewhat important	12.5%
Overall	**174**	**100%**	**-**	**-**	**-**	**3%**

9.3.4.1 Spillover Estimate

Table 9-8 displays measures, similar to ENH program offerings, surveyed ENH builders installed in nonparticipating homes during the program year, and qualifying as spillover.

Table 9-8: Efficient New Homes Program Spillover Measures

Measure	Quantity	Per Unit kWh Savings	Total kWh Savings
High-efficiency insulation and air tightness	18	408	7,344
ENERGY STAR Appliances	5	500	2,500
Central AC	5	619	3,095
CFL	5	71	355
ENERGY STAR Windows and Doors	5	600	300
Total	**-**	**-**	**16,294**

Table 9-9 provides the ENH program spillover estimate, calculated by dividing total evaluated spillover kWh savings attributable to the program, obtained from surveyed participants, by evaluated kWh savings associated with measures rebated through the program by the same survey participant sample.

Table 9-9: Efficient New Homes Program Spillover Percent Estimate

Total Survey Sample Spillover kWh	Total Survey Sample Program kWh	Spillover Percent Estimate
16,294	222,404	7%

9.3.4.2 NTG Estimate

Using the (NTG = 1 – Freeridership + Spillover) equation, the NTG ratio for program is 104%.

Table 9-10: Efficient New Homes Program Freeridership Ratio

Response Group	Freeridership Ratio	Spillover Ratio	NTG Ratio
Efficient New Homes Builders	3%	7%	104%

9.3.5 Program Conclusions and Recommendations

Multifamily participation carried the weight of participation and savings goals for the program overall in 2011. Multifamily home builders seemed to benefit from the volume capacity, and applied efficient building practices to all or most of their projects, including several hundred units at a time.

Recommendations:

- *Continue support and outreach efforts with multifamily builders, as these represent high potential for program participation.*
- *Consider increasing multifamily participation goals and adjusting single-family participation goals downward to better reflect participation levels in the market*. Consider reassessing the multifamily and single-family goal proportions as the new housing market begins to improve and more single-family builders participate in the program.

As roughly half of home buyers surveyed played a limited role in design decisions for their homes, builders appear to be driving program participation for 2011.

Recommendations:

- *Continue current training and networking efforts with builders and real estate agents, in addition to mass market campaigns to raise program awareness among potential home buyers.*
- *Consider developing additional printed materials aimed at customers, helping builders more effectively promote the value of efficient new homes to prospective buyers*. Also consider incorporating marketing concepts such as “framing” into builder trainings. Builders could present efficient features as the default or standard design package, with less efficient features optional. As this already happens with 23% of home buyers purchasing an efficient home already constructed, program participation could increase, with more builders taking this approach.

Both participating builders and homebuyers indicated a need for more marketing and promotion to increase program awareness. Additionally, awareness for the newly branded EarthCents program proved limited among a majority (56%) of nonparticipating builders. Although this awareness could likely increase given additional times and exposure to messaging, the mass media approach used for the EarthCents campaign may not be as effective for attracting builders. Despite the program design's shift to focus more to the home buyer demand side, builders remain an important component for achieving participation goals. Additional strategies such as the Stakeholder summit held in April 2012 need to continue raising program awareness among both homebuyers and builders.

Recommendations:

- *Consider revising the program logic chart to reflect strategies connecting to the objective and barriers identified around a lack of builder awareness and participation.* As the program already cites builder recruitment as a stated goal, the logic chart could provide associated metrics and outcomes to better reflect what is already occurring.. Metrics could also provide indicators to program success, which could be improved to offer more effective indicators throughout the program year, allowing for mid-course corrections or adjustments.
- *Consider Website improvements to connect to the EarthCents Webpage from Georgia Power's front page.* Provide links and information for builders and realtors on the ENH EarthCents Webpage.
- *Consider conducting additional research to assess awareness levels for the program and the EarthCents campaign's effectiveness for raising awareness among homebuyers and builders*. Use research findings to identify specific targets or segments for targeted marketing efforts.

Recommendations:

- *Consider database enhancements allowing identification of builders for each record, in addition to the party filing the application and receiving the incentive.* Consider EERT enhancements, allowing programs to identify segments, such as home types, critical for tracking progress on goals.
- *Consider developing data tracking procedures or standards to eliminate possible variations in data reporting*. Provide additional detail in the program manual for data entry procedures, timing, and quality assurance.

Although staff members did not raise program resources as a concern, implementing the program internally appeared to create challenges for staff involved, particularly regarding timely rebate processing, data tracking, and reporting.

Recommendations:

- *Consider allocating additional staff and budget resources or a third party implementer to relieve program implementation stress.*

Appendix A LOGIC MODELS

A.1 OVERVIEW OF LOGIC MODELS

Logic models especially prove valuable for exposing assumptions, and stating these clearly. Though development of a logic model cannot ensure program success, it can help identify logical or program gaps at the program's outset, enhancing their resolution. In addition, models provide frameworks for program monitoring and evaluation activities.

A few key concepts drive logic models:

- Activities *the program will conduct* or be responsible for. These do not include market activities occurring without program involvement. Activities include: development and distribution of brochures, implementation of training programs, rebate processing, and outreach to contractors.
- Outputs produce countable program results. For example: 100 brochures, five trainings, or 10 projects received audits. *The program's data base or program record outputs should be countable.*
- Outcomes represent the ultimate change in behavior sought. They answer the question: *Why are we doing this?* Outcomes typically can be harder to measure, and may only be determined through evaluation.
    - Outcomes may produce results in: the short term (zero to two or one to three years from activity), the medium term (one to three or two to five years from activity), or the long term (more than three years following activity—usually three to five or five to 10 years). Program plans should define "short," "medium," and "long" term specifically for each program.
    - Outcomes can be expressed with phrases such as: "the program increases penetration of whole-house energy upgrades (short or medium term)," "the program influences widespread upgrades, resulting in 30% reductions in energy use and reductions in carbon emissions," and "green workforce increases (long term)."

In addition, logic models include lists of resources that contribute to the program: function, target market (e.g., customers, trade allies, retailers), assumptions about external influences, and final metrics used to measure and monitor progress. Figure A-1 and Figure A-2 provide linked and graphically depicted examples of such components.

Logic Model Development Process

The process of developing a logic model can itself be instructive. Model development forces program managers to analyze and better understand linkages between program components, ways the design should drive the program and achieve final desired outcomes, and whether appropriate resources and intermediate steps proved adequate (activities, outputs, short-term outcomes) to drive the outcomes. The report describes this process in greater detail below.

After reviewing program implementation plans, the logic model developer must answer a few key questions. To the extent program documents do not address these, interview program contacts may be necessary.

1. What activities will *the program conduct*? (Do not include activities of others.) C*ombine specific activities into common groups* to focus on program logic, not program processes. Examples include:
    a. Specific marketing activities
    b. Outreach strategies
    c. Screening
    d. Information provided (to whom)
    e. Training activities
    f. Direct incentives
    g. Program conduct audits or assessments
    h. Inspection/verification or QC activities
2. What ***outputs might be expected*** to flow from the activities? Outputs are results within the program manager's control.
    a. Outreach might generate a list of potential participants for screening; assessments might identify energy-saving projects.
    b. For evaluation plan/evaluability assessments: Are outputs tracked (or expected to be tracked)?
3. What immediate or short-term outcomes (i.e., changes in participant behaviors within one to three years) would flow from *successfully executed* activities? Outcomes can be defined as actions the program should deliver due to resources expended.
    a. Screened applicants request and receive a home performance assessment (short-term outcomes), and schedule and install equipment upgrades in their homes (short-term outcomes). Energy savings expected to flow from such installation follow as a medium-term outcome, but only after equipment installation.
    b. Multiple activities may produce one short-term outcome. For example, marketing, outreach and screening might result in recruiting *eligible* participants, who then receive assessments resulting in home energy upgrades (the outcome).
    c. Adjectives can be important in these diagrams. For example, if the marketing, outreach and screening activities do not identify *eligible* participants, the program may not attain enough participants to meet retrofit goals.
4. What mid-term outcomes should *flow from short-term outcomes*?
    a. In this stage, equipment upgrades in 3.a become verified energy savings.

b. Aspects expected to increase would be listed here. For example: 5% of HVAC contractors BPI certified in year one, 30% certified in year two, or 60% certified in year three. Without specific numeric goals established, this could be stated as: “an increasing portion of HVAC contractors in XYZ area are BPI certified.”

c. Outcomes frequently become the focus of impact evaluations.

5. O*verarching program objectives* provide long-term outcomes. Long-term outcomes may be difficult to measure, and may occur after the current program cycle. For example:

   a. Building a green-collar workforce, meeting carbon mitigation goals, and sustained energy savings. All provide reasons for undertaking the project, but may not be directly assessable within the program cycle.

   b. If the program has specific or defined goals (such as reducing a carbon footprint by 10%), it may be important to quantify achievements on this continuum (e.g., carbon mitigation calculated and verified or participant households reduced use of electricity by 50%).

Figure A-1: Example Logic Model

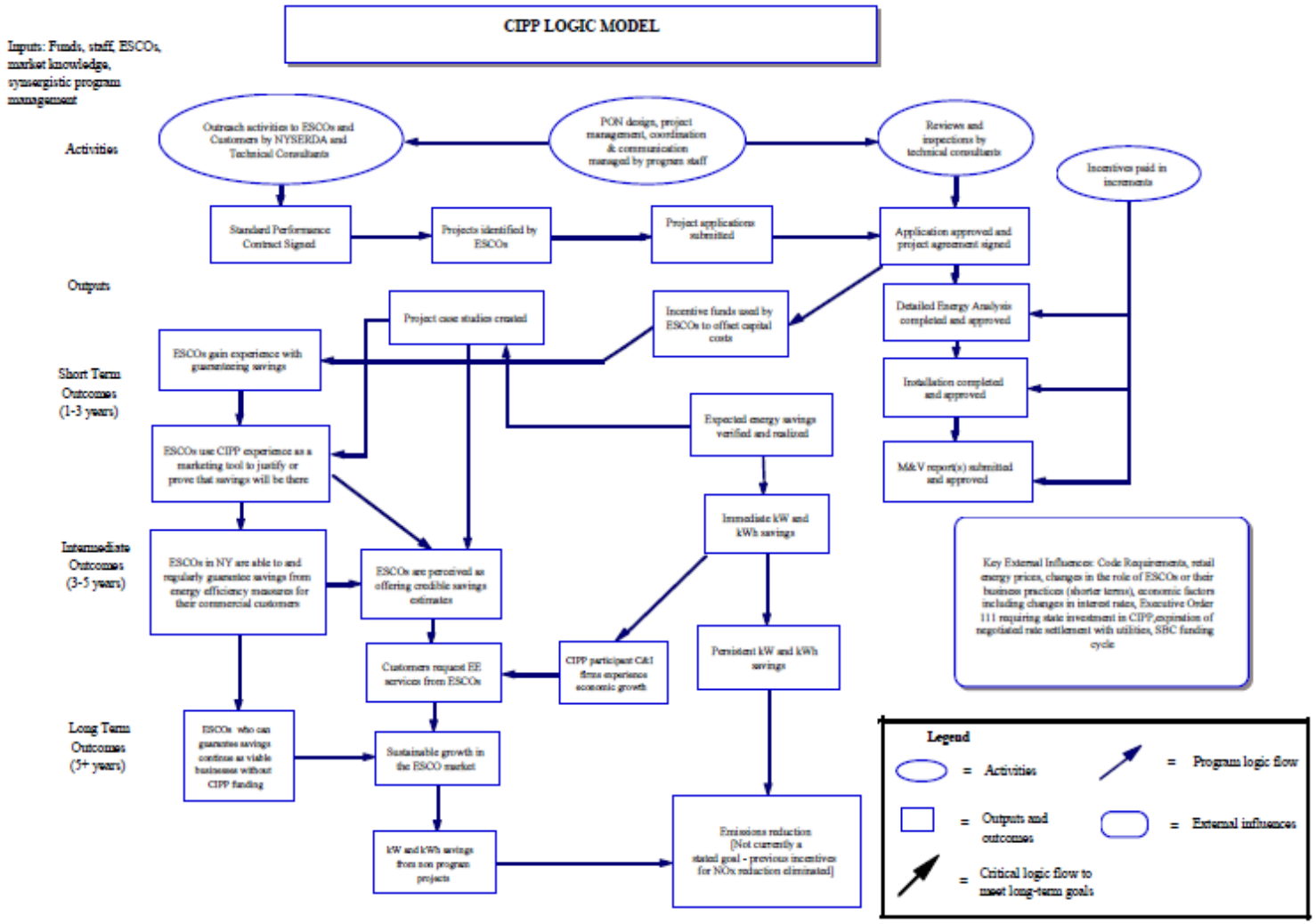


Figure A-2: Example Logic Model

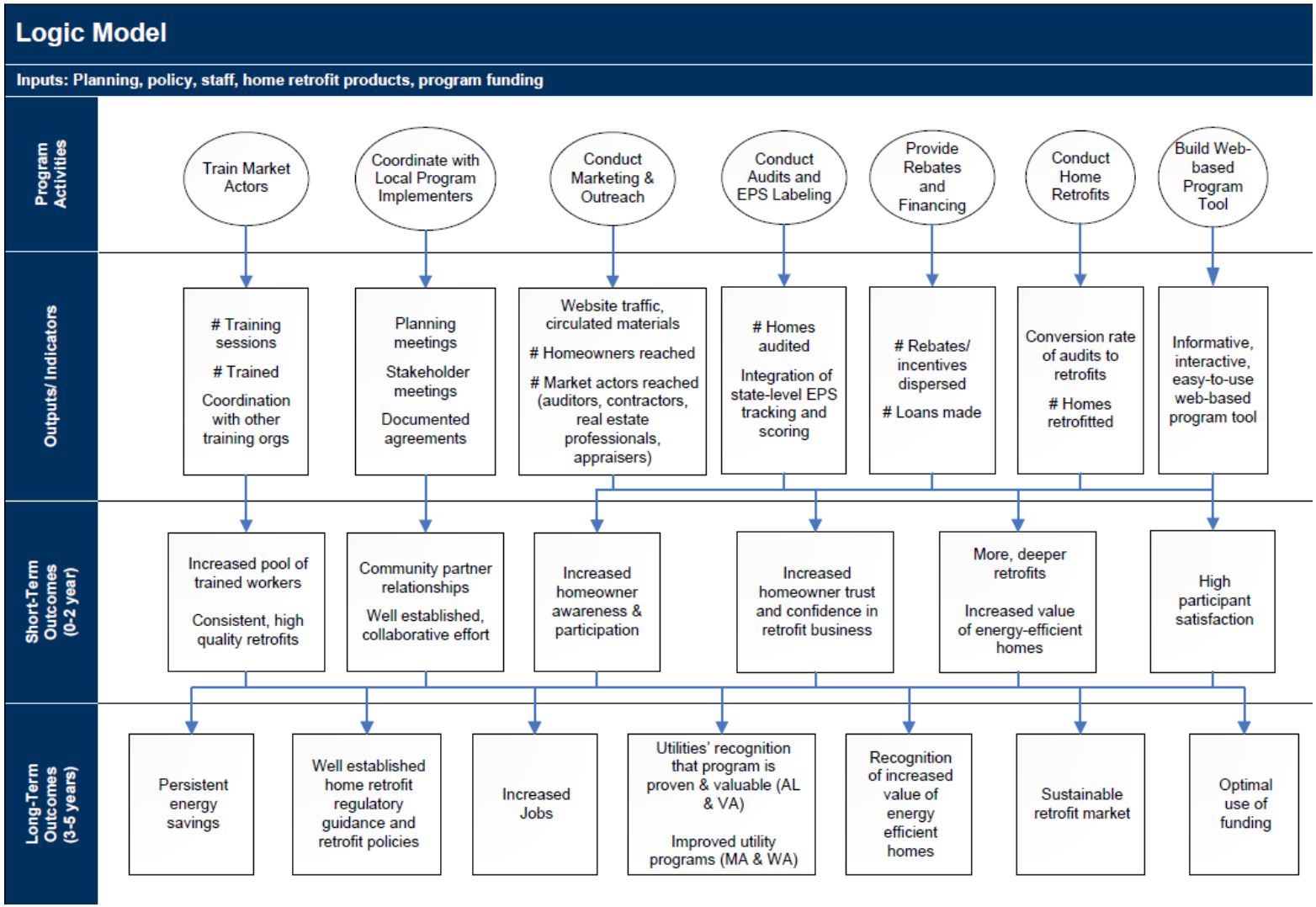


Figure A-3: Commercial Programs Logic Chart

			Market Effects		Market Effects Metrics		Savings Metrics	
Objectives	**Market Barriers Addressed**	**Strategy, Tools and Market Actors**	**SHORT TERM Behavior Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**SHORT TERM Behavioral Change Effects (1 year)**	**LONGER TERM Market Effects (2-5 years)**	**Program Activities/ 2011 Outputs**	**Impact Evaluation/ Savings Verification**
Increase awareness and customer demand for high-efficiency practices, and energy saving equipment Increase customer satisfaction with commercial programs Increase the availability and market penetration of energy efficient equipment Obtain verifiable, cost-effective and long-term electrical energy and demand savings, and peak reductions	High initial costs of technologies Competing priorities Lack of in-house staff resource to manage energy efficiency projects, especially in small companies Commercial decision makers lack awareness of costs and benefits of taking action Economic downturn Short term payback criterion (< 2 years)	Financial Incentives Commercial Energy Audit Straightforward and streamlined application process Marketing and education campaign (advertisement, workshops) targeting eligible customers and trade allies Leverage ENERGY STAR Branding	Increase in customer awareness of technology benefits Increase in retailers and vendors awareness of market potential	Increase in high efficiency equipment market availability Increase in equipment average energy efficiency Increase in high efficiency equipment sales	Program's eligible equipment sales levels Customers, vendors and retailers product awareness survey	Program's eligible equipment sales levels Participant reported commitment to continual improvement process w/o program Spillover to nonparticipants Incremental prices decrease Increase in average efficiency of equipment being sold	Number of projects implemented Number of trade allies recruited and trained Outreach to customers through marketing campaigns, trade allies, and field representatives	Energy and demand savings M&V surveying and monitoring

Figure A-4: Lighting and Appliances Program Logic Chart

			Market Effects		Market Effects Metrics		Savings Metrics	
Objective	Market Barriers Addressed	Strategy, Tools and Market Players	SHORT TERM Behavior Change Effects (1 year)	LONGER TERM Market Effects (2- 5 years)	SHORT TERM Behavioral Change Effects (1 year)	LONGER TERM Market Effects (2- 5 years)	Program Activities/ 2011 Outputs	Program Activities/ 2011 Outputs
Lighting, appliances and room air conditioning market transformation - increase awareness and market share of high-efficiency lighting and appliances such as: CFLs, ENERGY STAR qualified lighting fixtures, lighting controls, ENERGY STAR qualified appliances and room air-conditioners.	Lack of information and awareness of energy efficient products Product differentiation confusion Higher initial cost Limited product availability Prior negative experience with technology (CFLs) Concern for reduced product performance or lost features.	Financial incentives Increase awareness of consumer benefits and product availability through coordination with retailers, manufacturers, consumer channels, trade allies and professional organizations. Retail sales associate training, point of purchase initiatives, collaboration with retailers and manufacturers, mass market communication and promotional outreach, such as State Sales Tax holiday.	Increase in customer awareness of technology benefits Increase in utility driven consumer education impressions through retailers or manufacturers.	Increased CFL penetration prior to progressive phase-out of most incandescent bulbs Increase in appliances' and window A/C units' average energy efficiency Increase in high-efficiency lighting, appliance and window A/C unit availability and sales	CFLs, efficient lighting fixtures, appliances and window A/C unit sales levels Customer product awareness survey Manufacturers introduce more products in the market and promote them	CFLs, efficient lighting fixtures, appliances and window A/C unit sales levels Customer product awareness survey Participant reported commitment to continual improvement process w/o program (especially for window A/C units) Spillover to nonparticipants Increase in average SEER of window A/C unit being sold Increase in availability of energy efficient products, and decrease in incremental price	Marketing and outreach to end-users: leverage suppliers existing promotional resources, coordinate with the ENERGY STAR program Recruitment of distributors to stock and supply high-efficiency equipment Energy and demand savings Marketing & Outreach activities	Customer awareness and satisfaction surveys Retailer registration and training counts M&V surveying and monitoring Energy and demand savings

Figure A-5: Home Energy Improvement Program Logic Chart

			Market Effects		Market Effects Metrics		Savings Metrics	
Objective	**Market Barriers Addressed**	**Strategy, Tools and Market Players**	**SHORT TERM Behavior Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**SHORT TERM Behavioral Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**Program Activities/ 2011 Outputs**	**Impact Evaluation/ Savings Verification**
Increase achievable energy savings in homes by helping customers save energy while lowering their utility bills. Increase awareness of energy efficiency practices and services amongst Georgia Power's customers and local contractors. Encouraging the use of ENERGY STAR® rated and similar energy efficiency measures and bringing them into the mainstream market.	Expensive implementation costs Lack of customer information or awareness of specific measures, products and practices Competition for funds with other home investments Heavy customer reliance on contractors for material selection Limited equipment options Concern over reduced product performance or lost features	Program Incentives and awareness/promotion of other available rebates, tax credits, and incentives Provide educational material on products and practices to customers to help them understand the long term economic and environmental benefits of energy-efficiency measures Train registered contractors on both technical and economic aspects of the energy efficiency measures to be conveyed to their customers Recruit distributors to stock and supply the eligible energy efficient products	Increase in customer awareness of energy efficiency products and measures and their economic and environmental benefits Increase in customer awareness of other incentives either through state or federal activities Registration of contractors with Georgia Power Increase in awareness among manufacturers and trade allies about energy efficiency product demand in the market	Increase in demand for and sales of energy efficiency products among consumers Increase in competition among manufacturers and vendors & contractors to provide energy efficiency products and to meet market demands Increase in contractor training by Georgia Power Increase in energy efficiency businesses and equipment options available in the market	Awareness as indicated by customer surveys Number of contractors registered with Georgia Power	Increased sales and installation of various energy efficiency products Increase in the number of qualified contractors participating in the program	Recruitment of distributors to stock and supply eligible products Contractors' registration and training Marketing & Outreach activities Energy and demand savings	Number and performance of installed energy efficiency measures Customer awareness and satisfaction surveys Contractor registration and training counts Sales records of eligible energy efficiency measures M&V surveying and monitoring Energy and demand savings

Figure A-6: Residential Water Heating Logic Chart

			Market Effects		Market Effects Metrics		Savings Metrics	
Objective	**Market Barriers Addressed**	**Strategy, Tools and Market Actors**	**SHORT TERM Behavior Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**SHORT TERM Behavioral Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**Program Activities/ 2011 Outputs**	**Impact Evaluation/ Savings Verification**
Reduce energy consumed by residential water heaters Identify and implement low-cost and no-cost energy conservation measures related to residential water heaters Increase awareness of energy-efficiency opportunities for residential water heating	Initial cost of identifying and implementing water heater improvements Customer's lack of information regarding energy savings potential Customer's lack of knowledge of qualified contractors Customer's concern for giving up performance by putting in low flow shower heads or faucet aerators	Free insulation blanket installations on qualifying equipment Increase customer awareness of water heater energy savings potential through direct educational and advertising material Increase public awareness of free in-home audits	Increase in customer awareness of water heater related energy conservation measures Increase customer awareness of free in-home audits	Decrease in residential water heater energy consumption Increased availability of high-efficiency water heaters and new water heating technologies from increased customer awareness and demand	Customer product awareness survey Increased customer awareness of properly operating water heaters	Increased customer product awareness of energy-efficiency water heating technologies Increased customer awareness of properly operating high-efficiency water heater	Customer outreach: mass media advertisement, bill inserts and existing promotional resources. Contractor and vendor education and training; professional organizations. Energy and demand savings	M&V surveying and monitoring Number of audits conducted and measures installed Energy and demand savings Customer awareness and satisfaction survey

Figure A-7: Refrigerator Recycling Program Logic Chart

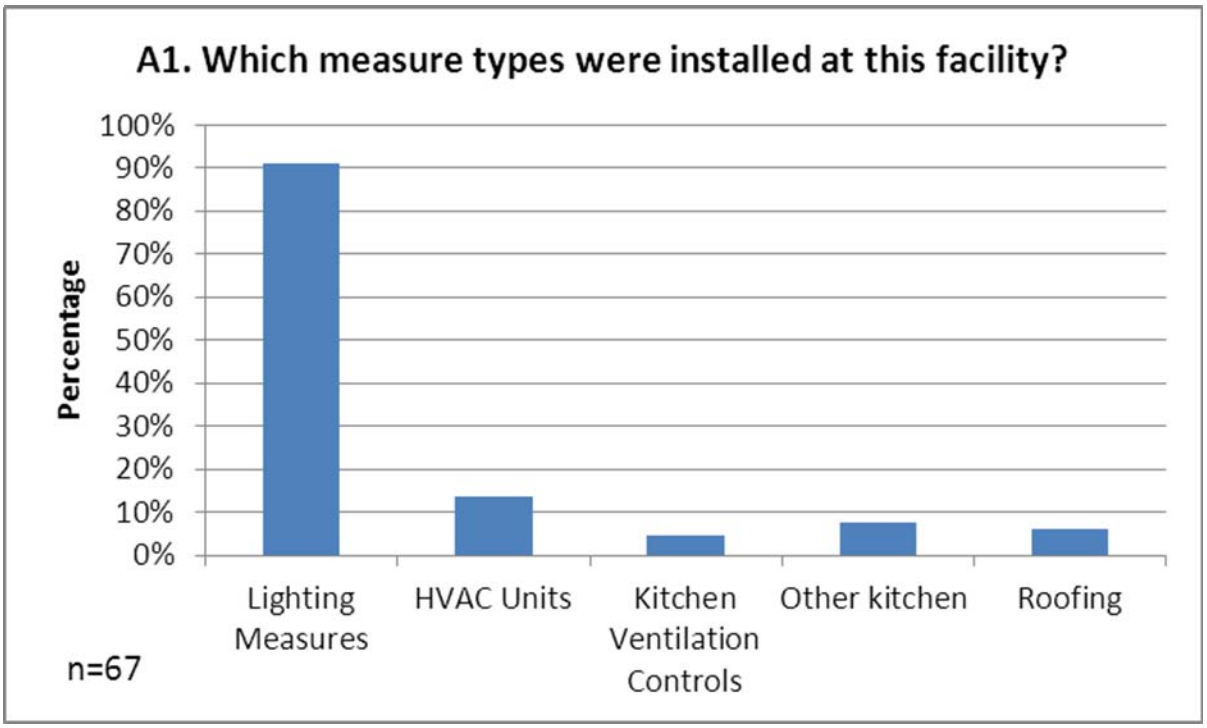
			Market Effects		Market Effects Metrics		Savings Metrics	
Objective	**Market Barriers Addressed**	**Strategy, Tools and Market Actors**	**SHORT TERM Behavior Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**SHORT TERM Behavioral Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**Program Activities/ 2009 Outputs**	**Impact Evaluation/ Savings Verification**
Educate and encourage residential customers to dispose of spare or inefficient refrigerators Energy and demand savings from removal of second refrigerators and freezers .	Lack of information on cost of operating equipment and benefits of removing and recycling Inconvenience and expenses involved in the disposing of old refrigerators and freezers Concern over losing additional refrigeration capacity	Financial incentives Free refrigerator/freezer pick-up service Educational materials on expense of maintaining a second refrigerator/freezer	Increase in customer awareness of energy and bill savings benefits	Increase in the number of refrigerators and freezers recycled Reduction in the number of secondary, inefficient refrigerators and inefficient freezers Increased awareness in the benefits of energy efficient appliances Spillover to non-participants	Customer awareness of program and energy expense of secondary refrigerators and inefficient freezers	Customer satisfaction and commitment to refrigerator and freezer recycling Number of non-participants adopting the practice and eliminating the use of a secondary refrigerator and inefficient freezer	Energy and demand savings Number of refrigerators and freezers recycled Outreach to customers. Leverage field representatives.	Number of refrigerators and freezers recycled Reduction in the number of secondary refrigerators M&V surveying and monitoring Energy and demand savings

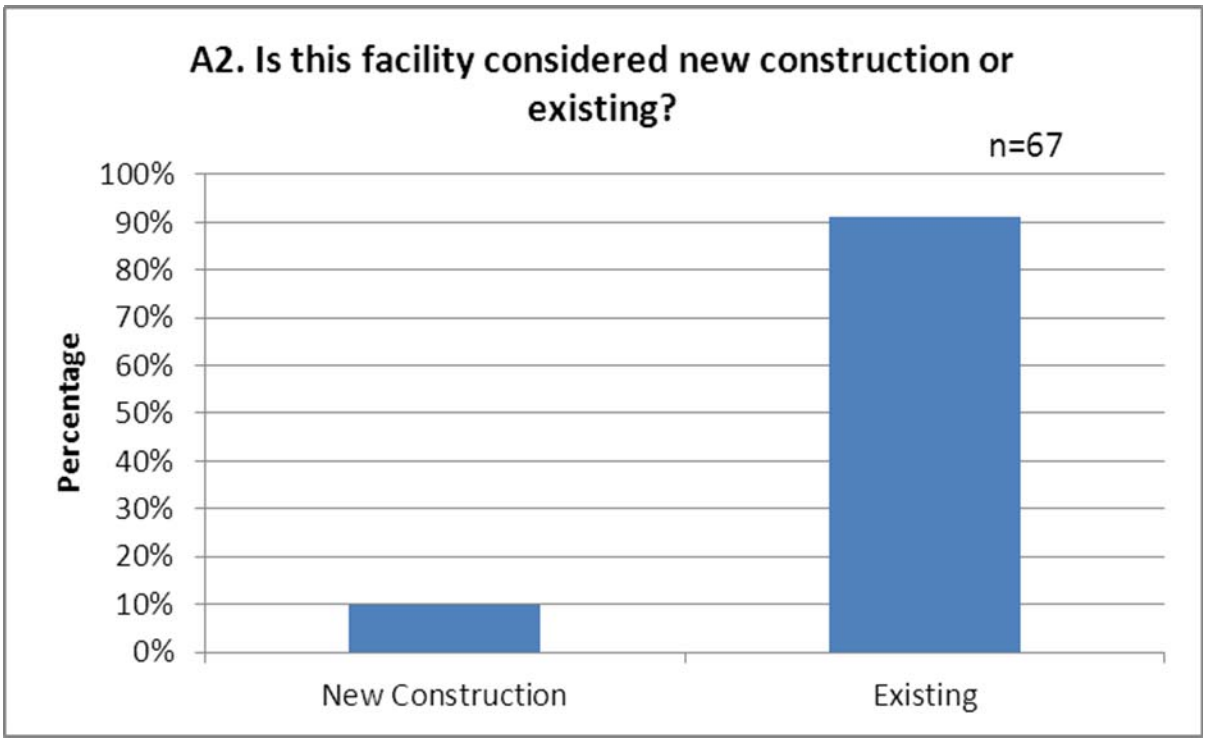
Figure A-8: Efficient New Homes Logic Chart

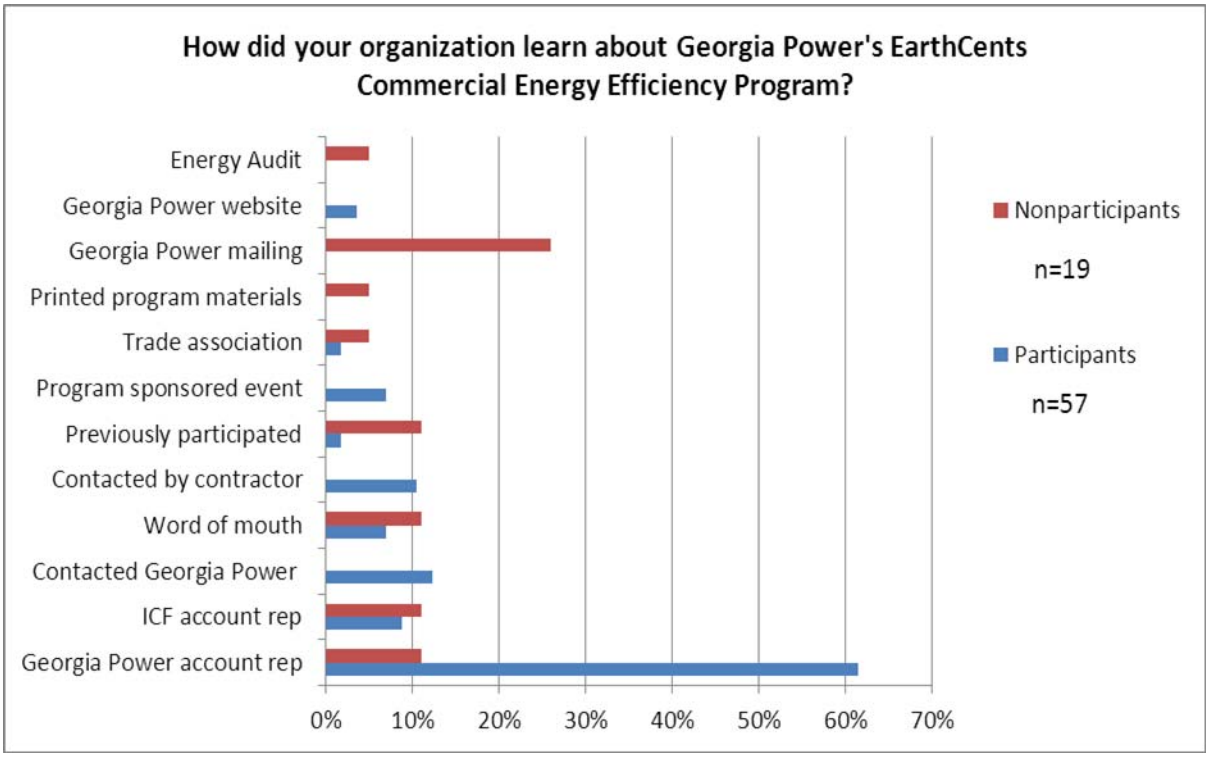
			Market Effects		Market Effects Metrics		Savings Metrics	
Objective	**Market Barriers Addressed**	**Strategy, Tools and Market Players**	**SHORT TERM Behavior Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**SHORT TERM Behavioral Change Effects (1 year)**	**LONGER TERM Market Effects (2- 5 years)**	**Program Activities/ 2011 Outputs**	**Impact Evaluation/ Savings Verification**
Maximize achievable energy efficiency in new homes by helping homebuyers reduce future energy consumption while lowering their future utility bills Increase awareness of energy-efficiency practices and services among Georgia Power's customers and local contractors Encourage the use of ENERGY STAR® rated and similar energy-efficiency measures and bring them into the mainstream market	High start-up cost Lack of prospective homebuyer and contractor information or awareness of practices Split incentives (i.e., builder incurs capital costs but homeowner benefits from energy savings) Limited equipment options	Financial Incentives Provide educational material on products and practices to customers to help them understand the long term economic and environmental benefits of energy-efficiency measures Train contractors and realtors on both technical and economic aspects of the energy-efficiency measures to be conveyed to prospective homebuyers. Recruit distributors to stock and supply the eligible energy efficient products	Increase in prospective homebuyer and contractor awareness of energy-efficiency products and measures and their economic and environmental benefits Registration of contractors with Georgia Power Increase in awareness among manufacturers about energy-efficiency product demand in the market	Increase in demand for and sales of energy-efficiency products among prospective homebuyers Increase in competition among contractors to provide energy-efficiency products and to meet market demands Increase in contractor training by Georgia Power Increase in energy-efficiency businesses and equipment options available in the market Development of robust energy rater network in Georgia	Awareness as indicated by homebuyer and contractor surveys Number of contractors registered with Georgia Power	Increased sales of High-Efficiency New Homes Increase in the number of qualified contractors participating in the program Increase in availability of energy efficient products Realtors incorporating energy efficiency into home data that is provided to homebuyers	Energy and demand savings Recruitment of distributors to stock and supply high-efficiency equipment Contractors' registration and training Marketing & outreach activities	Number of homebuyers that have participated in the program Customer awareness and satisfaction surveys Contractor registration and training counts Sales records of eligible High-Efficiency New Homes M&V surveying and monitoring Energy and demand savings Number of energy raters in Georgia

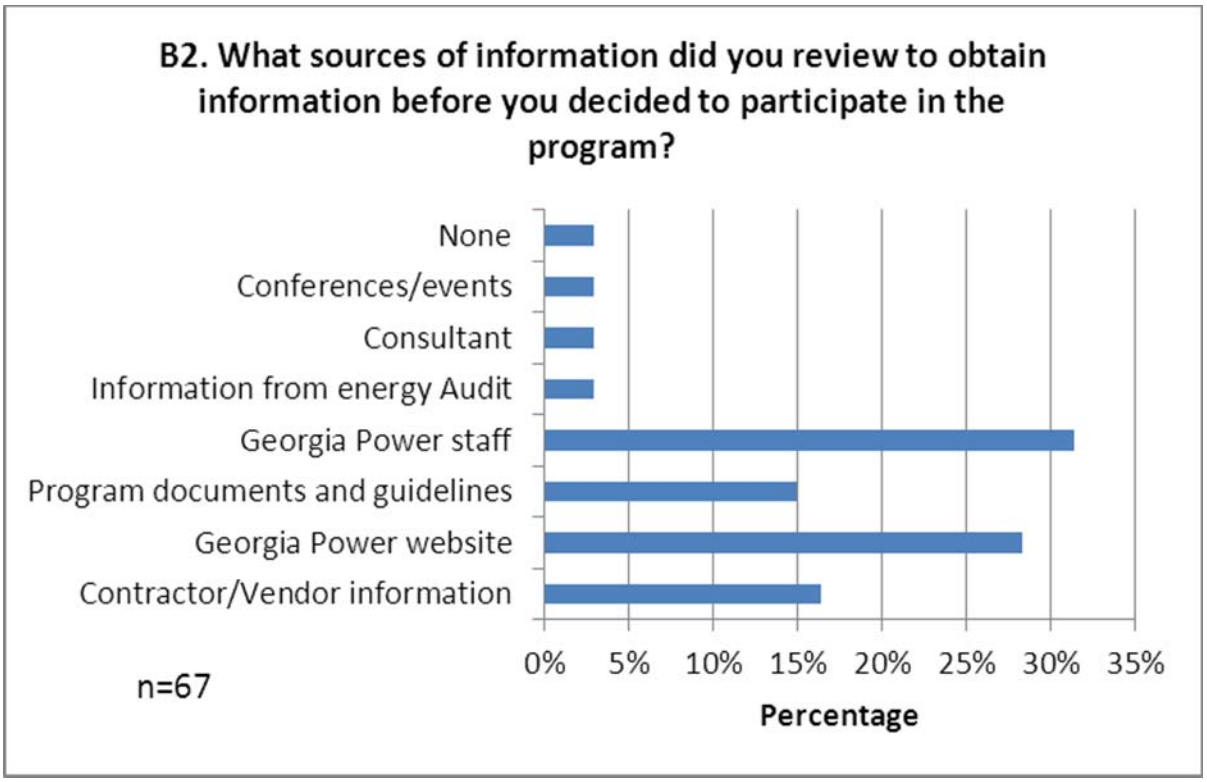
Appendix B DETAILED SURVEY RESULTS: COMMERCIAL

B.1 COMMERCIAL CUSTOMER PARTICIPANT SURVEY

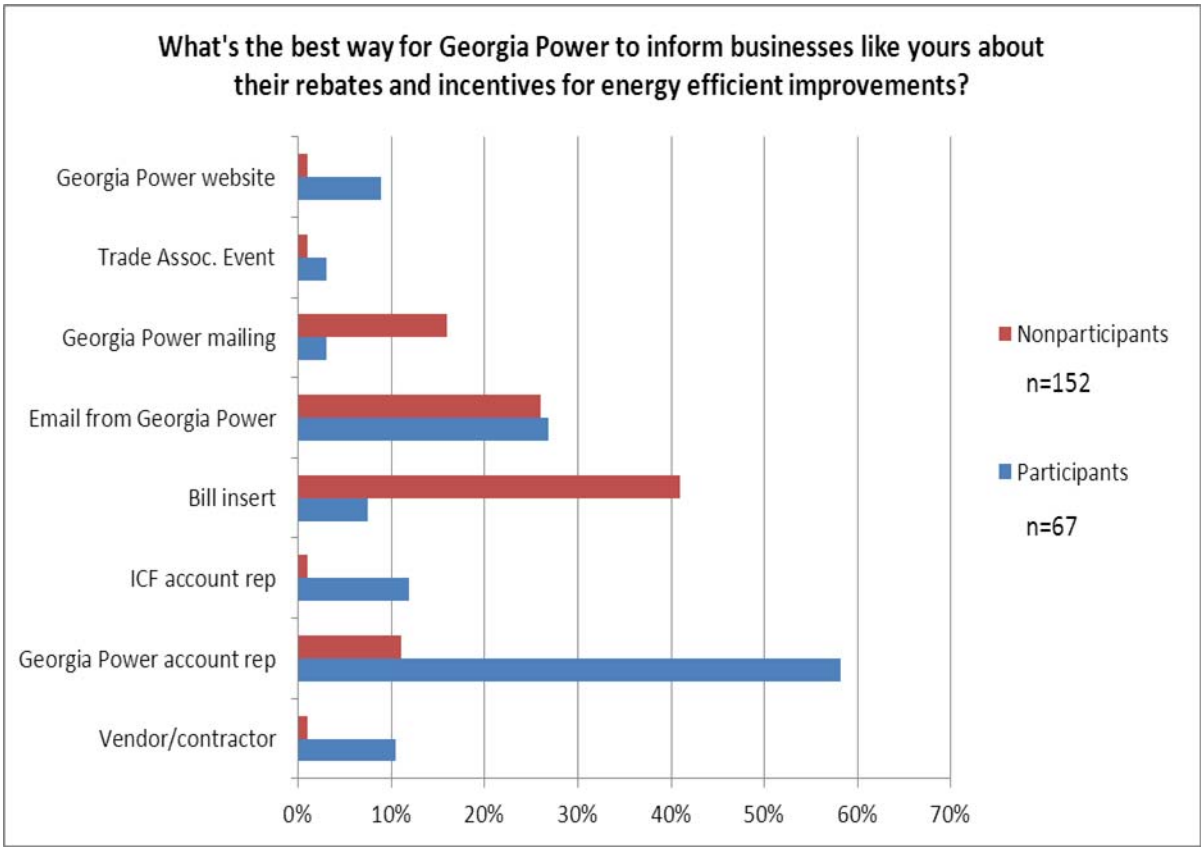


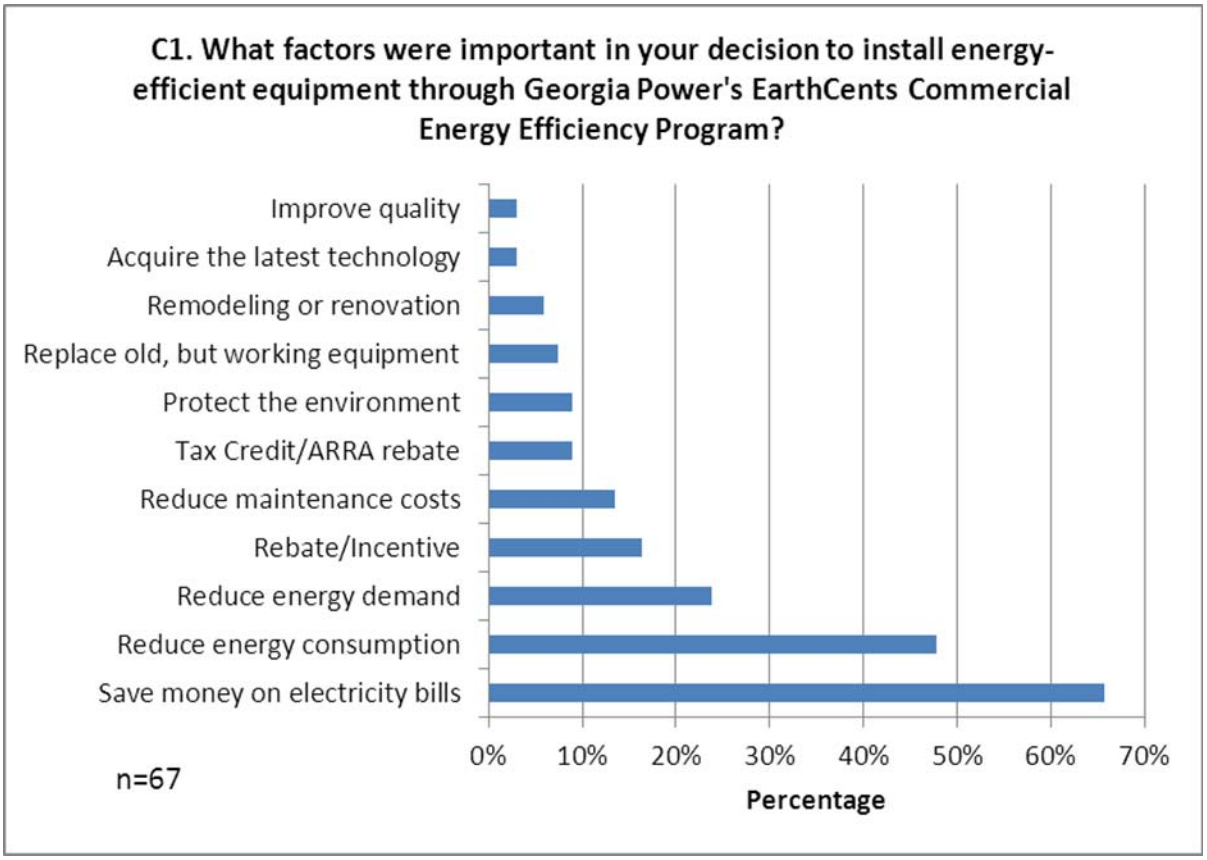



How did your organization learn about Georgia Power's EarthCents Commercial Energy Efficiency Program?
Energy Audit
Georgia Power website
Georgia Power mailing
Printed program materials
Trade association
Program sponsored event
Previously participated
Contacted by contractor
Word of mouth
Contacted Georgia Power
ICF account rep
Georgia Power account rep
0%
10%
20%
30%
40%
50%
60%
70%
Nonparticipants
n=19
Participants
n=57


B2. What sources of information did you review to obtain information before you decided to participate in the program?
None
Conferences/events
Consultant
Information from energy Audit
Georgia Power staff
Program documents and guidelines
Georgia Power website
Contractor/Vendor information
n=67
0%
5%
10%
15%
20%
25%
30%
35%
Percentage

Was the information sufficient to meet your needs?	**Base**	**54**
		100%
	Yes	52
		96%
	No [Ask w hat w as not sufficient]	2
		4%
	Don't know	11
	Refused	2
Was the information sufficient to meet your needs?	**Base**	**2**
		100%
	application help	1
		50%
	it took a long time for results	1
		50%
	Other	-
		-

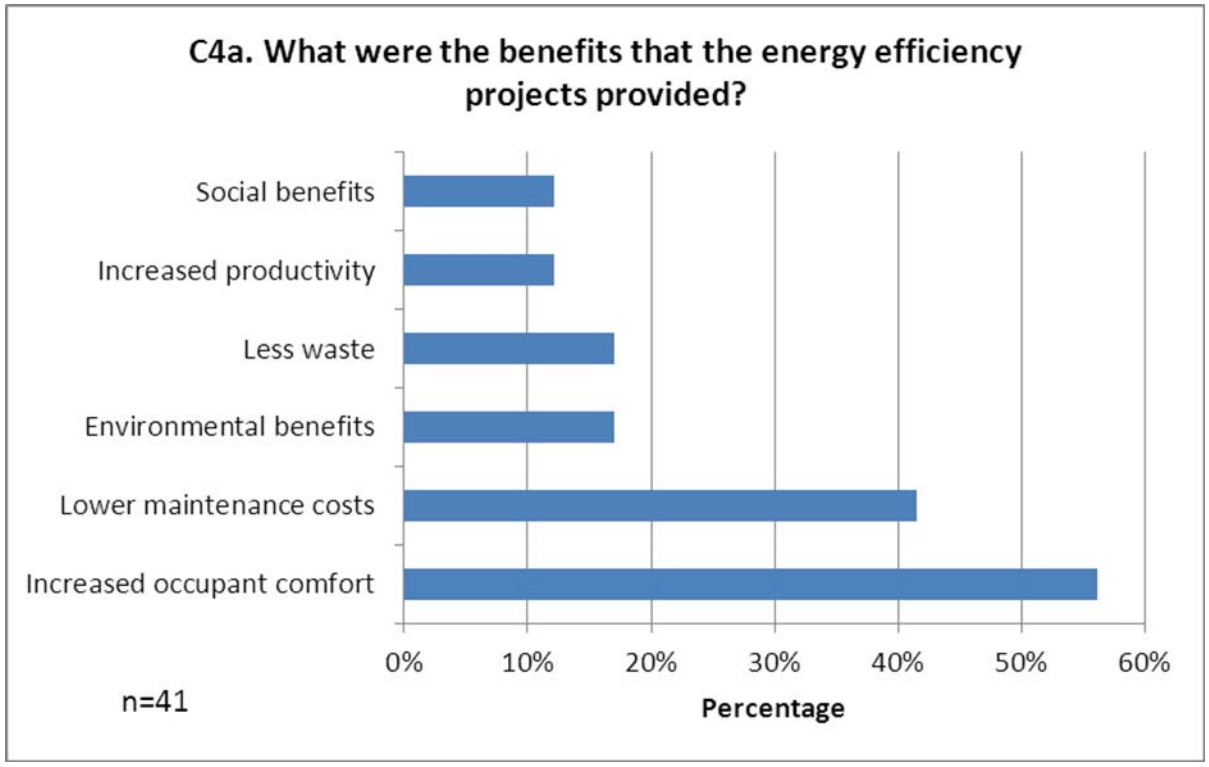


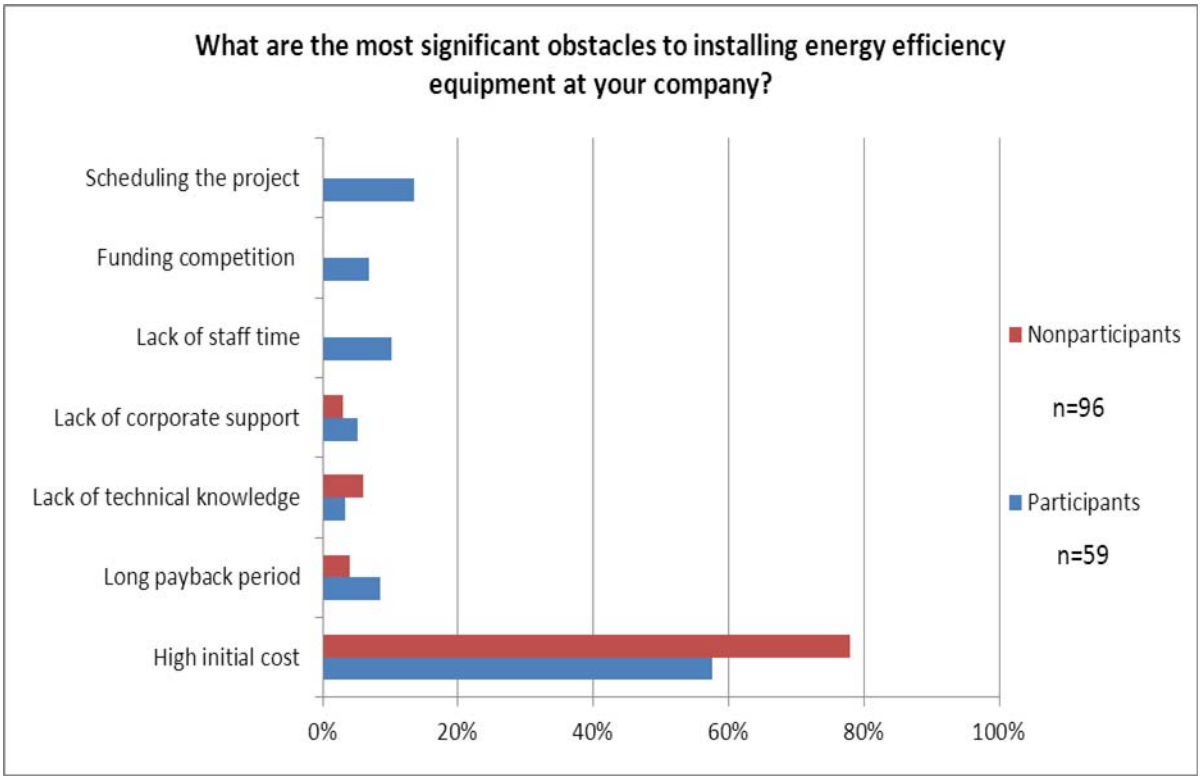


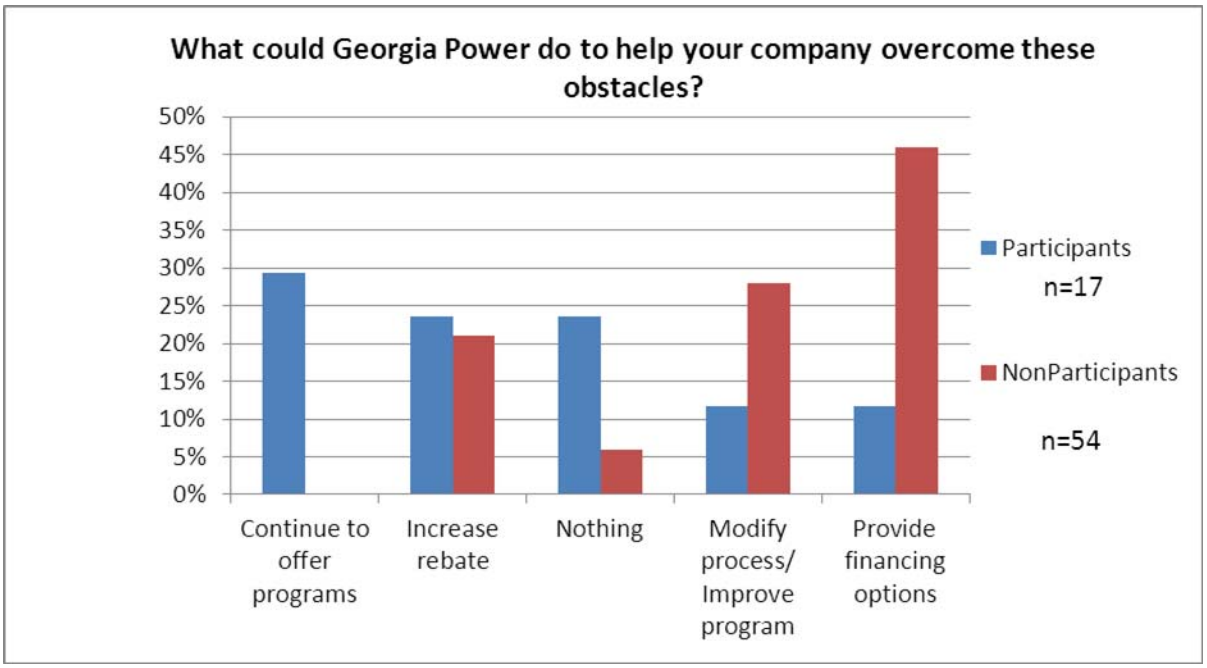
Which of these factors was the most influential in your decision to participate in the incentive program?	**Base**	**26**
		100%
	A commonsense approach to how we do business.	1
		4%
	Cost savings	1
		4%
	Don't Know	1
		4%
	Energy efficiency	1
		4%
	Energy savings	3
		12%
	Equal.	2
		8%
	Equally distributed.	1
		4%
	He wanted to save energy, but Vice President didn't approve it until he presented it as a safety risk for the warehouse. Then the VP gave approval. Didn't know about the rebate until already starting the project.	1
		4%

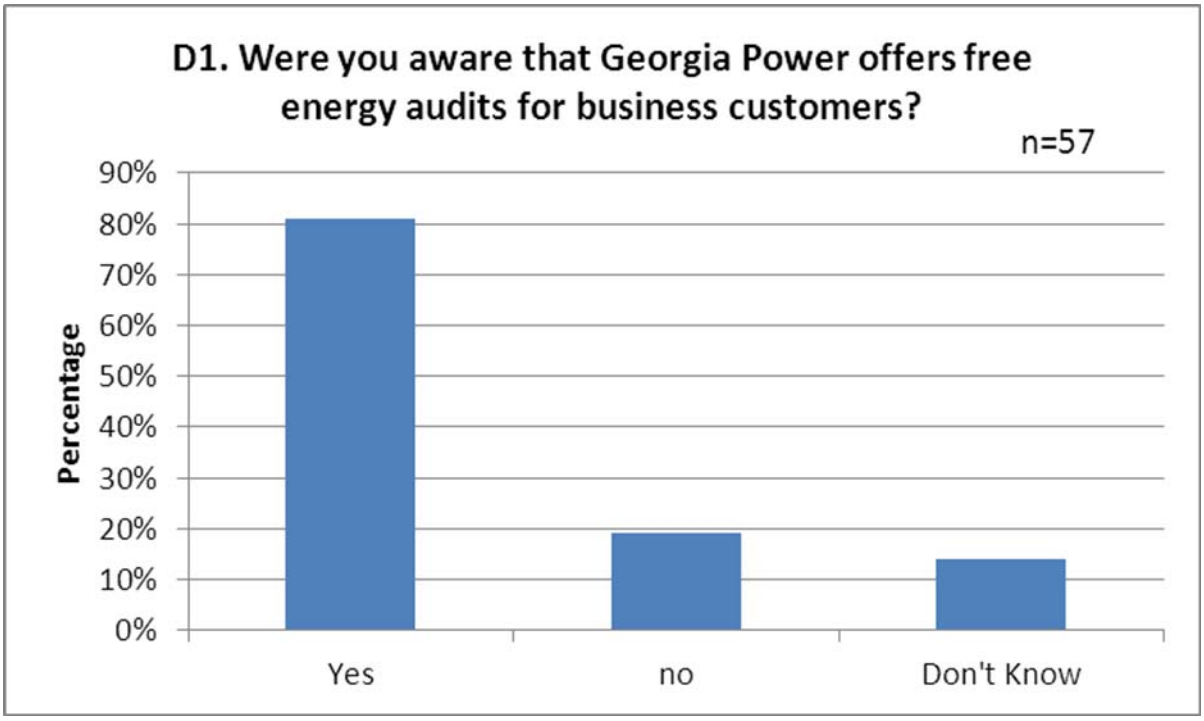
	Lowering consumption was a top priority.	1
		4%
	Rebate	1
		4%
	Reduce load	1
		4%
	Reducing consumption	1
		4%
	The energy savings was a high priority on the influences.	1
		4%
	The incentive itself	1
		4%
	The money saved from the upgrades	1
		4%
	The stimulus grant money	1
		4%
	cost	1
		4%
	energy efficiency, cost was not a driving factor	1
		4%
	rebate for the ROI	1
		4%
	reduce energy consumption	1
		4%
	replacement for old equipment	1
		4%
	save money	1
		4%
	the incentive program itself and energy savings	1
		4%

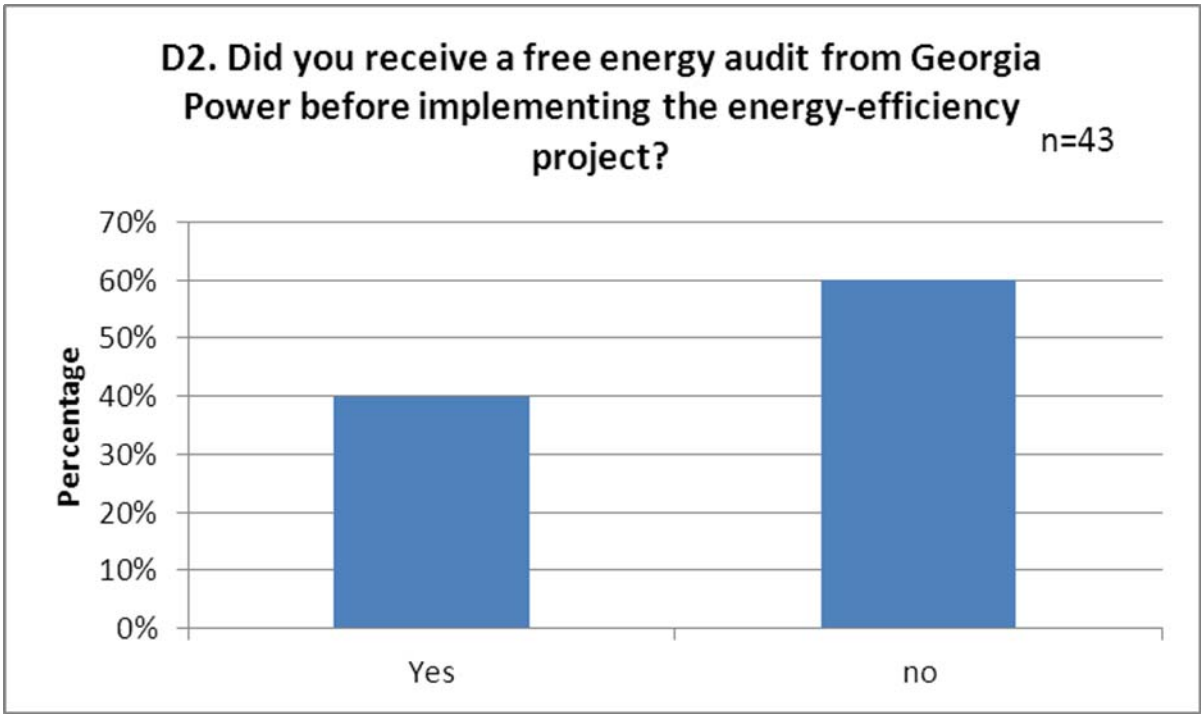
Have the energy efficiency projects that we've discussed provided benefits in addition to energy savings?	**Base**	**46**
		100%
	Yes	41
		89%
	No	5
		11%
	Don't know	12
	Refused	1

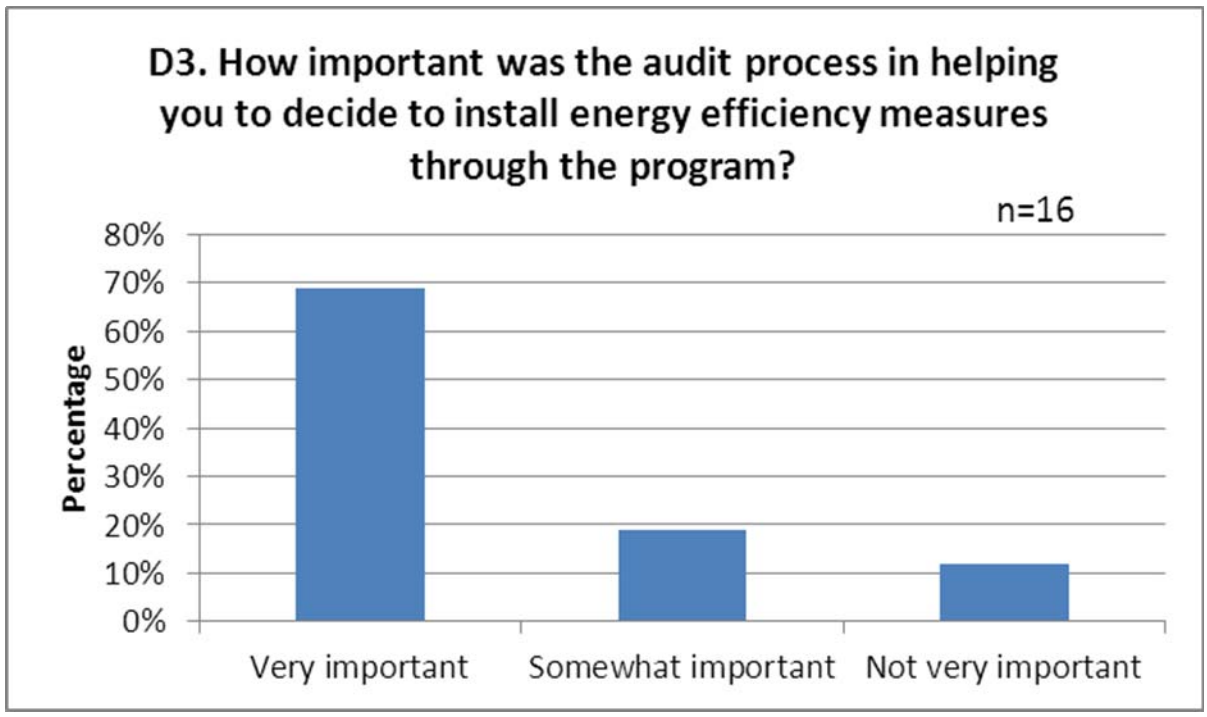



What are the most significant obstacles to installing energy efficiency equipment at your company?
Scheduling the project
Funding competition
Lack of staff time
Lack of corporate support
Lack of technical knowledge
Long payback period
High initial cost
0%
20%
40%
60%
80%
100%
Nonparticipants
n=96
Participants
n=59

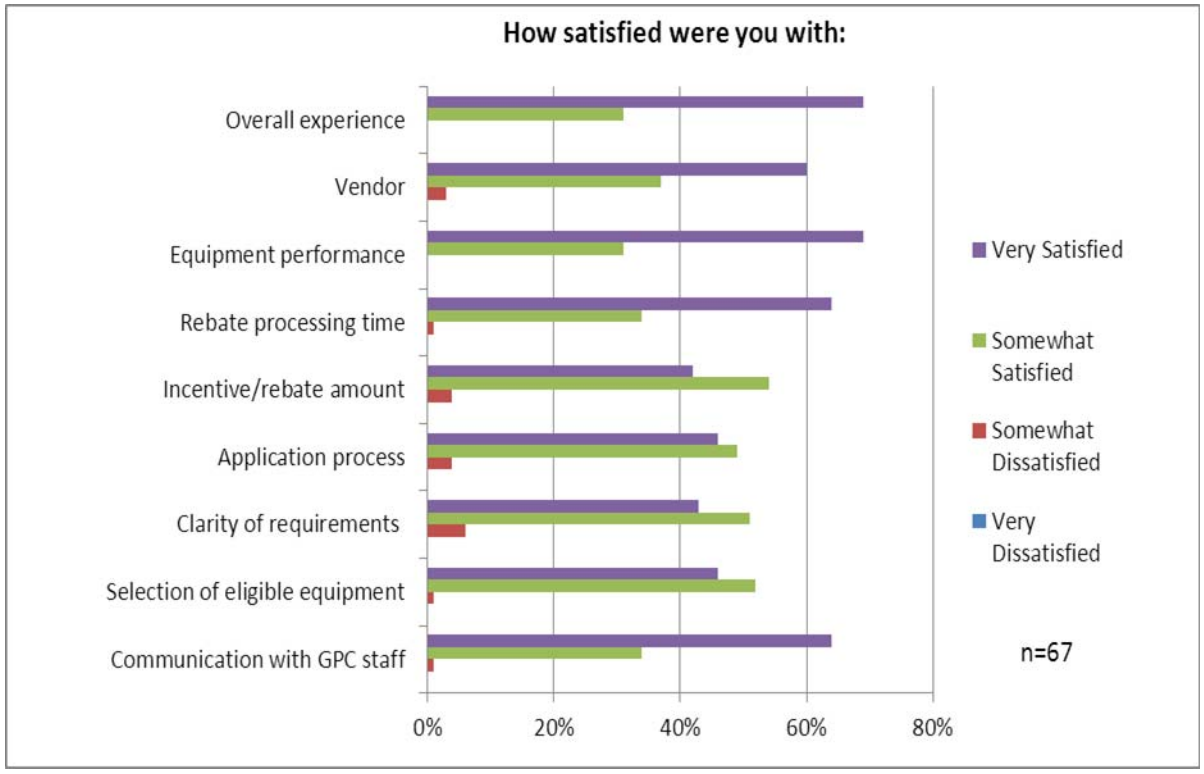

What could Georgia Power do to help your company overcome these obstacles?
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Continue to offer programs
Increase rebate
Nothing
Modify process/ Improve program
Provide financing options
Participants
n=17
NonParticipants
n=54


D1. Were you aware that Georgia Power offers free energy audits for business customers?
n=57
Percentage
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Yes
no
Don't Know


D2. Did you receive a free energy audit from Georgia Power before implementing the energy-efficiency project?
n=43
Percentage
70%
60%
50%
40%
30%
20%
10%
0%
Yes
no



What prevented you from implementing some of the audit recommendations?-TEXT	**Base**	**9**
		100%
	Cost	1
		11%
	Financial reasons	3
		33%
	High inital cost.	1
		11%
	Money	2
		22%
	budget contraints, plan on doing all but dont have the budget now	1
		11%
	budget limitations	1
		11%



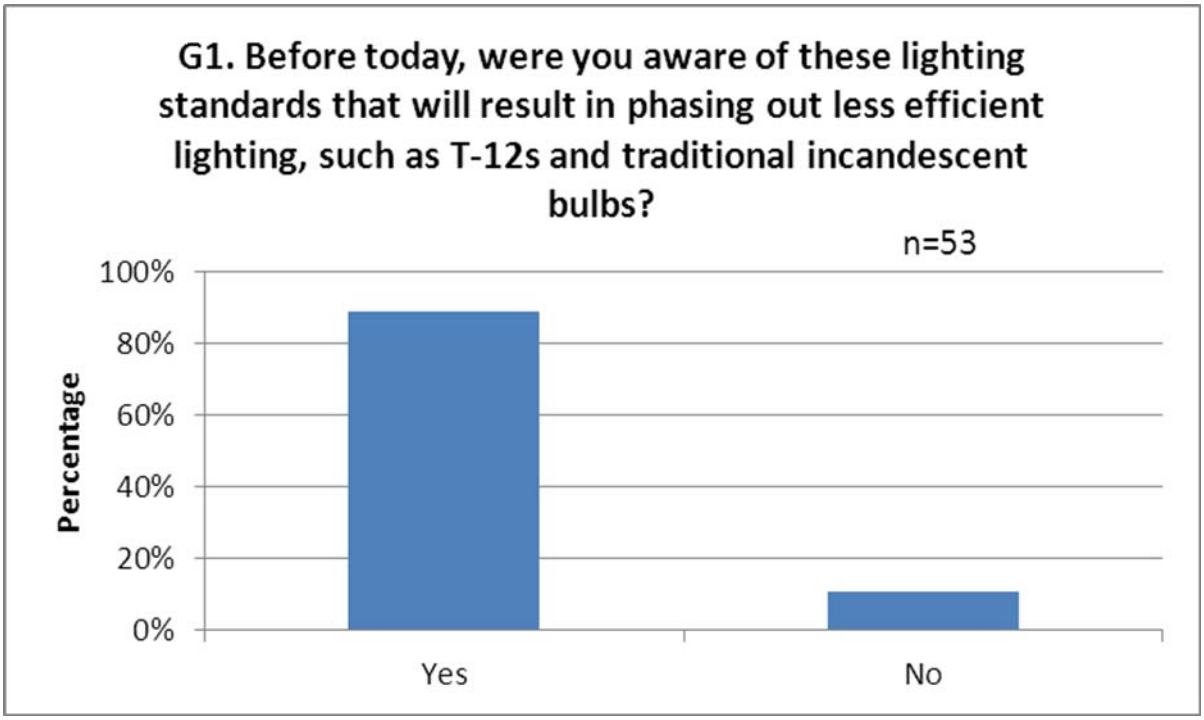
You said you were somewhat dissatisfied with the communication with the GPC staff. Why did you give...	**Base**	**1**
		100%
	at the time of request nobody knew what was going on	1
		100%
	Other	-
		-
You said you were somewhat dissatisfied with the selection of eligible equipment. Why did you give t...	**Base**	**1**
		100%
	Georgia Power did not seem to work with manufacturers much in terms of specifying certein qualified products.	1
		100%
	Other	-
		-
You said you were somewhat dissatisfied with the clarity of program application requirements. Why di...	**Base**	**4**
		100%
	Excel spreadsheet naming convention was not consistent between old and new lighting	1
		25%
	It was a littled difficult sometimes to pick out the correct fixture type from the list of available.	1
		25%
	The submittals were difficult to figure out. The excel worksheet was not functioning properly	1
		25%
	called many times before i found someone to get me started	1
		25%

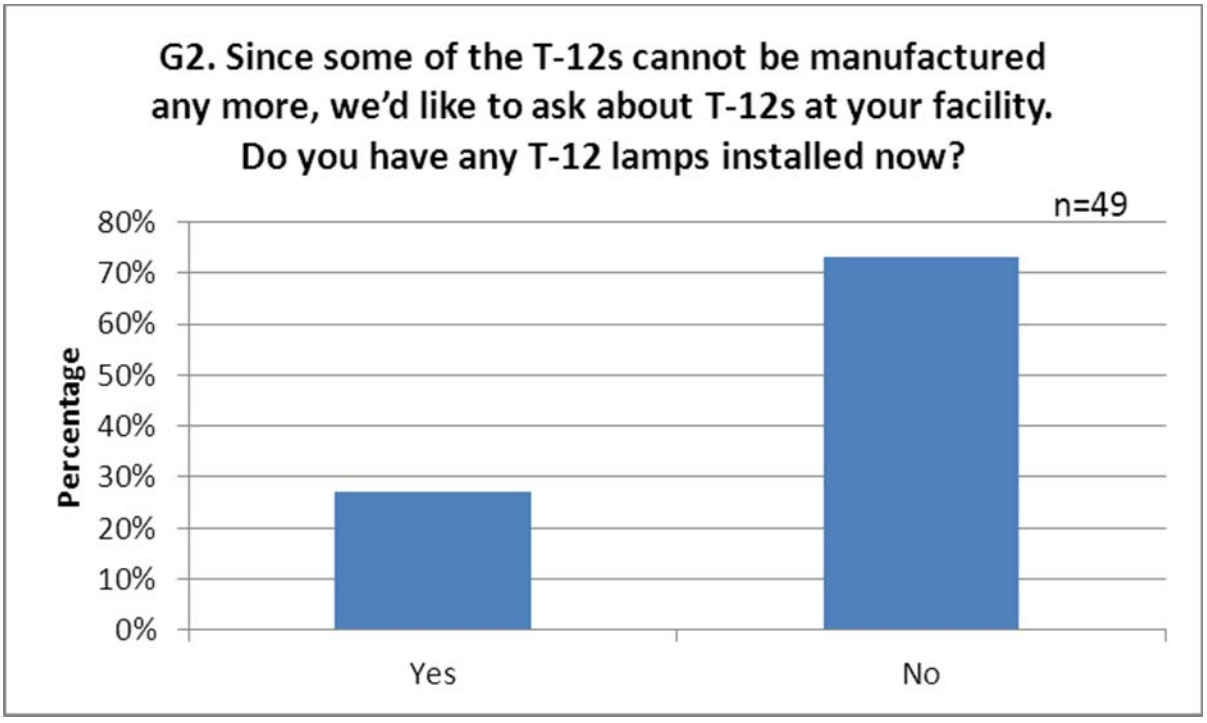
	Other	-
		-
You said you were somewhat dissatisfied with the application process. Why did you give this rating?	**Base**	**3**
		100%
	The amount of effort necessary to acquire the information needed (e-mails, specs, on-site visits)	1
		33%
	The submittals were difficult to figure out. The excel worksheet was not functioning properly	1
		33%
	There was another company who helped walk her through the process, but if there had not been someone helping her and walking her through it, she did not think that she would have been able to do it on her own.	1
		33%
	Other	-
		-
You said you were somewhat dissatisfied with the incentive/rebate amount for equipment installed. Wh...	**Base**	**3**
		100%
	cost a lot with very little help	1
		33%
	they knew what they were stepping into, so not fooled, but would have liked more.	1
		33%
	we could always use more monies	1
		33%
	Other	-
		-
You said you were somewhat dissatisfied with the rebate processing time. Why did you give this ratin...	**Base**	**1**
		100%
	took longer than i thought/ but guess it did not matter much	1
		100%
	Other	-
		-
You said you were somewhat dissatisfied with the vendor who installed the equipment. Why did you giv...	**Base**	**2**
		100%
	Had doubts about their technical expertise and communication/support after the installation.	1
		50%
	The scheduling and amount of time that it took to install the equipment was an issue	1
		50%
	Other	-
		-

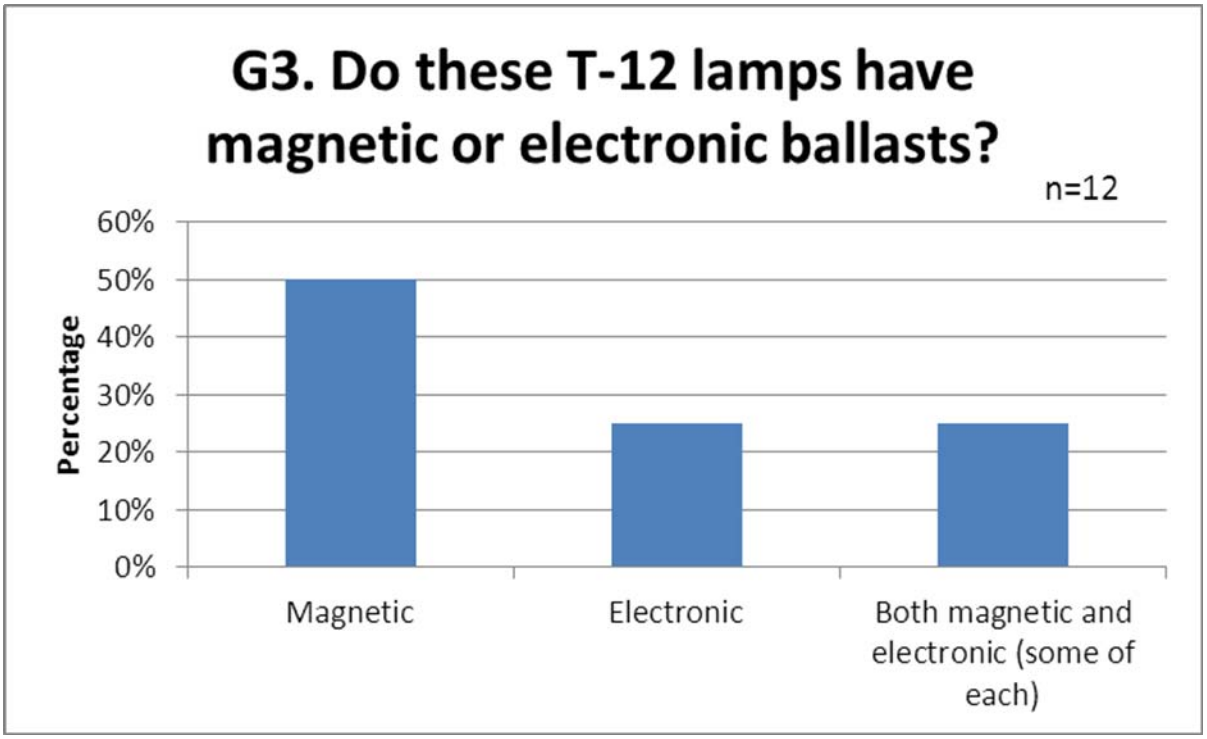
Was there any energy-efficient	**Base**	**67**

equipment that you were interested in but did not install because a rebate was unavailable from Georgia Power?		***100%***
	Yes	9
		13%
	No	44
		66%
	Don't know	12
		18%
	Refused	2
		3%

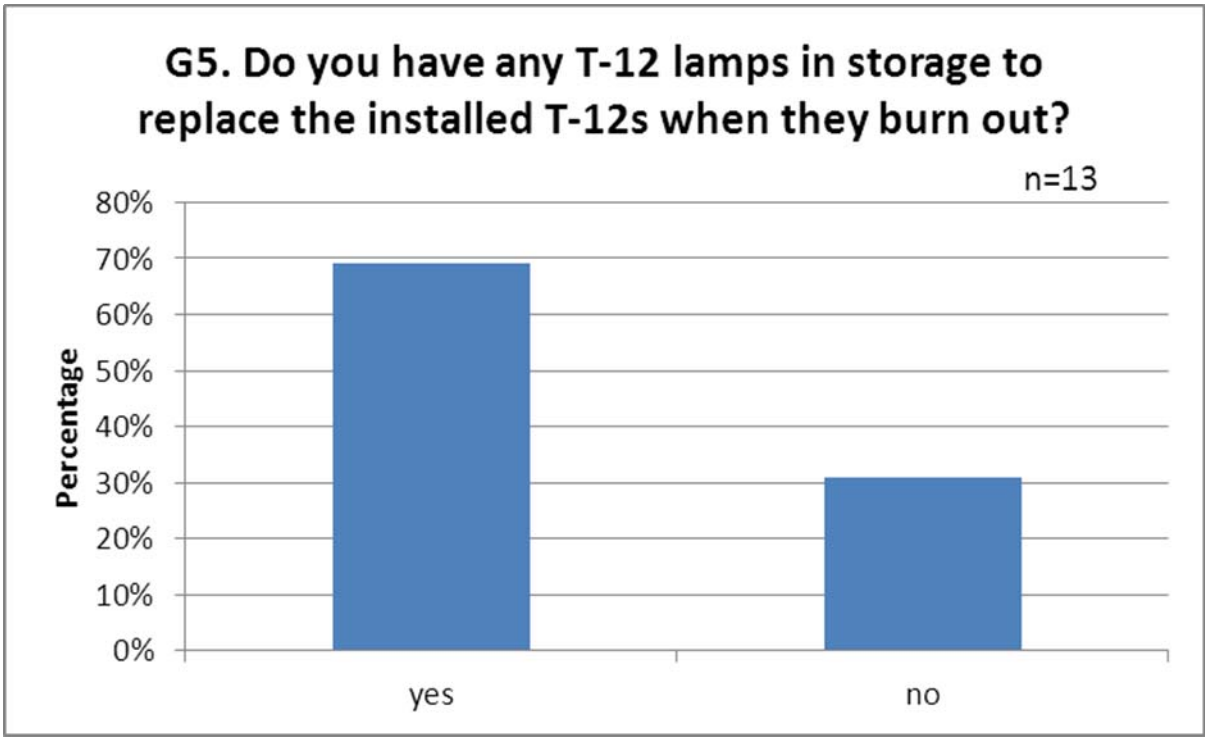
What were they? [Record verbatim]	**Base**	**9**
		100%
	Commercial Kitchen Equipment (not available to purchase)	1
		11%
	Lighting, chillers	1
		11%
	No rebate VFD motors	1
		11%
	Refrigeration (heating and cooling system BRB) replacement w as not available at the time	1
		11%
	Solar electric	1
		11%
	Would have gone from T8 to LED	1
		11%
	building controls, other than occupancy sensors	1
		11%
	large mechanical equipment	1
		11%
	spray foam insulation	1
		11%
	Other	-
		-


G1. Before today, were you aware of these lighting standards that will result in phasing out less efficient lighting, such as T-12s and traditional incandescent bulbs?
n=53
100%
80%
60%
40%
20%
0%
Percentage
Yes
No

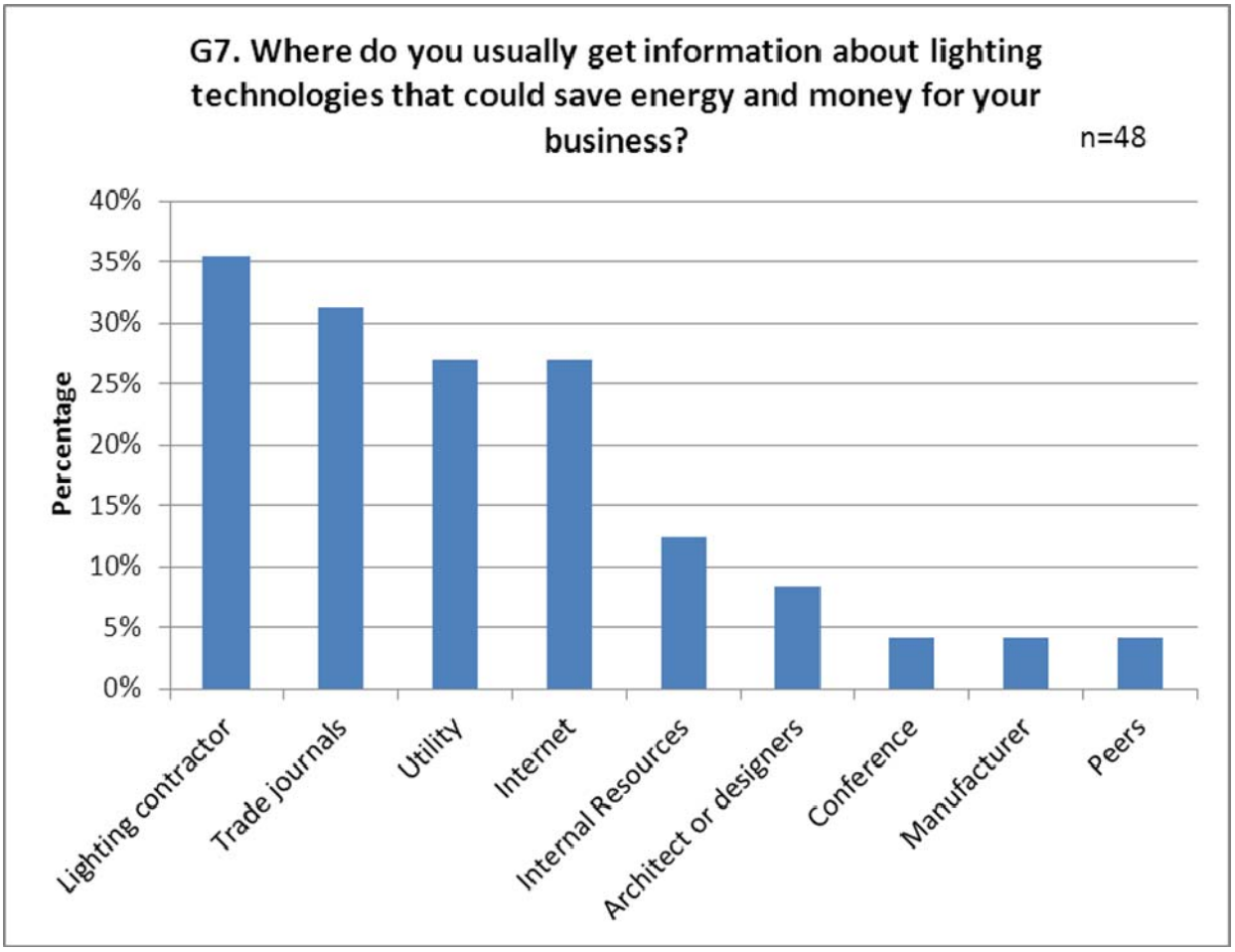

G2. Since some of the T-12s cannot be manufactured any more, we'd like to ask about T-12s at your facility. Do you have any T-12 lamps installed now?
n=49
80%
70%
60%
50%
40%
30%
20%
10%
0%
Percentage
Yes
No

