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N.C. Utilities Commission

INFORMATION SHEET

PRESIDING: Commissioner Brown-Bland, Chairman Finley and Commissioners Beatty, Bailey, Dockham and Patterson
PLACE: Dobbs Building, Raleigh, NC
DATE: June 2, 2015
TIME: 9:40 a.m. – 9:52 a.m.
DOCKET NO.: E-7, Sub 1073
COMPANY: Duke Energy Carolinas, LLC
DESCRIPTION: Application for Approval of demand-Side Management and Energy Efficiency Cost Recovery Rider Pursuant to G.S. 62-133.9 and Commission Rule R8-69.
VOLUME:

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EXHIBITS

Duke Energy Carolinas, LLC, Application & Amended Application (A)

Barnes Direct Exhibits 1 – 11 (I/A)	Barnes Supplemental Exhibits 1 – 4 (I/A)
Miller Exhibits 1 – 7 (I/A)	Miller Supplemental Exhibits 1 – 7 (I/A)
Ham Exhibits 1 – 2 (I/A)	Ham Exhibits ~~A~~ (I/A) D - E
Allred Exhibits 1 – 2 (I/A)	Maness Exhibit 1 (I/A)
NCSEA Exhibits 1 – 2 (I/A)	

COPIES ORDERED: E-mail: Kaylor, Ledford, Edmondson
REPORTED BY: Kim Mitchell
TRANSCRIBED BY: Kim Mitchell
DATE TRANSCRIBED: June 12, 2015

TRANSCRIPT PAGES: 21
PREFILED PAGES: 132

I, A

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Final Report

Process and Impact Evaluation of the 2013-2014 Residential Neighborhood Program in the Carolina System

Prepared for
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139 East Fourth Street
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November 14, 2014

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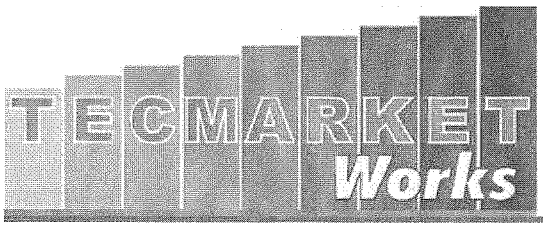

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Executive Summary

Significant Impact Evaluation Findings

This section presents the key findings and recommendations identified through the evaluation of Duke Energy's Residential Neighborhood Program in the Carolina System. This evaluation covers program participation from March, 2013 through July, 2014 (n= 8,147 participants). A billing analysis was conducted to estimate the net energy savings by participants in the program. The billing analysis employs a statistical analysis of actual customer-billed monthly electricity usage of customers participating in the program. The statistical model used for the billing analysis produces estimates of the monthly electricity savings resulting from participation in the program, and Table 1 presents the estimated overall ex post energy impacts from the billing analysis. The billing analysis approach used to assess energy savings provides a direct net (net of short-term freeridership, short-term participant spillover, and participation in other Duke Energy programs) energy impact estimate[1] by employing a quasi-experimental analysis design.

Table 1. Estimated Overall Impacts

	Net Savings
Annual Savings Per Participant Per Year	
kWh	350
kW	0.0944

The billing analysis gives the estimated overall net kWh savings per participant, but is incapable of estimating coincident kW reduction. As a result, kW is determined using the results of the billing analysis in DSMore. Additionally, program per participant savings as reported in Table 1 includes an adjustment made to CFL savings over the effective useful life of a bulb. The adjustment factor is computed in the course of the engineering analysis. The purpose of the adjustment factor is to account for the decrease in baseline wattage over time due to the phase out of standard wattage incandescent bulbs as stipulated in the Energy Independence and Security Act (EISA) of 2007. See *Appendix K: EISA Schedule and CFL Baseline* for a detailed description of baseline adjustments by year. See *Billing Analysis EISA Effects* for the calculation of the adjustment factor.

Significant Process Evaluation Findings

From the Participant Surveys

- A plurality of 36.3% (29 out of 80) of participants first learned about this program from letters and postcards received in the mail. Home visits from the enrollment team (23.8% or 19 out of 80) were the next most-mentioned source of awareness, followed by door hangers (12.5% or 10 out of 80).

[1] The net long-term spillover or short and long-term market effects savings were not documented in this evaluation. These savings are in addition to those identified in this report, but are beyond the researchable issues associated with this evaluation.

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- When participants were asked what they understood this program was about, 57.5% (46 out of 80) mentioned the installation of energy-saving measures, 43.8% (35 out of 80) mentioned a home audit, 35.0% (28 out of 80) mentioned saving energy, 26.3% (21 out of 80) mentioned saving money on energy bills, and 26.3% (21 out of 80) mentioned home weatherization.
- When asked for reasons they chose to participate in this program, the most common answers are "saving money on utility bills" (by 55.0% or 44 out of 80) and "saving energy" (42.5% or 34 out of 80). About one participant in four also mentioned "receiving efficiency measures" (25.0% or 20 out of 80) and "home weatherization and repairs" (22.5% or 18 out of 80).
- About half of participants (45.0% or 36 out of 80) had to wait less than a week from enrollment to audit, including 12.5% (10 out of 80) who reported that they enrolled on the same day of their audit or that "I did not enroll, the auditor just showed up." Only 3.8% (3 out of 80) thought the length of time between enrollment and audit was too long, and only 5.0% (4 out of 80) thought that the length of time the auditor was in their home should have been longer or shorter than it was.
- About a third of surveyed participants (32.5% or 36 out of 80) attending the community meeting kick-off event in their neighborhood. These customers were very satisfied with the staff and presenters at the meeting (mean satisfaction rating 9.8 on a 10-point scale) and the information presented at the meeting (mean satisfaction rating 9.5 out of 10).
- Participants are generally quite satisfied with the measures they received during the audit: among the most highly-rated items are the door sweeps (mean satisfaction rating 9.6 out of 10), years' supply of HVAC filters (9.5 out of 10), filter change calendar (9.4 out of 10), water tank insulation wrap (9.7 out of 10) and water heater temperature adjustment (9.5 out of 10). The lowest-rated measures are vinyl weather stripping for doors (8.1 out of 10) and the window HVAC winter kit (8.4 out of 10), which are the only items to receive mean satisfaction ratings of less than 8.5 out of 10; these are not low satisfaction scores, but there is room for improvement relative to customer satisfaction with some of the other measures.
- Program satisfaction is quite high, with the program receiving a mean satisfaction rating of 9.35 out of 10 overall. The program also receives high scores for convenience of enrollment (9.5 out of 10), the knowledge of the auditors (9.4 out of 10) and the helpfulness of the auditors (9.3 out of 10). Relative to the Residential Neighborhoods program, participants' satisfaction with Duke Energy is somewhat lower at 8.7 out of 10.
- A majority of 58.8% (47 out of 80) of surveyed participants report that this program has made their attitude towards Duke Energy more positive, while only 2.5% (2 out of 80) say it has made their attitude towards Duke Energy more negative. Two-thirds (67.5% or 54 out of 80) also report that the program has increased their knowledge of how to save energy.
- Nearly half of surveyed participants (43.8% or 35 out of 80) report that their utility bills have decreased since they participated in this program, though another 10.0% (8 out of 80) report that their bills have increased. Overall, customers estimate that their utility bills have decreased by an average of about $8 per month since the program.
- According to auditor records, the percentage of participating customers receiving measures ranges from 97.5% (78 out of 80) for CFLs down to 7.5% (6 out of 80) for both the clear glass patch tape and vinyl weather stripping for HVAC window units. Surveyed

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customers received between five and thirteen types of measure during their home audits, with the average and median number of measures received being about nine.

- Surveyed participants were asked to confirm the installation of measures from auditor records. Some measure installations were confirmed at high rates (such as 96.1% or 75 out of 78 customers confirming that they received CFLs as reported in auditor records), while other measures were confirmed at much lower rates (only 9.1% or 1 out of 11 customers receiving window caulk according to auditor records was able to confirm this installation).
- Some participants report that auditors have left measures behind for the customer to install themselves; in particular, 41.0% (32 out of 78) of customers who received program CFLs report that the auditor left some uninstalled bulbs behind (most of these bulbs have since been installed by the customers themselves, although 50 CFLs out of 765 confirmed received by participants remained uninstalled at the time of this survey). The winter kits for window HVAC units were also mostly installed by customers (61.5% or 16 out of 26 confirmed installations), because this measure is meant for wintertime use and the audits were performed in the spring and summer.
- Customers who received the switch plate thermometer and who did not previously have any thermometers in their home are twice as likely to report turning the temperature down during the winter (36.7% or 11 out of 30) compared to those who received this measure but who already had a thermometer in their home before the program (16.7% or 6 out of 36; this difference is significant at $p<.05$ using Student's t-test). However, there is no significant difference in temperature settings during the summer (overall only 4.5% or 3 out of 66 participants who received thermometers report using less cooling in the summer).
- When asked what they learned from participating in this program, most customers (86.2% or 69 out of 80) were able to name something that they learned. The most-mentioned lessons include the importance of weatherization and plugging drafts (mentioned by 17.5% or 14 out of 80), that energy efficiency measures save money over time through lower bills (15.0% or 12 out of 80) and about efficient lighting (13.8% or 11 out of 80).
- Sixty percent (48 out of 80) surveyed participants report taking additional actions to save energy since participating in the program: the most commonly reported actions are turning off lights and electronic items and using less heat in the winter.
- Survey participants' favorite things about this program include the home audit and assistance from the auditor (32.5% or 26 out of 80), the fact that participation and the measures are cost-free for customers (27.5% or 22 out of 80), the information and education gained (17.5% or 14 out of 80) and saving money through lower bills (17.5% or 14 out of 80).
- Two-thirds of participants (67.5% or 54 out of 80) could not name a least favorite aspect of the program. The most frequently-mentioned complaints about the program are about problems with specific measures (13.8% or 11 out of 80) and not receiving measures (6.3% or 5 out of 80, with four of these cases involving undelivered HVAC filters).
- When asked for their suggestions to improve the program, the top suggestions are that the auditor should provide more information during the audit (13.8% or 11 out of 80) and that the program could include additional measures and services (12.5% or 10 out of 80).

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From the Non-Participant Surveys

- Two-thirds of non-participants contacted (82 out of 123) are aware of this program's existence, while the other third (33.3% or 41 out of 123) had not heard anything about it. Non-participants were only invited to complete the remaining parts of the survey if they were aware of the Residential Neighborhoods program.
- Non-participants who are aware of the program learned about it through the same channels as participants: mailings are the most-mentioned (47.5% or 38 out of 80), followed by door hangers (31.3% or 25 out of 80) and visits from the enrollment team (20.0% or 16 out of 80).
- When asked what they understood the Residential Neighborhoods program to be about, non-participants are most likely to mention "receiving free measures" (31.3% or 25 out of 80) and the home audit (30.0% or 24 out of 80). Only 16.3% (13 out of 80) of non-participants who are aware of the program were unable to answer this question.
- Only 55.0% (44 out of 80) of surveyed non-participants are certain that they would have been eligible to participate in the program, while 35.0% (28 out of 80) are not sure and 10.0% (8 out of 80) believe that they would not have been eligible. Among those who believe they are not eligible, most (5 out of 8) mentioned that their status as renters rather than owners played a part in their non-participation.
- When asked for their suggestions for improving program participation, non-participants' top responses are giving customers more information about the program (13.8% or 11 out of 80), improving communications about the program (12.5% or 10 out of 80) and making more weekend and evening hours available for audits (10.0% or 8 out of 80).
- Four-fifths of surveyed non-participants (81.3% or 65 out of 80) report that they have taken steps to save energy on their own in the past year. The most common action is using efficient light bulbs such as CFLs (37.5% or 30 out of 80), while another 15.0% (12 out of 80) mention that they sealed leaks around windows and doors.
- Non-participants' mean satisfaction rating with Duke Energy overall is 8.0 on a 10-point scale, which is lower than the 8.7 mean rating given by program participants. Though this difference is not quite statistically significant, it could indicate that having a lower opinion of Duke Energy is a barrier to participation in Duke Energy programs, even when they are free to all customers.
- In spite of not having participated in this program, 60.0% (48 out of 80) of non-participants report that their opinion of Duke Energy has become more positive based on what they know about the Residential Neighborhoods program, compared to 6.3% (5 out of 80) who say their attitude towards Duke Energy has become more negative.

Recommendations

- Suggestions for improving program participation:
  - Make mailings more personalized if possible (a personal invitation rather than "advertising")
  - Work with local housing authority to pre-arrange permission for tenants living in properties with fewer than eight units to participate

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Introduction and Purpose of Study

Summary Overview

This document presents the process and impact evaluation report for Duke Energy's Residential Neighborhood program as it was administered in North Carolina and South Carolina. The evaluation was conducted by TecMarket Works, BuildingMetrics, and Integral Analytics.

Summary of the Evaluation

TecMarket Works performed a process evaluation comprised of management interviews to review program operations and administration, and a participant and non-participant survey to determine satisfaction levels and identify any program implementation issues.

Impact was evaluated using a billing analysis together with engineering estimates for the purpose of determining individual measure contributions to savings as well as coincident peak demand reduction.

Table 2. Evaluation Date Ranges

Evaluation Component	Dates of Analysis
Participant Surveys	Surveyed from April 4, 2014 to May 9, 2014
Non-Participant Surveys	Surveyed from February 22, 2014 to March 8, 2014
Management Interviews	Conducted in February and May of 2014
Engineering Estimates	September through October 2014
Billing Analysis	September through October 2014

Evaluation Objectives

The objective of this evaluation is to determine the effectiveness of and customer satisfaction with Duke Energy's Residential Neighborhood program as it was administered in the Carolina System.

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Description of Program

The program assists customers in reducing energy costs through energy education and by installing or providing energy conservation measures for each customer's residence. Areas targeted for participation in this program have approximately 50% of the households with income equal to or less than 200% of the federal poverty level. Once a neighborhood is identified, all participants within the boundaries will qualify for the program, regardless of income status. Under this program, participating customers will receive an energy assessment to identify energy efficiency opportunities in the customer's home, one-on-one education on energy efficiency techniques and measures, and a package of energy conservations measures installed or provided to the extent the measure is identified as an energy efficiency opportunity (based on the results of the energy assessment). Energy conservation measures, up to $210, may include the following energy efficiency starter items:

- AC/Heat Filters
- Change Filter Reminder
- Aerators
- Caulking
- Weatherstripping
- Clear Glass Patch Tape
- 13W CFLs
- 18W CFLs
- Door Sweeps
- Foam Insulation Spray
- HVAC Winterization Kit
- Low Flow Showerhead
- Water Heater Tank Insulation
- Water Heater Pipe Wrap
- Water Heater Temp Adjustment
- Switch Plate Wall thermometer

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Methodology

Overview of the Evaluation Approach

The process evaluation has three components: management interviews, participant surveys and non-participant surveys. The impact evaluation has engineering and billing analysis components.

Study Methodology

Management Interviews

Interviews were conducted with the Duke Energy product managers and with the program vendor (GoodCents) manager.

Participant Surveys

TecMarket Works fielded a phone survey with randomly selected participants in order to measure satisfaction and to identify areas for program improvement. Eighty (80) surveys were completed with Residential Neighborhoods participants in the Carolina System whose home audits were completed between March 6, 2013 and August 23, 2013 according to auditor records.[2] Roughly half of the participants surveyed live in North Carolina (55.0% or 44 out of 80) and roughly half live in South Carolina (45.0% or 36 out of 80).

Non-Participant Surveys

TecMarket Works fielded a phone survey with randomly selected non-participants in order to identify barriers to program participation. Eighty (80) surveys were completed with Residential Neighborhood participants in the Carolina System. Thirty-one surveys (38.8% of 80) were completed with non-participants in North Carolina and 49 surveys (61.3% of 80) were completed with non-participants in South Carolina.

Engineering Estimates

Engineering algorithms taken from the Draft Ohio and New York Technical Reference Manuals (TRMs) along with DOE-2 simulations were used to estimate savings. These unit energy savings values were applied to customers in the engineering analysis sample.

Billing Analysis

For this analysis, billing data were obtained for all participants in the program between March 2013 and July 2014. There were a total of 8,147 usable accounts after processing. A panel model specification was used that analyzed the monthly billed energy use across time and participants. The model included terms to control for the effect of weather on usage, the effect of impact from other Duke Energy offers, the effect of normal non-program induced energy use changes, as well as a complete set of monthly indicator variables to capture the effects of non-measureable factors that vary over time (such as economic conditions and season loads).

[2] One surveyed participant had December 27, 2013 listed as the date their work was completed. However since all other participants have completion dates between March and August, the December date is probably the result of this participant's record being updated or modified months after their audit.

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Data collection methods, sample sizes, and sampling methodology

Management Interviews

All contacts provided by Duke Energy for the management interviews were contacted and interviewed for this evaluation.

Participant Surveys

Duke Energy provided TecMarket Works with a list of 941 records of program participants in the Carolina System (439 from North Carolina and 502 from South Carolina). After removing records with missing contact information, duplicate records, "do not contact" numbers and customers who have recently been surveyed about other programs, the sample list consisted of 510 contactable customers. The survey was conducted by telephone by TecMarket Works staff from the list of 510 participant customers in the Carolina System, and 80 respondents completed the survey (44 from North Carolina and 36 from South Carolina). The survey instrument can be found in *Appendix F: Participant Survey Instrument.*

Non-Participant Surveys

Duke Energy provided TecMarket Works with a list of 3,482 records of non-participants in the Carolina System (1670 from North Carolina and 1812 from South Carolina) that lived in targeted neighborhoods but did not participate in the program. After removing records with missing contact information, duplicate records, "do not contact" numbers and customers who have recently been surveyed about other programs, the sample list consisted of 2,341 contactable customers. The survey was conducted by telephone by TecMarket Works staff from the list of 2,341 non-participant customers in the Carolina System, and 80 respondents completed the survey (31 from North Carolina and 49 from South Carolina).

Engineering Estimates

The engineering analysis relied on primary data collected through the participant phone survey, which was conducted with a random sample of 80 participants.

Billing Analysis

The billing analysis used consumption data from all complete data provided for the participants in North and South Carolina that participated between March, 2013 and July 2014. The billing analysis used data of all participation homes with reliable data.

Number of completes and sample disposition for each data collection effort

Management Interviews

All contacts provided by Duke Energy for the management interviews were contacted and interviewed for this evaluation.

Participant Surveys

From the sample list of 510 customers, 501 participants were called between April 4, 2014 and May 9, 2014, and a total of 80 usable telephone surveys were completed yielding a response rate of 16.0% (80 out of 501).

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Non-Participant Surveys

From the sample list of customers, 718 non-participants in the Carolina System (306 in North Carolina and 412 in South Carolina) were called between February 22 and March 8, 2014, and a total of 80 usable telephone surveys were completed (31 from North Carolina and 49 from South Carolina) yielding a response rate of 11.1% (80 out of 718).