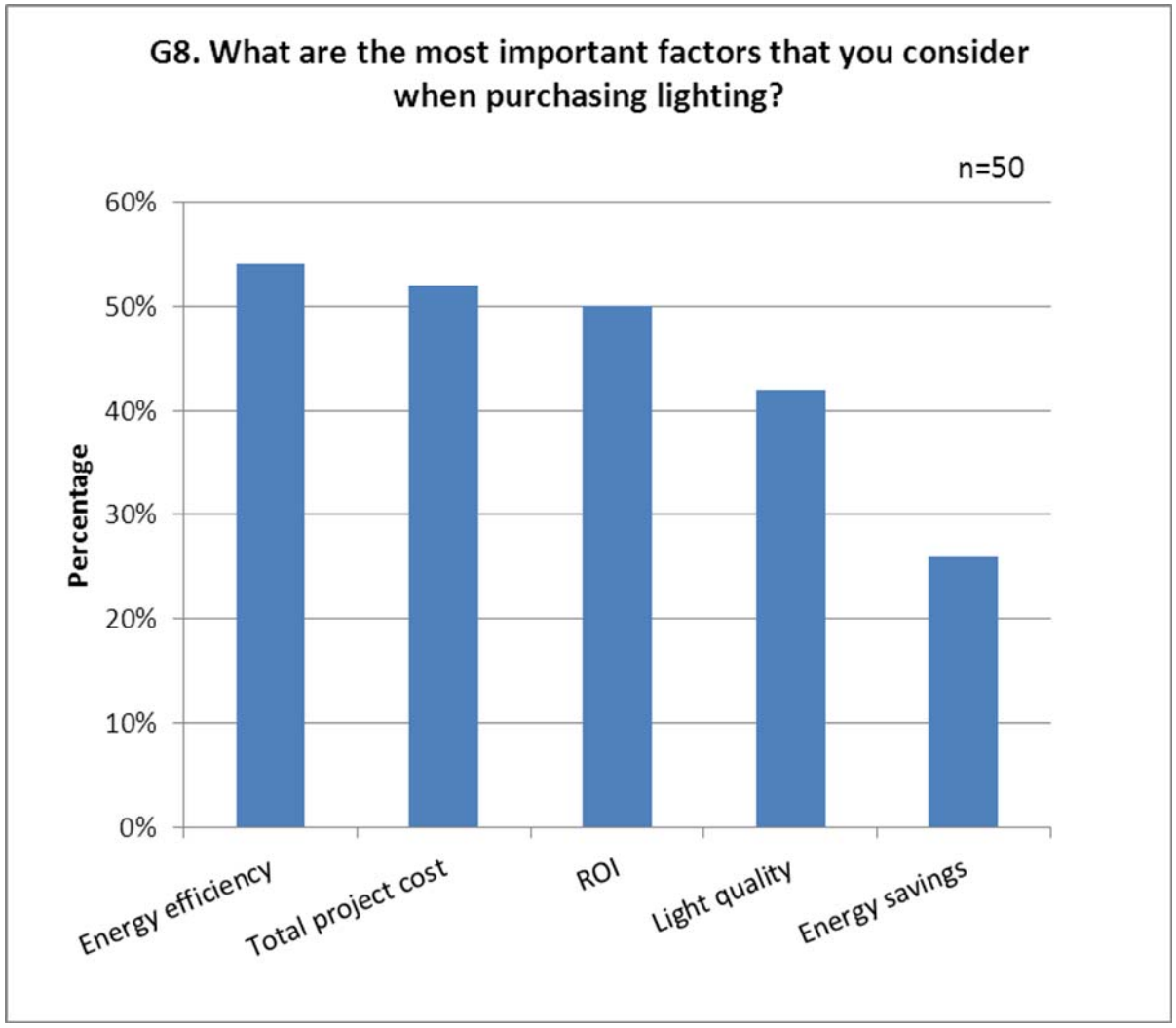


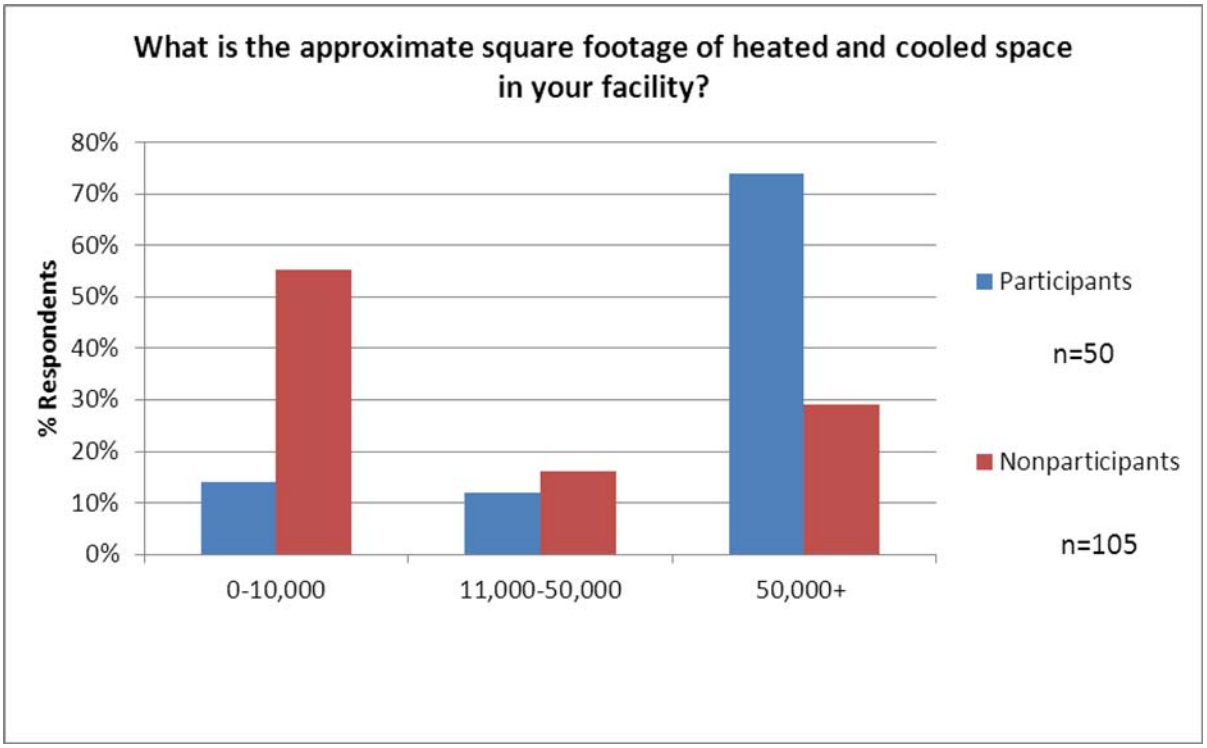
What percent of all linear fluorescent lighting in your facility is currently T-12s?- TEXT	**Base**	**12**
		100%
	.05	1
		8%
	1	2
		17%
	1%	1
		8%
	10	3
		25%
	15	1
		8%
	2	1
		8%
	2%	1
		8%
	3-4%	1
		8%
	50	1
		8%
	Other	-
		-

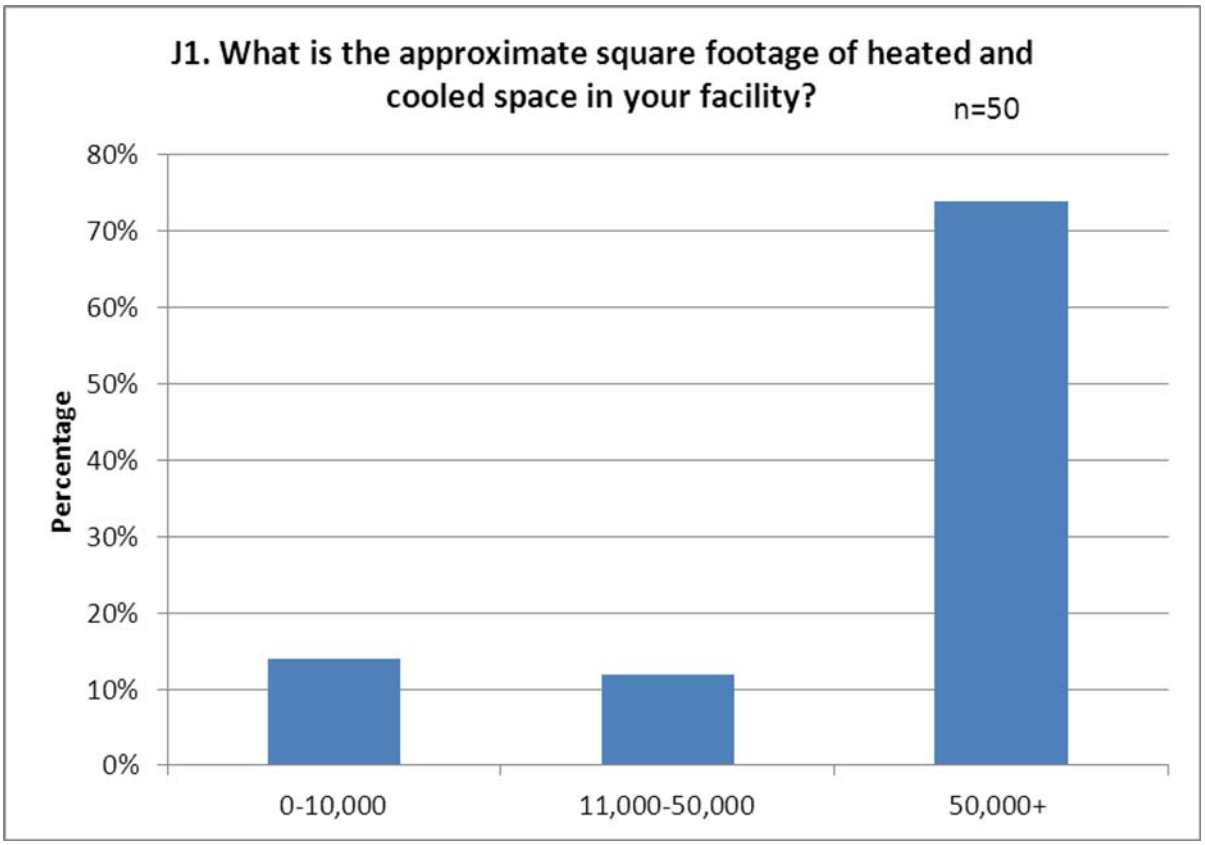


What percent of the T-12s currently installed could be replaced by the T-12s in storage? [Do you hav...-TEXT	**Base**	**6**
		100%
	10	1
		17%
	100	2
		33%
	100%	1
		17%
	25	1
		17%
	30	1
		17%
	Other	-
		-

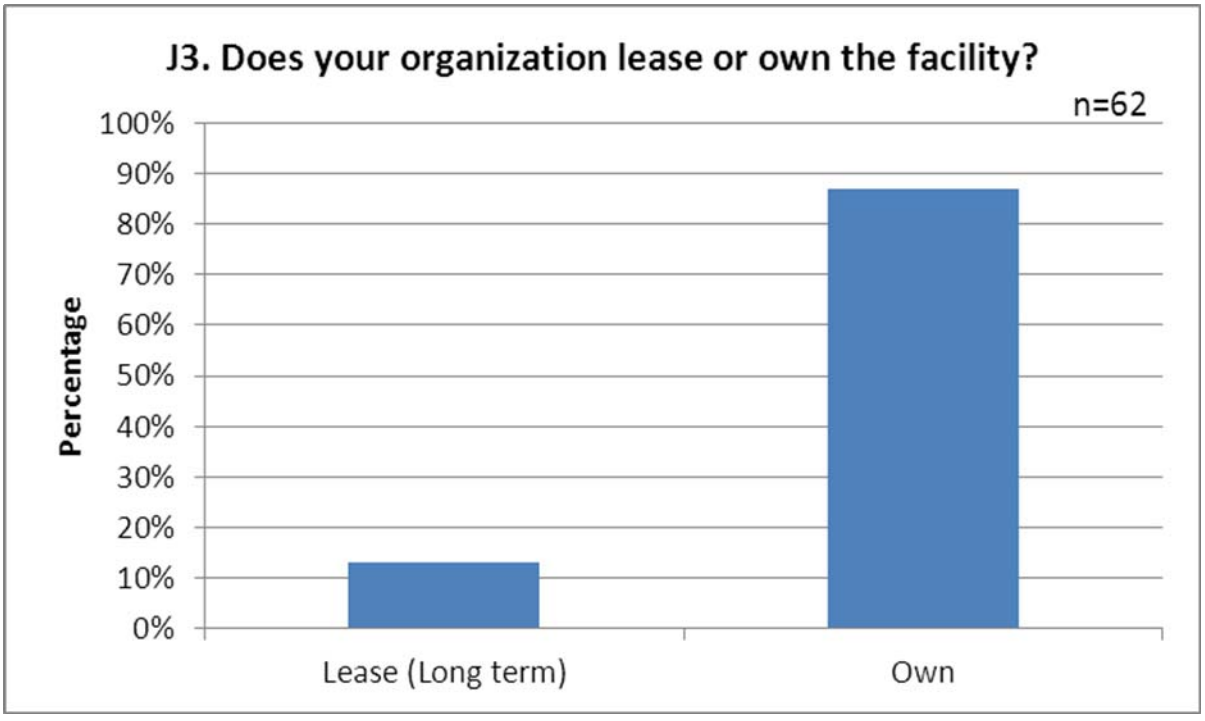

G7. Where do you usually get information about lighting technologies that could save energy and money for your business?
n=48
Percentage
40%
35%
30%
25%
20%
15%
10%
5%
0%
Lighting contractor
Trade journals
Utility
Internet
Internal Resources
Architect or designers
Conference
Manufacturer
Peers

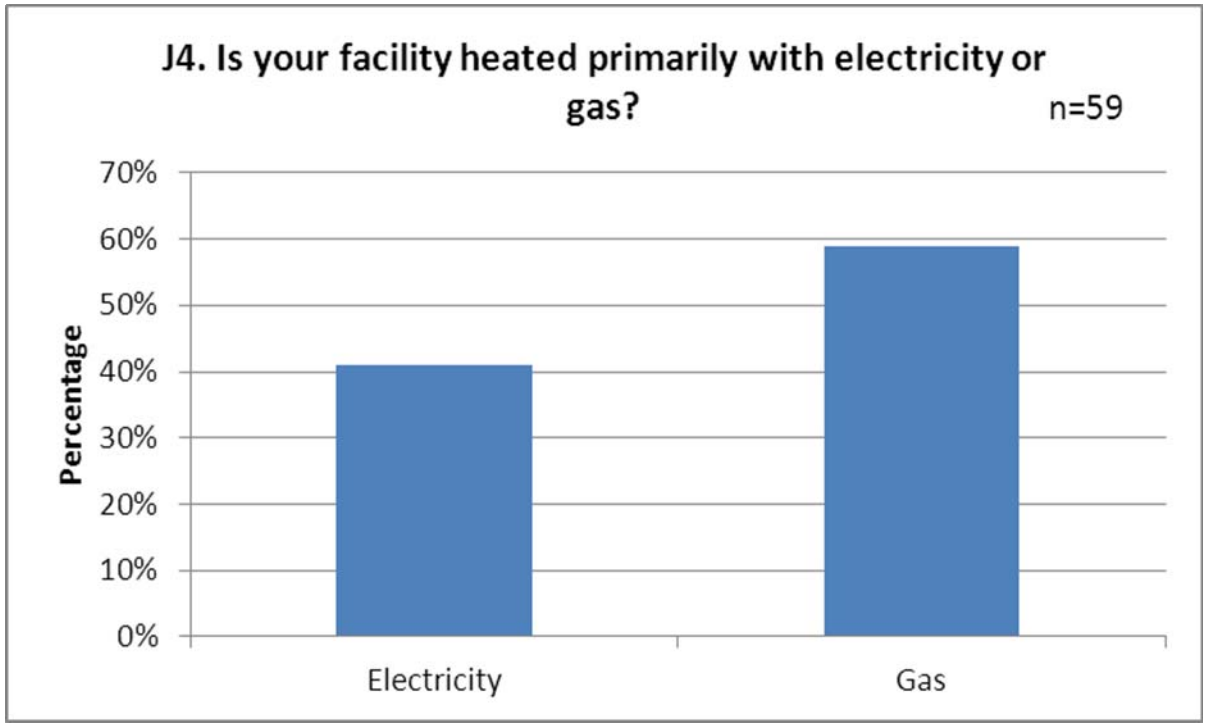

G8. What are the most important factors that you consider when purchasing lighting?
n=50
Percentage
60%
50%
40%
30%
20%
10%
0%
Energy efficiency
Total project cost
ROI
Light quality
Energy savings


What is the approximate square footage of heated and cooled space in your facility?
% Respondents
80%
70%
60%
50%
40%
30%
20%
10%
0%
0-10,000
11,000-50,000
50,000+
Participants
n=50
Nonparticipants
n=105

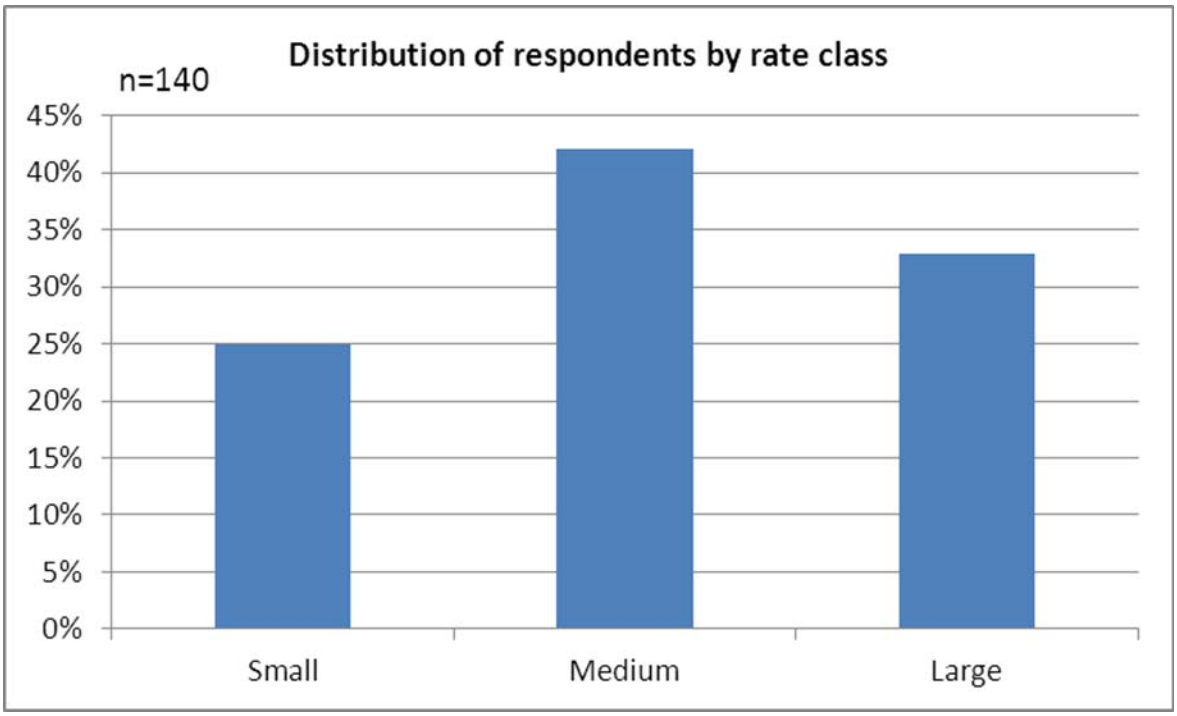

J1. What is the approximate square footage of heated and cooled space in your facility?
n=50
Percentage
80%
70%
60%
50%
40%
30%
20%
10%
0%
0-10,000
11,000-50,000
50,000+


J2. How many people are employed at this location?
n=48
Percentage
35%
30%
25%
20%
15%
10%
5%
0%
1-50
51-100
101-500
501+

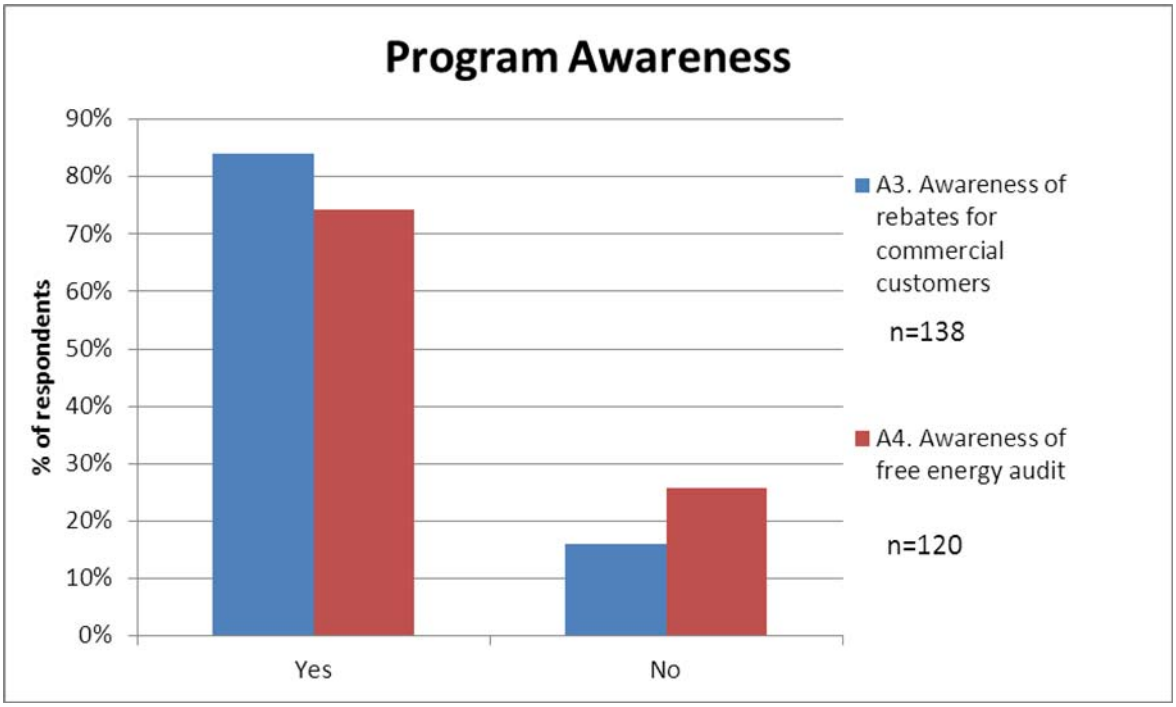

J3. Does your organization lease or own the facility?
n=62
Percentage
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Lease (Long term)
Own


J4. Is your facility heated primarily with electricity or gas?
n=59
Percentage
70%
60%
50%
40%
30%
20%
10%
0%
Electricity
Gas

B.2 COMMERICAL CUSTOMER NONPARTICIPANT SURVEY



A1. Has your company received a rebate from Georgia Power for installing energy efficient equipment in the last year?	**Base**	**41**
		100%
	Yes	-
		-
	No	41
		100%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-



A5. Has your business received a free energy audit from Georgia Power?	**Base**	**29**
		100%
	No	24
		83%
	Yes	5
		17%
	(VOL) Don't Know	2
	(VOL) Refused	-
		-

A6. Did you implement all, some, or none of the recommendations provided by the audit?	**Base**	**5**
		100%
	All	1
		20%
	Some	2
		40%
	None	2
		40%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

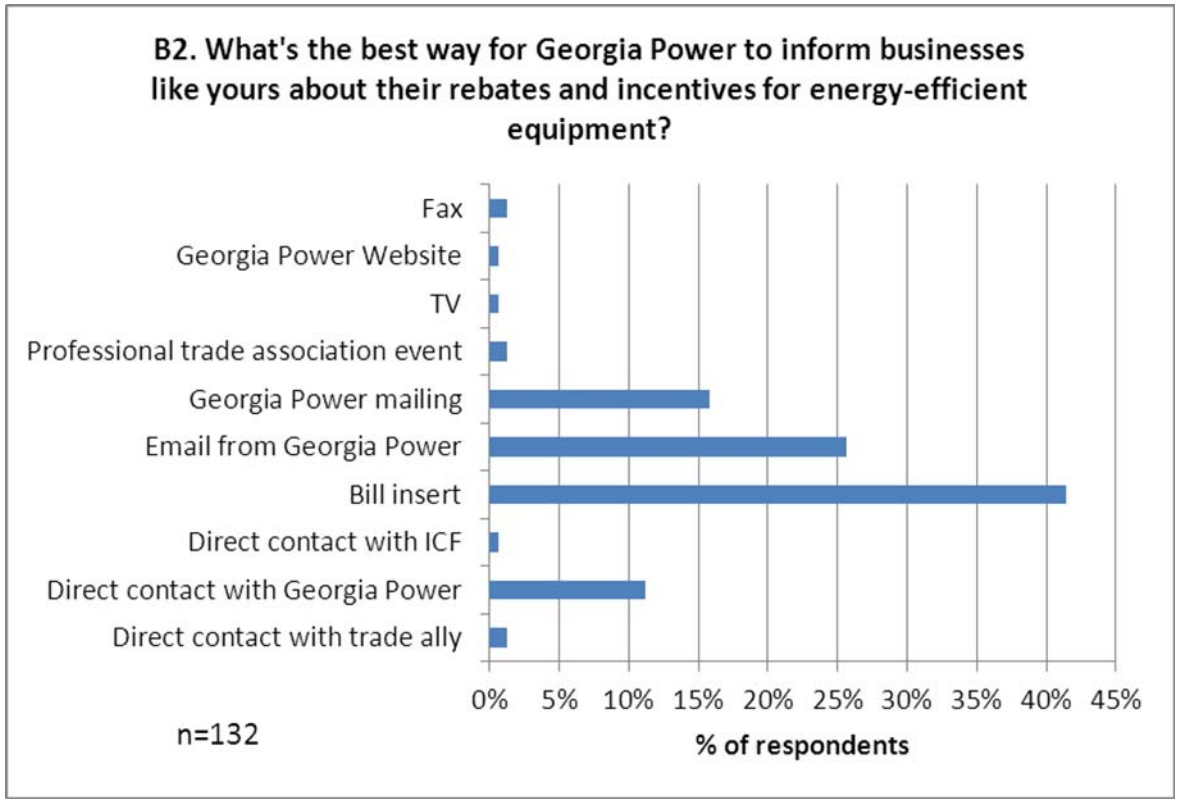
[INTERVIEWER: RECORD VERBATIM] (A7. How did you decide which recommendations to implement? [VERBATIM RESPONSE]	**Base**	**4**
		100%
	because w e have already done all of the ones on their list (else)	1
		25%
	the lighting	1
		25%
	the ow ners	1
		25%
	w e moved locations	1
		25%

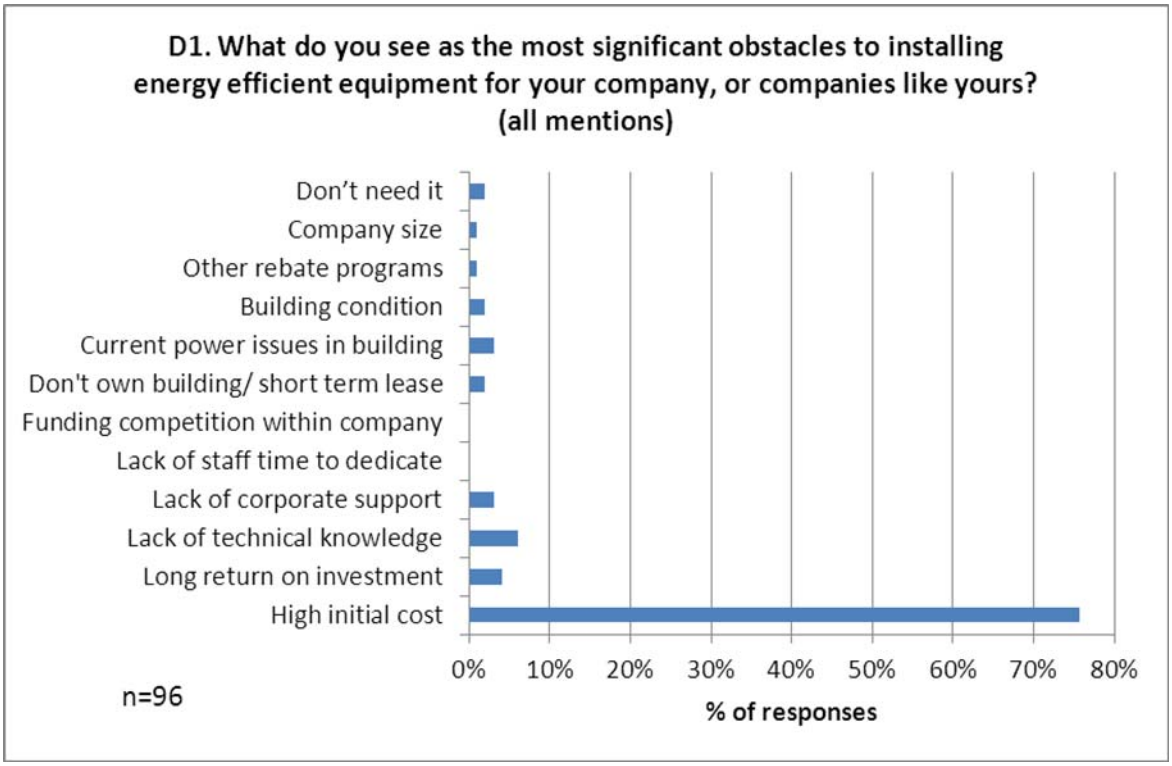
A8. How useful was the energy audit in encouraging your business to implement changes to help your business save energy? Would you say it was:	**Base**	**5**
		100%
	Very useful	4
		80%
	Somew hat useful	1
		20%
	Not very useful	-
		-
	Not useful at all	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

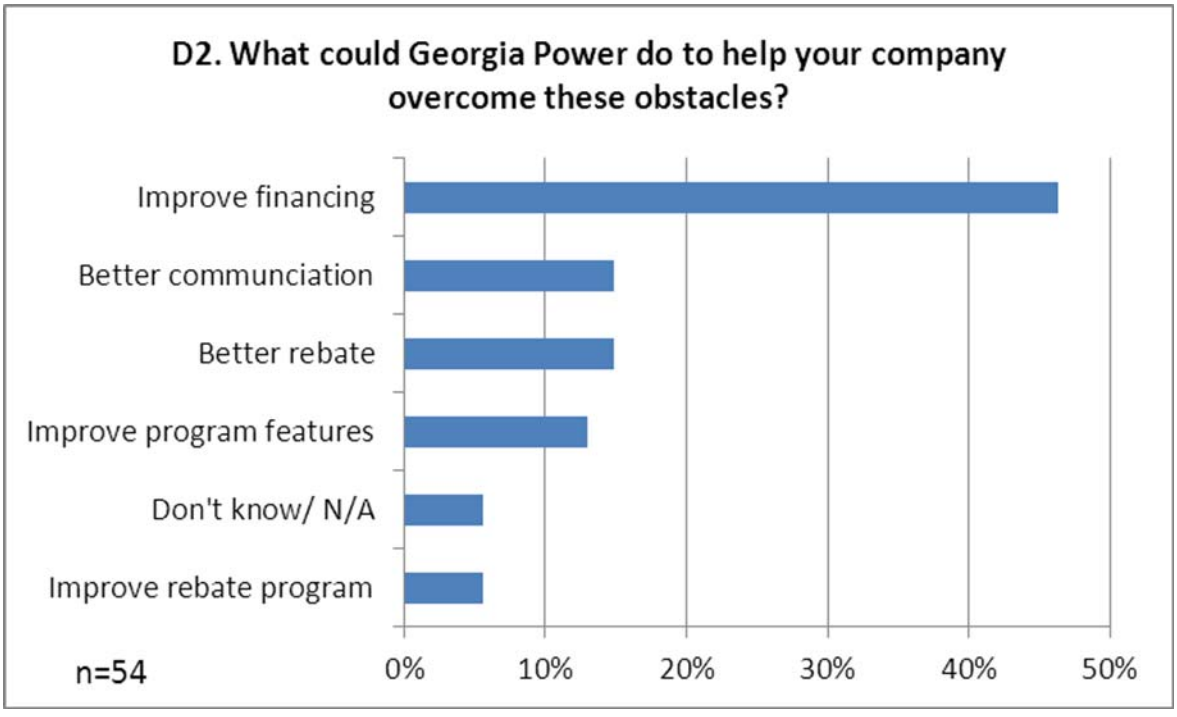
A9. Have you had any plans to install new equipment that would qualify for a rebate through Georgia Power's EarthCents Commercial Energy Efficiency Program?	**Base**	**14**
		100%
	Yes	-
		-
	No	14
		100%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

B1. How did your organization learn about Georgia Power's EarthCents Commercial Energy Efficiency Programs? [DO NOT READ; MULTIPLE RECORD; DO NOT PROMPT] (MENTION #1)	**Base**	**7**
		100%
	Georgia Power mailing	4
		57%
	Word of Mouth (family, friend, or business colleague)	1
		14%
	Previously participated in program/received a rebate Program sponsored conference, trade show, or other event	1
		14%
	Other, Specify	1
		14%
	Contacted by my Georgia Power account representative	-
		-
	Contacted by ICF account representative	-
		-
	Our organization contacted Georgia Power directly	-
		-
	Received an energy audit	-
		-
	Contacted by trade ally (contractor or vendor)	-
		-
	Through a trade association or professional organization	-
		-
	Printed program materials	-
		-
	Georgia Power's EarthCents Commercial Energy Efficiency Program website	-
		-
	(VOL) Don't Know	1
	(VOL) Refused	-

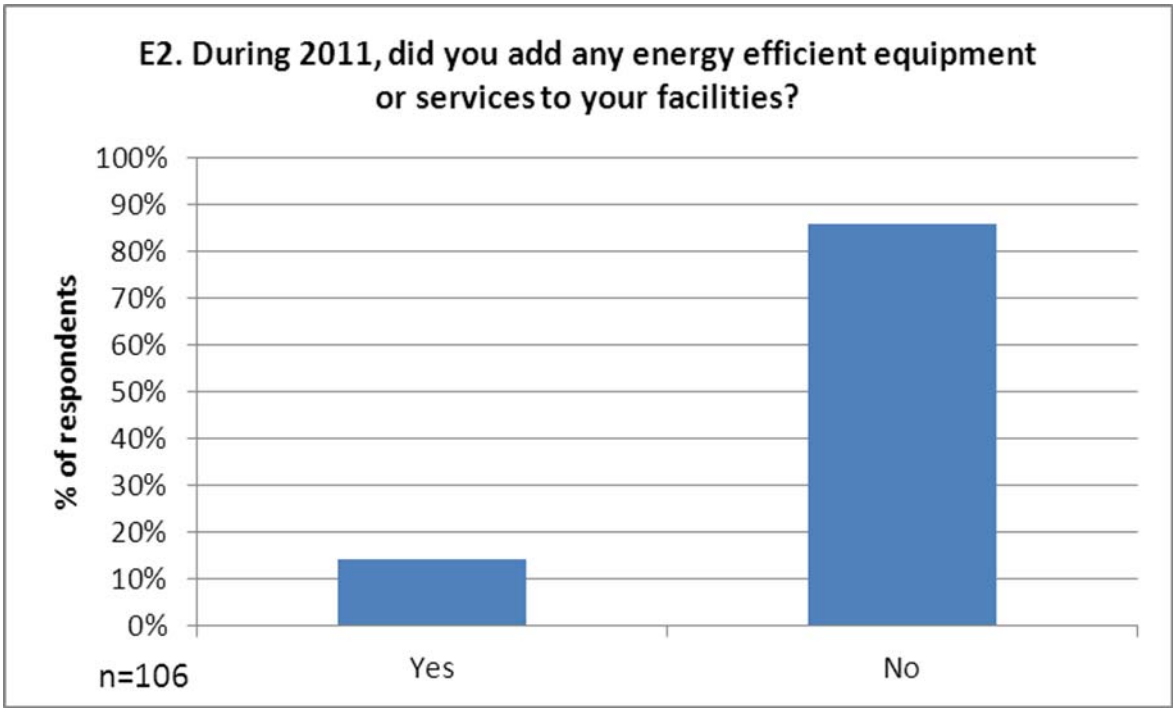
B1. How did your organization learn about Georgia Power's EarthCents Commercial Energy Efficiency Programs? [DO NOT READ; MULTIPLE RECORD; DO NOT PROMPT] [VERBATIM RESPONSE]	**Base**	**5**
		100%
	<12:Other, Specify>:i have it at home	1
		20%
	<12:Other, Specify>:i read bill insert	1
		20%
	<12:Other, Specify>:saw a poster at the georgia POWER OFFICE	1
		20%
	<12:Other, Specify>:through boma	1
		20%
	<12:Other, Specify>:w ord of mouth	1
		20%
	Other	-
		-

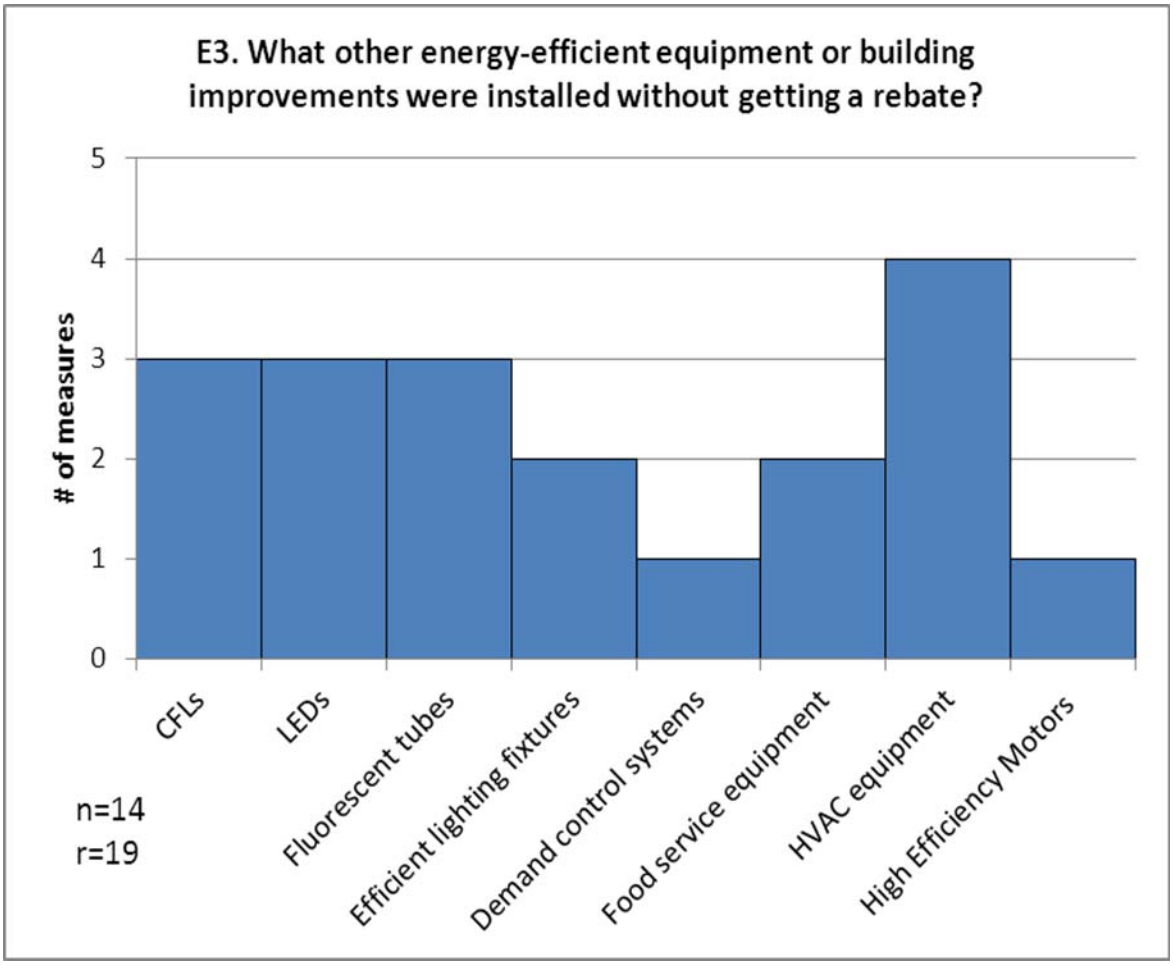



D1. What do you see as the most significant obstacles to installing energy efficient equipment for your company, or companies like yours? (all mentions)
Don't need it
Company size
Other rebate programs
Building condition
Current power issues in building
Don't own building/ short term lease
Funding competition within company
Lack of staff time to dedicate
Lack of corporate support
Lack of technical knowledge
Long return on investment
High initial cost
0%
10%
20%
30%
40%
50%
60%
70%
80%
% of responses
n=96


D2. What could Georgia Power do to help your company overcome these obstacles?
Improve financing
Better communciation
Better rebate
Improve program features
Don't know/ N/A
Improve rebate program
0%
10%
20%
30%
40%
50%
n=54

E1. During 2011, did you add any energy efficient equipment or services in your facilities without receiving a rebate from Georgia Power?	**Base**	**21**
		100%
	No	17
		81%
	Yes	4
		19%
	(VOL) Don't Know	-
		-
	(VOL) Refused	1




E3. What other energy-efficient equipment or building improvements were installed without getting a rebate?
# of measures
5
4
3
2
1
0
CFLs
LEDs
Fluorescent tubes
Efficient lighting fixtures
Demand control systems
Food service equipment
HVAC equipment
High Efficiency Motors
n=14
r=19

E5. What type of food service equipment did you install? Was it...	**Base**	**2**
		100%
	Freezers	1
		50%
	Refrigerators	1
		50%
	Icemakers	1
		50%
	Dishwashers, or	1
		50%
	Something else (Specify)	1
		50%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
E5. What type of food service equipment did you install? Was it...: (MULTIPLE RECORD) [VERBATIM RESPONSE]	**Base**	**1**
		100%
	<5:Something else (Specify)>:microwave	1
		100%
	Other	-
		-

E6. What type of HVAC equipment did you install? Was it a...: (MULTIPLE RECORD) (MENTION #1)	**Base**	**4**
		100%
	Chillers	2
		50%
	Unit heaters, or	1
		25%
	Something else (Specify)	1
		25%
	Furnace	-
		-
	Boilers	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
E6. What type of HVAC equipment did you install? Was it a...: (MULTIPLE RECORD) (MENTION #2)	**Base**	**1**
		100%
	Chillers	1
		100%
	Furnace	-
		-
	Boilers	-
		-
	Unit heaters, or	-
		-
	Something else (Specify)	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
E6. What type of HVAC equipment did you install? Was it a...: (MULTIPLE RECORD) [VERBATIM RESPONSE]	**Base**	**1**
		100%
	<5:Something else (Specify)>:condensing unit	1
		100%
	Other	-
		-

CFLS E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**3**
		100%
	10	1
		33%
	40	1
		33%
	66	1
		33%
	Don't know	-
		-
	Refused	-
		-
LEDS E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**3**
		100%
	Don't know	-
		-
	Refused	-
		-
	5	1
		33%
	50	1
		33%
	97	1
		33%
FLUORESCENT TUBES: [+e3oth3+] E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**3**
		100%
	Don't know	1
		33%
	Refused	-
		-
	40	1
		33%
	97	1
		33%
EFFICIENT LIGHTING FIXTURES E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**2**
		100%
	Don't know	-
		-
	Refused	-
		-
	10	1

		50%
	97	1
		50%
DEMAND CONTROL SYSTEMS: [+e3oth8+] E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**1**
		100%
	Don't know	-
		-
	Refused	-
		-
	1	1
		100%
ECONOMIZER E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**-**
		-
	Don't know	-
		-
	Refused	-
		-
FOOD SERVICE EQUIPMENT / APPLIANCES (FREEZERS, REFRIGERATORS, ICE MAKERS, DISHWASHERS) E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**2**
		100%
	Don't know	-
		-
	Refused	-
		-
	1	1
		50%
	7	1
		50%
HVAC EQUIPMENT (FURNACE, BOILERS, CHILLERS, UNIT HEATERS) E7Z. How many did you install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	**Base**	**4**
		100%
	Don't know	-
		-
	Refused	-
		-
	2	1
		25%
	3	1
		25%
	7	2
		50%
HIGH EFFICIENCY MOTORS: [+e3oth12+] E7Z. How many did you	**Base**	**1**
		100%

install? [Record Quantity] 1 to 97, 97-97 or more, 98 = Don't know 99= Refused	Don't know	-
		-
	Refused	-
		-
	1	1
		100%

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install CFLS ?	**Base**	**3**
		100%
	Very Important	1
		33%
	Somewhat important	1
		33%
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	1
		33%
	(VOL) Refused	-
		-
E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install LEDS ?	**Base**	**3**
		100%
	Very Important	-
		-
	Somewhat important	1
		33%
	Not very important	-
		-
	Not at all important	1
		33%
	(VOL) Don't Know	1
		33%
	(VOL) Refused	-
		-
E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install	**Base**	**3**
		100%
	Very Important	-
		-
	Somewhat important	2

FLUORESCENT TUBES: [+e3oth3+] ?		*67%*
	Not very important	-
		-
	Not at all important	1
		33%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install EFFICIENT LIGHTING FIXTURES ?	**Base**	**2**
		100%
	Very Important	2
		100%
	Somewhat important	-
		-
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install CLOTHES WASHERS ?	**Base**	**-**
		-
	Very Important	-
		-
	Somew hat important	-
		-
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install DEMAND CONTROL SYSTEMS: [+e3oth8+] ?	**Base**	**1**
		100%
	Very Important	-
		-
	Somew hat important	1
		100%
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install ECONOMIZER ?	**Base**	**-**
		-
	Very Important	-
		-
	Somew hat important	-
		-
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install FOOD SERVICE EQUIPMENT / APPLIANCES (FREEZERS, REFRIGERA	**Base**	**2**
		100%
	Very Important	-
		-
	Somew hat important	1
		50%
	Not very important	1
		50%
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install HVAC EQUIPMENT (FURNACE, BOILERS, CHILLERS, UNIT HEATERS	**Base**	**4**
		100%
	Very Important	-
		-
	Somew hat important	-
		-
	Not very important	2
		50%
	Not at all important	1
		25%
	(VOL) Don't Know	1
		25%
	(VOL) Refused	-
		-

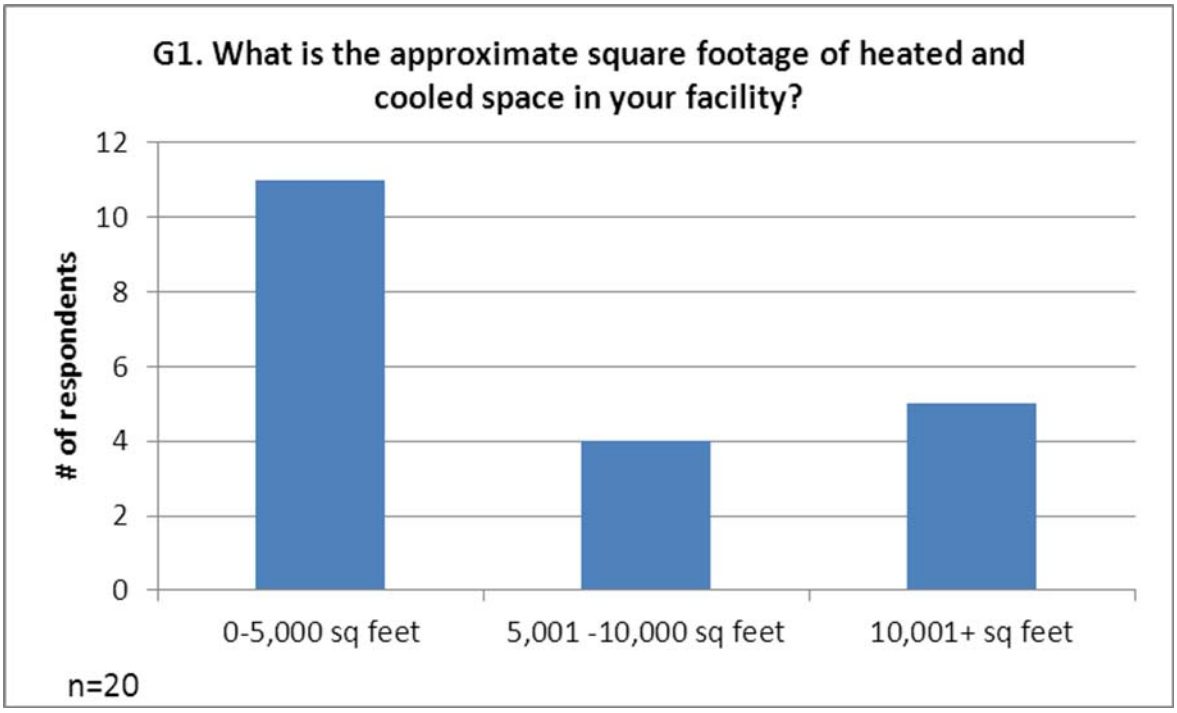
E8. Please rate whether your experience with Georgia Power's energy efficiency programs was very important, somewhat important, not very important, or not at all important on your decision to install HIGH EFFICIENCY MOTORS: [+e3oth12+] ?	**Base**	**1**
		100%
	Very Important	1
		100%
	Somew hat important	-
		-
	Not very important	-
		-
	Not at all important	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-

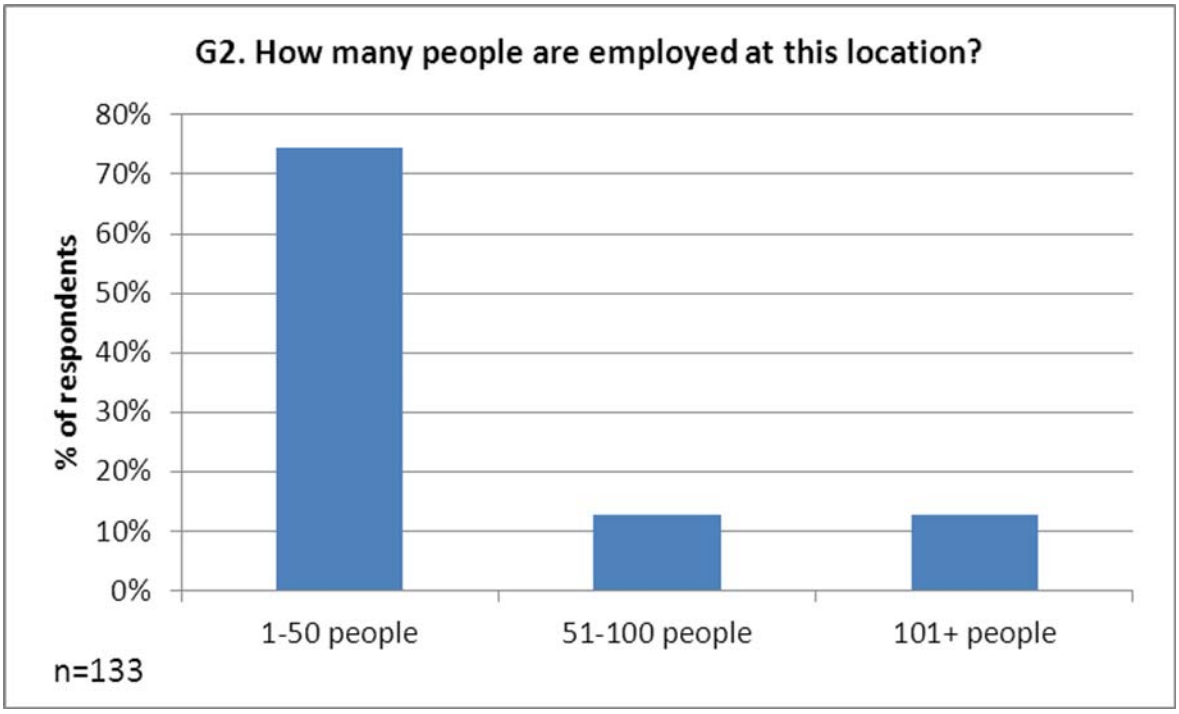
F1. What factors were important in your decision to install energy-efficient equipment? [DO NOT READ RESPONSES; MULTIPLE RESPONSE] (MENTION #1)	**Base**	**13**
		100%
	To save money on electric bills	6
		46%
	Other (SPECIFY)	5
		38%
	To save energy	2
		15%
	To obtain a tax credit and/or ARRA rebate	-
		-
	To replace old (but still functioning) equipment	-
		-
	To replace broken equipment	-
		-
	To acquire the latest technology	-
		-
	To reduce maintenance costs	-
		-
	Part of a broader remodeling or renovation	-
		-
	To help protect the environment	-
		-
	My contractor recommended it	-
		-
	Participation in other Georgia Pow er rebate programs	-
		-
	(VOL) Don't Know	2
	(VOL) Refused	-
		-

F1. What factors were important in your decision to install energy-efficient equipment? [DO NOT READ RESPONSES; MULTIPLE RESPONSE] (MENTION #2)	**Base**	**1**
		100%
	To save money on electric bills	-
		-
	To save energy	1
		100%
	To obtain a tax credit and/or ARRA rebate	-
		-
	To replace old (but still functioning) equipment	-
		-
	To replace broken equipment	-

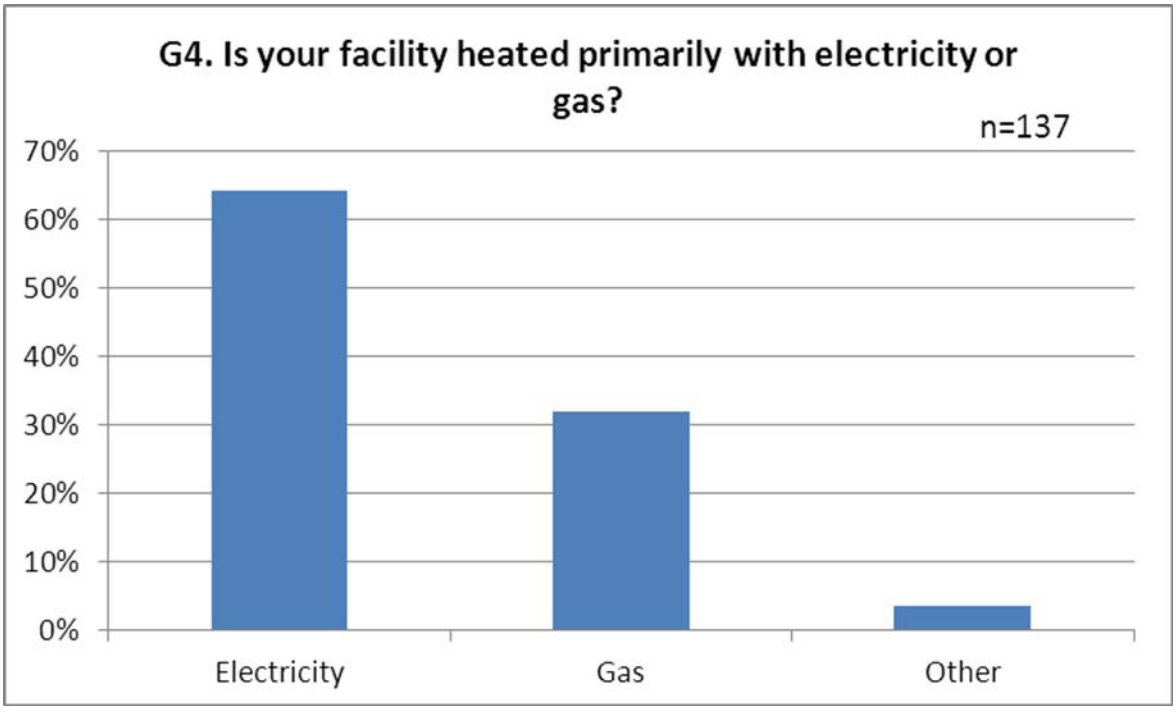
		-
	To acquire the latest technology	-
		-
	To reduce maintenance costs	-
		-
	Part of a broader remodeling or renovation	-
		-
	To help protect the environment	-
		-
	My contractor recommended it	-
		-
	Participation in other Georgia Power rebate programs	-
		-
	Other (SPECIFY)	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
F1. What factors were important in your decision to install energy-efficient equipment? [DO NOT READ RESPONSES; MULTIPLE RESPONSE] [VERBATIM RESPONSE]	**Base**	**5**
		100%
	<12:Other {SPECIFY}>:I had no choice I had to put it in	1
		20%
	<12:Other {SPECIFY}>:i HAD NO CHOICE BECAUSE OUR A/C WAS BROKEN(ELSE)NO	1
		20%
	<12:Other {SPECIFY}>:it just needed to be upgraded	1
		20%
	<12:Other {SPECIFY}>:return on investments	1
		20%
	<12:Other {SPECIFY}>:this was decided at a higher level from another office	1
		20%

F2. Which of these factors was the most influential in your decision?	**Base**	**1**
		100%
	To save money on electric bills	1
		100%
	To save energy	-
		-
	To obtain a tax credit and/or ARRA rebate	-
		-
	To replace old (but still functioning) equipment	-
		-
	To replace broken equipment	-
		-
	To acquire the latest technology	-
		-
	To reduce maintenance costs	-
		-
	Part of a broader remodeling or renovation	-
		-
	To help protect the environment	-
		-
	My contractor recommended it	-
		-
	Participation in other Georgia Pow er rebate programs	-
		-
	[+f1oth+]	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-


G1. What is the approximate square footage of heated and cooled space in your facility?
# of respondents
12
10
8
6
4
2
0
0-5,000 sq feet
5,001 -10,000 sq feet
10,001+ sq feet
n=20


G2. How many people are employed at this location?
% of respondents
80%
70%
60%
50%
40%
30%
20%
10%
0%
1-50 people
51-100 people
101+ people
n=133


G3. Does your organization lease or own the facility?
% of respondents
80%
70%
60%
50%
40%
30%
20%
10%
0%
Own
Long-term lease
Manage
Short-term lease
n=133

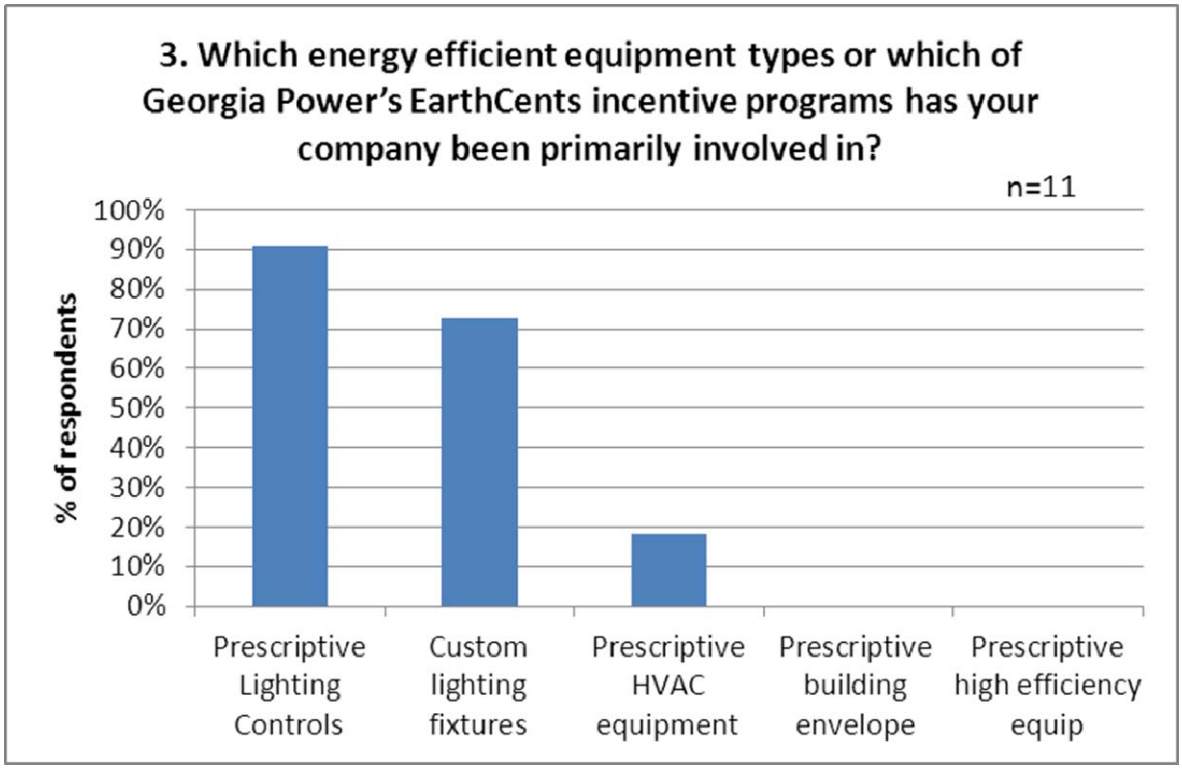

G4. Is your facility heated primarily with electricity or gas?
n=137
70%
60%
50%
40%
30%
20%
10%
0%
Electricity
Gas
Other

B.3 COMMERCIAL TRADE ALLY SURVEY

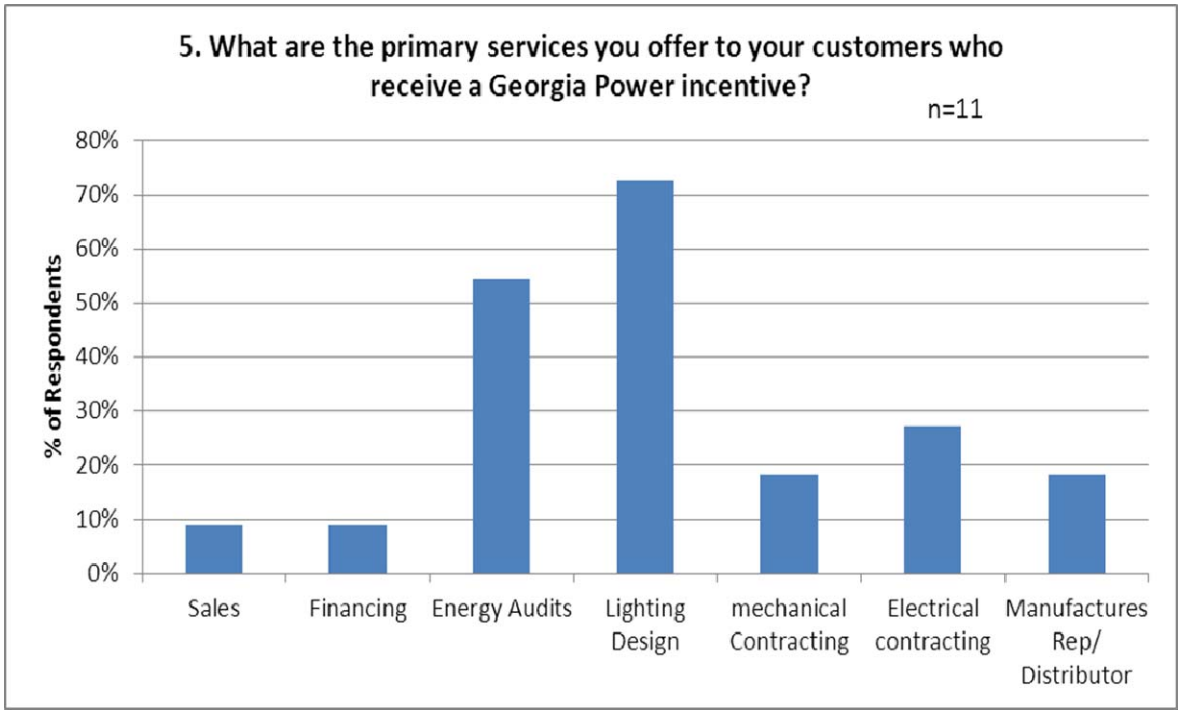
Did your company sell or install equipment to a Georgia Power customer who received an incentive thr...	**Base**	**31**
		100%
	Yes	11
		35%
	No	20
		65%
	Don't know	-
		-

Have you considered participating and if not, why not?	**Base**	**20**
		100%
	Yes	19
		95%
	No	1
		5%
Have you considered participating and if not, why not? -TEXT	**Base**	**1**
		100%
	Not their role. They spread the word.	1
		100%
	Other	-
		-

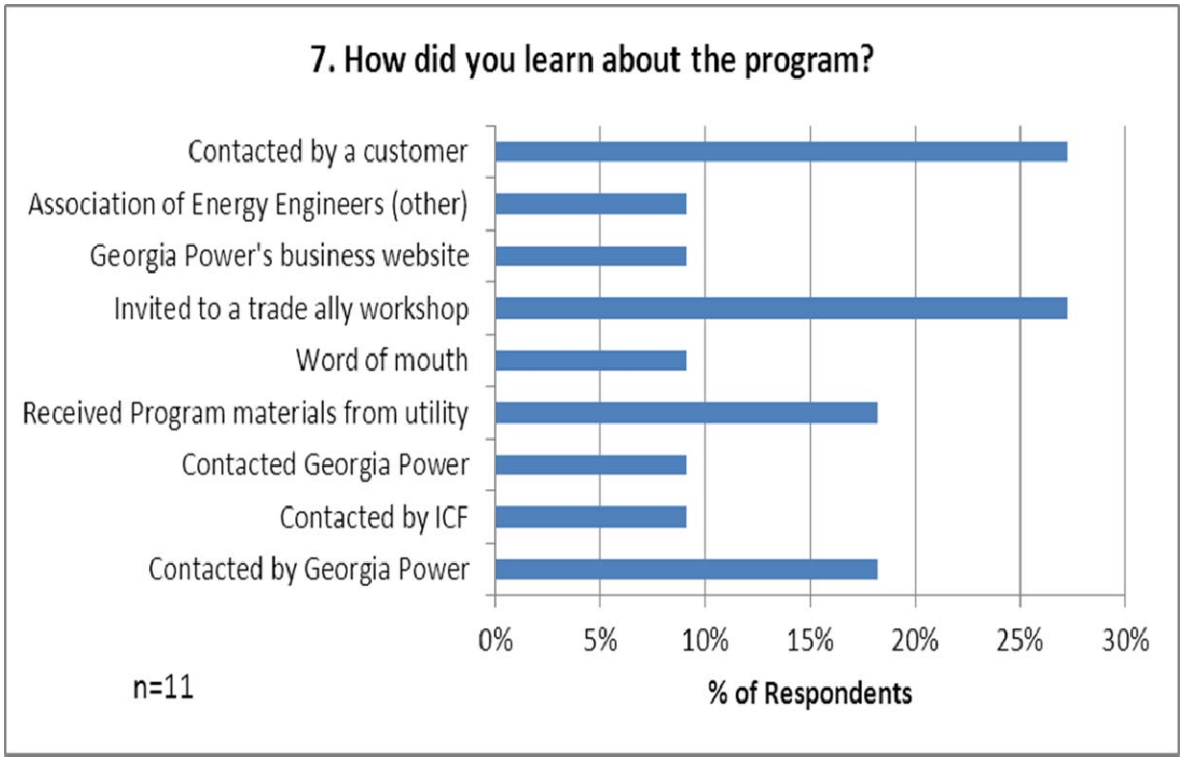
Are you familiar with Georgia Power's EarthCents commercial energy efficiency incentive programs?	**Base**	**11**
		100%
	Yes	11
		100%
	No	-
		-

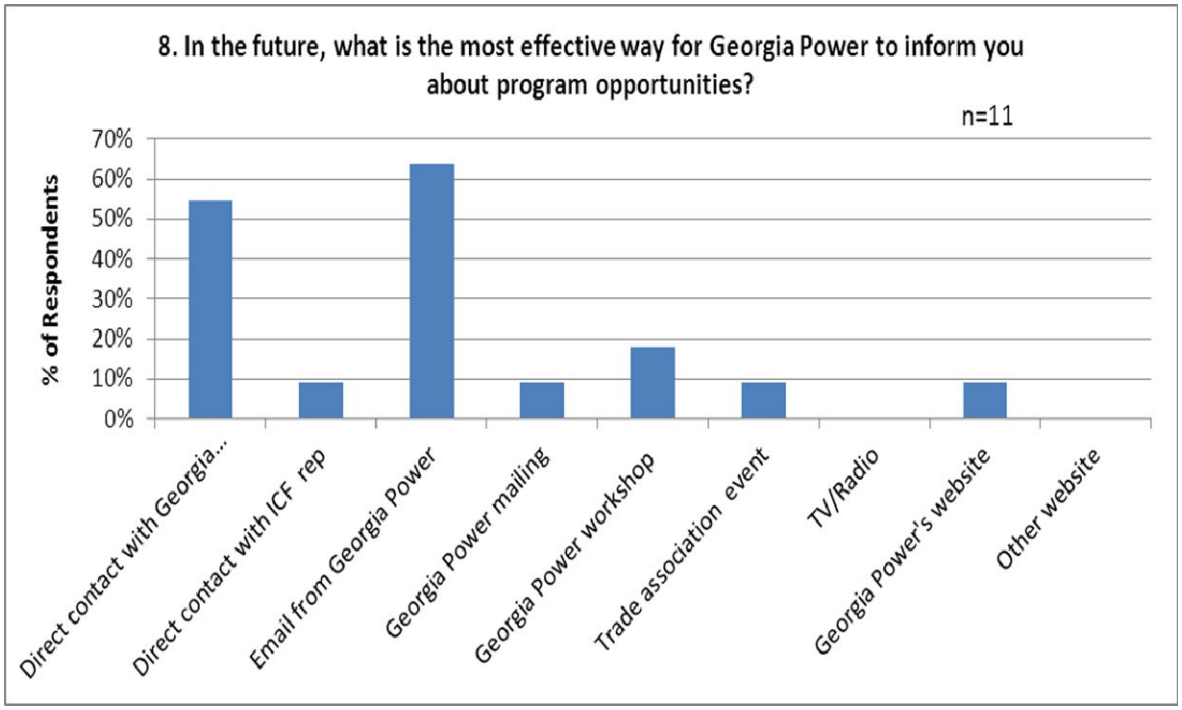


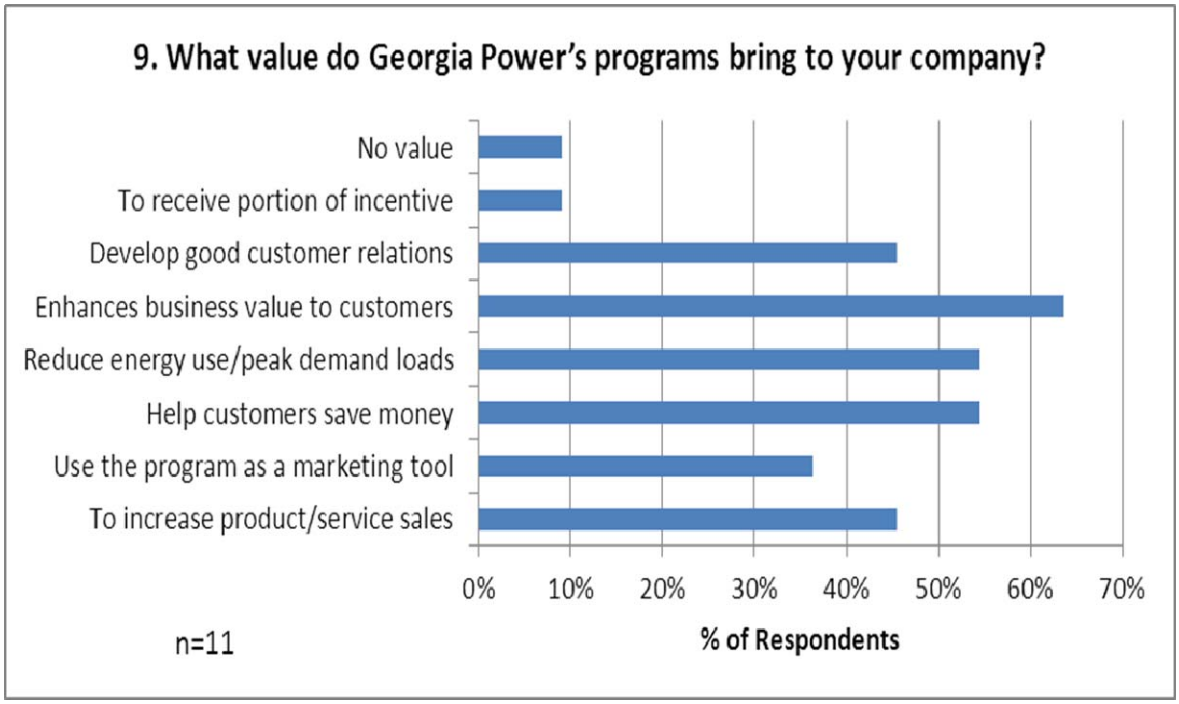
4. Roughly how many Georgia Power projects were you involved in (or are currently involved in) since program start up in January 2011?	**Base**	**11**
		100%
	1	1
		9%
	2	2
		18%
	3	2
		18%
	4	1
		9%
	5	1
		9%
	6	1
		9%
	Quite a few. working on 4-6 right now.	1
		9%
	8-10	1
		9%
	10	1
		9%

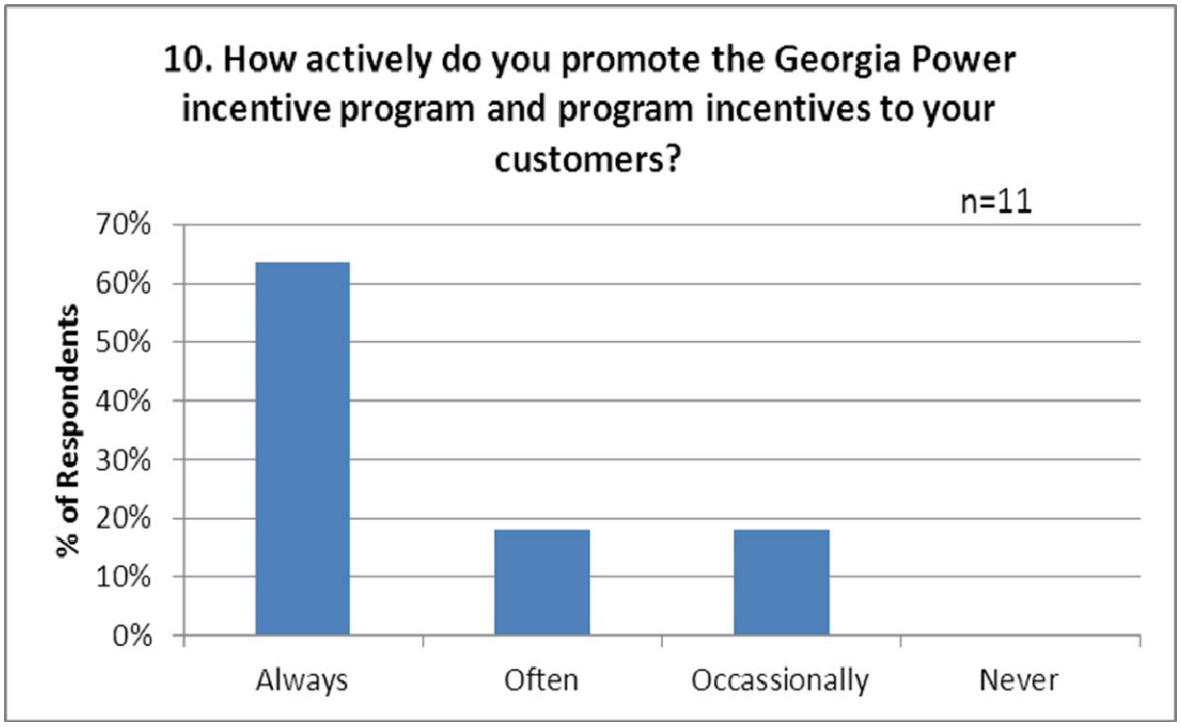


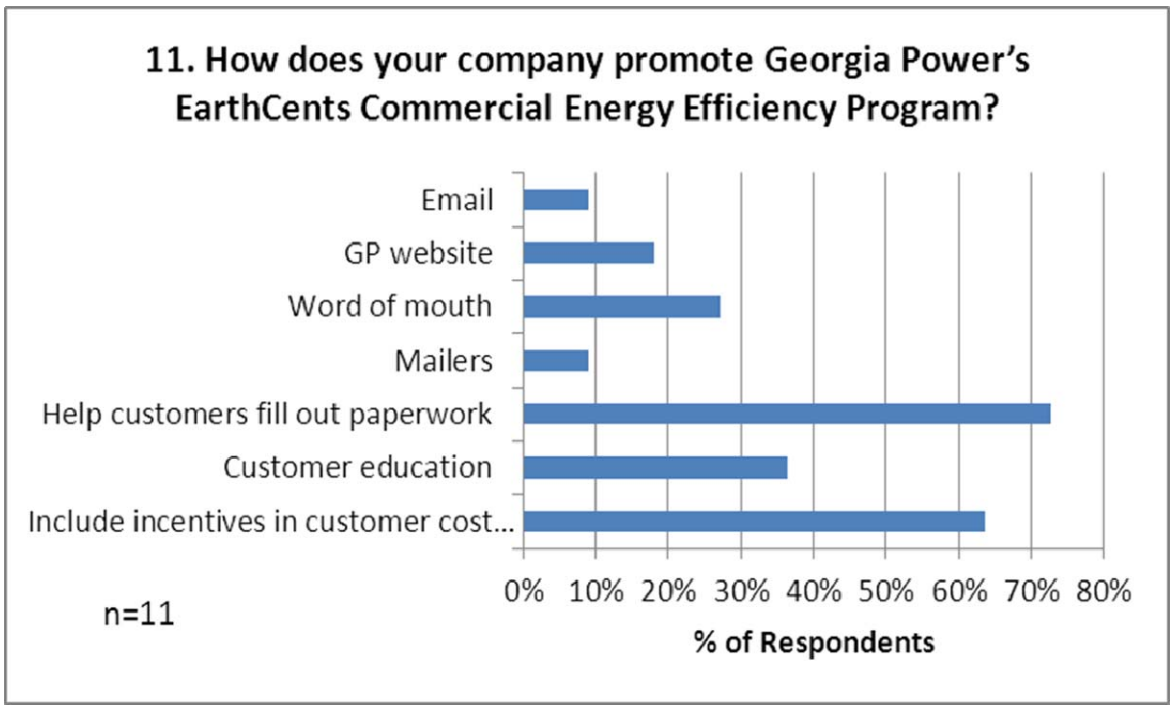
6. Approximately how many people does your firm employ?- TEXT	**Base**	**11**
		100%
	100,000	1
		9%
	2, associates - 6	1
		9%
	20	2
		18%
	24	1
		9%
	300+	1
		9%
	32	1
		9%
	4	1
		9%
	40	2
		18%
	7	1
		9%

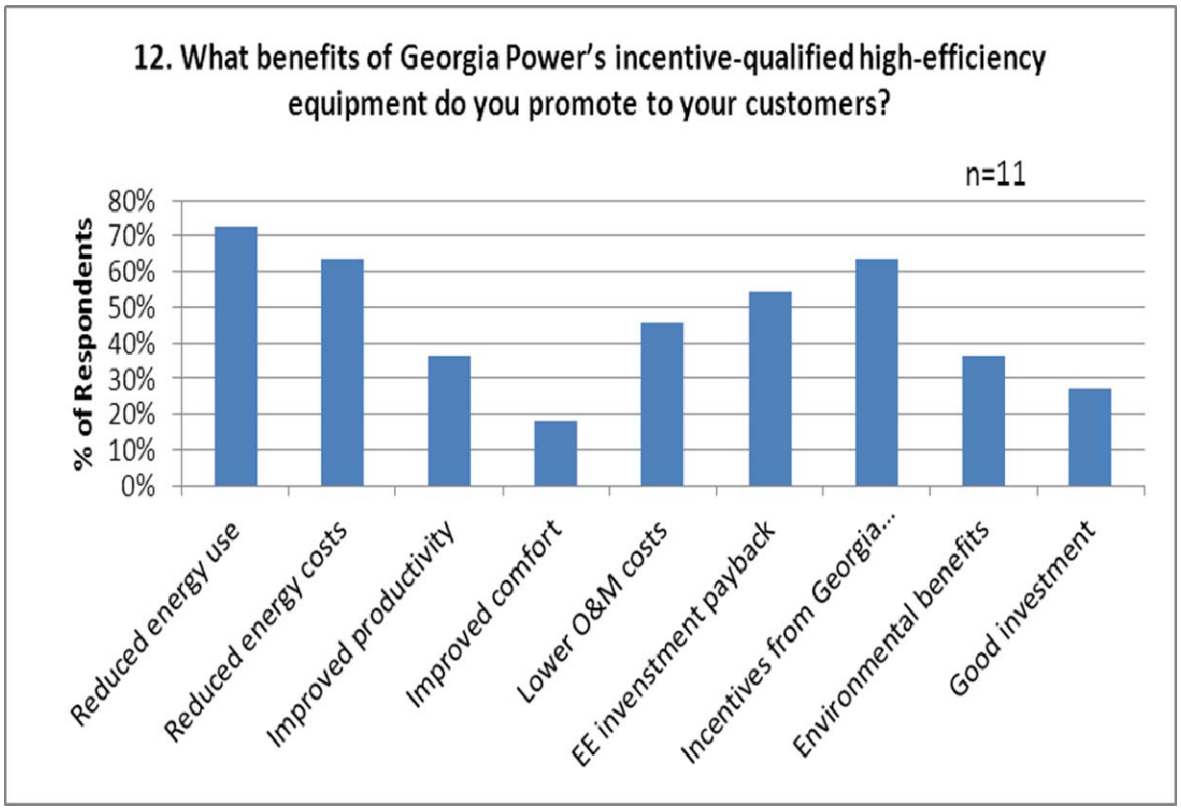

7. How did you learn about the program?
Contacted by a customer
Association of Energy Engineers (other)
Georgia Power's business website
Invited to a trade ally workshop
Word of mouth
Received Program materials from utility
Contacted Georgia Power
Contacted by ICF
Contacted by Georgia Power
0%
5%
10%
15%
20%
25%
30%
n=11
% of Respondents


8. In the future, what is the most effective way for Georgia Power to inform you about program opportunities?
n=11
% of Respondents
70%
60%
50%
40%
30%
20%
10%
0%
Direct contact with Georgia...
Direct contact with ICF rep
Email from Georgia Power
Georgia Power mailing
Georgia Power workshop
Trade association event
TV/Radio
Georgia Power's website
Other website


9. What value do Georgia Power's programs bring to your company?
No value
To receive portion of incentive
Develop good customer relations
Enhances business value to customers
Reduce energy use/peak demand loads
Help customers save money
Use the program as a marketing tool
To increase product/service sales
0%
10%
20%
30%
40%
50%
60%
70%
% of Respondents
n=11


10. How actively do you promote the Georgia Power incentive program and program incentives to your customers?
n=11
% of Respondents
70%
60%
50%
40%
30%
20%
10%
0%
Always
Often
Occassionally
Never


11. How does your company promote Georgia Power's EarthCents Commercial Energy Efficiency Program?
Email
GP website
Word of mouth
Mailers
Help customers fill out paperwork
Customer education
Include incentives in customer cost...
n=11
0% 10% 20% 30% 40% 50% 60% 70% 80%
% of Respondents


12. What benefits of Georgia Power's incentive-qualified high-efficiency equipment do you promote to your customers?
n=11
% of Respondents
80%
70%
60%
50%
40%
30%
20%
10%
0%
Reduced energy use
Reduced energy costs
Improved productivity
Improved comfort
Lower O&M costs
EE invenstment payback
Incentives from Georgia...
Environmental benefits
Good investment

13. Did you participate in a trade ally training sponsored by Georgia Power?	**Base**	**11**
		100%
	Yes	8
		73%
	No	3
		27%
	Don't know	-
		-