Engineering Estimates

The engineering analysis relied on primary data collected through the participant phone survey, which was conducted with a random sample of 80 participants.

Billing Analysis

The billing analysis used consumption data from all complete data provided for the participants in North and South Carolina that participated between March, 2013 and July 2014. There were a total of 8,147 usable accounts after processing.

Table 3. Summary of Data Collection Efforts

Residential Neighborhoods Program			
Data Collection Effort	Size of Population in Sample for Surveys	# of Successful Contacts	Sample Rate
Management Interviews	3	3	100%
Participant Surveys	510	80	15.7%
Non-Participant Surveys	2341	80	3.4%
Engineering Estimates	510	80	15.7%
Billing Analysis	8,147 participants		

Expected and achieved precision

Participant Surveys

The survey sample methodology had an expected precision of 90% +/- 8.5% and an achieved precision of 90% +/- 8.5%.

Non-Participant Surveys

The survey sample methodology had an expected precision of 90% +/- 9.0% and an achieved precision of 90% +/- 9.0%.

Billing Analysis

The savings estimates for this program that were estimated from the billing analysis and presented in this report are statistically significant at the 95% confidence level unless otherwise noted.

Description of baseline assumptions, methods and data sources

Baseline assumptions for CFLs were determined through phone surveys with customers providing self-reported values of baseline lamp watts and operating hours. Baseline assumptions for other measures were taken from the Draft Ohio TRM.

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The HVAC system interaction factors are the result of a series DOE-2 of simulations and represent the weighted average value across all HVAC system types according to their prevalence in the Carolinas.

Description of measures and selection of methods by measure(s) or market(s)

The audits may provide the following measures, depending on customer needs:

- Up to fifteen 18-watt CFL
- Up to fifteen 13 watt CFLs
- Up to two low flow showerheads
- Up to three faucet aerators
- One switch plate wall thermometer
- One year's supply of HVAC filters and filter change calendar
- Door sweeps for up to two doors
- Vinyl weatherstripping for up to two doors
- Caulking for up to two doors
- Caulking for up to three windows
- Clear glass patch tape for up to two windows
- Vinyl weatherstripping for window HVAC units
- Winterization kits for window HVAC units
- Spray foam insulation
- Water heater pipe wrap
- Water heater tank wrap
- Water heater temperature check and adjustment

Use of TRM values

Algorithms were selected from the Draft Ohio and New York TRMs to make the best use of primary data collected through the participant survey. DOE-2 simulations of prototypical building models were used to estimate savings for infiltration measures. The HVAC interaction factors were developed from prototypical building simulations conducted across several HVAC system types. The results were weighted according to HVAC system type weights developed from Duke Energy's appliance saturation survey.

Threats to validity, sources of bias and how those were addressed

Engineering Analysis

The participant responses are self-reported and therefore may be affected by self-selection bias, false response bias or positive result bias. If these biases are present, the savings achieved can be expected to be higher than those reported in the impact evaluation. The effects of any bias in the participant responses is expected to be minimal as all measures distributed and installed were recorded by an auditor at the premise.

Billing Analysis

The specification of the model used in the billing analysis was designed specifically to avoid the potential of omitted variable bias by including monthly variables that capture any non-program

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effects that affect energy usage, as well as other Duke Energy offers. Moreover, the interaction of temperature (cooling degree days and heating degree days) and monthly variables were also taken consideration to further control for differences in how consumption responds to weather in different months. The model did not correct for self-selection bias because there is no need as long as the program remains voluntary.

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Impact Evaluation: Engineering Analysis

Measure and program impacts were calculated using a combination of engineering and billing analysis. The engineering analysis was based on a combination of standard engineering assumptions and self-reported information from a sample of participants. Overall program savings are based on a pre/post billing data analysis results conducted on a near-census of participants. The engineering estimates were developed to provide insight into individual measure contributions to overall savings as well as a way to measure the effects of the Federal EISA standards on lifecycle program savings.

Table 4 shows the estimated energy savings per unit distributed adjusted downward for the ISR computed from participants' survey responses. The savings per unit distributed are shown for each energy saving item offered through the program and, in the final row, savings resulting from the all measures together.

Table 4. Gross Program kWh and Coincident kW Savings by Measure

Measure	Quantity	Units	ISR	Gross kWh/unit	Gross kW/unit	Gross kWh	Gross kW
CFL	715	Bulb	95.0%	32.98	0.0029	23,579	2.0560
Low-Flow Showerhead	74	showerhead	98.7%	127.6	0.0100	9,440	0.7381
Faucet Aerator	149	Aerator	98.7%	8.80	0.0011	1,311	0.1639
Weather Stripping	1508	linear foot	86.0%	0.36	0.0002	545	0.2656
Caulking	2112	linear foot	100.0%	0.22	0.0001	468	0.2282
Door Sweep	113	Each	95.8%	1.36	0.0007	153	0.0747
Foam Insulation Spray	196	Sink	100.0%	2.83	0.0014	556	0.2707
DHW Pipe Insulation	225	linear foot	100.0%	24.64	0.0028	5,544	0.6329
DHW Tank Wrap	19	tank wrap	100.0%	125.8	0.0144	2,389	0.2727
DHW Temp Adjust	43	adjustment	97.7%	86.08	0.0098	3,701	0.4225
AC Filters/Calendar	56	participant	87.5%	23.01	0.0017	1,289	0.0924
Overall Savings	**80**	**Survey participant**		**612**	**0.0652**	**48,976**	**5.2177**

Effective Useful Life (EUL) Calculation

The EUL of program savings is a weighted average derived from the effective useful lives of the individual measures weighted based on their contribution to overall gross kWh savings. The overall EUL for the program is seven years as seen in Table 5.

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Table 5. Effective Useful life of Program Measures

Measure	Weight	EUL
CFL	48.1%	5
Low-Flow Showerhead	19.3%	10
Faucet Aerator	2.7%	10
Weather Stripping	1.1%	5
Caulking	1.0%	15
Door Sweep	0.3%	5
Foam Insulation Spray	1.1%	15
DHW Pipe Insulation	11.3%	15
DHW Tank Wrap	4.9%	5
DHW Temp Adjust	7.6%	4
AC Filters/Calendar	2.6%	1
Overall Effective Useful Life		7

In Service Rate (ISR) Calculation

Survey respondents were asked to report whether or not any of the energy saving measures installed through the program had been subsequently removed. As Residential Neighborhood program measures are directly installed by auditors, rather than afterward by participants, auditors' accounts of measure installations are considered to be the most accurate. Baseline ISR was set to 100% for each measure with reductions made for subsequently uninstalled units. The ISR for the furnace filters that were left behind for customer installation is determined through the participant survey, where respondents were asked if they had been installing the filters monthly as suggested by the calendar.

For CFLs, an allowance is made for program bulbs that are left behind by the auditor, placed into storage, and subsequently used to replace an incandescent bulb, thereby yielding energy savings. At the time of the phone survey, 96.9% of 13-Watt and 89.4% of 18-Watt bulbs distributed to respondents were installed and operable; this is the first year ISR.

The final ISR value is calculated, using 18-Watt CFLs as an example, with the following formula as presented in the Draft Ohio TRM:

$$\text{ISR} = \text{first year ISR} + (43\% * \text{remainder}) = \mathbf{89.4\% + (43\% * 7.6\%) = 92.7\%}$$

The remainder is the percentage of bulbs that are not installed in the first year (100% - 89.4% = 10.6%) less 3% for the 97% lifetime ISR[3]. In this case, the remainder is 7.6%. The 43% represents the percentage of the remainder that will replace an incandescent bulb rather than a CFL[4]. The ISR for each wattage of CFL is assigned a weight that represents its prevalence in the participant population and a weighted average ISR is calculated (95%).

[3] As established in the Nexus Market Research, RLW Analytics, and GDS Associates study, dated January 20, 2009: "New England Residential Lighting Markdown Impact Evaluation".

[4] As established in the Nexus Market Research, RLW Analytics, dated October 2004: "Impact Evaluation of the Massachusetts, Rhode Island, and Vermont 2003 Residential Lighting Programs", table 6-4 where 24 out of 56 respondents indicated that they did not purchase the CFLs as spares.

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The ISR for the other program measures were taken from the customer survey responses regarding the fraction of initially installed measures that were subsequently removed. The ISR assumptions for each program measure can be seen in Table 4.

CFL Impact Calculation and EISA Application

Average daily hours of use, replaced wattage, and the room in which the bulb was installed were included in data collected from survey participants. Customers were asked if they had increased or decreased their lighting usage since installing the CFLs they received through the program. This enabled the detection of a slight decrease in hours of use going from an incandescent bulb to a CFL.

Table 6 shows the unadjusted weighted average daily hours of use values along with the updated values after the self-reporting bias is applied. Previous studies that have included both customer surveys and lighting loggers have shown that, comparing customers' self-reported hours of operation to the actual hours of operation, customers responding to the survey overestimated their lighting usage by about 27%[5]. As this study did not employ lighting loggers, there is no data with which to make a comparison for this program specifically. Consequently, the self-reported hours of use obtained from the survey were reduced by the 27% shown in Table 6.

Table 6. Adjusted Average Daily Hours of Use

Adjustment	Magnitude of Adjustment	Average Daily Hours of Use (Incandescent)	Average Daily Hours of Use (CFL)
Unadjusted	N/A	4.17	4.06
Self-Reporting Bias	27%	3.05	2.96

The adjusted average daily hours of use by room type are shown in Table 7. The row labelled "Overall" represents the weighted average across all room types.

Table 7. Adjusted Average Daily Hours of Use by Room Type

Room Type	Number of Installations	Mean Daily Hours of Use (Old)	Mean Daily Hours of Use (New)
Bathroom	38	2.34	2.47
Kitchen	51	3.65	3.73
Living/Family Room	49	3.40	3.40
Dining Room	12	1.70	1.70
Master Bedroom	34	2.38	2.47
Other Bedroom	13	2.22	2.25
Closet	1	2.56	2.56
Hall	4	1.10	1.19
Other	16	4.15	4.52
Overall	**218**	**2.96**	**3.05**

[5] The adjustment for the self-reporting bias used in this study was determined using paired lighting logger and customer self-reported data from Kentucky, Ohio, Indiana, North Carolina, and South Carolina.

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As described in *Appendix K: EISA Schedule and CFL Baseline*, it is assumed that a baseline incandescent lamp will be replaced several times during the life of a CFL. Due to EISA legislation which limits the wattage of an incandescent lamp, the baseline lamp wattage decreases during each replacement. The baseline wattage by room type and by year is shown in Table 8 with the average in the final column and the overall weighted average in the highlighted cell in the bottom right, the numbers used for the savings calculations. Baseline estimates for each room type are based on small sample sizes and have limited statistical reliability at the individual room type level. Gross savings for the program are presented in the same manner in Table 9 and Table 10.

Table 8. Baseline Wattage by Room Type and Year

Room Type	2014	2015	2016	2017	2018	Average
Bathroom	57	47	46	44	43	47
Kitchen	52	43	42	41	40	44
Living/Family Room	61	50	48	47	45	50
Dining Room	63	51	49	47	46	51
Master Bedroom	55	45	43	42	41	45
Other Bedroom	61	51	50	48	46	51
Closet	18	18	18	18	18	18
Hall	60	51	50	48	46	51
Other	69	56	54	52	51	56
Overall	**58**	**48**	**46**	**45**	**43**	**48**

Applying these adjustments to each individual room type shows estimated bulb savings by room type. As described above, calculations by room type have limited statistical reliability. Only the weighted mean across all room types, in the bottom rows of these tables, were used in the calculations. The overall averages in the bottom right corners of Table 9 below are the numbers reported as per unit savings for the engineering analysis seen in Table 4.

Table 9. Gross kWh Savings by Room Type and Year

Room Type	2014	2015	2016	2017	2018	Average
Bathroom	34.2	26.5	25.3	23.9	22.9	26.6
Kitchen	45.9	34.9	33.0	31.4	30.2	35.1
Living/Family Room	50.7	38.5	36.7	35.1	33.7	38.9
Dining Room	26.9	20.3	19.0	17.9	17.3	20.3
Master Bedroom	32.5	24.7	23.3	22.2	21.5	24.8
Other Bedroom	34.2	26.6	25.6	24.3	23.0	26.7
Closet	1.9	1.9	1.9	1.9	1.9	1.9
Hall	18.0	14.3	13.9	13.3	12.6	14.4
Other	81.4	62.1	58.9	56.9	54.9	62.8
Overall	**42.9**	**32.7**	**31.1**	**29.6**	**28.5**	**33.0**

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Coincident peak demand savings were calculated based on the lamp wattage difference across each room and parameters from *Appendix C: Engineering Algorithms*. The results are shown in Table 10 below.

Table 10. Gross Coincident kW by Room Type and Year

Room Type	2014	2015	2016	2017	2018	Average
Bathroom	0.0037	0.0028	0.0027	0.0025	0.0024	0.0028
Kitchen	0.0033	0.0025	0.0024	0.0022	0.0021	0.0025
Living/Family Room	0.0040	0.0031	0.0029	0.0028	0.0027	0.0031
Dining Room	0.0043	0.0032	0.0030	0.0028	0.0027	0.0032
Master Bedroom	0.0035	0.0026	0.0025	0.0024	0.0023	0.0026
Other Bedroom	0.0041	0.0032	0.0031	0.0029	0.0027	0.0032
Closet	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Hall	0.0040	0.0031	0.0031	0.0029	0.0027	0.0032
Other	0.0047	0.0036	0.0034	0.0033	0.0032	0.0036
Overall	**0.0038**	**0.0029**	**0.0027**	**0.0026**	**0.0025**	**0.0029**

Low-Flow Showerheads and Faucet Aerators

A total of 74 low-flow showerheads and 149 faucet aerators were installed in the homes of survey respondents. According to customer self-reported data, nearly all of these units (98.7%) remain installed.

To determine impacts for low-flow showerheads, survey respondents were asked how many showers per week on average were taken using the showerhead provided by the program, which is rated at 1.75 GPM. Faucet aerators provided by the program are rated at 1.5 GPM. The baseline showerhead flow rate is assumed to be 2.87 GPM and the baseline faucet flow rate is assumed to be 2.2 GPM per the Draft Ohio TRM. This reduction in hot water usage was converted into kWh savings using the algorithm shown in *Appendix C: Engineering Algorithms*. This measure produces zero kW or kWh savings in households that use gas water heaters. Approximately 41% of households in the Carolinas have electric water heaters per Duke Energy's appliance saturation survey data. This is reflected in the unit savings values in Table 11.

Table 11. Unit Savings Estimation for Low-Flow Showerheads and Faucet Aerators

Measure	Quantity	ISR	Base Flow Rate (GPM)	EE Flow Rate (GPM)	Gross kWh/unit	Gross Coincident kW/unit
Low-Flow Showerhead	74	98.7%	2.87	1.75	127.6	0.0100
Faucet Aerator	149	98.7%	2.20	1.50	8.80	0.0011

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Air Sealing – Reduce Infiltration Measures

Program measures aimed at infiltration reduction include weather stripping, caulking, foam insulation spray, and door sweeps. Savings are calculated using kWh and kW per unit cfm reduction factors. These values were based on DOE-2 simulations of a set of prototypical residential buildings. The unit infiltration airflow rate reduction for each measure were determined using the ASHRAE tables, equations, and calculation methods described in the 2005 ASHRAE Fundamentals Handbook, Chapter 27, "Ventilation and Infiltration." Tables S3.1, S3.2, S3.3, and S3.4. The equation used can be seen in *Appendix C: Engineering Algorithms*. Unit savings estimates described above were applied to installed measure quantities from the installing contractors. Note, according to Duke Energy program staff, the foam insulation spray was used to seal pipe penetrations under sinks.

Table 12. Unit Savings Estimation for Infiltration Reduction Measures

Measure	Quantity	Units	ISR	cfm Reduction per unit	Gross kWh/unit	Gross kW/unit
Weather Stripping	1508	linear foot	86.0%	0.0583	0.36	0.0002
Caulking	2112	linear foot	100.0%	0.0308	0.22	0.0001
Door Sweep	113	each	95.8%	0.3932	1.36	0.0007
Foam Insulation Spray	196	sink	100.0%	0.1966	2.83	0.0014

Water Heater Measures

Water heater measures available through the program include hot water pipe insulation, water heater tank wrap, and a tank temperature turn-down. The pipe insulation and tank wraps were only available to participants with electric water heaters. As such, no adjustment to unit savings, similar to that made for low-flow showerheads and faucet aerators to exclude gas water heater participants, is necessary.

Algorithms for calculating impacts are shown in *Appendix C: Engineering Algorithms*. The equation and parameters used for pipe insulation were taken from the Draft Ohio TRM. Tank wrap calculations use the New York TRM as the Draft Ohio TRM offers only deemed savings for this measure. This same algorithm was used for the tank temperature adjustment, holding tank insulation constant and varying the temperature difference assuming a 20 degree turn-down from 140 to 120 degrees Fahrenheit.

Table 13. Unit Savings Estimation for Water Heater Measures

Measure	Quantity	Units	ISR	Gross kWh/unit	Gross kW/unit
DHW Pipe Insulation	225	linear foot	100.0%	24.64	0.0028
DHW Tank Wrap	19	tank wrap	100.0%	125.8	0.0144
DHW Temp Adjust	43	adjustment	97.7%	86.08	0.0098

Furnace Filters and Calendar

Participants were left with a year supply of furnace filters and a calendar instructing them to replace their filter monthly. As dirt accumulates on the air filter, more energy is required to move air through the filter. Changing the filter monthly reduces the amount of time the unit is operated

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with a dirty filter, and therefore, lowers fan energy consumption for both the heating and cooling seasons.

Table 14. Increased Power Use Over Time

Month	Percent Increase in Power due to Dirty Filter
0	0.00%
1	0.33%
2	0.66%
3	0.98%
4	1.31%
5	1.64%
6	1.97%
7	2.30%
8	2.63%
9	2.95%
10	3.28%
11	3.61%
12	3.94%

Table 14, taken from Southern California Edison Company's work paper on air filter alarms dated April 27, 2012, summarizes the linear increase over a 12 month average air filter replacement interval. Savings is estimated using a yearly changeout as a baseline. Annual fan energy consumption was estimated at 644 kWh/yr, based on the prototypical building simulations. The maximum percentage increase in power due to a dirty air filter was estimated as 3.94%, compared to 0.33% after one month.

Measure	Quantity	Units	ISR	Gross kWh/unit	Gross kW/unit
AC Filters/Calendar	56	Participant	87.5%	23.01	0.0017

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Net to Gross Analysis

Typically, net to gross ratio (NTGR) for low income programs is simply deemed at 1.0. This is common practice in the industry, and discussed in the memo presented in *Appendix D: Memo: Low Income Programs and Freeridership*. Since this program operates at the neighborhood level, low income and standard income households are free to participate once the neighborhood as a whole has qualified. Freeridership for the program is thus calculated based only on phone survey responses given by standard income respondents (those over 200% of the Federal Poverty Level). Low income participants are assumed to have 0% freeridership and assigned a NTGR of 1.0. The overall program NTGR is the weighted average of both populations.

Using the participant survey responses, we have found that:

- 8.75% (7 out of 80) of the surveyed participant households are above the 200% Federal Poverty Level,
- 52.5% (42 out of 80) of the surveyed participant households are below the 200% Federal Poverty Level, and
- 38.75% (31 out of 80) are unknown (refused to answer, etc.).

Freeridership and spillover are calculated based on survey responses for households that are identified as standard income according to the participant's description of their household income and the number of residents in the home. Standard income household freeridership is calculated for each measure and then weighted by the percentage of standard income households identified among surveyed participants to calculate the freeridership level for all program participants. The methods used to calculate freeridership in standard income households are all based on survey responses, but the specific questions and calculations differ by measure.[6]

Of the 80 program participants surveyed in the Carolinas, 49 participants gave responses to the income and household composition questions which allowed them to be categorized as low-income or standard income (defined as being at or below 200% of the federal poverty income level). The other 31 participants could not be definitively categorized, including 16 participants who did not answer the question about household income. Thus the ratio of standard-income households in the program population is estimated at 14.3% (7 out of 49 customers whose survey responses allowed their income category to be determined). Table 15 shows the freeridership levels for measures confirmed to be installed in the seven households identified as standard income (over 200% of federal poverty level), and the estimated freeridership level for the measure among all program participants based on weighting standard income freeridership (14.3% of program population) with low income freeridership (85.7% of the program population who are assigned zero freeridership).

[6] Examples of freeridership calculations for measures such as those in the Residential Neighborhood program can be found in *Process and Impact Evaluation of the Residential Energy Assessments Program in the Carolina System*, TecMarket Works on behalf of Duke Energy, March 29, 2013.

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Table 15. Freeridership for Measures Installed in Standard Income Households

	Homes with Measures Installed, Standard Income households (valid N = # households)	Standard Income Freeridership	Population-weighted Freeridership
CFLs	6	24.9%	3.6%
Low-flow showerheads	6	8.3%	1.2%
Faucet aerators	5	20.0%	2.9%
Foam insulation spray	1	0.0%	0.0%
Weather stripping	4	25.0%	3.6%
Window AC kit	2	50.0%	7.1%
Caulking doors	1	0.0%	0.0%
Caulking windows	0	NA[7]	0.0%
Door sweeps	5	30.0%	4.3%
Glass patch tape	1	0%	0.0%
Water pipe wrap	3	0%	0.0%
Water tank wrap	2	0%	0.0%
Water temp adjustment*	N/A	0%	0.0%
Filter changes/calendar*	N/A	0%	0.0%

*Freeridership for these measures is assumed to be 0%.

None of the seven survey participants who are identified as standard income households gave responses indicating program spillover. Thus program-level spillover is zero, based on low income spillover being assigned zero percent and standard income household spillover being estimated at zero percent.

Table 16. Gross and Net Program Savings by Measure

Measure	Gross kWh	Gross kW	Net kWh	Net kW
CFL	23,579	2.0560	22,731	1.9820
Low-Flow Showerhead	9,440	0.7381	9,326	0.7293
Faucet Aerator	1,311	0.1639	1,273	0.1592
Weather Stripping	545	0.2656	526	0.2560
Caulking	468	0.2282	468	0.2282
Door Sweep	153	0.0747	147	0.0715
Foam Insulation Spray	556	0.2707	556	0.2707
DHW Pipe Insulation	5,544	0.6329	5,544	0.6329
DHW Tank Wrap	2,389	0.2727	2,389	0.2727
DHW Temp Adjust	3,701	0.4225	3,701	0.4225
AC Filters/Calendar	1,289	0.0924	1,289	0.0924
Overall Savings	**48,976**	**5.2177**	**47,950**	**5.1173**

The final overall freeridership for the program is set at 2.1% (47,950/48,976) for a program NTGR of 0.979.

[7] Since no surveyed standard income households received this measure, the program-level freeridership is based on low income households only (zero percent freeridership).

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Impact Evaluation: Billing Analysis

This section of the report presents the results of a billing analysis conducted among the participants in the Residential Neighborhood Program in the Carolina System. Billing data were obtained for all participants in the program between March, 2013 and July, 2014 that had accounts with Duke Energy (after processing, there were a total of 8,147 accounts from Carolinas)[8]. A panel model was used to determine program impacts, where the dependent variable was monthly electricity consumption from November 2010 to August 2014.

The estimated savings obtained from the billing data analysis are presented below.

Table 17. Estimated Impacts: Billing Analysis

	95% Confidence Interval		
	Lower Bound	Mean Estimate, Unadjusted for EISA	Upper Bound
Per Participant Annual Savings kWh	309	393	477

This table shows that the Residential Neighborhood Program produced statistically significant savings for participants.

Note that the billing data analysis includes variables to capture effect of participation in other Duke Programs. This is to explicitly control for any impact from other program participation.

For this analysis, data are available both across households (i.e., cross-sectional) and over time (i.e., time-series). With this type of data, known as "panel" data, it becomes possible to control, simultaneously, for differences across households as well as differences across periods in time through the use of a "fixed-effects" panel model specification that provides net savings estimates that are already adjusted for freeridership and participant spillover that occurs during the analysis period. The approach does not include the program induced savings that are associated with short and longer term non-participant spillover or market effects. As a result, these savings should be considered conservative for an estimate actual achieved savings. The fixed-effect refers to the model specification aspect that differences across homes that do not vary over the estimation period (such as square footage, heating system, etc.) can be explained, in large part, by customer-specific intercept terms that capture the net change in consumption due to the program, controlling for other factors that do change with time (e.g., the weather). That is to say, the fixed effects model can be viewed as a type of differencing model in which all characteristics of the home, which (1) are independent of time and (2) determine the level of energy consumption, are captured within the customer-specific constant terms. Differences in customer characteristics that cause variation in the level of energy consumption, such as building size and structure, are captured by constant terms representing each unique household. The model does control for what would have been done without the program within the participants' homes.

[8] Useable accounts are those accounts which have billing data for at least a year of the pre- and a portion of the post-participation period, as well as monthly kWh greater than 10 and less than 10,000 kWh. It was not required that the data covers the complete evaluation period, only that there is at least one observation in each period.

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Because the consumption data in the panel model includes months before and after the installation of measures through the program, the period of program participation (or the participation window) may be defined specifically for each customer. This feature of the panel model allows for the pre-installation months of consumption to effectively act as the comparison group for post-participation months. In addition, this model specification, unlike annual pre/post-participation models such as annual change models, does not require a full year of post-participation data. Effectively, the participant becomes their own comparison group, thus eliminating the need for a non-participant comparison or control group. We know the exact month of participation in the program for each participant, and are able to construct customer specific models that measure the change in usage consumption immediately before and after the date of program participation, controlling for weather and customer characteristics.

In essence, because the model is analyzing the impacts at a monthly level, the model requires an adequate sample of monthly data to estimate the savings for each month. As a result, there is no need to have a full year of post-participant data for all participants. With past methods, the impact evaluations used annual data which required a full year of post-participation data to account for seasonal variations. With the monthly model, this is no longer required since each month is treated independently.

Algebraically, the fixed-effect panel data model is described as follows:

$$y_{it} = \alpha_i + ß(x_{it} * T) + \varphi P_t + \delta DP_{it} + \varepsilon_{it}$$

where:

y_{it} = energy consumption for home i during month t
α_i = constant term for site i (the fixed-effect)
T = indicator variables for each month in the analysis
P = indicator for the treatment for the program in question
DP = indicators for other utility-sponsored programs
$ß, \varphi, \delta$ = vectors of estimated coefficients
x = vector of non-program variables that represent factors causing changes in energy consumption for home i during month t (i.e., weather)
$x*T$ = *interaction of temperature and monthly indicator*
ε = error term for home i during month t.

With this specification, the only information necessary for estimation is those factors that vary month to month for each customer, and that will affect energy use, which effectively are weather conditions and program participation. Other non-measurable factors can be captured through the use of monthly indicator variables (e.g., to capture the effect of potentially seasonal energy loads).

The effect of the Residential Neighborhood program are captured by including a variable which is equal to one for all months after the household participated in the program. The coefficient on this variable is the savings associated with the program. In order to account for differences in

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billing days, the usage was normalized by days in the billing cycle. The estimated electric model for the Residential Neighborhood program is presented in Table 18.

Table 18. Estimated Savings Model – dependent variable is daily kWh usage, November 2010 through August 2014 (savings are negative).

Independent Variable	Coefficient (Daily kWh Savings)	t-value
Participation	-1.08	-9.17
Sample Size	281,382 observations (8,147 homes)	
R-Squared	66%	

The complete estimate model, showing the weather and time factors, is presented in *Appendix B: Estimated Model.*

Billing Analysis EISA Effects

As the billing analysis does not span the entire EUL of a CFL, it does not take into account the future effects of EISA (See *Appendix K: EISA Schedule and CFL Baseline*). From Table 9, first year annual CFL savings is 42.9 kWh per bulb. As this is the first year of counted savings, no adjustment is made to the baseline wattage. The average annual CFL savings is 33.0 kWh per bulb, a reduction of 23.1%. [(42.9-33.0)/42.9].

From Table 20, engineering estimates show that CFLs contribute 47.4% of net program kWh savings. In terms of the raw billing analysis savings of 393 kWh per participant, from Table 17, this represents 186 kWh (0.474 * 393). This portion of the billing savings is adjusted downward 23.1% to account for EISA, resulting in the overall net savings from the billing analysis of 350 kWh per participant seen in Table 20 (393 – 0.231 * 186).

Table 19. EISA Adjustments to Billing Analysis by year

Billing Analysis	2014	2015	2016	2017	2018	Average
Adjustment	0.0%	11.2%	13.0%	14.7%	15.9%	11.0%
kWh	393	349	342	335	330	350

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Table 20. Breakdown of Per Participant Savings Contributions by Measure from Engineering Estimates Extrapolated to Billing Analysis

Measure	Net kWh Contribution from Engineering	Net kW Contribution from Engineering	Billing Analysis Average kWh Allocation	Billing Analysis kW Allocation
CFLs	47.4%	38.7%	166	0.0365
Low-Flow Showerhead	19.5%	14.3%	68	0.0135
Faucet Aerator	2.7%	3.1%	9	0.0029
Weather Stripping	1.1%	5.0%	4	0.0047
Caulking	1.0%	4.5%	3	0.0042
Door Sweep	0.3%	1.4%	1	0.0013
Foam Insulation Spray	1.2%	5.3%	4	0.0050
DHW Pipe Insulation	11.6%	12.4%	40	0.0117
DHW Tank Wrap	5.0%	5.3%	17	0.0050
DHW Temp Adjust	7.7%	8.3%	27	0.0078
AC Filters/Calendar	2.7%	1.8%	9	0.0017
Overall Savings			**350**	**0.0944**

The billing analysis approach used to assess energy savings provides a direct net (net of short-term freeridership, short-term participant spillover, and participation in other Duke Energy programs) energy impact estimate by employing a quasi-experimental design. Therefore, it is necessary to apply a net to gross ratio to the engineering estimates for comparison to the billing analysis.

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Management Interviews

Program Operations

Duke Energy's Residential Neighborhood Program supplies eligible Duke Energy customers with home energy audits, one-on-one education during the audit, and the installation of energy efficiency measures as appropriate[9]. Duke Energy provides administrative oversight for the program, including vendor management, confirmation of eligible neighborhoods. GoodCents handles day-to-day program activities including marketing, customer enrollment, measure ordering, oversight of installations and timelines, data collection and database management, and reporting.

The neighborhoods are served one at a time and selected using U.S. Census Tract data showing the percent of residents that live at or below 200% of the federal poverty level (FPL). If at least 50% of the residents are at or below 200% of the FPL, the neighborhood is considered. The program managers conduct additional research on the area to determine if it is a good selection for the program. For example, they consider safety issues (inquiring with the local police department), the size of the area (number of homes), and other factors. After a neighborhood is selected, the boundaries are set to include approximately 500-800 homes, however some neighborhoods have been as large as 2,000 homes.

Marketing and Outreach

After the neighborhood and the 6-8 week period of time the program will operate are selected and confirmed, the program managers and GoodCents initiate more detailed planning for that neighborhood. The first outreach effort is targeted to all homes by mail two weeks prior to the neighborhood kick-off event. The purpose of the mailing is to inform the residents about the program, encourage them to learn more about it, and invite them to the program's kick-off event. The kick-off event provides more information about the program and how it operates and provides an opportunity for residents to meet the auditors. The event serves a catered dinner for the household to encourage participation and attendance. About a week before the kick-off event, postcards are sent as reminders to attend and learn more. Door hangers are also left on the doors of residents in the neighborhood throughout the 6-8 week period in which auditors are in the area. Residents are encouraged to RSVP for the event to help the managers order the correct amount of food for the dinner, however a response is not required to attend. Currently GoodCents and Duke Energy are reaching out to the residents six or seven times over the 6-8 week period they are in the neighborhood to encourage participation.

Kick-off Event

The kick-off event is held at a place familiar to the neighborhood such as a school or community center. There are signs directing residents to the event on major streets close to the event (see Figure 1). During the first hour, residents are encouraged to sign up for an audit, informed of the program and its benefits to their homes, their utility bills, and to Duke Energy. GoodCents staff including all of the auditors that will be working in the neighborhood attend so that residents can

[9] Not all items are installed during the audit. For instance, a year's supply of furnace filters are left at the residence for future filter changes.

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meet the people that will be entering their home and conducting the audit. All GoodCents and Duke Energy staff are wearing the same blue colored shirt that matches the program marketing materials and the vehicles that will be in the neighborhood. In addition, Duke Energy program managers invite trusted community members to attend and speak, encouraging residents to participate. TecMarket Works attended one of these events which included the mayor, a community center director, the Duke Energy liaison for the area, and a church leader. Attendees are provided with a catered dinner, and everyone is entered to win one of four $25 Visa gift cards which are awarded after the presentation. The events are very well organized and effective. Many residents sign up for their audit before they leave the event. A flyer that is displayed at the entrance of the kick-off event is shown in *Appendix J: Flyer at Kick-off Event.*

Figure 1. Sign for the Kick-off Event

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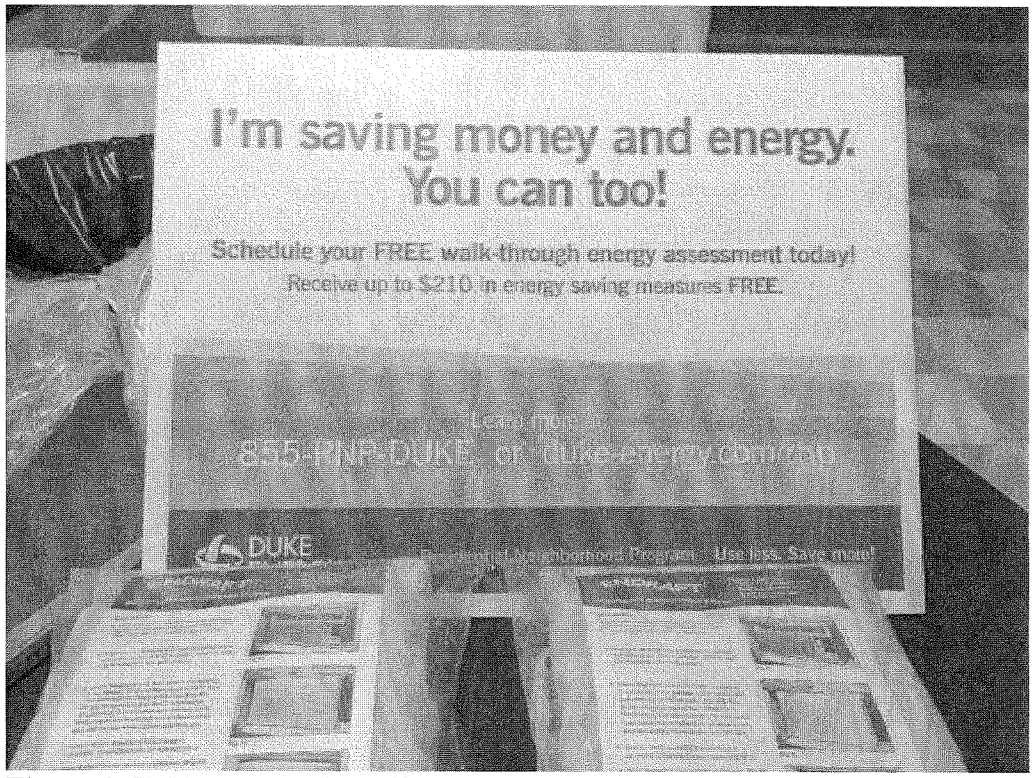

Figure 2. Table at the Kick-off Event with the Measures Available to Participants

Post-Event Activities

After the event, the auditors are in the neighborhood for eight to ten weeks conducting audits and approaching residents encouraging them to participate. The trucks, shown in Figure 3, are parked in conspicuous areas so that the residents are aware of and reminded of their presence and the services they are offering. Audits generally take from one to two hours to complete and the auditors are available from 8am to 7pm Monday through Friday, and from 10am to 3pm on Saturdays. The auditors are available to make appointments at any time for the following week (past a week they have found that some appointments are not held by the customer).

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Figure 3. Residential Neighborhood Vehicle

During the audit, participants are provided with one-on-one education about what the auditor is doing, and what measures they are installing. Each of the GoodCents auditors are provided with training specific to this program (see training guide in *Appendix I: Auditor Training Guide*). GoodCents hires auditors that have carpentry, weatherization, or some HVAC-related job history. Then they attend an internal training for this program, followed by one week of supervised on-site work. GoodCents also conducts safety training for carbon monoxide so that they can discuss carbon monoxide levels with the customers and its effects on health. Auditors also undergo quality assurance training which includes driving safety, in-home safety, and are required to review all training materials regularly (weekly, monthly or quarterly, depending on measure).

Eligibility

This program is available to Duke Energy customers that live in the defined neighborhood. The neighborhood is selected as described above. However, residents from outside of the neighborhood borders have attended events and tried to participate. None are turned away from the event, however, customers from outside the targeted neighborhood are informed that when the auditors will be in their area, that they will be in contact to enroll them in the program.