14. How useful was the training to understanding Georgia Power's EarthCents commercial energy efficiency programs?	**Base**	**8**
		100%
	Very useful	4
		50%
	Somewhat useful	4
		50%
	Not very useful	-
		-
	Not at all useful	-
		-
	Don't know	-
		-

15. How could Georgia Power make the training more useful for your company? -TEXT	**Base**	**3**
		100%
	Make the custom lighting a little bit easier. Has to get help on the custom form everytime to ensure that he's maximizing the incentive. Need to dumb it down.	1
		33%
	More outreach to business customers	1
		33%
	spreadsheet could be easier to fill out	1
		33%

16. Have you used any online resources available from the Georgia Power website?-TEXT	**Base**	**10**
		100%
	Application, web portal to upload documents	1
		10%
	Calculation Worksheets	1
		10%
	Just the trade ally website for submitting applications for customers	1
		10%
	Submit for reimbursements and get the forms	1
		10%
	The workbooks	1
		10%
	They are on the Georgia Power website themselves, they use the forms but they have someone else who worked for Georgia Power for 14 years to fill out the applications/paperwork for them. They use a workbook now to input the information for a quicker outpu.	1
		10%
	Use the website fairly often to see what the programs are offering, there have been some job sites with Georgia Power reps	1
		10%
	forms and instructions	1
		10%
	forms to fill out	1
		10%
	program application	1
		10%

17. How useful were the online resources available from Georgia Power? Were they...	**Base**	**9**
		100%
	Very useful	5
		56%
	Somewhat useful	4
		44%
	Not very useful	-
		-
	Not at all useful	-
		-
	Don't know	1

18. How could Georgia Power make the online resources more useful for your company? -TEXT	**Base**	**2**
		100%
	Hyperlinks to participating contractor websites	1
		50%
	The paperwork is so complicated. The information on the forms is 40 year old technology, waste of time doing paperwork. Doesn't matter to them since they have someone filling it out for them, but Georgia Power could make the process simpler.	1
		50%

19. Have you received any program materials from Georgia Power? If so, what materials have you received?- TEXT	**Base**	**3**
		100%
	Material from training	1
		33%
	When he goes to meetings he does, typically they are materials that enumerate the different programs, what items qualify, etc	1
		33%
	training materials	1
		33%

20. How useful are the program materials you received from Georgia Power? Were they…	**Base**	**3**
		100%
	Very useful	1
		33%
	Somewhat useful	1
		33%
	Not very useful	1
		33%
	Not at all useful	-
		-
	Don't know	-
		-

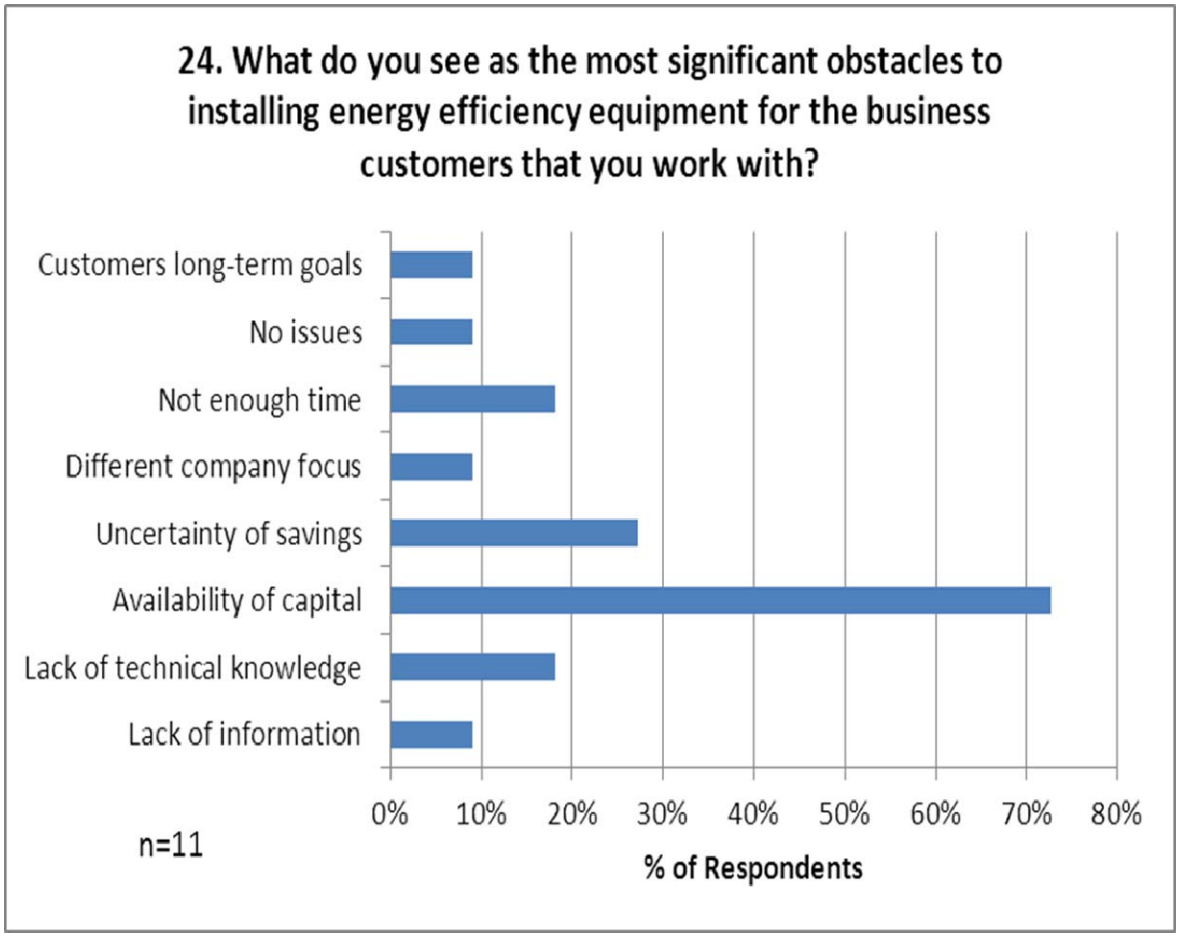
21. How could Georgia Power make the program materials more useful for your company?	**Base**	**2**
		100%
	RECORD RESPONSE	1
		50%
	Don't know	1
		50%

21-OTHER How could Georgia Power make the program materials more useful for your company? -TEXT	**Base**	**1**
		100%
	Steer customers to contractors who are registered with the program and actively engaged in efficiency	1
		100%

22. Do you typically help customers complete application forms to receive a Georgia Power incentive?	**Base**	**11**
		100%
	Yes	8
		73%
	No	3
		27%
	Don't know	-
		-

23. Have you or your customer's encountered difficulty completing the forms and providing the necessary...	**Base**	**11**
		100%
	Yes [RECORD RESPONSE]	4
		36%
	No	6
		55%
	Don't know	1
		9%

23. Have you or your customer's encountered difficulty completing the forms and providing the necessary...(OTHER)	Custom lighting form is difficult. Would like to see them expand the applications incentivize. Would like them for EC motors, would be HUGE.	1
		25%
	Pretty minor, Georgia Power was great, sent out regional rep to help them with the forms, resolved in 30 mins	1
		25%
	Some of them have spreadsheets to complete none of which match the particular equipment that they are using.	1
		25%
	The forms are pretty extensive based on other rebate programs that he deals with.	1
		25%



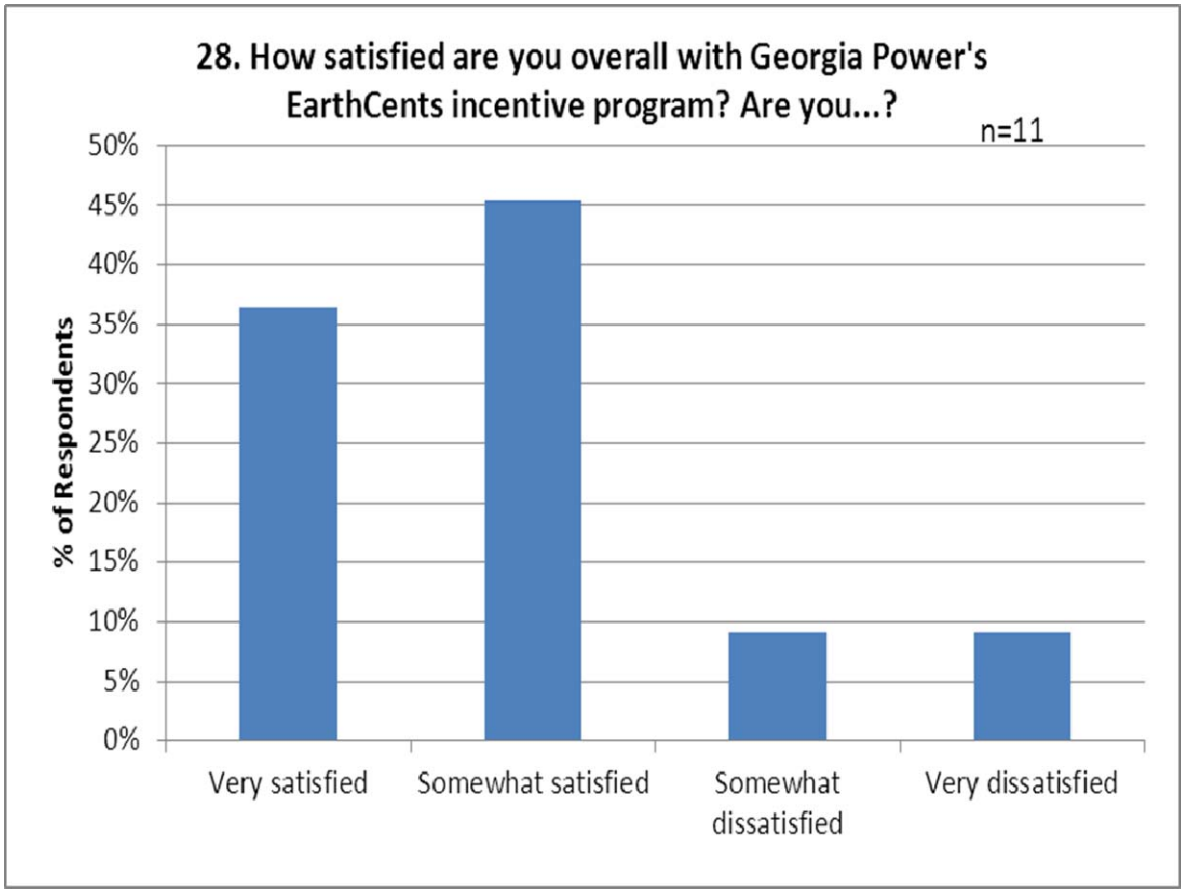
25. What could Georgia Power do to assist you or your customers in overcoming these obstacles?	**Base**	**11**
		100%
	RECORD RESPONSE	10
		91%
	Don't know	1
		9%

25- Verbatim What could Georgia Power do to assist you or your customers in overcoming these obstacles?- TEXT	**Base**	**10**
		100%
	Increase the rebate and remove or increase the cap	1
		10%
	Increasing their rebate	1
		10%
	Offer financing to all of their customers through their utility bills like GP does for their ESCO customers. Incentives could be better too in comparison to other utilities across the country.	1
		10%
	Offering the rebates for industrial users, making the paperwork simpler	1
		10%
	Provide payback analysis based upon customer load history and types of improvements being considered	1
		10%
	Providing financing would be helpful	1
		10%
	Simplify the process, increase the rebates. The guidelines that they have for their rebate. Georgia Power needs to commit to save energy. Compared to other states it seems that Georgia Power hasn't committed to saving energy.	1
		10%
	The rebate programs help. The rebates help, but they aren't as big as the tax credits used to be. With the tax credit it made the upgrades a no brainer. The tax credits helped in the past, so if they have any lobbying capability with congress, that would e great! Also, they could consider a financial program.	1
		10%
	nothing	1
		10%
	they already do, they've used Georgia Power to do some energy audits. It's just a matter of changing mindsets.	1
		10%

26. Considering all the factors that could influence customers to install energy saving improvements, how important are Georgia Power's incentives?	**Base**	**11**
		100%
	Very important	7
		64%
	Somewhat important	4
		36%
	Not very important	-
		-
	Not at all important	-
		-
	Don't know	-
		-

27. Is there electric energy efficiency equipment that is not currently eligible for incentives that you think Georgia Power should consider?	**Base**	**11**
		100%
	Yes (Which ones?) [RECORD RESPONSE]	8
		73%
	No	-
		-
	Don't know	3
		27%

27. Verbatim Is there electric energy efficiency equipment that is not currently eligible for incentives that you...-TEXT	**Base**	**8**
		100%
	Big chillers (electricity in Georgia is somewhat low), thermal storage	1
		12%
	EC motors, LED Case Lighting (probably have under custom), fan controllers, night curtains, doors (they partner with anthony grocers)	1
		12%
	More emphasis on special controls to save energy, Demand Controlled Ventilation, Energy Recovering Unit	1
		12%
	Pole lights (exterior)	1
		12%
	Solar installations	1
		12%
	Solar, since GP is not actually signing tarriff agreements to date. They say they will, but they have not for our customers.	1
		12%
	They need to exhibit a deeper commitment to energy savings.	1
		12%
	they are considering some variant refrigerant flow, little disappointed that they don't have their own category. Right now they only treat it as a heat pump, want them to deal with it separately.	1
		12%



29. Why do you say that? (Response to 28)	**Base**	**2**
		100%
	The program could be made better; its a start and a positive one. The costs of the program could be justified by considering the cost of not operating peak power plants.	1
		50%
	They don't offer to industrial customers, which is 90% of the business that they do.	1
		50%

30. How would you rate your overall experience working with Georgia Power representatives within this program? Were you…?	**Base**	**11**
		100%
	Very satisfied	6
		55%
	Somewhat satisfied	5
		45%
	Somewhat dissatisfied	-
		-
	Very dissatisfied	-
		-
	Don't know	-
		-

32. Are there any other aspects of the program that are not working well for you or that you would like to see improved?	**Base**	**8**
		100%
	Allow private companies or individuals to act as co-generators (get paid for putting power on the grid).	1
		12%
	It was good, but for more of the residential side it would be nice to be able to get energy usage data now that we have digital meters to be able to get real time data. Available online for each account?	1
		12%
	More incentive in the HVAC side of things, air conditioning. Spreadsheet (the one spreadsheet that has the custom and other type of installations)	1
		12%
	The GA Power rebate is pretty low compared to other incentives. It's easier to close sales in TVA and Duke Energy or Progress Energy locations	1
		12%
	The GP reps need to know about the nuts and bolts as of how to save energy, not just the knowledge of how to fill out paperwork.	1
		12%
	The application forms have been somewhat cumbersome to work with.	1
		12%
	The scale of incentives is low compared with other prgorams.	1
		12%
	There were a couple of applications that were denied, and he thinks he sent out the right information. They were too small to follow up on. Seeing the actual flow of the applications would be good. The process could be made smoother.	1
		12%

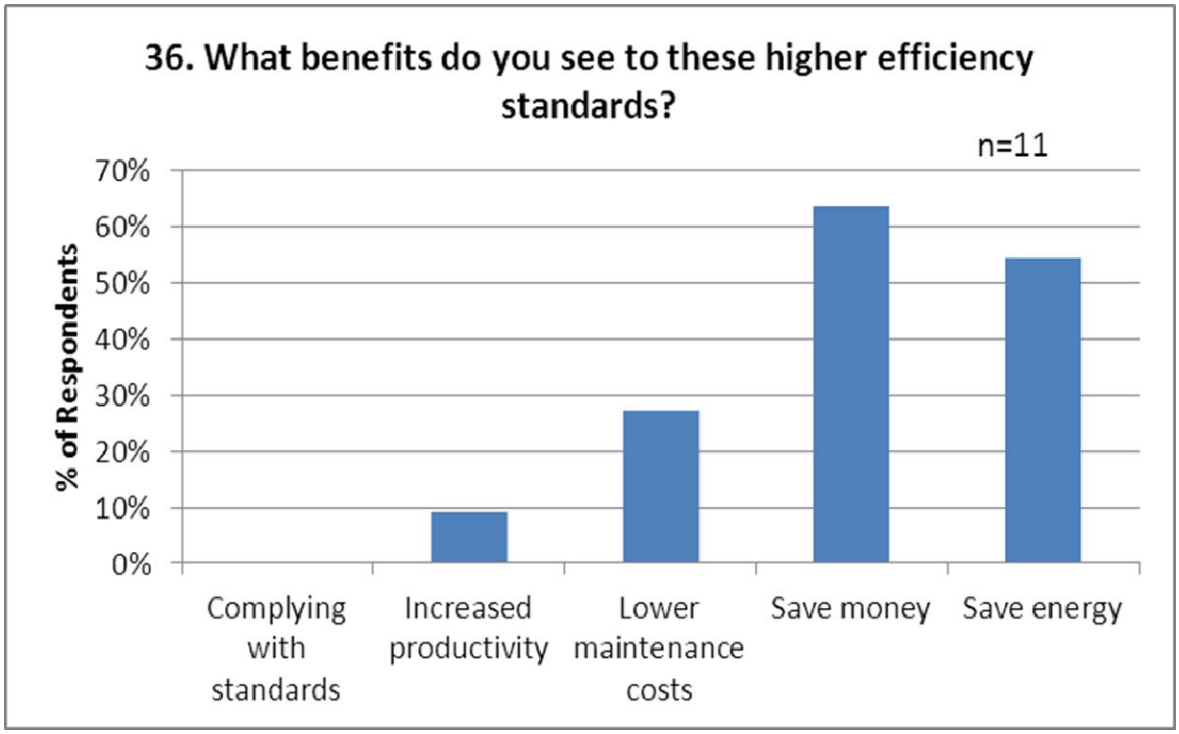
33. Before today, were you aware of these lighting standards that will result in phasing out less efficient lighting, such as T-12's and incandescent light bulbs?	**Base**	**10**
		100%
	Yes (What have you heard?) [RECORD RESPONSE]	10
		100%
	No	-
		-
	Don't know	-
		-

33- Verbatim Before today, were you aware of these lighting standards that will result in phasing out less efficient lighting, such as T-12's and incandescent light bulbs?	**Base**	**9**
		100%
	All T12 information and incandescent	1
		11%
	Everything articulated above	1
		11%
	He was aware of it seven years ago. in 1966 there was a subcommitment meeting at the house of reps, called in the big 3 manufacturers, need a lightbulb that lasts longer, uses less energy. The big 3 says they don't want you to! Now everyone is scramblingto upgrade since the CFL's upgrade was on Opera. Forcing the manufacturer to do a lightbulb that puts out as much light as a 100W at 55W.	1
		11%
	He was aware of the incandescents, but not the T12s	1
		11%
	He's in the industry. Phasing out T12s, bringing in T8s, and then T5, and then to LED type lighting.	1
		11%
	I was aware of it	1
		11%
	That it will be difficult to replace lamps because they won't be manufactured.	1
		11%
	not going to sell them anymore	1
		11%
	stop manufacturing the ballast of 2010, stopped manufacturing lamps in July	1
		11%

34. Have you had any discussions with your customers about these new lighting standards? What are they saying?	**Base**	**10**
		100%
	Yes [RECORD RESPONSE]	10
		100%
	No	-
		-
	Don't know	-
		-

34. Verbatim Have you had any discussions with your customers about these new lighting standards? What are they saying?	**Base**	**10**
		100%
	The customers are understanding of the standards.	1
		10%
	Everyone has heard about the incandescents but not the T12s	1
		10%
	He does, it's not as cut and dry as it seems. There was a lot of bad press about that. They say they're not going to change anything about their lighting, and they can come in and shut them down but they don't want to upgrade because they are unsure of enrgy savings, and don't have enough money to change it. People are concerned with the mercury in the CFL's.	1
		10%
	I tell everyone that they are going away. Typically that does get me in the door, but also the capital to make the change is not there.	1
		10%
	Larger customers get it, but the small customers are complaining. Small independent grocers, incentives help a lot. The incentive takes some of the sting out.	1
		10%
	Some are concerned. Some are not as conerned as they ought to be, but they will be in time when the recognize its not a joke...	1
		10%
	The customers don't understand what they are talking about, the company tries to educate them as much as possible during the process.	1
		10%
	There's no objection, going to LED or induction type lighting (life is much longer, so they recommend it in addition to energy savings)	1
		10%
	We encourage T8 ballast replacement (in T12 fixtures) and remind customers that certain lamps will be unavailable in the future	1
		10%
	its ridiculous that the DOE is regulating what light bulbs we use	1
		10%

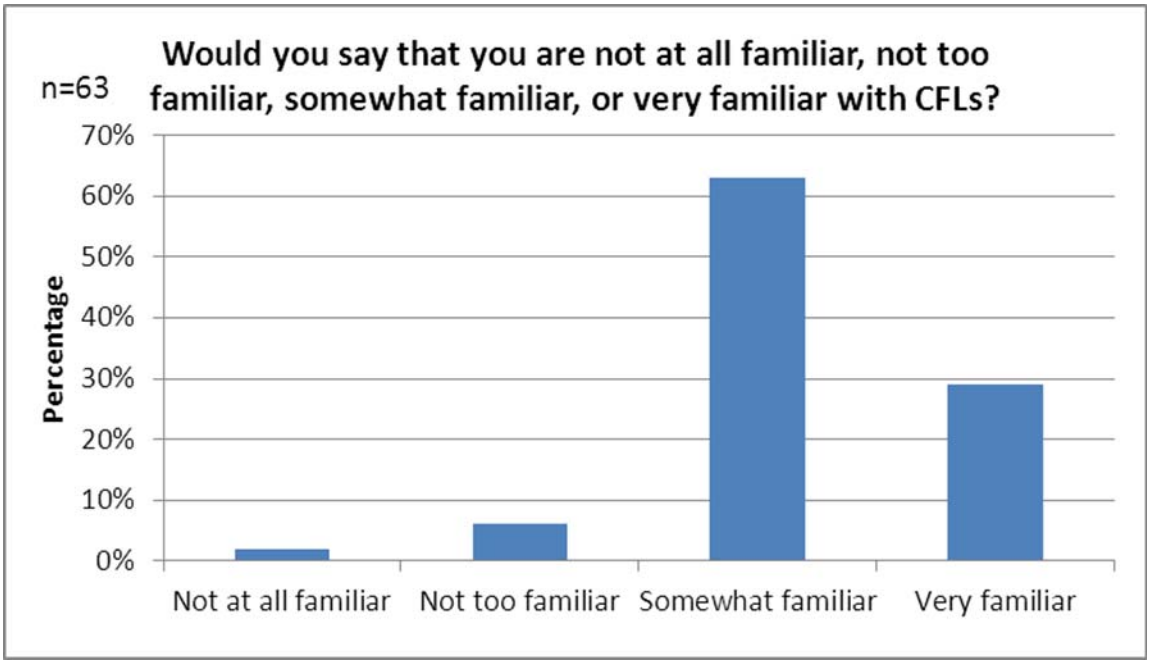
35. How do the changing standards affect your business approach, products, or promotions?-VERBATIM	**Base**	**8**
		100%
	I make it a point to tell each customer about their current lighting equipment being phased out and typically it creates a positive response. They will listen and let us give them options for replacement.	1
		12%
	It makes more sales. The incentives definitely help.	1
		12%
	It will not help to sell equipment, but it will make the end users more aware of how much energy is being used by the inefficient equipment	1
		12%
	Only lighting people keep up on these standards. Educating the customers about the energy savings. Nursing homes are looking to get high wattage light bulbs because their eyes are bad. Caught the nursing home on fire. People don't know what lumens are, dn't know what wattage is or voltage is, so educating everyone about lighting standards is great for America.	1
		12%
	Savings finances the project, the more savings they can come up with, the easier it is to get financing for the project and a better pay back.	1
		12%
	They don't too much.	1
		12%
	Trying to get people to upgrade their lighting. It's complimentary, moving people towards efficiency.	1
		12%
	We always inform customers and we perform a lot of retrofits because of these changes.	1
		12%


36. What benefits do you see to these higher efficiency standards?
n=11
% of Respondents
70%
60%
50%
40%
30%
20%
10%
0%
Complying with standards
Increased productivity
Lower maintenance costs
Save money
Save energy

Appendix C DETAILED SURVEY RESULTS: L&A

C.1 LIGHTING CUSTOMER SURVEY

Before this call today, had you ever heard of compact fluorescent light bulbs, or CFLs?	**Base**	**63**
		100%
	Yes	63
		100%
	No	-
		-
	Don't Know	-
		-
	Refused	-
		-

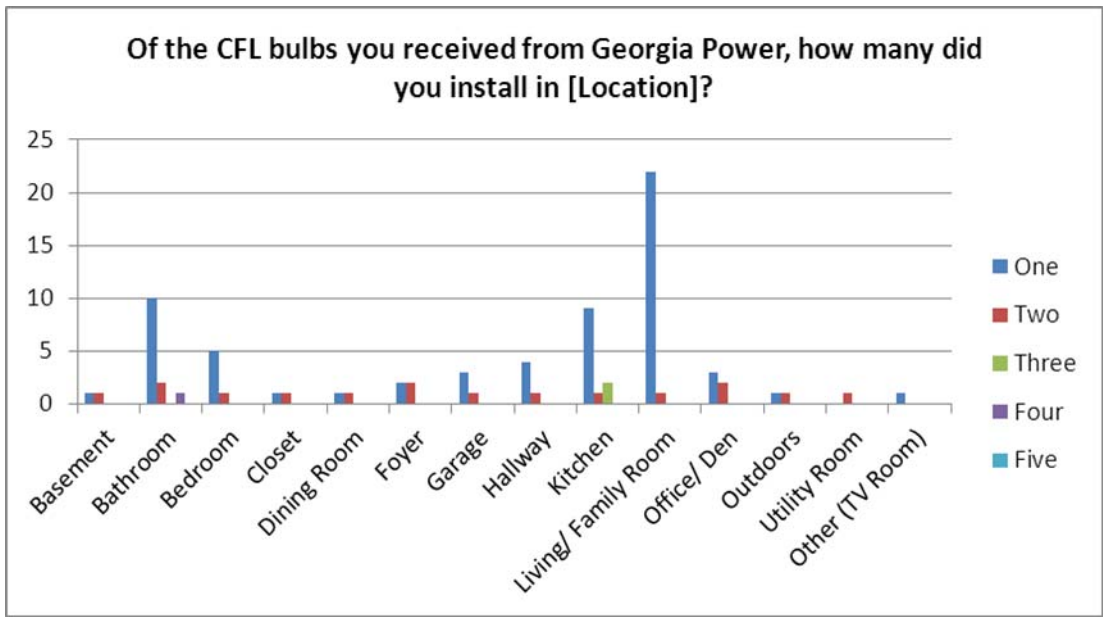


How many CFLs have you received from Georgia Power in the past two years?-TEXT	**Base**	**63**
		100%
	0	8
		13%
	1	44
		70%
	2	7
		11%
	3	1
		2%
	4	1
		2%
	5	1
		2%
	6	1
		2%

Of the [ANSWER FROM A6] light bulbs you received in the past two years, how many of them have you in...-TEXT	**Base**	**54**
		100%
	0	2
		4%
	1	40
		74%
	2	7
		13%
	3	2
		4%
	5	1
		2%
	6	1
		2%
	All	1
		2%

[ASK IF A7 A6] What did you do with the CFL light bulbs that you haven't installed? [DO NOT READ LIS...	**Base**	**12**
		100%
	Other (Specify)	7
		58%
	Stored them in my home (e.g., put in a cupboard)	5
		42%
	Gave them aw ay	-
		-
	Threw them aw ay	-
		-
	Refused	-
		-
	Don't Know	1

[ASK IF A7 A6] What did you do with the CFL light bulbs that you haven't installed? [DO NOT READ LIST]-TEXT	**Base**	**7**
		100%
	All light bulbs are CFLs	1
		14%
	No others received	1
		14%
	They are all installed	1
		14%
	installed all	3
		43%
	installed all of the bulbs	1
		14%



(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Bathroom-TEXT	**Base**	**13**
		100%
	.25	1
		8%
	1	2
		15%
	2	3
		23%
	3	1
		8%
	4	3
		23%
	4 hours	1
		8%
	6	2
		15%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Bedroom-TEXT	**Base**	**6**
		100%
	1	2
		33%
	1.5	1
		17%
	2	1
		17%
	4	1
		17%
	unknow n	1
		17%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Closet-TEXT	**Base**	**2**
		100%
	.5	1
		50%
	unknow n	1
		50%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Dining Room-TEXT	**Base**	**2**
		100%
	unknow n	2
		100%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Foyer-TEXT	**Base**	**4**
		100%
	12	1
		25%
	3	1
		25%
	unknow n	2
		50%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Garage-TEXT	**Base**	**4**
		100%
	.5	1
		25%
	1	1
		25%
	unknow n	2
		50%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Hallway-TEXT	**Base**	**5**
		100%
	2	1
		20%
	3	1
		20%
	4	1
		20%
	unknow n	2
		40%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Kitchen-TEXT	**Base**	**12**
		100%
	10	2
		17%
	2	1
		8%
	3	6
		50%
	3.5	1
		8%
	4	1
		8%
	unknow n	1
		8%

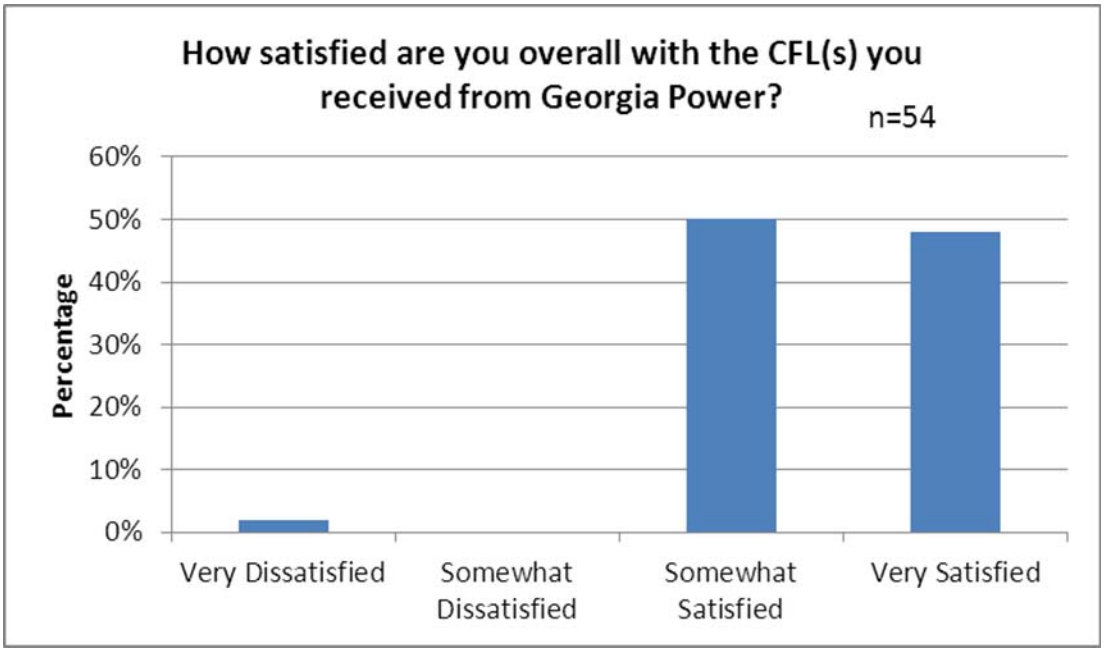
(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Living/Family Room-TEXT	**Base**	**23**
		100%
	1	2
		9%
	11	1
		4%
	2	1
		4%
	3	5
		22%
	4	3
		13%
	4.5	1
		4%
	5	3
		13%
	7	2
		9%
	8	2
		9%
	9	1
		4%
	unknow n	2
		9%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Office/Den-TEXT	**Base**	**5**
		100%
	2.5	1
		20%
	5	1
		20%
	8	1
		20%
	unknow n	2
		40%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Outdoors-TEXT	**Base**	**1**
		100%
	8	1
		100%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Utility Room-TEXT	**Base**	**1**
		100%
	unknow n	1
		100%

(FOR EACH ROOM WITH BULBS INSTALLED FROM QA9) Can you estimate, on average throughout the year, how...-Other-TEXT	**Base**	**1**
		100%
	8	1
		100%



What is the reason you are dissatisfied? [DO NOT READ, ALLOW MULTIPLE RESPONSE] [IF RESPONDENT SAYS...-TEXT	**Base**	**1**
		100%
	only recieved one light bulb, w ishes to have received more	1
		100%
	Other	-
		-

Since receiving the CFL(s) has your opinion of Georgia Power…	**Base**	**55**
		100%
	Increased substantially	1
		2%
	Somew hat increased	7
		13%
	Stayed the same	46
		84%
	Somew hat decreased	1
		2%
	Decreased substantially	-
		-
	Don't know	-
		-
	Refused	-
		-

How many CFLs have you purchased in the past year?- TEXT	**Base**	**63**
		100%
	0	11
		17%
	1	2
		3%
	2	4
		6%
	4	8
		13%
	5	2
		3%
	8	1
		2%
	6	7
		11%
	10	1
		2%
	12	6
		10%
	15	3
		5%
	20	6
		10%
	24	1
		2%
	25	4
		6%
	30	4
		6%
	40	2
		3%
	None	1
		2%

About how many CFLs are you currently storing at your home? This could be in a closet, pantry, garag...-TEXT	**Base**	**59**
		100%
	0	28
		47%
	1	5
		8%
	2	7
		12%
	3	3
		5%
	5	2
		3%
	6	3
		5%
	10	2
		3%
	12	3
		5%
	12-18	1
		2%
	14	1
		2%
	18	1
		2%
	20	1
		2%
	42	1
		2%
	None	1
		2%

Approximately what percentage of your home's light sockets have a CFL, would it be….[READ LIST UNTIL…	**Base**	**58**
		100%
	Less than 25%	21
		36%
	25% - Less than 50%	13
		22%
	50% - Less than 75%	8
		14%
	75% - Less than 100%	11
		19%
	100%	5
		9%
	Don't know	-
		-
	Refused	1

Approximately how long ago did you first use a compact fluorescent light bulb? [RECORD NUMBER OF YEA...- TEXT	**Base**	**58**
		100%
	1	20
		34%
	10	1
		2%
	14	1
		2%
	2	12
		21%
	2.5	1
		2%
	3	10
		17%
	4	1
		2%
	5	2
		3%
	6	4
		7%
	6 months	1
		2%
	7	3
		5%
	8	1
		2%
	9	1
		2%
	Other	-
		-

Do you have any concerns with the use or operation of CFLs?	**Base**	**59**
		100%
	Yes	7
		12%
	No	52
		88%
	Don't Know	-
		-
	Refused	-
		-

What are your concerns?	**Base**	**7**
		100%
	Mercury	2
	Requires special disposal/must be recycled	2
	Not bright enough	2
	Slow start-up/delay coming on	1
	Burn out too soon/short life	3

What are your concerns?-Other (Specify)-TEXT	**Base**	**3**
		100%
	Longevity is over-estimated	1
		33%
	Want CFL replacement for 100 W blub	1
		33%
	life span is inaccurate	1
		33%
	Other	-
		-

Do you have any concerns with the disposal of CFLs?	**Base**	**59**
		100%
	Yes	15
		25%
	No	40
		68%
	Don't know	4
		7%
	Refused	-
		-

What are your concerns?	**Base**	**15**
		100%
	Mercury	8
	Requires special disposal/must be recycled	8
	Unsure how to dispose of CFLs	1

What are your concerns?-Other (Specify)-TEXT	**Base**	**1**
		100%
	No guidance on how to dispose of them	1
		100%

Have you ever disposed of any CFLs that have broken, burned out, or are no longer useful?	**Base**	**58**
		100%
	Yes	12
		21%
	No	46
		79%
	Don't know	1
	Refused	-
		-

How did you dispose of them? [DO NOT READ. ALLOW MULTIPLE RESPONSES]-Threw away in trash	**Base**	**8**
		100%
	Threw away in trash	8
	Recycled/dropped off at hazardous waste center	1

How did you dispose of them? [DO NOT READ. ALLOW MULTIPLE RESPONSES]-Recycled/dropped off at other retailer (Specify)-TEXT	**Base**	**2**
		100%
	Brought them back to BJ's and they gave him new ones	1
		50%
	CostCo	1
		50%

How did you dispose of them? [DO NOT READ. ALLOW MULTIPLE RESPONSES]-Other (Specify)-TEXT	**Base**	**2**
		100%
	Storing them at the house, but don't know what to do with them	1
		50%
	Took to the county recycle center	1
		50%

I will read a few statements. Please tell me which ONE most accurately describes why you currently u...	**Base**	**12**
		100%
	I want to save energy	6
		50%
	I want to save money	3
		25%
	I want to help the environment	1
		8%
	I want to reduce dependence on foreign oil, coal, or gas	2
		17%
	Don't know	-
		-
	Refused	-
		-

Where do you buy incandescent, or regular light bulbs?	**Base**	**10**
		100%
	Grocery store or supermarket such as Publix, Kroger, or Trader Joe's	10
		100%
	Warehouse store, such as Costco or Sam's Club	6
		100%
	Home improvement store, such as Home Depot or Lowe's	33
		100%
	Hardware store, such as ACE Hardware	1
		100%
	Mass merchandise or discount department store, such as a Wal-Mart, K-Mart, or Target	20
		100%
	Drugstore, such as CVS, Rite Aid or Walgreens	2
		100%
	Do not buy incandescents	5
		100%

Where do you buy incandescent, or regular light bulbs? [DON'T READ, RECORD UP TO THREE RESPONSES]-Other (Specify)-TEXT	**Base**	**2**
		100%
	does not buy them	1
		50%
	w herever they are on Sale	1
		50%

Where do you buy CFLs?	**Base**	**7**
		100%
	Grocery store or supermarket such as Publix, Kroger, or Trader Joe's	7
	Warehouse store, such as Costco or Sam's Club	10
	Home improvement store, such as Home Depot or Low e's	33
	Hardw are store, such as ACE Hardw are	1
	Mass merchandise or discount department store, such as a Wal-Mart, K-Mart, or Target	21
	Drugstore, such as CVS, Rite Aid or Walgreens	1
	Home furnishing store, such as a Bed, Bath, and Beyond	1
	Do not buy CFLs	4
	Don't lknow	1

The ENERGY STAR label is usually a square or rectangular blue and white label attached to appliances...	**Base**	**1**
		100%
	Yes	1
		100%
	No	-
		-
	Don't know	-
		-
	Refused	-
		-

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Save money on operation	Base	9
		100%
	1	9
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Energy efficient/savings	Base	55
		100%
	1	55
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Energy conservation	Base	10
		100%
	1	10
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Savings (not linked to operation)	Base	1
		100%
	1	1
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Environmental benefits	Base	3
		100%
	1	3
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Energy/environmental product standards	Base	5
		100%
	1	5
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Environment (no link to benefit)	Base	3
		100%
	1	3
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Product standards (no environmental link)	**Base**	**2**
		100%
	1	2
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Government backing	**Base**	**2**
		100%
	1	2
		100%

What does the ENERGY STAR label mean to you? [DO NOT READ LIST. CHECK ALL THAT APPLY]-Other (Specify)-TEXT	**Base**	**1**
		100%
	Marketing gimmick	1
		100%

Do you remember seeing or hearing any advertising or information specifically about ENERGY STAR, abo...	**Base**	**59**
		100%
	Yes, saw or heard ENERGY STAR advertising or information only	11
		19%
	Yes, saw or heard general energy-efficiency advertising or information only?	7
		12%
	Both	40
		68%
	No	1
		2%
	Don't know	4
	Refused	-
		-

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-TV ad	**Base**	**21**
		100%
	1	21
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Radio ad	**Base**	**1**
		100%
	1	1
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Retail store sign and informational materials		
	Base	**25**
		100%
	1	25
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Newspaper or magazine ad		
	Base	**5**
		100%
	1	5
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Newspaper insert		
	Base	**3**
		100%
	1	3
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Billboard		
	Base	**1**
		100%
	1	1
		100%

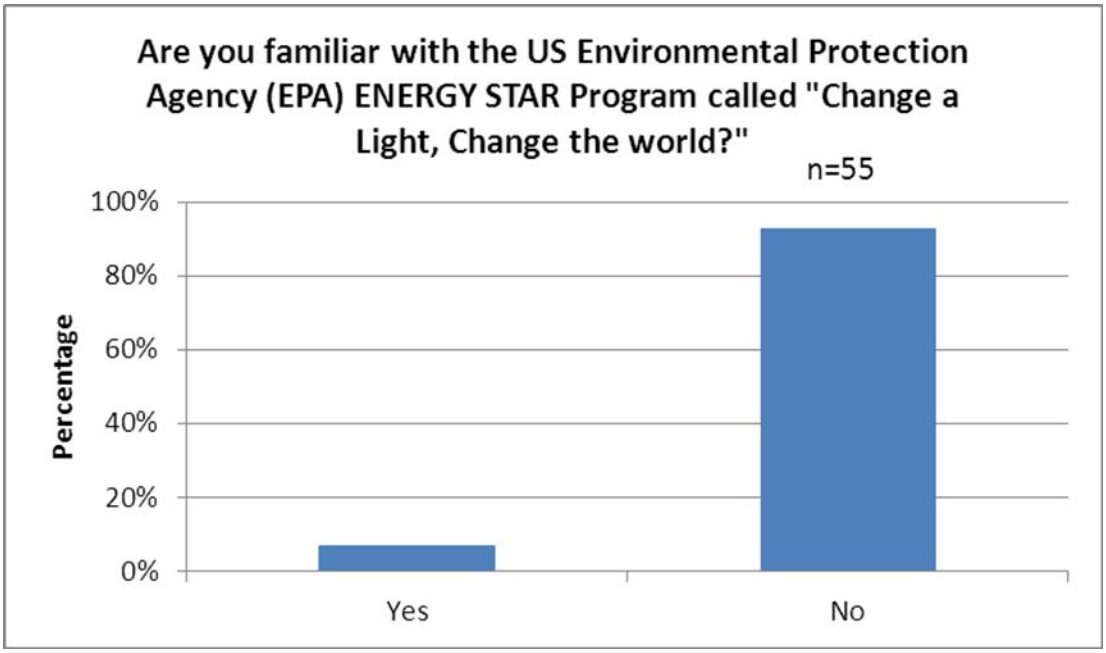
Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-A utility mailing or bill insert		
	Base	**5**
		100%
	1	5
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Georgia Power Website		
	Base	**3**
		100%
	1	3
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Yellow energy guide label		
	Base	**4**
		100%
	1	4
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Signage at a local Georgia Power office	**Base**	**2**
		100%
	1	2
		100%

Can you tell me where you saw or heard those advertising or informational materials? [DO NOT READ. P...-Other (Specify)-TEXT	**Base**	**3**
		100%
	GA Pow er New spaper	1
		33%
	online	2
		67%



Have you ever participated in the 'Change A Light' campaign by making a pledge?	**Base**	**7**
		100%
	Yes	-
		-
	No	7
		100%
	Don't know	-
		-
	Refused	-
		-

Are you aware of any programs or services from [Georgia Power] that help you save energy?	**Base**	**62**
		100%
	Yes	48
		77%
	No	14
		23%
	Don't Know	1
	Refused	-
		-

What energy saving programs have you heard of?	**Base**	**48**
		100%
	Home energy improvement program	14
	High efficiency new home program	1
	Energy audit and w ater heating program	37
	Refrigerator recycling program	11
	CFL program	8

What energy saving programs have you heard of? (DO NOT READ, RECORD ALL MENTIONS)-Other (Specify)-TEXT	**Base**	**8**
		100%
	Appliance rebate program	1
		12%
	Buying green energy	1
		12%
	Earthcents	1
		12%
	Levelized billing	1
		12%
	Metering control.	1
		12%
	The meter control program	1
		12%
	email campaign to log on and look at energy use	1
		12%
	good cents?	1
		12%

How did you first hear about the [insert program name]?	**Base**	**17**
		100%
	All through emails.	1
		6%
	Bill insert	2
		12%
	Bill insert, then website	1
		6%
	Bill inserts.	1
		6%
	Email	1
		6%
	GA Power Newsletter	1
		6%
	GPC called	1
		6%
	Georgia Power bill insert	1
		6%
	Georgia Power flyers	1
		6%
	Georgia Power website, bill inserts	1
		6%
	Heard it through friends and acquaintances.	1
		6%
	In a letter from Georgia Power.	1
		6%
	Local office	1
		6%
	Newspaper or website for all of the above	1
		6%
	Personal friends at Georgia Power	1
		6%
	Website.	1
		6%

Have you ever heard of Georgia Power's [READ ANSWERS For ones not mentioned in previous item, BUT Ro...-Home energy improvement program	**Base**	**9**
		100%
	1	9
		100%

Have you ever heard of Georgia Power's [READ ANSWERS For ones not mentioned in previous item, BUT Ro...-High efficiency new home program	**Base**	**3**
		100%
	1	3
		100%

Have you ever heard of Georgia Power's [READ ANSWERS For ones not mentioned in previous item, BUT Ro...-Energy audit and water heating program	**Base**	**6**
		100%
	1	6
		100%

Have you ever heard of Georgia Power's [READ ANSWERS For ones not mentioned in previous item, BUT Ro...-Refrigerator recycling program	**Base**	**10**
		100%
	1	10
		100%

Have you ever heard of Georgia Power's [READ ANSWERS For ones not mentioned in previous item, BUT Ro...-CFL program	**Base**	**3**
		100%
	1	3
		100%

In the recent past, which type of light bulb do you typically purchase the most often? (Read List) (...	**Base**	**60**
		100%
	Incandescents	19
		32%
	CFLs	40
		67%
	LED	1
		2%
	Other (Specify)	-
		-
	Don't know	3
	Refused	-
		-

Were you planning on purchasing light bulbs before you heard about receiving free CFLs for taking th...	**Base**	**59**
		100%
	Yes	18
		31%
	No	41
		69%
	Don't Know	4
	Refused	-
		-

What type of light bulb would you have purchased if the free offer had not been available? (Read Lis...	**Base**	**17**
		100%
	Incandescents	3
		18%
	CFLs	14
		82%
	LED	-
		-
	Other (Specify)	-
		-
	Don't know	1
	Refused	-
		-

What type of residence do you live in? [SELECT ONE RESPONSE]	**Base**	**63**
		100%
	Detached single-family home	52
		83%
	Townhouse or duplex which share adjacent walls	7
		11%
	Apartment or condo in a two, three, or four unit building	1
		2%
	Apartment or condo in a building with 5 or more units	3
		5%
	Mobile home or manufactured home	-
		-
	Other [SPECIFY: _____]	-
		-
	Don't know [DO NOT READ]	-
		-
	Refused [DO NOT READ]	-
		-

Is your home's energy source…	**Base**	**60**
		100%
	Natural gas and electricity	38
		63%
	Electricity only	22
		37%
	Some other combination of energy sources	-
		-
	Something else	-
		-
	Don't know [DO NOT READ]	1
	Refused [DO NOT READ]	1

Is your water heated by…	**Base**	**62**
		100%
	Natural Gas	41
		66%
	Electricity or	21
		34%
	Some other energy source	-
		-
	Don't know [DO NOT READ]	1
	Refused [DO NOT READ]	-
		-

Is your home occupied…	**Base**	**63**
		100%
	Year round or	63
		100%
	On a seasonal basis/vacation home	-
		-
	Don't know [DO NOT READ]	-
		-
	Refused [DO NOT READ]	-
		-

How many people live in your home on a full-time basis [including yourself]?- TEXT	**Base**	**62**
		100%
	1	10
		16%
	2	27
		44%
	3	11
		18%
	3.5	1
		2%
	4	5
		8%
	5	5
		8%
	6	2
		3%
	7	1
		2%

Which of the following categories best describes your age? Is it... [READ LIST]	**Base**	**30**
		100%
	(18 to 24)	-
		-
	(25 to 34)	2
		7%
	(35 to 44)	4
		13%
	(45 to 54)	15
		50%
	(55 to 64)	5
		17%
	(65 or over)	4
		13%
	Refused [DO NOT READ]	33

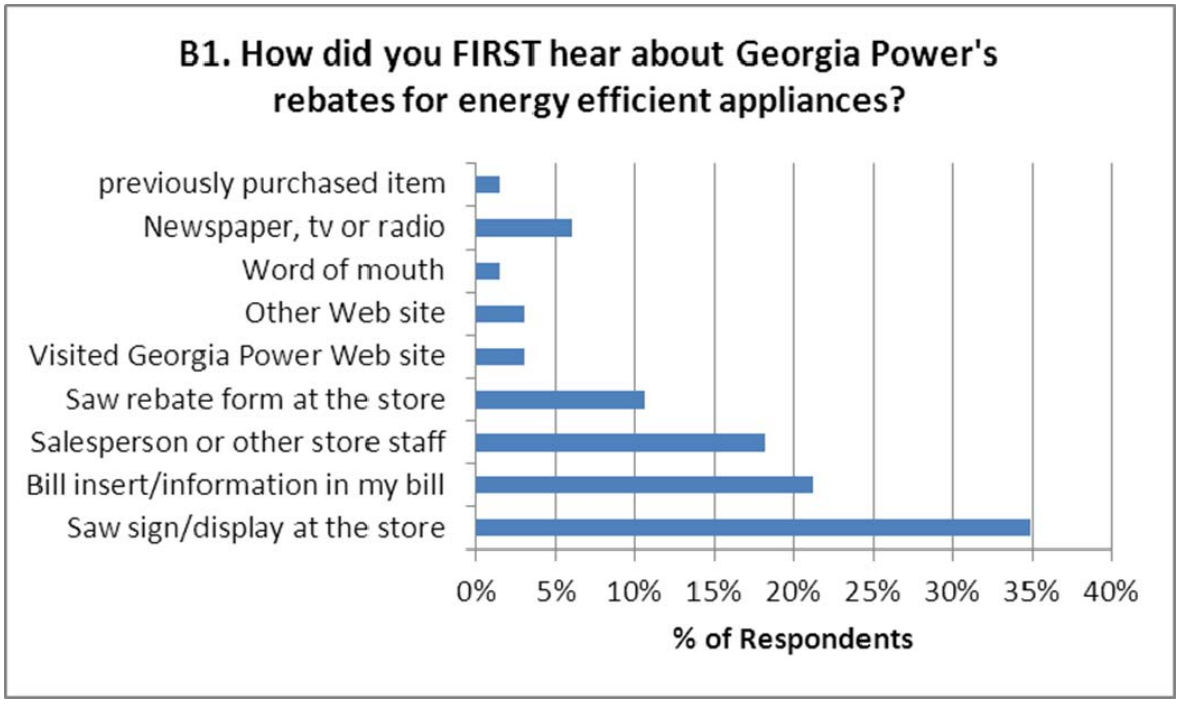
Do you or members of your family speak a language other than English in your home on a regular basis...	**Base**	**61**
		100%
	Yes [Which language? _____Record response]	-
		-
	No	61
		100%
	Don't know [DO NOT READ]	2
	Refused [DO NOT READ]	-
		-

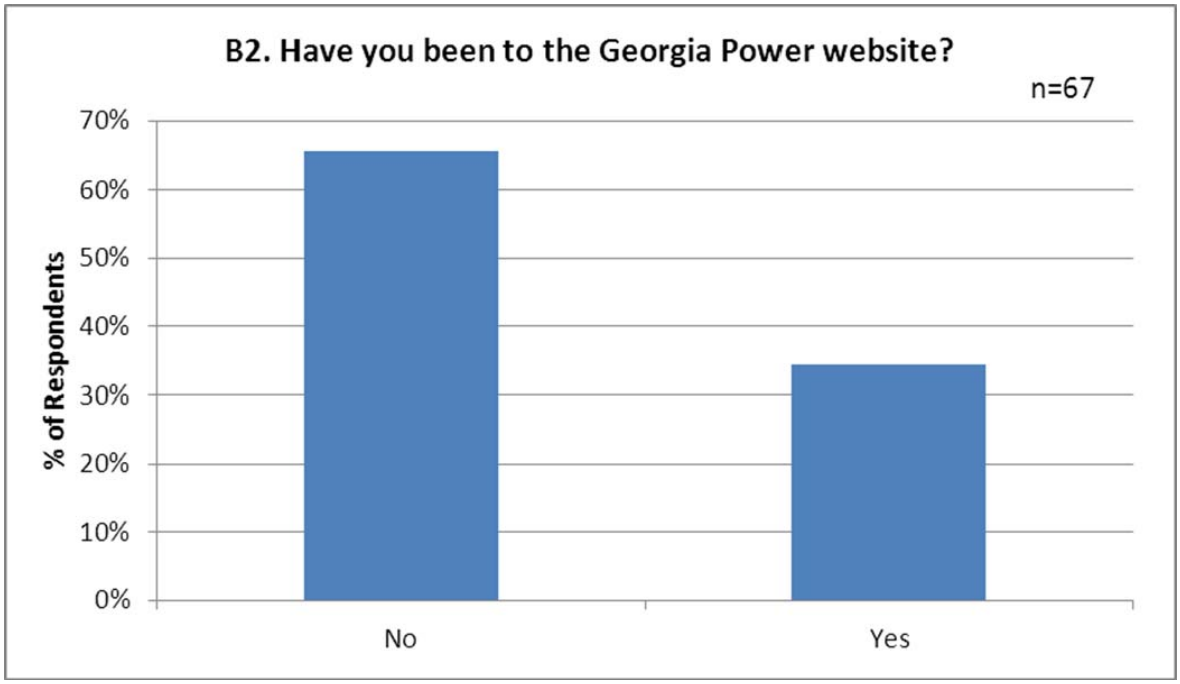
Are you on a levelized or on a budgeted billing plan?	**Base**	**52**
		100%
	Yes	5
		10%
	No	47
		90%
	Don't know	6
	Refused	5

Which of the following categories best describes your average monthly power bill? Is it...	**Base**	**24**
		100%
	Less than $50	-
		-
	$50 - $99	4
		17%
	$100 - $149	5
		21%
	$150 or more	15
		62%
	Don't know	32
	Refused	7

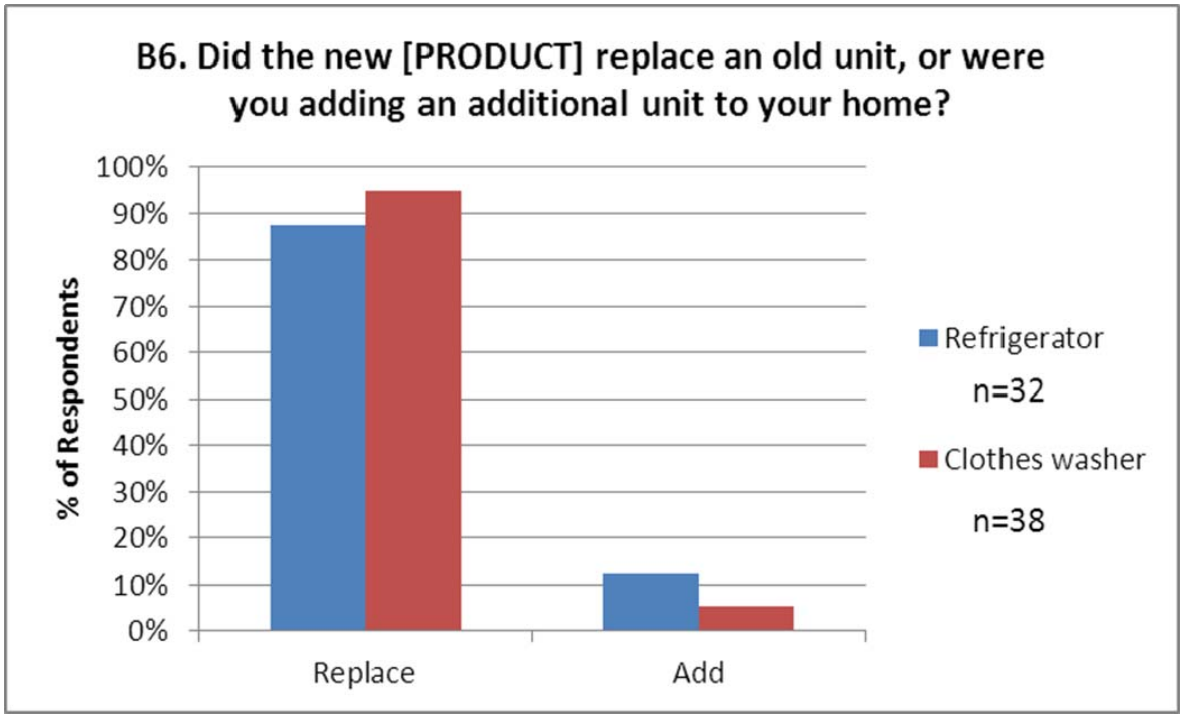
Which of the following categories best describes your total annual household income before taxes? [R...	**Base**	**21**
		100%
	Less than $15,000	2
		10%
	$15,000 but less than $25,000	2
		10%
	$25,000 but less than $35,000	1
		5%
	$35,000 but less than $50,000	5
		24%
	$50,000 but less than $75,000	2
		10%
	$75,000 but less than $100,000	6
		29%
	$100,000 but less than $150,000	1
		5%
	$150,000 or more	2
		10%
	Don't know [DO NOT READ]	6
	Refused [DO NOT READ]	35

C.2 APPLIANCE CUSTOMER SURVEY





B3. Did you find the information you were looking for on the Georgia Power website?	**Base**	**22**
		100%
	Yes	22
		100%
	No	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	1



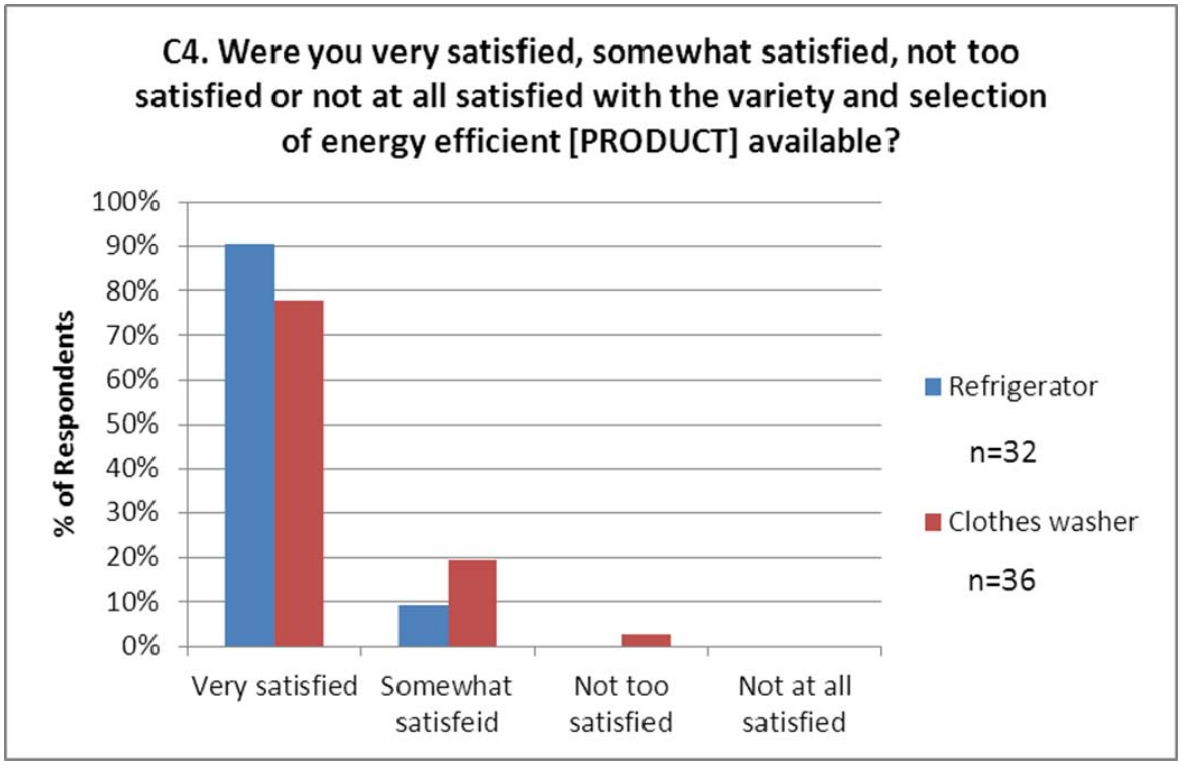
C1. Is the new REFRIGERATOR for which you received a rebate currently installed in your home? (RECORD ONE ANSWER ONLY)	**Base**	**34**
		100%
	Yes, it is currently installed in my home	33
		97%
	No, it is installed at some other location	1
		3%
	It was installed in my home but is now permanently removed (example: broke, burned out, don't fit, don't like, etc.)	-
		-
	It was installed at home, wasn't working properly, and was replaced with another item through warranty	-
		-
	It was sold or given away	-
		-
	It is currently in storage.	-
		-
	Other, (Specify:)	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-

C1. Is the new CLOTHES WASHER for which you received a rebate currently installed in your home? (RECORD ONE ANSWER ONLY)	**Base**	**38**
		100%
	Yes, it is currently installed in my home	38
		100%
	No, it is installed at some other location	-
		-
	It was installed in my home but is now permanently removed (example: broke, burned out, don't fit, don't like, etc.)	-
		-
	It was installed at home, wasn't working properly, and was replaced with another item through warranty	-
		-
	It was sold or given away	-
		-
	It is currently in storage.	-
		-
	Other, (Specify:)	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-

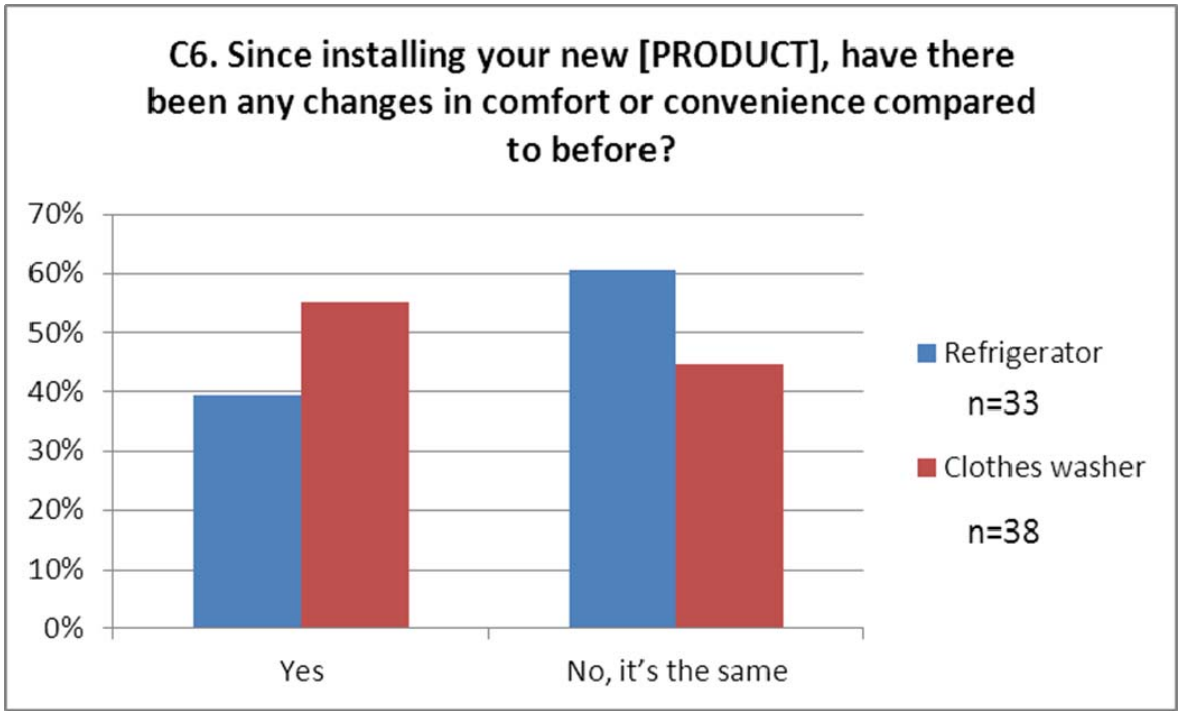
[RECORD ANSWER] (C1A. Where is it installed? [VERBATIM RESPONSE]	**Base**	**1**
		100%
	son's location	1
		100%

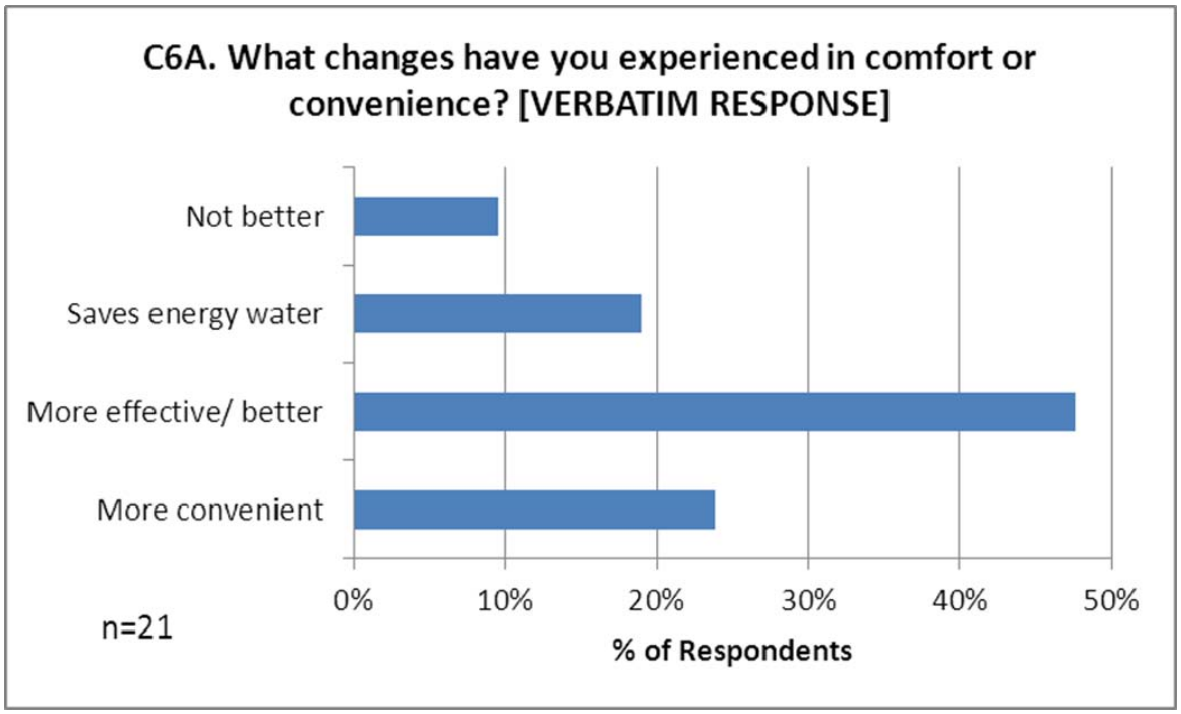
C3. What is the reason you are dissatisfied? [DO NOT READ, ALLOW MULTIPLE RESPONSE] [VERBATIM RESPONSE]	**Base**	**1**
		100%
	<4:Other {SPECIFY:}>:Design flaw in ice maker	1
		100%

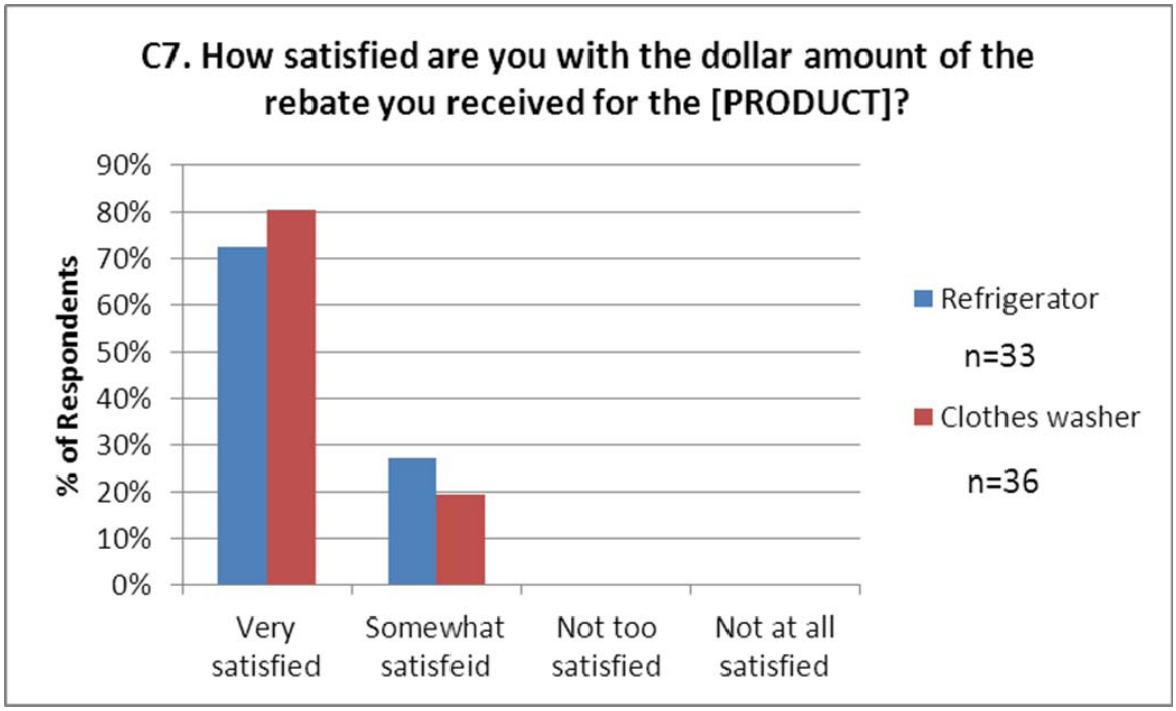
cu3@_2	**Base**	**1**
		100%
	<4:Other {SPECIFY:}>:the way it works	1
		100%

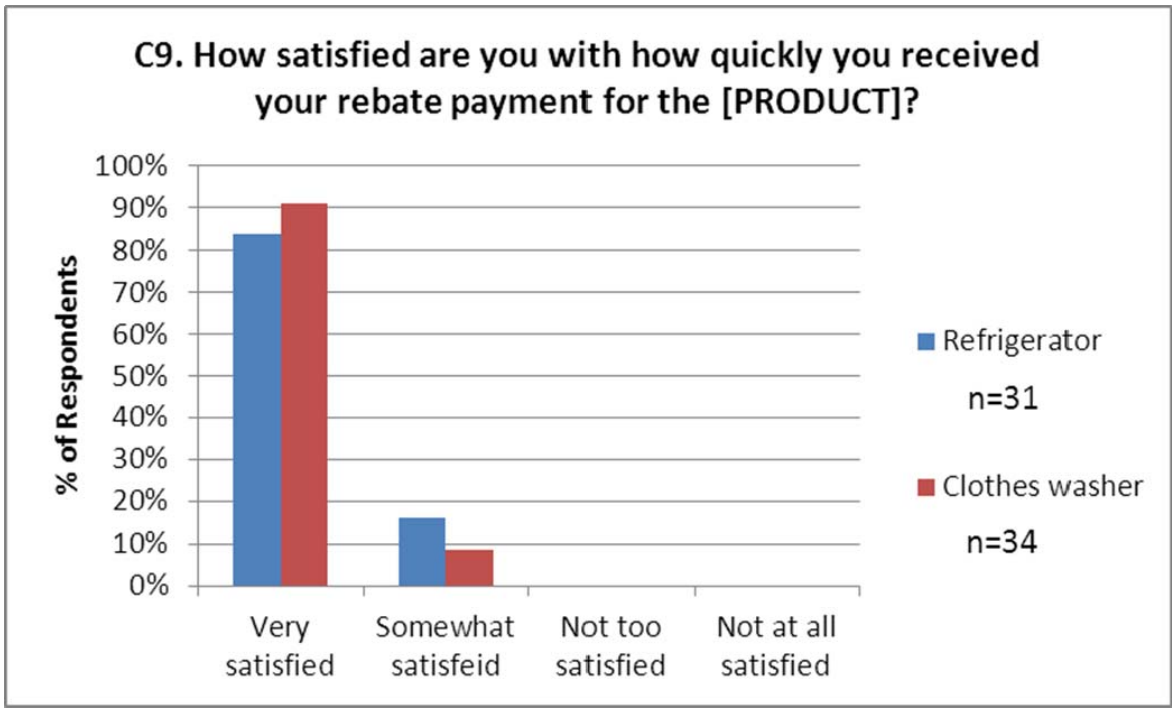


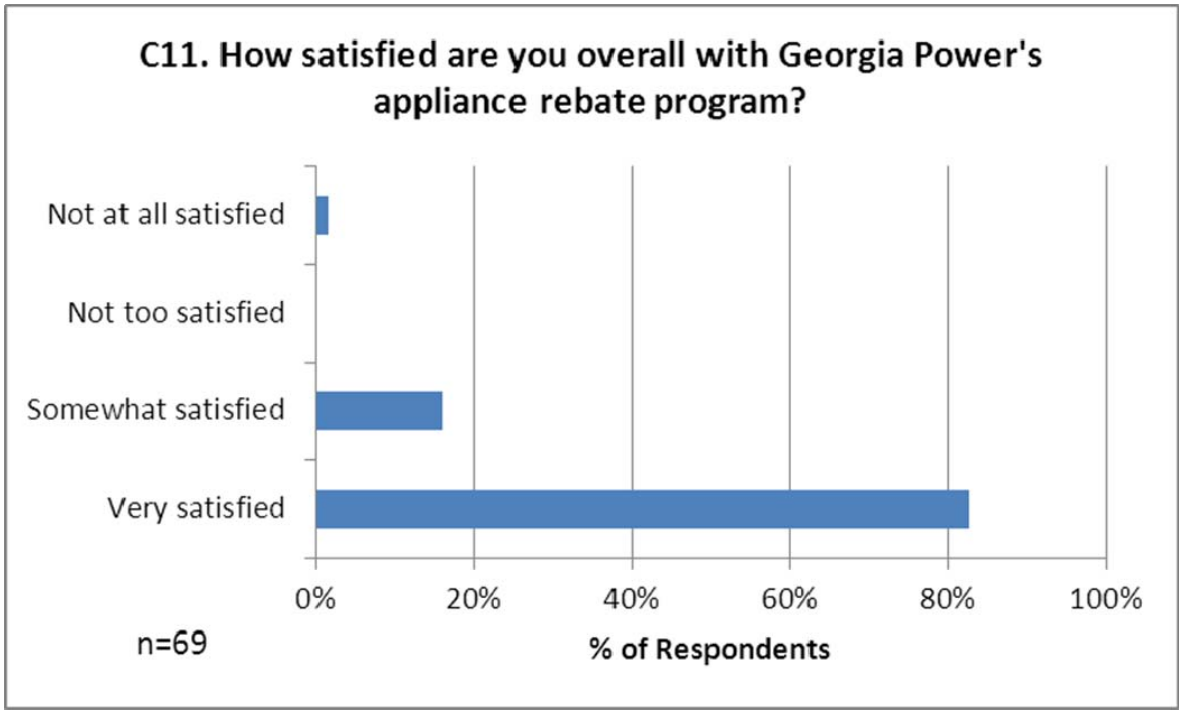
C5. What is the reason you are dissatisfied?	**Base**	**1**
		100%
	<4:Other {SPECIFY:}>:I was looking for one with a thin aggitator and they don't make many of those any more, they don't have many options	1
		100%
	Other	-
		-


C6. Since installing your new [PRODUCT], have there been any changes in comfort or convenience compared to before?
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No, it's the same
Refrigerator
n=33
Clothes washer
n=38

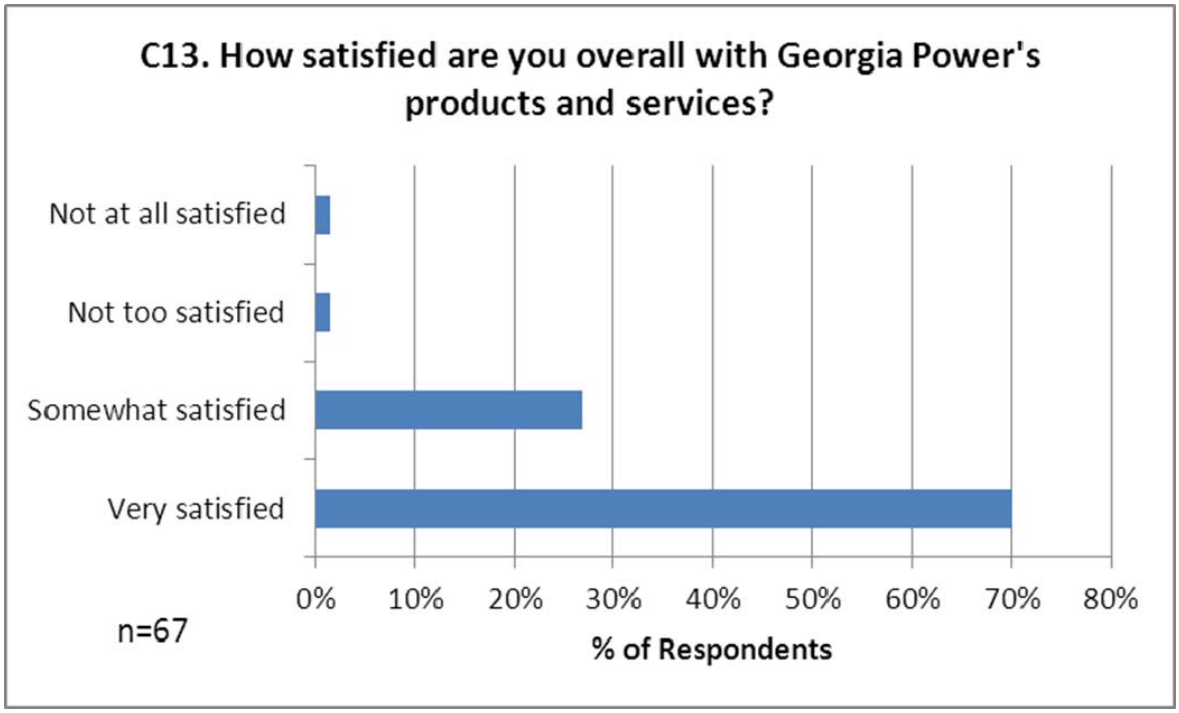

C6A. What changes have you experienced in comfort or convenience? [VERBATIM RESPONSE]
Not better
Saves energy water
More effective/ better
More convenient
n=21
0%
10%
20%
30%
40%
50%
% of Respondents


C7. How satisfied are you with the dollar amount of the rebate you received for the [PRODUCT]?
% of Respondents
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Very satisfied
Somewhat satisfeid
Not too satisfied
Not at all satisfied
Refrigerator
n=33
Clothes washer
n=36

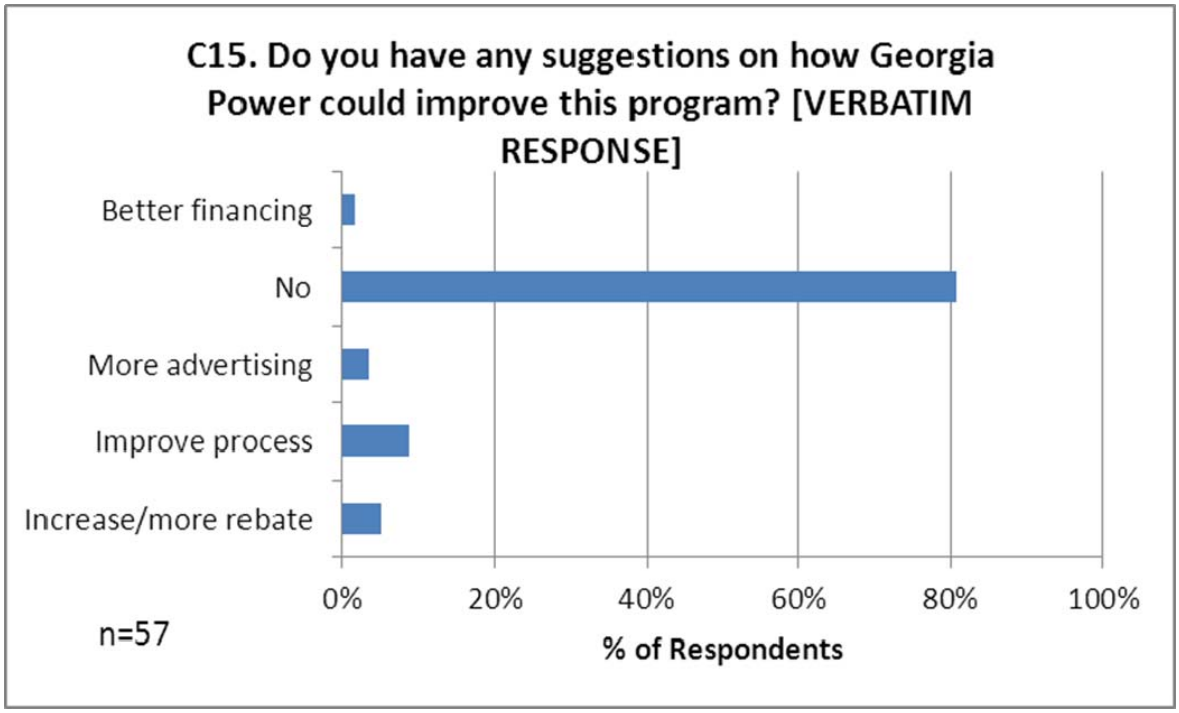

C9. How satisfied are you with how quickly you received your rebate payment for the [PRODUCT]?
% of Respondents
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Very satisfied
Somewhat satisfeid
Not too satisfied
Not at all satisfied
Refrigerator
n=31
Clothes washer
n=34

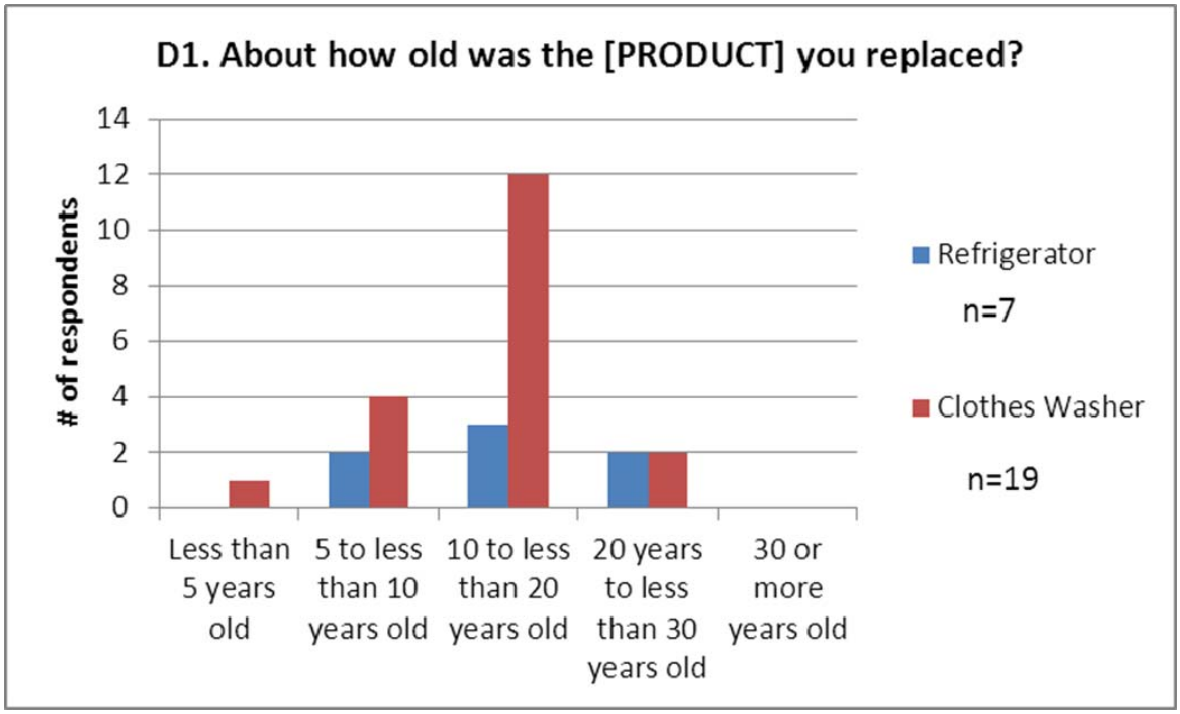


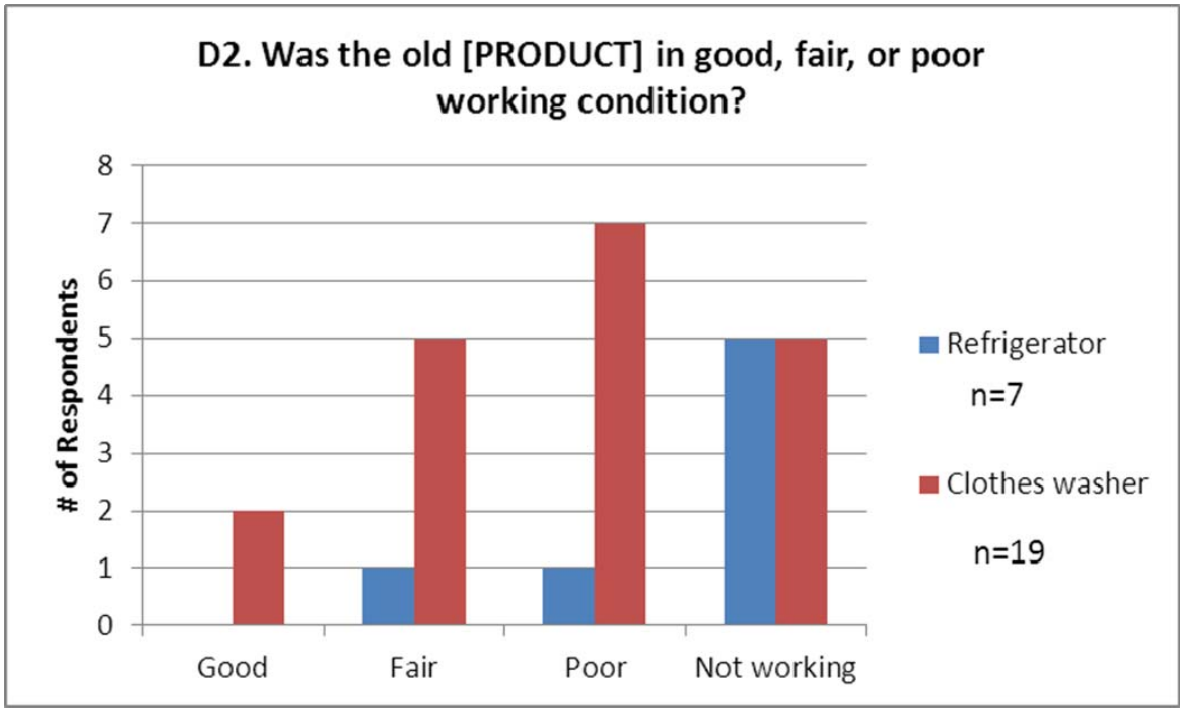
C12. What is the reason you are dissatisfied? [DO NOT READ, ALLOW MULTIPLE RESPONSE] (MENTION #1)	**Base**	**1**
		100%
	Rebate w as not enough	-
		-
	Didn't receive rebate quick enough	-
		-
	Rebates w eren't available for other appliances	1
		100%
	Savings less than expected	-
		-
	Other [SPECIFY:]	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-

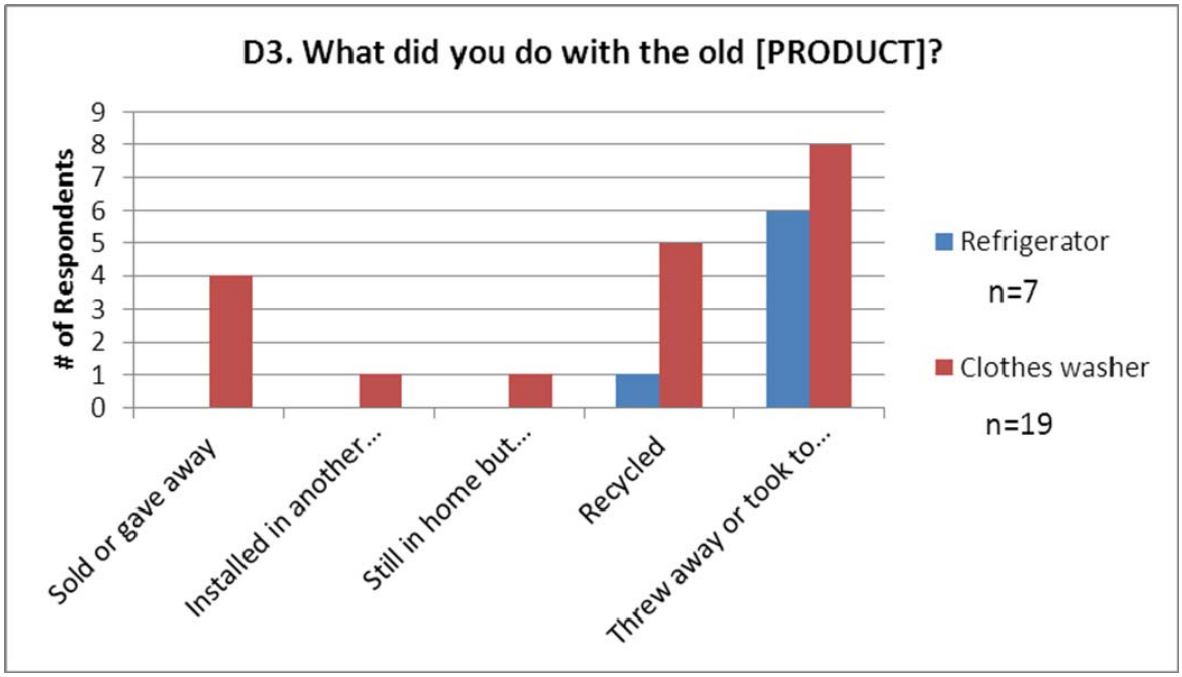


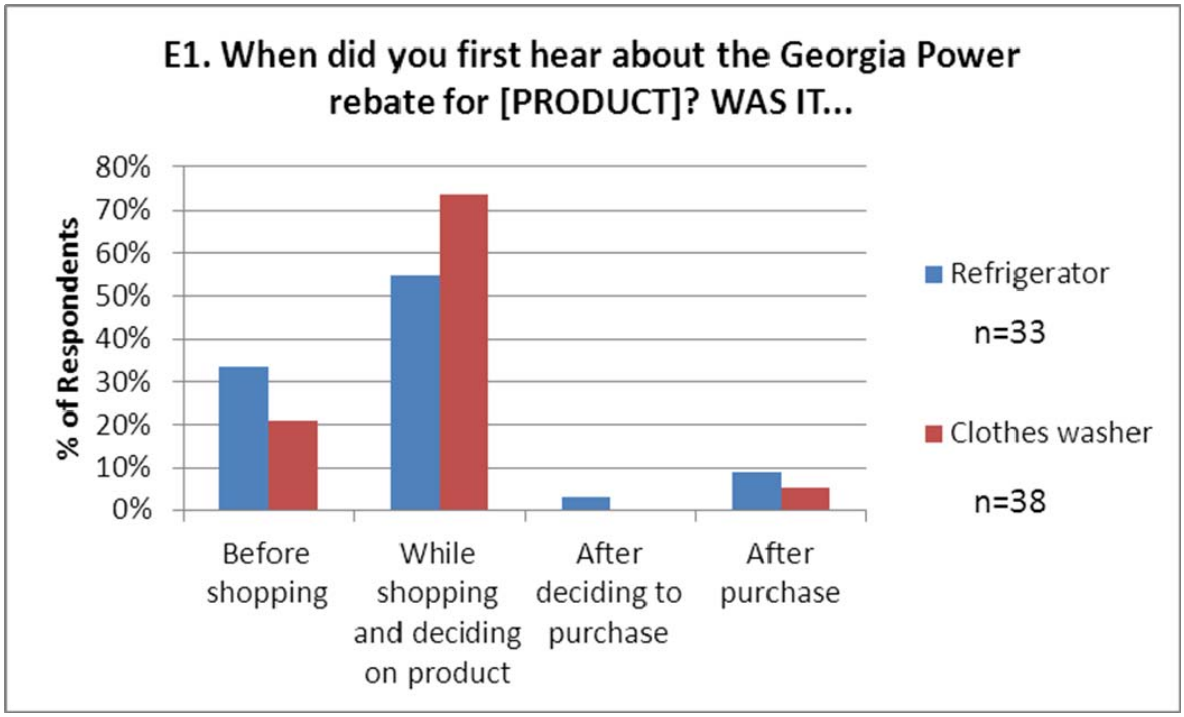
C14. What is the reason you are dissatisfied? [DO NOT READ, ALLOW MULTIPLE RESPONSE] (MENTION #1)	**Base**	**2**
		100%
	None of the products or services offered benefited me	-
		-
	There was not enough value provided	-
		-
	I had a problem with Georgia Power in the past	-
		-
	Products don't save me energy	-
		-
	Bills are too high	2
		100%
	Other [SPECIFY:]	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-


C15. Do you have any suggestions on how Georgia Power could improve this program? [VERBATIM RESPONSE]
Better financing
No
More advertising
Improve process
Increase/more rebate
0%
20%
40%
60%
80%
100%
n=57
% of Respondents


D1. About how old was the [PRODUCT] you replaced?
# of respondents
14
12
10
8
6
4
2
0
Less than 5 years old
5 to less than 10 years old
10 to less than 20 years old
20 years to less than 30 years old
30 or more years old
Refrigerator
n=7
Clothes Washer
n=19

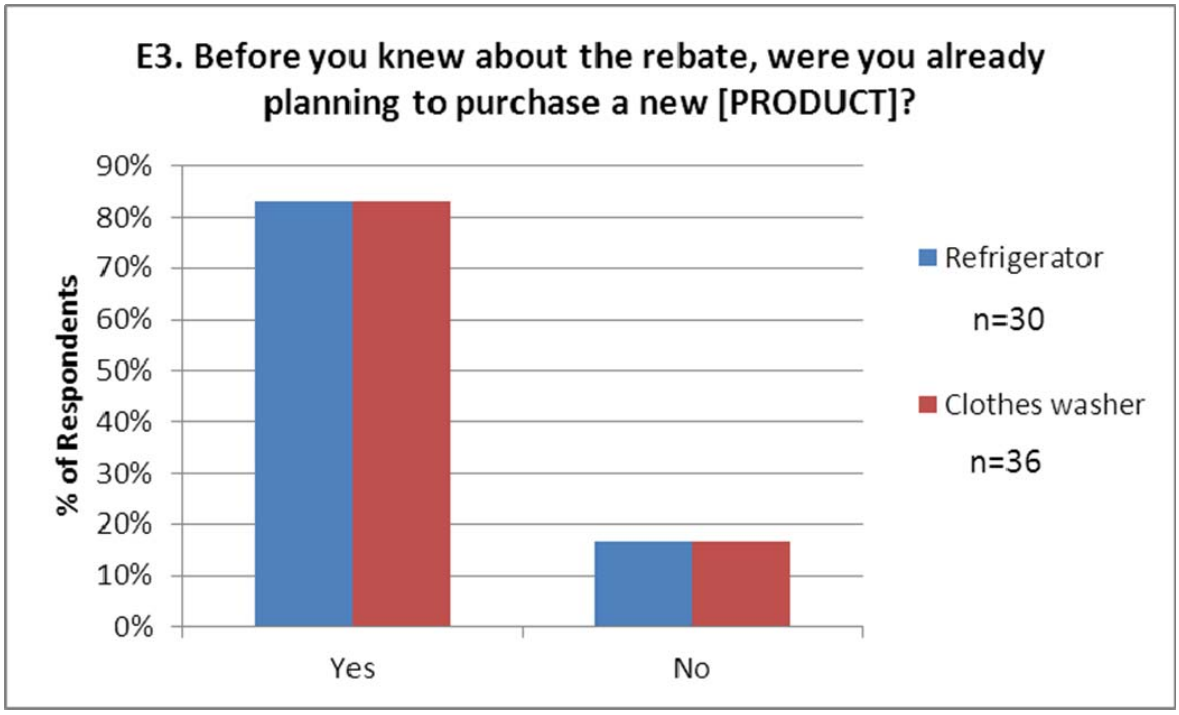

D2. Was the old [PRODUCT] in good, fair, or poor working condition?
# of Respondents
0
1
2
3
4
5
6
7
8
Good
Fair
Poor
Not working
Refrigerator
n=7
Clothes washer
n=19

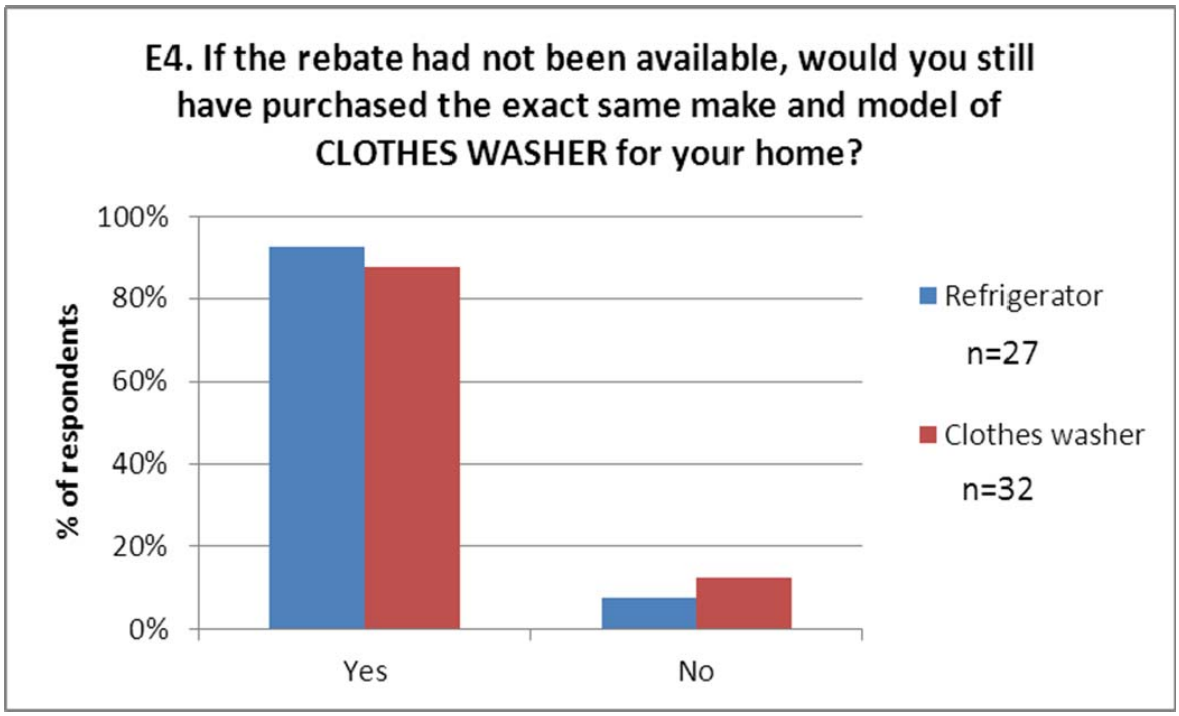

D3. What did you do with the old [PRODUCT]?
# of Respondents
0
1
2
3
4
5
6
7
8
9
Sold or gave away
Installed in another...
Still in home but...
Recycled
Threw away or took to...
Refrigerator
n=7
Clothes washer
n=19

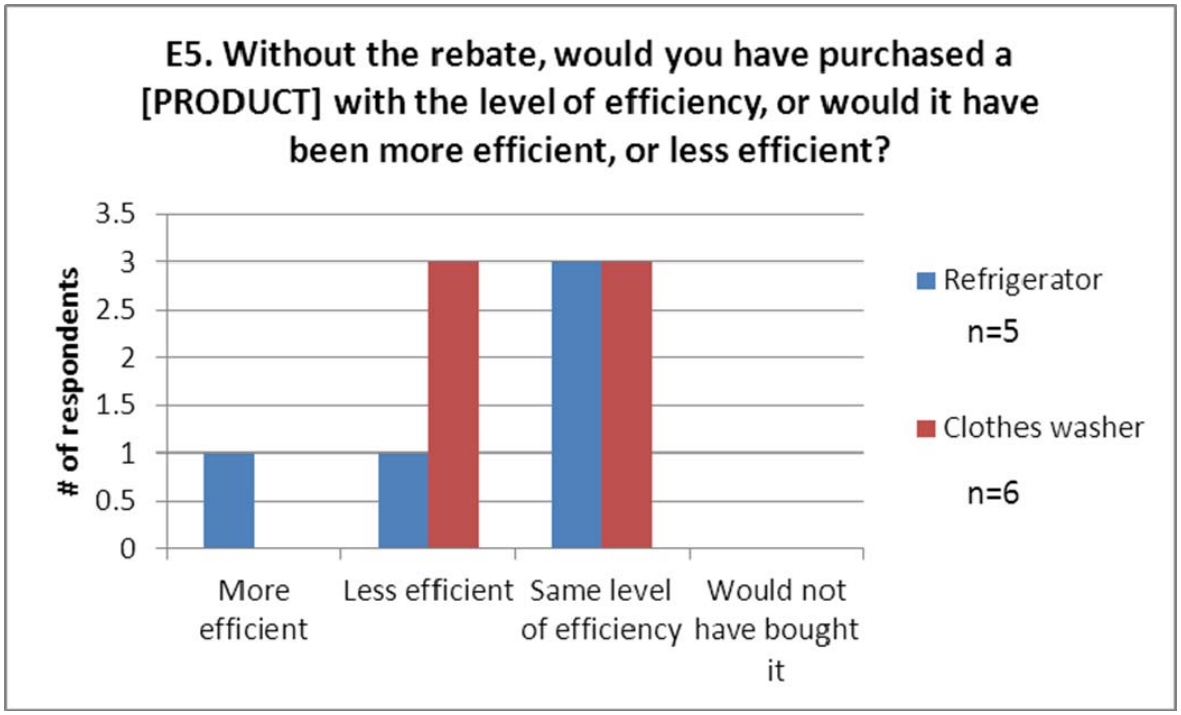


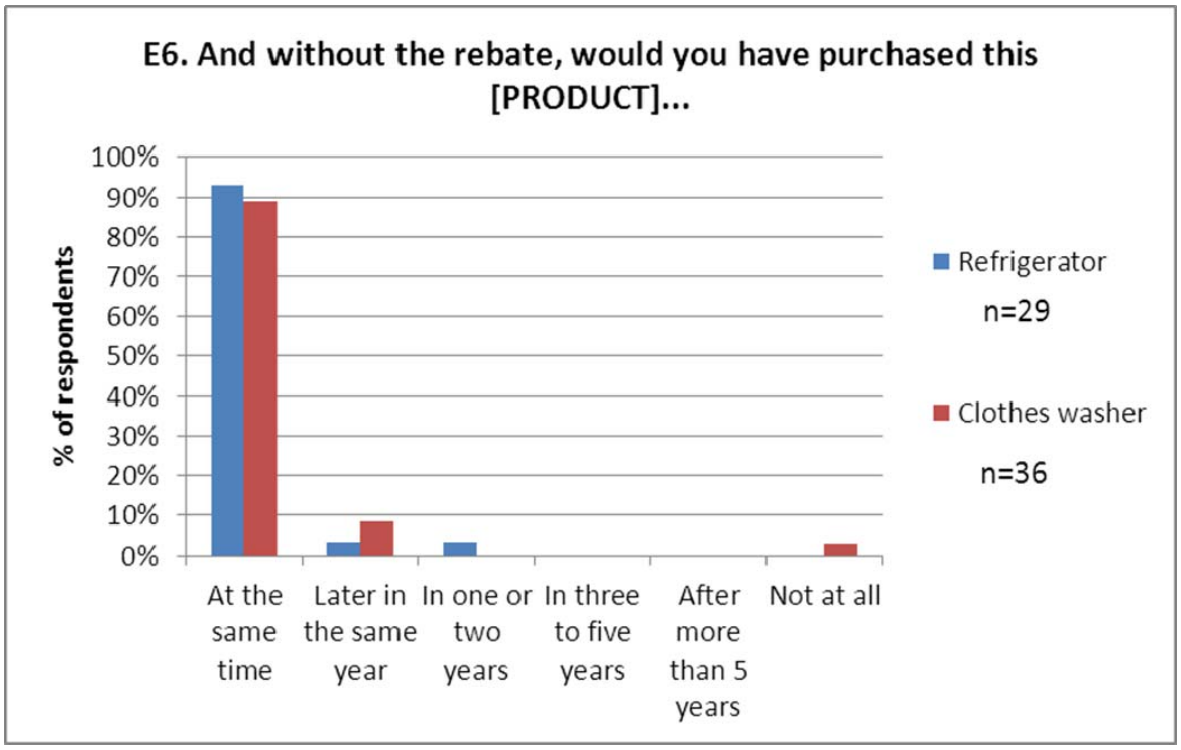
E2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific REFRIGERATOR?	**Base**	**4**
		100%
	Yes	4
		100%
	No	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-

E2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific CLOTHES WASHER?	**Base**	**2**
		100%
	Yes	2
		100%
	No	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-


E3. Before you knew about the rebate, were you already planning to purchase a new [PRODUCT]?
% of Respondents
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No
Refrigerator
n=30
Clothes washer
n=36


E4. If the rebate had not been available, would you still have purchased the exact same make and model of CLOTHES WASHER for your home?
% of respondents
100%
80%
60%
40%
20%
0%
Yes
No
Refrigerator
n=27
Clothes washer
n=32

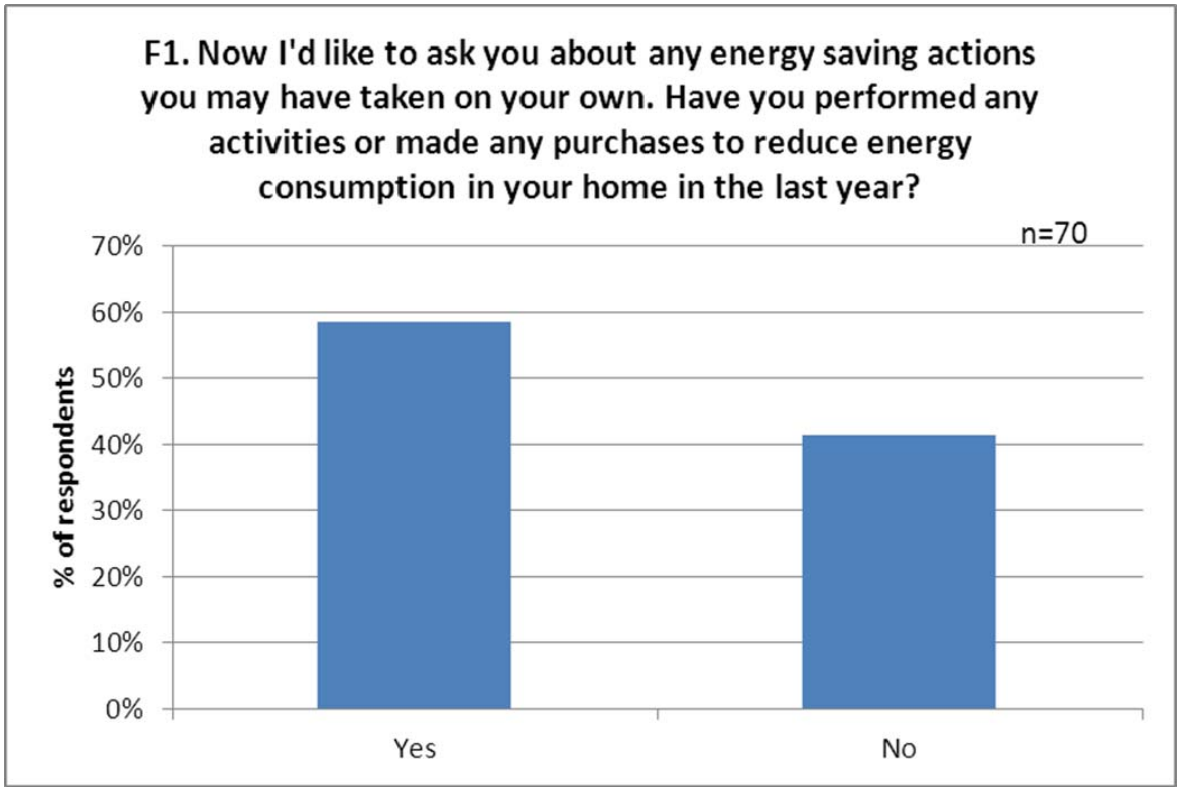

E5. Without the rebate, would you have purchased a [PRODUCT] with the level of efficiency, or would it have been more efficient, or less efficient?
# of respondents
3.5
3
2.5
2
1.5
1
0.5
0
More efficient
Less efficient
Same level of efficiency
Would not have bought it
Refrigerator
n=5
Clothes washer
n=6

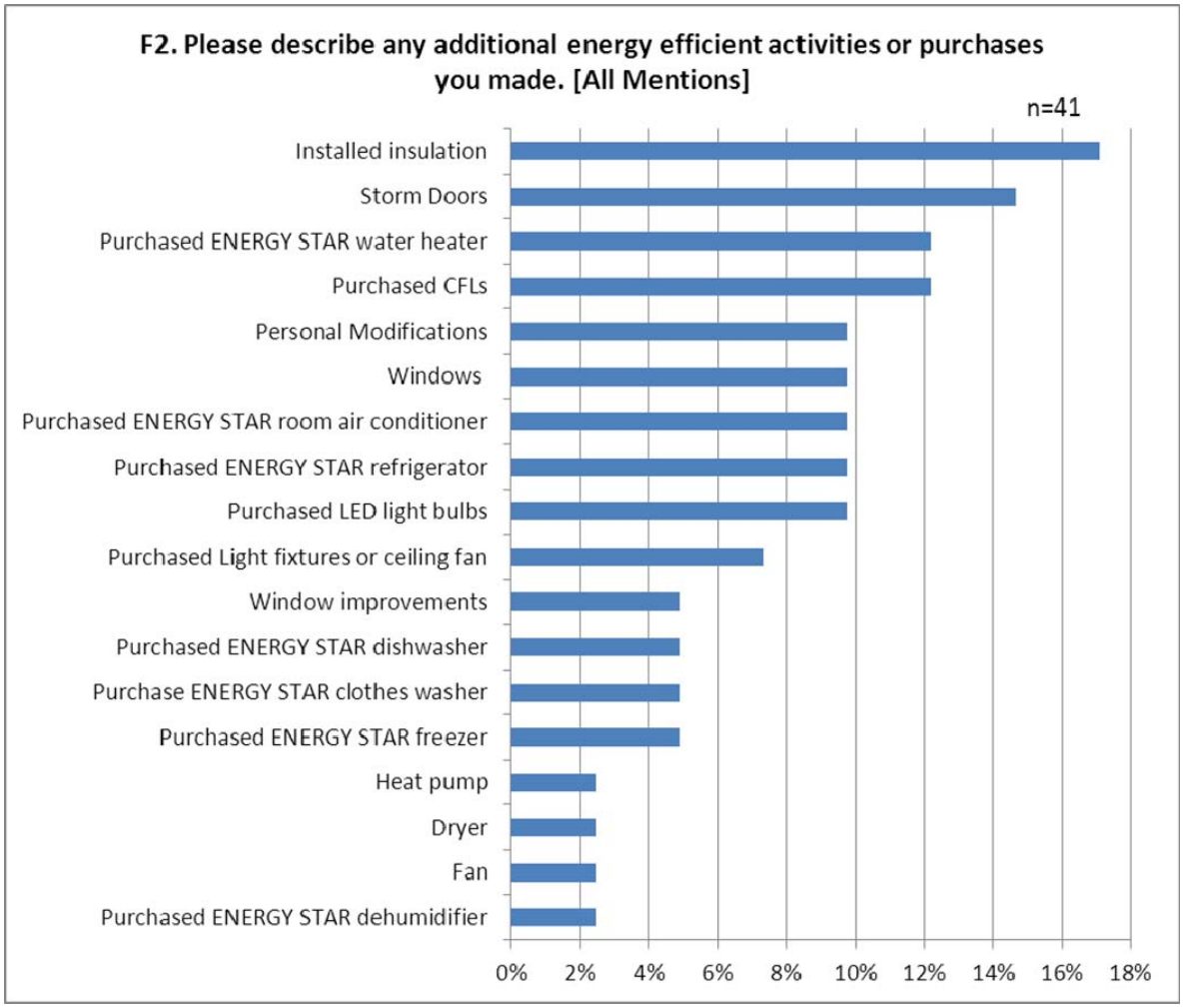

E6. And without the rebate, would you have purchased this [PRODUCT]...
% of respondents
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
At the same time
Later in the same year
In one or two years
In three to five years
After more than 5 years
Not at all
Refrigerator
n=29
Clothes washer
n=36

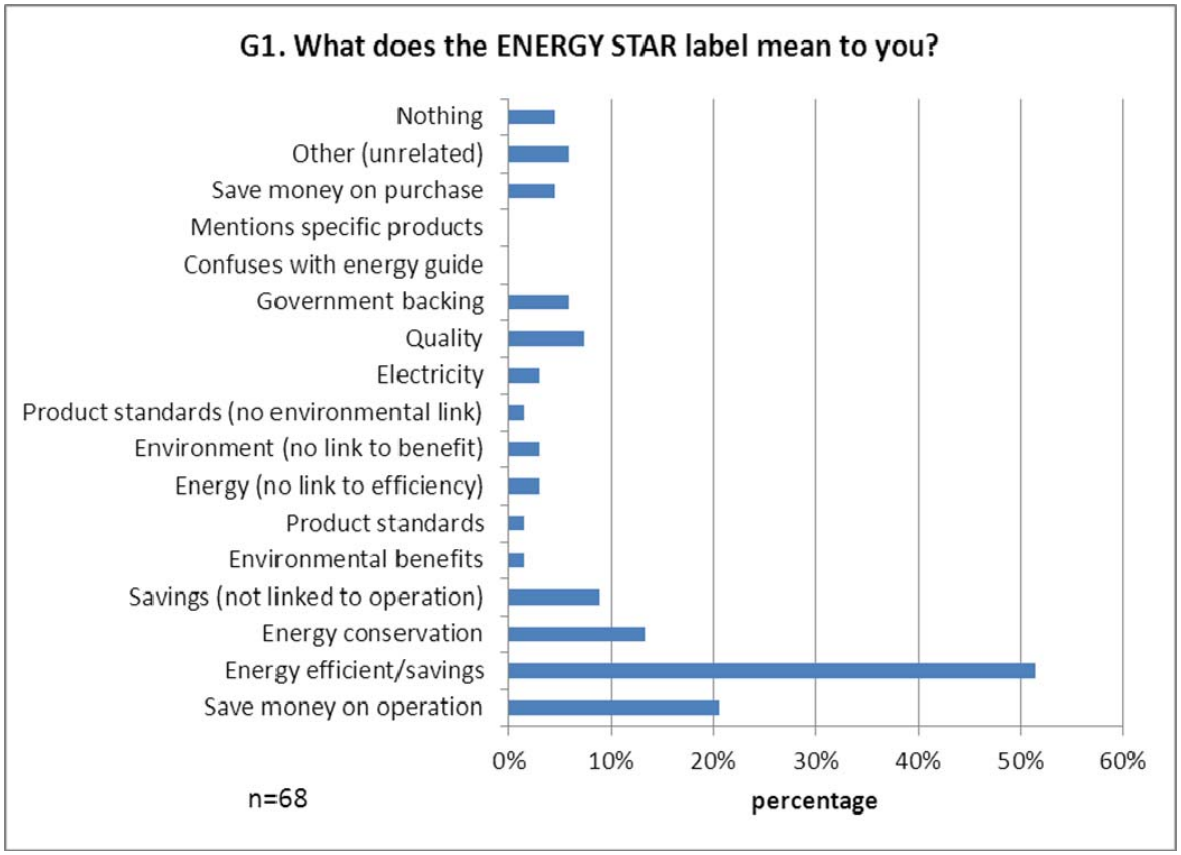
[RECORD ANSWER] (E7. Can you please tell me in your own words the influence the program rebate had on your decision to purchase the REFRIGERATOR? [VERBATIM RESPONSE]	**Base**	**28**
		100%
	$30 dollars back and better deal for the floor model	1
		4%
	I knew i'd needed a new one and the rebate was just an added bonus.	1
		4%
	I was trying to figure out the best deal I could get, spending the least amount of money, so with the rebate, I was fixin to purchase a refrigerator and anything I could save was a big help	1
		4%
	IT WAS A NICE LITTLE BONUS BUT I HAD PLANNED ON BUYING A NEW REFRIGERATOR ANYWAY	1
		4%
	It saved me money, just the price of it (else) it's energy efficient instead of just buying a regular refrigerator	1
		4%
	It was a nice incentive and extra added bonus.	1
		4%
	It was extra savings for me.	1
		4%
	It was just an added bonus.	1
		4%
	Money's always good.	1
		4%
	The fact we would get a rebate enhanced shopping.	1
		4%
	Very little.	1
		4%
	You all thought that it was a good item, and I thought it was a good item (else) and the good price with rebate came in handy	1
		4%
	helped to defray an unexpected cost i was having to incur	1
		4%
	i was happy that i was going to get a rebate back i very pleased with it	1
		4%
	it didn't	1
		4%
	it helped because there was some other kind of sale or rebate on top of it, the other wasn't as substantial as the Georgia Power rebate, but between the both it helped influence my decision	1
		4%
	it was a plus because it was the refrig we were loooking for when we saw it a rebate we decided to go with this one	1
		4%
	no effect	1
		4%
	no influence it was just replacing the one that went bad it was a plus for us	1
		4%
	none	2
		7%
	none.	2
		7%
	one of those things we run across could get a little money with todays economy to offset the cost of the refrigerator	1
		4%
	somewhat	1
		4%
	the rebate itself they hauled it away didn't have to worry about disposal	1
		4%
	tilted me to buy it	1
		4%
	we wanted an energy efficient to meet requirements of the rebate	1
		4%
	Other	-
		-

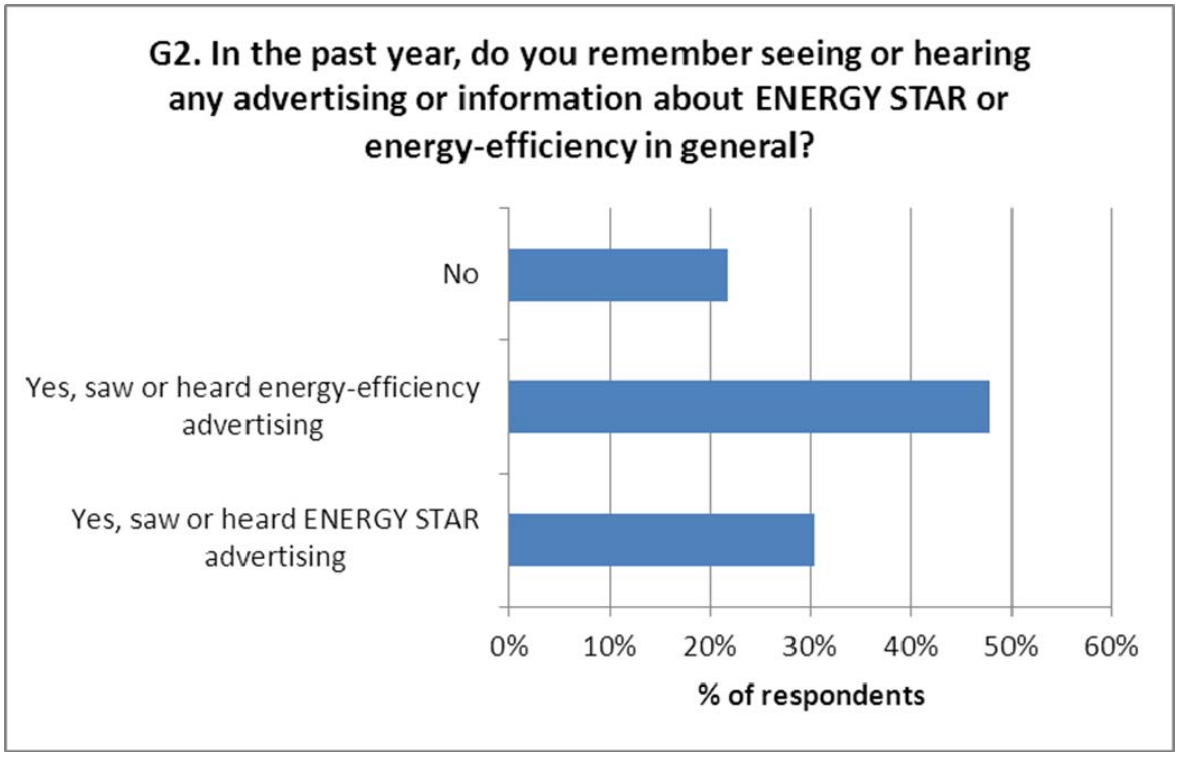
[RECORD ANSWER] (E7. Can you please tell me in your own words the influence the program rebate had on your decision to purchase the CLOTHES WASHER? [VERBATIM RESPONSE]	**Base**	**36**
		100%
	I don't know that it influencedit.	1
		3%
	I don't know.	1
		3%
	I needed a clothes washer so i had to get one. The rebate didn't play a big role because i was going to purchase something that satisfied my needs.	1
		3%
	I thought i could save some money.	1
		3%
	I thought it was nice to get some money back on it. I thought it was a nice gesture. And with my income it has done alot.	1
		3%
	I was looking at two different ones that I like and I chose the one that had the rebate (else) that's it	1
		3%
	IT MADE SURE I LOOKED FOR THE ENERGY STAR	1
		3%
	IT WAS A BONUS IT WAS NICE TO GET IT	1
		3%
	It helped somewhat but we already needed a new one so this was a added bonus.	1
		3%
	It just made it a better buying decision.	1
		3%
	It made it little easier to say yes too. Anybody would want to get money back.	1
		3%
	It made me lean towards a more efficient product.	1
		3%
	It really didn't have an influence it's was just a added bonus.	1
		3%
	It was a big help.	1
		3%
	It was a big influence (spec) becuase i didn't realize that the washer I purchased had a rebate program and it was big influence as to why I purchased it	1
		3%
	It was somewhat urging to go ahead.	1
		3%
	Minimal.	1
		3%
	NOT MUCH	1
		3%
	None at that time, I had to have a washing	1

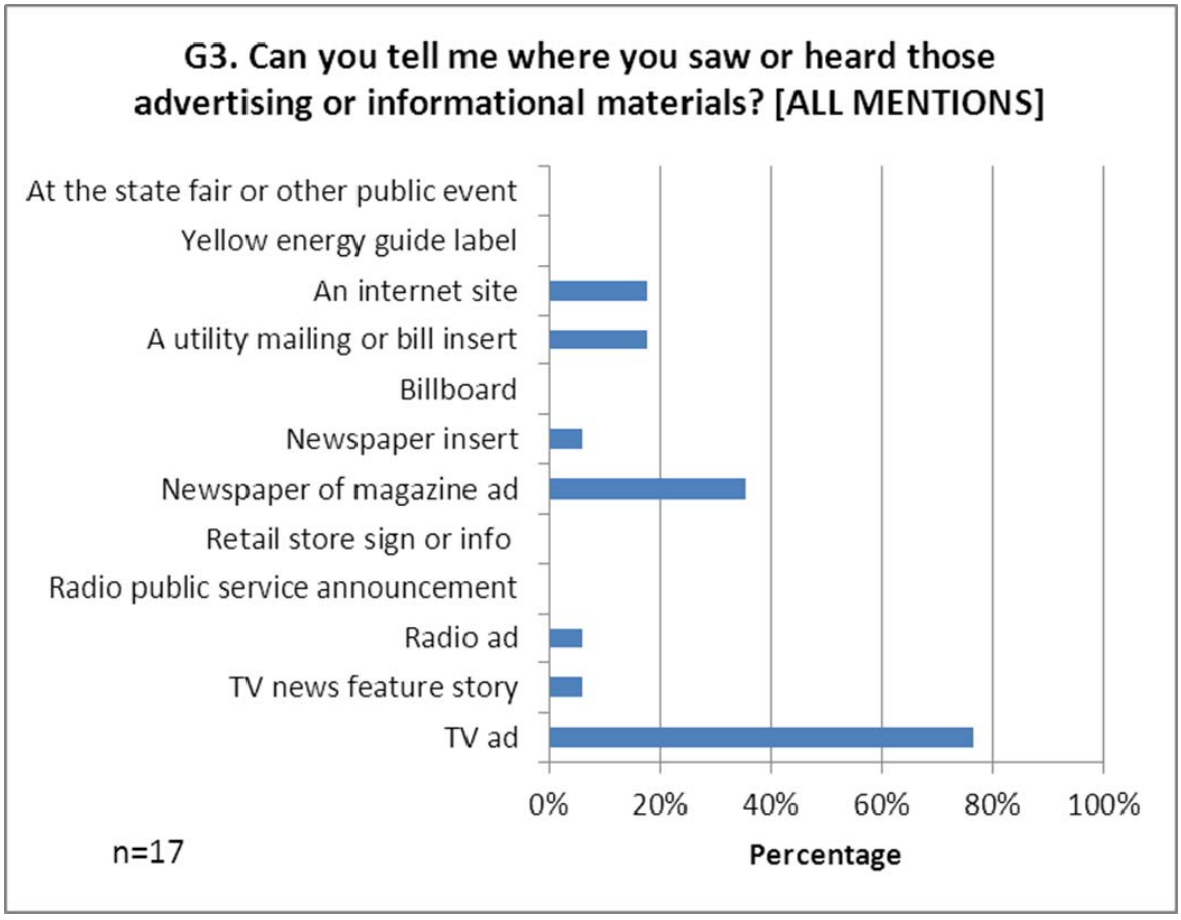
	machine	1 *3%*
	To make a better decision about quality and then the price also (else) The decision of getting the money back after spending so much to buy a house, then the washer was wonderful	1 *3%*
	We might of got a cheaper model if it wasn't for the rebate.	1 *3%*
	We were very pleased with and getting money back.	1 *3%*
	deciding factor savings on the washer, as opposed to one that is not	1 *3%*
	economy tough any money back in my pocket is money in my pocket	1 *3%*
	it had a deciding factor, sure, it was nice to get a rebate back after spending as much money as we did on the clothes washer (else) no	1 *3%*
	it reduced my price a LOT and I got an energy efficient and water saving clothes washer at the same time	1 *3%*
	it thought it was a plus i new there had to be some kind of savings in power and uses less energy	1 *3%*
	no influence	1 *3%*
	none	1 *3%*
	none at all.	1 *3%*
	nothing	2 *6%*
	very little (spec) no	1 *3%*
	we got very excited we could get money back on something we already had to buy	1 *3%*
	we were going to get money back and it was going to be more energy efficient	1 *3%*
	would have bought a cheaper one|	1 *3%*

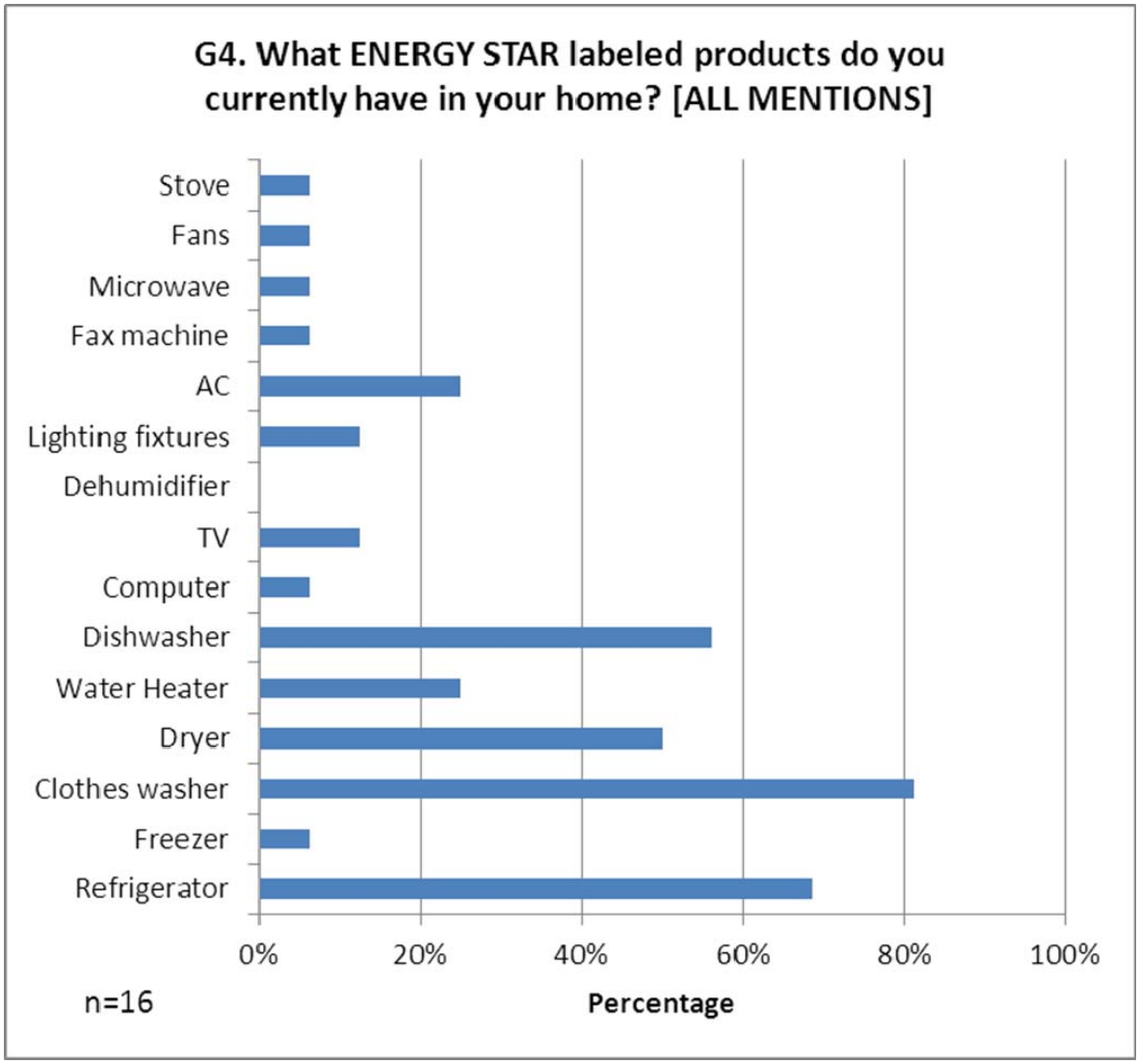

F1. Now I'd like to ask you about any energy saving actions you may have taken on your own. Have you performed any activities or made any purchases to reduce energy consumption in your home in the last year?
n=70
% of respondents
70%
60%
50%
40%
30%
20%
10%
0%
Yes
No


F2. Please describe any additional energy efficient activities or purchases you made. [All Mentions]
n=41
Installed insulation
Storm Doors
Purchased ENERGY STAR water heater
Purchased CFLs
Personal Modifications
Windows
Purchased ENERGY STAR room air conditioner
Purchased ENERGY STAR refrigerator
Purchased LED light bulbs
Purchased Light fixtures or ceiling fan
Window improvements
Purchased ENERGY STAR dishwasher
Purchase ENERGY STAR clothes washer
Purchased ENERGY STAR freezer
Heat pump
Dryer
Fan
Purchased ENERGY STAR dehumidifier
0%
2%
4%
6%
8%
10%
12%
14%
16%
18%

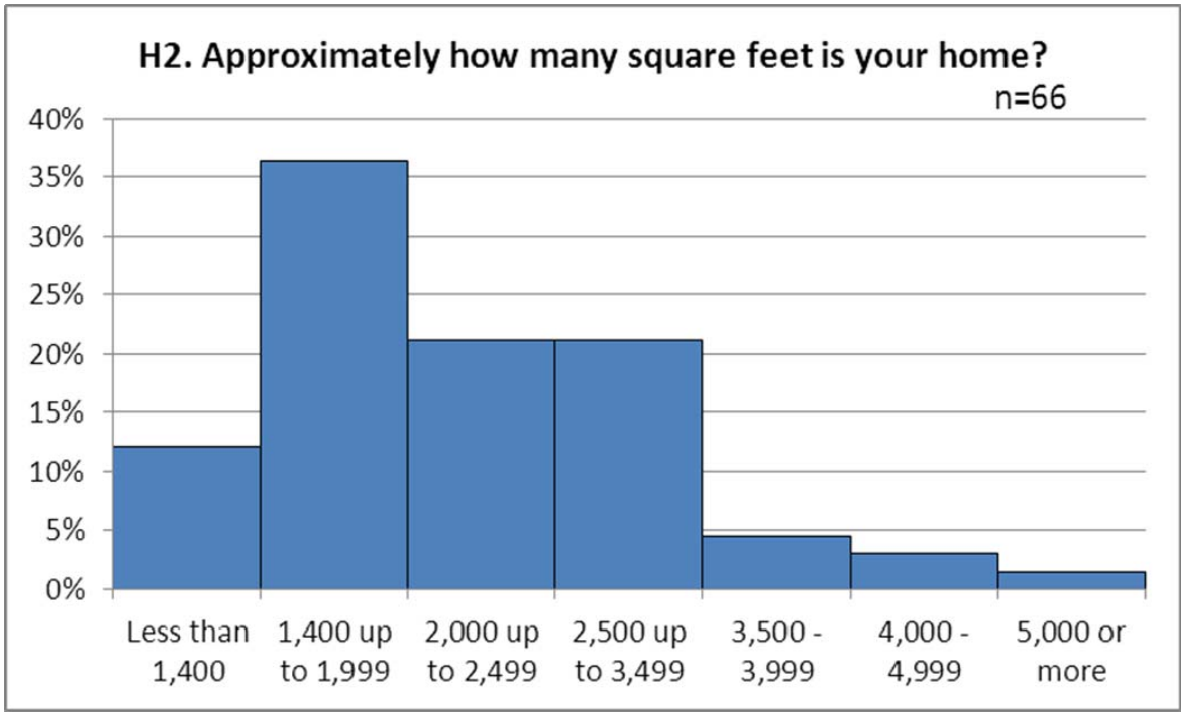

G1. What does the ENERGY STAR label mean to you?
Nothing
Other (unrelated)
Save money on purchase
Mentions specific products
Confuses with energy guide
Government backing
Quality
Electricity
Product standards (no environmental link)
Environment (no link to benefit)
Energy (no link to efficiency)
Product standards
Environmental benefits
Savings (not linked to operation)
Energy conservation
Energy efficient/savings
Save money on operation
0%
10%
20%
30%
40%
50%
60%
n=68
percentage

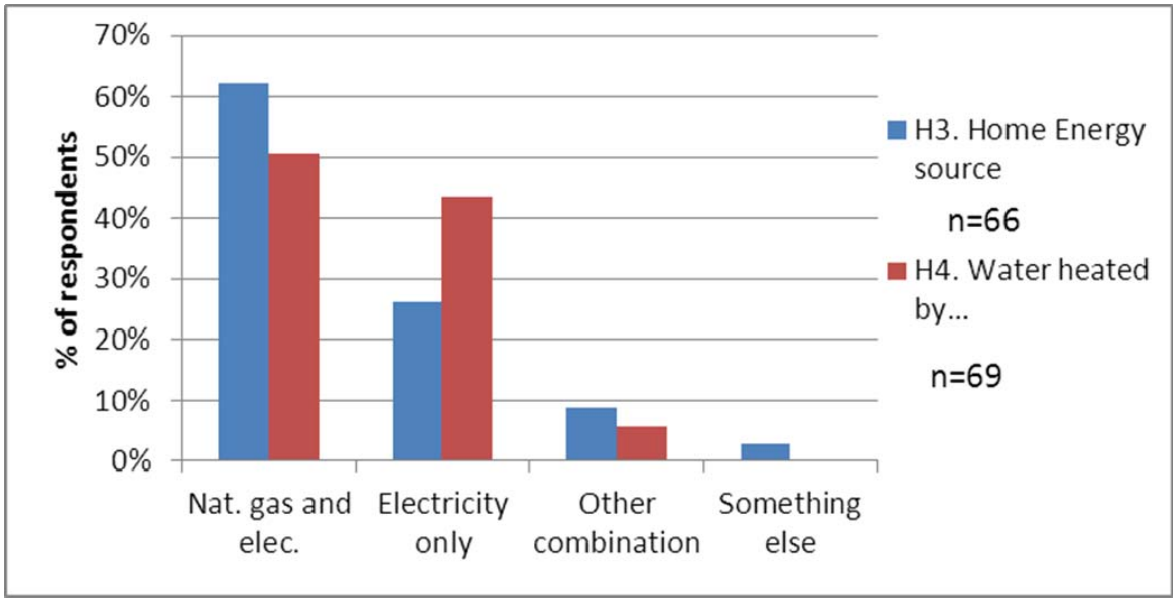

G2. In the past year, do you remember seeing or hearing any advertising or information about ENERGY STAR or energy-efficiency in general?
No
Yes, saw or heard energy-efficiency advertising
Yes, saw or heard ENERGY STAR advertising
0%
10%
20%
30%
40%
50%
60%
% of respondents

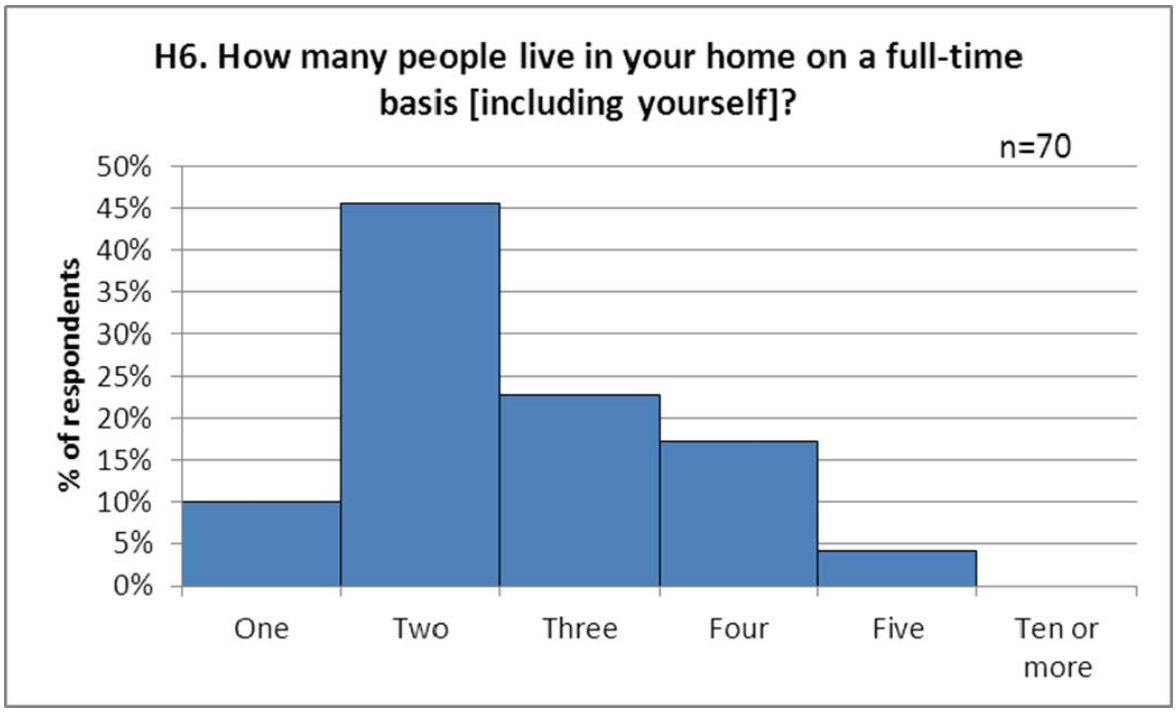

G3. Can you tell me where you saw or heard those advertising or informational materials? [ALL MENTIONS]
At the state fair or other public event
Yellow energy guide label
An internet site
A utility mailing or bill insert
Billboard
Newspaper insert
Newspaper of magazine ad
Retail store sign or info
Radio public service announcement
Radio ad
TV news feature story
TV ad
0%
20%
40%
60%
80%
100%
Percentage
n=17

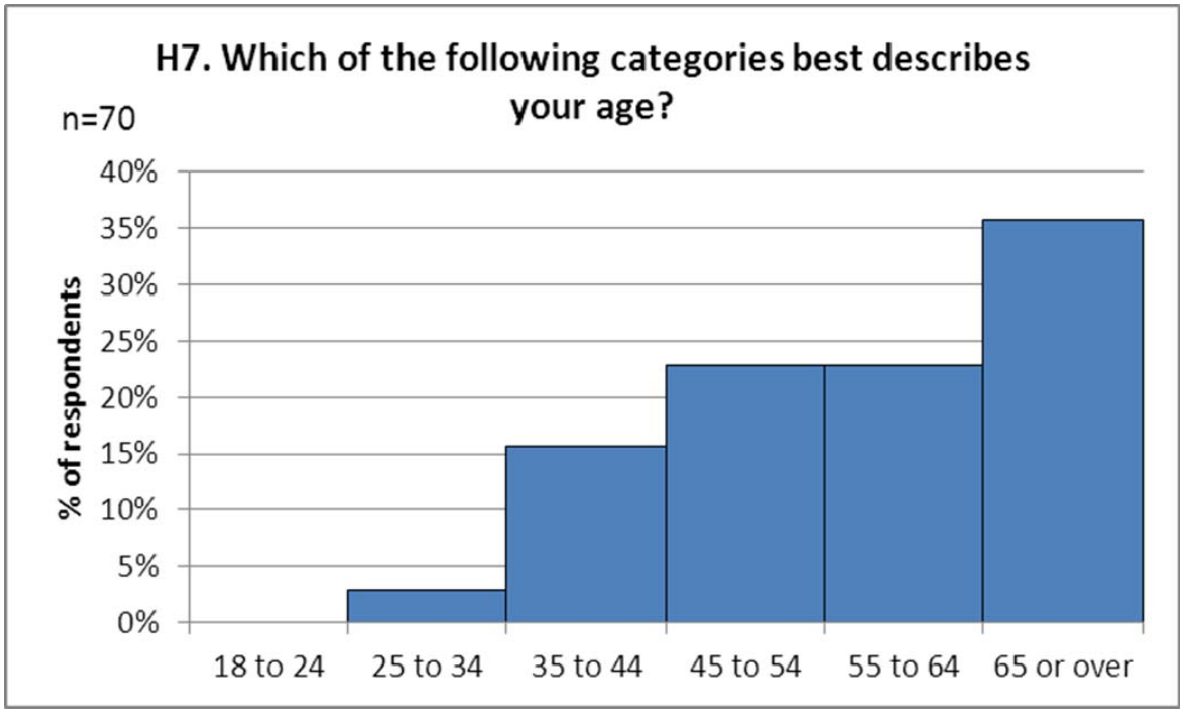

G4. What ENERGY STAR labeled products do you currently have in your home? [ALL MENTIONS]
Stove
Fans
Microwave
Fax machine
AC
Lighting fixtures
Dehumidifier
TV
Computer
Dishwasher
Water Heater
Dryer
Clothes washer
Freezer
Refrigerator
0%
20%
40%
60%
80%
100%
n=16
Percentage

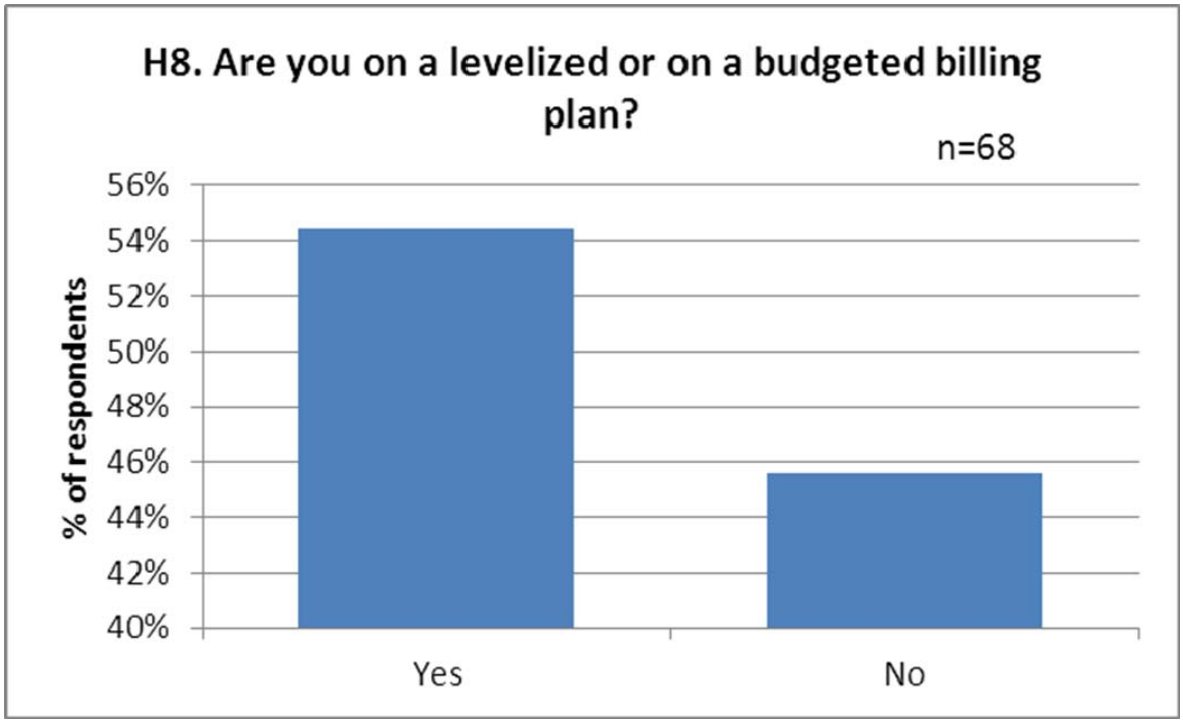
H1. What type of residence do you live in? [READ RESPONSES 1- 6; SELECT ONE RESPONSE]	**Base**	**70**
		100%
	Detached single-family home	65
		93%
	Tow nhouse or duplex w hich share adjacent w alls	3
		4%
	Apartment or condo in a tw o, three, or four unit building	-
		-
	Apartment or condo in a building w ith 5 or more units	2
		3%
	Mobile home or manufactured home	-
		-
	Other [SPECIFY:]	-
		-
	(VOL) REFUSED	-
		-
	(VOL) DON'T KNOW	-
		-

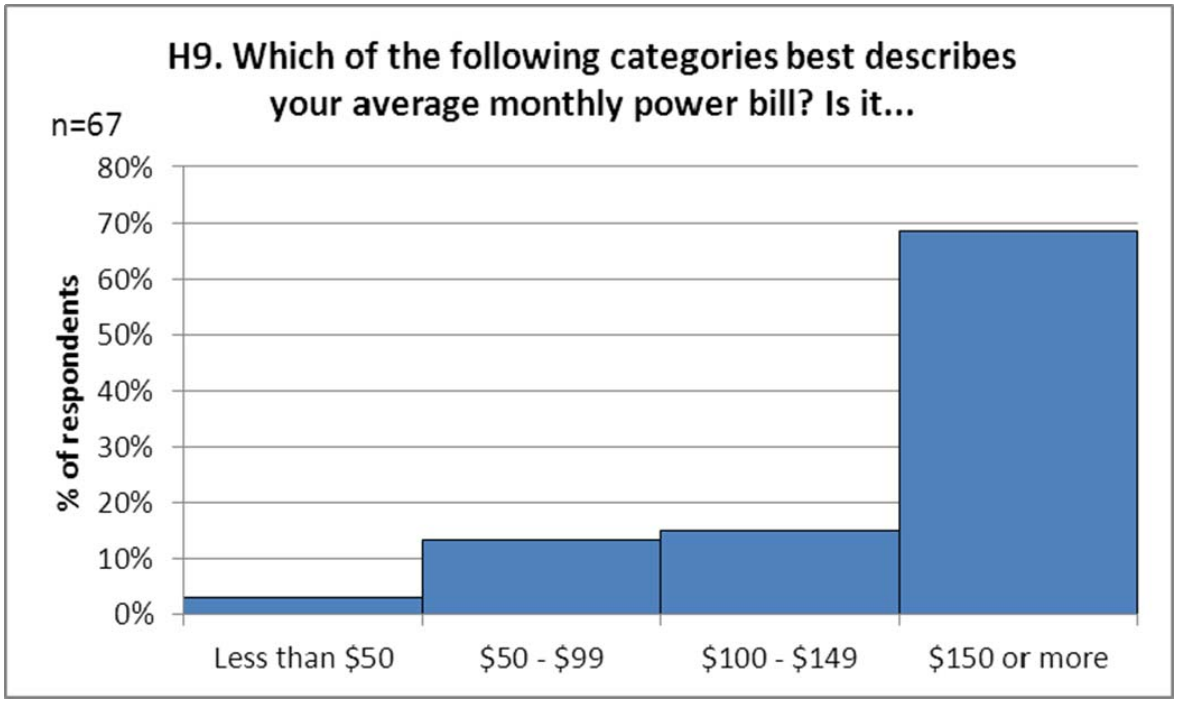



70%
60%
50%
40%
30%
20%
10%
0%
% of respondents
Nat. gas and elec.
Electricity only
Other combination
Something else
H3. Home Energy source
n=66
H4. Water heated by...
n=69


H6. How many people live in your home on a full-time basis [including yourself]?
n=70
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
% of respondents
One
Two
Three
Four
Five
Ten or more


H7. Which of the following categories best describes your age?
n=70
% of respondents
40%
35%
30%
25%
20%
15%
10%
5%
0%
18 to 24
25 to 34
35 to 44
45 to 54
55 to 64
65 or over


H8. Are you on a levelized or on a budgeted billing plan?
n=68
% of respondents
56%
54%
52%
50%
48%
46%
44%
42%
40%
Yes
No


H9. Which of the following categories best describes your average monthly power bill? Is it...
n=67
% of respondents
80%
70%
60%
50%
40%
30%
20%
10%
0%
Less than $50
$50 - $99
$100 - $149
$150 or more

Appendix D DETAILED SURVEY RESULTS: HEIP

D.1 INDIVIDUAL IMPROVMENT CUSTOMER SURVEY

S2. Are you the person who was most involved in participating in the program?	**Base**	**70**
		100%
	Yes	70
		100%
	No	-
		-

Q1. How did you first learn about the Home Energy Improvement Program?	**Base**	**67**
		100%
	Through a contractor	19
		28%
	Georgia Power website	10
		15%
	Through family, friend, or neighbor	9
		13%
	Internet research other than Georgia Power website	4
		6%
	**Work for Georgia Power office	4
		6%
	Bill stuffer	3
		4%
	Customer called Georgia Power for another reason and agent referred to program	3
		4%
	Other (SPECIFY)	3
		4%
	**TV/radio/newspaper advertisement	3
		4%
	(VOL) Don't know	3
	Georgia Power mailing	2
		3%
	**Homeowners Association	2
		3%
	**Home show	2
		3%
	**Salesperson	2
		3%
	Georgia Power email	1
		1%
	Georgia Power brochure	1
		1%
	Participation in other Georgia Power Programs	-
		-
	From the Georgia Power free in-home energy audit	-
		-

Q1other. How did you first learn about the Home Energy Improvement Program?	**Base**	**30**
		100%
	Air conditioning dealer/store	5
		17%
	Georgia Pow er--employee, marketing to business	4
		13%
	personal contact	2
		7%
	home show	2
		7%
	Homeow ner's association	2
		7%
	internet	2
		7%
	AC Installer	2
		7%
	New spaper article	2
		7%
	Southface	2
		7%
	e-mail from corporate	1
		3%
	Environmental programs	1
		3%
	architecht	1
		3%
	at low e's	1
		3%
	came w ith bill	1
		3%
	through the insulation they w ere one of the preffered providers	1
		3%
	tv and radio	1
		3%

Q2. Of the sources of information you mentioned, which one was most helpful in informing you about the program?	**Base**	**1**
		100%
	Through family, friend, or neighbor	1
		100%
	Bill stuffer	-
		-
	Georgia Power mailing	-
		-
	Georgia Power website	-
		-
	Georgia Power email	-
		-
	Georgia Power brochure	-
		-
	Through a contractor	-
		-
	Participation in other Georgia Power Programs	-
		-
	From the Georgia Power free in-home energy audit	-
		-
	Internet research/found Program on Georgia Power website	-
		-
	Customer called Georgia Power for another reason and agent referred to program	-
		-

Q3. Free in-home energy audit and water heater wrap--Awareness	**Base**	**70**
		100%
	Yes, aware	43
		61%
	No, DK, Not aware	27
		39%
Q3. Appliance Rebates--Awareness	**Base**	**70**
		100%
	Yes, aware	46
		66%
	No, DK, not aware	24
		34%
Q3. Refrigerator or Freezer recycling--Awareness	**Base**	**70**
		100%
	Yes, aware	43
		61%
	No, DK, not aware	27
		39%
Q3. High efficiency new homes--Awareness	**Base**	**70**
		100%
	Yes, aware	34
		49%
	No, DK, not aware	36
		51%

Q4. When you were thinking about participating, did you have any concerns about any part of the program?	**Base**	**69**
		100%
	Yes	15
		22%
	No	54
		78%
	(VOL) Don't know	1

Q5. What were those concerns?	**Base**	**15**
		100%
	Incentive/rebate would be too low/insufficient	3
		20%
	Finding a contractor	3
		20%
	**That I would not receive the rebate(s)	3
		20%
	That the audit wouldn't find anything/my home was already efficient	2
		13%
	Other (SPECIFY)	2
		13%
	**Cost of the audit	2
		13%
	Disruption to home/mess involved with installing improvements	1
		7%
	That improvements would cost a lot	1
		7%
	Wouldn't like what they recommended	-
		-
	Wouldn't like what was installed	-
		-
	The process would take too long	-
		-

Q6. What was the single most important reason you decided to participate?	**Base**	**70**
		100%
	To save money on utility bills, save money on electric bills	19
		27%
	To obtain a rebate, Program incentive	16
		23%
	To save energy	15
		21%
	To replace old or broken equipment	5
		7%
	To improve/increase comfort in the home	5
		7%
	To get more efficient equipment	4
		6%
	Other (SPECIFY)	4
		6%
	To help protect the environment	1
		1%
	Part of a broader remodeling or renovation	1
		1%
	To acquire the latest technology	-
		-
	To reduce maintenance costs	-
		-
	Because the Program was sponsored by GP	-
		-
	Previous experience with other Georgia Power Programs	-
		-
	Recommended by contractors/trade allies	-
		-
	Recommended by family, friend, or neighbor	-
		-
	**To boost resale value	-
		-

Q6. What was the single most important reason you decided to participate?	**Base**	**11**
		100%
	Wanted to identify and fix leaks, temperature differences in home	3
		27%
	Old house needed some w ork	2
		18%
	because i w ork for georgia pow er	1
		9%
	getting a new unit something to think about	1
		9%
	had to spend the money anyhow	1
		9%
	rebates	1
		9%
	to insulate the house	1
		9%
	unbaised info on hvac	1
		9%

Q6a. Other reasons for participating	**Base**	**70**
		100%
	(VOL) Don't know	19
		27%
	To save money on utility bills, save money on electric bills	13
		19%
	To obtain a rebate, Program incentive	9
		13%
	To improve/increase comfort in the home	9
		13%
	To save energy	7
		10%
	(VOL) Refused	5
		7%
	To help protect the environment	4
		6%
	To replace old or broken equipment	2
		3%
	Other (SPECIFY)	2
		3%
	**To boost resale value	2
		3%
	Recommended by contractors/trade allies	1
		1%

Q6a. Were there any other secondary reasons?	**Base**	**6**
		100%
	Good for home resale	2
		33%
	Planning to do work and rebates helped offset costs, rebates for other work planned	2
		33%
	a good deal	1
		17%
	stuff i needed to have done	1
		17%

Q7. What factors persuaded you to choose the individual improvements option?	**Base**	**68**
		100%
	Didn't need the other measures in the w hole house	24
		35%
	Whole house too expensive/limited funds	11
		16%
	Didn't know about the w hole house option	10
		15%
	Other (SPECIFY)	5
		7%
	**Did the w hole house	5
		7%
	Advice from contractor	4
		6%
	Amount of energy saving potential/affect on energy bills	3
		4%
	**Usually do improvements myself	3
		4%
	Information provided in the assessment	2
		3%
	Time involved to make the improvements	2
		3%
	Advice from family/friend	-
		-
	(VOL) Don't know	2

Q7other. What factors persuaded you to choose the individual improvements option?	**Base**	**28**
		100%
	Didn't need w hole house--only one or a few measures needed	9
		32%
	Did do w hole house	4
		14%
	Usually do improvements myself	3
		11%
	Didn't w ant to be tied dow n to one person. or be pressured by person	1
		4%
	amount w rk done	1
		4%
	the age of the house	1
		4%
	availability,local. the business w as local	1
		4%
	didn't w ant the people in my house	1
		4%
	didnt w ant to commit to make any improvements at that time	1
		4%
	duke pow er w as giving rebates	1
		4%
	liked the particular quantitative analysis	1
		4%
	save energy	1
		4%
	thats w hat w e w ere eligible for	1
		4%
	its easir to interface w ith georgia pow er for the individual items	1
		4%
	w e did a w hole house energy assesment w ith one of georgia pow er contractors and they insulated the w hole to house to r	1
		4%

Q8. Of the factors you mentioned, which one influenced you the most to select the individual improvement approach?	**Base**	**1**
		100%
	Whole house too expensive/limited funds	1
		100%
	Information provided in the assessment	-
		-
	Didn't need the other measures in the w hole house	-
		-
	Didn't know about the w hole house option	-
		-
	Time involved to make the improvements	-
		-
	Amount of energy saving potential/affect on energy bills	-
		-
	Advice from contractor	-
		-
	Advice from family/friend	-
		-

Q9. Were you aware that the whole house rebate option was available before you decided on the individual improvements to your home?	**Base**	**61**
		100%
	Yes	29
		48%
	No, don't know	32
		52%

Q10. If you had known about the whole house rebate option before you did the individual improvements, would you chosen the whole house approach instead, even if the cost could have been substantially higher?	**Base**	**26**
		100%
	Yes	8
		31%
	No	18
		69%
	(VOL) Don't know	9

Q11. How valuable was the report in deciding which improvements to make to your home?	**Base**	**18**
		100%
	Not at all valuable	-
		-
	Not too valuable	1
		6%
	Somew hat valuable	3
		17%
	Very valuable	14
		78%
	(VOL) Don't know	1

Q12. Why do you say the report was [+q11+]?	**Base**	**18**
		100%
	Told me w hat needed to be done and gave me costs	10
		56%
	I already knew w hat needed to be done	2
		11%
	It w as proof that the person w ho i bought the house from. He didn't do his job i had Proff finally. Insulation not installed correctly, also duct w ork not done correctly. It w as very valuable to me. Gave me leverage on the person w ho sold me this ho	1
		6%
	i am driven by data	1
		6%
	I w anted to know w hat they w ere doing to my house and how it could help	1
		6%
	the biggest thing it w as lacking is payback period these are leteras do no mean anthing	1
		6%
	they used the presure ized fan to see w herr the leaks w here	1
		6%
	w e compared our cost of elextric to last summer to this summer it seemed the bill w as somew hat low er	1
		6%

Q13. For each of the following improvements, was it recommended for your home?	**Base**	**19**
		100%
	Air sealing	19
		100%
	Attic insulation	15
		79%
	Duct sealing	14
		74%
	Basement/crawlspace Insulation	12
		63%
	Water heater wrap	10
		53%
	Efficient cooling system (AC, heat pump)	8
		42%
	Window or door replacement	8
		42%
	ENERGY STAR Appliances	7
		37%
	Efficient furnace/boiler/heat pump	5
		26%
	Wall insulation	5
		26%
	Efficient water heater	4
		21%
	Electronic Thermostat/Set-Back	3
		16%
	**Energy efficient lightbulbs	2
		11%
	Anything else? (SPECIFY)	1
		5%

Q13. For each of the following energy-saving improvements, was it recommended it for your home?	**Base**	**6**
		100%
	Lights	1
		17%
	device for breaker box to help motors run cooler	1
		17%
	digital thermostat	1
		17%
	gasket in door	1
		17%
	insulation the doors on the attic spaces	1
		17%
	plug in open holes and light bukbs and seals on a few doors	1
		17%

Q14. How important was the option to use a non-BPI certified contractor (or yourself) for the improvements you made?	**Base**	**51**
		100%
	Not at all important	16
		31%
	Not too important	6
		12%
	Somew hat important	10
		20%
	Very important	19
		37%
	(VOL) Don't know	4

Q15. Who did the work for the improvements you made? Did you use:	**Base**	**41**
		100%
	Same contractor that did BPI assessment	4
		10%
	Different BPI certified contractor	22
		54%
	Non-BPI contractor (includes anyone hired and not BPI certified)	8
		20%
	Friend/family helper (Use for non-hired assistance of any kind)	2
		5%
	Did not hire a contractor/self installation	5
		12%
	(VOL) Don't know	14

Q16. Would you have made the same improvements if Georgia Power HAD required a BPI-certified contractor to get the rebate?	**Base**	**25**
		100%
	Yes	16
		64%
	No	9
		36%
	(VOL) Don't know	4

Q17. Would you have made other home improvements if Georgia Power HAD NOT required a BPI-certified contractor to get the rebate?	**Base**	**47**
		100%
	Yes	22
		47%
	No	25
		53%
	(VOL) Don't know	8

Q18. How satisfied are you with the quality of work provided by the BPI contractor that did your improvements?	**Base**	**19**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	1
		5%
	Somew hat satisfied	1
		5%
	Very satisfied	17
		89%
	(VOL) Don't know	6
	(VOL) Refused	1

Q19. Why were you dissatisfied?	**Base**	**1**
		100%
	THEY DID NOT CLEAN UP ALL THE MESS ON THE FRONT STOOP. A COUPLE OF ITEMS WERE RUSHED AT THE END OF THE DAY. THE DOOR SWEEP AND THE FRAME WAS ASKEW. THERE WAS A HALF INCH GAP LEFT AT THE BOTTOM OF THE DOOR. THE INSULATION IN THE ATTIC HELPED SOME BUT ST	1
		100%

Q20. How satisfied are you with the professionalism of the contractor?	**Base**	**19**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	1
		5%
	Somew hat satisfied	3
		16%
	Very satisfied	15
		79%
	(VOL) Don't know	6
	(VOL) Refused	1

Q21. Why were you dissatisfied?	**Base**	**1**
		100%
	BECAUSE OF THE AFFORMENTIONED MISTAKES	1
		100%

Q22. Did you experience any challenges in installing or completing the improvements?	**Base**	**55**
		100%
	Yes	6
		11%
	No	49
		89%

Q23. What were the challenges you experienced?	**Base**	**6**
		100%
	First company i chose and then didn't use w ere unhappy and tried to charge me my deposit money and in the end they seemed sleazy in their behavior so i w as happy i w ent w ith the second company and not the first. Found both companies at the home show so i	1
		17%
	getting the contractor to finish it	1
		17%
	The time frame it had to be done. I changed contractors. and I had to get it done by the end of the year to get the rebate. (else)	1
		17%
	scheduling they had changed out the duct w ork but w hile they w ere changine the ductw ork they blow ing in the instalation , they w ere to rushed	1
		17%
	sealing ducts made my duct w ork more noisy	1
		17%
	w ith the door	1
		17%

Q24. Has any of the energy-efficient equipment installed as part of the program been removed?	**Base**	**55**
		100%
	Yes	-
		-
	No	55
		100%

Q25. How important was Georgia Power's Home Energy Improvement Program Rebate	**Base**	**55**
		100%
	Not at all important	2
		4%
	Not too important	-
		-
	Somew hat important	23
		42%
	Very important	30
		55%

Q25.How important were quality and reliability of efficient equipment	**Base**	**53**
		100%
	Not at all important	1
		2%
	Not too important	-
		-
	Somew hat important	5
		9%
	Very important	47
		89%
	(VOL) Don't know	2

Q25. How important was the opportunity for federal tax credits	**Base**	**55**
		100%
	Not at all important	6
		11%
	Not too important	1
		2%
	Somew hat important	16
		29%
	Very important	32
		58%

Q25. How important was the fact that some items upgraded were previously not functioning optimally	**Base**	**44**
		100%
	Not at all important	6
		14%
	Not too important	2
		5%
	Somew hat important	10
		23%
	Very important	26
		59%
	(VOL) Don't know	11

Q25. How important were rebates through the city of Atlanta program called SHINE	**Base**	**40**
		100%
	Not at all important	28
		70%
	Not too important	-
		-
	Somew hat important	5
		12%
	Very important	7
		18%
	(VOL) Don't know	15

Q26. Would you have made the same improvements if the program rebates had not been available?	**Base**	**55**
		100%
	Yes	42
		76%
	No	13
		24%

Q27. When you say you would have made the same improvements, would you have made all, some or none of the improvements?	**Base**	**4**
		100%
	All of the improvements	2
		50%
	Some of the improvements	2
		50%
	None of the improvements	-
		-

Q28. Would any of the improvements you made have been less efficient?	**Base**	**38**
		100%
	Yes	11
		29%
	No	27
		71%
	(VOL) Don't know	4

Q29. And with respect to timing, without the program, would you have made the same improvements:	**Base**	**41**
		100%
	Within three months of when you actually made the upgrades	24
		59%
	Within three to six months	9
		22%
	Six to 12 months	5
		12%
	More than a year, or	3
		7%
	Never	-
		-
	(VOL) Don't know	1

Q30. Before you requested the energy assessment, had you ever previously had an energy assessment done on your home?	**Base**	**3**
		100%
	Yes	-
		-
	No	3
		100%
Q30a. Was that the free in-home energy audit offered by Georgia Power?	**Base**	**-**
		-
	Yes	-
		-
	No	-
		-

Q31. Let me make sure I understand. When you say you would not have made the same energy efficient upgrades, do you mean you would not have made any of the improvements?	**Base**	**11**
		100%
	Yes	5
		45%
	No	6
		55%
	(VOL) Don't know	2

Q33. And, with respect to timing, without the program, would you have installed those measures:	**Base**	**8**
		100%
	At the same time or within three months of when you actually made the upgrades	1
		12%
	Within three to six months	-
		-
	Six to 12 months	1
		12%
	More than a year	5
		62%
	Never	1
		12%

Q34. Before you requested the energy assessment, had you ever previously had an energy assessment done on your home?	**Base**	**6**
		100%
	Yes	3
		50%
	No	3
		50%
Q34a. Was that the free in-home energy audit offered by Georgia Power?	**Base**	**2**
		100%
	Yes	1
		50%
	No	1
		50%
	(VOL) Don't know	1

Q35. Since participating in the Home Energy Improvement Program, have you participated in any other energy efficiency programs offered by GEORGIA POWER?	**Base**	**53**
		100%
	Yes	4
		8%
	No	49
		92%
	(VOL) Don't know	2
Q35a. Program participated in	**Base**	**4**
		100%
	Appliance or Lighting Rebates	-
		-
	Free in-home energy audit and w ater heating w rap	2
		50%
	Refrigerator or Freezer recycling	1
		25%
	Other (SPECIFY)	1
		25%
Q35aother. Which programs did you participate in?	**Base**	**3**
		100%
	commercial incentives program	1
		33%
	hot w ater heater	1
		33%
	w hole house	1
		33%

Q36. Besides installing the [+omeasr1+] (& [+omeasr2+] & [+omeasr3+]) through the Home Energy Improvement program, have you made any other energy-efficiency improvements or purchases on your own without a rebate or funding from a..?	**Base**	**54**
		100%
	Yes	31
		57%
	No	23
		43%
	(VOL) Don't know	1
Q36a. What did you purchase or install?	**Base**	**29**
		100%
	Insulation	10
		34%
	Window s/doors	9
		31%
	HVAC unit	8
		28%
	Duct/air sealing	6
		21%
	Solar panels/solar energy items	3
		10%
	Appliances	3
		10%
	A/O miscellaneous mentions	3
		10%
	Hot w ater heater	2
		7%
	Energy efficient light bulbs	2
		7%
	Timer/programmable theromostat	2
		7%
	Don't know /refused	1

Q37. How important was the Home Energy Improvement program in your decision to install ADDITIONAL efficient equipment?	**Base**	**28**
		100%
	Not at all important	4
		14%
	Not too important	3
		11%
	Somew hat important	14
		50%
	Very important	7
		25%
	(VOL) Don't know	3

Q38. After you had the energy saving improvements installed, would you say your home is more comfortable, less comfortable, or about the same as before the improvements were made?	**Base**	**54**
		100%
	More comfortable	48
		89%
	Less comfortable	-
		-
	Just about the same	6
		11%
	(VOL) Don't know /Hasn't been enough time to notice anything	1

Q39. How is your home more comfortable?	**Base**	**48**
		100%
	Provided even temperatures throughout the home	32
		67%
	Noticeably few er drafts throughout home	9
		19%
	**Conserves on energy	6
		12%
	Made it more convenient to control temperature automatically, day or night	5
		10%
	Other (SPECIFY)	4
		8%
	Reduced the noise level of replaced appliances	2
		4%
	**Saves money	2
		4%
	Provided longer lasting hot w ater	-
		-

Q40. Compared to before you made the energy saving improvements to your home, would you say you run your air conditioning/cooling system more, less, or about the same?	**Base**	**55**
		100%
	More	9
		16%
	Less	27
		49%
	About the same	19
		35%

Q41. Since the energy saving improvements were installed, have your energy bills gone down, gone up, or remained about the same?	**Base**	**53**
		100%
	Bills have gone down	34
		64%
	Bills have gone up	9
		17%
	Remained about the same	10
		19%
	(VOL) Don't know	2
Q41a. Has the amount of change to your energy bill met your expectations?	**Base**	**34**
		100%
	Yes	31
		91%
	No	3
		9%
Q41b. Why not?	**Base**	**3**
		100%
	i think the promise made was greater than the realised gain in my case	1
		33%
	i thought it would be more , the bills would have gone down more	1
		33%
	running very similar to last year,but efficiency is better	1
		33%