While the eligibility rules are clearly defined and explained, non-participant surveys reveal some confusion about the hours that audits are available (believing the audits would conflict with their work hours), that their income is too high to participate, or since they have CFLs they believe their home is already efficient. This is discussed in more detail the section *Non-Participants' Understanding of the Program.*

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Management Communication and Coordination

All parties interviewed for this evaluation reported positive working relationships between Duke Energy and GoodCents. Representatives from the two entities meet to review progress toward goals, discuss challenges or discrepancies, adjust strategies, and coordinate marketing and field activities. All communications are reported to be effective and timely.

Key Findings and Conclusions from Management Interviews

Duke Energy and its key vendor, GoodCents, work well together with no issues in communications or operational effectiveness.

All parties agree that all of the managers are open to discussing and trying out new marketing ideas, hoping to improve program participation.

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Participant Surveys Results

Awareness and Understanding of the Program

A plurality of surveyed program participants in the Carolina System first learned about the Residential Neighborhoods program from letters and postcards in the mail (mentioned by 31.8% or 14 out of 44 North Carolina customers and 41.7% or 15 out of 36 South Carolina customers), as seen in Figure 4. People visiting the customers' homes were the second-most mentioned source of awareness (22.7% or 10 out of 44 North Carolinians and 25.0% or 9 out of 36 South Carolinians). Door hangers were the only other source of awareness mentioned by more than 10% of customers in South Carolina, however in North Carolina customers attending the community event, word of mouth, and spotting auditors and their trucks in the neighborhood were also mentioned by more than 10% of participants.

None of these customers learned about the program online (0% in both states), and very few mentioned traditional media sources (2.3% or 1 out of 44 for North Carolina and 2.8% or 1 out of 36 in South Carolina). The only statistically significant difference between North and South Carolina customers in terms of their initial source of awareness of the program is that North Carolinians are more likely to mention spotting auditors and their trucks in the neighborhood (13.6% or 6 out of 44, versus 2.8% or 1 out of 36 in South Carolina; this difference is significant at $p<.05$ using Student's t-test).

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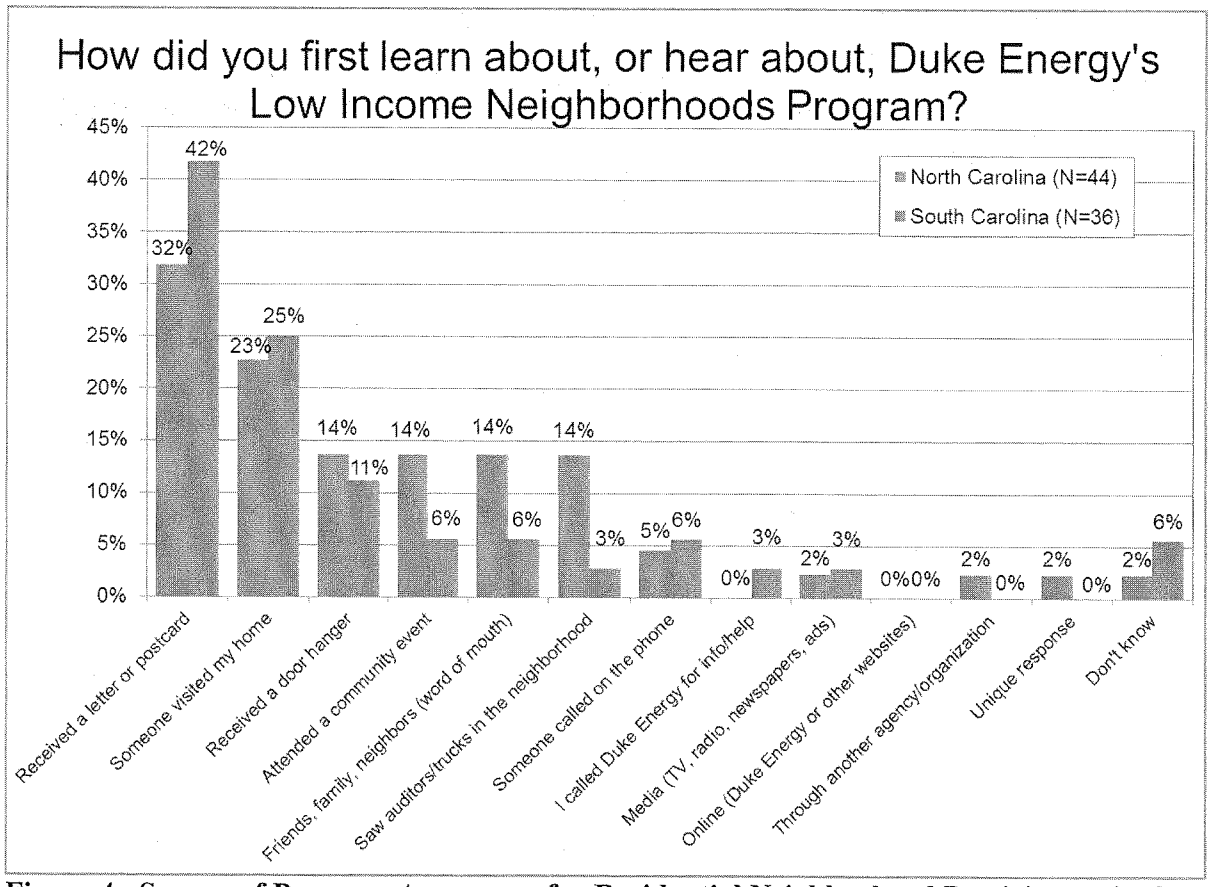

Figure 4. Source of Program Awareness for Residential Neighborhood Participants in the Carolina System (N=80)

Percentages total to more than 100% because participants could name multiple sources of awareness.

Among the 29 customers in the Carolina System who mentioned finding about the program through the mail, 93.1% (27 out of 29) identified Duke Energy as the organization that sent the mailings (including two customers who said they received a notice with their bill[10]). One South Carolina customer said their mailing came from "*one of the neighborhood centers: Northwest? C.C. Woodson?*", and one North Carolina customer could not recall the source of the mailing they received.

Among the 19 customers who learned about this program when someone visited their home, 73.7% (14 out of 19) identified Duke Energy as the organization that sent the representatives to their home, while the rest did not know or did not specify. All ten customers who learned about the program from door hangers (100% of 10) identified Duke Energy as the source of these communications.

Among the four customers who received phone calls about the program, three (75%) identified Duke Energy as the organization calling, while one customer from North Carolina stated that

[10] The program did not conduct a marketing effort via bill inserts.

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"someone from the city contacted me; I am a community leader, so I was asked to get involved with the program."

Two customers mentioned that they heard about this program through the media. They were asked to specify which media source, and these responses are listed below.

- *Channel 7* (South Carolina)
- *I think I saw it on TV as well.* (North Carolina)

One participant in North Carolina mentioned learning about the program from an agency or community organization; they specified that this organization was "*the Housing Authority.*"

One participant in North Carolina mentioned a unique method of learning about the program, listed below.

- *There was a note from the rental office.*

Participants were asked to describe in their own words what they understood was required of them as a participant in the program, and what they would receive in return for their participation; these responses are summarized in Table 21. A majority mentioned that they would receive measures such as light bulbs, showerheads and HVAC filters (57.5% or 46 out of 80), nearly half mentioned the home audit (43.8% or 35 out of 80), a third mentioned saving energy (35.0% or 28 out of 80), and a quarter mentioned saving money on bills (26.3% or 21 out of 80) and home weatherization (26.3% or 21 out of 80).

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Table 21. Participants Understanding of the Program (N=80)

	Carolina System (count)	Carolina System (percent)
Install measures	46	57.5%
Home audit	35	43.8%
Save energy	28	35.0%
Save money on bills	21	26.3%
Weatherize home	21	26.3%
Information / education about saving energy	14	17.5%
Must be present during home audit	12	15.0%
Make home more comfortable / fix things	7	8.8%
Participation is free	7	8.8%
Attend a community meeting	6	7.5%
Renters must notify landlord	4	5.0%
Everyone in the neighborhood is eligible	3	3.8%
I don't recall signing up for this program / they just showed up at my home	2	2.5%
Must be a home owner to participate	1	1.3%
Good for the environment	0	0.0%
Unique comments, listed below	3	3.8%
Negative comments, listed below	3	3.8%
I just let them do what they came to do	4	5.0%
Don't know	6	7.5%

Percentages total to more than 100% because responses mentioned multiple aspects of the program.

Three participants had unique comments, which are listed below.

- *I would get a change in batteries for my smoke detector.*
- *I expected I would get information about what I could do about signing up for more programs to reduce my energy bills.*
- *The program would help the neighborhood.*

Three participants had negative comments, which are listed below; all three of these comments are about increasing energy bills.

- *This program was supposed to save me money, but I want to find out why my bill has gone up. I'm on a fixed income and want to make sure my lights stay on.*
- *I was led to believe that I would get energy efficient things put in my house that was supposed to cut the cost of my monthly bill, but it didn't help the cost go down at all. My Duke Energy bill has actually increased since they came and supposedly did these improvements to my home.*
- *I don't know; after they did that, my bill was a little higher.*

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Factors Motivating Participation

Participants were asked to list all of the reasons that they participated in the Residential Neighborhoods program, including the main reason for their participation; these results are shown in Figure 5. The most-mentioned reason overall is to save money on utility bills, which is the main reason for participation for 27.5% (22 out of 80) of customers and a secondary reason for participating for another 27.5% (22 out of 80), thus is the only reason for participation mentioned by a majority of surveyed customers (overall 55.0% or 44 out of 80). The second most-mentioned reason for participating in the program is to save energy (also the main reason for 27.5% or 22 out of 80, but a secondary reason for only 15.0% or 12 out of 80). Obtaining energy efficiency measures (overall 25.0% or 20 out of 80) and weatherization services and repairs (overall 22.5% or 18 out of 80) were also mentioned by about one-quarter of participants.

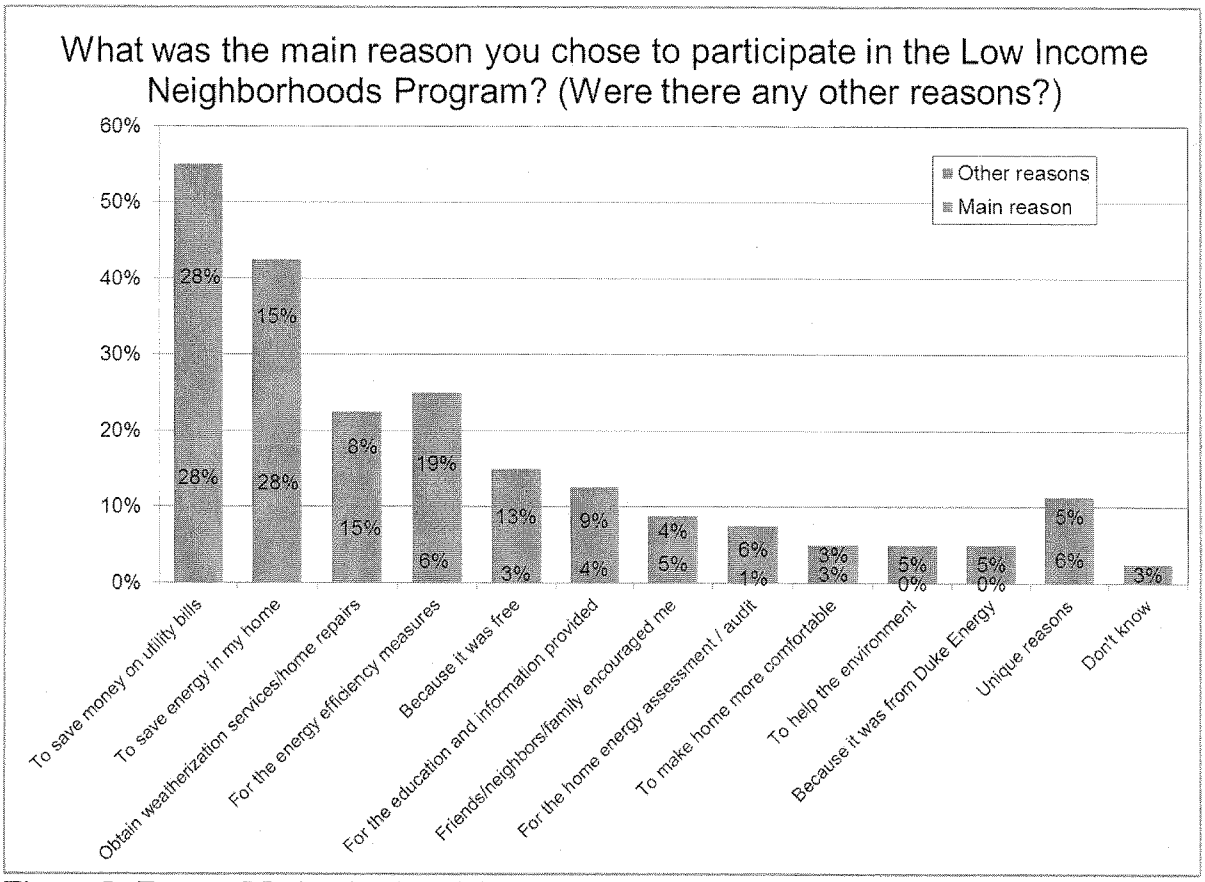

Figure 5. Factors Motivating Participation in the Residential Neighborhoods Program the Carolina System (N=80)

"Other reason" percentages total to more than 100% because participants could name multiple "other" reasons. "Main reason" percentages total to 100% because participants could only name one "main" reason.

Nine participants gave unique reasons for participating in the Residential Neighborhoods program, which are listed below.

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Unique main reasons (N=5)

- *Duke was going to do all the units in my building anyway.*
- *The building management chose for me. I was at work when it was going on.*
- *I don't recall choosing to be in this program.*
- *I live in an older house, and although I rent, I am still concerned. I thought it would be the right thing to do.*
- *I saw no reason not to.*

Unique other reasons (N=4)

- *I did it to help out the landlord.*
- *It seemed like all the people involved in offering the program were polite and eager to help out the folks in my neighborhood.*
- *We needed new light bulbs.*
- *I didn't know anything about it. I had heard home owners talking about the program, but I didn't know whether Duke would also do the projects.*

Enrollment and Participation

Participants were asked how long they waited between signing up for the Residential Neighborhoods program and receiving the home audit. As seen in Table 22, about half of surveyed participants waited less than a week (45.0% or 36 out of 80 including customers who signed up the same day and those who claimed that they never signed up but the audit was performed anyway). Only 6.3% (5 out of 80) reported that they had two wait for three weeks or longer, though one in five (20.0% or 16 out of 80) could not recall the length of time between sign-up and audit. TecMarket Works considers this "service wait time" to be a best practice in the field of energy efficiency audit service offerings. Few utilities provide audits to customers with so few days between enrollment and service delivery.

Table 22. Length of Time between Sign-up and Audit (N=80)

	Carolina System (count)	Carolina System (percent)
Same day	8	10.0%
Next day up to one week	26	32.5%
One week up to two weeks	17	21.3%
Two weeks up to three weeks	6	7.5%
Three weeks up to six weeks	3	3.8%
Six weeks or longer	2	2.5%
I did not sign up, they just showed up and went to work	2	2.5%
Don't know / can't recall	16	20.0%

Participants were asked if the length of time they waited between signing up and receiving the audit was too long, too short or about right. Table 23 indicates that three-quarters (76.3% or 61 out of 80) feel that the time from sign-up to audit is "about right" though 17.5% (14 out of 80) are not sure. Participants were asked a similar question about the length of time the auditor was

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in their home, and 92.5% (74 out of 80) reported that this was "about right." For both of these questions, the percentages of customers saying "too long" or "too short" are about equal and in the low single-digits.

Table 23. Customer Perception of Home Audit Timing (N=80)

	Carolina System (count)	Carolina System (percent)
Time between signing up and audit was....		
Too long	3	3.8%
About right	61	76.3%
Too short	2	2.5%
Don't know	14	17.5%
Length of time auditor was in the home was....		
Too long	1	1.3%
About right	74	92.5%
Too short	3	3.8%
Don't know	2	2.5%

Attending the Community Meeting

Before auditing teams begin to install measures in customers' homes, there is a kick-off meeting to inform customers about the program and what participation entails. About one in three surveyed participants (32.5% or 26 out of 80) attended the meeting in their area. Participant ratings of satisfaction with the staff and presenters and the information presented the meetings are included in the *Program Satisfaction* section of this report.

Recommending the Program

Surveyed participants were asked if they recommended this program to any of their friends, neighbors or relatives, and if so to how many people. Four out of five participants (81.3% or 65 out of 80) reported that they did recommend the program, and the range of reported recommendations per participant ranges from one to sixty, with an average of 5.5 and a median of three recommendations per participant recommending the program.

Participant Satisfaction

Participants were asked for their levels of satisfaction on a 1 to 10 scale (with one being the lowest and ten being the highest) for individual measures they received as well as different aspects of the program. The survey can be found in *Appendix F: Participant Survey Instrument* and the results of the satisfaction questions are presented below.

Measure Satisfaction

Table 24 below shows the respondents' mean satisfaction scores with the various measures provided by this program. Customers only provided satisfaction ratings for measures they confirmed receiving.

Most measures provided by this program received mean satisfaction ratings between 8.5 and 9.5, indicating high levels of satisfaction. The highest satisfaction ratings are for the door sweeps (9.63 with 56 customers rating this measure), water heater insulation tank wrap (9.73 based on 15 ratings) and foam insulation spray (9.75 based on 12 ratings). The lowest satisfaction ratings

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are for vinyl weather stripping for doors (8.14 based on 42 ratings) and the HVAC winter kit (8.35 based on 17 ratings).

Table 24. Mean Satisfaction Ratings for Measures (N=80)

Measure	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
CFLs	9.18	73	11.0%
Switch Plate Wall Thermometer	9.11	65	10.8%
Door Sweeps	9.63	56	3.6%
Low-flow Showerheads	8.85	55	12.7%
Faucet aerators	9.22	49	12.2%
AC/Heat Filters Year Supply	9.47	43	4.7%
Vinyl Weather Stripping Doors	8.14	42	23.8%
Change Filter Calendar	9.35	26	7.7%
Water Heater Temperature Adjustment	9.36	22	9.1%
Water Heater Pipe Wrap	8.95	21	9.5%
HVAC Winter Kit for Wall/Window Unit	8.35	17	35.3%
Water Heater Tank Insulation Wrap	9.73	15	6.7%
Caulking Doors	8.83	12	16.7%
Foam Insulation Spray	9.75	12	0.0%
Vinyl Weather for window HVAC units	9.00	4	25.0%
Clear Glass Patch Tape	10.00	4	0.0%
Caulking Windows	10.00	1	0.0%

Customers who gave satisfaction ratings of "7" or lower on a ten-point scale were asked the reason for their relatively low satisfaction with a measure. These responses are listed in later sections of this report that discuss the installation of each individual measure.