Q43. Do you intend to make any of the recommended energy-efficient home improvements or install efficient equipment by the end of this year?	**Base**	**15**
		100%
	Yes	9
		60%
	No	6
		40%

Q44. What energy saving improvements to you plan to make?	**Base**	**10**
		100%
	Duct sealing	7
		70%
	Attic insulation	6
		60%
	Air sealing	4
		40%
	Basement/crawlspace Insulation	3
		30%
	ENERGY STAR Appliances	2
		20%
	Efficient cooling system (AC, heat pump)	2
		20%
	Window or door replacement	2
		20%
	Water heater wrap	1
		10%
	(VOL) Don't know	3
	(VOL) None recommended	1
	(VOL) Refused	1
	Efficient water heater	-
		-
	Efficient furnace/boiler/heat pump	-
		-
	Wall insulation	-
		-
	Electronic Thermostat/Set-Back	-
		-
	**Energy efficient lightbulbs	-
		-

Q45. Have you made any other energy-efficiency improvements or purchases on your own without a rebate or funding from a utility or other organization?	**Base**	**14**
		100%
	Yes	9
		64%
	No	5
		36%
	(VOL) Don't know	1
Q45a. What did you purchase or install?	**Base**	**9**
		100%
	14 windows on our own, and the heating and air	1
		11%
	Appliances. some windows. a toilet. Some lighting.	1
		11%
	add insultions	1
		11%
	cfl weather stripping caulking	1
		11%
	door and window sealant and replaced the thermostat	1
		11%
	efficient dishwasher	1
		11%
	electronic theromstat	1
		11%
	installed programmable thermostats on all 3 units	1
		11%
	mastic tape in unit in attic	1
		11%

Q46. How important was the Home Energy Improvement program in your decision to install additional efficient equipment?	**Base**	**9**
		100%
	Not at all important	2
		22%
	Not too important	1
		11%
	Somewhat important	2
		22%
	Very important	4
		44%

Q47. Thinking back to when you filled out the rebate form, how easy was it to complete the information required on the form?	**Base**	**62**
		100%
	Very difficult	2
		3%
	Somew hat difficult	6
		10%
	Somew hat easy	17
		27%
	Very easy	37
		60%
	(VOL) Don't know	8

Q48. Did you encounter any problems, delays or difficulties with completing the rebate application process?	**Base**	**68**
		100%
	Yes	17
		25%
	No	51
		75%
	(VOL) Don't know	2

Q49. What kind of difficulties did you experience?	**Base**	**17**
		100%
	The process took too long	6
		35%
	Too many delays between steps in the process	2
		12%
	Lack of coordination and communication among Program staff	2
		12%
	The Program staff was not responsive, could not get questions answered	2
		12%
	The Program staff was not knowledgeable	2
		12%
	The incentives were less than I expected	2
		12%
	Unable to get information on the status of the application	2
		12%
	The process was too complex	1
		6%
	Multiple requests for more information from Georgia Power throughout the process	1
		6%
	Other (SPECIFY)	1
		6%
	The applications materials were difficult to understand	-
		-

Q50. how satisfied are you overall with the program?	**Base**	**70**
		100%
	Very dissatisfied	-
		-
	Somewhat dissatisfied	4
		6%
	Somewhat satisfied	15
		21%
	Very satisfied	51
		73%

Q51. Why were you not satisfied?	**Base**	**4**
		100%
	I don't think the contractors and people who do this work know much about it. I just think this is well publicized.	1
		25%
	as i stated there was nothing new told to us, no miracle device that was available and also the primary inspector was condesending to us and he also smelled, he was in our house all day and it was not pleasent	1
		25%
	the program should have gone more smoothly and the people should have been more knowledgeale. the rebate was hard to obtain.	1
		25%
	told in begining 100 for a sear but the failed to do that	1
		25%

Q52. How satisfied are you with the amount of rebate you received?	**Base**	**68**
		100%
	Very dissatisfied	2
		3%
	Somewhat dissatisfied	7
		10%
	Somewhat satisfied	22
		32%
	Very satisfied	37
		54%
	(VOL) Don't know	2

Q53. How satisfied are you with the time it took to receive the rebate payment?	**Base**	**68**
		100%
	Very dissatisfied	6
		9%
	Somewhat dissatisfied	7
		10%
	Somewhat satisfied	18
		26%
	Very satisfied	37
		54%
	(VOL) Don't know	2

Q54. You said that you were not satisfied with the time it took to receive the incentive payment. How long did it take from the time you submitted the application to when you received the rebate?	**Base**	**12**
		100%
	1 to 2 weeks	-
		-
	3 to 4 weeks	2
		17%
	5 to 8 weeks	2
		17%
	3 to 4 months	8
		67%
	5 to 6 months	-
		-
	More than 6 months	-
		-
	(VOL) Don't know	1

Q55. During the process of participating in the program, would you say you had the information you needed or were you missing some information that would have been helpful?	**Base**	**66**
		100%
	Had the information needed	57
		86%
	Missing information	9
		14%
	(VOL) Don't know	4
Q55a. (What information were you missing?	**Base**	**9**
		100%
	Didn't know there was a rebate program. I knew more about it 18 years ago it was better pulicized..	1
		11%
	Meter number. And one other number i had to have and Georgia power gave me that number	1
		11%
	detailed information from the contractor and easy to understand info on the rebates on the websites	1
		11%
	program guidelines	1
		11%
	tax i.d. #'s were needed and we weren't made aware of it.	1
		11%
	the business id #'s	1
		11%
	the difference betwen the indidvial and whole house improvemtns	1
		11%
	the only information i would have liked was how long the contractor would be in our house	1
		11%
	they said the form wasnt turned it wasnt there fault it was more the contractors fault	1
		11%

Q56. How likely are you to recommend the Home Energy Improvement Program to others?	**Base**	**68**
		100%
	Very unlikely	2
		3%
	Somew hat unlikely	-
		-
	Somew hat likely	9
		13%
	Very likely	57
		84%
	(VOL) Don't know	2

Q57. Is there anything you would suggest to improve the program?	**Base**	**53**
		100%
	Nothing/no suggestions/was satisfied	15
		28%
	Increase awareness	10
		19%
	Expand rebate program to include additional energy saving measures	7
		13%
	More knowledgeable reps	5
		9%
	Improve/update website/more detailed information on website	5
		9%
	All contractor mentions	4
		8%
	Increase incentive/rebate amount	3
		6%
	Simplify the process/make information required for rebate application easily accessible to homeowner	3
		6%
	Improve communication/follow-up	3
		6%
	A/O miscellaneous mentions	3
		6%
	Provide more detailed information on rebate items	2
		4%
	Issue rebates in a timely manner	2
		4%
	Like/good program	2
		4%
	A/O incentives/rebates mentions	-
		-
	A/O customer service mentions	-
		-

H1. What type of residence do you live in?	**Base**	**69**
		100%
	Detached single-family home	66
		96%
	Tow nhouse or duplex w hich share adjacent w alls	3
		4%
	Apartment or condo in a tw o, three, or four unit building	-
		-
	Apartment or condo in a building w ith 5 or more units	-
		-
	Mobile home or manufactured home	-
		-
	(VOL) Don't know	1

H2. Is your home's energy source…	**Base**	**70**
		100%
	Natural gas and electricity	41
		59%
	Electricity only	27
		39%
	Some other combination of energy sources	1
		1%
	Something else	1
		1%

H3. Is your water heated by…	**Base**	**69**
		100%
	Natural Gas	38
		55%
	Electricity or	30
		43%
	Some other energy source	1
		1%
	(VOL) Don't know	1

H4. Is your home occupied...	**Base**	**70**
		100%
	Year round or	69
		99%
	On a seasonal basis/vacation home	1
		1%

H5. How many people live in your home on a full-time basis [including yourself]?	**Base**	**67**
		100%
	1	14
		21%
	2	25
		37%
	3	13
		19%
	4	6
		9%
	5 or more	9
		13%
	DK	1
	REF	2

H6. Do you own or rent your home?	**Base**	**70**
		100%
	Own	70
		100%
	Rent	-
		-

H7. Which of the following categories best describes your age? Is it...	**Base**	**68**
		100%
	18 to 24	-
		-
	25 to 34	1
		1%
	35 to 44	11
		16%
	45 to 54	23
		34%
	55 to 64	23
		34%
	65 or over	10
		15%
	(VOL) Refused	2

H8. Do you or members of your family speak a language other than English in your home on a regular basis?	**Base**	**70**
		100%
	Yes	3
		4%
	No	67
		96%
H8a. Which language?	**Base**	**3**
		100%
	German	1
		33%
	Hindi	1
		33%
	Portegeuse	1
		33%

H9. Which of the following categories best describes your total annual household income before taxes?	**Base**	**47**
		100%
	Less than $25,000	2
		4%
	$25,000 up to $50,000	8
		17%
	More than $50,000 up to $100,000	18
		38%
	More than $100,000 up to $200,000	13
		28%
	More than $200,000	6
		13%
	(VOL) Don't know	8
	(VOL) Refused	15

D.2 WHOLE HOUSE CUSTOMER SURVEY

Q1. How did you first learn about the HEI Program?	**Base**	**36**
		100%
	Through a contractor	10
		28%
	Georgia Power website	8
		22%
	Other (SPECIFY)	8
		22%
	Through family, friend, or neighbor	7
		19%
	Georgia Power brochure	1
		3%
	Participation in other Georgia Power Programs	1
		3%
	From the Georgia Power free in-home energy audit	1
		3%
	Internet research other than Georgia Power website	1
		3%
	Customer called Georgia Power for another reason and agent referred to program	1
		3%
	Don't know	1
	Bill stuffer	-
		-
	Georgia Power mailing	-
		-
	Georgia Power email	-
		-

Q1other. How did you first learn about the Home Energy Improvement Program?	**Base**	**8**
		100%
	<12:Other (SPECIFY)>:CALLED INSULATION COMPANY	1
		12%
	<12:Other (SPECIFY)>:I AM IN HVQAC INDUSTRY - THROUGH WORK	1
		12%
	<12:Other (SPECIFY)>:PUBLIC SERVICE ANNOUNCEMENT	1
		12%
	<12:Other (SPECIFY)>:home show	1
		12%
	<12:Other (SPECIFY)>:the city of decatur, ga's website had information about ga power's program on it. (else) no	1
		12%
	<12:Other (SPECIFY)>:tv	1
		12%
	<12:Other (SPECIFY)>:went to a home and garden show	1
		12%
	<12:Other (SPECIFY)>:went to hone and garden expo in my hometown and they (ga power) had an exhibit there explaining how the program worked(else) no	1
		12%

Q2. Of the sources of information you mentioned, which one was most helpful in informing you about the program?	**Base**	**1**
		100%
	Georgia Power website	1
		100%

Q3. Did you have any concerns about taking part in the program?	**Base**	**37**
		100%
	Yes	9
		24%
	No	28
		76%

Q4. What were those concerns?	**Base**	**9**
		100%
	Other (SPECIFY)	5
		56%
	That improvements would cost a lot	4
		44%
	Wouldn't like what was installed	1
		11%
	The process would take too long	1
		11%
	Disruption to home/mess involved with installing improvements	-
		-
	Incentive/rebate would be too low/insufficient	-
		-
	That the audit wouldn't find anything/my home was already efficient	-
		-
	Wouldn't like what they recommended	-
		-

Q4. What were those concerns?	**Base**	**5**
		100%
	<8:Other (SPECIFY)>:KNEW THERE WOULD BE A LOT OF HOOPS TO JUMP THROUGH.	1
		20%
	<8:Other (SPECIFY)>:WAS IT LEGITIMATE	1
		20%
	<8:Other (SPECIFY)>:didnt know much about it and wanted to be sure the contractors were certified	1
		20%
	<8:Other (SPECIFY)>:might be too good to be true	1
		20%
	<8:Other (SPECIFY)>:not enough improvement to justify cost - trying to decide which improvements to make	1
		20%

Q5. What was the single most important reason you decided to participate?	**Base**	**37**
		100%
	To save money on utility bills, save money on electric bills	17
		46%
	To get more efficient equipment	8
		22%
	To improve/increase comfort in the home	7
		19%
	To obtain a rebate, Program incentive	3
		8%
	To replace old equipment	1
		3%
	To reduce maintenance costs	1
		3%
	To replace broken equipment	-
		-
	To acquire the latest technology	-
		-
	Because the Program was sponsored by GP	-
		-
	Previous experience with other Georgia Power Programs	-
		-
	To help protect the environment	-
		-
	To save energy	-
		-
	Recommended by contractors/trade allies	-
		-
	Recommended by family, friend, or neighbor	-
		-
	Part of a broader remodeling or renovation	-
		-
	Other (SPECIFY)	-
		-

Q5. What was the single most important reason you decided to participate?	**Base**	**6**
		100%
	<16:Other (SPECIFY)>:georgia pow er contractors w ere not too expensive and needed the w ork doe anyw ay	1
		17%
	<16:Other (SPECIFY)>:it w as free	1
		17%
	<16:Other (SPECIFY)>:the upstairs of our home is unbelieveably hot and w e w anted to get that fixed. (else) no	1
		17%
	<16:Other (SPECIFY)>:to make sure the things that needed to be fixed w ere fixed	1
		17%
	<16:Other (SPECIFY)>:to obtain a full assessment of the house	1
		17%
	<16:Other (SPECIFY)>:w eighs saving money and saving environmen equally	1
		17%

Q5A. Other reasons for participating	**Base**	**37**
		100%
	To save money on utility bills, save money on electric bills	9
		24%
	To improve/increase comfort in the home	8
		22%
	Other (SPECIFY)	8
		22%
	To help protect the environment	4
		11%
	To save energy	4
		11%
	To obtain a rebate, Program incentive	3
		8%
	To replace old equipment	2
		5%
	(VOL) Don't know	2
		5%
	To get more efficient equipment	1
		3%
	To reduce maintenance costs	1
		3%
	To replace broken equipment	-
		-
	To acquire the latest technology	-
		-
	Because the Program was sponsored by GP	-
		-
	Previous experience with other Georgia Power Programs	-
		-
	Recommended by contractors/trade allies	-
		-
	Recommended by family, friend, or neighbor	-
		-
	Part of a broader remodeling or renovation	-
		-
	No other reason	-
		-

Q5aOther. Were there other reasons?	**Base**	**8**
		100%
	bad experience with other contractors	1
		12%
	if we wanted to ever sell the house, it would be better to say we had that done. (else) no	1
		12%
	No other reasons	6
		75%

Q6. What factors persuaded you to take the whole house approach?	**Base**	**34**
		100%
	Had many things that needed improvement	13
		38%
	The rebate amount	6
		18%
	Information provided in the assessment indicated whole house was a better choice	6
		18%
	Other (SPECIFY)	6
		18%
	Advice from contractor	5
		15%
	Amount of energy saving potential/affect on energy bills	3
		9%
	(VOL) Don't know	3
	Time involved to make the improvements	-
		-
	Advice from family/friend	-
		-

Q6other. What factors persuaded you to take the whole house approach?	**Base**	**6**
		100%
	<8:Other (SPECIFY)>:knew we would not move from house so would benefit long term	1
		17%
	<8:Other (SPECIFY)>:more appropriate for our particular home	1
		17%
	<8:Other (SPECIFY)>:old house	1
		17%
	<8:Other (SPECIFY)>:to be a responsible citizen and improve the efficiency of my home. (else) no	1
		17%
	<8:Other (SPECIFY)>:was free	1
		17%
	<8:Other (SPECIFY)>:w w anted everything done at w once	1
		17%

Q7. Of the factors you mentioned, which one influenced you the most to select the whole house approach?	**Base**	**4**
		100%
	The rebate amount	1
		25%
	Information provided in the assessment indicated whole house was a better choice	1
		25%
	Amount of energy saving potential/affect on energy bills	1
		25%
	Other	1
		25%
	Had many things that needed improvement	-
		-
	Time involved to make the improvements	-
		-
	Advice from contractor	-
		-
	Advice from family/friend	-
		-

Q8. First, how did you find a certified contractor to come to your home and conduct a home energy assessment?	**Base**	**37**
		100%
	Through the Georgia Power website	11
		30%
	Other (SPECIFY)	10
		27%
	Family/Friend	9
		24%
	Called a contractor I knew	6
		16%
	Salesperson/Contractor referral	1
		3%
	Georgia Power free in-home energy audit/auditor	-
		-
	Called 800 number advertised	-
		-
	Georgia Power call center representative provided referrals	-
		-
	Maintenance contract	-
		-

Q8other. First, how did you find a certified contractor to come to your home and conduct a home energy assessment?	**Base**	**10**
		100%
	<9:Other (SPECIFY)>:HOMES REPORRT	1
		10%
	<9:Other (SPECIFY)>:HOMETOWN BLOG	1
		10%
	<9:Other (SPECIFY)>:THE INSULATION CO PROVIDED CONTACT INFO3	1
		10%
	<9:Other (SPECIFY)>:at the home and garden show . (else) no	1
		10%
	<9:Other (SPECIFY)>:decatur website listed 3 contractors local ot the area. i got references and chose the one with the best review (else) no	1
		10%
	<9:Other (SPECIFY)>:i am a certified contractor	1
		10%
	<9:Other (SPECIFY)>:it was on tv	1
		10%
	<9:Other (SPECIFY)>:looked at recommended contractors on website	1
		10%
	<9:Other (SPECIFY)>:on the internet	1
		10%
	<9:Other (SPECIFY)>:the contractor was at the exhibit, increasing his exposure and business. (else) no	1
		10%

Q9. How easy was it to find your contractor for the home assessment?	**Base**	**37**
		100%
	Not at all easy	1
		3%
	Not too easy	1
		3%
	Somewhat easy	7
		19%
	Very easy	28
		76%

Q10. How valuable was the report in deciding which improvements to make to your home?	**Base**	**37**
		100%
	Not at all valuable	-
		-
	Not too valuable	1
		3%
	Somew hat valuable	9
		24%
	Very valuable	27
		73%

Q11. Why do you say [+q10+]?	**Base**	**37**
		100%
	ALREADY HAD AN IDEA WHAT NEEDED TO BE DONE.	1
		3%
	ALREADY KNEW	1
		3%
	BECAUSE IT ONLY DEALT WITH INSULATION - I THOUGHT IT WOULD BE BROADER THAN THAT - THERE NEED TO BE BETTER STANDARDS -	1
		3%
	CONSULTANT WAS INDEPENDANT, CONTRACTOR OFFERED UNBIASED OPIONION.	1
		3%
	DIDNT SEE THE CORRULATION FROM SAVINGS VS. IMPROVEMENTS.	1
		3%
	GAVE ME ASSESMENT OF THE HOUSE AND WHAT i NEEDED TO DO.	1
		3%
	I NEEDED TO KNOW WHAT WAS GOING ON WITH THE HOUSE	1
		3%
	IDENTIFIED SERIOUS PROBLEMS IN EFFIECIENCY OF HOME & QUALIFIED FOR THE REBATES.	1
		3%
	LET ME KNOW WHAT i NEEDED TO DO.	1
		3%
	NOT TOO WELL WRITTEN. THE INFORMATION WAS NOT A REALLY TERRIFIC HELP. DOES NOT REALLY SAY HOW MUCH I WILL SAVE. NEEDED TO BE CLEARER.	1
		3%
	SPLIT IT UP COST WISE. ABLED TO ME BUDGET FOR CERTAIN PEICES. ALLOWED TO SHARE REPORT.	1
		3%
	THEY DID THE ASSESMENT & FIGURED OUT WHERE THE	1

	DRAFTS WERE COMING FROM.	1 *3%*
	THEY POINTED OUT SEVERAL THINGS - THE WHOLE APPROACH	1 *3%*
	WE HAD NEVER DONE THIS BEFORE, NEEDED TO KNOW HOW TO IMPROVE	1 *3%*
	WE WERE IN THE MEDST OF RENOVATION - HE DID NOT SEE HOUSE IN NORMAL STATE SO IT WAS NOT FULLY ACCURATE	1 *3%*
	because id like to see what wa done to my house and afterwards i could go through the list and check off what had been done. (else) no	1 *3%*
	because it let me know areas to improve in that would give the most savings.(else) no	1 *3%*
	because it pointed out a lot of things that made sense to reduce energy use and it showed the heat pump's level of efficiency throughout the house, how well sealed the house was, where there were any drafts. (else) no	1 *3%*
	confusing and not written in laymens terms hard to follow matrix.	1 *3%*
	he did a wonderful complete process he took picture of my duct work he poijnted out everythign he did the test to see where the air was coming out of my vent he was very thurough(else) no other than the contractor idd a wonderful job it didnt matter that i would get a rebate i did it anyway ti was just an added bonus, he contact a reputable heating and air company and they came and fixed my duct work	1 *3%*
	he rated the improvements based on efficiency and need. (else) pointed out ways to save money that were urgent, but easy fixes, like eliminating air coming under the doors. (else) no	1 *3%*
	i had before i retired i had an addition to build on like a den, the way the den was set up it wasnt as cool or as warm as it should hvae been but once i had this done i can tell a difference and also i can tell a differecne in my power bill	1 *3%*

	i think the report could be seriously imporved in terms of how effectively it communicates but eneve in it's less than perfect state it laid out how much we were spending and the differences between beofre and after	1 *3%*
	i would have liked to have seeen it more with m ore concrete actions the the homeowner could take (eles) i just thought that some of it was kind of confusing for a lay person so that i needed to have someone else explain it to me so that i could be fully clear for my self fot what actions to take	1 *3%*
	it broke down the percentage of energy we'd save, the rebates, improvements for federal tax credis listed individually. (else) no	1 *3%*
	it didnt hacwe enough information for what i wanted. (else) no	1 *3%*
	it had estimated numbers without number it's just guessing it nothing (else) that was the main thing, it had estimated numbers	1 *3%*
	it identified the locations wehre i was losing heat and cooling and i felt that we could do those improvemnts my particular home had only a few locations wher i needed improvemnts and the contractors said i could do them myself because of the minor situationsthat he found they werent very significant i was able to do those changes myself (esle) i thought it was very enlightening as to what info i was able to recieve i enjoyed the data process they used to identify the locatiosn where the actual losses of poewr and enery was located	1 *3%*
	it identifies the problems that youve got that need to be corrected to save energy and money on your motnhy bill (eles) that the biggest thing	1 *3%*
	it pinpointed what we needed to do which we sor t of had an idea because tehre were places that were colder he told us which thing to improve were old people so (else)	1

	we jsut decided that explained everything they were going to do and why and what they could save us in electircity over the next year	*3%*
	it showed me that i had a lot of avenues where i had energy problems that could be assessed and be tightend up (eles) i had a lot of facotrs with energy leaks that could be address i had some energy saving light bulbs in some places and not in other i had insulation in some places and in some places i didnt have insulation i didnt have all the energy saving light bulbs (else) that was just abou it	1 *3%*
	it was pretty detaliled they had detailed every step we should take in all areas of the house it was very detailed and he talkeed to us about it (eles) i think that the most importatn part waws that itw as very detailed like improvemetns for the floors and the window and all the differnt parts of the house like the windows to be fix it was good like the good parts of the house and the bad parts it was good, it talked about the bad parts and the good things that we had already done, it was very measured	1 *3%*
	it was very detalied and provided a lot more feedback to the test they ran on it it was more informatio than i tjhought there'd be (else) it was easy to follow and very specific	1 *3%*
	it ws detailed and pointed out things that i didnt really know (else) that's it	1 *3%*
	they were very honest about what would make a difference and what wouldnt (else) tha's ti	1 *3%*
	to save money, and to better enviornmental standard--he pointed outr areas in our home that we can help protect ourselves from gas leaks where we can protect ourselves and save moneuy	1 *3%*
	we did waht they said, we took their advice and did it (else) i mean we did what they had recommended, i dont know what elese to say	1 *3%*

Q12. Did you have the same contractor who did your energy assessment also make the energy saving improvements, or did a different contractor make the improvements?	**Base**	**34**
		100%
	Same contractor for both	23
		68%
	Different contractor did installation	9
		26%
	Some done by each contractor	2
		6%
	Don't know	3

Q13. Georgia Power requires that contractors are certified with the Building Performance Institute (BPI) for the whole house form of this program. How important was it to you that they had certification?	**Base**	**34**
		100%
	Not at all important	4
		12%
	Not too important	1
		3%
	Somew hat important	6
		18%
	Very important	23
		68%
	Don't know	3

Q14. How satisfied are you with quality of work provided by the contractor that did the installations? Are you very dissatisfied, somewhat dissatisfied, somewhat satisfied, or very satisfied?	**Base**	**33**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	-
		-
	Somew hat satisfied	4
		12%
	Very satisfied	29
		88%
	Don't know	4

Q15. Why were you dissatisfied?	**Base**	**-**
		-
	Gave response	-
		-

Q16. How satisfied are you with the professionalism of the contractor?	**Base**	**35**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	1
		3%
	Somew hat satisfied	1
		3%
	Very satisfied	33
		94%
	Don't know	2

Q17. Why were you not satisfied?	**Base**	**1**
		100%
	IT WAS A LOT TO KEEP UP WITH, A LOT OF BACK AND FORTH, SLOW TO RESPOND	1
		100%

Q18. For each item, was it recommended for your home? (Multiples)	**Base**	**36**
		100%
	Attic insulation	29
		81%
	Air sealing	28
		78%
	Water heater w rap	27
		75%
	Duct sealing	27
		75%
	Basement/craw lspace Insulation	22
		61%
	Efficient cooling system (AC, heat pump)	21
		58%
	Efficient furnace/boiler/heat pump	16
		44%
	ENERGY STAR Appliances	14
		39%
	Wall insulation	14
		39%
	Window or door replacement	11
		31%
	Electronic Thermostat/Set-Back	10
		28%
	Efficient w ater heater	9
		25%
	Other (SPECIFY)	4
		11%
	(VOL) Don't know	1

q19. Of the improvements recommended, which did you have done?	**Base**	**36**
		100%
	(VOL) Installed all recommendations	15
		42%
	Basement/crawlspace Insulation	9
		25%
	Efficient cooling system (AC, heat pump)	8
		22%
	Water heater wrap	7
		19%
	ENERGY STAR Appliances	6
		17%
	Efficient water heater	5
		14%
	Efficient furnace/boiler/heat pump	5
		14%
	Duct sealing	5
		14%
	Attic insulation	4
		11%
	Wall insulation	4
		11%
	Air sealing	3
		8%
	Window or door replacement	2
		6%
	Electronic Thermostat/Set-Back	2
		6%

Q20. Have any of the improvements that were installed as part of the program been removed?	**Base**	**34**
		100%
	Yes	-
		-
	No	34
		100%
	Don't know	3

Q21. How easy was it to complete the information required on the rebate application form?	**Base**	**33**
		100%
	Very difficult	1
		3%
	Somew hat difficult	4
		12%
	Somew hat easy	12
		36%
	Very easy	16
		48%
	Don't know	4

Q22. Did you encounter any problems, delays or difficulties with the rebate application process?	**Base**	**36**
		100%
	Yes	9
		25%
	No	27
		75%
	Don't know	1

Q23. What kind of difficulties?	**Base**	**9**
		100%
	The process took too long	4
		44%
	Other (SPECIFY)	3
		33%
	Program Staff issues: Lack of coordination and communication, not responsive; could not get questions answered	2
		22%
	The incentives were less than I expected	1
		11%
	Too many delays between steps in the process	-
		-
	The process was too complex	-
		-
	The applications materials were difficult to understand	-
		-
	The Program staff was not knowledgeable	-
		-
	Unable to get information on the status of the application	-
		-
	Multiple requests for more information from Georgia Power throughout the process	-
		-
	Problem with completing application details	-
		-

Q23other. What kind of difficulties?	**Base**	**3**
		100%
	<12:Other (SPECIFY)>:SENT REBATE TO WRONG PLACE, HAD WRONG SPELLING AND WRONG ADDRESS. I RENTED HOUSE SO RENTER THEN HAD ACCOUNT #	1
		33%
	<12:Other (SPECIFY)>:have not received a rebate check, been waiting 2 to 3 months	1
		33%
	<12:Other (SPECIFY)>:havent received rebate check back yet, but its only been 3 weeks. (else) no	1
		33%

Q24. How satisfied are you with the amount of rebate you received for making the whole house improvements?	**Base**	**32**
		100%
	Very dissatisfied	1
		3%
	Somew hat dissatisfied	-
		-
	Somew hat satisfied	3
		9%
	Very satisfied	28
		88%
	Don't know	5
Q24a. Why were you very dissatisfied?	**Base**	**1**
		100%
	because w e have not heard anything from georgia pow er and have not recieved the rebate check (else) that's it	1
		100%

Q25. And how satisfied are you with the amount of time it took to receive the rebate payment?	**Base**	**32**
		100%
	Very dissatisfied	4
		12%
	Somew hat dissatisfied	6
		19%
	Somew hat satisfied	12
		38%
	Very satisfied	10
		31%
	Don't know	5

Q26. You said that you were not satisfied with the time it took to receive the incentive payment. How long did it take from the time you submitted the application to when you received the rebate?	**Base**	**7**
		100%
	1 to 2 weeks	-
		-
	3 to 4 weeks	1
		14%
	5 to 8 weeks	6
		86%
	3 to 4 months	-
		-
	5 to 6 months	-
		-
	More than 6 months	-
		-
	Don't know	3

Q27. Importance of information provided by contractor on energy savings	**Base**	**36**
		100%
	Not at all important	-
		-
	Not too important	3
		8%
	Somewhat important	8
		22%
	Very important	25
		69%
	Don't know	1

Q27. Importance of quality and reliability of ENERGY STAR rated equipment	**Base**	**32**
		100%
	Not at all important	5
		16%
	Not too important	2
		6%
	Somewhat important	9
		28%
	Very important	16
		50%
	Don't know	5

Q27. Importance of opportunity for federal tax credits	**Base**	**36**
		100%
	Not at all important	4
		11%
	Not too important	2
		6%
	Somew hat important	12
		33%
	Very important	18
		50%
	Don't know	1

Q27. Importance of items upgraded were previously not functioning optimally	**Base**	**32**
		100%
	Not at all important	4
		12%
	Not too important	3
		9%
	Somew hat important	7
		22%
	Very important	18
		56%
	Don't know	5

Q28. Would you have made the same improvements if this program had not been available?	**Base**	**36**
		100%
	Yes	13
		36%
	No	23
		64%
	Don't know	1

Q29. Let me make sure I understand. When you say you would have made the same improvements, would you have made all the improvements at the same efficiency level?	**Base**	**13**
		100%
	Yes	8
		62%
	No	5
		38%

Q30. And would you have made the same improvements:	**Base**	**12**
		100%
	At the same time or within three months of when you actually made the upgrades	4
		33%
	Within three to six months	4
		33%
	Six to 12 months	3
		25%
	More than a year	1
		8%
	Never	-
		-
	Don't know	1

Q31. Before you requested the energy assessment, had you ever previously had an energy assessment done on your home?	**Base**	**-**
		-
	Yes	-
		-
	No	-
		-

Q32. Let me make sure I understand. When you say you would not have made the same improvements, do you mean you would not have made any of the improvements?	**Base**	**23**
		100%
	Yes	11
		48%
	No	12
		52%

Q33. Would you have made some of the improvements at a lower efficiency level?	**Base**	**11**
		100%
	Yes	6
		55%
	No	5
		45%
	Don't know	1

Q34. And, would you have made those improvements:	**Base**	**12**
		100%
	Within three months of w hen you actually made the upgrades	-
		-
	Within three to six months	3
		25%
	Six to 12 months	2
		17%
	More than a year, or	6
		50%
	Never	1
		8%

Q35. Before you requested the energy assessment, had you ever previously had an energy assessment done on your home?	**Base**	**37**
		100%
	Yes	6
		16%
	No	31
		84%

Q36. How important was the incentive in influencing your decision to invest in energy efficient upgrades?	**Base**	**35**
		100%
	Not at all important	1
		3%
	Not too important	1
		3%
	Somew hat important	7
		20%
	Very important	26
		74%
	Don't know	2

Q37. Besides completing the efficiency upgrades through this program, have you made any other energy efficiency improvements or purchases on your own without any assistance from a utility or other organization?	**Base**	**35**
		100%
	Yes	14
		40%
	No	21
		60%
	Don't know	2

Q37a. What did you purchase or install?	**Base**	**14**
		100%
	HAD TO REPLACE WATER HEATER, WAS LEAKING.	1
		7%
	HEATING AND AIR CONDITIONING, HOT WATER HEATER	1
		7%
	HIGH EWFFICIENCY HOT WATER HEATER A YEAR AGO	1
		7%
	LOW FLOW TOILETS, CFL'S	1
		7%
	WATER HEATER BLANKET. ELECTRONIC THERMOSTAT.	1
		7%
	a new refigerator more energy effiecient, that is it	1
		7%
	cfl lightbulbs	1
		7%
	energy effiecient doors, weather stripping, made improvements to our windows, air sealing, that's about it oh and energy efficient light bulbs	1
		7%
	insulation around the ceiling in the attic, insulating and hardboard foam insulation to make existing insulation more efficient. (else) no	1
		7%
	new heating and ac unit	1
		7%
	put in energy efficient windows and insulated the crawl spce under the home. (else) no	1
		7%
	water saving faucets, a couple incandescents and CFLs	1
		7%
	window film, it was suggested but theuy did not put it in, i did	1
		7%
	windows, light bulbs, duct sealing	1
		7%

Q38. Since participating in the Home Energy Improvement Program, have you participated in any other energy efficiency programs offered by GEORGIA POWER?	**Base**	**14**
		100%
	Yes	-
		-
	No	14
		100%

Q39. How important was the Home Energy Improvement program in your decision to install additional efficient equipment? Would you say it was not at all important, not too important, somewhat important, or very important?	**Base**	**14**
		100%
	Not at all important	2
		14%
	Not too important	-
		-
	Somew hat important	6
		43%
	Very important	6
		43%

Q40. How strongly do you disagree, somewhat disagree, somewhat agree, or strongly agree. 'My experience with Georgia Power's Home Energy Improvement influenced my decision to install other high efficiency equipment on my own.'	**Base**	**13**
		100%
	Strongly disagree	1
		8%
	Somew hat disagree	3
		23%
	Somew hat agree	6
		46%
	Strongly agree	3
		23%
	Don't know	1

Q40a. Why do you disagree?	**Base**	**4**
		100%
	GEORGIA POWER WASNT THE ONLY INFLUENCE IN THE DESCISION.	1
		25%
	HAD ALREADY BOUGHT IT	1
		25%
	We already had done some w ork on our home and i used the program as a tool to see w hat else could be done to improve efficiency of my home. (else) no	1
		25%
	i just do w hat i'm going to do and i'm not relaly thinking of anything beyond that right now	1
		25%

Q41. After you had the energy saving improvements installed, would you say your home is more comfortable than before, less comfortable than before, or is the comfort in your home just about the same?	**Base**	**35**
		100%
	More comfortable	30
		86%
	Less comfortable	-
		-
	Just about the same	5
		14%
	Don't know	2

Q42. How is your home more/less/same comfortable?	**Base**	**29**
		100%
	Provided even temperatures throughout the home	21
		72%
	Other (SPECIFY)	7
		24%
	Made it more convenient to control temperature automatically, day or night	4
		14%
	Noticeably few er drafts throughout home	4
		14%
	Reduced the noise level of replaced appliances	3
		10%
	Provided longer lasting hot w ater	-
		-
	(VOL) Don't know	1

Q42. How is your home more comfortable since making energy saving improvements through the program.	**Base**	**7**
		100%
	<6:Other (SPECIFY)>:AIR COND RUNS LESS	1
		14%
	<6:Other (SPECIFY)>:air conditioner does not run as much	1
		14%
	<6:Other (SPECIFY)>:cheaper bill, more efficient cooling system	1
		14%
	<6:Other (SPECIFY)>:easier to cool	1
		14%
	<6:Other (SPECIFY)>:its cooler in my home now . (else) no	1
		14%
	<6:Other (SPECIFY)>:less loss of cooling	1
		14%
	<6:Other (SPECIFY)>:save money	1
		14%

Q43. Since you made the energy saving improvements, do you now keep your thermostat at a different setting compared to before?	**Base**	**35**
		100%
	Yes	21
		60%
	No	14
		40%
	Don't know	2

Q44a. What temperature did you keep your thermostat during summer months before the improvements?	**Base**	**20**
		100%
	68	1
		5%
	70	1
		5%
	72	4
		20%
	73	1
		5%
	74	1
		5%
	75	4
		20%
	76	4
		20%
	77	2
		10%
	80	2
		10%
	DK	1

Q44b. And now? (Cooling temperature setting after program)	**Base**	**20**
		100%
	73	1
		5%
	74	1
		5%
	76	3
		15%
	77	2
		10%
	78	8
		40%
	79	3
		15%
	80	2
		10%
	DK	1

Q45. Compared to before you made the energy saving improvements to your home, would you say you run your cooling system more, less, or about the same?	**Base**	**34**
		100%
	More	2
		6%
	Less	21
		62%
	About the same	8
		24%
	(VOL) Just keep a constant temperature setting	3
		9%
	Don't know	3

Q46. Since the energy saving improvements were installed, have your energy bills gone down, gone up, remained about the same, or haven't you noticed?	**Base**	**31**
		100%
	Bills have gone dow n	17
		55%
	Bills have gone up	4
		13%
	Remained about the same	1
		3%
	Haven't noticed	9
		29%
	Don't know	6

Q47. Has the amount of change to your energy bill met your expectations?	**Base**	**14**
		100%
	Yes	12
		86%
	No	2
		14%
	Don't know	3

Q48. OVERALL experience with the Home Energy Improvement program, how satisfied are you with the program?	**Base**	**37**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	2
		5%
	Somew hat satisfied	7
		19%
	Very satisfied	28
		76%

Q49. (You indicated that you were not satisfied with the program overall. What was the ONE most important reason you were not satisfied with the program overall?	**Base**	**2**
		100%
	money. georgia pow er not refunding my the money	1
		50%
	the speed w ith w hich georgia pow er sent us the rebate, or lack of rebate from georgia pow er	1
		50%

Q50. How likely are you to recommend the Home Energy Improvement Program to others?	**Base**	**37**
		100%
	Very unlikely	1
		3%
	Somew hat unlikely	-
		-
	Somew hat likely	3
		8%
	Very likely	33
		89%

Q51. During the process of participating in the program, would you say you had the information you needed or were you missing some information that would have been helpful?	**Base**	**37**
		100%
	Had the information needed	32
		86%
	Missing information	5
		14%

Q52. Is there anything you would suggest to improve customers' experience with the Home Energy Improvement Program?	**Base**	**18**
		100%
	More information/communication about the measures involved and how to qualify for the rebate	5
		28%
	Improve time to receive the rebate	3
		17%
	Need more info on GP website about what homeowners can do	2
		11%
	a ga power representative should follow up to see if you are satisfied with the results. (else) no	1
		6%
	i really feel you make georgia power employees aware when someone calls, they couldnt tell me if there was anyone in the state of ga who would do it, i just accidentally saw it on tv talking about it, georgia power needs to talk it up more	1
		6%
	if i could talk to some of the customers what i seen some of the differences where the negatives turned into positive like my house is quieter it is cooler and my georgia power bill has just gone down compared to what it used to be (else) id say compared to before i had the enevergy saving program to come into my house, i can see a gretat difference in it and i would adivse anyone who has a home as old as mine i would recommend that they have the improvements	1
		6%
	Georgia Power should advertise the program more (I 'stumbled' upon it)	3
		17%
	the follow up and timelyness of payment of georgia power everything was great except georgia power it has me wanting to switch energy companies its like a bait and switch they want you to do it but then they dont pay you	1
		6%
	therre was one area that we had difficulty with the time limit, my contractor and i had difficulty meeting the time line requirements, the work has to be completed within a certain amount of time after the initial assessment and we ahd some delays thats one of the reasons we didnt do more work than we did because it could not have bene completed in time	1
		6%

H1. What type of residence do you live in?	**Base**	**37**
		100%
	Detached single-family home	35
		95%
	Tow nhouse or duplex w hich share adjacent w alls	2
		5%
	Apartment or condo in a tw o, three, or four unit building	-
		-
	Apartment or condo in a building w ith 5 or more units	-
		-
	Mobile home or manufactured home	-
		-

H2. Is your home's energy source...	**Base**	**37**
		100%
	Natural gas and electricity	30
		81%
	Electricity only	5
		14%
	Some other combination of energy sources	2
		5%
	Something else	-
		-

H3. Is your water heated by...	**Base**	**37**
		100%
	Natural Gas	22
		59%
	Electricity or	14
		38%
	Some other energy source	1
		3%

H4. Is your home occupied...	**Base**	**37**
		100%
	Year round or	36
		97%
	On a seasonal basis/vacation home	1
		3%

H5. How many people live in your home on a full-time basis [including yourself]?	**Base**	**37**
		100%
	1	6
		16%
	2	15
		41%
	3	11
		30%
	4	4
		11%
	7	1
		3%

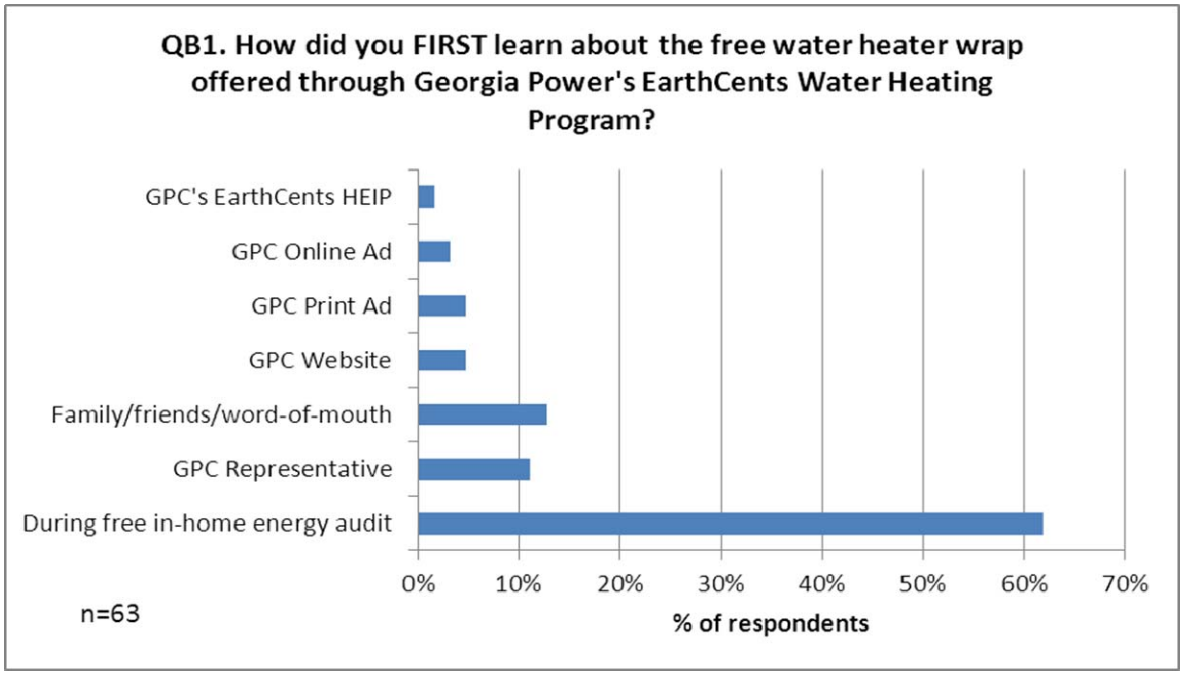
H6. Do you own or rent your home?	**Base**	**37**
		100%
	Own	37
		100%
	Rent	-
		-

H7. Which of the following categories best describes your age? Is it...	**Base**	**36**
		100%
	18 to 24	-
		-
	25 to 34	5
		14%
	35 to 44	7
		19%
	45 to 54	8
		22%
	55 to 64	9
		25%
	65 or over	7
		19%
	No answer	1

H8. Do you or members of your family speak a language other than English in your home on a regular basis?	**Base**	**37**
		100%
	Yes	2
		5%
	No	35
		95%
H8a. Which language?	**Base**	**2**
		100%
	BULGERIAN	1
		50%
	french	1
		50%
H9. Which of the following categories best describes your total annual household income before taxes?	**Base**	**34**
		100%
	Less than $25,000	1
		3%
	$25,000 up to $50,000	5
		15%
	More than $50,000 up to $100,000	11
		32%
	More than $100,000 up to $200,000	13
		38%
	More than $200,000	4
		12%
	No Answer	3
qmeasure	**Base**	**37**
		100%
	20% Home Energy Reduction	1
		3%
	30% Home Energy Reduction	7
		19%
	Audit Fee	22
		59%
	DHW Tank Wrap	4
		11%
	Heating System Thermostat	3
		8%

Appendix E DETAILED SURVEY RESULTS: RWH

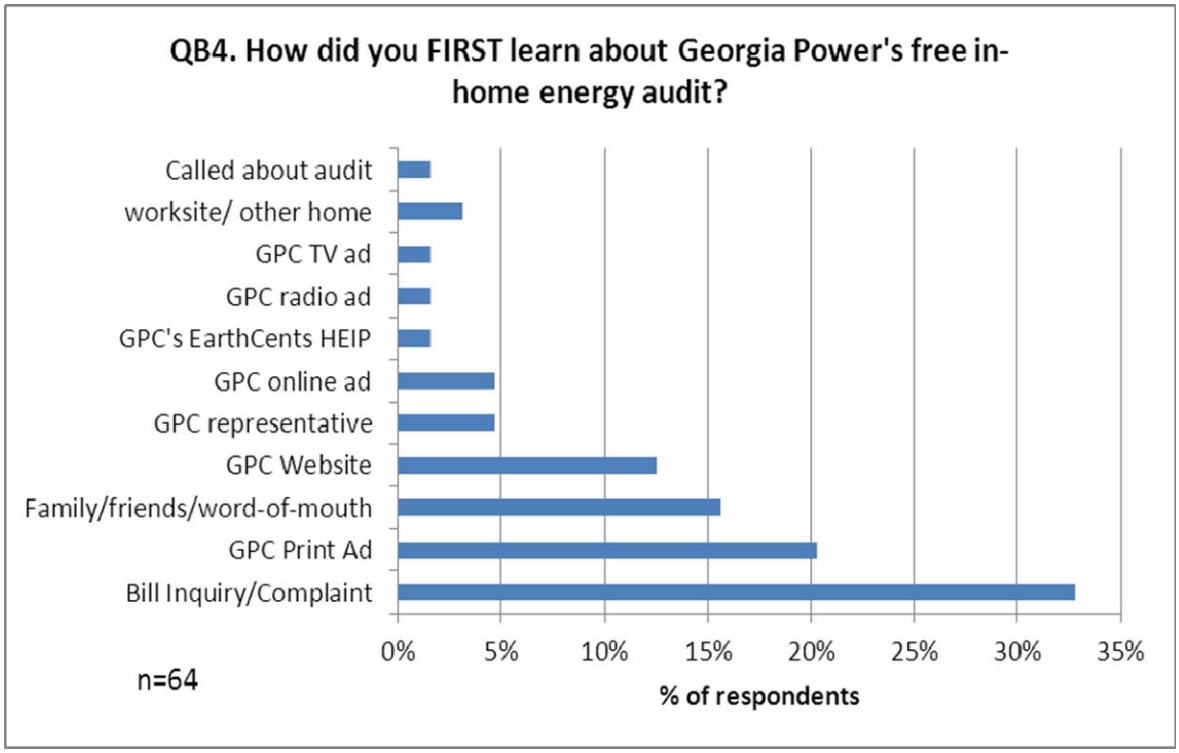
E.1 PARTICIPATING CUSTOMER SURVEY



QB2. Would you say that this information about the water heater program was informative?	**Base**	**56** ***100%***
	Yes, it was informative	52 *93%*
	No, it was not informative	3 *5%*
	(VOL) Other (SPECIFY): "Most of it"	1 *2%*
	(VOL) Don't know	2
	(VOL) Refused	- -

This was crosstabbed with question b3

QB3- [IF QB2 = no] Why do you say that?	**Base**	**3** ***100%***
	I don't know why he added it and it didn't help my bill at all	1 *33%*
	because it hasn't helped us any on our water bill	1 *33%*
	they did not give a whole lot of info	1 *33%*

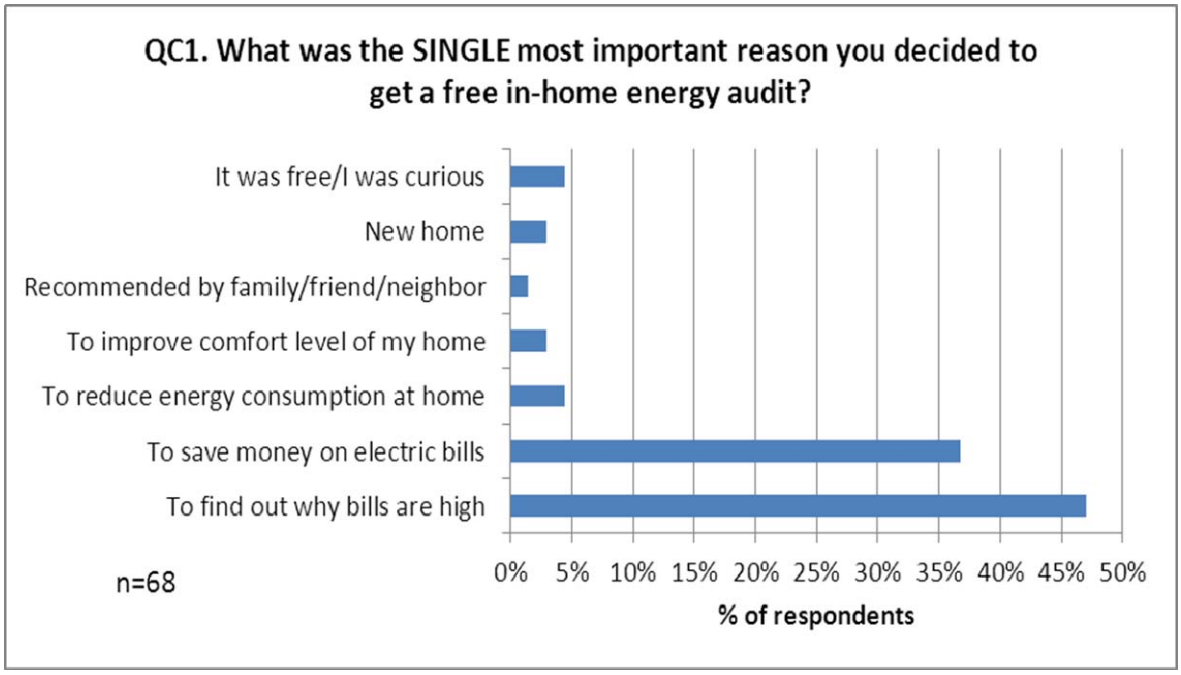


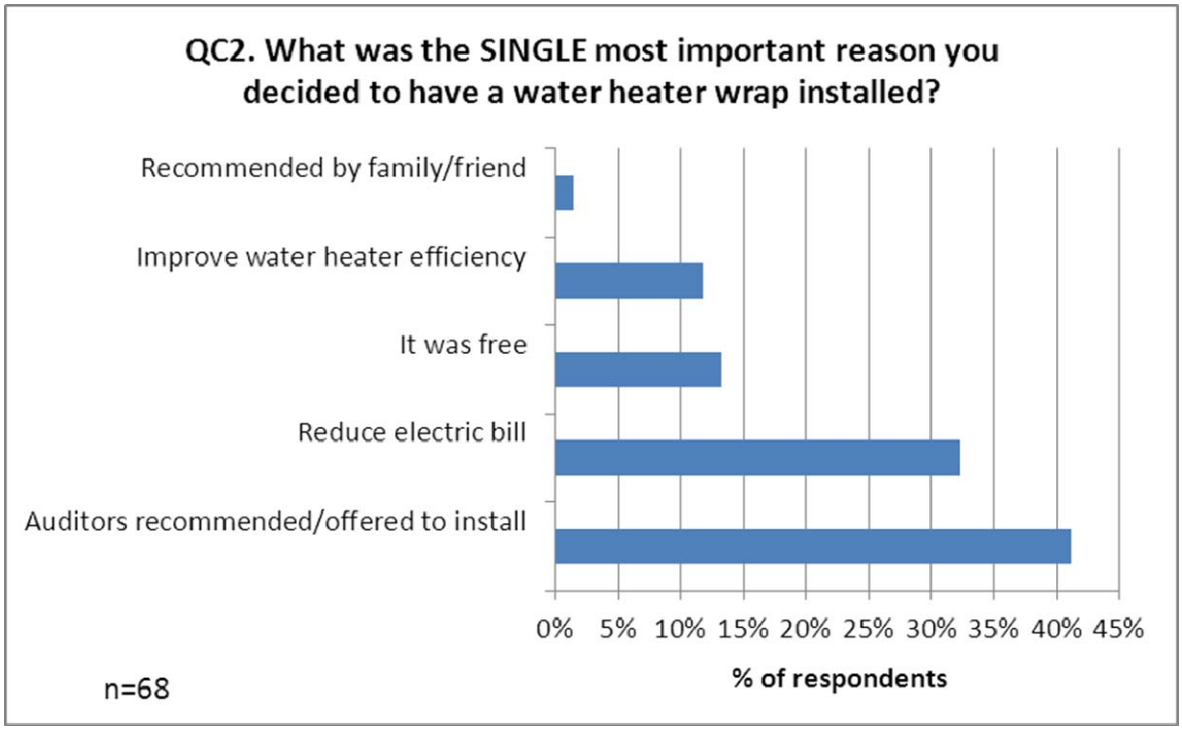
QB5. Would you say that this source from Georgia Power about the free in-home energy audit was useful?	**Base**	**60**
	Yes, it was useful	*93%*
	No, it was not useful	*3%*
	Other (SPECIFY)	*3%*
	Don't know	- -
	Refused	- -
QB5. Would you say that this source from Georgia Power about the free in-home energy audit was useful?	**OTHER Responses**	**2**
	Somewhat	*50%*
	Yes and no, it refers to contractors and was difficult to find the correct info	*50%*

FS to discuss with b3

QB6. [if B5= NO] What would have made it more useful to you?	**Number of Responses**	**2**
	If the power bill had gone down	*50%*
	If they could have told me something we could do to reduce our bill	*50%*

FS to discuss with B3 and B5


QC1. What was the SINGLE most important reason you decided to get a free in-home energy audit?
It was free/I was curious
New home
Recommended by family/friend/neighbor
To improve comfort level of my home
To reduce energy consumption at home
To save money on electric bills
To find out why bills are high
n=68
0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50%
% of respondents


QC2. What was the SINGLE most important reason you decided to have a water heater wrap installed?
Recommended by family/friend
Improve water heater efficiency
It was free
Reduce electric bill
Auditors recommended/offered to install
n=68
0% 5% 10% 15% 20% 25% 30% 35% 40% 45%
% of respondents

QD1. Did you make an appointment for a free in-home energy audit in order to receive the free water heater wrap?	**Number of Responses**	**69**
	No	*90%*
	Yes	*10%*
	(VOL) Don't know	1
	(VOL) Refused	- -

fs to discuss

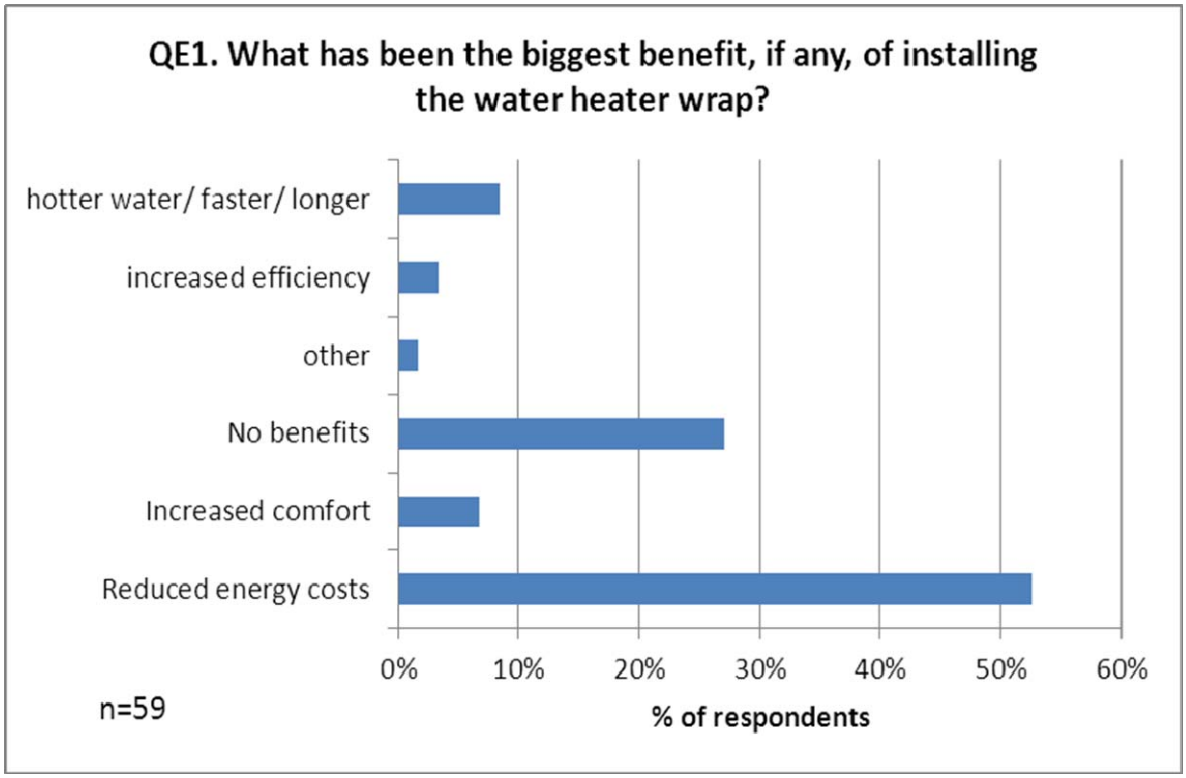
NET TO GROSS BATTERY

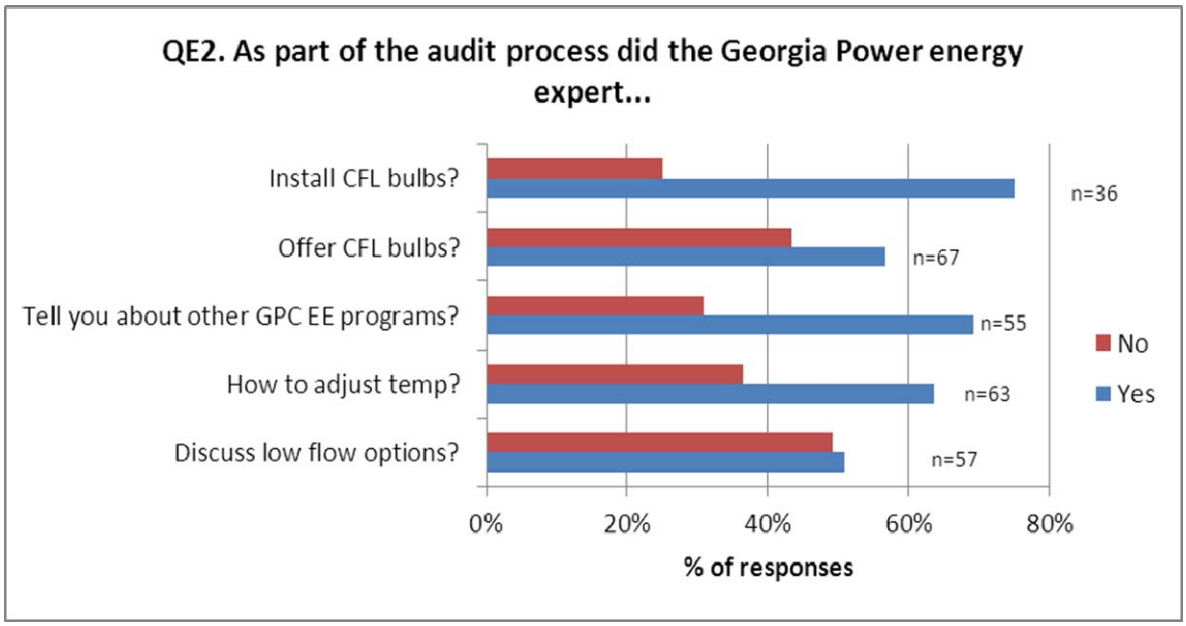
QD2. [For QD1 = Yes] BEFORE you heard about the Georgia Power's EarthCents water heater program, had you already been PLANNING TO PURCHASE AND INSTALL a water heater wrap?	**Number of Responses**	**7**
	No	*86%*
	Yes	*14%*
	(VOL) Don't know	- -
	(VOL) Refused	- -

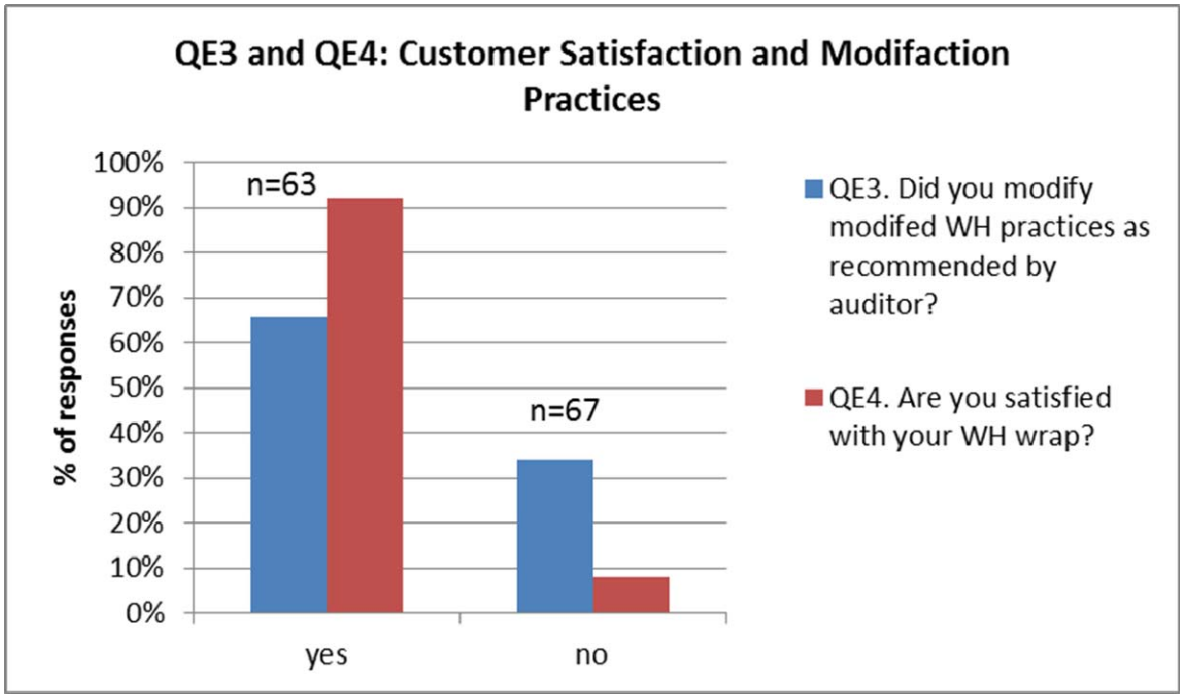
QD3. Would you have installed a water heater wrap on your own without the Georgia Power program? (DO NOT READ RESPONSES)	**Number of Responses**	**1**
	Yes, you would have installed a water heater wrap on my own	*100%*
	No, you would not have installed a water heater wrap on my own	- -
	(VOL) Don't know	- -
	(VOL) Refused	- -

QD4. If you had not received the water heater wrap from Georgia Power, when would you have purchased and installed a new water heater wrap? Would it have been...	**Number of Responses**	**1**
	At the same time?	*100%*
	Later in the same year?	- -
	More than one year?	- -
	(VOL) Don't know	- -
	(VOL) Refused	- -

QD5. Our records show you received [# of] water heater wraps. Would you have installed the same quantity of wraps without the program?	**Number of Responses**	**- -**
	Yes	- -
	No	- -
	(VOL) Don't know	- -
	(VOL) Refused	- -


QE1. What has been the biggest benefit, if any, of installing the water heater wrap?
hotter water/ faster/ longer
increased efficiency
other
No benefits
Increased comfort
Reduced energy costs
0%
10%
20%
30%
40%
50%
60%
n=59
% of respondents

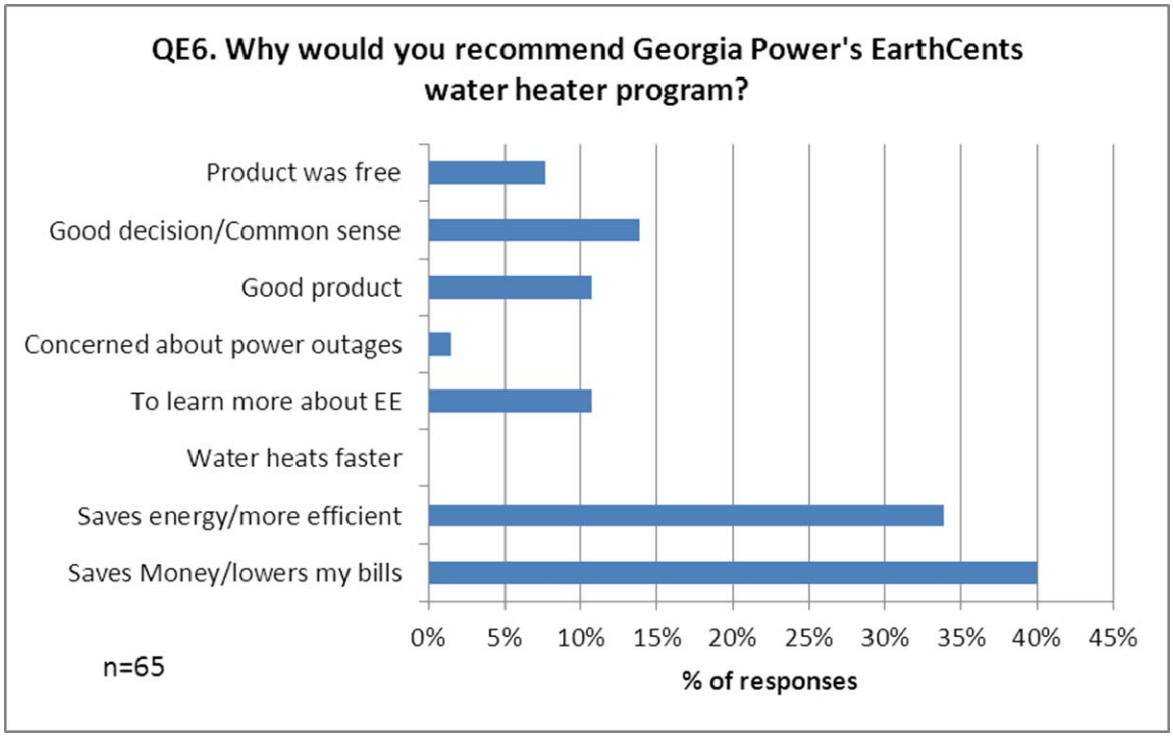

QE2. As part of the audit process did the Georgia Power energy expert...
Install CFL bulbs?
Offer CFL bulbs?
Tell you about other GPC EE programs?
How to adjust temp?
Discuss low flow options?
n=36
n=67
n=55
n=63
n=57
No
Yes
0%
20%
40%
60%
80%
% of responses



QE3A. (if QE3=Yes) What modifications have you made? (ALLOW MULTIPLE RESPONSES) (MENTION #1)	**Base**	**18** ***100%***
	I make an effort to use less w ater	3 *17%*
	I have reduced the temperature setpoint	13 *72%*
	Other (RECORD RESPONSE)	2 *11%*
	(VOL) Don't know	1
	(VOL) Refused	- -

QE4A. [if QE4= no] Why not?	**Number of Responses**	**5**
	It is rediculously heavy and the tape didn't stay put on the heater and wrap. I have a big water heater and we had to piece it together, so I don't efficient it is	*20%*
	It's starting to come off so we had to try to re-tape it	*20%*
	When the guy came out he wrapped WH first, then came to talk to us. He had to piece together 2 wraps to cover the heater and it now covers all the dials. So we have to remove the wraps to change settings.	*20%*
	never received wrap	*20%*
	the water is still cold in the winter	*20%*

QE5. Would you recommend Georgia Power's EarthCents Water heater Program to friends or family members?	**Number of Responses**	**68**
	Yes	***96%***
	No	***4%***
	(VOL) Don't know	
	(VOL) Refused	- -



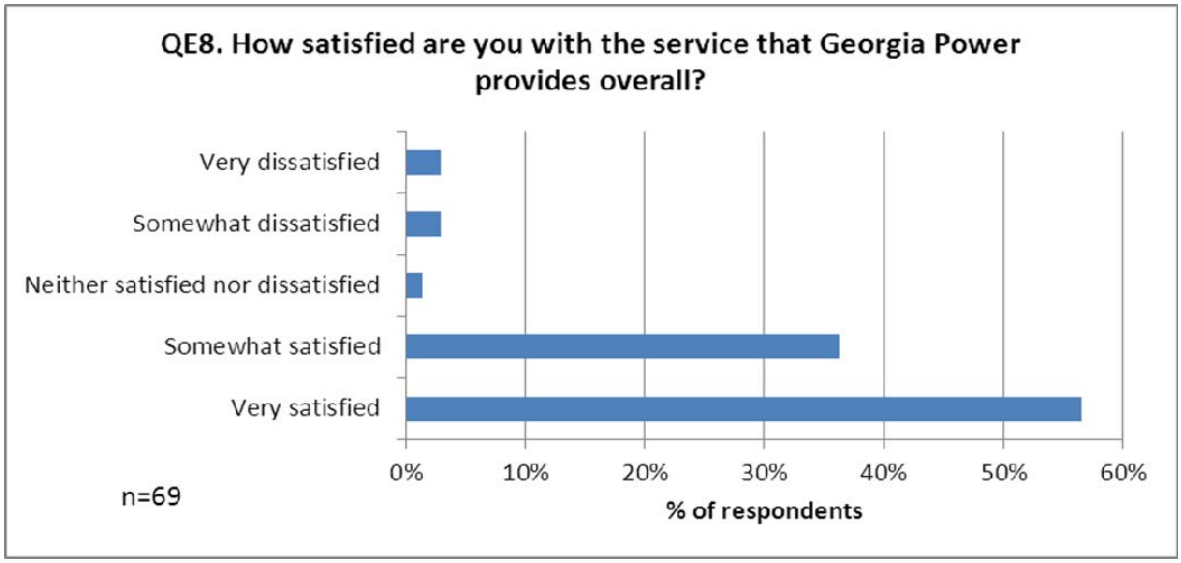
QE6- Why would you recommend Georgia Power's EarthCents water heater program?	
Saves Money/lowers my bills	Because it helps save money, (Else) It's a great educational too, and was very informative (Else) no
	Got the water to heat faster and brought down the bill
	Helps to be more efficient and saves money
	It did reduce my power bill
	It has helped with lowering my bills
	Might save them money
	My bill went down
	Reduce bill
	So they can save money too
	The money savings
	To help people with thier energy bill and get the free water heater wrap
	To help reduce costs
	benefit, save a few dollars
	energy and money conservation
	for the information, and to save money
	hopefully it's saving money, but I have multiple water heaters, but only one wrap, so haven't seen the benefit from it
	if it helps to save a dollar, it helps.
	it can save you money
	it helos save money
	save energy and money
	save money (x2)
	saved money and good for saving energy
	to save money
	to save oney
	to save resources, and to save money on the bill

Saves energy/more efficient	Anything you can do to save energy helps
	Got the water to heat faster and brought down the bill
	Helps to be more efficient and saves money
	I think it's important to save power anyway we can
	It helped on the energy.
	Less energy usage
	Saves energy
	The water heater wrap was more effiecient (else) it was free, plus the man was so informative
	To save energy
	any way we can save energy we should
	energy and money conservation
	energy savings
	good way to get information, we called to do what we could to cut down energy usage
	helps save energy
	it would help a little bit on thier energy bill
	save energy and money
	saved money and good for saving energy
	to ensure they are not wasting enegery
	to help save electricity
	to save resources, and to save money on the bill
	try to help on the energy bill
	we feel its an oppotunity to reduce enegery costs and it works for us
To learn more about EE	It's nice to know about the overall effeciency of the home
	So they can learn more about it
	The water heater wrap was more effiecient (else) it was free, plus the man was so informative
	a lot of us don't understand efficiency and its informative. two, you learn how to keep things balanced, make adjustments, and its free.
	for the information, and to save money
	good way to get information, we called to do what we could to cut down energy usage
	you can find out where you are not saving money.
Concerned about power outages	becaase i did not sense pressure or a sales pitch, and I'm concerned about the SE grid and the possibility of outages

Good product	It did good
	Seems like its helpful
	it works
	it's been successfull for us
	it's supposed to, in the winter time, when it gets real cold, it keeps water heater protected and in the summer keeps it cooler
	seems like it will help
	we feel its an oppotunity to reduce enegery costs and it works for us
Good decision/Common sense	Because it made common sense
	Couldn'y hurt
	Its good so far
	The do a good job hoa
	becaase i did not sense pressure or a sales pitch, and I'm concerned about the SE grid and the possibility of outages
	because it has helped me, lowe
	doesn't hurt to
	if youre interested in this, it was great
	she wanted it, she is going on the assumption she will get the wrap
Product was free	The water heater wrap was more effiecient (else) it was free, plus the man was so informative
	To help people with thier energy bill and get the free water heater wrap
	a lot of us don't understand efficiency and its informative. two, you learn how to keep things balanced, make adjustments, and its free.
	becuase they give you the free wrap
	no effort, and

QE7- [If QE5 = no] Why would you NOT recommend Georgia Power's EarthCents water heater program?	**Number of Responses**	**2**
	Haven't seen a benefit from me participating in the program	*50%*
	because they did not tell me anything that I could see reduced my bill	*50%*

FS to discuss wth e5 and e6

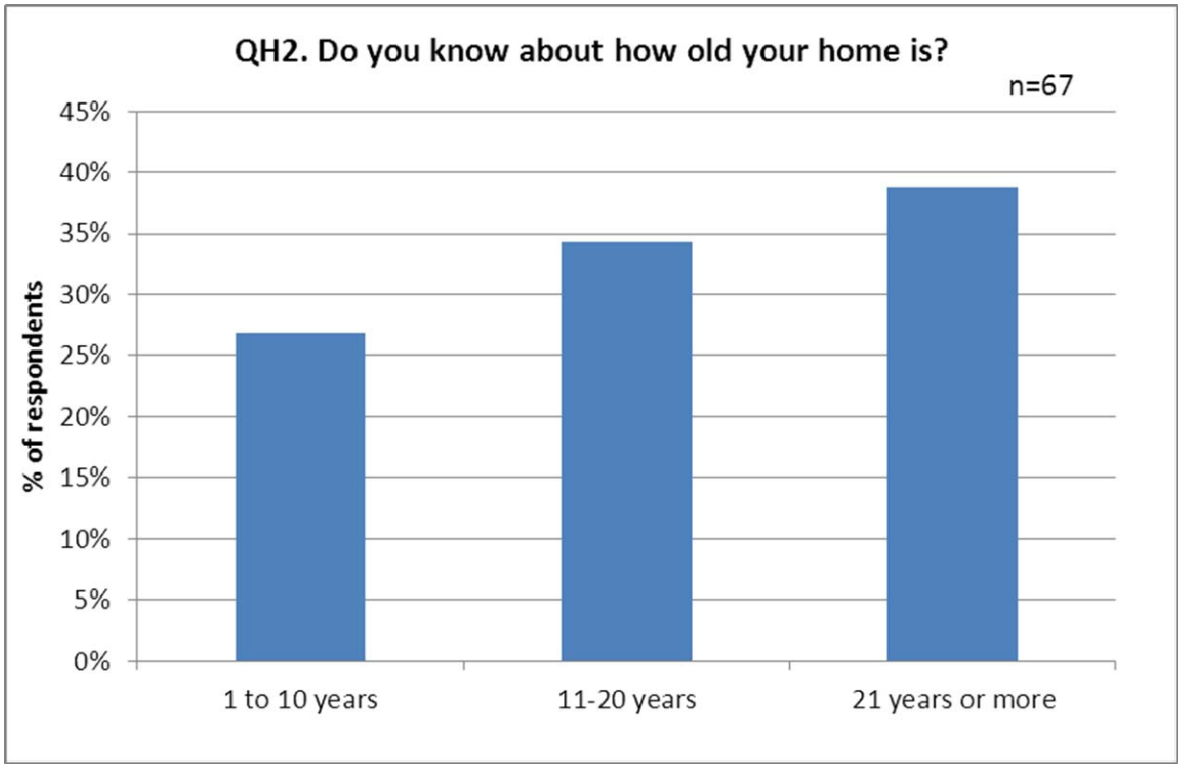


QF1. Since participating in Georgia Power's program, have you made any other energy efficiency improvements or purchases on your own without any rebate or other financial incentive?	**Number of Responses**	**68**
	Yes	***47%***
	No	***53%***
	(VOL) Don't know	**1**
	(VOL) Refused	**1**

spillover

DEMOGRAPHICS

QH1. Which of the following best describes your house?	**Number of Responses**	**68**
	Detached single-family home	*96%*
	Townhouse or duplex which share adjacent walls	*3%*
	Apartment	- -
	Mobile home or manufactured home	*1%*
	Other (RECORD)	- -
	(VOL) Don't know	- -
	(VOL) Refused	2



QH3. Do you own or rent your home?	**Base**	**68**
	Own	*93%*
	Rent	*7%*
	Other (RECORD)	- -
	(VOL) Don't know	- -
	(VOL) Refused	2

QH4. How do you primarily heat and cool your home? Do you use...	**Base**	**68**
	Electricity only?	*74%*
	Natural gas and electricity?	*21%*
	Some other combination of energy sources	*6%*
	Propane?	- -
	(VOL) Don't know	- -
	(VOL) Refused	2

QH5: Is your water heated by...?	**Base**	**67** ***100%***
	Electricity?	64 *96%*
	Natural gas?	2 *3%*
	Some other combination of energy sources	1 *1%*
	Propane? or	- -
	(VOL) Don't know	1
	(VOL) Refused	2

QH6. How long have you lived at this address?	**Base**	**68** ***100%***
	Five years or more	45 *66%*
	One up to two years	11 *16%*
	Two up to five years	10 *15%*
	Less than one year	2 *3%*
	(VOL) Don't know	- -
	(VOL) Refused	2

QH8. Which of the following categories best describes your age? Just stop me when I get to the right category?	**Base**	**66** ***100%***
	18 to 24	- -
	25 to 34	6 *9%*
	35 to 44	9 *14%*
	45 to 54	17 *26%*
	55 to 64	17 *26%*
	65 or over	17 *26%*
	(VOL) Refused	4

QH9. Do you or members of your family speak a language other than English in your home on a regular basis?	**Base**	**67** ***100%***
	No	65 *97%*
	Yes	2 *3%*
	(VOL) Don't know	- -
	(VOL) Refused	3

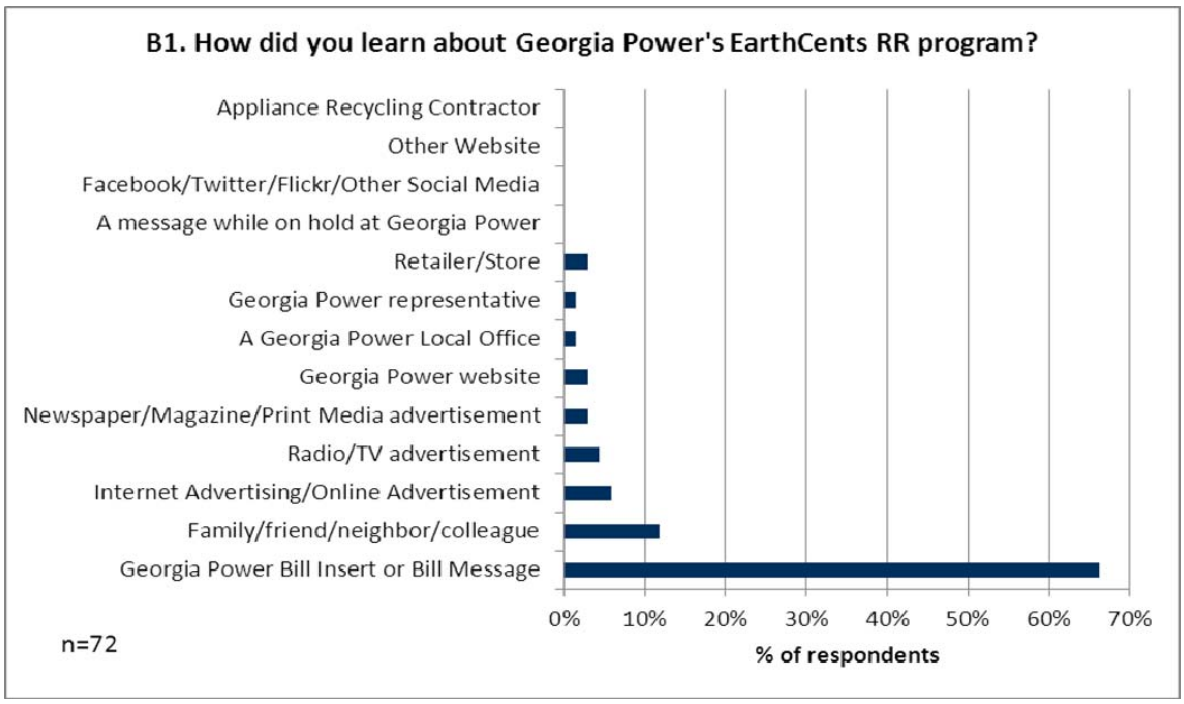
QH9A. Which language? RECORD RESPONSE) [VERBATIM RESPONSE]	**Base**	**2** ***100%***
	German	1 *50%*
	Phillippino	1 *50%*

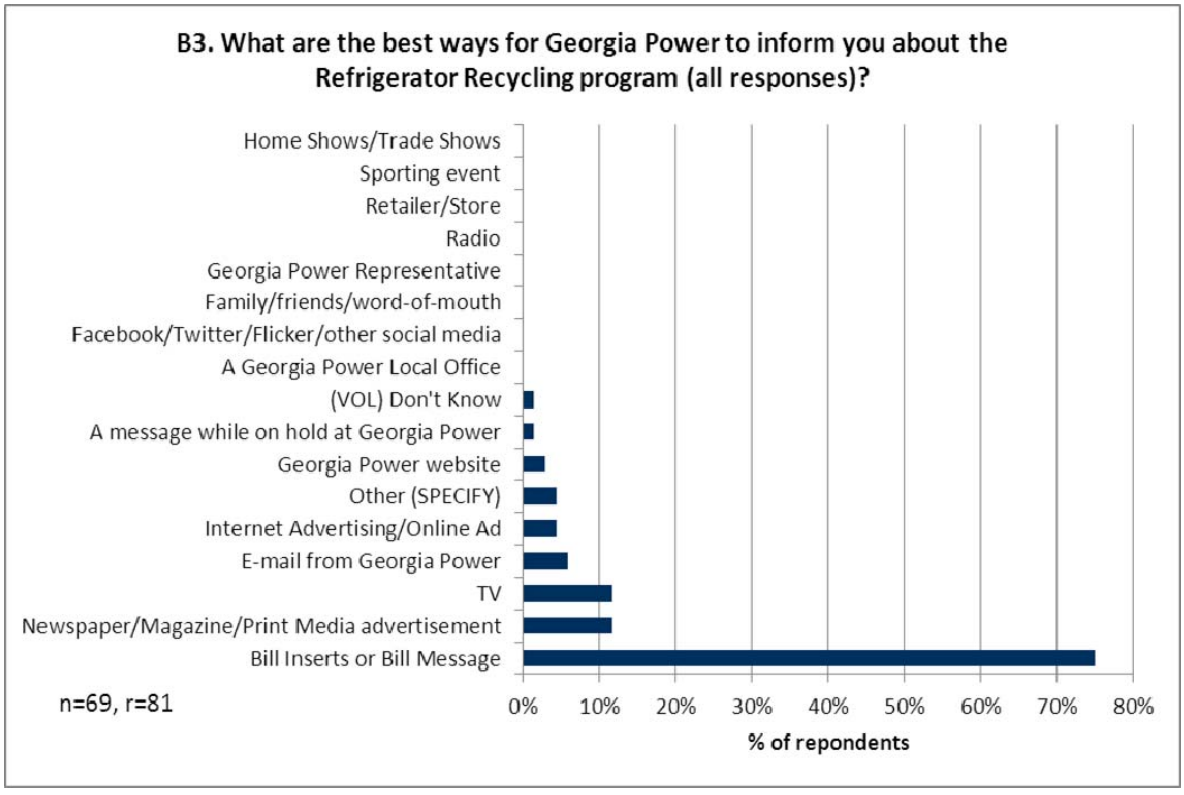
QH10. Which of the following categories best describes your total annual household income before taxes?	**Base**	**55** ***100%***
	Less than $25,000	11 *20%*
	$25,000 up to $50,000	10 *18%*
	More than $50,000 up to $100,000	25 *45%*
	More than $100,000 up to $200,000	5 *9%*
	More than $200,000	4 *7%*
	(VOL) Don't know	1
	(VOL) Refused	14

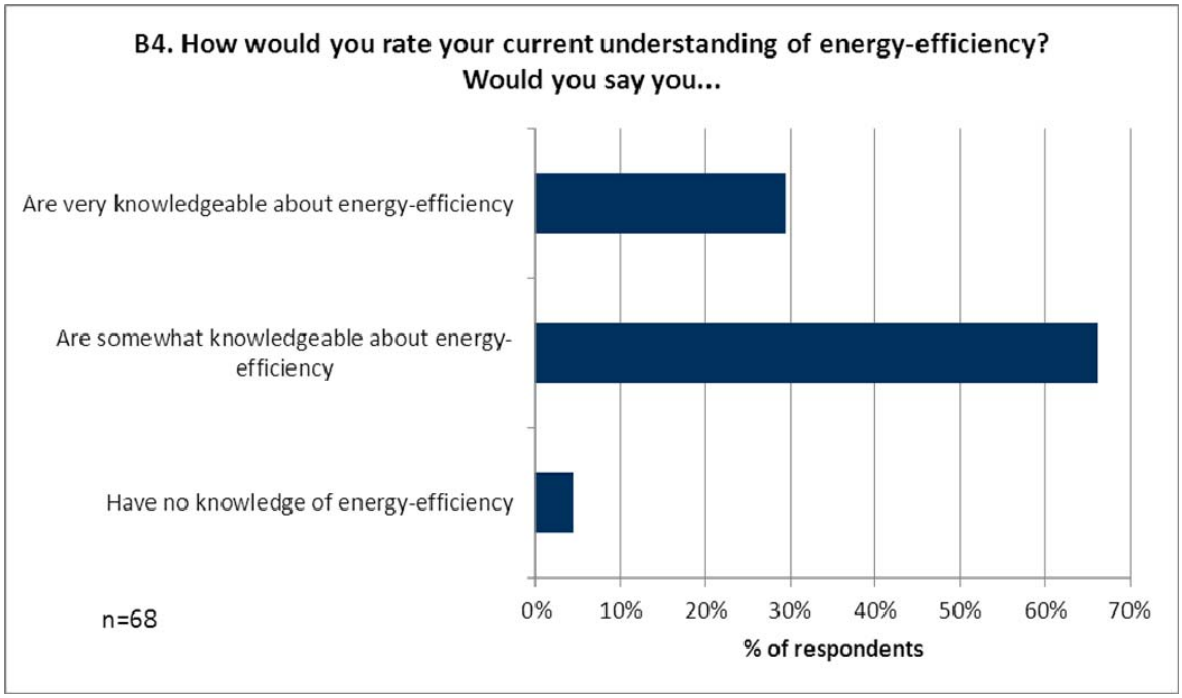
Appendix F DETAILED SURVEY RESULTS: RRP

F.1 PARTICIPATING CUSTOMER SURVEY

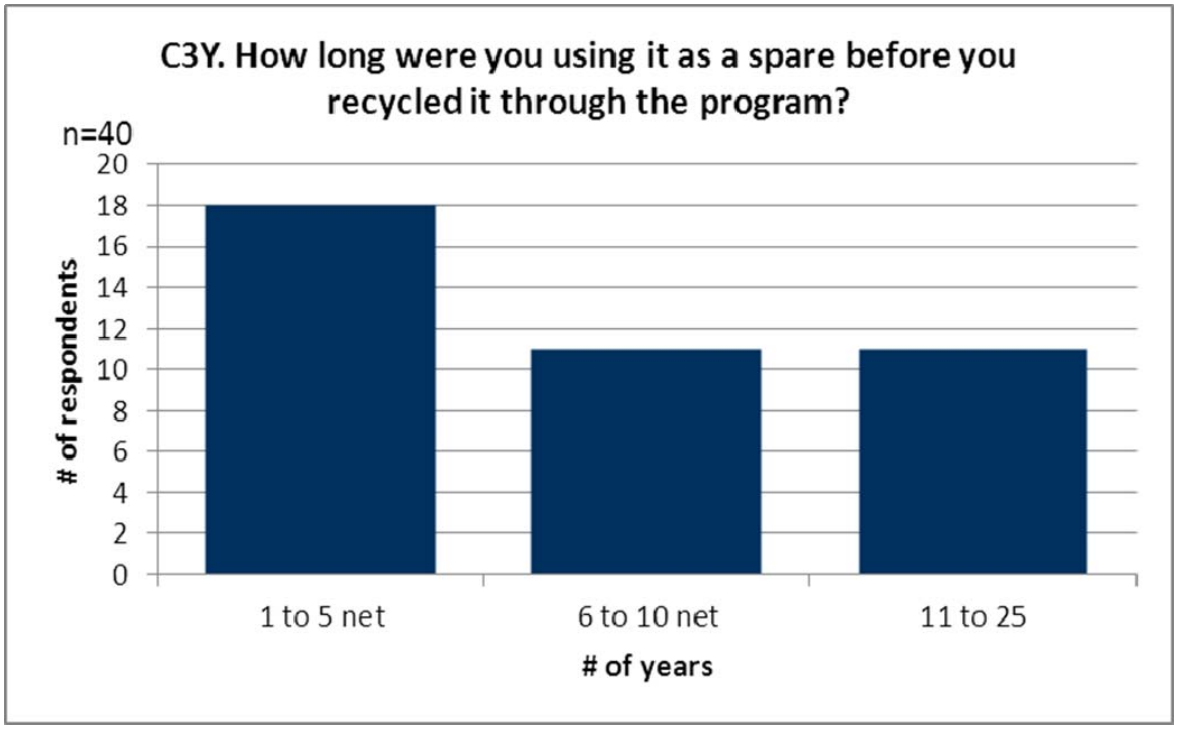
Measure indicator	**Base**	**70** ***100%***
	Refrigerator	49 *70%*
	Freezer	21 *30%*
A1. Program records indicate that you received an incentive for having one or more refrigerator(s) recycled by the program in 2011. Is this correct?	**Base**	**49** ***100%***
	Yes	49 *100%*
	No	- -
A2. How many refrigerators did you recycle through Georgia Power's Refrigerator Recycling program? [	**Base**	**49** ***100%***
	1	45 *92%*
	2	4 *8%*
A3. Program records indicate that you received an incentive for having one or more freezer(s) recycled by the program in 2011. Is this correct?	**Base**	**21** ***100%***
	Yes	21 *100%*
	No	- -
A4. How many freezers did you recycle through the Georgia Power Refrigerator Recycling program?	**Base**	**21** ***100%***
	1	21 *100%*

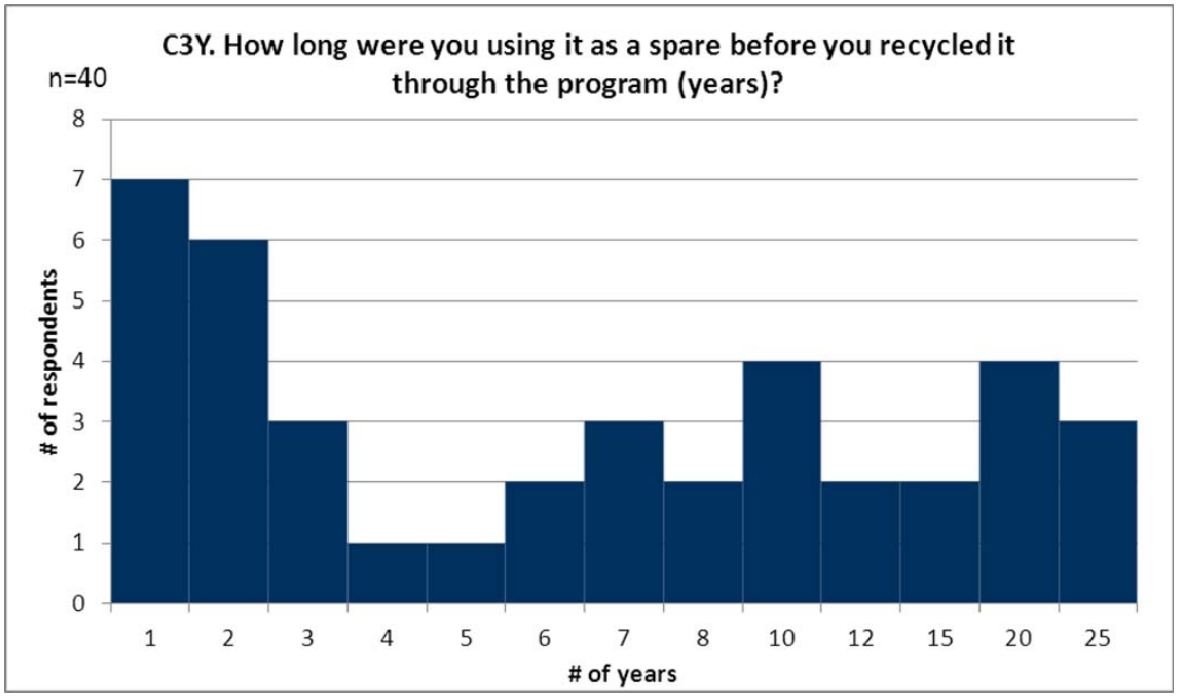

B1. How did you learn about Georgia Power's EarthCents RR program?
Appliance Recycling Contractor
Other Website
Facebook/Twitter/Flickr/Other Social Media
A message while on hold at Georgia Power
Retailer/Store
Georgia Power representative
A Georgia Power Local Office
Georgia Power website
Newspaper/Magazine/Print Media advertisement
Radio/TV advertisement
Internet Advertising/Online Advertisement
Family/friend/neighbor/colleague
Georgia Power Bill Insert or Bill Message
0%
10%
20%
30%
40%
50%
60%
70%
n=72
% of respondents

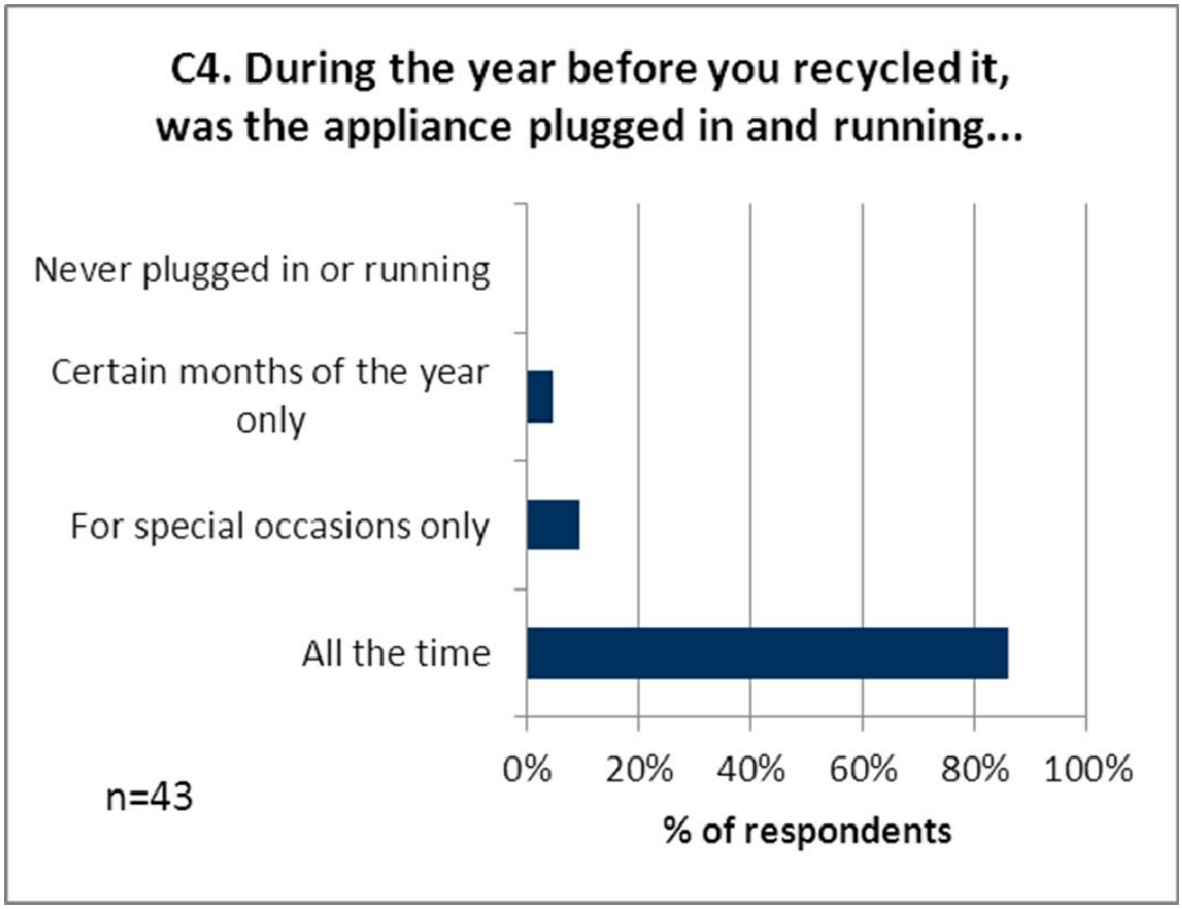

B3. What are the best ways for Georgia Power to inform you about the Refrigerator Recycling program (all responses)?
Home Shows/Trade Shows
Sporting event
Retailer/Store
Radio
Georgia Power Representative
Family/friends/word-of-mouth
Facebook/Twitter/Flicker/other social media
A Georgia Power Local Office
(VOL) Don't Know
A message while on hold at Georgia Power
Georgia Power website
Other (SPECIFY)
Internet Advertising/Online Ad
E-mail from Georgia Power
TV
Newspaper/Magazine/Print Media advertisement
Bill Inserts or Bill Message
0%
10%
20%
30%
40%
50%
60%
70%
80%
n=69, r=81
% of repondents



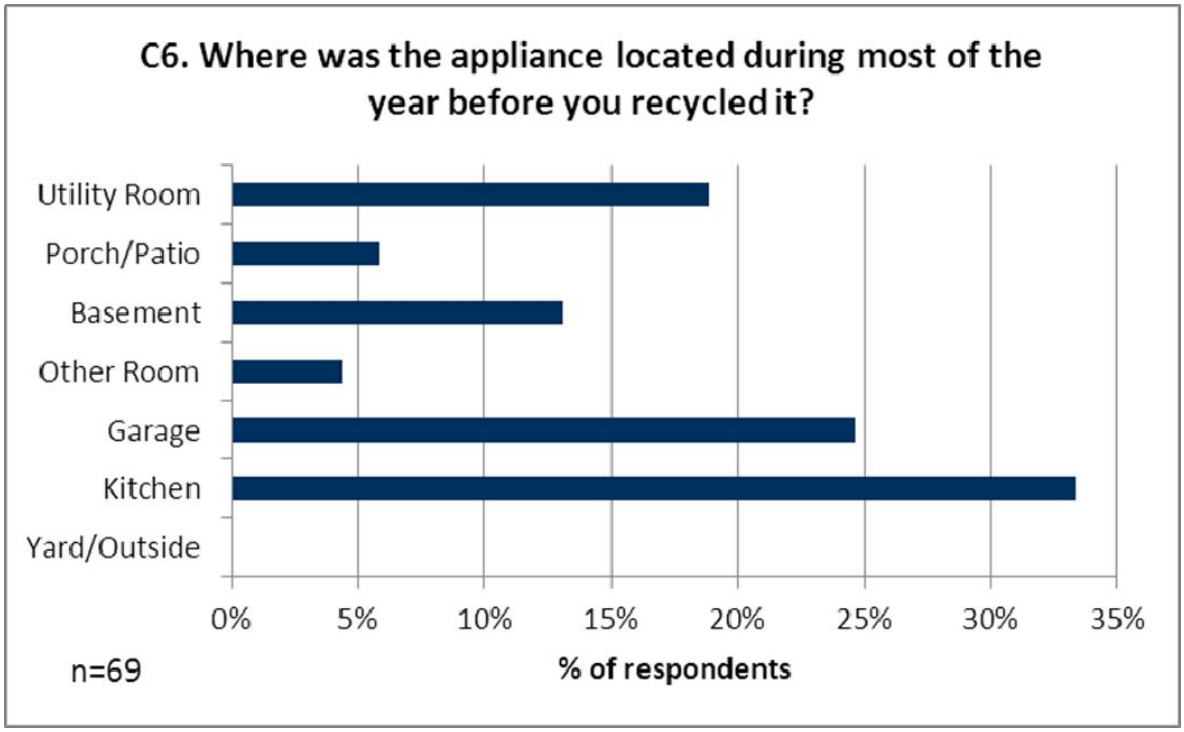
C1. Please answer these questions about an appliance you discarded that was a secondary unit, or if not, the appliance you discarded most recently. Can you please tell me if this appliance was a refrigerator or a freezer?	**Base**	**4** ***100%***
	Refrigerator	4 *100%*
	Freezer	- -
C2. During the time just before you decided you no longer needed the appliance, was it being used as your main appliance, or had it been a secondary or spare?	**Base**	**69** ***100%***
	Main	25 *36%*
	Secondary or Spare	44 *64%*
	(VOL) Don't Know	1
C3. How long were you using it as a spare before you recycled it through the program?	**Base**	**41** ***100%***
	Months	2 *5%*
	Years	39 *95%*
	(VOL) Don't Know	3


C3Y. How long were you using it as a spare before you recycled it through the program?
n=40
# of respondents
20
18
16
14
12
10
8
6
4
2
0
1 to 5 net
6 to 10 net
11 to 25
# of years

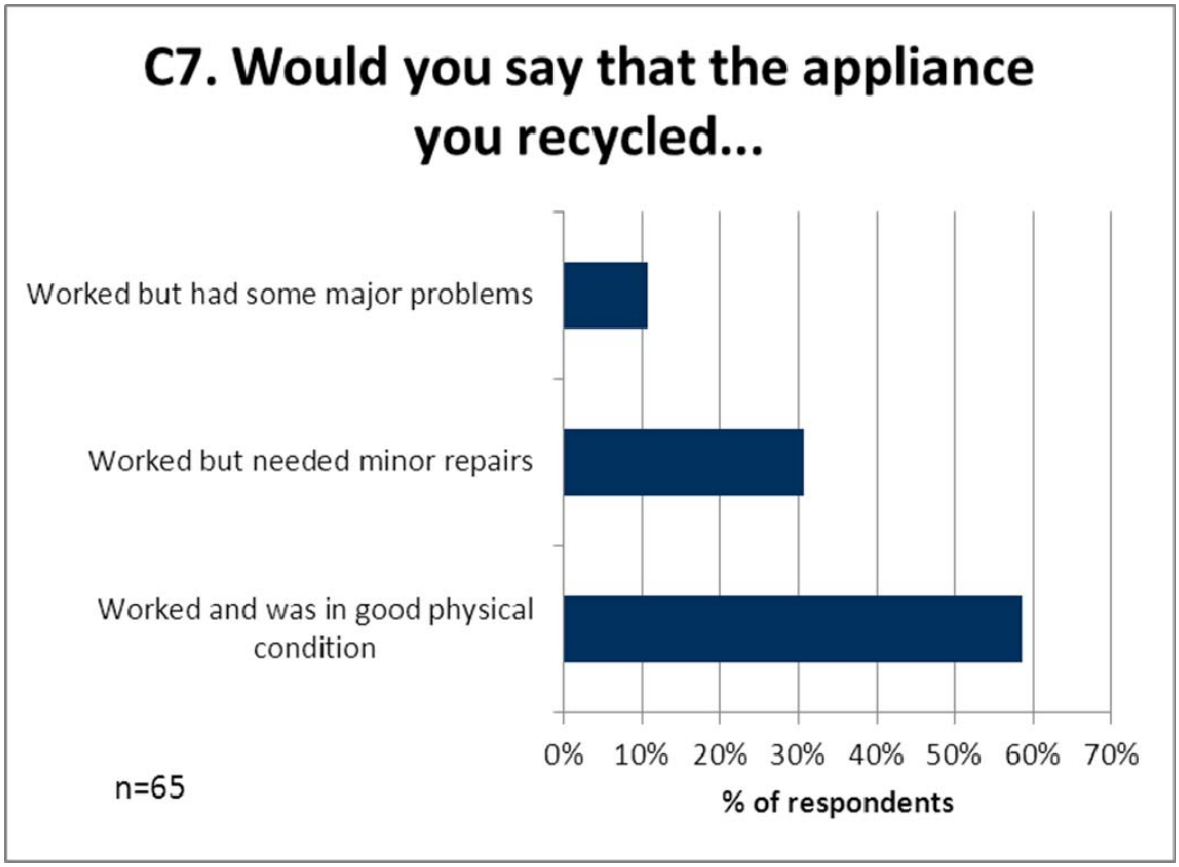

C3Y. How long were you using it as a spare before you recycled it through the program (years)?
n=40
# of respondents
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
10
12
15
20
25
# of years



C5. If you were to add up the total time it was running as a spare in the last year before you recycled it how many months would that be?	Base	6 *100%*
	1	2 *33%*
	3	1 *17%*
	5	1 *17%*
	8	1 *17%*
	9	1 *17%*



	Verbatim Response	16 Responses
C6. Where was theappliance located during most of the year before you recycled it?	Laundry room	*38%*
	Storage or utility room	*38%*
	Recreational room or den	*12%*
	loo house	*6%*
	pantry	*6%*

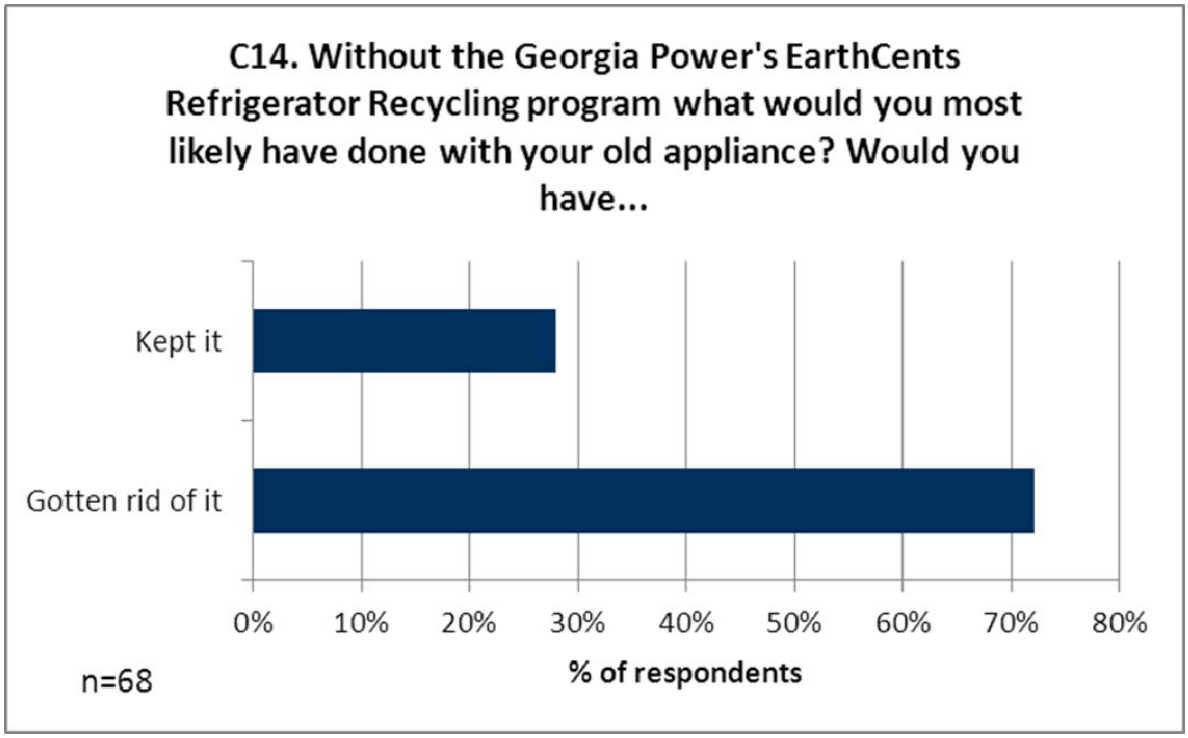


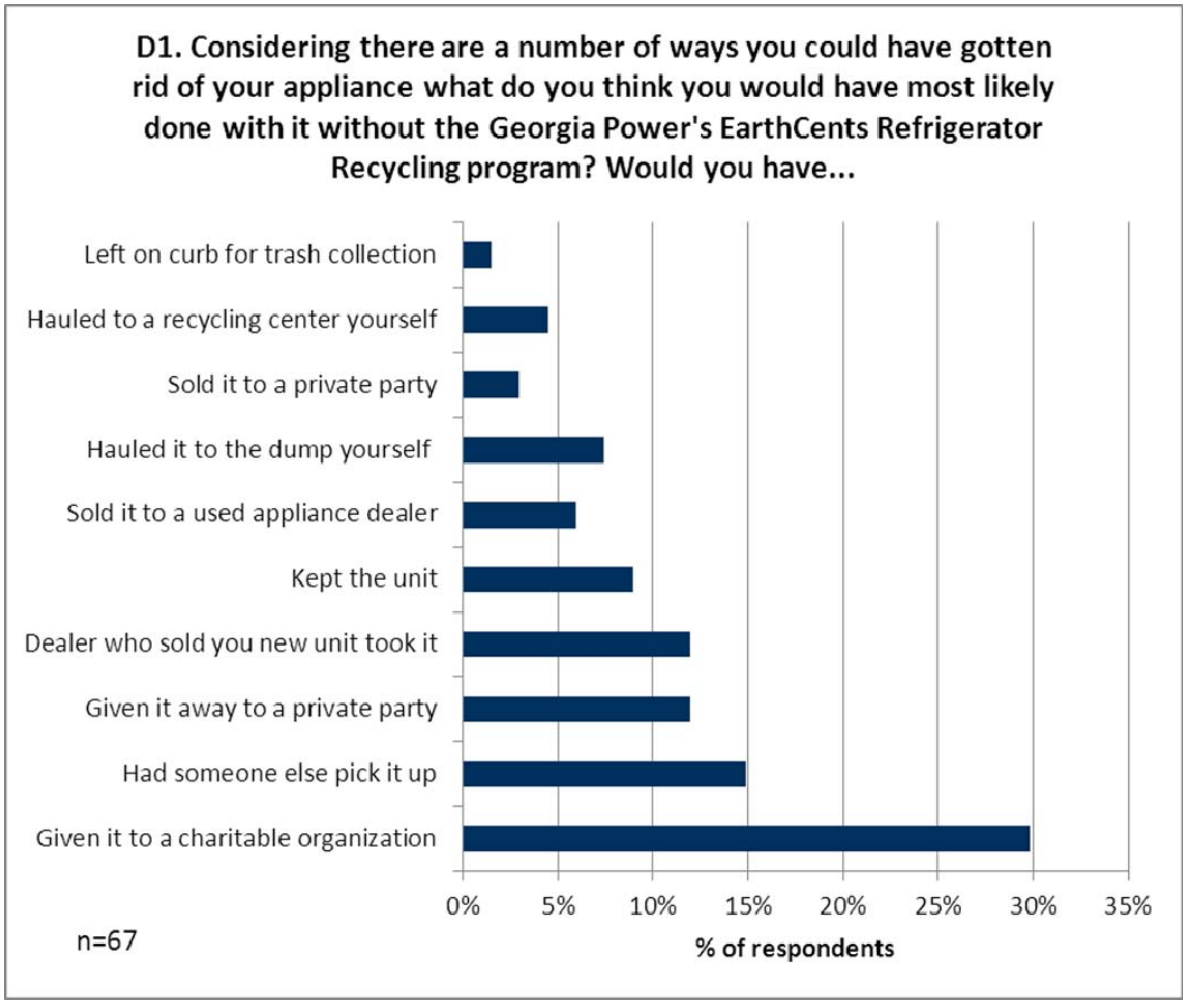
Net to Gross battery:

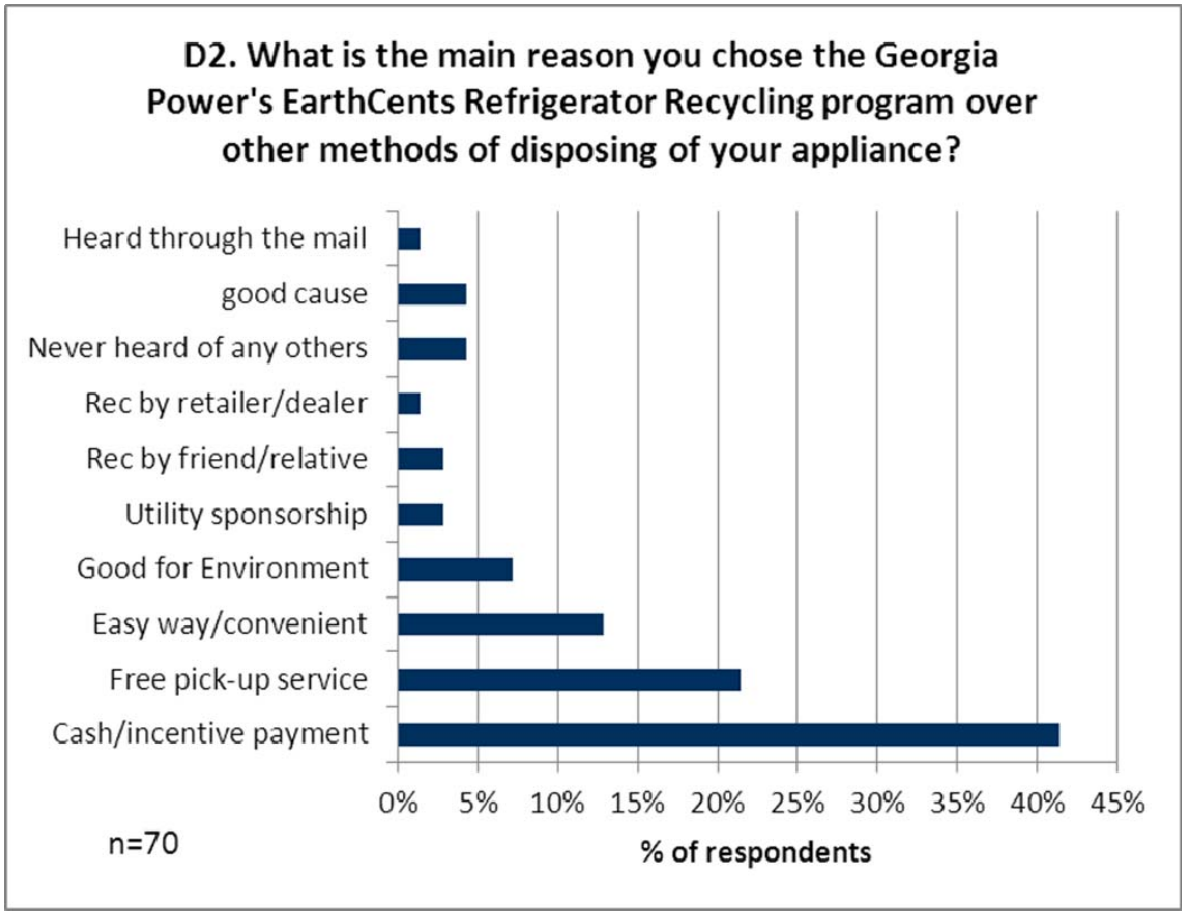
C8. Did you get a new [+appli+] to replace the one you recycled?	**Base**	**70** ***100%***
	Yes	37 *53%*
	No	33 *47%*
C9. Do you plan to get a replacement appliance in the near future?	**Base**	**33** ***100%***
	Yes	6 *18%*
	No	26 *79%*
C10. Would you have purchased the new [+appli+] without the $35 incentive you received for recycling the old one?	**Base**	**36** ***100%***
	Yes	35 *97%*
	No	1 *3%*
	(VOL) Don't Know	1

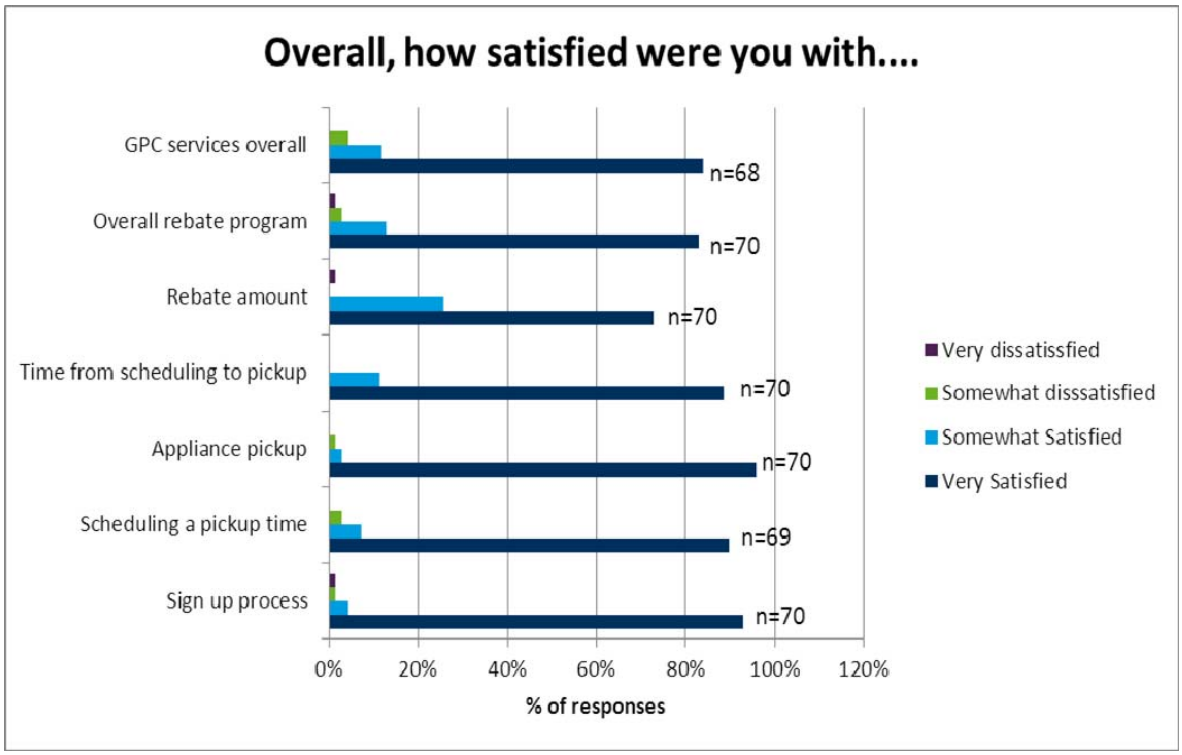
C11. Just to confirm: you would NOT have replaced your old [+appli+] without the Georgia Power incentive for recycling it. Is that correct?	**Base**	**1** ***100%***
	Correct	- -
	Incorrect	1 *100%*
C12. Is the new [+appli+] an ENERGY STAR or high efficiency model?	**Base**	**36** ***100%***
	Yes	34 *94%*
	No	2 *6%*
	(VOL) Don't Know	1
C13. Had you already considered getting rid of the old [+appli+] before hearing about Georgia Power's EarthCents Refrigerator Recycling program?	**Base**	**69** ***100%***
	Yes	46 *67%*
	No	23 *33%*
	(VOL) Don't Know	1
C14. Without the Georgia Power's EarthCents Refrigerator Recycling program what would you most likely have done with your old [+appli+]? Would you have…	**Base**	**68** ***100%***
	Gotten rid of it	49 *72%*
	Kept it	19 *28%*
	(VOL) Don't Know	2

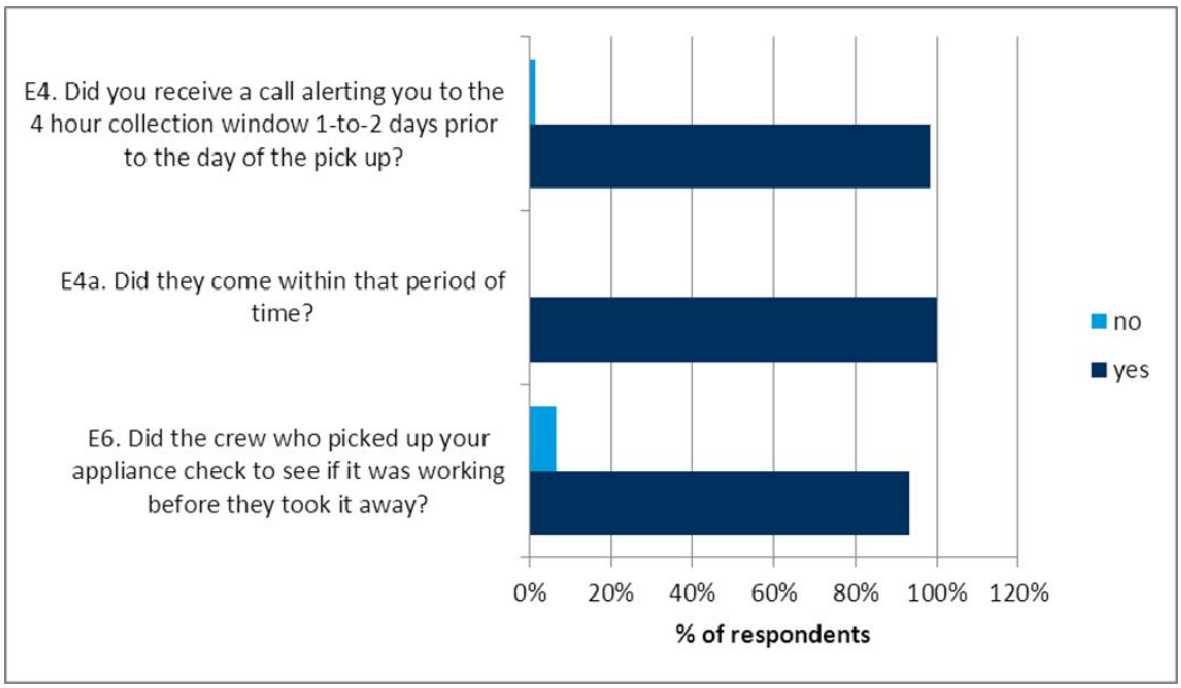
C15. Would you have gotten rid of it within a year of when the program took it, or more than a year later?	**Base**	**43** ***100%***
	Within a year of when the program took it	37 *86%*
	More than a year later	6 *14%*
	(VOL) Don't Know	6
C16. If you had kept it, would you have used it full time, stored it unplugged, or used it occasionally?	**Base**	**19** ***100%***
	Used full time	10 *53%*
	Stored it unplugged	4 *21%*
	Used it occasionally	5 *26%*

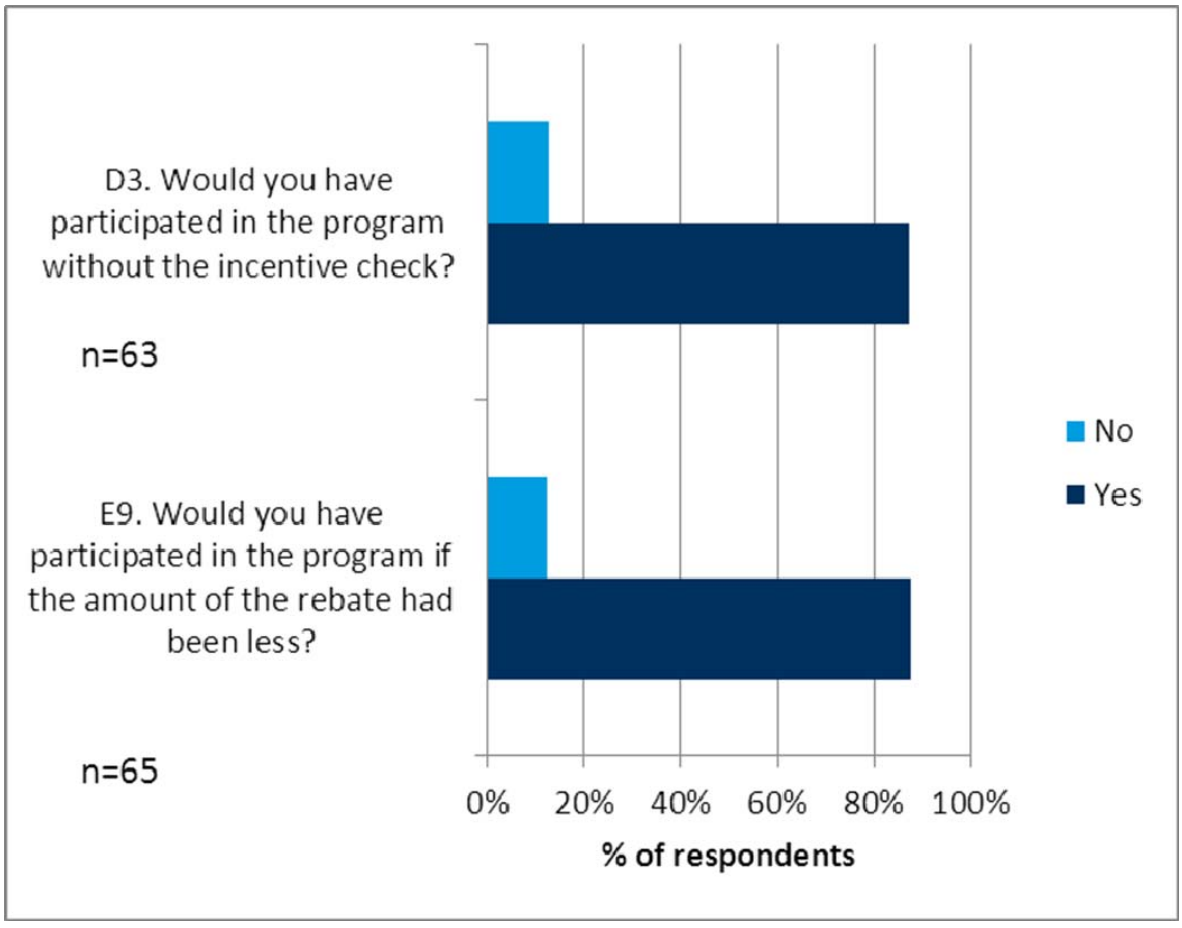



D1. Considering there are a number of ways you could have gotten rid of your appliance what do you think you would have most likely done with it without the Georgia Power's EarthCents Refrigerator Recycling program? Would you have...
Left on curb for trash collection
Hauled to a recycling center yourself
Sold it to a private party
Hauled it to the dump yourself
Sold it to a used appliance dealer
Kept the unit
Dealer who sold you new unit took it
Given it away to a private party
Had someone else pick it up
Given it to a charitable organization
0%
5%
10%
15%
20%
25%
30%
35%
% of respondents
n=67


D2. What is the main reason you chose the Georgia Power's EarthCents Refrigerator Recycling program over other methods of disposing of your appliance?
Heard through the mail
good cause
Never heard of any others
Rec by retailer/dealer
Rec by friend/relative
Utility sponsorship
Good for Environment
Easy way/convenient
Free pick-up service
Cash/incentive payment
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
n=70
% of respondents

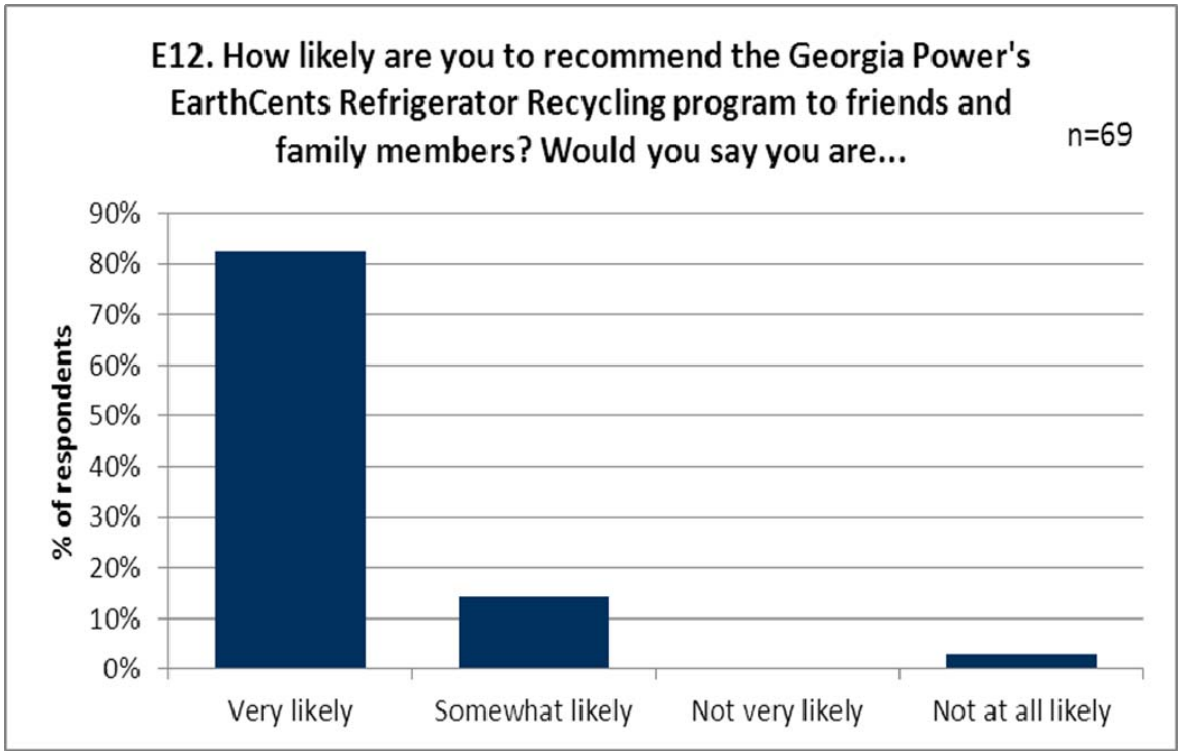

Overall, how satisfied were you with....
GPC services overall
Overall rebate program
Rebate amount
Time from scheduling to pickup
Appliance pickup
Scheduling a pickup time
Sign up process
n=68
n=70
n=70
n=70
n=70
n=69
n=70
0%
20%
40%
60%
80%
100%
120%
% of responses
Very dissatissfied
Somewhat disssatisfied
Somewhat Satisfied
Very Satisfied


E4. Did you receive a call alerting you to the 4 hour collection window 1-to-2 days prior to the day of the pick up?
E4a. Did they come within that period of time?
E6. Did the crew who picked up your appliance check to see if it was working before they took it away?
no
yes
0%
20%
40%
60%
80%
100%
120%
% of respondents

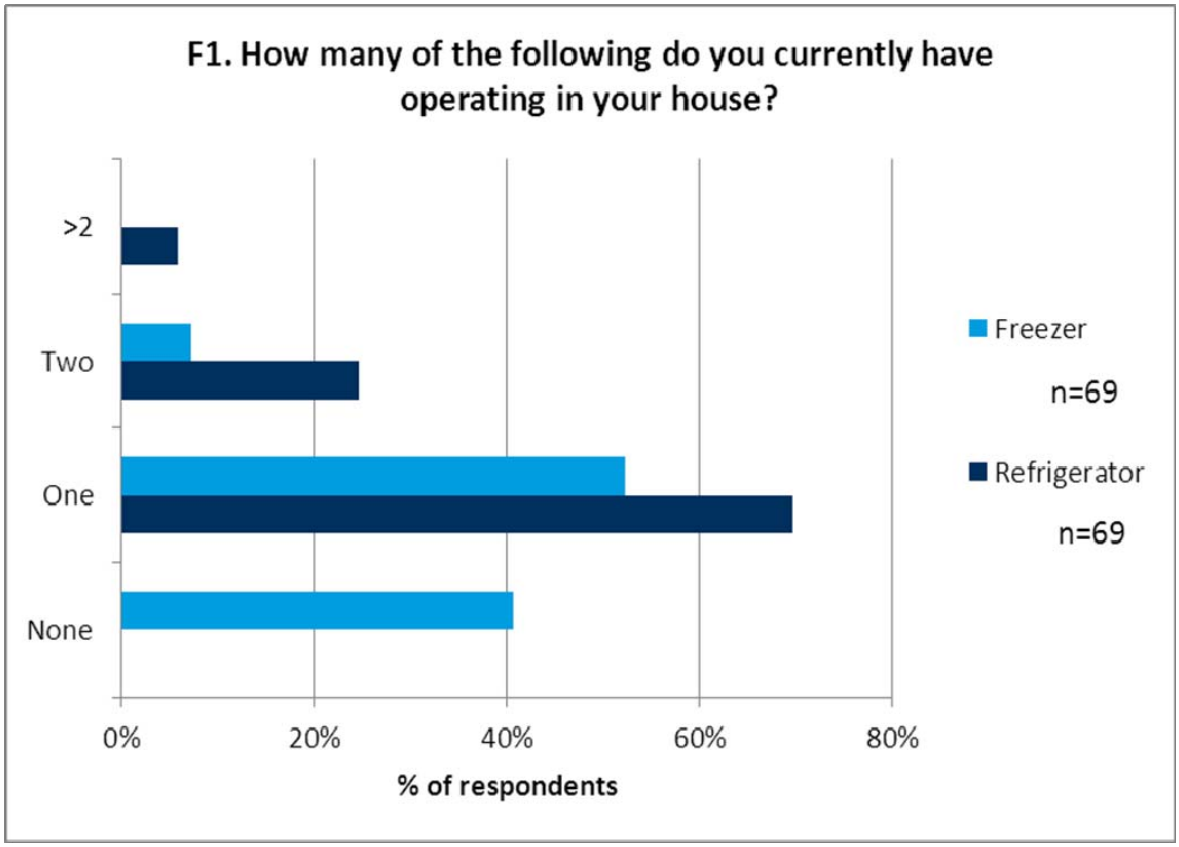

D3. Would you have participated in the program without the incentive check?
n=63
E9. Would you have participated in the program if the amount of the rebate had been less?
n=65
No
Yes
0%
20%
40%
60%
80%
100%
% of respondents

E11_merged. (if E10 is not "Very satisfied") Why do you give it that rating ?	**Base**	**8** ***100%***
	Incentive was too small	**1** ***12%***
	Other (SPECIFY)	**7** ***88%***
	(VOL) Don't Know	**4**

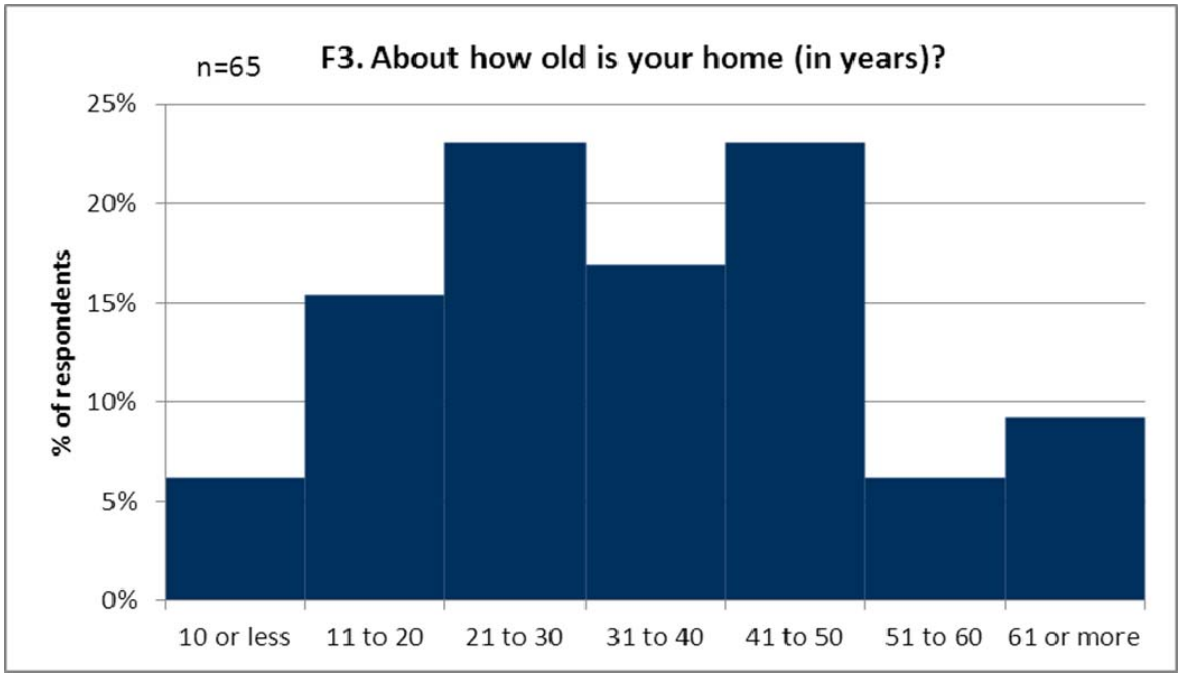
E11_merged. Why do you give it that rating? (other responses)	Responses	7 Responses
	I never received my incentive check. I would still like to receive what is owed.	14%
	I thought the fridge would be rehabbed and reuse and that's not the case. I could have donated it to the Salvation Army. Clearly they're junking it because they cut off the cord.	14%
	I was perfectly satisfied and had no problems with the program. Not sure why I rated as "somewhat satisfied".	14%
	I'm not dissatisfied with the program at all, not sure why I gave it a Somewhat Satisfied rating.	14%
	It took a long time from the time I signed up for the program to the time that they actually called back and said they would be out to pick it up. Response time could be better.	14%
	It was my understanding the old refrigerator was going to be recycled or donated to people in need. I could have junked it myself. I thought it would be refurbished and used to help others. I saw the cord get cut off.	14%
	It's not actually recycling the unit, which is what I expected. I was under the impression it would be reused or donated to the needy and not junked. They immediately cut the power cord off of it.	14%



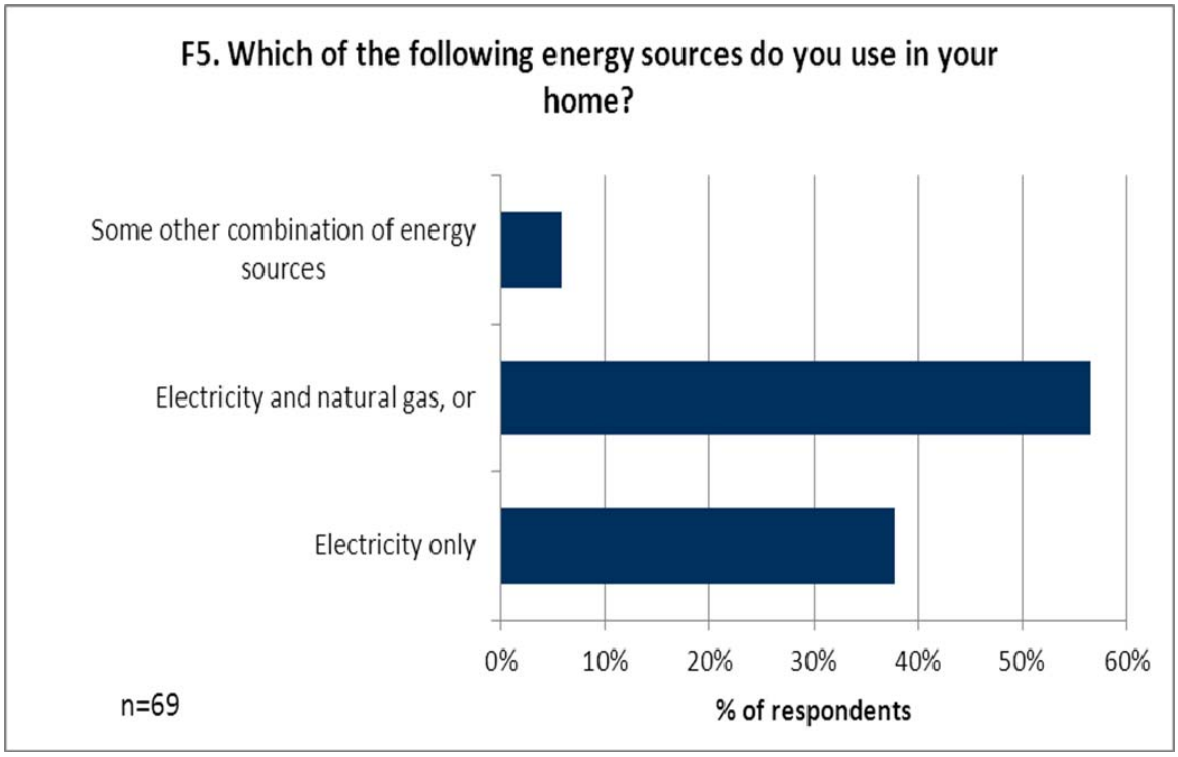
	Responses	10 Responses
E14 other. Is there anything you would suggest to improve the Georgia Power's EarthCents Refrigerator Recycling program?	include other appliances (e.g. washer/dryers)	4 *40%*
	Be clear about what is being done to the appliance/Don't tell people the appliance is going to charity	2 *20%*
	pick-up sooner and work with people's schedules/smaller window	2 *20%*
	More incentive	1 *10%*
	the truck was way too big for my driveway	1 *10%*

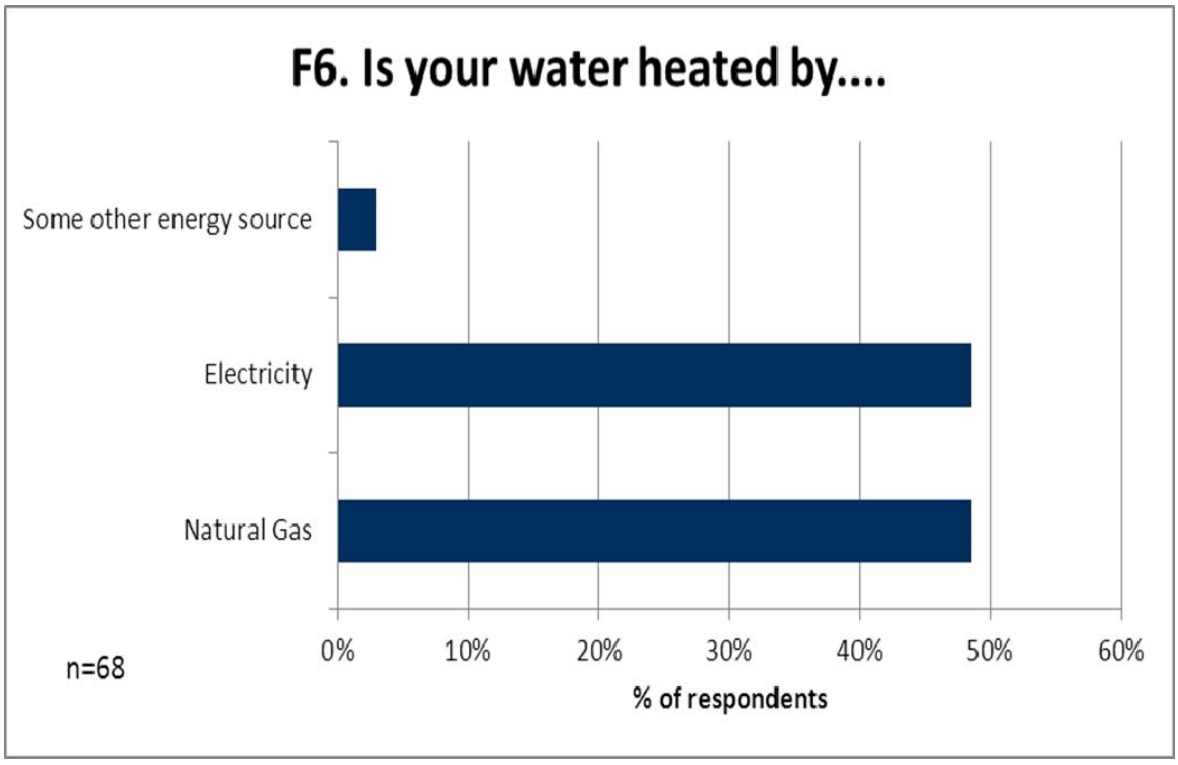


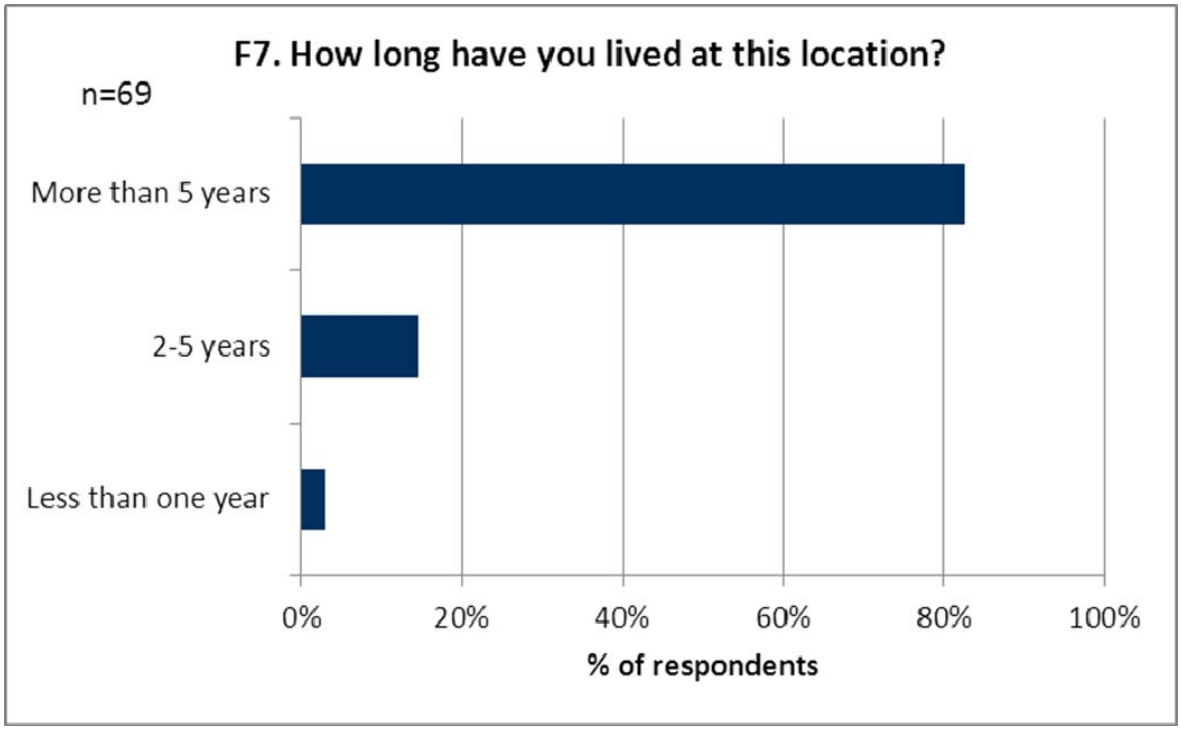
F2. Which of the following best describes your house? Is it a… :	**Base**	**69** ***100%***
	Detached single-family home	65 *94%*
	Townhouse or duplex which share adjacent walls	3 *4%*
	Mobile or manufactured home	1 *1%*
	Apartment or condo in a building with 4 or less units	- -
	Apartment or condo in a building with 5 or more unites	- -
	Other (SPECIFY)	- -
	(VOL) Refused	1



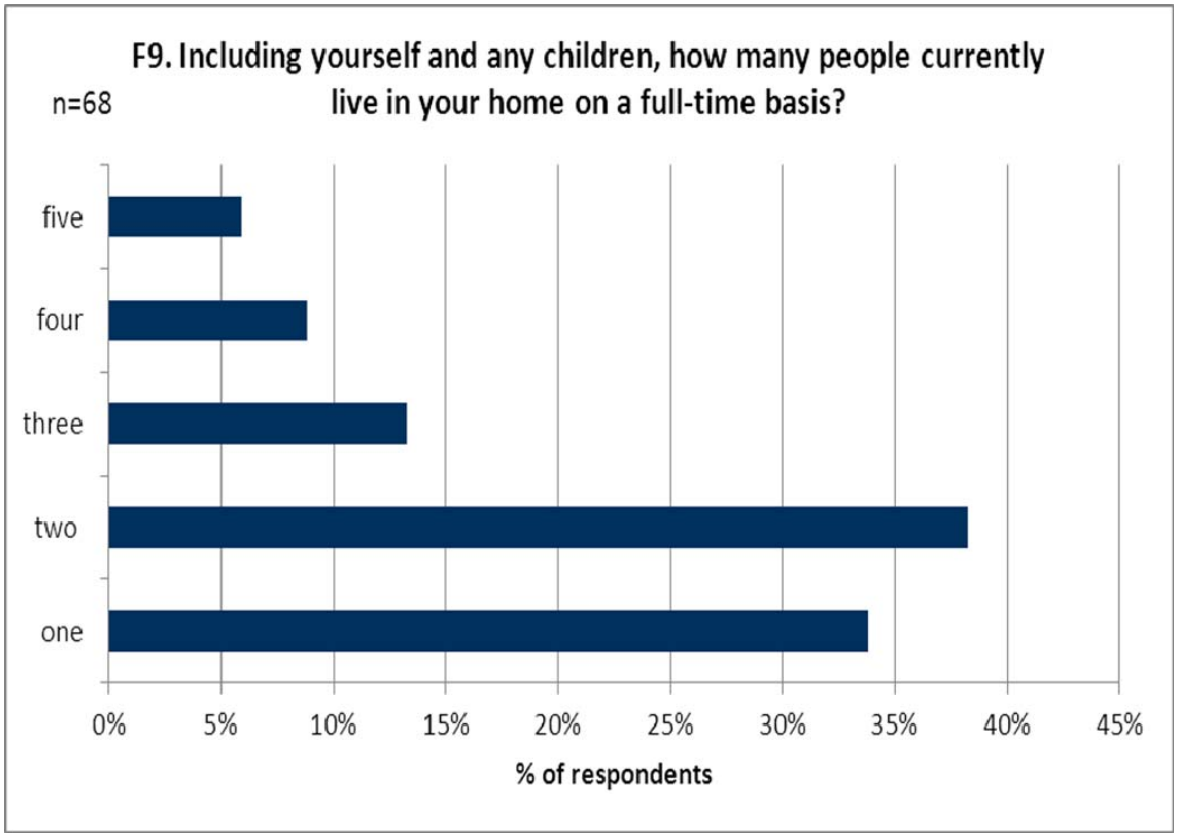
F4. Do you own or rent your home?	**Base**	**69** ***100%***
	Own	67 *97%*
	Rent	2 *3%*
	Other (SPECIFY)	- -
	(VOL) Refused	1


F5. Which of the following energy sources do you use in your home?
Some other combination of energy sources
Electricity and natural gas, or
Electricity only
0%
10%
20%
30%
40%
50%
60%
% of respondents
n=69


F6. Is your water heated by....
Some other energy source
Electricity
Natural Gas
0%
10%
20%
30%
40%
50%
60%
% of respondents
n=68

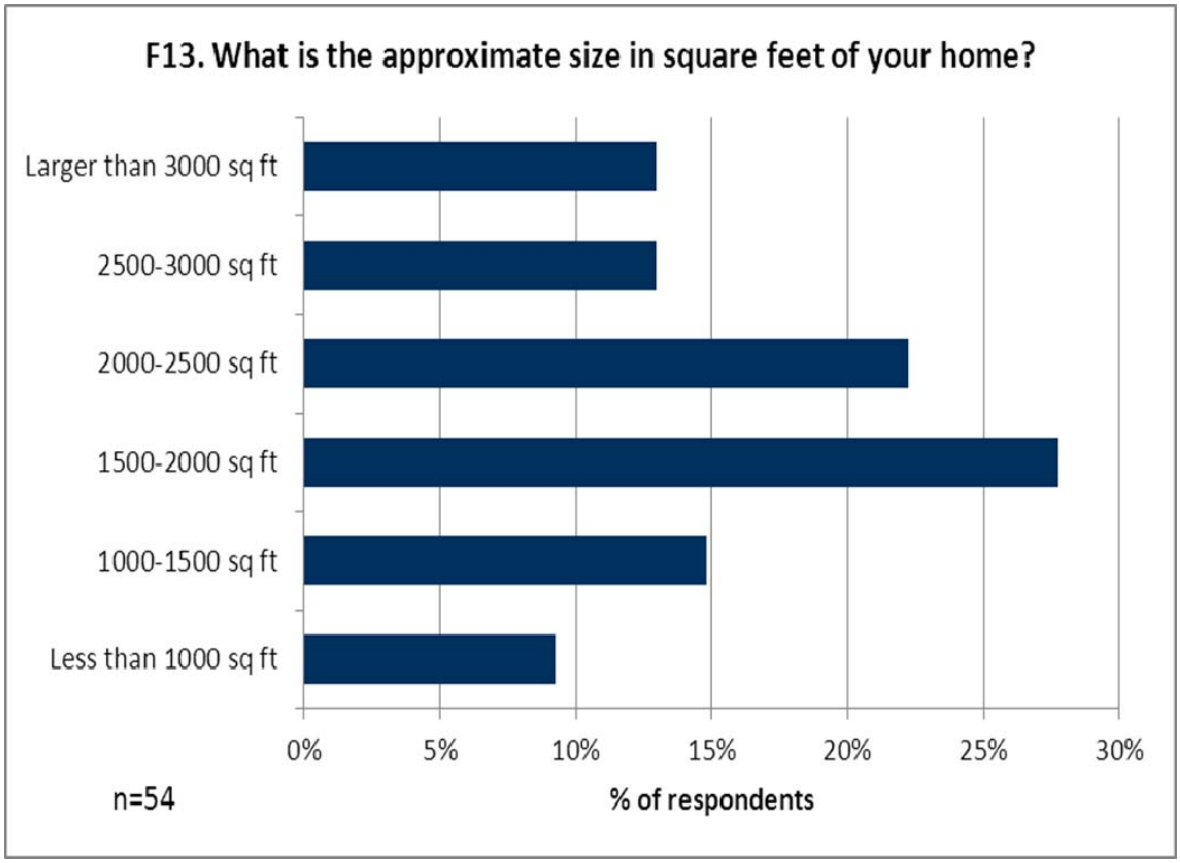


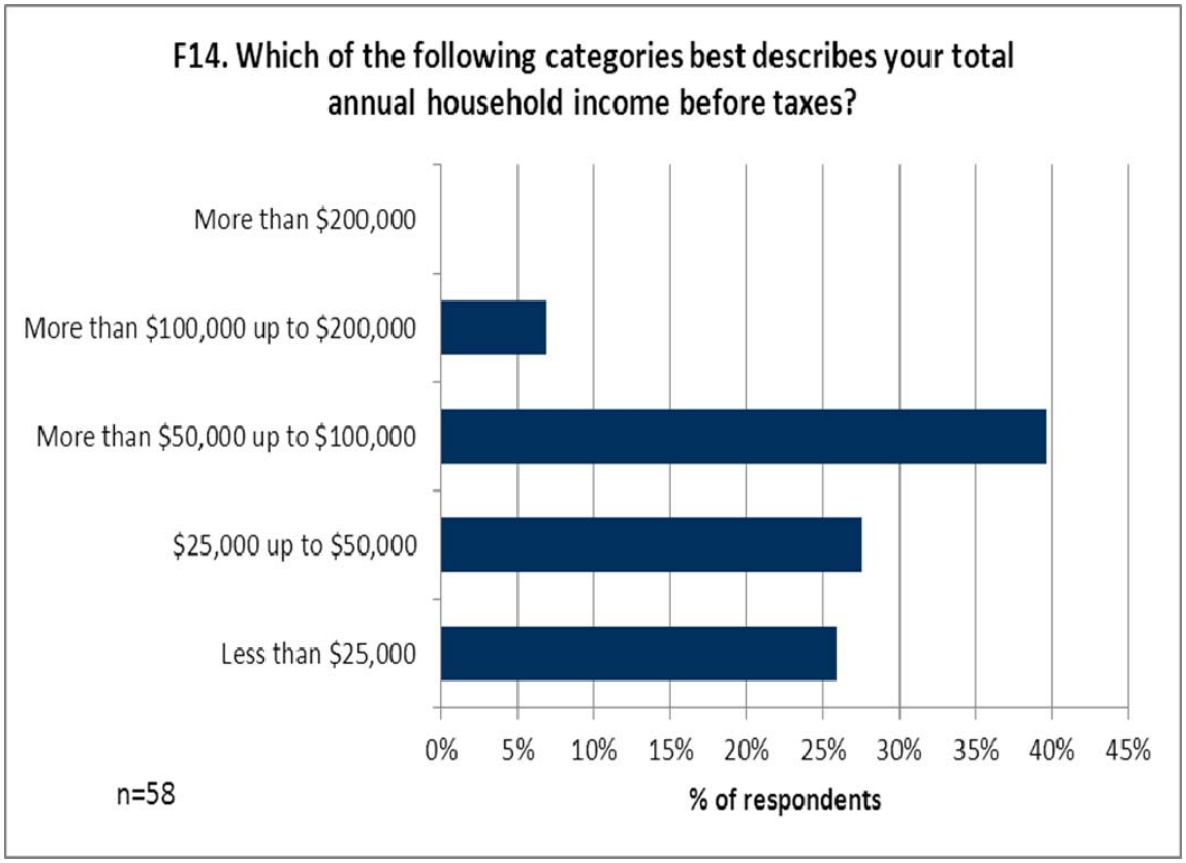
F8. Is your home occupied…	**Base**	**69** ***100%***
	Year round, or	69 *100%*
	On a seasonal basis/vacation home?	- -
	(VOL) Refused	1



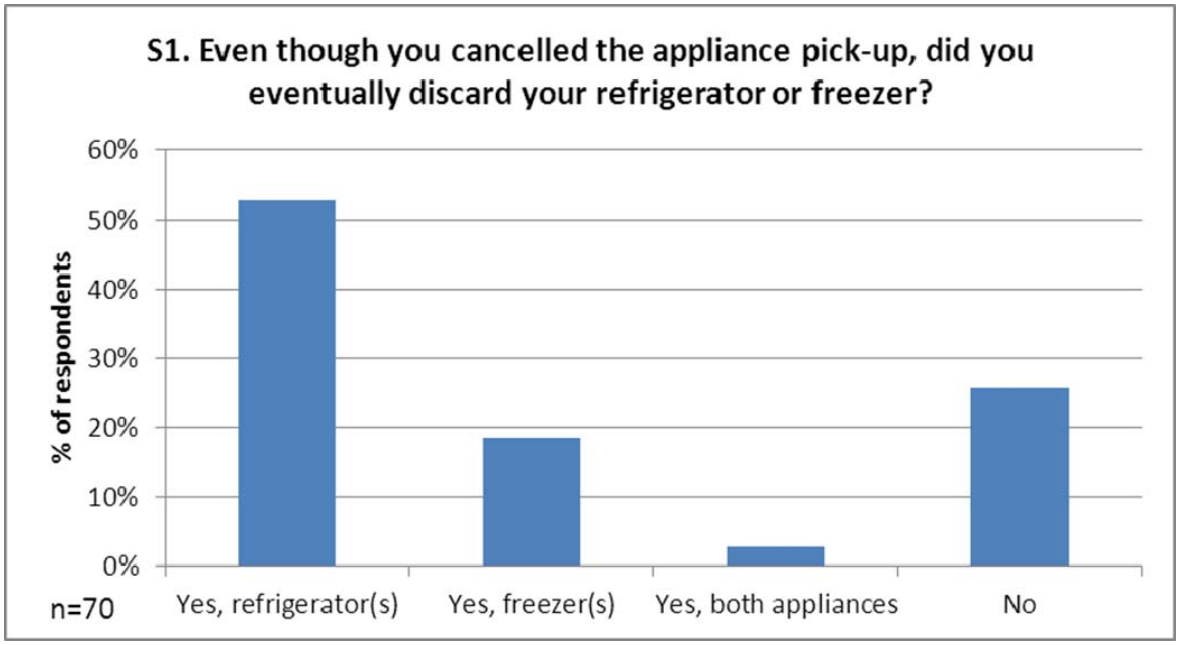
F10. Are any of the people living in your home under the age of 18?	**Base**	**45** ***100%***
	Yes	9 *20%*
	No	36 *80%*
F11. Which of the following categories best describes your age? Just stop me when I get to the right category	**Base**	68 *100%*
	18 to 24	- -
	25 to 34	- -
	35 to 44	2 *3%*
	45 to 54	11 *16%*
	55 to 64	16 *24%*
	65 or over	39 *57%*
	(VOL) Refused	2

F12. Do you or members of your family speak a language other than English in your home on a regular basis?	**Base**	69 *100%*
	Yes	2 *3%*
	No	67 *97%*
	(VOL) Refused	1
F12A. Which language?	**Base**	2 *100%*
	Gave response	2 *100%*
	No comments/suggestions	- -
F12a. Which language?	**Base**	2 *100%*
	Japanese	1 *50%*
	spanish	1 *50%*




F14. Which of the following categories best describes your total annual household income before taxes?
More than $200,000
More than $100,000 up to $200,000
More than $50,000 up to $100,000
$25,000 up to $50,000
Less than $25,000
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
% of respondents
n=58

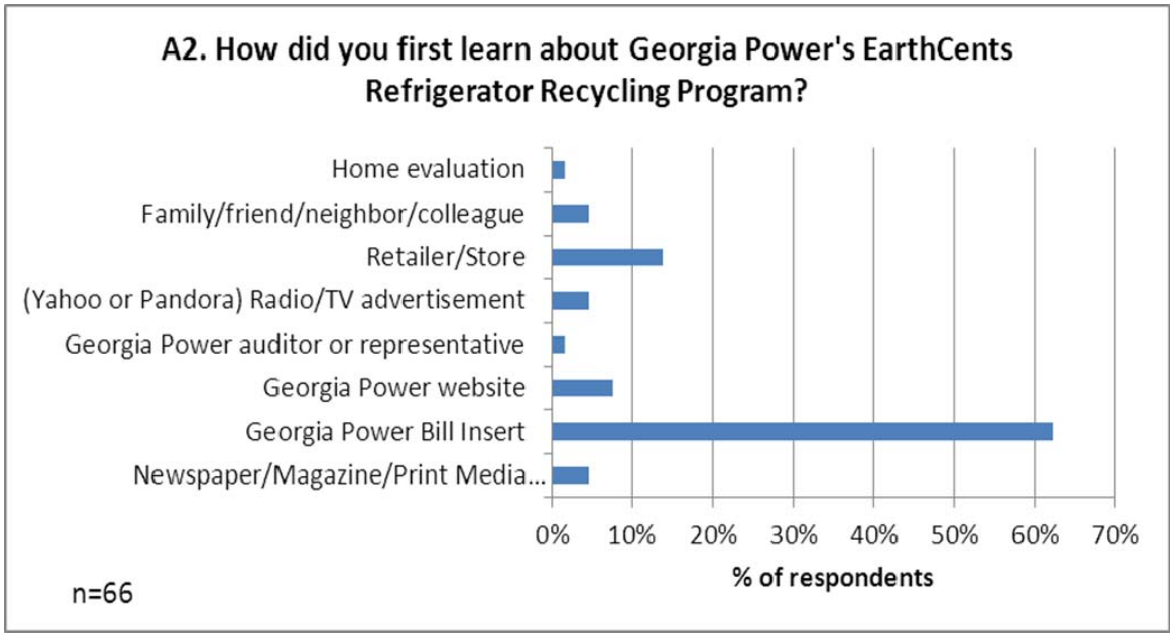
F.2 CANCELLATION CUSTOMER SURVEY



S2. Is the appliance still working?	**Base**	**70** ***100%***
	Yes	70 *100%*
	No	- -
	(VOL) Don't Know	- -
	(VOL) Refused	- -
S3. Did you eventually have the appliance(s) picked up through Georgia Power's EarthCents Refrigerator Recycling Program?	**Base**	**69** ***100%***
	Yes	- -
	No	69 *100%*
	(VOL) Don't Know	1
	(VOL) Refused	- -

FS to discuss with s1

A1. Were you aware of Georgia Power's EarthCents Refrigerator Recycling Program before you decided to recycle your appliance, or did you find out about the program while looking for a way to get rid of it or recycle it?	**Base**	**67** ***100%***
	I was aware of Georgia Power's program when I decided to get rid of my appliance	44 *66%*
	I found out about it while looking for a way to get rid of / recycle my appliance	23 *34%*
	(VOL) Don't Know	3
	(VOL) Refused	- -

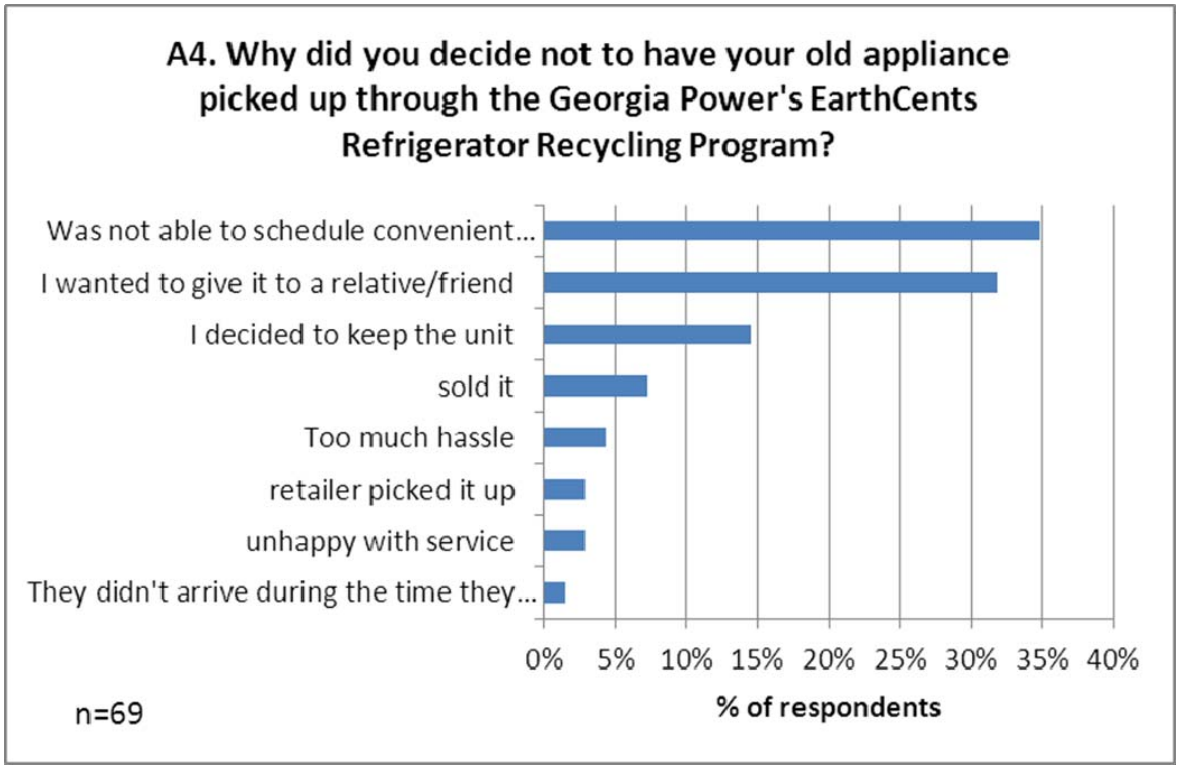


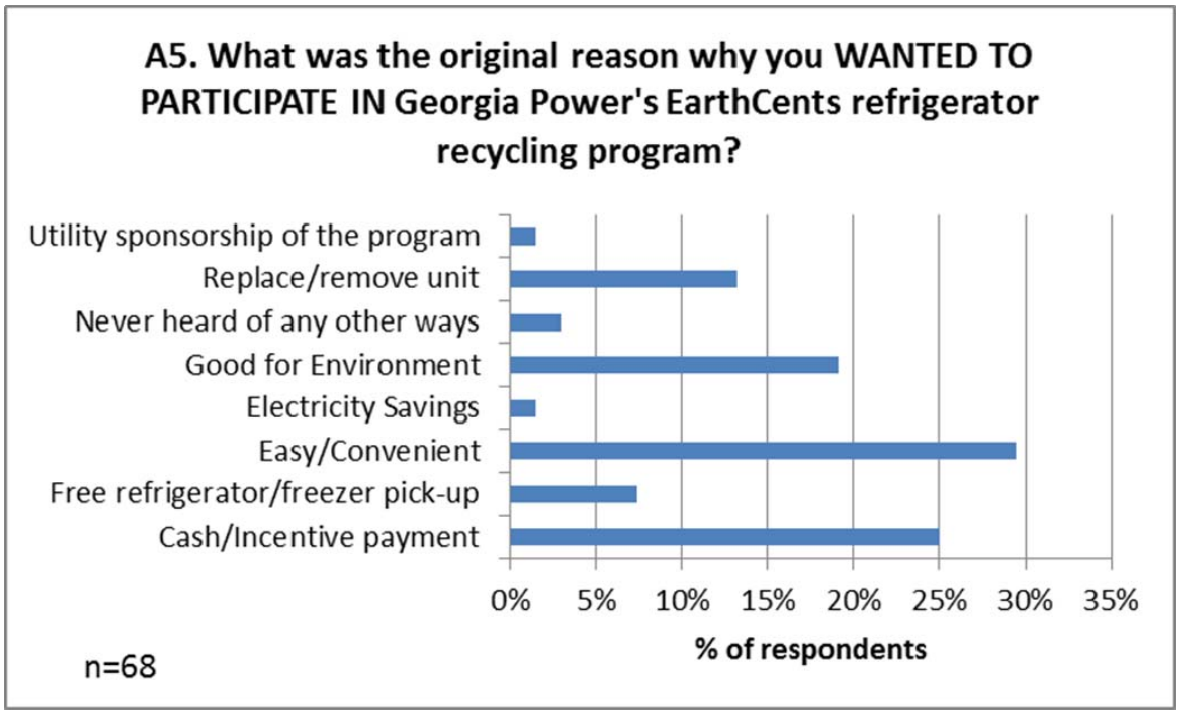
A2. How did you first learn about Georgia Power's EarthCents Refrigerator Recycling Program?	**Base**	**3** ***100%***
	Man who installed new fridge	1 *33%*
	Radio	1 *33%*
	Througfh home evaluation	1 *33%*