Program Satisfaction

The surveyed participants are very satisfied with the Residential Neighborhood program. Table 25 below shows the respondents' mean satisfaction scores with various aspects of the program.

Overall program satisfaction is very high with a mean of 9.35 on a 10-point scale. Surveyed participants also rated their satisfaction with the auditors who came to their homes and performed the audit: on a 1 to 10 scale, the auditors' knowledge was rated at 9.39, and their helpfulness was rated at 9.31. The highest satisfaction ratings were given to the information presented at the community meetings (9.54) and the staff and presenters at these meetings (9.77), tough only about a third of these participants attended a meeting and were thus able to give a satisfaction rating.

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Table 25. Mean Satisfaction with Program Components (N=80)

Metric	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Convenience of enrolling in the program	9.49	76	6.6%
Knowledge of the auditor	9.39	76	6.6%
Helpfulness of the auditor	9.31	78	9.0%
Information presented at the community meeting *(only asked of customers who attended)*	9.54	26	3.8%
Staff and presenters at the community meeting *(only asked of customers who attended)*	9.77	26	0.0%
Overall program satisfaction	9.35	78	6.4%

For satisfaction ratings of "7" or below, participants were asked what could be done to improve the situation. The verbatim responses of these less-satisfied customers are listed below for each aspect rated.

Rated satisfaction with program overall at "7" or less (N=5)

- *I think that this is a great idea, and overall a great program, but I personally have not seen any results in my Duke Energy bill being reduced. The only change I have seen since participating in this program is that the cost on my monthly bill has actually gone up. I think, for folks who participate in this program whose bills don't reduce, another home audit, perhaps a more advanced one, should be performed and have it figured out as to why no improvements were made on reducing the amount of energy used in the home.*
- *This program should have followed through with what they said they were going to do. I did not receive the installations that were proclaimed to be installed, and I did not see a change for the better on my Duke Energy bill. I suggest for the program to offer installation of programmable thermostats as well as other options for energy efficient light bulbs besides CFLs. I like high wattage or very bright lights, and those CFLs do not offer that sort of light.*
- *I don't know how this can be improved. I didn't like the shower head and faucet aerators. I did like the door sweep which was keeping the air conditioning in, but the landlord had it removed.*
- *They could use products that are not so cheap.*
- *I would have like it better if I had more knowledge about the improvements they made.*

Rated convenience of enrolling at "7" or less (N=5)

- *The convenience could be improved by reducing the number of calls it takes to enroll in the program.*
- *Duke could set up appointments for the audit rather than soliciting participants door-to-door.*

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- *They just showed up at my house and offered the services right away, I never really signed up to participate.*
- *They did a sloppy job. I am very dissatisfied.*
- *Explain more about it.*

Rated knowledge of auditor at "7" or less (N=5)

- *It didn't seem like my auditor knew what he was doing, I think he needed more training to have knowledge of what he was doing and what needed to be done to my home to help it save energy. Also, the things he did, like installing the foam vinyl door insulation, did not stay installed.*
- *The auditor had to come back to my house after the initial visit and needed to change out one of the shower heads that he installed. He did not test the shower head to see if it actually worked when he first installed it. Also, I asked about the purpose and function of the switch plate wall thermometer, and he was unable to give me any information about it. I still don't see the purpose of that thermometer.*
- *The auditor would have been more helpful if he was more knowledgeable about energy. I would have liked the auditor to be more knowledgeable about energy savings devices. The auditor was not able to answer a question I had about the device that attaches to the refrigerator to help save energy. He had not heard of it. I was hoping to find out what it was called.*
- *They should have explained about what they were putting in and why.*
- *Explain things better.*

Rated helpfulness of auditor at "7" or less (N=7)

- *They never explained what the things they put in are used for.*
- *The auditor could provide more explanation of what he's doing and why he's doing it.*
- *The auditor didn't seem to know much about what he was doing. This program should offer more training to the auditors. He should have been able to answer my questions about what he was installing and the function or maintenance of these things, and he could not do that for me.*
- *The auditor should have had full knowledge of what each installation's purpose was. I'm referring to how my auditor did not know what the purpose or function of the switch plate wall thermometer was to me. He was unable to explain it to me.*
- *The auditor would have been more helpful if he was more knowledgeable about energy savings devices. The auditor was not able to answer a question I had about the device that attaches to the refrigerator to help save energy. He had not heard of it. I was hoping to find out what it was called.*
- *He didn't talk much.*
- *I wish he took more time.*

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Rated information presented at community meeting at "7" or less (N=1)

- *First of all, now everybody in the neighborhood may not be as dumb as I am, but we don't have the information about these energy-saving things. There needs to be more emphasis on identifying what things cause energy to go up and what can be done to reduce energy costs. A lot of people really need to know. Politicians like to be there to say hello, to say that they support the program, and that's good. But, what we really need to be presented with is with what causes energy bills to be high and what can be done to lower bills. A lot of people are not able to read the program information on the computer or the letters. When a block of people are listening at a meeting, it's a good thing. We can talk to each other. How often do we leave our cell phone chargers plugged in or appliances we're not using? For those of us who are conscious of saving energy, it's still important.*

Rated staff and presenters at community meeting at "7" or less (N=0)

Satisfaction with Duke Energy

Satisfaction with Duke Energy was generally high among these program participants, with a mean rating of 8.71 on a 10-point scale where "10" means "very satisfied", and more than half of surveyed participants (53.8% or 43 out of 80) rate their satisfaction with Duke Energy at "10 out of 10", the highest possible score. The full distribution of responses is shown in Figure 6.

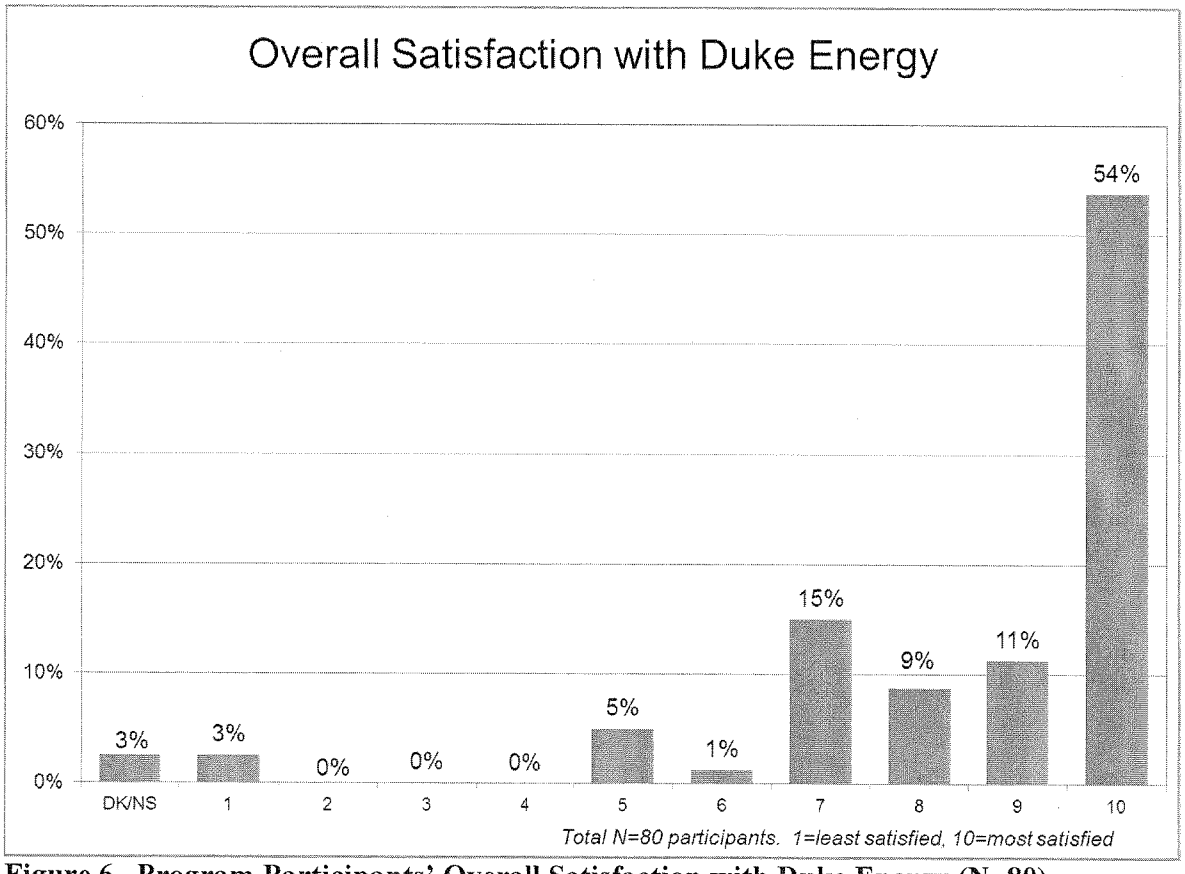

Figure 6. Program Participants' Overall Satisfaction with Duke Energy (N=80)

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Nineteen participants (23.8% of 80) rated their satisfaction with Duke Energy at "7" or less on a 10-point scale and were asked how this situation could be improved. The most common responses to this question had to do with concerns about high energy rates and utility fees, as seen in the list below.

Rated satisfaction with Duke Energy overall at "7" or less (N=19)

- *Duke could reduce their energy rates.*
- *I think their rates are too high, they should work on lowering those rates.*
- *Duke could lower energy rates for elderly and/or infirmed people.*
- *The cost of my energy bill keeps on going up, I don't understand why my bills are so high. I live alone and am at work all day, I try my best to cut back and be energy efficient. I just don't understand why my monthly bill is now around $150 per month when it used to be under $100, usually around $80 or $90 dollars. Has the cost of Duke Energy really gone up that much recently?*
- *My bill was $89 per month; it's now $98. I don't know why it went up.*
- *My bill's just been high and I can't see where anything's really helping.*
- *Stop telling lies. Why is my bill so much higher than it used to be? There is something wrong with this picture.*
- *I understand that it takes money to maintain power grids, but it's hard on folks every time they raise rates. That seems to be happening a lot. Duke must think we're crazy. They know we need lights, we like electricity, so we put up with it.*
- *I am on a fixed income so I don't always have the full amount of the payment due and I frequently get cut off notices. The Duke Energy customer service people aren't flexible with the amount of money that I have to pay. It's frustrating for me because I don't like having to choose between having power in the apartment and being able to pay for food.*
- *What I don't like about Duke is they send this little card out with the bill, Share the Warmth, where they round off your bill to help someone else to pay their energy bill. They shouldn't do this when they give out these huge, huge, huge bonuses to their people and they're rounding off people's bill to pay off others' bills. It's a struggle for a lot more people than they may think. I don't like this at all!*
- *I wish Duke Energy had a payment plan for folks who are on a fixed income.*
- *Don't add a security deposit to your bill after six years.*
- *I think it's a pain in the neck when you have to call all those numbers to get to somebody, and the deposits for changing residences is outrageous.*
- *I'm disappointed by the reconnection fee. The DSS (a federally funded program) said that they would send Duke Energy $200 on my behalf but that it would take 6-8 weeks for the money to get to Duke. My most recent bill was $255 which I could not afford to pay. I had hoped that the $200 from the DSS would have applied to that bill but it didn't and my power was shut off. Crisis Ministry paid the $255 and $75 reconnection fee for me. I feel like Duke didn't care about my situation and that the $75 reconnection fee is excessive.*
- *I am disappointed that they used such cheap products. I hear other people complaining. I could have installed cheap stuff myself.*

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- *Duke is great with emergencies, but I do have a problem with the ash spill. I don't think the customers should have to pay for it and I have concern about the impact on the environment.*
- *I'm not getting very good prices lately and all that coal ash stuff has given them a black eye. I guess more community involvement helps.*
- *Duke Energy does not give you any warning for when your services are to be interrupted. They don't give us enough time to pay our bills, and their deferment plan does not help us. I think Duke Energy needs to get a whole new CEO and new team, start all over again. What they are doing now is not currently working. I want to move somewhere where I don't have to deal with Duke Energy anymore. Duke needs to stop doing stuff that is making them look bad, all this pollution is bad for them, their customers, and especially the environment, Duke's 'efforts' are poisoning people's drinking water! Duke needs to start helping us, not hurting us! The cost of Duke Power is too high on too many levels.*
- *I don't know.*

Surveyed participants were also asked if their participation in the Residential Neighborhoods program has made their attitude toward Duke Energy more positive or more negative. Table 26 shows that nearly a clear majority say that the program has made them more positive towards Duke Energy (58.8% or 47 out of 80), and nearly two-thirds report that their knowledge of how to save energy has increased (67.5% or 54 out of 80). Only two customers report that their attitude towards Duke Energy has gotten worse (2.5% of 80) and a similar number report that their knowledge of how to save energy has decreased somewhat (2.5% or 2 out of 80).

Table 26. Changes in Attitude and Knowledge due to Program Participation (N=80)

	Carolina System (count)	Carolina System (percent)
This program has made my attitude towards Duke Energy....		
Much more positive	22	27.5%
Somewhat more positive	25	31.3%
About the same	30	37.5%
Somewhat more negative	0	0.0%
Much more negative	2	2.5%
Don't know	1	1.3%
Has your knowledge of how to save energy		
Increased a lot	21	26.3%
Increased somewhat	33	41.3%
Stayed the same	24	30.0%
Decreased somewhat	2	2.5%
Decreased a lot	0	0.0%
Don't know	0	0.0%

Participants who said their attitude towards Duke Energy was altered by their participation in the program were asked to explain this; these responses are categorized and listed below.

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Much more negative towards Duke Energy (N=2)

- *They did not do the installations they said they would and I have not seen any savings on my utility bill; there have been no actual improvements made.*
- *The materials they used are of waste of money and my time.*

Much more positive towards Duke Energy (N=22)

- *Because it seems as though Duke Energy is making an effort to save costs and offer provisions for the homes. Costs are always going up on everything we need, so it's great that Duke has made an effort to help control those necessary costs.*
- *Because of the impact that this program has made. The program is working! People have had the opportunity to improve things in their homes that would have never been improved without the help from this program offered by Duke Energy.*
- *Because their lighting seems to last longer and you don't have to buy as many bulbs.*
- *I did not know that Duke Power would come to your home and do those repairs. I think it's a very good project.*
- *I like that they are trying to give their customers help.*
- *I think it was very nice of them to provide this service and to help us senior. We are so often neglected. I have been working since I was 14 and am now almost 80. I see young people getting so much help but as a senior I get very little help. I have so much to pay on a limited income: taxes, insurance, utility bills.....*
- *It shows that they are more concerned about us saving a dollar than them making a dollar.*
- *It was great that Duke offered a free program that would potentially save us money on our utility bills.*
- *It was very helpful Duke came out and make this program for us. Also I liked that the program is free.*
- *It's nice that Duke has done this program. It really helps people like me who want to conserve energy for financial reasons but aren't able to afford the things that Duke provided. I wanted to use door sweeps and try out CFLs but I really couldn't find the money to do these things. I don't think that my bill has decreased but I think that's because the rates keep going up and I think I'm using fewer kilowatt hours.*
- *My attitude is much more positive because I am grateful for the help I received. I knew that Duke's rates were going up, so getting an offer for a free energy assessment was nice.*
- *My attitude is much more positive because I learned ways to reduce my energy bill. Duke Energy demonstrated that they care about their customers.*
- *Programs like the Residential Neighborhood Program demonstrate that Duke Energy cares about their customers.*
- *They are helping us conserve on energy.*
- *They did a lot for our neighborhood. They visited many peoples' homes.*
- *They helped a lot of people.*

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- *They work with you and they try to help you out. There's no other company that I know of who think about equality Very good for them! Whoever owns Duke must have a big heart.*
- *They're helping people save energy; they didn't have to do that. They could have let us keep wasting power.*
- *Things are working out for me, the program worked out great towards making my home more comfortable. I think my energy bills came down a little bit as well.*
- *Through participating in this program, it is the first time I have ever known that Duke Energy wanted to help the residents to be more energy efficient. I see it as they are caring for their customers.*
- *Who else does these things? Why would you do these things if you didn't care? They were all over the neighborhood. Really nice they are reaching out. I was unemployed at time and the program saved me money. I think it's awesome that someone was doing something.*
- *With this program they try to show you things that you probably would have missed, or did not even know, that could help you save energy. This program offered things that everyone should be doing for their homes.*

Somewhat more positive towards Duke Energy (N=25)

- *After taking advantage of this program, I got a feeling that Duke Energy cared about how much money I had to spend on my utilities. This program helped me save money, yet it did not cost me anything but a little bit of time. I think it is wonderful.*
- *Because for them to offer us this program, to save on our electricity, I have a better opinion about them. It's so great that this program and all these home improvements were all free to us, it shows that Duke Energy cares about being conservative with energy use. I like that they have given us the right things to conserve energy in our homes.*
- *Duke Energy is giving us something for nothing even though they don't have to. They are concerned about their customers' bills and helping the environment.*
- *I appreciated it. Any help I can get, I'm all for it. I'm disabled and I'm on a fixed income.*
- *I learned a little bit and got some things done I needed to.*
- *I like that they are taking the initiative to let people know how to save energy.*
- *I like the helpfulness of the auditor. I would give a higher rating if their rates were lower.*
- *I like their concern for us and the help they gave our neighborhood.*
- *I love what they offered.*
- *I mean, Duke Energy was nice enough to come out to my neighborhood and help us out with saving energy in our homes, I'm impressed on their efforts to help out individuals.*
- *I understand that Duke Energy's rates have gone up quite some percentage wise, but they are still trying to save their customers money by offering programs like this one.*
- *I've always liked Duke Energy but I thought that it was really nice that they are providing this service to their customers. It's not something that they have to do, but they are doing it for their customers and the environment.*
- *It was a good idea to help people save money and energy.*

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- *It woke me up to change some of the things I was doing.*
- *It's beneficial to the community, so that's a positive step.*
- *It's a good program.*
- *It's like they're giving back to community. Not just out there to make money.*
- *My attitude is somewhat more positive because I gained useful knowledge about energy efficiency.*
- *They did everything well.*
- *They send me a form every month and I can tell where I was before I got these lights.*
- *They're trying to help people save on their bill.*
- *You don't really think of an energy company helping you save energy in your home and taking an interest in us personally.*
- *My bill's the same.*
- *I think they could do more, Duke Energy could get more involved in communities and offer more of these energy efficiency programs to the 'little people'. Currently, it seems like a lot of Duke's attention goes to industrial and commercial efforts instead of residents and the individuals.*
- *I like the program. However, Duke has been sloppy with the Ash Spill. It's endangering our environment and health. The customers have to pay for the Ash problem yet executives are getting raises and utility bills are increasing.*

Nearly half of surveyed participants (43.8% or 35 out of 80) report that their utility bills have decreased since participating in the program, though one in ten (10.0% or 8 out of 80) report that their bills have actually increased. A third of these participants (31.3% or 35 out of 80) have seen no change, and 15.0% (12 out of 80) are not sure if their bills have gone up or down. Table 27 also shows participants' estimates for the monthly change in their bills; the six customers who say their bills "decreased a lot" report saving an average of about $70 per month, while those who say their bills "decreased somewhat" report saving an average of about $13 per month. Overall, the average savings of the 65 participants[11] who were able to estimate the change in their bill is about $8 per month, though the median savings is only $1 per month (indicating that overall nearly as many surveyed participants saw their bills stay the same or increase as saw their bills decrease).