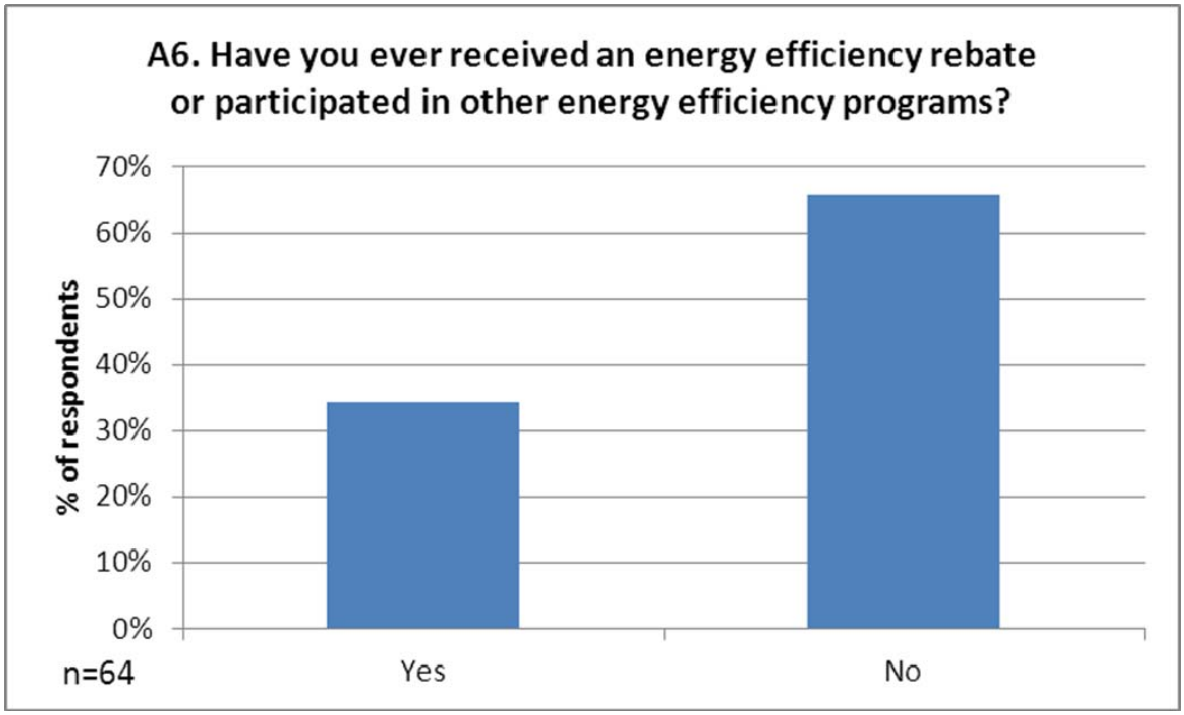
A3. How useful was this source of information? ([+a2+]) Was it...	**Base**	**50** ***100%***
	Very useful	41 *82%*
	Somew hat useful	6 *12%*
	Not very useful	2 *4%*
	Not at all useful	1 *2%*
	(VOL) Don't Know	1
	(VOL) Refused	1

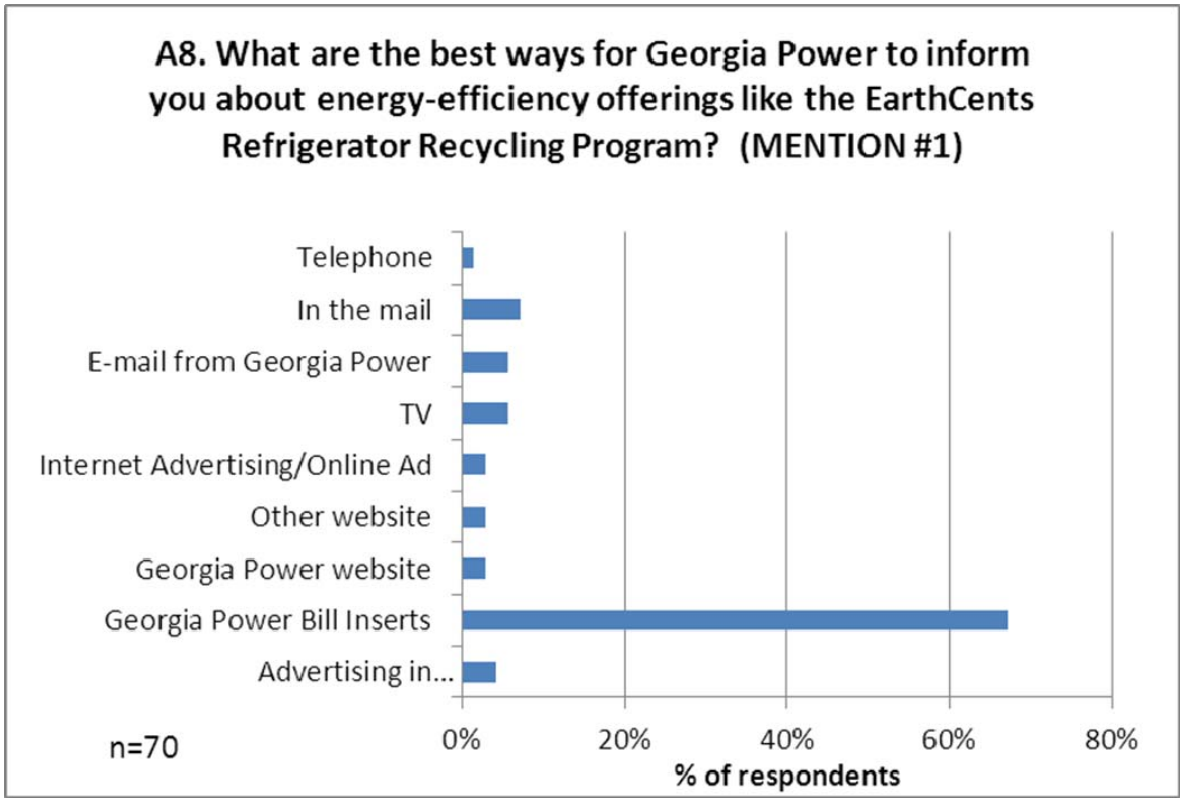
crosstabbed w ith a2

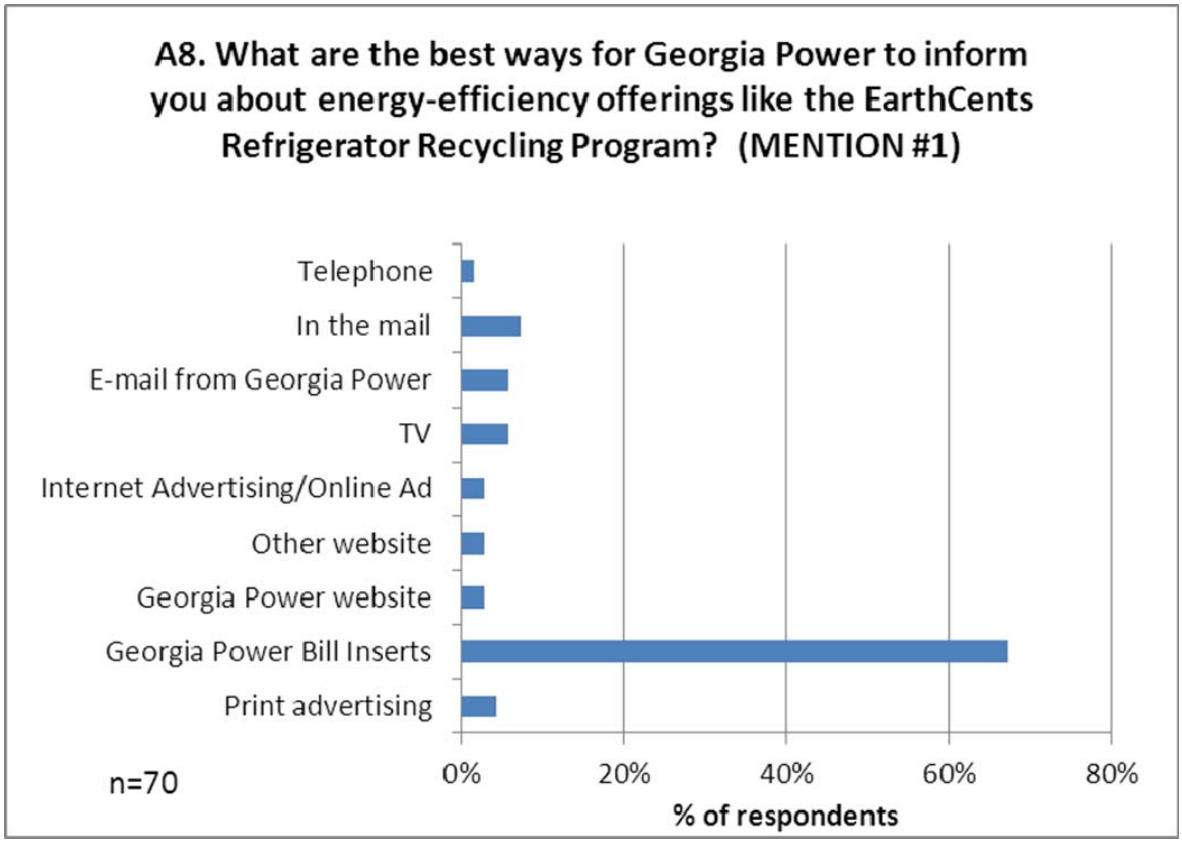
[INTERVIEWER: RECORD VERBATIM. PROBE FOR HOW TO IMPROVE THE SOURCE OF INFORMATION AND NOT THE PROGRAM OVERALL] (A3B. How could this information source be more useful to you? ([+a2+]) [VERBATIM RESPONSE]	**Base**	**5 Responses**
	MAYBE EXPLAIN WHY THE APPLIANCE HAD TO STILL BE WORKING TO BE IN THE PROGRAM AND WHY IT HAD TO BE A CERTAIN SIZE.	20%
	don't know	20%
	just better w ays of getting the info outr there	20%
	less w ords more to the point	20%
	tell us "if you can't w ait 2 or 3 months for a pickup, then don't call us"	20%

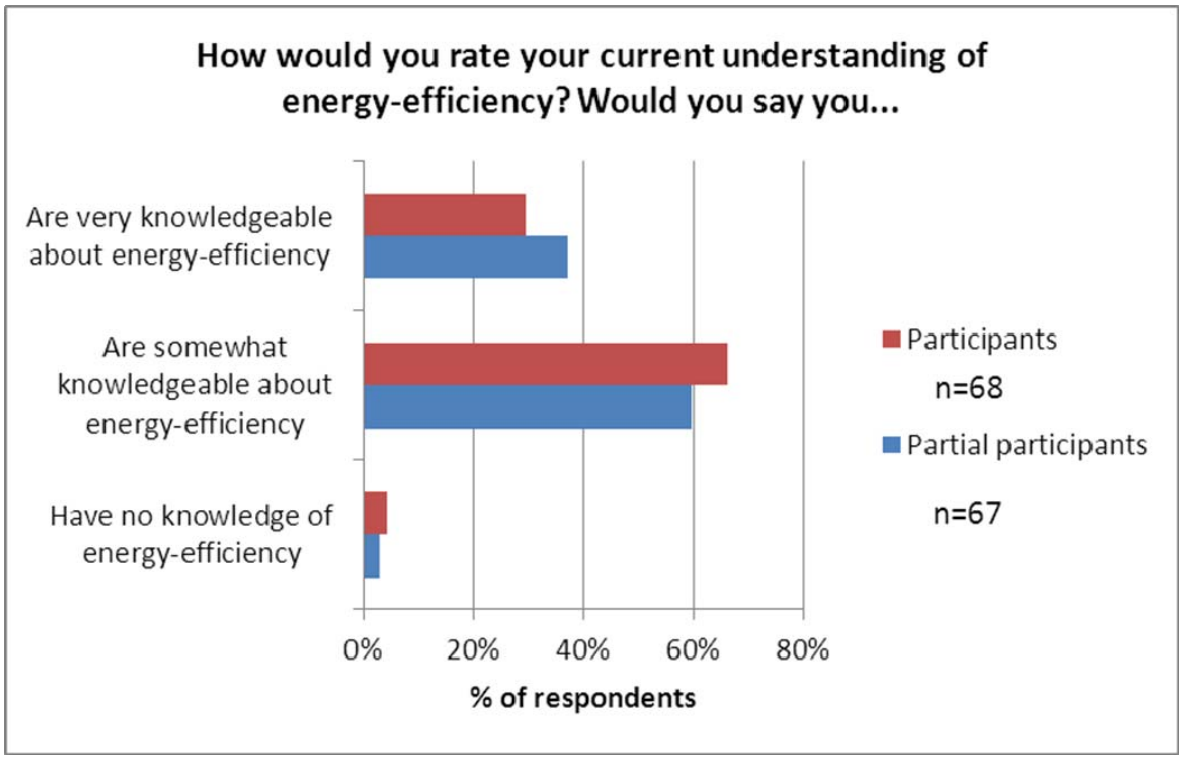

A4. Why did you decide not to have your old appliance picked up through the Georgia Power's EarthCents Refrigerator Recycling Program?
Was not able to schedule convenient...
I wanted to give it to a relative/friend
I decided to keep the unit
sold it
Too much hassle
retailer picked it up
unhappy with service
They didn't arrive during the time they...
0%
5%
10%
15%
20%
25%
30%
35%
40%
% of respondents
n=69

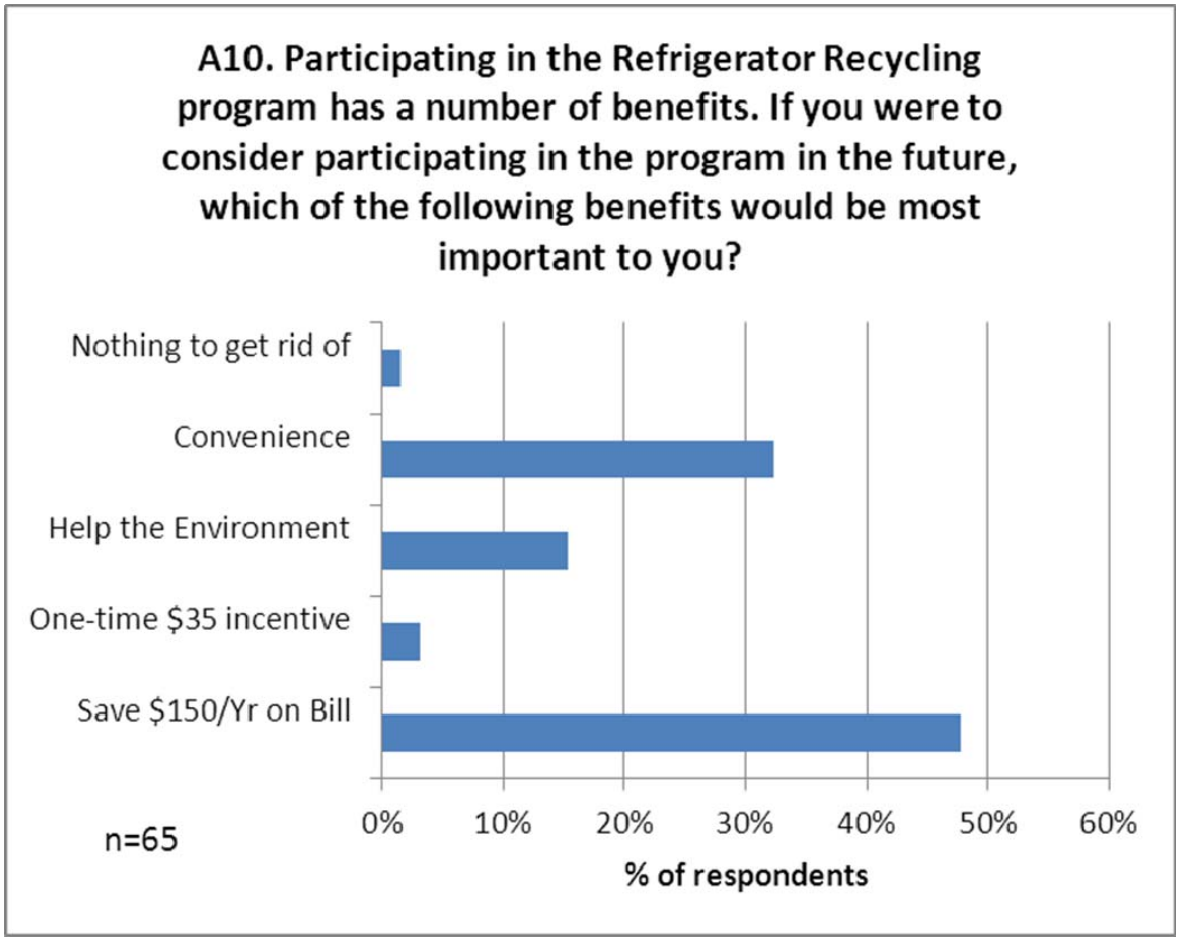

A5. What was the original reason why you WANTED TO PARTICIPATE IN Georgia Power's EarthCents refrigerator recycling program?
Utility sponsorship of the program
Replace/remove unit
Never heard of any other ways
Good for Environment
Electricity Savings
Easy/Convenient
Free refrigerator/freezer pick-up
Cash/Incentive payment
0%
5%
10%
15%
20%
25%
30%
35%
% of respondents
n=68

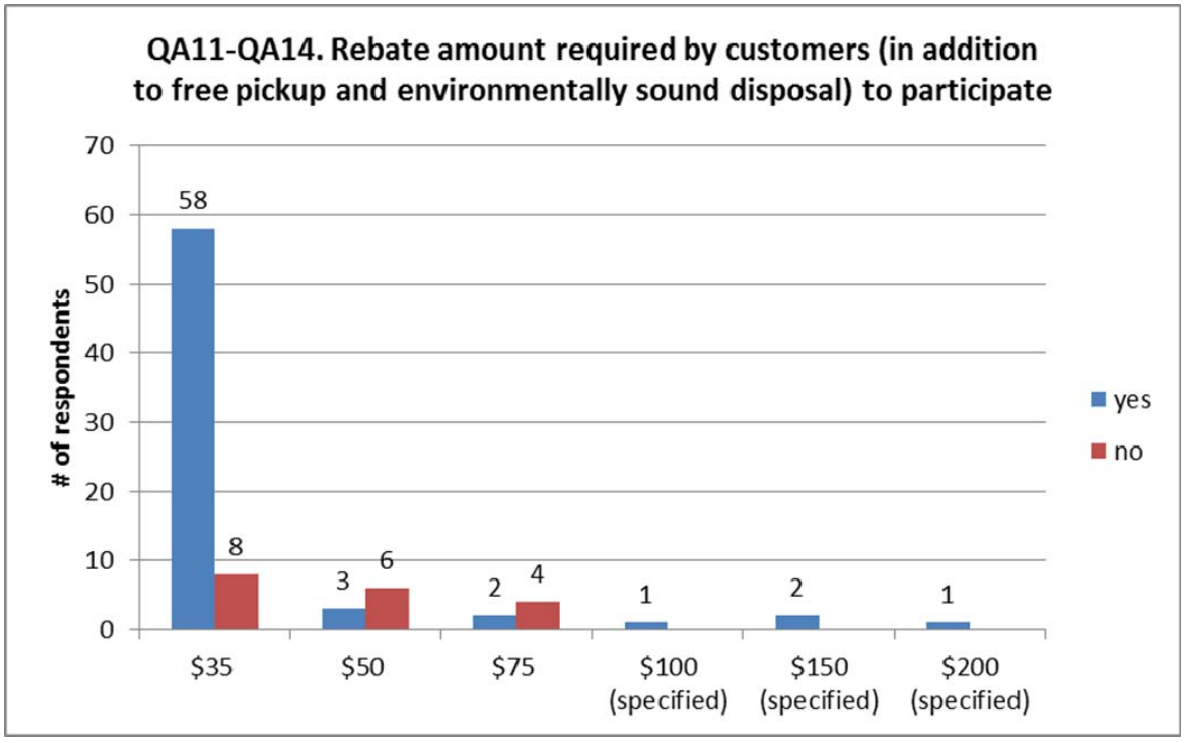

A6. Have you ever received an energy efficiency rebate or participated in other energy efficiency programs?
% of respondents
70%
60%
50%
40%
30%
20%
10%
0%
n=64
Yes
No


A8. What are the best ways for Georgia Power to inform you about energy-efficiency offerings like the EarthCents Refrigerator Recycling Program? (MENTION #1)
Telephone
In the mail
E-mail from Georgia Power
TV
Internet Advertising/Online Ad
Other website
Georgia Power website
Georgia Power Bill Inserts
Advertising in...
n=70
0%
20%
40%
60%
80%
% of respondents

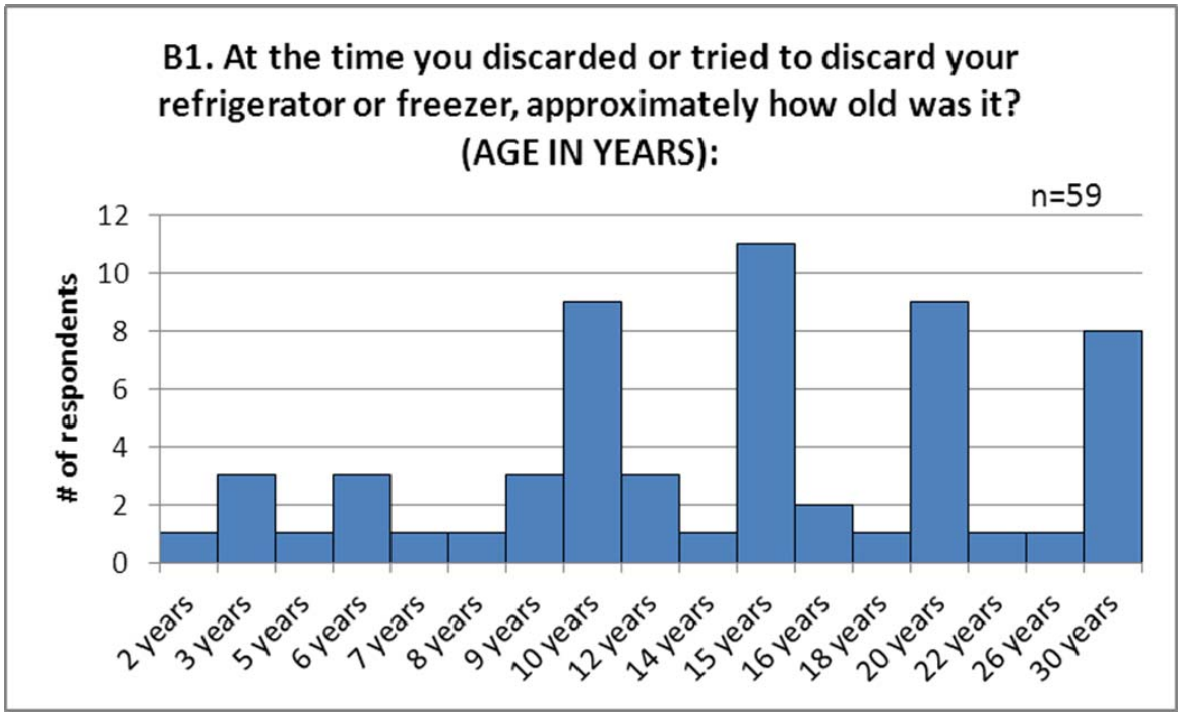

A8. What are the best ways for Georgia Power to inform you about energy-efficiency offerings like the EarthCents Refrigerator Recycling Program? (MENTION #1)
Telephone
In the mail
E-mail from Georgia Power
TV
Internet Advertising/Online Ad
Other website
Georgia Power website
Georgia Power Bill Inserts
Print advertising
n=70
0%
20%
40%
60%
80%
% of respondents

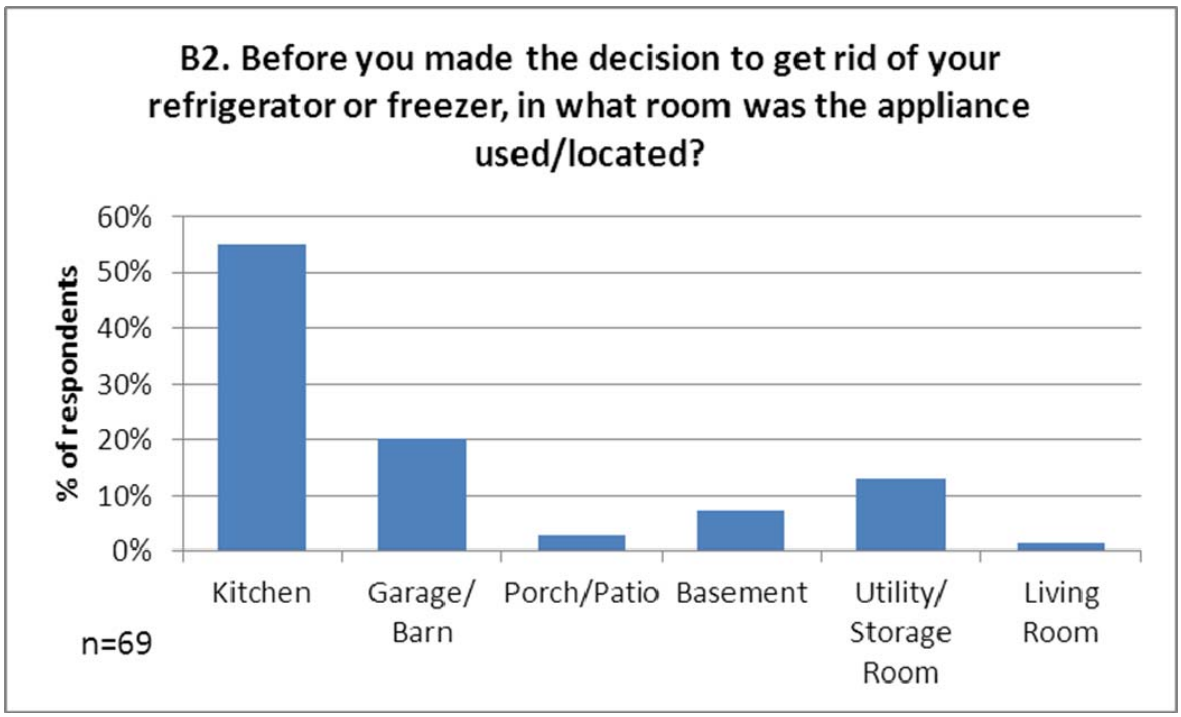

How would you rate your current understanding of energy-efficiency? Would you say you...
Are very knowledgeable about energy-efficiency
Are somewhat knowledgeable about energy-efficiency
Have no knowledge of energy-efficiency
Participants
n=68
Partial participants
n=67
0%
20%
40%
60%
80%
% of respondents

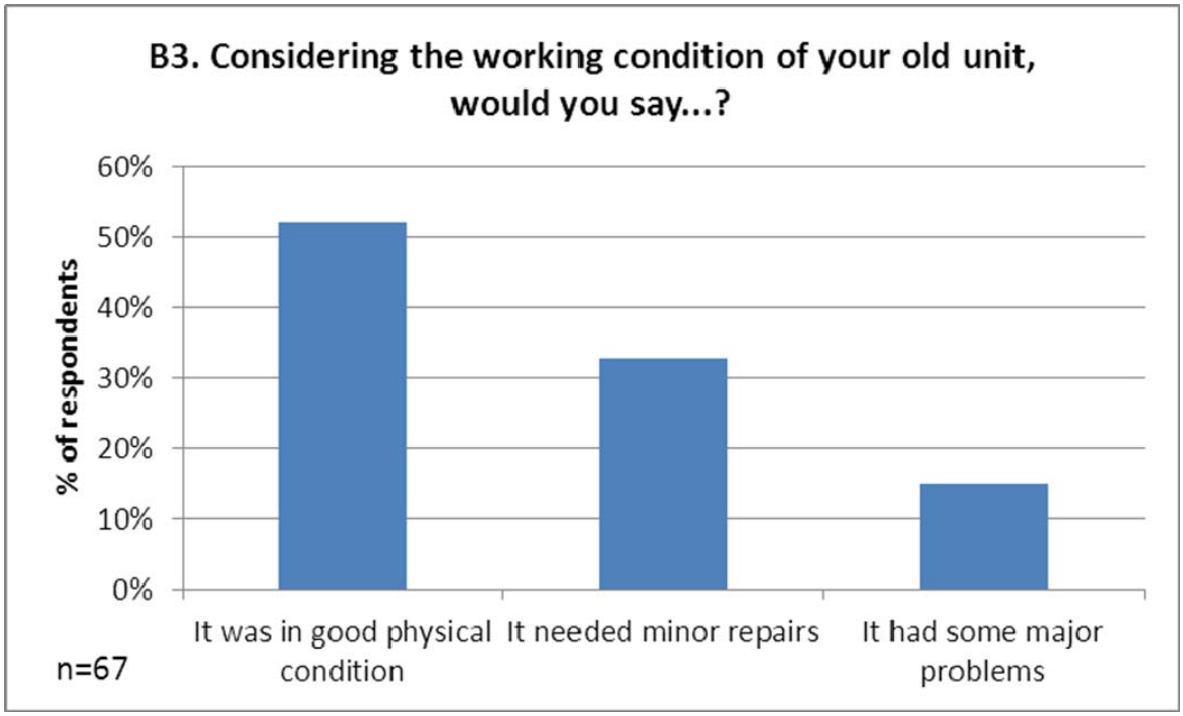

A10. Participating in the Refrigerator Recycling program has a number of benefits. If you were to consider participating in the program in the future, which of the following benefits would be most important to you?
Nothing to get rid of
Convenience
Help the Environment
One-time $35 incentive
Save $150/Yr on Bill
n=65
0%
10%
20%
30%
40%
50%
60%
% of respondents

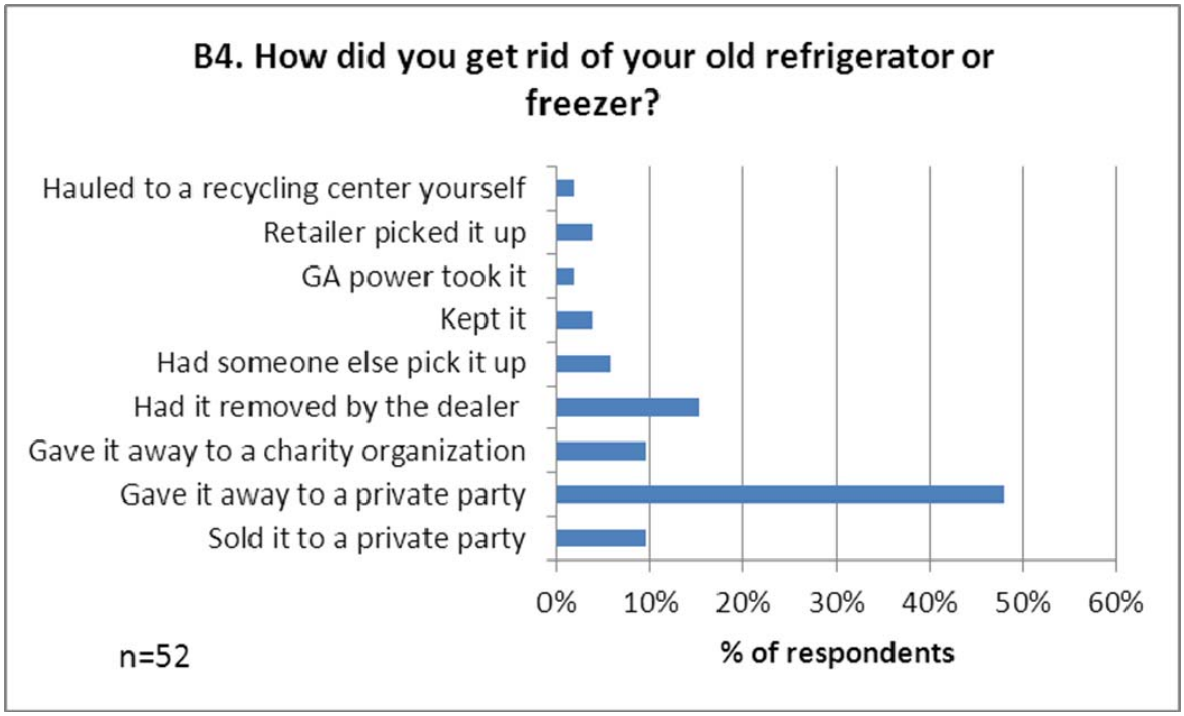

QA11-QA14. Rebate amount required by customers (in addition to free pickup and environmentally sound disposal) to participate
# of respondents
70
60
50
40
30
20
10
0
58
8
3
6
2
4
1
2
1
$35
$50
$75
$100 (specified)
$150 (specified)
$200 (specified)
yes
no

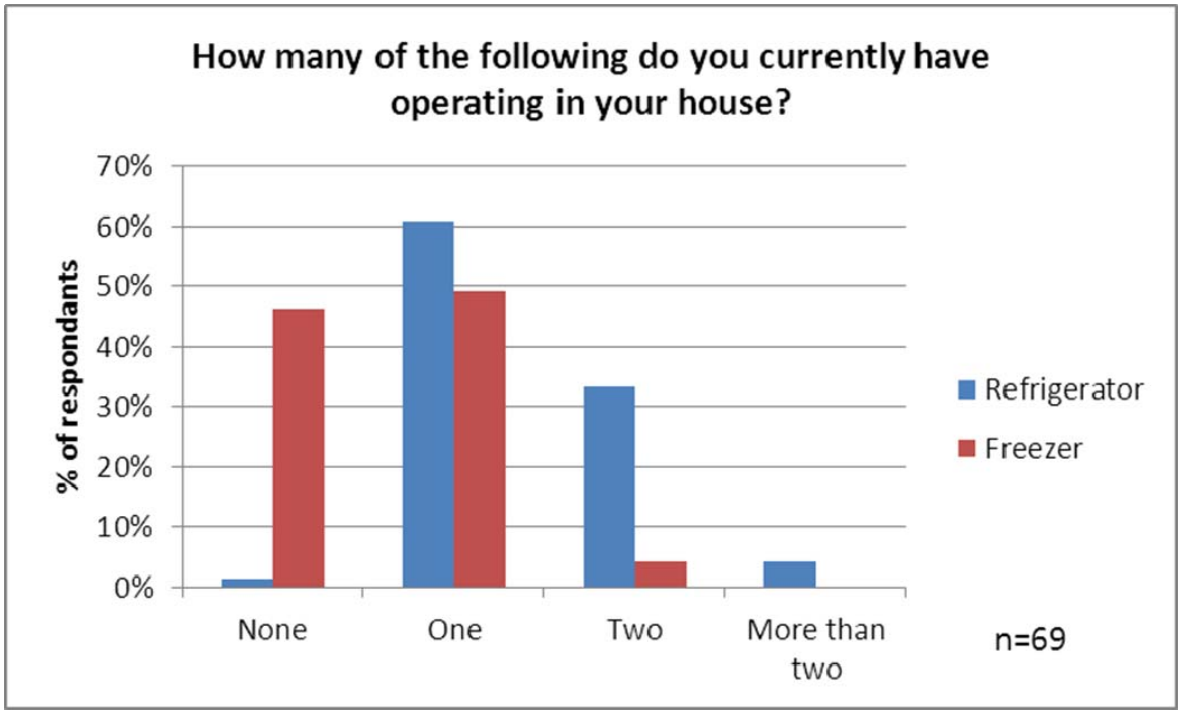
[INTERVIEWER: RECORD VERBATIM] (A15. What would be required for you to consider recycling your appliance through Georgia Power's EarthCents program? [VERBATIM RESPONSE]	**Base**	**1** ***100%***
	timing is the problem low e's could come much sooner days sooner for seniors need the serviceman to move the refrigerator	1 *100%*

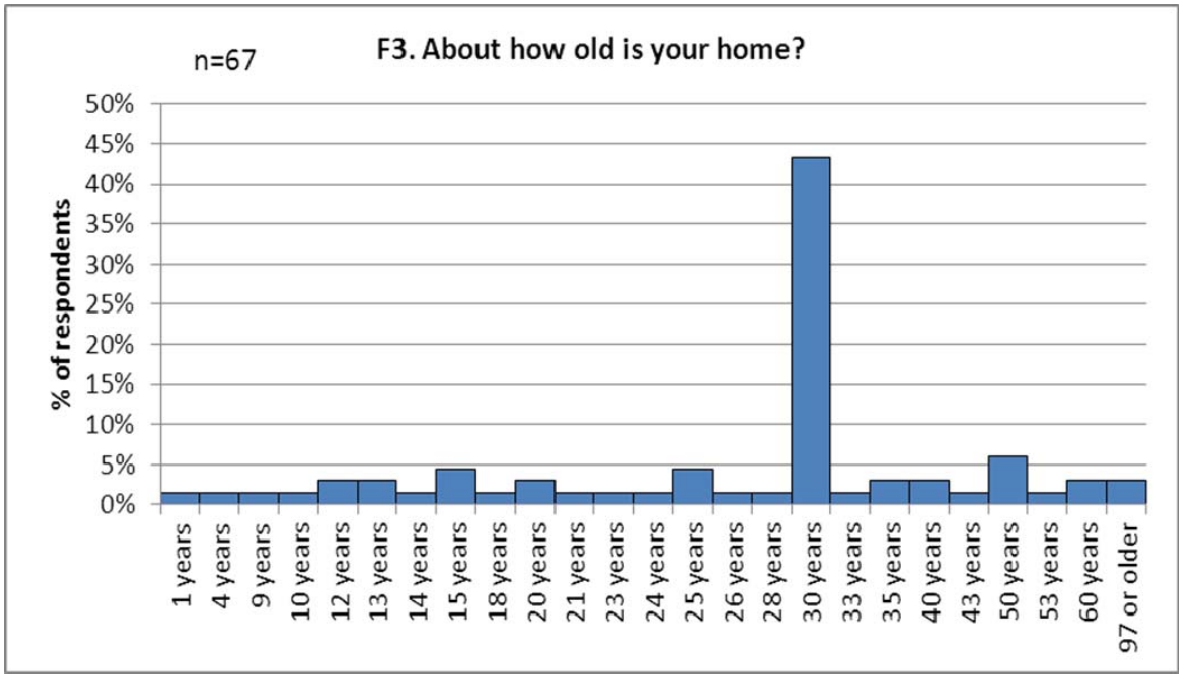


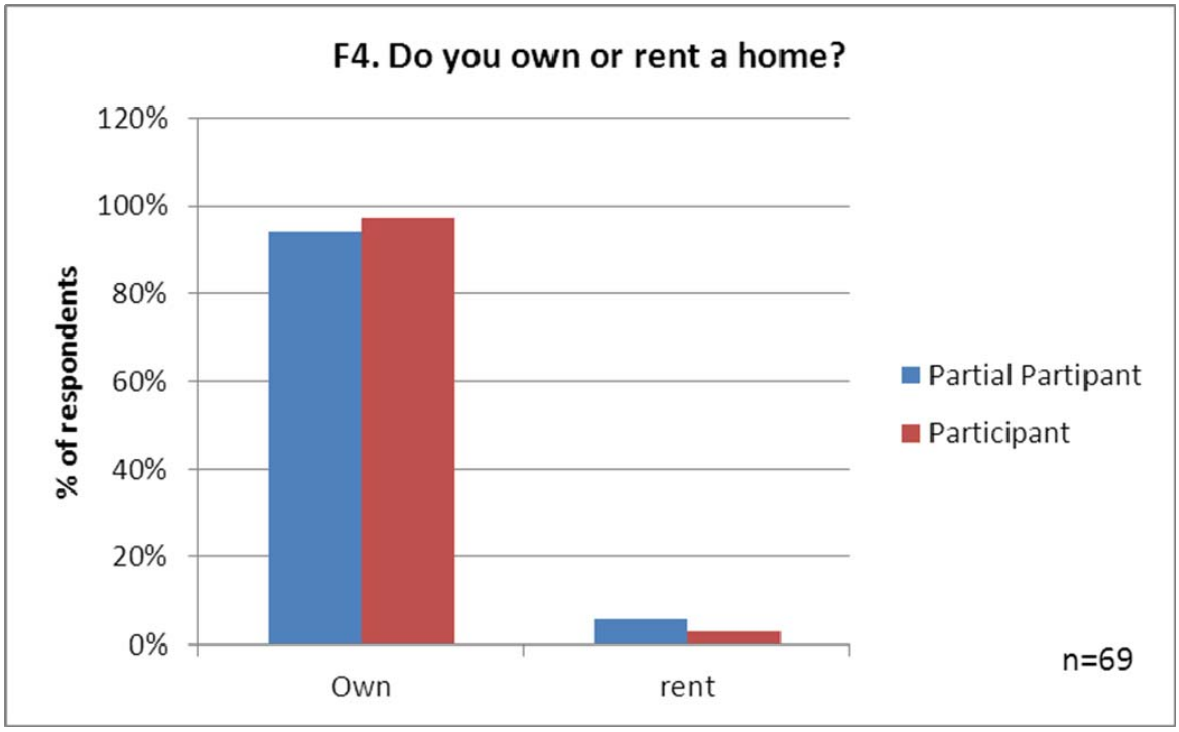


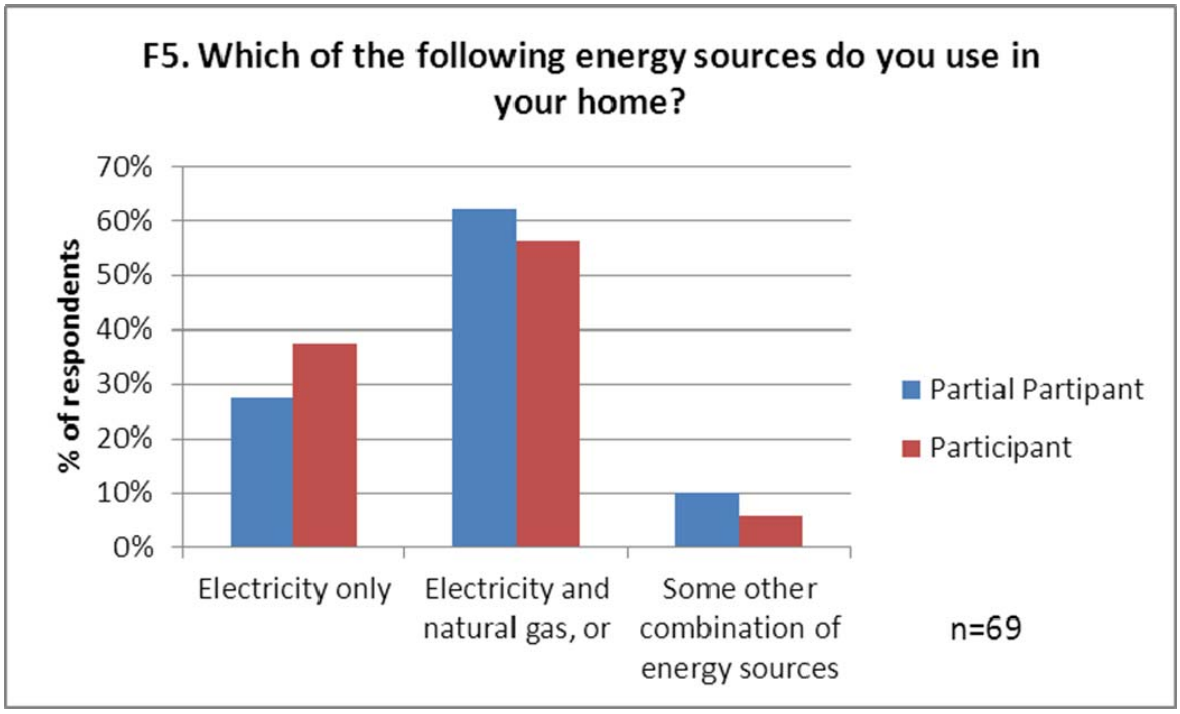

B3. Considering the working condition of your old unit, would you say...?
% of respondents
60%
50%
40%
30%
20%
10%
0%
It was in good physical condition
It needed minor repairs
It had some major problems
n=67

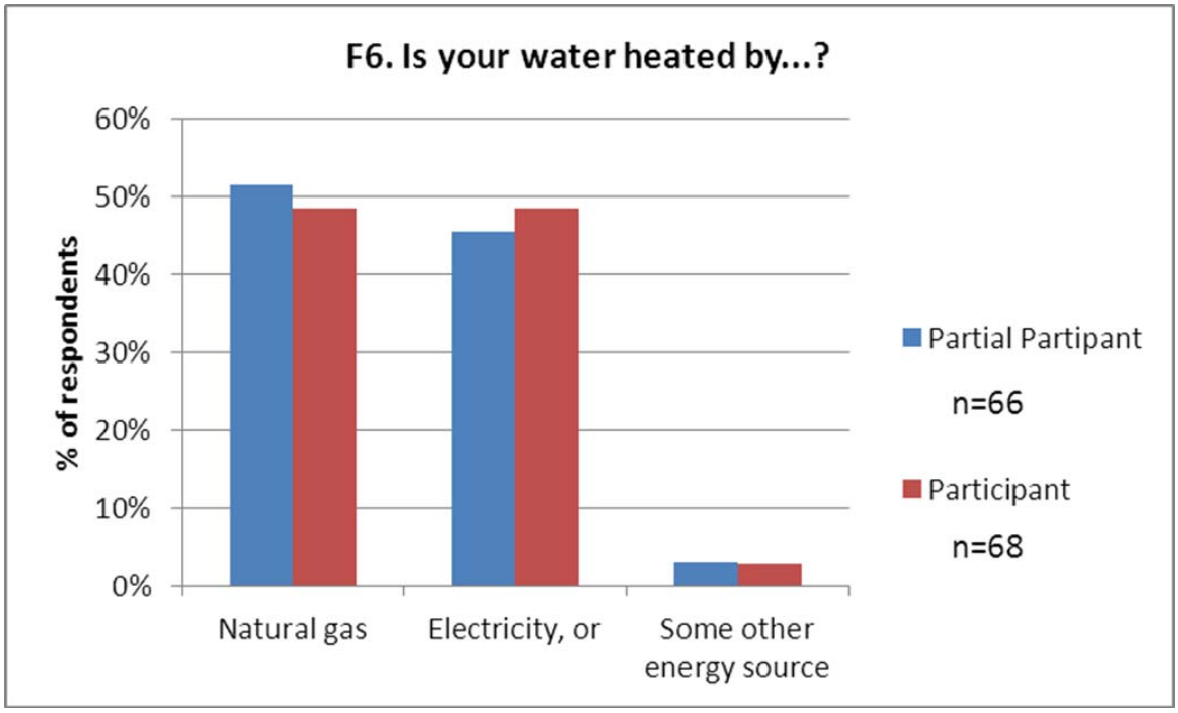

B4. How did you get rid of your old refrigerator or freezer?
Hauled to a recycling center yourself
Retailer picked it up
GA power took it
Kept it
Had someone else pick it up
Had it removed by the dealer
Gave it away to a charity organization
Gave it away to a private party
Sold it to a private party
0%
10%
20%
30%
40%
50%
60%
% of respondents
n=52

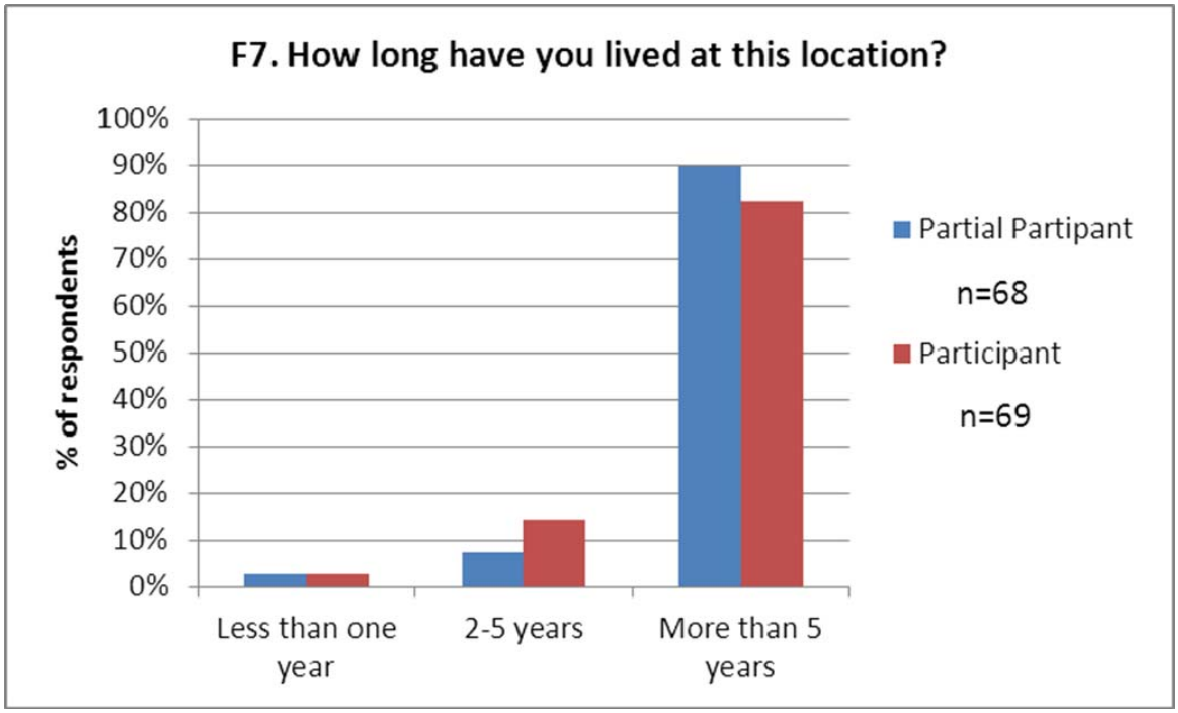

How many of the following do you currently have operating in your house?
% of respondants
70%
60%
50%
40%
30%
20%
10%
0%
None
One
Two
More than two
Refrigerator
Freezer
n=69

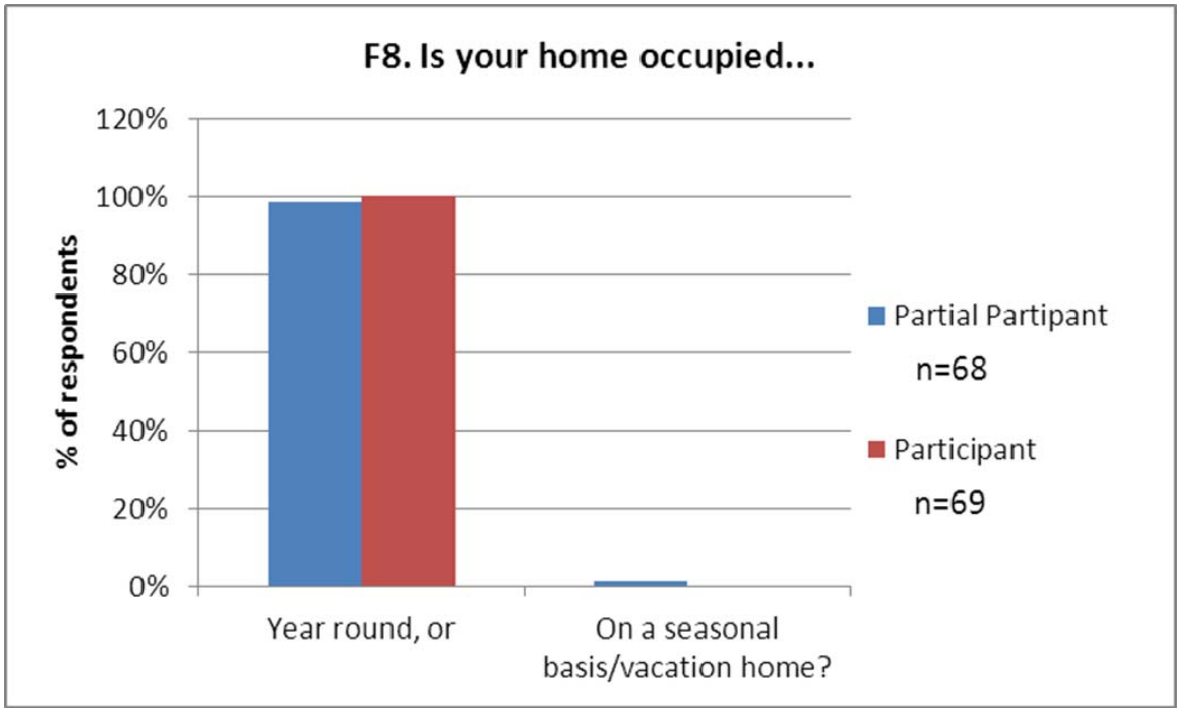

n=67
F3. About how old is your home?
% of respondents
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
1 years
4 years
9 years
10 years
12 years
13 years
14 years
15 years
18 years
20 years
21 years
23 years
24 years
25 years
26 years
28 years
30 years
33 years
35 years
40 years
43 years
50 years
53 years
60 years
97 or older

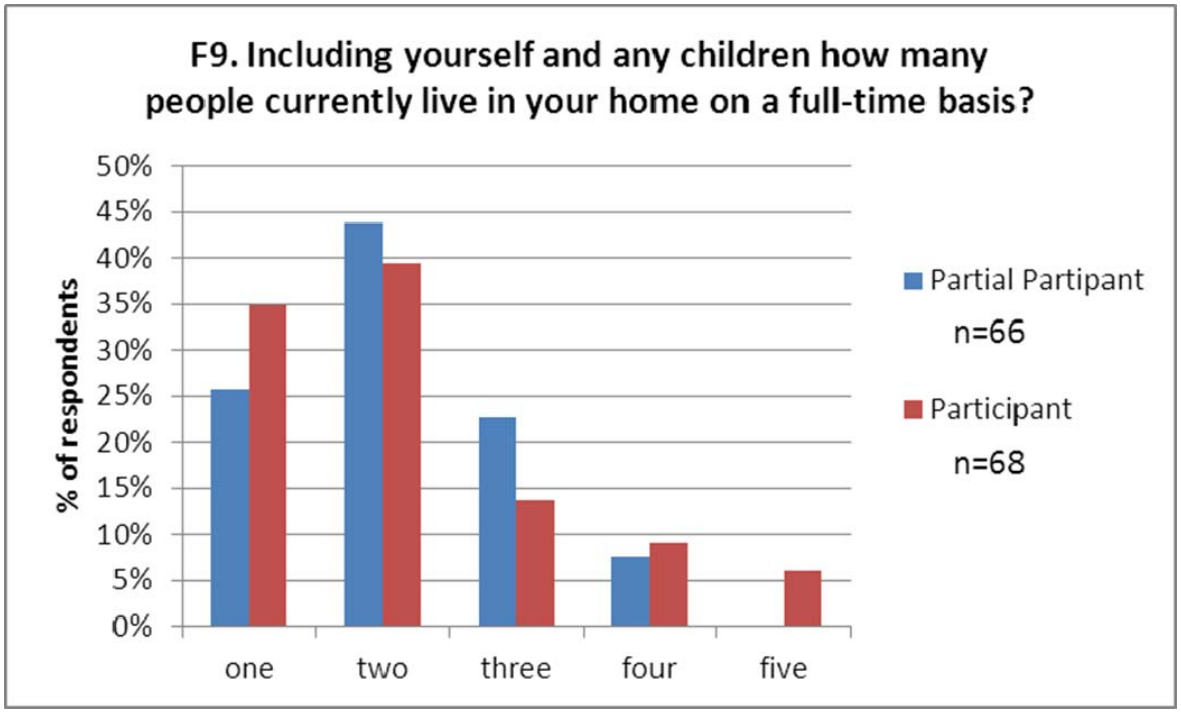

F4. Do you own or rent a home?
120%
100%
80%
60%
40%
20%
0%
% of respondents
Own
rent
Partial Partipant
Participant
n=69

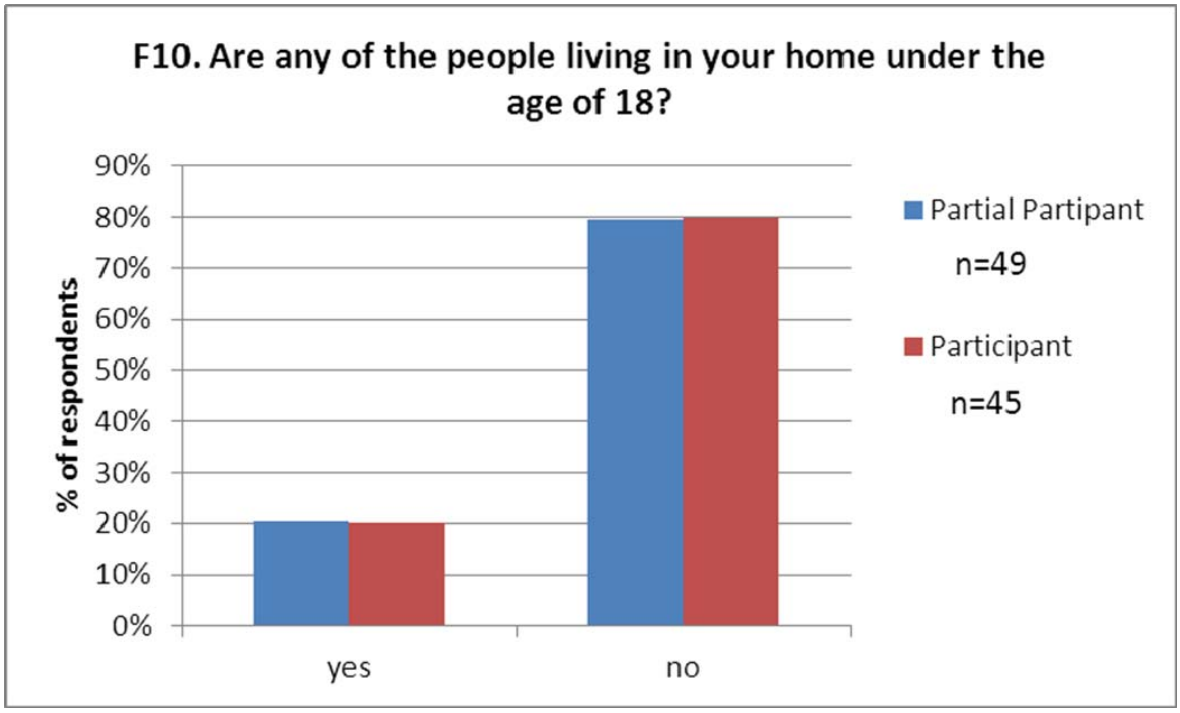

F5. Which of the following energy sources do you use in your home?
70%
60%
50%
40%
30%
20%
10%
0%
% of respondents
Electricity only
Electricity and natural gas, or
Some other combination of energy sources
Partial Partipant
Participant
n=69

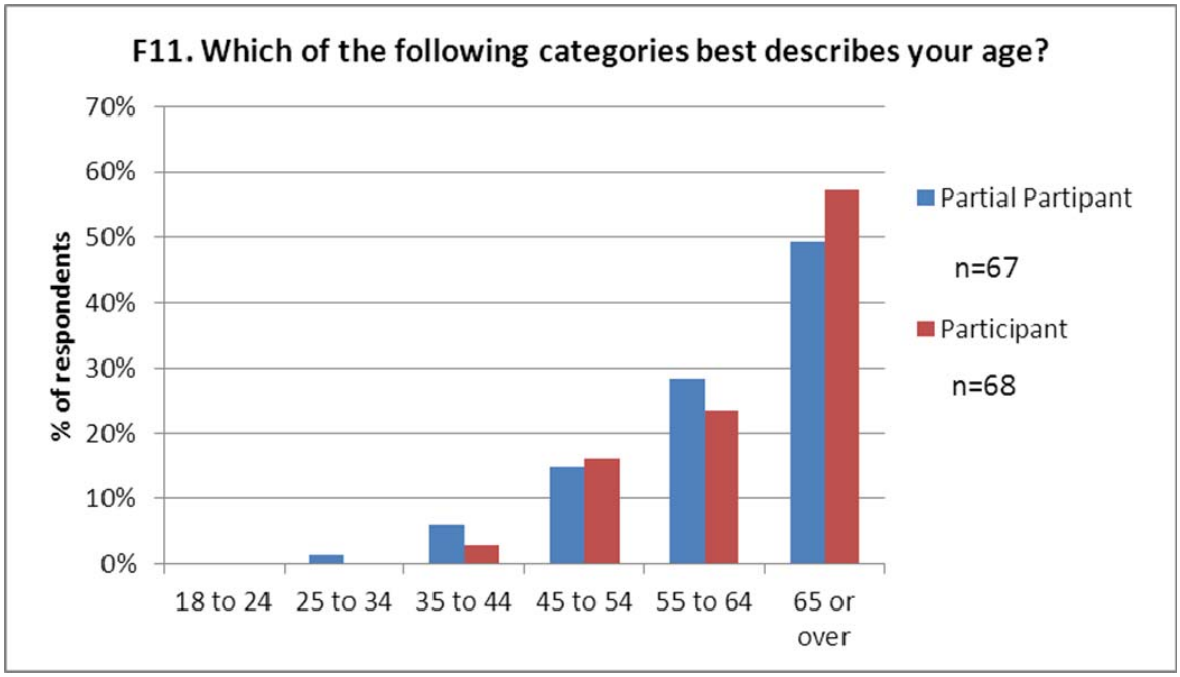

F6. Is your water heated by...?
% of respondents
60%
50%
40%
30%
20%
10%
0%
Natural gas
Electricity, or
Some other energy source
Partial Partipant
n=66
Participant
n=68

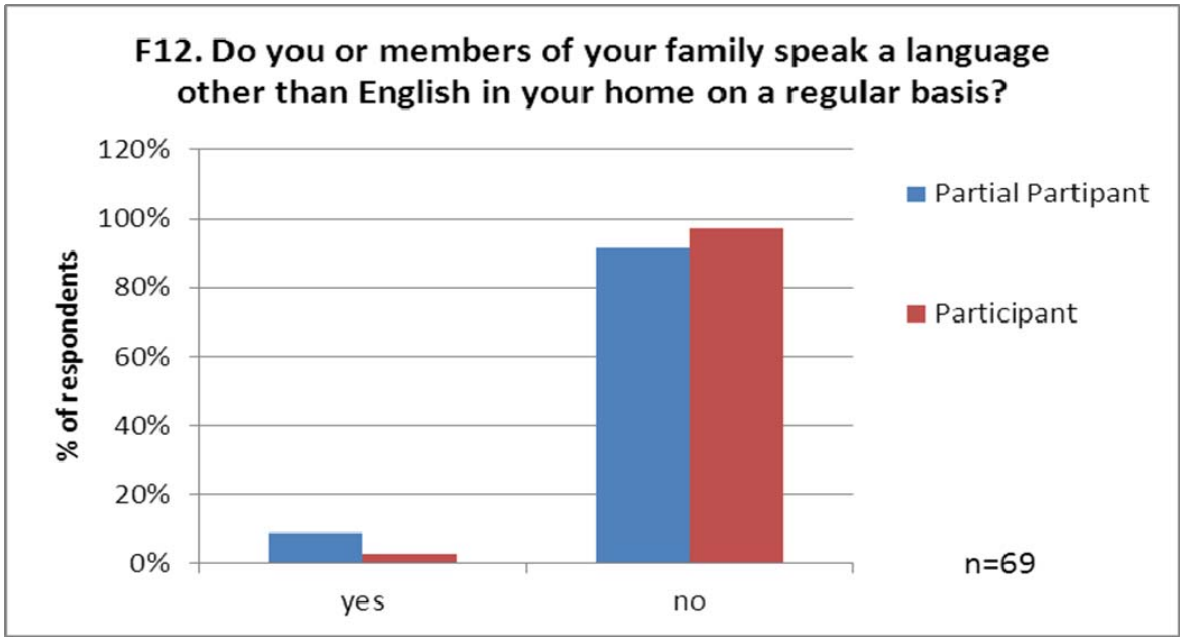

F7. How long have you lived at this location?
% of respondents
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Less than one year
2-5 years
More than 5 years
Partial Partipant
n=68
Participant
n=69

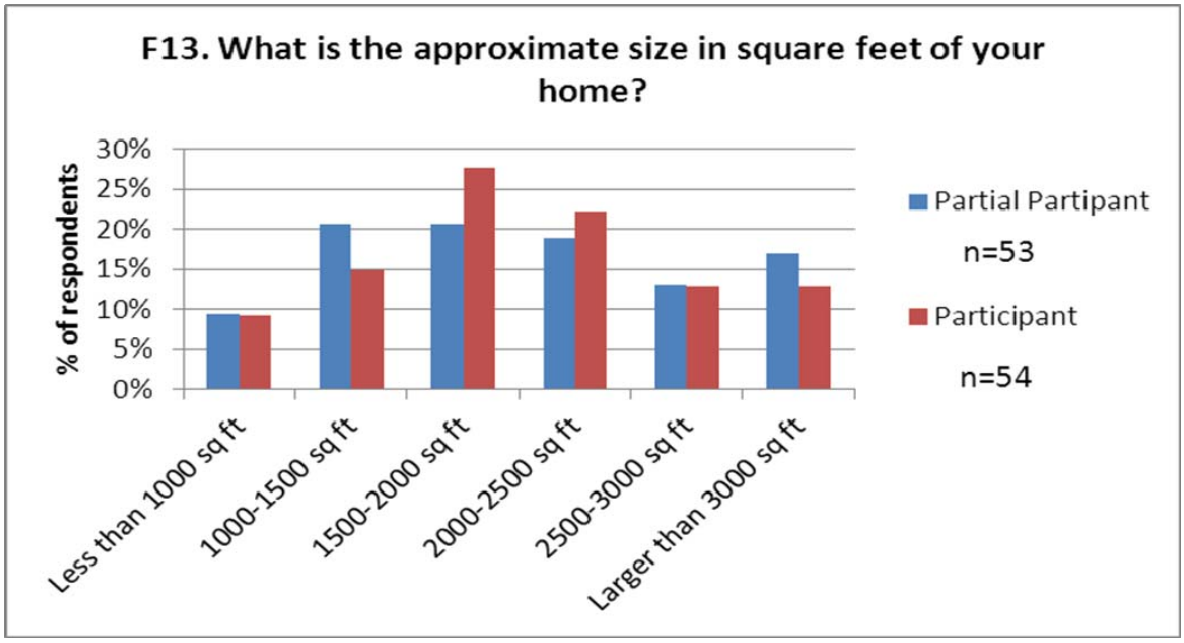

F8. Is your home occupied...
120%
100%
80%
60%
40%
20%
0%
% of respondents
Year round, or
On a seasonal basis/vacation home?
Partial Partipant
n=68
Participant
n=69

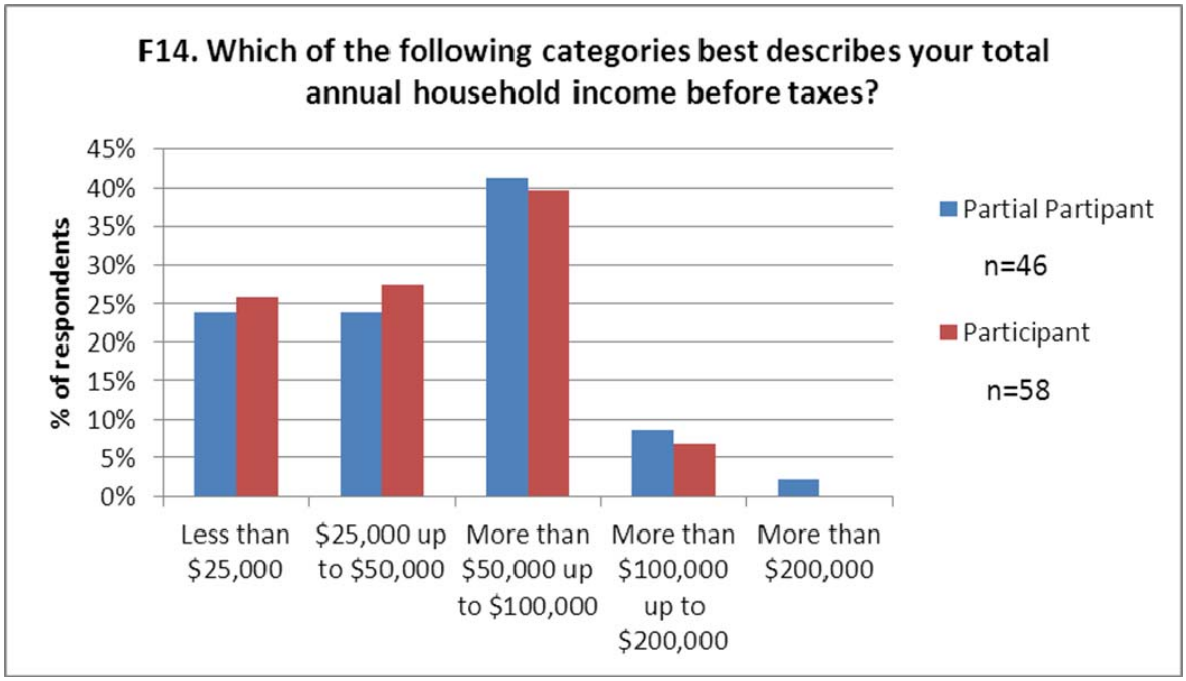

F9. Including yourself and any children how many people currently live in your home on a full-time basis?
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
% of respondents
one
two
three
four
five
Partial Partipant
n=66
Participant
n=68


F10. Are any of the people living in your home under the age of 18?
% of respondents
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
yes
no
Partial Partipant
n=49
Participant
n=45


F11. Which of the following categories best describes your age?
% of respondents
70%
60%
50%
40%
30%
20%
10%
0%
18 to 24
25 to 34
35 to 44
45 to 54
55 to 64
65 or over
Partial Partipant
n=67
Participant
n=68


F12. Do you or members of your family speak a language other than English in your home on a regular basis?
120%
100%
80%
60%
40%
20%
0%
% of respondents
yes
no
Partial Partipant
Participant
n=69


F13. What is the approximate size in square feet of your home?
30%
25%
20%
15%
10%
5%
0%
% of respondents
Less than 1000 sq ft
1000-1500 sq ft
1500-2000 sq ft
2000-2500 sq ft
2500-3000 sq ft
Larger than 3000 sq ft
Partial Partipant
n=53
Participant
n=54


F14. Which of the following categories best describes your total annual household income before taxes?
% of respondents
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Less than $25,000
$25,000 up to $50,000
More than $50,000 up to $100,000
More than $100,000 up to $200,000
More than $200,000
Partial Partipant
n=46
Participant
n=58

Appendix G DETAILED SURVEY RESULTS: ENH

G.1 HOMEBUYER SURVEY

B1. Which of the following statements best describes your involvement in the design and building of your new home?	**Base**	**48**
		100%
	We had the home custom built to our specifications	6
		12%
	We selected from a number of home designs that the builder offered and made changes to a standard design	16
		33%
	We selected from a number of home designs that the builder offered and made FEW or NO changes to the standard design	15
		31%
	We bought a home that was already built or a model home	11
		23%

B2. Did you buy the land from a builder or developer, or did you already own the land before you chose a builder?	**Base**	**36**
		100%
	Bought land from builder/developer	35
		97%
	Already owned land	1
		3%
	(VOL) Refused	1

B3_1. Please tell me how important they were in your home purchase decision- LOCATION	**Base**	**48**
		100%
	Not at all important	2
		4%
	Not too important	-
		-
	Somew hat important	7
		15%
	Very important	39
		81%
B3_2. Please tell me how important they were in your home purchase decision- APPEARANCE	**Base**	**48**
		100%
	Not at all important	-
		-
	Not too important	-
		-
	Somew hat important	6
		12%
	Very important	42
		88%
B3_3. Please tell me how important they were in your home purchase decision- PRICE	**Base**	**48**
		100%
	Not at all important	1
		2%
	Not too important	1
		2%
	Somew hat important	7
		15%
	Very important	39
		81%
B3_4. Please tell me how important they were in your home purchase decision- SIZE	**Base**	**48**
		100%
	Not at all important	1
		2%
	Not too important	3
		6%
	Somew hat important	22
		46%
	Very important	22
		46%

B3_5. Please tell me how important they were in your home purchase decision- QUALITY OF CONSTRUCTION	**Base**	**48**
		100%
	Not at all important	-
		-
	Not too important	-
		-
	Somew hat important	4
		8%
	Very important	44
		92%
B3_6. Please tell me how important they were in your home purchase decision- GREEN OR SUSTAINABLE BUILDING PRACTICES	**Base**	**48**
		100%
	Not at all important	8
		17%
	Not too important	5
		10%
	Somew hat important	18
		38%
	Very important	17
		35%
B3_7. FLEXIBILITY OR OPTION TO UPGRADE AND CUSTOMIZE THE HOME'S FEATURES	**Base**	**47**
		100%
	Not at all important	5
		11%
	Not too important	6
		13%
	Somew hat important	14
		30%
	Very important	22
		47%
	(VOL) Don't Know	1
B3_8. HOME OWNERSHIP FINANCING SUCH AS MORTGAGE RATES	**Base**	**48**
		100%
	Not at all important	4
		8%
	Not too important	1
		2%
	Somew hat important	7
		15%
	Very important	36
		75%

B3_9. - HOME OWNERSHIP FEES SUCH AS TAXES, HOA FEES	**Base**	**47**
		100%
	Not at all important	6
		13%
	Not too important	3
		6%
	Somew hat important	18
		38%
	Very important	20
		43%
	(VOL) Don't Know	1
B3_10. Please tell me how important they were in your home purchase decision- ENERGY EFFICIENCY	**Base**	**48**
		100%
	Not at all important	1
		2%
	Not too important	2
		4%
	Somew hat important	6
		12%
	Very important	39
		81%
B3_11. Please tell me how important they were in your home purchase decision- ENERGY STAR CERTIFICATION	**Base**	**47**
		100%
	Not at all important	5
		11%
	Not too important	2
		4%
	Somew hat important	9
		19%
	Very important	31
		66%
	(VOL) Don't Know	1

B4. Before you started the building or home buying process, how knowledgeable were you about energy efficient home features? Were you...	**Base**	**48**
		100%
	Not at all know ledgeable	4
		8%
	Not too know ledgeable	7
		15%
	Somew hat know ledgeable	32
		67%
	Very know ledgeable	5
		10%

B5. How important was energy efficiency in your decision to buy this home? Would you say energy efficiency was...?	**Base**	**48**
		100%
	Not at all important	3
		6%
	Not too important	4
		8%
	Somew hat important	17
		35%
	Very important	24
		50%

B6. Why do you say energy efficiency was not at all important/not too important/somewhat important/very important in your decision to buy this home?	**Base**	**48**
		100%
	Gave response	48
		100%
[INTERVIEWER: RECORD VERBATIM] Why do you say energy efficiency was not at all important/not too important/somewhat important/very important in your decision to buy this home?	**Base**	**48**
		100%
	Save money on utility bills and help the environment	28
		58%
	Wasn't high priority/other factors more important	9
		19%
	Wasn't aware of energy efficient features	4
		8%
	Only type home the builder was building/Habitat for Humanity home	2
		4%
	because it was new construction	1
		2%
	has prior experience	1
		2%
	important to heating and cooling	1
		2%
	interested in double pane windows and doors and garage insulation - house off the ground	1
		2%
	we are downsizing	1
		2%
C1. How familiar are you with Georgia Power's Efficient New Homes program, also called the EarthCents New Homes program?	**Base**	**48**
		100%
	Not at all familiar	39
		81%
	Not too familiar	3
		6%
	Somewhat familiar	6
		12%
	Very familiar	-
		-

C2. Were you aware that your home qualified as an energy efficient home through Georgia Power's Efficient New Homes program?	**Base**	**48**
		100%
	Yes	17
		35%
	No, Don't know	31
		65%

C3. Were you aware that your home had energy efficient features not found in most new homes built to the standard building codes?	**Base**	**31**
		100%
	Yes	17
		55%
	No, Don't know	14
		45%

C4. At what point in the home-buying process did you become aware that your home was energy-efficient?	**Base**	**34**
		100%
	In the planning/building process	17
		50%
	During the home search	11
		32%
	After deciding to buy the home but before papers w ere signed	4
		12%
	After you signed the papers on your home	1
		3%
	Other (SPECIFY)	1
		3%
	Not aw are	-
		-
C4. At what point in the home-buying process did you become aware that your home was energy-efficient?	**Base**	**1**
		100%
	<5:Other {SPECIFY}>:After the purchase and living in the home.	1
		100%

C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home? (MENTION #1)	**Base**	**27**
		100%
	Builder/contractor	11
		41%
	Print ads or brochures	4
		15%
	Realtor	4
		15%
	Word of mouth (friend, coworker, acquaintance)	2
		7%
	General internet search	2
		7%
	Television ads	1
		4%
	Sales agent	1
		4%
	Georgia Power website	1
		4%
	Other (SPECIFY)	1
		4%
C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home? (MENTION #2)	**Base**	**12**
		100%
	Builder/contractor	6
		50%
	Realtor	3
		25%
	Print ads or brochures	1
		8%
	Sales agent	1
		8%
	General internet search	1
		8%
C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home? (MENTION #3)	**Base**	**4**
		100%
	Sales agent	2
		50%
	Realtor	2
		50%
C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home? (MENTION #4)	**Base**	**2**
		100%
	Realtor	2
		100%

C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home?(MENTION #5)	**Base**	**2**
		100%
	Word of mouth (friend, cow orker, acquaintance)	1
		50%
	Model home tour	1
		50%
C5. Through which sources did you first become aware that you had choices for energy-efficient features that could be included in your home? (MENTION #6)	**Base**	**1**
		100%
	Model home tour	1
		100%
C5m. Through which sources did you first learn that you had choices about energy-efficient features for your home? (All mentions combined)	**Base**	**27**
		100%
	Builder/contractor	17
		63%
	Realtor	11
		41%
	Print ads or brochures	5
		19%
	Sales agent	4
		15%
	Word of mouth (friend, cow orker, acquaintance)	3
		11%
	General internet search	3
		11%
	Model home tour	2
		7%
	Television ads	1
		4%
	Georgia Pow er w ebsite	1
		4%
	Other (SPECIFY)	1
		4%

C6. Which of the following people, if any, talked with you about the energy efficiency benefits of buying your home? (MENTION #1)	**Base**	**27**
		100%
	The builder	11
		41%
	None of them did	9
		33%
	The sales agent	5
		19%
	The realtor	2
		7%
C6. Which of the following people, if any, talked with you about the energy efficiency benefits of buying your home? (MENTION #2)	**Base**	**12**
		100%
	The sales agent	6
		50%
	The realtor	3
		25%
	Friends, family, co-w orkers	2
		17%
	Some other party (SPECIFY)	1
		8%
C6. Which of the following people, if any, talked with you about the energy efficiency benefits of buying your home? (MENTION #3)	**Base**	**5**
		100%
	The realtor	4
		80%
	Friends, family, co-w orkers	1
		20%

C6. Which of the following people, if any, talked with you about the energy efficiency benefits of buying your home? (MENTION #4)	**Base**	**1**
		100%
	The builder	-
		-
	The sales agent	-
		-
	The realtor	-
		-
	Friends, family, co-w orkers	1
		100%
	Some other party (SPECIFY)	-
		-
	None of them did	-
		-
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
C6 Which of the following people talked about the energy saving features (All mentions combined)	**Base**	**27**
		100%
	The builder	11
		41%
	The sales agent	11
		41%
	The realtor	9
		33%
	Friends, family, co-w orkers	4
		15%
	Some other party (SPECIFY)	1
		4%
	None of them did	9
		33%
	(VOL) Don't Know	-
		-
	(VOL) Refused	-
		-
C6. Which of the following people, if any, talked with you about the energy efficiency benefits of buying your home?	**Base**	**1**
		100%
	<5:Some other party {SPECIFY}>:habitat	1
		100%

C7. How well did the builder or builder's salesperson explain the energy-efficient features of your home?	**Base**	**33**
		100%
	Not well at all	-
		-
	Not too well	5
		15%
	Somewhat well	12
		36%
	Very well	16
		48%
	(VOL) Don't Know	1

C8. How important was the builder's or builder's salesperson's advice in your decision to buy your specific home?	**Base**	**34**
		100%
	Not at all important	4
		12%
	Not too important	6
		18%
	Somewhat important	12
		35%
	Very important	12
		35%

C9. How well was your realtor able to explain the energy-efficient features of your home?	**Base**	**20**
		100%
	Not well at all	1
		5%
	Not too well	2
		10%
	Somewhat well	10
		50%
	Very well	7
		35%

C10. How important was the advice of your realtor in your decision to buy this specific home? .	**Base**	**20**
		100%
	Not at all important	4
		20%
	Not too important	3
		15%
	Somew hat important	5
		25%
	Very important	8
		40%

C11. How important was the advice of your friends, family or coworkers in your decision to buy your specific home?	**Base**	**7**
		100%
	Not at all important	2
		29%
	Not too important	-
		-
	Somew hat important	3
		43%
	Very important	2
		29%

C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #1)	**Base**	**37**
		100%
	Insulation levels	12
		32%
	Appliances	12
		32%
	Cooling system	4
		11%
	Efficient w indow s & doors	4
		11%
	None specifically	3
		8%
	Tight construction/less draftiness	1
		3%
	Other (SPECIFY)	1
		3%
	(VOL) Don't Know	2
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #2)	**Base**	**28**
		100%
	Insulation levels	5
		18%
	Appliances	5
		18%
	Overall quality	4
		14%
	Heating system	4
		14%
	Efficient w indow s & doors	4
		14%
	Cooling system	2
		7%
	Other (SPECIFY)	2
		7%
	Duct tightness	1
		4%
	Tight construction/less draftiness	1
		4%

C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #3)	**Base**	**15**
		100%
	Cooling system	4
		27%
	Appliances	3
		20%
	Insulation levels	2
		13%
	Overall quality	2
		13%
	Heating system	2
		13%
	Other (SPECIFY)	2
		13%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #4)	**Base**	**9**
		100%
	Cooling system	2
		22%
	Heating system	2
		22%
	Appliances	1
		11%
	Tight construction/less draftiness	1
		11%
	Durability	1
		11%
	Efficient windows & doors	1
		11%
	Other (SPECIFY)	1
		11%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #5)	**Base**	**7**
		100%
	Efficient windows & doors	3
		43%
	Heating system	2
		29%
	Duct tightness	1
		14%
	Tight construction/less draftiness	1
		14%

C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #6)	**Base**	**4**
		100%
	Duct tightness	1
		25%
	Tight construction/less draftiness	1
		25%
	Durability	1
		25%
	Less moisture buildup/mold	1
		25%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on?] (MENTION #7)	**Base**	**3**
		100%
	Less moisture buildup/mold	2
		67%
	Tight construction/less draftiness	1
		33%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #8)	**Base**	**3**
		100%
	Efficient windows & doors	2
		67%
	Durability	1
		33%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? (MENTION #9)	**Base**	**1**
		100%
	Less moisture buildup/mold	1
		100%
C12. Which energy-efficient features did the builder, sales agent, or realtor focus on? [DO NOT READ; CHECK ALL THAT APPLY] (MENTION #10)	**Base**	**1**
		100%
	Efficient windows & doors	1
		100%

C12. Which energy-efficient features did the builder, sales agent, or realtor focus on?	**Base**	**6**
		100%
	Other :water heater	2
		33%
	Other :all	1
		17%
	Other :blue board construction	1
		17%
	Other :kitchen appliance	1
		17%
	Other: materials used to build the home	1
		17%

C12. Energy features (All mentions combined, including other)	**Base**	**37**
		100%
	Appliances	22
		59%
	Insulation levels	19
		51%
	Efficient w indow s & doors	15
		41%
	Cooling system	12
		32%
	Heating system	10
		27%
	Overall quality	6
		16%
	Tight construction/less draftiness	6
		16%
	Less moisture buildup/mold	4
		11%
	Duct tightness	3
		8%
	Durability	3
		8%
	None specifically	3
		8%
	Building materials	2
		5%
	w ater heater	2
		5%
	all	1
		3%
	(VOL) Don't Know	2

C13. How likely is it that you would have still purchased this home if it were not an energy-efficient home?	**Base**	**48**
		100%
	Not at all likely	14
		29%
	Not too likely	4
		8%
	Somew hat likely	21
		44%
	Very likely	9
		19%

C14. What were your reasons for buying/building an energy-efficient home? (MENTION #1)	**Base**	**41**
		100%
	Lower energy/utility bills	21
		51%
	Didn't know or plan to buy an efficient home	7
		17%
	Save energy	6
		15%
	Green'/Environmentally friendly	3
		7%
	Higher quality home/better components/more attention to detail/better constructed	2
		5%
	More comfortable/better temperature regulation	1
		2%
	Other reason (SPECIFY):	1
		2%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #2)	**Base**	**10**
		100%
	Green'/Environmentally friendly	4
		40%
	Higher quality home/better components/more attention to detail/better constructed	2
		20%
	Save energy	2
		20%
	Lower energy/utility bills	1
		10%
	More comfortable/better temperature regulation	1
		10%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #3)	**Base**	**3**
		100%
	Save energy	2
		67%
	Lower energy/utility bills	1
		33%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #4)	**Base**	**2**
		100%
	Lower energy/utility bills	1
		50%
	Home is more valuable/resale value	1
		50%