[11] Out of 80 participants surveyed, twelve participants were not sure if their bills had changed, so were not asked to estimate the amount of the change. Three more participants who were able to answer the question about their bill changing were unable to provide a specific dollar estimate for the amount of the change.

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Table 27. Changes in Energy Bills due to Program Participation (N=80)

	Carolina System (count)	Carolina System (percent)	Estimated dollars per month savings (negative means increase in bill)
Have your monthly utility bills			
Decreased a lot	6	7.5%	$69.6
Decreased somewhat	29	36.3%	$12.6
Stayed about the same	25	31.3%	$0.0
Increased somewhat	5	6.3%	-$23.8
Increased a lot	3	3.8%	-$47.5
Don't know	12	15.0%	NA
Total average savings per month			$8.4

Predicting Overall Program Satisfaction

Table 28 shows the correlations between overall program satisfaction and seven factors which could be used to predict program satisfaction. All of the satisfaction ratings with aspects of the program, mean satisfaction with measures received, and satisfaction with Duke Energy are highly correlated to satisfaction with the program. However, attending the community meeting and the number of measures received are not significantly correlated with overall program satisfaction.

Table 28. Correlations with Overall Program Satisfaction

	Correlation with program satisfaction (Pearson's r)	Significance
Helpfulness of the auditor	.784	p<.01
Satisfaction with Duke Energy	.727	p<.01
Convenience of enrolling in the program	.715	p<.01
Knowledge of the auditor	.644	p<.01
Mean satisfaction with measures received	.487	p<.01
Attended community meeting	.117	-
Number of measures received	.094	-

Next, simple linear regressions were performed to predict overall participant satisfaction with the program using ratings of satisfaction for ten different aspects of the program. Two models were used: a stepwise model that selects predictors based on incremental improvements to the model (producing the most efficient model that predicts the most variance using the fewest predictors), and a "complete" model that uses all predictors simultaneously (which represents the maximum variance that can be explained using this set of predictors).

The two regression models produce highly consistent results, as both indicate the aspects of the program that have the most influence on overall program satisfaction are being satisfied with the helpfulness of the auditor and being satisfied with Duke Energy in general, followed by

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satisfaction with the convenience of enrollment. The two models also produce very similar levels of variance explained, indicating that the non-significant predictors included in the complete model have little additional effect.

The stepwise algorithm is iterative, adding or subtracting predictors from the model based on predetermined criteria. For the model presented in Table 29, predictors are added to the model as long as their coefficients when added to the model are significant at the p<.10 level, and removed from the model if the significance of their coefficients falls below p<.20 (due to multicolinearity with other predictors added to the model on subsequent steps). The algorithm will take as many steps as necessary until all predictors that meet the criteria have been added to (or subtracted from) the model. For this model, the algorithm added three predictors (and removed none) in order to arrive at the final regression equation in three steps.

Table 29. Stepwise Regression to Predict Overall Program Satisfaction (N=71[12])

Predictor	Beta coefficient	Significance
Satisfaction with Duke Energy	.393	p<.01
Helpfulness of the auditor	.380	p<.01
Convenience of enrolling in the program	.243	p<.05

The three-predictor regression model produced using the stepwise method predicts 76.7% of the variance in overall program satisfaction (R-squared), and is significant at the p<.01 level using ANOVA. Beta coefficients are standardized values and indicate the relative importance of the predictors in the model (absolute value of 1.0 would indicate that the predictor determines the predicted variable perfectly, and zero indicates no effect at all. Negative coefficients would represent negative influence, though for this model all coefficients are positive).

For the "complete" model, all seven predictors are used simultaneously to predict overall program satisfaction. Since there are no criteria used to determine which predictors are included in the model, most of the predictors do not reach the level of statistical significance. However the complete model does show the maximum amount of variance in overall satisfaction that can be explained using this set of predictors.

[12] Though there are 80 participants in this survey, the number of valid cases used for regression models is 71 due to "listwise" deletion of missing data. In order to be included in the model, a participant had to give valid answers to all questions used in the model; nine customers who are missing one or more ratings were excluded.

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Table 30. "Complete" Regression to Predict Overall Program Satisfaction (N=71)

Predictor	Beta coefficient	Significance
Helpfulness of the auditor	.441	p<.01
Satisfaction with Duke Energy	.401	p<.01
Convenience of enrolling in the program	.263	p<.01
Number of measures received	.044	-
Mean satisfaction with measures received	.003	-
Knowledge of the auditor	-.085	-
Attended community meeting	-.106	-

The "complete" seven-predictor regression model predicts 77.7% of the variance in overall program satisfaction (R-squared), and is significant at the p<.01 level using ANOVA. The additional non-significant predictors in this model only increase the variance explained by 1.0% over the stepwise model. The negative beta coefficients seen in this model are not significantly different from zero at p<.10 or better.

Comparing the correlations in Table 28 (relationship between predictors and program satisfaction one-at-a-time) with the regression model in Table 30 (relationship between predictors and program satisfaction all-at-once) indicates that mean satisfaction with measures received and the knowledge of the auditor become non-significant in the presence of the three significant predictors in the regression model: helpfulness of the auditor, satisfaction with Duke Energy and convenience of enrollment.

Installation of Energy Efficiency Measures

Duke Energy provided program records of which measures were installed in which customers' homes, which are based on the auditors' records of which measures were installed during audits. The number and percentage of surveyed Carolina System participants who received each measure according to these records is shown in Table 31. Out of the sixteen categories of measures shown in this table, all customers who were surveyed received between five and thirteen measures, and on average customers received nine of these measures (the mean is 9.2 types of measures received and the median is 9.0).

More than 90% of surveyed customers received CFLs (of either wattage: 97.5% or 78 out of 80), switch plate wall thermometers (92.5% or 74 out of 80) and faucet aerators (91.3% or 73 out of 80). The measures customers were least likely to receive are caulking for windows (13.8% or 11 out of 80), vinyl weather stripping for window units (7.5% or 6 out of 80) and the glass patch tape (7.5% or 6 out of 80).

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Table 31. Installation of Energy Efficiency Measures from Auditor Records (N=80)

	Carolina System (count)	Carolina System (percent)
Any CFL(s)	78	97.5%
13-watt CFL(s)	44	55.0%
18-watt CFL(s)	57	71.3%
Switch plate wall thermometer	74	92.5%
Faucet aerator(s)	73	91.3%
Door sweeps	71	88.8%
HVAC filters and filter change calendar	64	80.0%
Vinyl weather stripping doors	63	78.8%
Low-flow showerhead(s)	61	76.3%
Foam insulation spray	56	70.0%
Caulking doors	49	61.3%
Water heater temperature adjustment	44	55.0%
Water heater pipe wrap	36	45.0%
HVAC winter kit for wall/window unit	24	30.0%
Water heater tank insulation wrap	19	23.8%
Caulking windows	11	13.8%
Vinyl weather stripping HVAC window units	6	7.5%
Clear glass patch tape	6	7.5%

Surveyed customers who participated in the Residential Neighborhoods program were asked to confirm whether they received the measures that auditor records show they had received. Confirmation rates range as high as 91.8% (56 out of 61) for low-flow showerheads to as low as 9.1% (1 out of 11) for caulking windows. There is also high variability in the percent of customers who are unable to confirm measures ("don't know"), ranging from the low single digits for some measures such as CFLs (only 2.6% or 2 out of 78 were unsure if they had received these measures) up to 41.1% (23 out of 56) who were not sure if they received any foam insulation spray. For the two caulking measures, a majority of participants who received these measures according to auditor records reported that they did not receive caulk for their doors (51.0% or 25 out of 49) or windows (72.7% or 8 out of 11).

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Table 32. Customer-Confirmed Installation of Energy Efficiency Measures (N=80)

	Valid count (# receiving according to auditor records)	All measures installed %	Partially installed %	Not installed %	Don't know %
Any CFL(s) *(partial = only some bulbs installed)*	78	76.9%	19.2%	1.3%	2.6%
13-watt CFL(s)	44	NA	NA	NA	NA
18-watt CFL(s)	57	NA	NA	NA	NA
Switch plate wall thermometer	74	89.2%	NA	6.8%	4.1%
Faucet aerator(s)	73	68.5%	NA	21.9%	9.6%
Door sweeps	71	80.3%	NA	16.9%	2.8%
HVAC filters and filter change calendar *(partial = received filters or calendar)*	64	42.2%	15.6%	25.0%	17.2%
Vinyl weather stripping doors	63	66.7%	NA	28.6%	4.8%
Low-flow showerhead(s)	61	91.8%	NA	6.6%	1.6%
Foam insulation spray	56	23.2%	NA	35.7%	41.1%
Caulking doors	49	24.5%	NA	51.0%	24.5%
Water heater temperature adjustment	44	56.8%	NA	9.1%	34.1%
Water heater pipe wrap	36	61.1%	NA	27.8%	11.1%
HVAC winter kit for wall/window unit	24	70.8%	NA	25.0%	4.2%
Water heater tank insulation wrap	19	84.2%	NA	10.5%	5.3%
Caulking windows	11	9.1%	NA	72.7%	18.2%
Vinyl weather stripping HVAC window units	6	66.7%	NA	33.3%	0.0%
Clear glass patch tape	6	66.7%	NA	16.7%	16.7%

These significant discrepancies between auditor records and customer recollections are not unexpected, for several reasons:

- Auditors record installations the day the work is done; customers are recalling what was done weeks or months after the installation.
- The auditors did the vast majority of the installations themselves; the customers may or may not have been paying attention to what the auditor was doing during the audit.
- Auditors have experience with installing these particular measures and with filling out the paperwork to record what was done; most customers do not have any experience with these measures, and are not familiar with the forms (i.e., the range of possible measures that could be installed).

Since this evaluation did not include on-site verification of measure installation, we cannot determine the objective accuracy of either the auditor records or the customers' recollections of what was done during the audits. However, for the reasons listed above, TecMarket Works assumes that the auditor records are more accurate than the customers' survey responses. Therefore, the process reporting for measure installations assumes that the auditor records are correct and the measure was installed when a customer cannot confirm auditor records ("don't know").

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CFL Installations

Although auditors are supposed to install all measures, customers report that this does not always happen. As seen in Table 33, over half of the customers who received CFLs according to auditor records confirmed that the auditor installed all of the bulbs (55.1% or 43 out of 78), and another 21.8% (17 of 78) reported that all of the bulbs they received were installed by a combination of auditor and customer efforts. However, 17.9% (14 out of 78) report that the auditor left CFLs behind which have not been installed yet. Additionally, one customer (1.3% of 78) said that they received CFLs (two bulbs) but have not installed them yet, while another customer (1.3% or 1 out of 78) reports that they never received any CFLs, and two customers (2.6% of 78) could not recall if they received any CFLs.

Table 33. Measure Installation: CFLs (N=78)

78 participants received CFLs according to auditor records	Carolina System (N)	Carolina System (%)
Auditor installed all bulbs	43	55.1%
Auditor installed some bulbs, left other bulbs which customer installed	14	17.9%
Auditor gave bulbs to customer, customer installed all of them	3	3.8%
Auditor installed some bulbs, left other bulbs which customer has NOT installed	11	14.1%
Auditor gave bulbs to customer, customer installed some of them	3	3.8%
Auditor gave bulbs to customer, customer has not installed any of them	1	1.3%
Did not receive any CFLs	1	1.3%
Don't know / not specified	2	2.6%

The fourteen participants who said that they have uninstalled CFLs they received from the auditor were asked how many of these bulbs are left over, and what they have done or intend to do with those bulbs. These fourteen customers report having a total of thirteen 13-watt and 37 18-watt bulbs left over (an average of 0.9 13-watt and 2.6 18-watt CFLs apiece among customers with leftover program CFLs).

Table 34 compares auditor records of CFL installation with customer recollections. Auditor records report that 414 13-watt CFLs and 345 18-watt CFLs were installed across the 80 surveyed participant households. When asked to confirm the auditor bulb totals, in aggregate customers reported receiving slightly more bulbs than the program records showed (416 13-watt CFLs and 349 18-watt CFLs). However, after taking into account the 50 unused bulbs that customers say they received which had not been installed as of the time of this survey, the number of bulbs confirmed installed by customers is 403 13-watt CFLs (97.3% of the auditor-recorded total) and 312 18-watt CFLs (90.4% if the auditor-recorded total). Overall, the total number of customer-confirmed bulb installations is 94.2% of the auditor-reported total (715 out of 759 bulbs installed).

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Table 34. Customer Confirmation of CFL Installations

	Count of CFLs
Auditor records: 13w CFLs installed	414
Customer confirmation: 13w CFLs received	416
Customer confirmation: 13w CFLs installed	403
Percent of 13w CFLs from auditor records confirmed installed by customers	97.3%
Auditor records: 18w CFLs installed	345
Customer confirmation: 18w CFLs received	349
Customer confirmation: 18w CFLs installed	312
Percent of 18w CFLs from auditor records confirmed installed by customers	90.4%
Auditor records: Total CFLs installed	759
Customer confirmation: Total CFLs received	765
Customer confirmation: Total CFLs installed	715
Percent of Total CFLs from auditor records confirmed installed by customers	94.2%

As indicated in Table 35, about one in six customers who received CFLs from this program still has some program bulbs in storage (16.9% or 13 out of 77 who confirmed that they received CFLs from the program), though stored bulbs only account for 5.8% of the bulbs that customers confirm were given to them. Only one customer gave away any program bulbs (to a family member; this represents 1.3% of 77 customers receiving CFLs, accounting for 0.8% or 6 out of 765 bulbs distributed), and none of the surveyed customers reported disposing of (throwing away or recycling) any uninstalled program bulbs.

Table 35. Customers with Uninstalled CFLs and Number of Uninstalled CFLs

	Customers (N)	Customers (%)
Customers who received bulbs (customer confirmed)	**77**	**100.0%**
Customers with bulbs not installed yet	14	18.2%
Uninstalled bulbs in storage	13	16.9%
Uninstalled bulbs given away	1	1.3%
Uninstalled bulbs other outcomes	0	0.0%
Uninstalled bulbs don't know	0	0.0%
	CFLs (N)	**CFLs (%)**
Number of bulbs received (customer confirmed)	**765**	**100.0%**
Number of bulbs not installed yet	50	6.5%
Uninstalled bulbs in storage	44	5.8%
Uninstalled bulbs given away	6	0.8%
Uninstalled bulbs other outcomes	0	0.0%
Uninstalled bulbs don't know	0	0.0%

Customers with spare program CFLs in storage were asked if they intend to use all these bulbs, and how long they think it will take to use them all. As seen in Table 36, overall 92.3% (12 out of 13) of customers with program CFLs in storage plan to use them all, while one customer said they "maybe" will use them all (7.7% of 13) and no customers reported that they do not intend to install the CFLs. Among those who plan to install all program CFLs eventually, most are not

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sure how long it will take (53.8% or 7 out of 13 customers with bulbs in storage) though nearly as many believe they will install all remaining program bulbs within a year (38.5% or 5 out of 13).

Table 36. Customer Plans for Uninstalled Program CFLs

	Customers (N)	Customers (%)
Customers with program CFLs in storage	**13**	**100.0%**
Yes, plan on eventually installing all uninstalled CFLs	12	92.3%
Yes – will install all within a year	5	38.5%
Yes – will install all in 1-2 years	0	0.0%
Yes – will install all in 2-3 years	0	0.0%
Yes – will install all in 3-5 years	0	0.0%
Yes – will install all in more than 5 years	1	7.7%
Yes – will install all, not sure how long it will take	7	53.8%
Maybe, might eventually install all uninstalled CFLs	1	7.7%
No, do not plan to eventually install all uninstalled CFLs	0	0.0%
Don't know if all uninstalled CFLs will eventually be installed	0	0.0%

Customers who received CFLs from this program were asked a series of questions about up to three CFL installations. Table 37 indicates that program CFLs are most frequently installed in kitchens, living/family rooms, bedrooms and bathrooms; these correspond to the rooms in a home that generally have the highest occupancy time and thus highest lighting usage.

Table 37. Installation of Program CFLs by Room

Room where program CFLs were installed	13w CFLs count	18w CFLs count	Bulb wattage not recalled	Total CFLs count	% of CFL installations (N=218[13])
Kitchen	18	26	6	50	22.9%
Living/family room	18	28	3	49	22.5%
Bathroom	15	17	6	38	17.4%
Master bedroom	18	14	2	34	15.6%
Other bedroom	5	6	2	13	6.0%
Dining room/dinette	7	6	1	14	6.4%
Den/computer room	2	4	2	8	3.7%
Hall	1	3	0	4	1.8%
Porch/exterior	1	3	0	4	1.8%
Closet	0	1	0	1	0.5%
Basement	0	1	0	1	0.5%
Garage	0	0	0	0	0.0%
Don't know	0	2	0	2	0.9%

Respondents who have program CFLs installed are asked about up to three bulb installations.

[13] The 76 customers who confirmed that they have program CFLs installed in their homes were asked about up to three installations apiece, yielding data on 218 installations in total. This does not represent all installed bulbs, but rather a customer-selected sample of installations. There were a total of 715 CFLs confirmed installed by survey participants, though manyof these installations may involve multiple bulbs in the same fixtures, controlled by the same switches (we do not know the total number of installations represented by the 715 bulbs distributed).

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Table 38 shows the bulb type and wattage of the light bulbs which were replaced by program CFLs, according to customers' recollections. Customers report that 6.0% (13 out of 218) installations consisted of a program CFL replacing a pre-existing CFL, 2.3% (5 out of 218) of installations consisted of a program CFL being placed in a previously empty socket, and for 2.3% (5 out of 218) of these installations the customer did not know the previous bulb's type. The remaining nine out of ten program bulbs installed (89.4% or 195 out of 218) replaced standard incandescent bulbs. The majority of replaced incandescent bulbs were 45 to 70 watt bulbs (60.9% or 106 out of 174 installations replacing incandescent bulbs where the customer was able to give a wattage for the previous bulb).

Table 38. Installation of Program CFLs: Replaced Bulb Type and Wattage

	Count of installations	% of CFL installations (N=218)
What type of bulb was previously in the socket where the CFL was installed?		
Standard incandescent	195	89.4%
CFL	13	6.0%
Other type	0	0.0%
No bulb in the socket	5	2.3%
Don't know	5	2.3%
How many watts was the bulb that was replaced by the CFL?		
Replaced CFL: 44 watts or less	13	6.0%
Replaced incandescent: 44 watts or less	26	11.9%
Replaced incandescent: 45 to 70 watts	106	48.6%
Replaced incandescent: 71 to 99 watts	26	11.9%
Replaced incandescent: 100 watts or more	16	7.3%
Replaced incandescent: Don't know	21	11.9%
No bulb in socket / bulb type unknown	10	4.6%

Respondents who have program CFLs installed are asked about up to three bulb installations.

Table 39 shows the hours of use for lights where program CFLs were installed, based on customers' reporting. Nearly half of lights where program CFLs were installed are used for less than two hours per day (47.9% or 104 out of 217 installations where customers were able to report hours of use), but more than a quarter are used for five or more hours per day (28.1% or 61 out of 217). For about nine out of ten installations (89.4% or 195 out of 218), customers report that hours of use has not changed since participating in the program; however 2.8% (6 out of 218) reported that hours of use increased while 6.0% (13 out of 218) reported that their usage decreased. Among the six CFL installations where customers reported that their usage increased, five had no bulb previously installed in the socket (i.e., previous usage was zero).

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Table 39. Installation of Program CFLs: Hours of Use

	Count of installations	% of CFL installations (N=218)
How many hours per day is this light used?		
Less than 1	48	22.0%
1 to 2	56	25.7%
3 to 4	52	23.9%
5 to 10	46	21.1%
11 to 12	4	1.8%
13 to 24	11	5.0%
Don't know	1	0.5%
Did the hours of use for this light change since installing the CFL?		
Stayed the same	195	89.4%
Increased	6	2.8%
Decreased	13	6.0%
Don't know	4	1.8%

Respondents who have program CFLs installed are asked about up to three bulb installations.

Customers were asked to estimate the change in usage for the nineteen installations where usage went up or down after the program. These responses are listed below.

Hours of usage increased (N=6)

- *Three hours per day more; previously, there was no bulb installed.*
- *Less than one hour per day; previously, there was no bulb installed.* (N=4)
- *Fifteen minutes per day more.*

Hours of usage decreased (N=13)

- *Eight hours per day less.* (N=2)
- *Four hours less per day, because it is summer.*
- *Three hours per day less.* (N=2)
- *Two hours per day less.*
- *An hour and a half per day less.* (N=2)
- *One hour per day less.*
- *Half an hour per day less.* (N=2)
- *Fifteen minutes per day less.*
- *I don't know.*

About a third of previously installed bulbs were retained by customers and are being stored for potential future use (32.1% or 70 out of 218 installations), as seen in Table 40. A larger plurality of 47.2% (103 out of 218) of installations resulted in the old bulbs being thrown away, recycled, taken by the auditor, or stored for future disposal. In 13 of these 218 installations (6.0%), the old bulbs are still in use in the customer's home (0.9% or 2 out of 218 installations "installed elsewhere in the home") or could be being used in another person's home (5.0% of 11 out of 218

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bulbs were "given to somebody"). There are also a total of 27 installations (12.4% of 218) where it is not known what happened to the previous bulb (customers could not recall).

Table 40. Installation of Program CFLs: Disposal of Old Bulbs

	Count of installations	% of CFL installations (N=218)
What happened to the old bulb that was removed?		
Threw it away	84	38.5%
Stored it	70	32.1%
Gave it to somebody	11	5.0%
Auditor took it with them	10	4.6%
Recycled it	6	2.8%
Temporarily stored to dispose of later	3	1.4%
Installed it elsewhere in the home	2	0.9%
Don't know what happened to it	22	10.1%
Old bulb type unknown	5	2.3%
No bulb in socket	5	2.3%

Respondents who have program CFLs installed are asked about up to three bulb installations.

About one in five participants who confirmed that they have program CFLs installed has since removed at least one program bulb (21.1% or 16 out of 76), as seen in Table 41. The sixteen customers who removed program bulbs uninstalled a total of 36 CFLs (an average of 2.3 CFLs per household that removed CFLs), or 5.0% of the 715 program CFLs which were confirmed installed.

Table 41. Removing Installed Program CFLs

	Customers (N)	Customers (%)
Number of customers who confirmed that they have program CFLs installed	**76**	**100.0%**
Yes, removed program CFL(s)	16	21.1%
No, all program CFLs are still installed	54	71.1%
Don't know	6	7.9%
	CFLs (N)	**CFLs (%)**
Number of bulbs installed (customer confirmed)	**715**	**100.0%**
Total number of bulbs uninstalled	36	5.0%
Number of 13w bulbs uninstalled	19	2.7%
Number of 18w bulbs uninstalled	14	2.0%
Number of bulbs uninstalled, wattage unknown	3	0.4%

The sixteen survey participants who removed program CFLs were asked why they did so. Their responses are listed below; in most cases bulbs were removed because they burned out.

- Bulbs burned out (N=12)
- Bulbs did not work with the dimmer switch (N=2)
- Bulbs were too bright (N=1)

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- Bulbs broken by accident (N=1)

Seventy-three participants who confirmed that they have program-provided CFLs installed in their homes rated their satisfaction with the CFLs on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program CFLs is quite high at 9.18, and only 11.0% (8 out of 73) gave ratings of "7" or lower. Those eight customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the CFLs; these responses are listed below.

- *It takes a little longer for it to get bright.*
- *The CFLs take a while to warm up to full brightness, and I really prefer to have bright lights in my house. Also, I guess you could say that I don't like change. I like standard bulbs and I understand the benefits of the CFLs, but I guess I'm stuck in my ways and like the old, bright, standard bulbs.*
- *I don't like that it takes a long time for the bulb to become bright enough for me to see. I have diabetes and have trouble with my vision.*
- *I'm a senior and, as you age, you need more light to see by and they're dimmer than the average light bulb.*
- *It's kind of dim.*
- *I was disappointed in the longevity of the CFLs. Five of the 18-watt bulbs burned out rather quickly.*
- *I haven't really used them that much.*
- *I really haven't paid it that much attention.*

CFLs and LEDs Installed Before Participating in the Program

Table 42 indicates that nearly two-thirds of participants (61.8% or 47 out of 76) already had some CFLs installed in their homes before participating in the Residential Neighborhoods program. The 43 surveyed customers who already had CFLs installed before the program and were able to answer the question "how many?" had an average of 6.3 CFLs apiece before the program; including the 26 customers who did not have any CFLs installed before the program, the average number of CFLs installed before the program is 3.7 per household.

Among the customers who had CFLs installed before the program, most acquired them from another Duke Energy program. In fact, nearly half of the participants who received CFLs from the Residential Neighborhoods program had already received CFLs from another Duke Energy program (40.8% or 31 out of 76 customers who confirmed the installation of program CFLs). However, only about one in four surveyed participants (25.0% or 19 out of 76) have been using CFLs for three years or more.

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Table 42. Preinstalled CFLs (N=76)

Base: 76 participants who confirmed program CFLs were installed	Carolina System (N)	Carolina System (%)
Did you have any CFLs installed before participating in this program?		
No	26	34.2%
Yes, from 1 to 5	26	34.2%
Yes, from 6 to 11	11	14.5%
Yes, 12 or more	6	7.9%
Yes, don't know how many	4	5.3%
Don't know	3	3.9%
Where did you get the CFLs you were using in your home before participating in this program?		
Another Duke Energy program	31	40.8%
Purchased at a store	11	14.5%
A program from a company other than Duke Energy	2	2.6%
From a Community Assistance Program	1	1.3%
Another source, listed below	4	5.3%
Don't know	1	1.3%
How long have you been using CFLs?		
One year or less (but previous to program participation)	7	9.2%
One to two years	7	9.2%
Two to three years	13	17.1%
Three to five years	13	17.1%
Five years or more	6	7.9%
Don't know	1	1.3%

Although 47 participants reported having CFLs installed before participating in the program, there are 50 responses shown for the source of these CFLs; this is because participants could give multiple responses if they acquired CFLs from multiple sources.

Four surveyed participants said they acquired CFLs from "another source"; these responses are listed below.

- *My local Post Office offered free ones to us; I just had to fill out a post card request and they sent me free CFLs.*
- *A friend gave me one CFL.*
- *My daughter gave them to me.*
- *There were already CFLs here when I moved in.*

The 31 customers who said they received CFLs from "another Duke Energy program" were asked to describe or name the program: 29 customers mentioned variations on "free CFLs by mail" and two customers did not know (none of these customers mentioned any other Duke Energy programs).

The two customers who said they received CFLs from "a program from a company other than Duke Energy" were asked what company; these responses are listed below.

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- *I was given them since I was a teacher at a school. They were given to us for free through a charity.*
- *I don't know, they were mailed to me.*

The eleven customers who purchased CFLs at a store were asked to name the store; these responses are listed below.

- Lowe's (N=5)
- Home Depot (N=2)
- Walmart (N=2)
- Family Dollar (N=1)
- "*Lowe's or HQ*" (N=1)

Only about a third of surveyed participants (32.9% or 25 out of 76) were already intending to buy CFLs before participating in the program, while another 7.9% (6 out of 76) said they "maybe" were going to buy CFLs before participating in the program. A majority of 55.3% (42 out of 76) had not intended to purchase any CFLs.

Nine participants (11.8% of 76) have purchased additional CFLs since participating in the program. These participants purchased at least 38 additional bulbs, an average of 4.2 CFLs per household that purchased additional CFLs.

Table 43. Intent to Purchase CFLs Before the Program and Additional CFLs Purchased since the Program (N=76)

Base: 76 participants who confirmed program CFLs were installed	Carolina System (N)	Carolina System (%)
Were you planning on buying CFLs for your home before participating in this program?		
Yes	25	32.9%
Maybe	6	7.9%
No	42	55.3%
No, already installed in all available outlets	0	0.0%
Don't know	3	3.9%
Have you purchased any CFLs since participating in this program?		
No	65	85.5%
Yes, from 1 to 5	7	9.2%
Yes, from 6 to 11	1	1.3%
Yes, 12 or more	1	1.3%
Don't know	2	2.6%

Table 44 indicates that only one surveyed customer confirmed that they had LEDs installed before participating in the Residential Neighborhoods program. This customer described these LEDs as "*six small decorative ones for a chandelier.*"

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Table 44. Preinstalled LEDs (N=76)

Base: 76 participants who confirmed program CFLs were installed	Carolina System (N)	Carolina System (%)
Did you have any LEDs installed before participating in this program?		
No	70	92.1%
Yes, from 1 to 5	0	0.0%
Yes, from 6 to 11	1	1.3%
Yes, 12 or more	0	0.0%
Yes, don't know how many	0	0.0%
Don't know	5	6.6%
Where did you get the LEDs you were using in your home before participating in this program?		
Another Duke Energy program	0	0.0%
Purchased at a store	1	1.3%
A program from a company other than Duke Energy	0	0.0%
From a Community Assistance Program	0	0.0%
Another source, listed below	0	0.0%
Don't know	0	0.0%
How long have you been using LEDs?		
One year or less (but previous to program participation)	0	0.0%
One to two years	0	0.0%
Two to three years	0	0.0%
Three to five years	1	1.3%
Five years or more	0	0.0%
Don't know	0	0.0%

The only customer with LEDs installed before the program purchased them at a store. They identified the store as "*either Family Dollar or Walmart.*"

Only one surveyed participant was intending to purchase LED bulbs before participating in the program (this is the same participant who already had LEDs installed before the program). An additional four participants (5.3% of 76) said they "maybe" were intending to purchase LEDs before the program.

Table 45. Intent to Purchase LEDs Before the Program and LEDs Purchased since the Program (N=76)

Base: 76 participants who confirmed program CFLs were installed	Carolina System (N)	Carolina System (%)
Were you planning on buying LEDs for your home before participating in this program?		
Yes	1	1.3%
Maybe	4	5.3%
No	66	86.8%
No, already installed in all available outlets	0	0.0%
Don't know	5	6.6%

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Replacing Program CFLs and Spare Light Bulbs In Storage

Table 46 indicates that a slight majority of participants surveyed (54.1% or 40 out of 74 customers with program bulbs installed who answered the questions about spare bulbs) have extra CFLs in storage, while slightly less than half (44.6% or 33 out of 74) currently have spare incandescent bulbs in storage, and nobody in this survey (0% of 74) has any spare LEDs. Across all valid survey responses, there are an average of 3.2 spare CFLs and 2.8 spare incandescent bulbs per participant household (and zero spare LEDs).

Table 46. Types of Light Bulbs in Storage (N=74)

	All Surveyed Participants with Confirmed Program CFLs Installed Who Answered These Questions (Valid N=74)
% of customers with CFLs in storage	54.1%
% of customers with LEDs in storage	0.0%
% of customers with incandescent bulbs in storage	44.6%
	Total Number of Bulbs[14]
Number of CFL bulbs in storage	236.5
Number of LED bulbs in storage	0
Number of incandescent bulbs in storage	204.5
	Average Bulbs per Participant
Average number of CFL bulbs in storage	3.2
Average number of LED bulbs in storage	0.0
Average number of incandescent bulbs in storage	2.8

Some of the spare CFLs in storage are bulbs provided by the Residential Neighborhoods program which have not been installed yet, as seen in Table 47. About a quarter of customers with spare CFLs in storage (27.5% or 11 out of 40) report that all of their spare bulbs came from the program, while another 20.0% (8 out of 40) have some spare program CFLs in addition to other spare CFLs they acquired elsewhere. Half of the customers with spare CFLs in storage (50.0% or 20 out of 40) did not acquire any of their spare CFLs from this program. Overall, 78 of the 236.5 spare CFLs in storage in participant households (33.0%) were identified as CFLs provided by the Residential Neighborhoods program.

Table 47. CFLs in Storage Which Were Provided by the Residential Neighborhoods Program (N=40)

	Participants with Spare CFLs in Storage (Valid N=40)
None of the spare CFLs in storage are from the program	50.0%
Some of the spare CFLs in storage are from the program	20.0%
All of the CFLs in storage are from the program	27.5%
Don't know if any spare bulbs are from the program	2.5%

Participants who have incandescent light bulbs in storage were asked what type of bulb they would use to replace the program-provided CFLs when they need to be replaced. As seen in Table 48, even these customers are four times as likely to replace a program CFL with another

[14] Fractional bulb totals are due to values for customers who gave ranges of bulb quantities instead of integer responses being reported using the midpoint of the range (for example, "6 or 7 bulbs" is reported as 6.5 bulbs).

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CFL (69.7% or 23 out of 33) as an incandescent bulb (18.2% or 6 out of 33). Assuming that the 41 participants with program CFLs installed who did not confirm having any incandescents in storage will not replace their program-provided CFLs with incandescent bulbs, then the estimated rate of program CFLs that will be replaced by incandescents would be 8.1% (6 out of 74).

Table 48. Replacing Program CFLs (N=33)

Base: 33 participants with program CFLs confirmed installed and incandescent light bulbs in storage	Carolina System (N)	Carolina System (%)
If one of the free CFLs that was installed through the Residential Neighborhood Program burns out, will you replace it with . . . ?		
A CFL	23	69.7%
An LED	0	0.0%
An incandescent bulb	6	18.2%
It depends on the socket or other factors (listed below)	2	6.1%
Don't know	2	6.1%

Two participants with program-provided CFLs installed and spare incandescent bulbs in storage said that the type of bulb they would use to replace program CFLs depends on the type of socket or other factors. These customers' explanations are listed below.

- *I would replace the burned out bulb with the ones that the auditor uninstalled that I have in storage. I have some candelabra bulbs, unused CFLs that I had previously purchased, and a few standard incandescent bulbs.*
- *My budget at that time determines what kind of light bulbs I get. It depends on the need and time it runs out. A lot of stores aren't selling the old kind of bulbs. I'll probably put in the energy-efficient bulbs.*

Surveyed customers were asked how many of the next ten light bulbs they purchase will be standard incandescent (or halogen), CFL and LED bulbs. As seen in Table 49, nine out of ten participants surveyed reports that they intend to buy CFLs (91.0% or 61 out of 67), but only one in five says they intend to buy any standard incandescent or halogen bulbs 19.4% or 13 out of 67), and none (0.0% of 67) indicate an intention to buy LED bulbs at this point. The majority of bulbs these customers intend to purchase in the future will be CFLs (87.0% or 578 out of 664 bulbs), while only about an eighth will be standard incandescent or halogen bulbs (13.0% or 86 out of 664) and none will be LEDs (zero out of 664).

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Table 49. Purchase Intent: Next Ten Bulbs Purchased

Of the Next Ten Light Bulbs You Purchase, How Many Will Be...?	All Surveyed Participants with Confirmed Program CFLs Installed Who Answered This Question (Valid N=67)
% of surveyed customers who intend to buy at least one incandescent and/or halogen bulb	19.4%
% of surveyed customers who intend to buy at least one CFL bulb	91.0%
% of surveyed customers who intend to buy at least one LED bulb	0.0%
	All Bulbs To Be Purchased (N=664)[15]
Percentage of next ten bulbs that will be incandescent and/or halogen bulbs	13.0%
Percentage of next ten bulbs that will be CFL bulbs	87.0%
Percentage of next ten bulbs that will be LED bulbs	0.0%

Percentages in the first three rows total to more than 100% because participants could give multiple responses. Percentages in the bottom three rows are mutually exclusive and add up to 100%.

Figure 7 presents the distribution of future bulb purchases in the form of an area chart as a visual aid: the Y-axis shows the distribution of bulbs intended to be purchased, and the X-axis shows all 67 valid responses sorted by the distribution of bulb types. The chart shows that none of the customers surveyed intend to purchase any LEDs (there is no blue area in the chart). A majority of 54 out of 67 customers surveyed (80.6%) say they intend to purchase exclusively CFLs for their next ten bulbs, while only 6 out of 67 (9.0%) intend to purchase all standard incandescent and halogen bulbs for their next ten bulbs.

[15] All 76 respondents who confirmed that they received program CFLs were asked the question about the next ten bulbs they intend to purchase. Nine respondents said they "don't know" what any of their next ten bulbs purchased will be, and across the other 67 respondents there were another six bulbs that were designated "don't know" (i.e., the customer knew what some of their next ten bulbs purchased would be, but did not know all ten). When calculating the percentage of incandescent/halogen, CFL and LED bulbs purchased, "don't know" bulbs are not included in the analysis. Thus the base number of intended bulb purchases is 664 bulbs (10 bulbs times 76 respondents minus 96 "don't know" bulbs).