C14. What were your reasons for buying/building an energy-efficient home? (MENTION #5)	**Base**	**1**
		100%
	Reduced draftiness	1
		100%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #6)	**Base**	**1**
		100%
	Home is more valuable/resale value	1
		100%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #7)	**Base**	**1**
		100%
	More comfortable/better temperature regulation	1
		100%
C14. What were your reasons for buying/building an energy-efficient home? (MENTION #8)	**Base**	**1**
		100%
	Quieter	1
		100%
C14. What were your reasons for buying/building an energy-efficient home?	**Base**	**1**
		100%
	Already built	1
		100%
C14m Reasons for building an energy-efficient home (All mentions combined, including other)	**Base**	**41**
		100%
	Lower energy/utility bills	24
		59%
	Save energy	10
		24%
	Green'/Environmentally friendly	7
		17%
	Didn't know or plan to buy an efficient home	7
		17%
	Higher quality home/better components/more attention to detail/better constructed	4
		10%
	More comfortable/better temperature regulation	3
		7%
	Home is more valuable/resale value	2
		5%
	Reduced draftiness	1
		2%
	Quieter	1
		2%
	Already built	1
		2%

C15. What do you consider to be the most important benefit of an energy-efficient home?	**Base**	**48**
		100%
	Lower energy/utility bills	30
		62%
	More comfortable/better temperature regulation	9
		19%
	Other (SPECIFY):	5
		10%
	Save energy	3
		6%
	Green'/Environmentally friendly	1
		2%
C15. What do you consider to be the most important benefit of an energy-efficient home?	**Base**	**5**
		100%
	No benefit/haven't noticed benefit/bills higher than previous home	4
		80%
	insulation	1
		20%

D1. Did you bring any of the following appliances to the new home (All mentions combined)	**Base**	**48**
		100%
	None of the above	24
		50%
	Clothes washer	22
		46%
	Clothes dryer	22
		46%
	Refrigerator	5
		10%
	Light bulbs	5
		10%
	Dishwasher	-
		-
	Air conditioner	-
		-

D2_1. Which of the following high efficiency features do you have in your new home? HIGH EFFICIENT INSULATION AND AIR TIGHTNESS	**Base**	**48**
		100%
	Yes	41
		85%
	No	-
		-
	(VOL) Don't Know	7
		15%
D2_2. ENERGY STAR WINDOWS OR DOORS	**Base**	**48**
		100%
	Yes	43
		90%
	No	1
		2%
	(VOL) Don't Know	4
		8%
D2_3. ENERGY STAR REFRIGERATOR	**Base**	**48**
		100%
	Yes	42
		88%
	No	3
		6%
	(VOL) Don't Know	3
		6%
D2_4. T ENERGY STAR CLOTHES WASHER	**Base**	**48**
		100%
	Yes	35
		73%
	No	9
		19%
	(VOL) Don't Know	4
		8%
D2_5. ENERGY STAR DISHWASHER	**Base**	**48**
		100%
	Yes	40
		83%
	No	3
		6%
	(VOL) Don't Know	5
		10%

D2_6. ENERGY STAR FURNACE OR BOILER	**Base**	**47**
		100%
	Yes	16
		34%
	No	20
		43%
	(VOL) Don't Know	11
		23%
	(VOL) Refused	1
D2_7. ENERGY STAR CENTRAL AIR CONDITIONER	**Base**	**48**
		100%
	Yes	41
		85%
	No	-
		-
	(VOL) Don't Know	7
		15%
D2_8. ENERGY STAR LIGHTING (CFLs OR FIXTURES)	**Base**	**48**
		100%
	Yes	30
		62%
	No	8
		17%
	(VOL) Don't Know	10
		21%
D2_9. HIGH EFFICIENCY WATER HEATER	**Base**	**48**
		100%
	Yes	35
		73%
	No	2
		4%
	(VOL) Don't Know	11
		23%

D3_1. Who was most involved in choosing HIGH EFFICIENT INSULATION AND AIR TIGHTNESS?	**Base**	**40**
		100%
	Respondent/Household member researched and selected	4
		10%
	Builder/Architect offered list to choose from	2
		5%
	Builder/Architect alone	34
		85%
	(VOL) Don't Know	1
D3_2. Who was most involved in choosing the ENERGY STAR WINDOWS OR DOORS?	**Base**	**43**
		100%
	Respondent/Household member researched and selected	5
		12%
	Builder/Architect offered list to choose from	2
		5%
	Builder/Architect alone	36
		84%
D3_3. Who was most involved in choosing the ENERGY STAR REFRIGERATOR?	**Base**	**42**
		100%
	Respondent/Household member researched and selected	19
		45%
	Builder/Architect offered list to choose from	5
		12%
	Builder/Architect alone	18
		43%
D3_4.Who was most involved in choosing the ENERGY STAR CLOTHES WASHER?	**Base**	**34**
		100%
	Respondent/Household member researched and selected	24
		71%
	Builder/Architect offered list to choose from	3
		9%
	Builder/Architect alone	7
		21%
	(VOL) Don't Know	1

D3_5. Who was most involved in choosing the ENERGY STAR DISHWASHER?	**Base**	**40**
		100%
	Respondent/Household member researched and selected	10
		25%
	Builder/Architect offered list to choose from	4
		10%
	Builder/Architect alone	26
		65%
D3_6. Who was most involved in choosing the ENERGY STAR FURNACE OR BOILER ?	**Base**	**16**
		100%
	Respondent/Household member researched and selected	2
		12%
	Builder/Architect offered list to choose from	2
		12%
	Builder/Architect alone	12
		75%
D3_7. Who was most involved in choosing the ENERGY STAR CENTRAL AIR CONDITIONER?	**Base**	**41**
		100%
	Respondent/Household member researched and selected	2
		5%
	Builder/Architect offered list to choose from	4
		10%
	Builder/Architect alone	35
		85%
D3_8. Who was most involved in choosing the ENERGY STAR LIGHTING (CFLs OR FIXTURES)?	**Base**	**30**
		100%
	Respondent/Household member researched and selected	6
		20%
	Builder/Architect offered list to choose from	1
		3%
	Builder/Architect alone	23
		77%
D3_9. Who was most involved in choosing the HIGH EFFICIENCY WATER HEATER?	**Base**	**34**
		100%
	Respondent/Household member researched and selected	3
		9%
	Builder/Architect offered list to choose from	3
		9%
	Builder/Architect alone	28
		82%
	(VOL) Don't Know	1

D4_9. How important was theEfficient New Homes Program in your selection of the HIGH EFFICIENCY WATER HEATER?	**Base**	**5**
		100%
	Not important at all	3
		60%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	2
		40%
	(VOL) Don't Know	1
D4_8. How important was the Efficient New Homes Program in your selection of the ENERGY STAR LIGHTING (CFLs OR FIXTURES)?	**Base**	**7**
		100%
	Not important at all	2
		29%
	Not too important	1
		14%
	Somew hat important	1
		14%
	Very important	3
		43%
D4_7. How important was the Efficient New Homes Program in your selection of the ENERGY STAR CENTRAL AIR CONDITIONER?	**Base**	**4**
		100%
	Not important at all	2
		50%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	2
		50%
	(VOL) Don't Know	2

D4_6. How important was Efficient New Homes Program in your selection of the ENERGY STAR FURNACE OR BOILER?	**Base**	**2**
		100%
	Not important at all	1
		50%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	1
		50%
	(VOL) Don't Know	2
D4_5. How important was the Efficient New Homes Program in your selection of the ENERGY STAR DISHWASHER?	**Base**	**11**
		100%
	Not important at all	4
		36%
	Not too important	1
		9%
	Somew hat important	2
		18%
	Very important	4
		36%
	(VOL) Don't Know	3
D4_4. How important was the Efficient New Homes Program in your selection of the ENERGY STAR CLOTHES WASHER?	**Base**	**24**
		100%
	Not important at all	11
		46%
	Not too important	5
		21%
	Somew hat important	4
		17%
	Very important	4
		17%
	(VOL) Don't Know	3

D4_3. How important was Efficient New Homes Program in your selection of the ENERGY STAR REFRIGERATOR?	**Base**	**21**
		100%
	Not important at all	10
		48%
	Not too important	4
		19%
	Somew hat important	2
		10%
	Very important	5
		24%
	(VOL) Don't Know	3
D4_2. How important was the Efficient New Homes Program in your selection of the ENERGY STAR WINDOWS OR DOORS ?	**Base**	**5**
		100%
	Not important at all	3
		60%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	2
		40%
	(VOL) Don't Know	2
D4_1. How important was Georgia Power's Efficient New Homes Program in your selection of the HIGH EFFICIENT INSULATION AND AIR TIGHTNESS ?	**Base**	**4**
		100%
	Not important at all	3
		75%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	1
		25%
	(VOL) Don't Know	2

D5m. What were your reasons for installing high efficiency appliances? (All mentions combined)	**Base**	**46**
		100%
	Save money on energy bill/energy cost too high	35
		76%
	Better quality equipment/reduced equipment maintenance/longer equipment life	5
		11%
	Did not install any energy efficient appliances	5
		11%
	Environmental concerns	4
		9%
	Other (SPECIFY):	4
		9%
	Increase resale value	1
		2%
	Rebates or special deals	1
		2%
	(VOL) Don't Know	2
D5. What were your reasons for installing high efficient appliances?	**Base**	**4**
		100%
	They w ere already installed	2
		50%
	Faster products	1
		25%
	Required	1
		25%

D6. After moving into the home, did you install any additional energy efficient appliances or equipment in your home?	**Base**	**48**
		100%
	Yes	9
		19%
	No	39
		81%

D7. Please describe the type of appliance or equipment you had installed after moving in.	**Base**	**-**
		-
	Washer and Dryer	-
		-
	Light bulbs	-
		-
	Energy Efficienty Refrigerator	-
		-
	Washer, Dryer, Refrigerator	-
		-
	light blubs and w asher	-
		-

D8. How important would you say the Efficient New Homes Program was in your decision to add these additional energy efficient appliances?	**Base**	**9**
		100%
	Not at all important	4
		44%
	Not too important	1
		11%
	Somew hat important	1
		11%
	Very important	3
		33%

E1. How satisfied are you with the energy-efficient features of your new home?	**Base**	**48**
		100%
	Very Dissatisfied	2
		4%
	Somew hat dissatisfied	4
		8%
	Somew hat satisfied	11
		23%
	Very satisfied	31
		65%
[INTERVIEWER: RECORD VERBATIM] (What would make you more satisfied with the energy-efficient features in your home?	**Base**	**6**
		100%
	If the bills reflected savings/if utility bills decreased	6
		100%

E3_6. IT'S HARD TO REALLY NOTICE THE BENEFITS OF ENERGY-EFFICIENT HOMES	**Base**	**46**
		100%
	Strongly disagree	17
		37%
	Somew hat disagree	14
		30%
	Somew hat agree	13
		28%
	Strongly agree	2
		4%
	(VOL) Don't Know	2
E3_5. ENERGY-EFFICIENT HOMES HAVE HIGHER RESALE VALUE	**Base**	**39**
		100%
	Strongly disagree	-
		-
	Somew hat disagree	1
		3%
	Somew hat agree	15
		38%
	Strongly agree	23
		59%
	(VOL) Don't Know	9
E3_4. ENERGY EFFICIENT HOMES PROVIDE ADDITIONAL QUALITY	**Base**	**46**
		100%
	Strongly disagree	1
		2%
	Somew hat disagree	2
		4%
	Somew hat agree	22
		48%
	Strongly agree	21
		46%
	(VOL) Don't Know	1
	(VOL) Refused	1

E3_3. MOST NEW HOMES ARE ENERGY-EFFICIENT EVEN IF THEY DO NOT GO THROUGH A UTILITY SPONSORED ENERGY-EFFICIENCY PROGRAM	**Base**	**38**
		100%
	Strongly disagree	7
		18%
	Somew hat disagree	10
		26%
	Somew hat agree	14
		37%
	Strongly agree	7
		18%
	(VOL) Don't Know	10
E3_2. ENERGY-EFFICIENT HOMES ARE MORE COMFORTABLE THAN STANDARD HOMES	**Base**	**45**
		100%
	Strongly disagree	3
		7%
	Somew hat disagree	4
		9%
	Somew hat agree	21
		47%
	Strongly agree	17
		38%
	(VOL) Don't Know	3
E3_1. How strongly do you agree with each of these statementss? ENERGY-EFFICIENT HOMES ARE HARD TO FIND	**Base**	**43**
		100%
	Strongly disagree	11
		26%
	Somew hat disagree	17
		40%
	Somew hat agree	8
		19%
	Strongly agree	7
		16%
	(VOL) Don't Know	5

F1. Approximately how much did your home cost?	**Base**	**47**
		100%
	Below $100,000	3
		6%
	$100,001-$150,000	6
		13%
	$150,001-$200,000	15
		32%
	$200,001-$250,000	13
		28%
	$250,001-$300,000	7
		15%
	$300,001-$350,000	1
		2%
	$350,001-$400,000	1
		2%
	$400,001-$450,000	-
		-
	$450,001-$500,000	-
		-
	Over $500,000	1
		2%
	(VOL) Refused	1

F2. Do you believe you are saving money on your energy bills compared to a similar home that is less energy efficient?	**Base**	**44**
		100%
	Yes	37
		84%
	No	7
		16%
	(VOL) Don't Know	3
	(VOL) Refused	1

F3. To the best of your knowledge, why do you believe you have not saved money on your energy bill? [] (MENTION #1)	**Base**	**5**
		100%
	Other (SPECIFY):	4
		80%
	We have not been in the house long enough	1
		20%
	(VOL) Don't Know	2
F3. To the best of your knowledge, why do you believe you have not saved money on your energy bill? [DO NOT READ; CHECK ALL THAT APPLY] [VERBATIM RESPONSE]	**Base**	**4**
		100%
	My bills are actually higher	3
		75%
	Ow ner doesn't live in the home & is not able to see the bills compared to a non energy efficient home.	1
		25%

G1. Which of the following types of housing units would you say best describes your home?	**Base**	**47**
		100%
	Single-family detached house	42
		89%
	Single-family attached house (duplex, tow nhouse, condominium)	5
		11%
	(VOL) Refused	1
G2. About how many square feet is your home?	**Base**	**45**
		100%
	Less than 1,000 square feet	-
		-
	1,000 to 1,999 square feet	15
		33%
	2,000 - 2,999 square feet	21
		47%
	3,000 - 3,999 square feet	7
		16%
	4,000 - 4,999 square feet	2
		4%
	5000 square feet or greater	-
		-
	(VOL) Don't Know	1
	(VOL) Refused	2

G3. Which of the following fuels does your water heater use?	**Base**	**45**
		100%
	Natural gas	-
		-
	Electric	45
		100%
	Propane	-
		-
	(VOL) Don't Know	1
	(VOL) Refused	2

G4. Including you, how many children and adults normally live in this household on a full-time basis?	**Base**	**46**
		100%
	1.00	5
		11%
	2.00	17
		37%
	3.00	7
		15%
	4.00	7
		15%
	More than 4 (up to 7)	10
		22%
	REFUSED	2

G5. What is the highest level of education completed by anyone living in your household?	**Base**	**46**
		100%
	High school graduate or less	2
		4%
	Some college (including Associate's degree)	11
		24%
	Bachelor's degree	18
		39%
	Graduate study or degree	15
		33%
	(VOL) Refused	2

G6. Please stop me when I read the range that contains the total combined income of all members of your household over the past 12 months.	**Base**	**44**
		100%
	Less than $25,000	3
		7%
	$25,000 - $49,999	4
		9%
	$50,000 - $74,999	6
		14%
	$75,000 - $99,999	12
		27%
	$100,000 - $124,999	8
		18%
	$125,000 - $149,999	3
		7%
	$150,000 - $174,999	5
		11%
	$175,000 - $200,000	-
		-
	$200,000 or more	3
		7%
	(VOL) Refused	4

G7. Respondent's gender	**Base**	**48**
		100%
	Male	35
		73%
	Female	13
		27%

G.2 PARTICIPATING BUILDER SURVEY

QA1. I'm calling on behalf of Georgia Power. May I please speak with the owner or another person in your company who knows about your construction practices and about your participation in Georgia Power's Efficient New Homes Program?	**Base**	**7**
		100%
	Yes	7
		100%
	No	-
		-

QA2. To double check, the Georgia Power records show that your company has participated, or are currently participating, in Georgia Power's Efficient New Homes Program. Is that correct?	**Base**	**7**
		100%
	Yes	7
		100%
	No	-
		-

Qb1merged. How did you first find out about GPC's Efficient New Homes program?	**Base**	**6**
		100%
	Georgia Power staff/customer rep	3
		50%
	Other: (SPECIFY)	2
		33%
	Trade association	1
		17%
	(VOL) DON'T KNOW	1
	Georgia Power Builder Information/Rebate Packet	-
		-
	Georgia Power Information Session (luncheon)	-
		-
	Website	-
		-
	Home buyer	-
		-
	At an event	-
		-
	From another builder	-
		-
	From a vendor or contractor	-
		-

QB1. To begin, how did you FIRST learn about Georgia Power's Efficient New Homes Program?	**Base**	**2**
		100%
	<10:Other: (SPECIFY)>:online	1
		50%
	<10:Other: (SPECIFY)>:someone sent me an email	1
		50%

QB2. What was the single most important reason you decided to participate in the Efficient New Homes Program?	**Base**	**7**
		100%
	Other(SPECIFY)	3
		43%
	The Georgia Pow er incentive	2
		29%
	Like to keep up w ith new techniques/try new things	1
		14%
	House sells better if it's an efficient home	1
		14%
	Interest in building a better home	-
		-
	Third party verification	-
		-
	Builder tax credit	-
		-
	Already using many of the measures or practices	-
		-
	Wanted to market energy efficiency	-
		-
	Wanted to separate myself from other builders (competitive advantage)	-
		-
	The people involved in the program are good/know ledgeable people	-
		-
	Homeow ner requested it	-
		-
	Environmental reasons	-
		-

QB2. What was the single most important reason you decided to participate in the Efficient New Homes Program?	**Base**	**3**
		100%
	<13:Other(SPECIFY) >:discounts	1
		33%
	<13:Other(SPECIFY) >:marketing	1
		33%
	<13:Other(SPECIFY) >:verify the quality of the constuction	1
		33%

Qb3merged. Other reasons for participating?	**Base**	**7**
		100%
	(VOL) NO OTHER REASONS	6
		86%
	Other(SPECIFY)	1
		14%

QB3. Besides the [qb2 response], are there any other reasons?	**Base**	**1**
		100%
	<13:Other(SPECIFY) >:marketability	1
		100%

QB4. Has your company ever participated in any other energy efficiency building programs besides the one Georgia Power offers?	**Base**	**7**
		100%
	Yes	4
		57%
	No	3
		43%

QB5_merged. What is the other program you have participated in?	**Base**	**4**
		100%
	ENERGY STAR New Homes	3
		75%
	EarthCraft	1
		25%
	Other, (RECORD)	1
		25%
	Comfort Home	-
		-
	EarthCents	-
		-

QB5. Can you tell me the name of any other programs your company has participated in?	**Base**	**1**
		100%
	<5:Other, (RECORD)>:home depot grant	1
		100%

QB6. Georgia Power has recently changed the name for the Efficient New Homes Program. Have you heard or read anything about this name change?	**Base**	**7**
		100%
	Yes	6
		86%
	No	1
		14%

QB7. Do you recall the new name for the program?	**Base**	**6**
		100%
	NO, DO NOT RECALL NAME	4
		67%
	EARTHCENTS	2
		33%
	OTHER (SPECIFY)	-
		-

QB8. Have you seen or heard the name 'EarthCents' being used to refer to Georgia Power's Efficient New Homes Program?	**Base**	**4**
		100%
	Yes	4
		100%
	No	-
		-

QC1_1. How important is it for Georgia Power to provide Marketing the program's homes to home buyers as part of the program?	**Base**	**7**
		100%
	Not at all important	-
		-
	Not too important	1
		14%
	Somew hat important	-
		-
	Very important	6
		86%
QC1_2. How important is it for Georgia Power to provide Training for builders on efficient building practices as part of the program?	**Base**	**7**
		100%
	Not at all important	1
		14%
	Not too important	-
		-
	Somew hat important	3
		43%
	Very important	3
		43%
QC1_3. How important is it for Georgia Power to provide Rebates to cover the costs for HERS Ratings as part of the program?	**Base**	**7**
		100%
	Not at all important	1
		14%
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	6
		86%

QC1_4. How important is it for Georgia Power to provide Participating Builder listings on Georgia Power's website as part of the program?	**Base**	**7**
		100%
	Not at all important	1
		14%
	Not too important	-
		-
	Somew hat important	2
		29%
	Very important	4
		57%
QC1_5. How important is it for Georgia Power to provide Marketing to builders to make them aware of the program as part of the program?	**Base**	**7**
		100%
	Not at all important	1
		14%
	Not too important	-
		-
	Somew hat important	1
		14%
	Very important	5
		71%

QC2_1. Would you say Georgia Power's Marketing the program's homes to home buyers is very ineffective, not too effective, somewhat effective, or very effective?	**Base**	**5**
		100%
	Very ineffective	1
		20%
	Not too effective	1
		20%
	Somew hat effective	3
		60%
	Very effective	-
		-
	(VOL) DON'T KNOW/NO ANSWER	2
QC2_2. Would you say Georgia Power's Training for builders on efficient building practices is very ineffective, not too effective, somewhat effective, or very effective?	**Base**	**5**
		100%
	Very ineffective	-
		-
	Not too effective	1
		20%
	Somew hat effective	4
		80%
	Very effective	-
		-
	(VOL) DON'T KNOW/NO ANSWER	2

QC2_3. Would you say Georgia Power's Rebates to cover the costs for HERS Ratings is very ineffective, not too effective, somewhat effective, or very effective?	**Base**	**7**
		100%
	Very ineffective	-
		-
	Not too effective	1
		14%
	Somew hat effective	3
		43%
	Very effective	3
		43%
QC2_4. Would you say Georgia Power's Participating Builder listings on the website is very ineffective, not too effective, somewhat effective, or very effective?	**Base**	**7**
		100%
	Very ineffective	-
		-
	Not too effective	2
		29%
	Somew hat effective	2
		29%
	Very effective	3
		43%
QC2_5. Would you say Georgia Power's Marketing to builders to make them aware of the program is very ineffective, not too effective, somewhat effective, or very effective?	**Base**	**6**
		100%
	Very ineffective	-
		-
	Not too effective	1
		17%
	Somew hat effective	3
		50%
	Very effective	2
		33%
	(VOL) DON'T KNOW/NO ANSWER	1

QC3. How easy did you find it to participate in the Efficient New Homes Program?	**Base**	**7**
		100%
	Very difficult	-
		-
	Not too easy	1
		14%
	Somew hat easy	4
		57%
	Very easy	2
		29%

QC4. What made participating in the program very difficult/not too easy?	**Base**	**1**
		100%
	Gave response	1
		100%

QC4. What made participating in the program very difficult/not too easy?	**Base**	**1**
		100%
	georgia pow er lack of know ledge of their ow n programs	1
		100%

QC5. How did you find a certified home rater for your homes?	**Base**	**7**
		100%
	Other, (RECORD RESPONSE)	3
		43%
	Georgia Pow er Staff	2
		29%
	Internet search	2
		29%
	Southface Institute	-
		-
	RESNET	-
		-
	Knew through previous business interactions	-
		-

QC5. How did you find a certified home rater for your homes?	**Base**	**3**
		100%
	<6:Other, (RECORD RESPONSE)>:energy star w ebsite	1
		33%
	<6:Other, (RECORD RESPONSE)>:havent done one yet	1
		33%
	<6:Other, (RECORD RESPONSE)>:someone came to us	1
		33%

QC6. Overall, would you say you have been very dissatisfied, not too satisfied, somewhat satisfied, or very satisfied with the HERS rating services?	**Base**	**7**
		100%
	Very dissatisfied	-
		-
	Not too satisfied	1
		14%
	Somew hat satisfied	1
		14%
	Very satisfied	5
		71%

QC7. And would you say you are very dissatisfied, somewhat dissatisfied, somewhat satisfied, or very satisfied with the process of getting your rebate?	**Base**	**6**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	1
		17%
	Somew hat satisfied	4
		67%
	Very satisfied	1
		17%
	(VOL) DON'T KNOW	1

QC8. And why do you say YOU WERE very dissatisfied/somewhat dissatisfied? (PROBE: What was the issue? Was the issue resolved?	**Base**	**1**
		100%
	Gave response	1
		100%

QC8. And why do you say YOU WERE very dissatisfied/somewhat dissatisfied?	**Base**	**1**
		100%
	because it takes a long time, like 6 to 8 months	1
		100%

QC9. On average, how many weeks did it take for your rebate to arrive? (RECORD WEEKS)	**Base**	**3**
		100%
	5.00	1
		33%
	12.00	1
		33%
	20.00	1
		33%
	DON'T KNOW	4

QD1. Do you specifically promote the homes built through the program as 'energy efficient' or 'green'?	**Base**	**7**
		100%
	Yes	6
		86%
	No	1
		14%
Qd2merged. What have you found to be the most effective way to market efficient homes?	**Base**	**6**
		100%
	Website/Internet (Unspecified)	2
		33%
	Print ads or brochures	1
		17%
	Word of mouth (Friend, cow orker, acquaintance)	1
		17%
	Leave a packet of information at the house	1
		17%
	Other (SPECIFY AND RECORD)	1
		17%
	TV Advertising	-
		-
	TV new s feature story	-
		-
	Radio ad	-
		-
	New spaper/magazine article	-
		-
	Builder or sales agent	-
		-
	Architect	-
		-
	Model home tour	-
		-
	At a public event	-
		-
	Model homes	-
		-
	Outdoor signs	-
		-
	Don't market them, just build them	-
		-
QD2. What have you found to be the MOST effective way to market the homes you build through the program?	**Base**	**1**
		100%
	<16:Other (SPECIFY AND RECORD) >:thru our home buyers education classes	1
		100%

QD3. In 2011, have you increased, decreased, or kept the same your own marketing efforts to sell participating efficient new homes?	**Base**	**7**
		100%
	Increased	4
		57%
	Decreased	-
		-
	Kept the same	3
		43%

QD4. How effective is the Efficient New Homes marketing provided by Georgia Power in creating customer awareness for energy efficient new homes?	**Base**	**7**
		100%
	Not at all effective	2
		29%
	Not too effective	1
		14%
	Somew hat effective	4
		57%
	Very effective	-
		-

QD5. Do you include any kind of plaque or labeling similar to the ENERGYSTAR label on your efficient homes that would indicate to a buyer that it is an efficient home?	**Base**	**6**
		100%
	Yes	3
		50%
	No	2
		33%
	Other (specify)	1
		17%
	(VOL) DON'T KNOW	1

QD5. Do you include any kind of plaque or labeling similar to the ENERGYSTAR label on your efficient homes that would indicate to a buyer that it is an efficient home?	**Base**	**1**
		100%
	<3:Other (specify)>:w e put the energy star label	1
		100%

Qd6merged. What would you suggest GPC could do to increase builder participation in the efficient homes program?	**Base**	**7**
		100%
	Other (SPECIFY)	4
		57%
	No suggestions	1
		14%
	More marketing to public	1
		14%
	Help builders with advertising	1
		14%
	Certification, make it an industry standard	-
		-
	Keep the name/program requirements consistent	-
		-
	Have consultants spend more time with us	-
		-
	Better communication with what is going on with the program	-
		-
	Send the rebate check in a timelier manner	-
		-
	Tax credit	-
		-
	INCREASE THE REBATE AMOUNT	-
		-
QD6. What would you suggest Georgia Power do to increase builder participation in the Efficient New Homes Program?	**Base**	**4**
		100%
	<10:Other (SPECIFY) >:give us more money	1
		25%
	<10:Other (SPECIFY) >:increase the amount of rebate	1
		25%
	<10:Other (SPECIFY) >:marketing outreach would be helpful builder training	1
		25%
	<10:Other (SPECIFY) >:to many forclusures	1
		25%

QE1. How many new homes of any type have you built and completed in Georgia since January 2011?	**Base**	**7**
		100%
	2.00	1
		14%
	5.00	1
		14%
	6.00	1
		14%
	10.00	1
		14%
	45.00	1
		14%
	50.00	1
		14%
	80.00	1
		14%

QE2. Of these completed homes, how many took part in Georgia Power's Efficient New Homes Program?	**Base**	**7**
		100%
	0.00	1
		14%
	2.00	1
		14%
	5.00	1
		14%
	6.00	1
		14%
	10.00	1
		14%
	40.00	1
		14%
	80.00	1
		14%

QE3. About how many more new homes do you expect to complete in Georgia during 2011?	**Base**	**7**
		100%
	0.00	1
		14%
	1.00	1
		14%
	3.00	1
		14%
	10.00	3
		43%
	30.00	1
		14%

QE4. How many of these homes that are expected to be completed by the end of 2011 do you think will be evaluated by a HERS rater and eligible for the $300 incentive from Georgia Power?	**Base**	**6**
		100%
	1.00	1
		17%
	3.00	1
		17%
	4.00	1
		17%
	10.00	3
		50%

QE5. Since you began participating in the program, would you say a larger share of the homes you build in Georgia are going through the program, a smaller share of your homes, or is the proportion about the same?	**Base**	**7**
		100%
	A larger share of homes	2
		29%
	A smaller share of homes	-
		-
	Proportion stayed the same	5
		71%

QE6. Why is it a larger share of homes/smaller share of homes are going through the program?	**Base**	**2**
		100%
	Gave response	2
		100%

QE6. Why is it a larger share of homes/smaller share of homes are going through the program? [VERBATIM RESPONSE]	**Base**	**2**
		100%
	because of the program	1
		50%
	they all required to have a hers testing	1
		50%

QE7. How important was Georgia Power's Efficient New Homes Program in bringing about this increase, would you say not important, not too important, somewhat important or very important.	**Base**	**1**
		100%
	Not important	-
		-
	Not too important	-
		-
	Somew hat Important	-
		-
	Very Important	1
		100%
	(VOL) DON'T KNOW	1

QE8a_1. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? High efficiency insulation and air tightness (such as air sealing or duct sealing)	**Base**	**7**
		100%
	0.00	1
		14%
	100.00	6
		86%
QE8b_1. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? High efficiency insulation and air tightness (such as air sealing or duct sealing)	**Base**	**5**
		100%
	DON'T KNOW	1
	100.00	5
		100%
QE8a_2. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? ENERGY STAR Appliances	**Base**	**7**
		100%
	0.00	1
		14%
	35.00	1
		14%
	100.00	5
		71%
QE8b_2. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? ENERGY STAR Appliances	**Base**	**6**
		100%
	35.00	1
		17%
	100.00	5
		83%
QE8a_3. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? High efficiency Furnace, Boiler, or Heat Pump	**Base**	**7**
		100%
	0.00	2
		29%
	100.00	5
		71%
QE8b_3. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? High efficiency Furnace, Boiler, or Heat Pump	**Base**	**5**
		100%
	100.00	5
		100%
QE8a_4. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? High Efficiency water heater (EF 62.)	**Base**	**7**
		100%
	0.00	3
		43%
	100.00	4
		57%
QE8b_4. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? High Efficiency water heater (EF 62.)	**Base**	**4**
		100%
	100.00	4
		100%

QE8a_5. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? Efficient Central Air Conditioner (SEER 14 +)	**Base**	**7**
		100%
	0.00	3
		43%
	100.00	4
		57%
QE8b_5. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? Efficient Central Air Conditioner (SEER 14 +)	**Base**	**4**
		100%
	50.00	1
		25%
	100.00	3
		75%
QE8a_6. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? ENERGY STAR Lighting (CFLs or fixtures)	**Base**	**7**
		100%
	0.00	1
		14%
	30.00	1
		14%
	50.00	1
		14%
	100.00	4
		57%
QE8b_6. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? ENERGY STAR Lighting (CFLs or fixtures)	**Base**	**6**
		100%
	0.00	1
		17%
	30.00	1
		17%
	100.00	4
		67%
QE8a_7. Since January 2011, about what percent of your new homes that went through the Georgia Power program included the following equipment? ENERGY STAR rated windows or doors	**Base**	**6**
		100%
	DON'T KNOW	1
	0.00	1
		17%
	100.00	5
		83%
QE8b_7. In what percent of these homes would you have used the same equipment if Georgia Power's program had not existed? ENERGY STAR rated windows or doors	**Base**	**5**
		100%
	50.00	1
		20%
	100.00	4
		80%

E8H. Other than the ones we just talked about, are there any other energy efficient equipment or practices that exceed the standard building code that you use on a regular basis?	**Base**	**6**
		100%
	Yes	3
		50%
	No	3
		50%
	(VOL) DON'T KNOW	1
E8H. Other than the ones we just talked about, are there any other energy efficient equipment or practices that exceed the standard building code that you use on a regular basis? [VERBATIM RESPONSE]	**Base**	**3**
		100%
	advanced frame and package, radiat barrier on every roof, ultra low e-w indow	1
		33%
	more insulation	1
		33%
	we have hvac air handlers in condition space and caulked all exterior openings,an envelop	1
		33%

QE9a_1. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? High efficiency insulation and air tightness	**Base**	**6**
		100%
	0.00	2
		33%
	50.00	1
		17%
	100.00	3
		50%
QE9a_2. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? ENERGY STAR Appliances	**Base**	**6**
		100%
	0.00	2
		33%
	100.00	4
		67%
QE9a_3. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? High efficiency Furnace, Boiler, or Heat Pump	**Base**	**5**
		100%
	0.00	1
		20%
	100.00	4
		80%
QE9a_4. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? High Efficiency water heater (EF 62.)	**Base**	**4**
		100%
	0.00	1
		25%
	100.00	3
		75%

QE9a_5. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? Efficient Central Air Conditioner (SEER 14 +)	**Base**	**4**
		100%
	0.00	2
		50%
	100.00	2
		50%
QE9a_6. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? ENERGY STAR Lighting (CFLs or fixtures)	**Base**	**6**
		100%
	0.00	3
		50%
	100.00	3
		50%
QE9a_7. In that same time frame, what percent of your non-participating new homes (homes that did not go through Georgia Power's program) incorporated the following measures? ENERGY STAR rated windows or doors	**Base**	**5**
		100%
	80.00	1
		20%
	100.00	4
		80%

QE9b_1. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? High efficiency insulation and air tightness	**Base**	**4**
		100%
	Not at all important	1
		25%
	Not too important	-
		-
	Somew hat important	1
		25%
	Very important	2
		50%
QE9b_2. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? ENERGY STAR Appliances	**Base**	**4**
		100%
	Not at all important	2
		50%
	Not too important	-
		-
	Somew hat important	1
		25%
	Very important	1
		25%

QE9b_3. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? High efficiency Furnace, Boiler, or Heat Pump	**Base**	**3**
		100%
	Not at all important	1
		33%
	Not too important	-
		-
	Somew hat important	1
		33%
	Very important	1
		33%
	(VOL) DON'T KNOW/NO ANSWER	1
QE9b_4. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? High Efficiency water heater (EF 62.)	**Base**	**3**
		100%
	Not at all important	1
		33%
	Not too important	-
		-
	Somew hat important	1
		33%
	Very important	1
		33%
QE9b_5. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? Efficient Central Air Conditioner (SEER 14 +)	**Base**	**2**
		100%
	Not at all important	-
		-
	Not too important	-
		-
	Somew hat important	1
		50%
	Very important	1
		50%

QE9b_6. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? ENERGY STAR Lighting (CFLs or fixtures)	**Base**	**3**
		100%
	Not at all important	1
		33%
	Not too important	-
		-
	Somew hat important	1
		33%
	Very important	1
		33%
QE9b_7. Now, for this same list, how important was Georgia Power's program in your decision to incorporate these measures in those non-participating new homes? ENERGY STAR rated windows or doors	**Base**	**5**
		100%
	Not at all important	2
		40%
	Not too important	-
		-
	Somew hat important	2
		40%
	Very important	1
		20%
QF1. Is your company applying any knowledge or building practices learned through participation in Georgia Power's Program to other homes that are not going through the Program?	**Base**	**4**
		100%
	Yes	1
		25%
	No	3
		75%
	(VOL) DON'T KNOW	1
QF1a. WHAT PERCENT OF NON-EFFICIENT HOMES BENEFIT FROM THESE PRACTICES?	**Base**	**1**
		100%
	50.00	1
		100%
QF2. For the homes that did not go through the Georgia Power Efficient New Homes Program (we'll call them 'nonpaticipating homes'), what percent were built in areas where Georgia Power program incentives were available?	**Base**	**2**
		100%
	0.00	2
		100%
QF3. What percent of those nonparticipating homes within Georgia power could have qualified for the program if a HERS rating had been done?	**Base**	**-**
		-
	DON'T KNOW	-
		-
	REFUSED	-
		-

QF4. What percent of your nonparticipating homes were built in areas where Georgia Power incentives were not available (including outside of Georgia)?	**Base**	**2**
		100%
	0.00	1
		50%
	100.00	1
		50%

QF5. And what percent of those homes (outside of Georgia Power's territory) could have qualified for the program if it was offered in those areas?	**Base**	**1**
		100%
	100.00	1
		100%

QF6. What are the reasons for building homes that do not go through the program?	**Base**	**1**
		100%
	<6:Other (SPECIFY) >:the program was not available	1
		100%

QF6. What are the reasons for building homes that do not go through the program?	**Base**	**2**
		100%
	Not in (Georgia Power Service territory) eligible area	1
		50%
	Other (SPECIFY)	1
		50%
	Cost/not enough rebate	-
		-
	Wanted to see how they sell first	-
		-
	Too time consuming/need to meet deadlines	-
		-
	Customer didn't want it/had competing preferences	-
		-

QF7. What percent of your homes have received a HERS rating, but don't qualify for Georgia Power's program rebate?	**Base**	**4**
		100%
	0.00	3
		75%
	5.00	1
		25%

QG1. For custom projects, do any of your customers specifically request homes with energy efficient features?	**Base**	**7**
		100%
	Yes	3
		43%
	No	4
		57%
QG1A. WHAT PERCENT?	**Base**	**3**
		100%
	60.00	1
		33%
	75.00	1
		33%
	90.00	1
		33%
QG2. Compared to 2010, would you say consumer requests in 2011 for efficient homes that would qualify for the Georgia Power Efficient New Homes program has...?	**Base**	**7**
		100%
	Decreased significantly	-
		-
	Decreased somew hat	-
		-
	Increased somew hat	1
		14%
	Increased significantly	-
		-
	Stayed the same	6
		86%
QG3. To what do you attribute this change?	**Base**	**1**
		100%
	Gave response	1
		100%
QG3. To what do you attribute this change?	**Base**	**1**
		100%
	marketing	1
		100%

QG4. In your opinion, do your efficient homes that meet the qualifications for Georgia Power's rebate sell any faster than homes that wouldn't qualify?	**Base**	**7**
		100%
	Yes	2
		29%
	No	5
		71%
QG4A. About how much faster? (RECORD WEEKS)	**Base**	**2**
		100%
	3.00	1
		50%
	50.00	1
		50%
QG5. Projecting ahead to the years 2012 and 2013, how many new homes do you think you will build, on average per year, whether or not they qualify for the Georgia Power Efficient New Homes rebate? (RECORD NUMBER)	**Base**	**7**
		100%
	0.00	1
		14%
	17.00	1
		14%
	20.00	2
		29%
	50.00	1
		14%
	60.00	1
		14%
	80.00	1
		14%
QG6. Why do you not anticipate building any new homes in the next 1-2 years?	**Base**	**1**
		100%
	Gave response	1
		100%
QG6. Why do you not anticipate building any new homes in the next 1-2 years? [VERBATIM RESPONSE]	**Base**	**1**
		100%
	markets dow n	1
		100%

QH1. On average, how much more (as a percent) does it cost you to build a home that goes through Georgia Power's Efficient New Homes Program compared to one that meets the minimum standards required for the current building code?	**Base**	**5**
		100%
	1.00	1
		20%
	3.00	1
		20%
	5.00	2
		40%
	6.00	1
		20%
	DON'T KNOW	2

QH2. How have your expenses for building a home that qualifies for Georgia Power's Efficient New Home Program CHANGED in the last two years, compared to building a non-program new home?	**Base**	**7**
		100%
	Increased	3
		43%
	Decreased	-
		-
	Stayed the same	4
		57%
QH2A. By what percentage? (INCREASED) (RECORD RESPONSE)	**Base**	**3**
		100%
	5.00	2
		67%
	8.00	1
		33%
QH2B. By what percentage? (DECREASED) (RECORD RESPONSE)	**Base**	**-**
		-
	DON'T KNOW	-
		-
	REFUSED	-
		-
QH3. To what do you attribute this change?	**Base**	**3**
		100%
	Gave response	3
		100%
QH3. To what do you attribute this change? [VERBATIM RESPONSE]	**Base**	**3**
		100%
	high cost of things going up like increased prices	1
		33%
	new materials and insulation	1
		33%
	they have requirements for cost of products	1
		33%

QH4. How important was the Georgia Power Efficient New Homes Program in helping to bring about this decrease in cost? Would you say very unimportant, not too important, somewhat important or very important?	**Base**	-
		-
	Very unimportant	-
		-
	Not too important	-
		-
	Somew hat important	-
		-
	Very important	-
		-

QH5. Have you had fewer complaints or call-backs from home buyers who purchased the program homes compared to those you build that don't qualify for the program?	**Base**	**7**
		100%
	Yes	1
		14%
	No	6
		86%

QI1. As a result of participating in the Georgia Power Efficient New Homes Program, would you say your familiarity with energy efficient building practices has increased, decreased, or has not changed?	**Base**	**7**
		100%
	Increased	6
		86%
	Decreased	-
		-
	Has not changed	1
		14%

QI2. Have you visited Georgia Power's website to get more information about the Efficiency New Homes program?	**Base**	**7**
		100%
	Yes	4
		57%
	No	3
		43%

QI3. How user-friendly was the website, would you say it is very difficult, not too easy, somewhat easy, or very easy to navigate?	**Base**	**4**
		100%
	Very difficult	-
		-
	Not too easy	-
		-
	Somew hat Easy	2
		50%
	Very Easy	2
		50%

QI4. What would make the website easier to use?	**Base**	-
		-
	Gave response	-
		-

QI5. Is there any other information about the program you would find useful?	**Base**	**7**
		100%
	Yes	-
		-
	No	7
		100%

QJ1. How satisfied are you with Georgia Power's Efficient New Homes Program overall? Would you say you are very dissatisfied, somewhat dissatisfied, somewhat satisfied, or very satisfied?	**Base**	**7**
		100%
	Very dissatisfied	1
		14%
	somew hat dissatisfied	-
		-
	Somew hat satisfied	5
		71%
	Very satisfied	1
		14%

QJ2. What do you think are the primary benefits of building Efficient New Homes through Georgia Power's program?	**Base**	**4**
		100%
	<6:Other, (SPECIFY) >:benefits the ow ner to have more efficient homes	1
		25%
	<6:Other, (SPECIFY) >:efficient of savings from buyers	1
		25%
	<6:Other, (SPECIFY) >:saves on their utility bills	1
		25%
	<6:Other, (SPECIFY) >:thier is no benefits	1
		25%

qj2merged. What are the benefits of building efficient new homes through Georgia Power's program?	**Base**	**7**
		100%
	Other, (SPECIFY)	4
		57%
	The rebate	3
		43%
	Helps in marketing the home	1
		14%
	Increased value of the home	-
		-
	Increased sales revenue	-
		-
	Good PR for the company	-
		-

QJ3. Are you aware of Georgia Power sponsored training opportunities for builders?	**Base**	**7**
		100%
	Yes	3
		43%
	No	4
		57%

QJ4. Have you attended any of the training opportunities?	**Base**	**3**
		100%
	Yes	1
		33%
	No	2
		67%

QJ5. How useful did you find the training? Was it not at all useful, not too useful, somewhat useful, or very useful?	**Base**	**1**
		100%
	Not at all useful	-
		-
	Not too useful	-
		-
	Somew hat useful	1
		100%
	Very useful	-
		-

QJ6. How would you rate the ease of participating in Georgia Power's program overall, would you rate it very difficult, not too easy, somewhat easy, or very easy?	**Base**	**7**
		100%
	Very difficult	2
		29%
	Not too easy	-
		-
	Somew hat easy	5
		71%
	Very easy	-
		-

QJ7. Why do you say your ease of participation is very difficult/not too easy?	**Base**	**2**
		100%
	Gave response	2
		100%

QJ7. Why do you say your ease of participation is very difficult/not too easy?	**Base**	**2**
		100%
	bother him about energy issues	1
		50%
	hard to go to trainings w hen you got to w ork	1
		50%

QJ8. How would you improve Georgia Power's Efficient New Homes Program?	**Base**	**5**
		100%
	<1:(SPECIFY)>:I w ould w ait until somebody receives rebate before calling to see if they are	1
		20%
	<1:(SPECIFY)>:a broader know ledge base for information	1
		20%
	<1:(SPECIFY)>:do aw ay w ith these surveys	1
		20%
	<1:(SPECIFY)>:reach out to the builders to let them know about the trains	1
		20%
	<1:(SPECIFY)>:thats not my job	1
		20%

QK1. What percent of all the homes that you build are built outside of Georgia Power service territory? (RECORD PERCENTAGE)	**Base**	**7**
		100%
	0.00	3
		43%
	2.00	2
		29%
	10.00	1
		14%
	20.00	1
		14%

QK2. What percent of the homes you build are custom-built? (RECORD PERCENTAGE)	**Base**	**7**
		100%
	0.00	3
		43%
	3.00	1
		14%
	10.00	2
		29%
	100.00	1
		14%

QK3. What percent of the homes you build are on spec?	**Base**	**7**
		100%
	10.00	1
		14%
	50.00	2
		29%
	98.00	1
		14%
	100.00	3
		43%

QK4. What is the average size range of the homes you build?	**Base**	**7**
		100%
	Under 1000 square feet	-
		-
	1000 to just under 2000 square feet	4
		57%
	2000 to just under 3000 square feet	3
		43%
	3000 or larger	-
		-

QK5. What is the average selling price range of the homes you build?	**Base**	**7**
		100%
	Under $100,000	1
		14%
	$100,000 to just under $200,000	3
		43%
	$200,000 to just under $300,000	3
		43%
	$300,000 or more	-
		-

G.3 NON-PARTICIPATING BUILDER SURVEY

QB1. Have you read or heard about Georgia Power's Efficient New Homes Program? (IF NEEDED: this is the program that replaced the ENERGY STAR new homes program.)	**Base**	**46**
		100%
	YES	31
		67%
	NO	15
		33%
	(VOL) DON'T KNOW	4

Qb2merged. Where have you read or heard about the ENH program?	**Base**	**30**
		100%
	Georgia Power staff/customer rep	18
		60%
	Trade association	6
		20%
	At an event	4
		13%
	From another builder	2
		7%
	From a vendor or contractor (RECORD OTHER)	2
		7%
	Georgia Power Builder Information/Rebate Packet	1
		3%
	Georgia Power Information Session (luncheon)	-
		-
	Website	-
		-
	Home buyer	-
		-
	(VOL) DON'T KNOW	1
-QB2A- What event? (RECORD VERBATIM)	**Base**	**4**
		100%
	Gave response	4
		100%
-QB2A- What event?	**Base**	**4**
		100%
	a education class and georgia power had a speaker there	1
		25%
	company from builder who works for company attending homebuilder association.	1
		25%
	it was at a meeting for georgia power about earthcents	1
		25%
	seminar in Georgia power office	1
		25%

QB3. And would you say you are not at all familiar, not too familiar, somewhat familiar, or very familiar with Georgia Power's Efficient New Homes Program requirements? (IF NEEDED: FOR EXAMPLE, INSULATION LEVELS, AIR SEALING, DUCT SEALING.)	**Base**	**31**
		100%
	Not at all familiar	3
		10%
	Not too familiar	3
		10%
	Somew hat familiar	18
		58%
	Very familiar	7
		23%

QB4. Georgia Power has recently changed the name for the Efficient New Homes Program. Have you heard or read anything about this name change?	**Base**	**31**
		100%
	YES	13
		42%
	NO	18
		58%

QB5. Do you recall the new name for the program?	**Base**	**13**
		100%
	EARTHCENTS	5
		38%
	Other (SPECIFY)	-
		-
	(VOL) Don't Know	8
		62%

QB6. Have you seen or heard the name 'EarthCents' as the new name for Georgia Power's Efficient New Homes Program?	**Base**	**45**
		100%
	YES	20
		44%
	NO	25
		56%

QC1. Our records indicate that your company has not participated in the Efficient New Homes or EarthCents Program in 2011. Is that correct?	**Base**	**38**
		100%
	Yes	38
		100%
	No (INTERVIEWER NOTE: CLARIFY BY ASKING IF THEY ARE A CURRENT PARTICIPANT)	-
		-
	(VOL) Participated in the past	-
		-

QC2merged. What has prevented you from participating in Georgia Power's ENH program?	**Base**	**34**
		100%
	Uncertain about how to get involved/need information	13
		38%
	Other (SPECIFY)	11
		32%
	Geographic limits - only build in non Georgia Power service territories	4
		12%
	Not enough time to deal with it	3
		9%
	Cost, adds to price of construction	3
		9%
	No new home clients/not currently building efficient new homes	1
		3%
	Most of my customers do not want to build to efficient new home specifications	1
		3%
	Do not like the program	-
		-
	Economy-business going in different direction	-
		-
	(VOL) DON'T KNOW	4

QC2. What things have prevented you from participating in Georgia Power's Efficient New Home Program in 2011?	**Base**	**11**
		100%
	<9:Other (SPECIFY) >:I didn't know about it	1
		9%
	<9:Other (SPECIFY) >:The program was not up and running yet	1
		9%
	<9:Other (SPECIFY) >:WASNT AWARE OF IT	1
		9%
	<9:Other (SPECIFY) >:georgia power requires the use of an eletric water heater and we will will not use that water heater(else)no	1
		9%
	<9:Other (SPECIFY) >:haven't been building much	1
		9%
	<9:Other (SPECIFY) >:havent build anything	1
		9%
	<9:Other (SPECIFY) >:new building in certified earthcraft subdivision Southface	1
		9%
	<9:Other (SPECIFY) >:nopt enough incentives	1
		9%
	<9:Other (SPECIFY) >:our buyers preffer gas	1
		9%
	<9:Other (SPECIFY) >:we have just not done it yet , havent had the means	1
		9%
	<9:Other (SPECIFY) >:we haven't been building in GA till resently	1
		9%
-QC2A- WHY DID YOU NOT HAVE ENOUGH TIME TO DEAL WITH IT?	**Base**	**3**
		100%
	Gave response	3
		100%
-QC2A- WHY DID YOU NOT HAVE ENOUGH TIME TO DEAL WITH IT?	**Base**	**3**
		100%
	I'm a one man operation and I don't have time to deal with it(else)no	1
		33%
	because I don't know what the benefits are for using it(else)no	1
		33%
	because we are busy with workload(else)none	1
		33%

QC3. How likely are you to participate in the program in 2012?	**Base**	**38**
		100%
	Not at all likely	3
		8%
	Not too likely	4
		11%
	Somew hat likely	17
		45%
	Very likely	14
		37%

-QC4- What would increase the likelihood of your participation in 2012? (RECORD RESPONSE)	**Base**	**23**
		100%
	Gave response	23
		100%
	(VOL) DON'T KNOW	1
-QC4- What would increase the likelihood of your participation in 2012?	**Base**	**23**
		100%
	Understanding the benefits/if cost to me is w orth it	6
		26%
	Buyer demand/getting requests from customers	5
		22%
	If w e build houses, I w ould definitely get involved	2
		9%
	If builders can get incentives	2
		9%
	I'm not planning on building any houses in georgia pow ers areas(else)no	1
		4%
	Opinion of managers w hether or not heat pumps are a viable for comfort for our customers	1
		4%
	building a spec house(else)no	1
		4%
	changing the rules to allow the use of a gas w ater heater(else)no	1
		4%
	federal funding for building(else)no	1
		4%
	mr the president making that descision	1
		4%
	w e just have to look into that and see(el;se)no	1
		4%
	w ouldnt because I w on't be in business(else)no	1
		4%

QC5. Had you participated in Georgia Power's ENERGY STAR New Homes Program pilot prior to 2011?	**Base**	**36**
		100%
	YES	13
		36%
	NO	23
		64%
	(VOL) DON'T KNOW	2
QC6. Of the homes you completed in 2010, how many went through the ENERGY STAR New Homes program?	**Base**	**13**
		100%
	2	1
		8%
	3	2
		15%
	6	2
		15%
	10	1
		8%
	12	1
		8%
	20	2
		15%
	175	1
		8%
	998	3
		23%

QC7. Overall, would you say you were very dissatisfied, somewhat dissatisfied, somewhat satisfied, or very satisfied with your participation in the ENERGY STAR New Homes program?	**Base**	**13**
		100%
	Very dissatisfied	-
		-
	Somew hat dissatisfied	-
		-
	Somew hat satisfied	4
		31%
	Very satisfied	9
		69%

QD1. How many new homes of any type have you built and completed in Georgia since January 2011? (RECORD RESPONSE.	**Base**	**50**
		100%
	1	9
		18%
	2	7
		14%
	3	4
		8%
	4	4
		8%
	5	1
		2%
	6	3
		6%
	7	2
		4%
	9	1
		2%
	10	4
		8%
	12	1
		2%
	13	2
		4%
	15	2
		4%
	17	1
		2%
	20	1
		2%
	39	2
		4%
	40	1
		2%
	80	1
		2%
	125	1
		2%
	150	1
		2%
	200	1
		2%
	281	1
		2%

QD2. And about how many more new homes do you expect to complete in Georgia by the end of 2011? (RECORD RESPONSE.	**Base**	**50**
		100%
	0	21
		42%
	1	8
		16%
	2	3
		6%
	3	8
		16%
	4	2
		4%
	5	3
		6%
	6	1
		2%
	16	1
		2%
	20	2
		4%
	25	1
		2%
QD3. What percentage of the [+qd1+] [+qd1tx+] you've built so far in 2011 have been custom homes?	**Base**	**50**
		100%
	0	22
		44%
	2	1
		2%
	10	2
		4%
	20	1
		2%
	25	1
		2%
	40	1
		2%
	50	1
		2%
	65	1
		2%
	100	20
		40%

QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? a. High efficiency insulation . &qd4txt	**Base**	**50**
		100%
	0	1
		2%
	20	2
		4%
	25	1
		2%
	50	2
		4%
	90	1
		2%
	95	1
		2%
	100	39
		78%
	998	3
		6%
QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? b. Air sealing or duct sealing . &qd4txt	**Base**	**49**
		100%
	Don't know	1
	0	2
		4%
	10	1
		2%
	50	2
		4%
	100	36
		73%
	998	8
		16%

QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? c. ENERGYSTAR or 92% AFUE Furnace, 82% AFUE Boiler, or Heat Pump . &qd4txt	**Base**	**50**
		100%
	0	3
		6%
	13	1
		2%
	20	3
		6%
	50	1
		2%
	80	1
		2%
	95	1
		2%
	100	33
		66%
	998	7
		14%
QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? d. ENERGYSTAR or SEER 14 or higher Central Air Conditioner . &qd4txt	**Base**	**50**
		100%
	0	13
		26%
	10	2
		4%
	13	1
		2%
	20	2
		4%
	50	2
		4%
	75	1
		2%
	95	1
		2%
	100	26
		52%
	998	2
		4%

QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? e. High Efficiency water heater (EF 62.) . &qd4txt	**Base**	**50**
		100%
	0	12
		24%
	10	1
		2%
	20	1
		2%
	40	1
		2%
	50	2
		4%
	80	1
		2%
	100	28
		56%
	998	4
		8%
QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? f. ENERGYSTAR Lighting (CFLs or fixtures) . &qd4txt	**Base**	**50**
		100%
	0	9
		18%
	10	1
		2%
	20	2
		4%
	40	1
		2%
	50	8
		16%
	60	1
		2%
	75	1
		2%
	80	2
		4%
	100	20
		40%
	998	5
		10%

QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? g. ENERGYSTAR Refrigerator . &qd4txt	**Base**	**50**
		100%
	0	20
		40%
	15	1
		2%
	20	1
		2%
	50	2
		4%
	80	1
		2%
	100	23
		46%
	998	2
		4%
QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? h. ENERGYSTAR Clothes Washer . &qd4txt	**Base**	**50**
		100%
	0	36
		72%
	10	2
		4%
	20	1
		2%
	100	8
		16%
	998	3
		6%

QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? i. ENERGYSTAR Dishwasher . &qd4txt	**Base**	**50**
		100%
	0	5
		10%
	1	1
		2%
	20	1
		2%
	33	1
		2%
	50	1
		2%
	75	1
		2%
	100	37
		74%
	998	3
		6%
QD4. Of all the new homes you've built in 2011, what percent incorporate the following energy-efficient features? j. ENERGYSTAR qualified windows or doors . &qd4txt	**Base**	**50**
		100%
	0	2
		4%
	20	1
		2%
	70	1
		2%
	80	2
		4%
	100	39
		78%
	998	5
		10%

-QD5- Given what you know about efficient homes, what is the additional dollar amount to build an EFFICIENT new home above what it cost to build a standard home? (IF NEEDED: What are the incremental costs?	**Base**	**40**
		100%
	Gave response	40
		100%
	(VOL) DON'T KNOW	10

-QD5- Given what you know about efficient homes, what is the additional dollar amount to build an EFFICIENT new home above what it cost to build a standard home? (IF NEEDED: What are the incremental costs?) [VERBATIM RESPONSE]	**Base**	**40**
		100%
	1000	1
		2%
	10000	7
		18%
	120.00 $ per square foot more	1
		2%
	1200	1
		2%
	12000	2
		5%
	1500	1
		2%
	15000	5
		12%
	2000	3
		8%
	22000	1
		2%
	2500	1
		2%
	25000	1
		2%
	280000	1
		2%
	3000	3
		8%
	3000-5000	1
		2%
	3500	1
		2%
	3500-5000	1
		2%
	4000	1
		2%
	5000	4
		10%
	6000	1
		2%
	800	1
		2%
	8000	1
		2%
	dont know because we build habitate for humanity homes and the bulk of the things are donated(else)no	1
		2%

QD6. How familiar are you with an energy rating system for homes called the Home Energy Rating System, or with HERS raters? Would you say you are not at all familiar, not too familiar, somewhat familiar, very familiar?	**Base**	**50**
		100%
	Not at all familiar	12
		24%
	Not too familiar	9
		18%
	Somew hat familiar	15
		30%
	Very familiar	14
		28%

QD7. How often do you get a HERS rating on homes you build?	**Base**	**38**
		100%
	Alw ays	11
		29%
	Sometimes	6
		16%
	Never	21
		55%
QD7A. For what percentage of the homes you build do you obtain a HERS rating? (RECORD RESPONSE. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**6**
		100%
	10	1
		17%
	20	1
		17%
	50	1
		17%
	60	1
		17%
	70	1
		17%
	100	1
		17%

QD8. What percentage of the new homes you build will meet or exceed a HERS rating of 85 this year? (RECORD RESPONSE. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**17**
		100%
	10	1
		6%
	50	2
		12%
	100	12
		71%
	998	2
		12%

QE1. For custom projects, do you present energy efficient features as options to customers?	**Base**	**28**
		100%
	YES	17
		61%
	NO	11
		39%

-QE2- About what percent of your custom homebuyers request energy-efficient features? (RECORD PERCENT. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**17**
		100%
	5	2
		12%
	10	1
		6%
	20	1
		6%
	25	1
		6%
	33	1
		6%
	40	1
		6%
	50	3
		18%
	75	1
		6%
	80	3
		18%
	90	1
		6%
	100	2
		12%

QE3. In your opinion, do homes with efficient features sell any faster than a home built to the standard building code?	**Base**	**39**
		100%
	YES	12
		31%
	NO	27
		69%
	(VOL) DON'T KNOW	11

QE4. Projecting ahead to 2012, are you expecting your new home construction business to (INCREASE, DECREASE OR STAY THE SAME)?	**Base**	**50**
		100%
	Increase	23
		46%
	Decrease	8
		16%
	Stay the same	19
		38%
QE4A. By what percentage do you expect your business to increase in 2012? (RECORD PERCENT. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**23**
		100%
	4	1
		4%
	10	4
		17%
	15	3
		13%
	20	2
		9%
	25	3
		13%
	30	3
		13%
	50	2
		9%
	100	4
		17%
	998	1
		4%
QE4B. By what percentage do you expect your business to decrease in 2012? (RECORD PERCENT. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**8**
		100%
	10	1
		12%
	15	1
		12%
	30	1
		12%
	40	1
		12%
	100	4
		50%

QF1. Does your company promote any of your new homes as 'energy efficient' or 'green'?	**Base**	**50**
		100%
	YES	23
		46%
	NO	27
		54%

QF2. In 2011, has your company INCREASED, DECREASED, OR KEPT THE SAME marketing efforts to sell efficient new homes?	**Base**	**21**
		100%
	Increased	8
		38%
	Decreased	-
		-
	Kept the same	13
		62%
	(VOL) DON'T KNOW	2

Qf3merged. What have you found to be the most effective way to promote efficient homes?	**Base**	**20**
		100%
	Website/Internet (Unspecified)	6
		30%
	Print ads or brochures	5
		25%
	Word of mouth (Friend, cow orker, acquaintance)	4
		20%
	New spaper/magazine article	3
		15%
	Other (SPECIFY AND RECORD)	3
		15%
	Outdoor signs	2
		10%
	Builder or sales agent	1
		5%
	Model home tour	1
		5%
	Don't market them, just build them	1
		5%
	TV Advertising	-
		-
	TV new s feature story	-
		-
	Radio ad	-
		-
	Architect	-
		-
	At a public event	-
		-
	Model homes	-
		-
	Leave a packet of information at the house	-
		-
	Rely on utility promotions	-
		-
	(VOL) DON'T KNOW	3

QF3. What have you found to be the MOST effective way to market energy-efficient new homes you build?	**Base**	**3**
		100%
	<17:Other (SPECIFY AND RECORD) >:market rhough trade show s	1
		33%
	<17:Other (SPECIFY AND RECORD) >:our realestate agaents deals w ith that	1
		33%
	<17:Other (SPECIFY AND RECORD) >:signs on our custom homes	1
		33%

QG1. Have you attended any workshops or trainings on energy efficient building practices?	**Base**	**50**
		100%
	YES	29
		58%
	NO	21
		42%
-QG2- Who sponsored the training?	**Base**	**28**
		100%
	Gave response	28
		100%
	(VOL) DON'T KNOW	1

-QG2- Who sponsored the training? [VERBATIM RESPONSE]	**Base**	**28**
		100%
	GEORGIA POWER	7
		25%
	SOUTHFACE	5
		18%
	home builders association	2
		7%
	CITY OF SAVANNAH	1
		4%
	EARTHCRAFT HOMES OUT OF ATLANTA	1
		4%
	ENERGY STAR	1
		4%
	Georgia pow er and earthcraft	1
		4%
	HBA	1
		4%
	Southface Institute	1
		4%
	homebuilders	1
		4%
	homebuilders association and iceyne phone co	1
		4%
	homebuilders assoiciation	1
		4%
	national association of homebuilders	1
		4%
	probuild	1
		4%
	southface or earthcraft house	1
		4%
	state of GA and homebuilders	1
		4%
	w est GA inspectors	1
		4%

QG3. How valuable was the training? Was it...	**Base**	**29**
		100%
	Not at all valuable	-
		-
	Not too valuable	-
		-
	Somew hat valuable	14
		48%
	Very valuable	15
		52%

QG4. How interested would you/your staff be in training from Georgia Power on energy-efficient building practices? Would you be...	**Base**	**50**
		100%
	Not at all interested	5
		10%
	Not too interested	4
		8%
	Somew hat interested	19
		38%
	Very interested	22
		44%

QH1. How many years has your company been building new homes in Georgia? (RECORD YEARS. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	Base	50
		100%
	3	4
		8%
	4	1
		2%
	5	1
		2%
	6	3
		6%
	7	3
		6%
	8	2
		4%
	9	1
		2%
	10	2
		4%
	11	3
		6%
	12	5
		10%
	13	1
		2%
	14	1
		2%
	15	2
		4%
	18	1
		2%
	20	3
		6%
	22	2
		4%
	25	1
		2%
	27	3
		6%
	28	2
		4%
	30	1
		2%
	32	2
		4%
	33	2
		4%
	35	2
		4%
	50	1
		2%
	53	1
		2%

QH2. Of the &qd1 new [+qd1tx+] your company has built this year, about what percent of them are single family homes and what percentage are multi-family units?	**Base**	**50**
		100%
	0	5
		10%
	28	1
		2%
	75	1
		2%
	80	1
		2%
	90	1
		2%
	100	41
		82%
QH2. Of the &qd1 new [+qd1tx+] your company has built this year, about what percent of them are single family homes and what percentage are multi-family units?	**Base**	**50**
		100%
	0	41
		82%
	10	1
		2%
	20	1
		2%
	25	1
		2%
	72	1
		2%
	100	5
		10%

QH3. And about what percentage of all new homes your company has built in 2011 were in states other than Georgia? (RECORD RESPONSE. (VOL) DON'T KNOW = 998, (VOL) REFUSED = 999)	**Base**	**50**
		100%
	0	44
		88%
	10	1
		2%
	20	1
		2%
	25	2
		4%
	50	1
		2%
	60	1
		2%

Appendix H DETAILED NTG TABLES (L&A, HEIP, RWH)

H.1 LIGHTING AND APPLIANCES NTG TABLES

Table H-1: Frequency of Appliance Rebate Program Freeridership Scoring Combinations

FR1. When did you first hear about the Georgia Power rebate for [Refrigerator/Clothes Washer]? Was it…	FR2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific [Refrigerator/Clothes Washer]?	FR3. Before you knew about the rebate, were you already planning to purchase a new [Refrigerator/Clothes Washer]?	FR4. If the rebate had not been available, would you still have purchased the exact same make and model of [Refrigerator/Clothes Washer] for your home?	FR5. Without the rebate, would you have purchased a [Refrigerator/Clothes Washer] with the level of efficiency, or would it have been more efficient, or less efficient?	FR6. And without the rebate, would you have purchased this [Refrigerator/Clothes Washer]...	FR Estimate	Number of Responses
Yes	Yes	x	x	x	x	100%	6
Partial	x	Yes	Yes	x	Yes	75%	35
Partial	x	Yes	Yes	x	No	0%	1
Partial	x	Yes	Partial	Yes	Yes	50%	2
Partial	x	Yes	Partial	Partial	Yes	25%	1
Partial	x	Yes	Partial	Partial	Partial	12.5%	1
Partial	x	Yes	No	Yes	Yes	25%	1
Partial	x	Yes	No	No	x	0%	3
Partial	x	No	Yes	x	Yes	25%	2
Partial	x	No	Yes	x	Partial	12.5%	1
No	x	Yes	Yes	x	Yes	50%	7
No	x	Yes	Partial	Yes	Yes	25%	3
No	x	Yes	No	Yes	No	0%	1
No	x	No	Yes	x	Yes	12.5%	6
No	x	No	Yes	x	Partial	0%	1
No	x	No	No	No	x	0%	1

Table H-2: Appliance Rebate Program Freeridership Scoring Adjustments

FR1. When did you first hear about the Georgia Power rebate for [Refrigerator/Clothes Washer]? Was it…	FR2. Just to confirm, before you first learned about the Georgia Power rebate you had already purchased or decided to purchase this specific [Refrigerator/Clothes Washer]?	FR3. Before you knew about the rebate, were you already planning to purchase a new [Refrigerator/Clothes Washer]?	FR4. If the rebate had not been available, would you still have purchased the exact same make and model of [Refrigerator/Clothes Washer] for your home?	FR5. Without the rebate, would you have purchased a [Refrigerator/Clothes Washer] with the level of efficiency, or would it have been more efficient, or less efficient?	FR6. And without the rebate, would you have purchased this [Refrigerator/Clothes Washer]...	Original FR Estimate	Number of Responses
Partial	x	Yes	Yes	x	Yes	75%	11
Partial	x	No	Yes	x	Partial	12.5%	1
No	x	No	Yes	x	Yes	12.5%	1
No	x	No	Yes	x	Partial	0%	2

H.2 HEIP NTG TABLES

Table H-3: Assignments of HEIP Bundled Response Options into Matrix Terminology

FR1. Would you have made the same improvements if the program rebates had not been available?	FR2. Let me make sure I understand. When you say you would have made the same improvements, would you have made all the improvements at the same efficiency level?	FR3. And would you have made the same improvements:	FR4. Let me make sure I understand. When you say you would not have made the same improvements, do you mean you would not have made any of the improvements?	FR5. Would you have made some of the improvements at a lower efficiency level?	FR6. And, would you have made those improvements:	FR7. How important was the incentive in influencing your decision to invest in energy efficient upgrades?
Yes (Yes)	Yes (Yes)	At the same time or within three months of when you actually made the upgrades (Yes)	Yes (No)	Yes (No)	At the same time or within three months of when you actually made the upgrades (Yes)	Not at all important (Yes)
No (No)	No (No)	Within three to six months (Partial)	No (Yes)	No (Yes)	Within three to six months (Partial)	Not too important (Partial)
Don't Know (Partial)	Don't Know (Partial)	Six to 12 months (Partial)	Don't Know (Partial)	Don't Know (Partial)	Six to 12 months (Partial)	Somewhat important (Partial)
Refused (Partial)	Refused (Partial)	More than a year (No)	Refused (Partial)	Refused (Partial)	More than a year (No)	Very important (No)
		Never (No)			Never (No)	Don't Know (Partial)
		Don't Know, Refused (Partial)			Don't Know, Refused (Partial)	Refused (Partial)

Table H-4: Assignments of HEIP Unbundled Response Options into Matrix Terminology

FR1. Would you have made the same improvements if the program rebates had not been available?	FR2. Let me make sure I understand. When you say you would have made the same improvements, would you have made all, some or none of the improvements?	FR3. Would any of the improvements you made have been less efficient?	FR4. And with respect to timing, without the program, would you have made the same improvements:	FR5. Let me make sure I understand. When you say you would not have made the same energy efficient upgrades, do you mean you would not have made any of the improvements?	FR6. Would you have made some of the improvements but at a lower efficiency level?	FR7. And, with respect to timing, without the program, would you have installed those measures:
Yes (Yes)	All of the improvements (Yes)	Yes (No)	At the same time or within three months of when you actually made the upgrades (Yes)	Yes (No)	Yes (No)	At the same time or within three months of when you actually made the upgrades (Yes)
No (No)	Some of the improvements (Partial)	No (Yes)	Within three to six months (Partial)	No (Yes)	No (Yes)	Within three to six months (Partial)
Don't Know (Partial)	None of the improvements (No)	Don't Know (Partial)	Six to 12 months (Partial)	Don't Know (Partial)	Don't Know (Partial)	Six to 12 months (Partial)
Refused (Partial)	Don't Know (Partial)	Refused (Partial)	More than a year (No)	Refused (Partial)	Refused (Partial)	More than a year (No)
	Refused (Partial)		Never (No)			Never (No)
			Don't Know, Refused (Partial)			Don't Know, Refused (Partial)

Table H-5: Frequency of Freeridership Scoring Combinations – HEIP bundled

FR1. Would you have made the same improvements if the program rebates had not been available?	FR2. Let me make sure I understand. When you say you would have made the same improvements, would you have made all the improvements at the same efficiency level?	FR3. And would you have made the same improvements:	FR4. Let me make sure I understand. When you say you would not have made the same improvements, do you mean you would not have made any of the improvements?	FR5. Would you have made some of the improvements at a lower efficiency level?	FR6. And, would you have made those improvements:	FR7. How important was the incentive in influencing your decision to invest in energy efficient upgrades?	FR Estimate	Number of Responses
Yes	Yes	Yes	x	x	x	Partial	75%	3
Yes	Yes	Yes	x	x	x	No	50%	1
Yes	Yes	Partial	x	x	x	Yes	75%	1
Yes	Yes	Partial	x	x	x	Partial	50%	2
Yes	Yes	Partial	x	x	x	No	25%	1
Yes	No	x	x	x	x	x	0%	5
Partial	x	x	x	x	x	No	0%	1
No	x	x	Yes	Yes	Partial	Partial	12.5%	1
No	x	x	Yes	Yes	Partial	No	0%	1
No	x	x	Yes	Yes	No	x	0%	3
No	x	x	Yes	Partial	Partial	No	0%	1
No	x	x	Yes	No	x	x	0%	6
No	x	x	No	x	x	x	0%	11

Table H-6: Frequency of Freeridership Scoring Combinations – HEIP unbundled

Q26. Would you have made the same improvements if the program rebates had not been available?	Q27. Let me make sure I understand. When you say you would have made the same improvements, would you have made all, some or none of the improvements?	Q28. Would any of the improvements you made have been less efficient?	Q29. And with respect to timing, without the program, would you have made the same improvements:	Q31. Let me make sure I understand. When you say you would not have made the same energy efficient upgrades, do you mean you would not have made any of the improvements?	Q32. Would you have made some of the improvements but at a lower efficiency level?	Q33. And, with respect to timing, without the program, would you have installed those measures:	FR Estimate	Number of Responses
Yes	Yes	Yes	Yes	x	x	x	100%	1
Yes	Yes	Yes	Partial	x	x	x	75%	1
Yes	Partial	Yes	Partial	x	x	x	50%	1
Yes	Partial	Yes	No	x	x	x	0%	1
Yes	x	Yes	Yes	x	x	x	100%	16
Yes	x	Yes	Partial	x	x	x	75%	6
Yes	x	Yes	No	x	x	x	0%	1
Yes	x	Partial	Yes	x	x	x	75%	1
Yes	x	Partial	Partial	x	x	x	50%	2
Yes	x	Partial	No	x	x	x	0%	1
Yes	x	No	x	x	x	x	0%	11
No	x	x	x	Yes	Yes	No	0%	2
No	x	x	x	Yes	Partial	Yes	25%	1
No	x	x	x	Yes	No	x	0%	3
No	x	x	x	Partial	Yes	No	0%	1
No	x	x	x	Partial	Partial	Partial	0%	1

Q26. Would you have made the same improvements if the program rebates had not been available?	Q27. Let me make sure I understand. When you say you would have made the same improvements, would you have made all, some or none of the improvements?	Q28. Would any of the improvements you made have been less efficient?	Q29. And with respect to timing, without the program, would you have made the same improvements:	Q31. Let me make sure I understand. When you say you would not have made the same energy efficient upgrades, do you mean you would not have made any of the improvements?	Q32. Would you have made some of the improvements but at a lower efficiency level?	Q33. And, with respect to timing, without the program, would you have installed those measures:	FR Estimate	Number of Responses
No	x	x	x	No	x	x	0%	5

H.3 WATER HEATING NTG TABLES

Table H-7: Assignments of RWH Response Options into Matrix Terminology

Did you make an appointment for a free in-home energy audit in order to receive the free water heater wrap?	BEFORE you heard about the Georgia Power's EarthCents water heater program, had you already been planning to purchase and install a water heater wrap?	Would you have installed a water heater wrap on your own without the Georgia Power program?	If you had not received the water heater wrap from Georgia Power, when would you have purchased and installed a new water heater wrap? Would it have been…	Would you have installed the same quantity of wraps without the program?
Yes (Yes)	Yes (Yes)	Yes (Yes)	At the same time (Yes)	Yes (Yes)
No (No)	No (No)	No (Yes)	Later in the same year (Partial)	No (No)
Don't Know (Partial)	Don't Know (Partial)	Don't Know (Partial)	More than a year (No)	Don't Know (Partial)
Refused (Partial)	Refused (Partial)	Refused (Partial)	Don't Know (Partial)	Refused (Partial)
			Refused (Partial)	

Table H-8: Frequency of Freeridership Scoring Combinations

Did you make an appointment for a free in-home energy audit in order to receive the free water heater wrap?	BEFORE you heard about the Georgia Power's EarthCents water heater program, had you already been planning to purchase and install a water heater wrap?	Would you have installed a water heater wrap on your own without the Georgia Power program?	If you had not received the water heater wrap from Georgia Power, when would you have purchased and installed a new water heater wrap? Would it have been…	Would you have installed the same quantity of wraps without the program?	FR Score	Frequency
Yes	Yes	Yes	Yes	x	100%	1
Yes	No	x	x	x	0%	6
No	x	x	x	x	0%	62
Partial	x	x	x	x	0%	1

Appendix I COMMERCIAL PROGRAM NTG ANALYSIS

The following calculation estimates each program's NTG:

Program NTG = 1 - Freeridership + Participant Spillover + Nonparticipant Spillover

The team relied on self-reporting from participant surveys to determine freeridership scores by asking a series of questions about what participants' actions would have been in the program's absence. The Georgia Power CEEP survey utilized the following freeridership questions:

- FR1. When you first heard about the rebate from Georgia Power's EarthCents Commercial Energy Efficiency Program for the [MEASURE TYPE], had you already purchased the [MEASURE TYPE]?
- FR2. Was buying the [MEASURE TYPE] included in your most recent capital budget before you participated in the program?
- FR3. Before your organization participated in the Georgia Power program for the first time, had you ever purchased the same type of [MEASURE TYPE]?
- FR4. Would you have purchased the [MEASURE TYPE] if the Georgia Power rebate had not been available?
- FR5. Without the rebate from the Georgia Power EarthCents program, would you have still purchased a [MEASURE TYPE] that was just as efficient, more efficient, or less efficient?
- FR6. And would you have purchased the same quantity of equipment?
- FR7. And without the rebate, would you have bought the [MEASURE TYPE] sooner, bought it at about the same time, later in the same year, bought it in 1-2 years, or 3-5 years later?
- FR8. [ASK IF FR4 = No] To confirm, when you say you would not have installed the same [MEASURE TYPE], do you mean you would not have installed the [MEASURE TYPE] at all?
- FR9. [ASK IF FR8 = No , DK, REF] Again, help me understand. Would you have installed the same type of [MEASURE TYPE] but [IT/THEY] would not have been as energy- efficient?
- FR10. [ASK IF FR8 = No , DK, REF AND QTY MEASURE>1] Would it have been the same [MEASURE TYPE] but fewer of them?
- FR11. [ASK IF FR8 = No , DK, REF]And, would you have installed the same [MEASURE TYPE]… [READ]
- FR12. In your own words, please tell me the influence Georgia Power's EarthCents energy efficiency incentive had on your decision to purchase [MEASURE type]?_____ [Record Response

Questions FR1 to FR7 assessed customer actions in the program's absence of the program. Questions FR8 to FR10 confirmed customer responses to FR4. Question FR8 was only asked if a

respondent answered “No” to question FR4. Questions FR9, FR10, and FR11 were asked only if a respondent answered “No” to Question FR8. Finally, the freeridership survey asked an open-ended question to identify, in the customers own words, the program’s influence level on the customer’s decision to purchase energy-efficient equipment.

The team assessed freeridership at three levels:

- First, each participant survey response was converted into freeridership scoring matrix terminology in terms of whether their answer indicated freeridership.
- Once each participant’s responses were combined, freeridership score from a scoring matrix could be assigned, containing all possible response permutations.
- Finally, all participants were aggregated into an average freeridership score for the entire program category.

The wide variation in nonresidential program participant energy savings required weighting respondent freeridership scores by estimated savings of all equipment installed through the program. Savings-weighted freeridership and NTG scores serve as a recent standard practice of the California Public Utilities Commission. The equation below illustrates the savings-weighted freeridership calculation.

$$\textit{Savings Weighted Freeridership} = \frac{\sum \text{Respondent FR Score} \times \text{Program Measure kWh Savings}}{\sum \text{Program Measure kWh Savings for All Respodnents}}$$

The team independently evaluated each survey question response to assess participants’ freeridership levels for each question. Each survey response option was converted into values of: “Yes” (indicative of freeridership); “No” (not indicative of freeridership); or “Partial” (partially indicative of freeridership).

Table I-1, below, lists the 11 Georgia Power EarthCents Commercial program freeridership survey question numbers, their corresponding response options, and the value to which they were converted (in parentheses).

Table I-1. Assignments of Georgia Power Commercial Freeridership Response Options into Matrix Terminology

FR2	FR2	FR3	FR4	FR5	FR6	FR7	FR8	FR9	FR10	FR11
Yes (Yes)	Yes (Yes)	Yes (Yes)	Yes (Yes)	Same efficiency (Yes)	Yes (Yes)	Bought it sooner (Yes)	Yes (Yes)	Yes (Yes)	Yes (Yes)	At the same time (Yes)
No (No)	No (No)	No (No)	No (No)	More efficient (Yes)	No (No)	Bought it at the same time (Yes)	No (No)	No (No)	No (No)	Within one year (No)
Don't know Partial)	Don't know (Partial)	Don't know (Partial)	Don't know (Partial)	Less efficient (No)	Don't know (Partial)	Bought it later in the same year (No)	Don't know (Partial)	Don't know (Partial)	Don't know (Partial)	Within one to two years (Partial)
Refused (Partial)	Refused (Partial)	Refused (Partial)	Refused (Partial)	Don't know (Partial)	Refused (Partial)	Bought it in 1-2 years (Partial)	Refused (Partial)	Refused (Partial)	Refused (Partial)	In more than two years (Partial)
				Refused (Partial)		Bought it in 3 or more years (Partial)				
						Don't know (Partial)				
						Refused (Partial)				

The team used self-report customer surveys to assess participant and nonparticipant spillover. Questions asked customers whether they decided to install another energy-efficient measure or undertake some other energy-efficiency improving activity due to the program. The survey asked whether customers installed energy-efficient products similar to those offered in Georgia Power's CEEP, without receiving a program incentive.

If respondents indicated they made energy-efficient improvements or purchased products, questions asked how important the program they participated in was in regard to their purchasing decisions. Response options included: "not at all important"; "not very important"; "somewhat important"; or "very important." Only measures where participants or nonparticipants indicated the CEEP program as very important on their purchasing decision were attributed to program spillover.

The team calculated spillover savings as a percentage of total savings using deemed savings values, consistent with those used in calculating the gross program savings value. The team then applied these savings values to spillover measures for participants or nonparticipants indicating the program very influential in their decisions. Where evaluated savings did not have applicable energy savings values, the team used Regional Technical Forum values. For some measures, not enough information was available, and spillover savings could not be estimated.

The program's spillover percentage was calculated by dividing the sum of additional verified spillover savings reported by respondents by total rebated verified savings achieved by all respondents in the program survey sample:

$$Spillover\ \%\ Estimate = \frac{\sum Sum\ of\ Survey\ Sample\ Verified\ Spillover\ kWh}{\sum Sum\ of\ Survey\ Sample\ Verified\ Program\ kWh}$$

The sum of these spillover savings values, divided by savings achieved through the program for each relevant measure, yielded spillover savings as a percentage of total savings, which could then be extrapolated to the program participant population.

Appendix J GEORGIA POWER'S COMMERCIAL FOCUS GROUP SUMMARY

The focus groups, sponsored by Georgia Power, sought to investigate trade ally program perceptions, experiences, and expectations. One focus group included trade allies receiving a rebate, and the other group included those not receiving a rebate. A brief summary of the report's findings, provided by research topics, follows below.[50]

What the current environment looks like: business customers express more interest in energy efficiency than prior to the commercial program's start, yet many are hesitant to install energy-efficiency equipment in the current economic climate.

Perceptions of Georgia Power: Overall, focus groups rated Georgia Power with a "B minus." Opinion directly tied to some frustrations or disappointments with the commercial energy-efficiency program (discussed below).

The role Georgia Power should play in energy-efficiency: Though trade allies did not consider Georgia Power obligated to educate businesses about energy efficiency, they thought the company should promote and educate customers about the rebate program to help trade allies gain business. Some trade allies felt Georgia Power promoted energy efficiency due to pressure from the Public Service Commission, and expressed skepticism about a utility promoting lower product sales.

Experiences with the incentive program: Smooth incentive program experiences could be attributed to: the helpfulness of representatives; and availability of rebates. Some trade allies experienced miscommunication during the rebate process, and felt improvements could be made.

Experiences with Georgia Power and ICF representatives: Georgia Power representatives received praise for easy accessibility and for establishing long-term relationships, yet some lacked product knowledge, training, and expertise. ICF reps received praise for knowledge, communication, and proactivity, yet some were unfamiliar with the rebate process, and lacked product knowledge.

Incentive program perceptions: Groups rated the rebate program a "C." Respondents felt it "better than nothing," but not as effective as it could be. Those familiar with out-of-state energy-efficiency programs thought Georgia Power's supplied sub-par rebate levels and equipment offerings, compared to other utilities.

Expectations of the trade ally program: Trade allies joined the program to increase business, but expressed this has yet to happen. Trade allies not registered (but receiving rebates) expressed confusion about registration requirements and steps.

[50] The evaluation team summarized results conducted by NSR, as provided in the presentation: SCS Market Services, Trade Ally Program Focus Group Report. Georgia Power July 2012.

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