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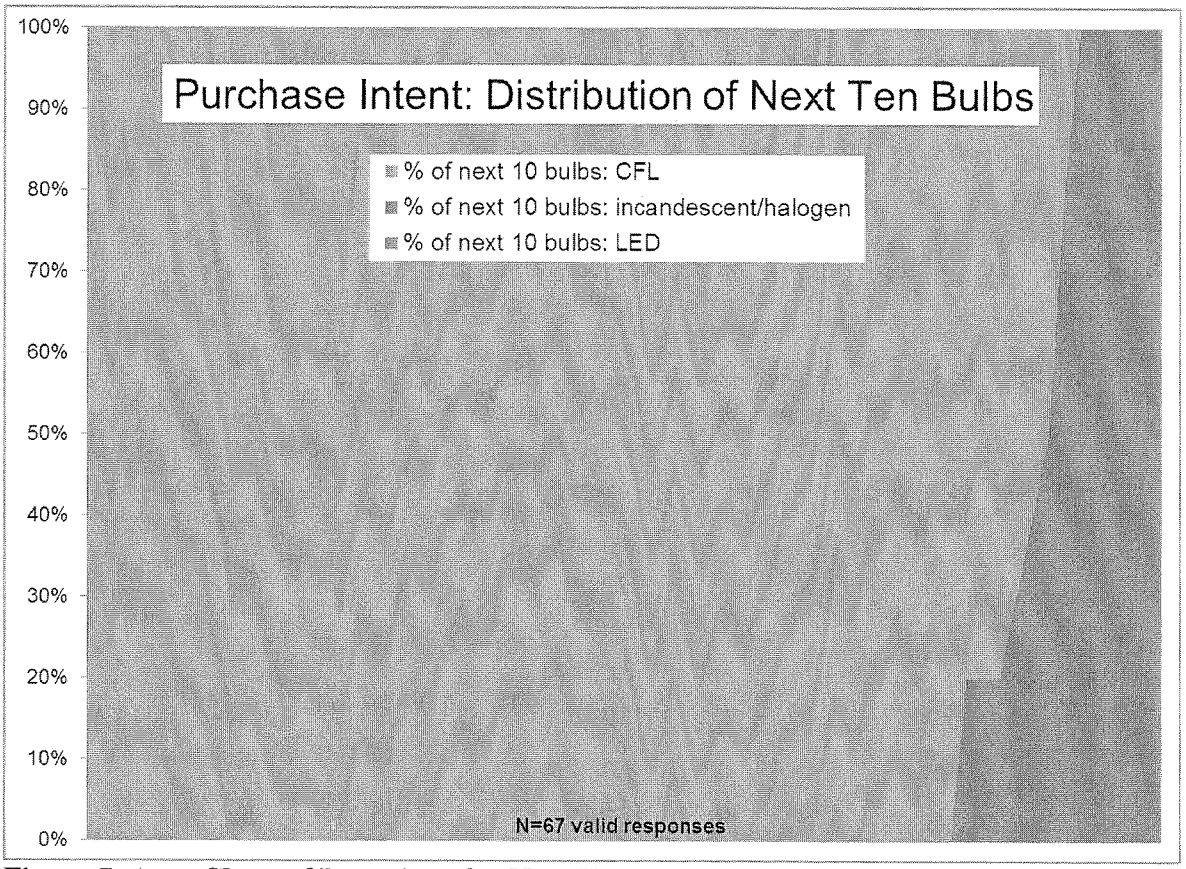

Figure 7. Area Chart of Intentions for Next Ten Bulbs Purchased (N=67)

Nine survey participants (11.8% of 76 who confirmed the installation of program CFLs) "don't know" what kind of bulbs they will buy in the future, and are not included in this chart.

Low-Flow Showerhead Installations

As seen in Table 50, the 61 surveyed participants confirmed the installation of 71 low-flow showerheads provided by the program, which is 94.7% of the 75 installations recorded by auditors. Four of the showerheads (5.6% of 71) were installed by the customers themselves.

Table 50. Measure Installation: Low-Flow Showerheads

61 participants received low-flow showerheads according to auditor records	**Customer count (N=61)**	**Measures installed count according to auditor records (N=75)**	**Confirmed measures installed count (N=71)**
Auditor installed showerhead(s)	86.9%	88.0%	93.0%
Auditor gave showerhead(s) to customer, customer installed them	4.9%	5.3%	5.6%
Auditor gave showerhead to customer, customer has NOT installed it	1.6%	1.3%	0.0%
Did not receive a showerhead	4.9%	4.0%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	1.6%	1.3%	1.4%

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One surveyed participant has one showerhead (1.3% of 75 distributed according to auditor records) which they received from an auditor but which has not been installed yet. This customer does not plan to install this showerhead, explaining "*I have a hand-held shower, I can't use this fixture.*"

Three customers installed their program-provided showerheads themselves (5.3% of 75 showerheads); two of these customers said the showerheads were easy to install, the third did not recall.

Customers who confirmed the installation of program-provided showerheads were asked if any of their showerheads have been removed from where they were installed. As indicated in Table 51, only one surveyed participant (1.8% of 57 who confirmed installations) uninstalled one showerhead (1.4% of 71 measures confirmed installed).

Table 51. Removing Program-Provided Low-Flow Showerheads

	Customers who confirmed installation percent (N=57)	Confirmed measures installed percent (N=71)
Have any of the low-flow showerheads that were installed through the Residential Neighborhood Program since been uninstalled or removed?		
No, all showerheads are currently installed	94.7%	94.4%
Yes, one showerhead removed	1.8%	1.4%
Yes, two showerheads removed	0.0%	0.0%
Customer confirmed two showerheads were installed, but only answered questions about one installation	1.8%	2.8%
Not sure if showerhead installed (did not answer questions about installation)	1.8%	1.4%

The customer who removed the showerhead was asked who did so and why; their response is below.

- *I didn't like that it had only three different sprays and it reduced the pressure too much.*

Table 52 shows how many showers are taken per week using the showers where program-provided showerheads were confirmed installed. Among the 68 installations described[16], about half (54.4% or 37 out of 68) are used for ten or fewer shower per week, while about a quarter (27.9% or 19 out of 68) are used for sixteen or more showers per week. Nearly half of the program-provided showerheads are reported as having a lower water flow than the previously-installed previous showerheads (45.6% or 31 out of 68), while about the same number report that

[16] Customers confirmed 71 showerheads installed (including one customer who did not recall the installation of a showerhead, thus auditor records are assumed correct for this customer). The customer who did not recall whether the installation occurred did not answer detailed questions about the installation, one showerhead was removed (thus questions were not asked about this installation), and one customer only answered questions about one installation though they confirmed receiving two showerheads. Thus the total number of showerhead installations described by participants is 68 (71 confirmed installed minus one removed, one not asked, and one not answered).

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the water flow is about the same (44.1% or 30 out of 68), and for one program showerhead in ten (10.3% or 7 out of 68) the customer reported that the water flow actually seems to have increased.

Table 52. Shower Usage for Low-Flow Showerhead Installations (N=68)

	Installations described (N)	Installations described (%)
How many showers per week are taken using this showerhead		
0 to 4	12	17.6%
5 to 10	25	36.8%
11 to 15	12	17.6%
16 to 20	8	11.8%
21 or more	11	16.2%
Don't know	0	0.0%
Flow of water after replacing showerhead		
Less than the old unit	31	45.6%
About the same as the old unit	30	44.1%
More than the old unit	7	10.3%
Don't know / not specified	0	0.0%

Fifty-five participants who confirmed that they currently have program-provided low-flow showerheads installed in their homes rated their satisfaction with the showerheads on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program showerheads is quite high at 8.85, and only 12.7% (7 out of 55) gave ratings of "7" or lower.

The seven customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the showerheads; these responses are listed below. Five of these customers (8.9% of 56 customers with showerheads currently installed) state that they preferred the stronger water flow of their previous showerheads (though only one of these customers reports uninstalling one program showerhead). One customer (1.8% of 56) thinks their new showerhead's water flow is "too hard", and the seventh less-satisfied customer prefers a more adjustable showerhead.

- *I really don't care too much for that low-flowing water; the water pressure seems less.*
- *The water pressure is much lower with the low-flow showerhead, I prefer what the water pressure was before this new low-flow showerhead was installed.*
- *The pressure was reduced too much.*
- *There is not enough water pressure.*
- *There isn't enough water pressure. The old one was good and hard, which I liked.*
- *I'm not used to that level of water pressure, the water pressure is a little too hard for my liking.*
- *My old shower head I could move around. I liked being able to do this and wish this low-flow shower head could do this also.*

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Only one in eight surveyed participants (12.5% or 7 out of 56) already had any low-flow showerheads installed, as seen in Table 53 (the seven participants with previously installed showerheads had a total of eight low-flow showerheads previously installed). Prior to the program, only four respondents (7.1% of 56) had intended to purchase a low-flow showerhead, while another eleven respondents (19.6% of 56) said they "maybe" would have installed a new showerhead before participating in the program, and a large majority of 73.2% (41 out of 56) did not intend to purchase low-flow showerheads. None of the surveyed program participants (0 out of 56) have purchased any additional showerheads since the receiving measures from the program audit.

Table 53. Showerheads Installed Before the Program and Additional Showerheads Purchased (N=56)

	Customers (N)	Customers (%)
Previously installed showerheads		
Already had low-flow showerhead(s) installed	7	12.5%
Did not already have low-flow showerhead(s) installed	48	85.7%
Don't know / not specified	1	1.8%
Were you planning on purchasing a low-flow showerhead before participating in the program?		
No	41	73.2%
No, already installed in all available showers	0	0.0%
Maybe	11	19.6%
Yes	4	7.1%
Don't know / not specified	0	0.0%
Additional showerheads purchased since program		
Have not purchased additional showerhead(s)	56	100.0%
Purchased additional showerhead(s)	0	0.0%

Faucet Aerator Installations

Table 54 shows that 73 surveyed participants confirmed the installation of 120 faucet aerators provided by the program, which is 79.5% of the 151 installations recorded by auditors; one participant in five who received aerators according to auditor records (19.2% or 14 out of 73) reported that they did not receive any aerators. Two of the aerators (1.7% of 120 aerators confirmed installed) were installed by one of the customers (1.4% of 73 customers).

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Table 54. Measure Installation: Faucet Aerators

73 participants received faucet aerators according to auditor records	Customer count (N=73)	Measures installed count according to auditor records (N=151)	Confirmed measures installed count (N=120)
Auditor installed aerator(s)	67.1%	68.9%	86.7%
Auditor gave aerator(s) to customer, customer installed them	1.4%	1.3%	1.7%
Auditor gave aerator(s) to customer, customer has NOT installed them	2.7%	2.6%	0.0%
Did not receive aerators	19.2%	17.9%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	9.6%	9.3%	11.7%

The lone respondent who installed two program-provided aerators themselves indicated that the installation was not difficult.

Two respondents reported that the auditor gave them aerators which have not been installed yet: one of these respondents plans to install the two aerators they were provided, and the other respondent does not plan to, explaining "*they won't fit on my faucets.*"

Customers who confirmed the installation of program-provided aerators were asked if any of their aerators have been removed from where they were installed. As indicated in Table 55, only two surveyed participants (3.4% of 59 who confirmed installations) uninstalled one aerator apiece (1.7% of 120 measures confirmed installed).

Table 55. Removing Program-Provided Faucet Aerators

	Customers who confirmed installations (N=59)	Confirmed measures installed (N=120)
Have any of the aerators that were installed through the Residential Neighborhood Program since been uninstalled or removed?		
No, all aerators are currently installed	84.7%	86.7%
Yes, one aerator removed	3.4%	1.7%
Yes, two or more aerators removed	0.0%	0.0%
Not sure if aerators installed (did not answer questions about installation)	11.9%	11.7%

The two participants who removed aerators were asked who did so and why; these responses are below.

- *I removed the kitchen aerator because I prefer the spray handle that I had on that faucet before the auditor changed it.*
- *I removed the kitchen aerator because I didn't like its lowered water pressure.*

Surveyed participants answered questions about the usage of program-provided faucet aerators

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for 49 kitchen installations and 55 bathroom installations.[17] Table 56 shows that about three-quarters of faucet aerators installed in kitchens involved a single aerator (73.5% or 36 out of 49). Customers confirmed that 42.9% (21 out of 49) of program-provided faucet aerators installed in kitchens replaced other faucet aerators that were already installed. A majority of installations are described as providing lower water flow than before the program aerators were installed (61.2% or 30 out of 49).

Table 56. Usage of Faucet Aerators in the Kitchen (N=49)

	Kitchen Installations described (N)	Kitchen Installations described (%)
Program aerators installed in kitchen		
One	36	73.5%
Two	10	20.4%
Three	3	6.1%
Was there an aerator previously installed on this faucet that had to be removed?		
Yes	21	42.9%
No	25	51.0%
Don't know / not specified	3	6.1%
Flow of water after installing program aerator		
Less than the old unit	30	61.2%
About the same as the old unit	17	34.7%
More than the old unit	1	2.0%
Don't know how compares to old unit	1	2.0%

Table 57 shows that only about half of faucet aerators installed in bathrooms involved a single aerator (54.5% or 30 out of 55). Customers confirmed that 36.4% (20 out of 55) of program-provided faucet aerators installed in bathrooms replaced other faucet aerators that were already installed. A majority of installations are described as providing lower water flow than before the program aerators were installed (56.4% or 35 out of 55).

[17] Customers confirmed 120 aerators installed (including seven customers who did not recall the installation of a total of 14 aerators, thus auditor records are assumed correct for these customers). Customers who did not recall whether installations occurred did not answer detailed questions about installations, and two of the installed aerators were removed by participants. Thus the total number of aerator installations described by participants is 104 (120 confirmed installed minus two removed and fourteen not asked).

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Table 57. Usage of Faucet Aerators in the Bathroom (N=55)

	Bathroom Installations described (N)	Bathroom Installations described (%)
Program aerators installed in bathrooms		
One	30	54.5%
Two	22	40.0%
Three	3	5.5%
Was there an aerator previously installed on this faucet that had to be removed?		
Yes	20	36.4%
No	30	54.5%
Don't know / not specified	5	9.1%
Flow of water after installing program aerator		
Less than the old unit	31	56.4%
About the same as the old unit	18	32.7%
More than the old unit	3	5.5%
Don't know how compares to old unit	3	5.5%

Forty-nine participants who confirmed that had program-provided faucet aerators rated their satisfaction with the aerators on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program showerheads is quite high at 9.22, and only 12.2% (6 out of 49) gave ratings of "7" or lower.

The six customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the aerators; these responses are listed below. Four of these six customers complain about the lower water flow of their new faucet aerators compared to their water flow before the program, however only one of these customers removed their program-provided aerator (the only other customer who removed a program aerator rated their satisfaction with the measures at "9" out of 10, and still has two other program-provided aerators installed).

- *I don't like how it runs in the kitchen; it doesn't have a lot of pressure and runs really slow now.*
- *I don't like the water pressure of the faucet anymore.*
- *It takes longer to fill the sink and the water pressure is too low.*
- *The flow isn't as forceful as it used to be.*
- *The water has a little split end on it. The water doesn't run smoothly.*
- *I prefer the spray handle that I had on the faucet before the auditor changed it.* [This customer uninstalled the only program aerator they received.]

Table 58 shows information about participants' previously installed aerators and intentions to purchase additional aerators. About half of participants surveyed (48.0% or 24 out of 50) said they already had aerators installed before participating in the program, but only 4.0% (2 out of 50) said they intended to purchase aerators before receiving them from the program (though one participant, or 2.0% of 50, reported that they already have aerators on every faucet). None of the

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surveyed participants have purchased additional aerators since participating in the Residential Neighborhoods program.

Table 58. Faucet Aerators Installed Before the Program and Additional Aerators Purchased (N=50)

	Customers (N)	Customers (%)
Previously installed aerators		
Already had low-flow showerhead(s) installed	24	48.0%
Did not already have low-flow showerhead(s) installed	22	44.0%
Don't know / not specified	4	8.0%
Were you planning on purchasing faucet aerators before participating in the program?		
No	46	92.0%
No, already installed in all available showers	1	2.0%
Maybe	1	2.0%
Yes	2	4.0%
Don't know / not specified	0	0.0%
Additional showerheads purchased since program		
Have not purchased additional showerhead(s)	50	100.0%
Purchased additional showerhead(s)	0	0.0%

Twenty-four participants reported having faucet aerators installed in their homes before participating in the program: five of these participants had only one aerator before the program, 17 participants had two aerators installed before the program, and two participants had three aerators apiece. In total, there were 45 aerators installed across the 24 participant households that confirmed having aerators before the program.

Door Sweep Installations

As seen in Table 59, the 71 surveyed participants confirmed the installation of 107 door sweeps provided by the program, which is 90.7% of the 118 installations recorded by auditors.[18] None of the door sweeps (0% of 100) were installed by the customers themselves.

[18] The 57 participants who confirmed that the auditor installed door sweeps should have received 100 sweeps according to auditor records, however the customers claimed to have 103 sweeps installed. Ten customers (17.5% of 57) reported a different number of sweeps installed than auditor records: seven said they received one more door sweep than program records and three said they received one less. In addition, two customers did not know if they received door sweeps, and according to program records these customers should have received four door sweeps. Thus the total confirmed installed is 103 confirmed and corrected by customers plus four where auditor records are assumed correct equals 107 door sweeps.

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Table 59. Measure Installation: Door Sweeps

71 participants received door sweeps according to auditor records	Customer count (N=71)	Measures installed count according to auditor records (N=118)	Confirmed measures installed count (N=107)
Auditor installed doorsweep(s)	80.3%	81.4%	96.3%
Auditor gave doorsweep(s) to customer, customer installed them	0.0%	0.0%	0.0%
Auditor gave doorsweep(s)to customer, customer has NOT installed them	0.0%	0.0%	0.0%
Did not receive doorsweep(s)	16.9%	15.3%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	2.8%	3.4%	3.7%

Customers who confirmed the installation of program-provided door sweeps were asked if any of their door sweeps have been removed from where they were installed. As indicated in Table 60, three surveyed participants (5.1% of 59 who confirmed installations) reported that a combined five program-installed door sweeps were removed (4.7% of 107 measures confirmed installed).

Table 60. Removing Program-Provided Door Sweeps

	Customers with confirmed installation percent (N=59)	Confirmed measures installed percent (N=107)
Have any of the door sweeps that were installed through the Residential Neighborhood Program since been uninstalled or removed?		
No, all door sweeps are currently installed	91.5%	90.7% installed
Yes, one door sweep removed (one remains installed)	1.7%	0.9% installed 0.9% removed
Yes, two door sweeps removed (none remain installed)	3.4%	3.7% removed
Not sure if door sweeps installed (did not answer questions about installation)	3.4%	3.7% assume installed

The three customers whose combined five door sweeps that were removed were asked who removed them and why. These responses are listed below; four of the sweeps that were removed were uninstalled by landlords and the fifth sweep came loose and was removed by the customer.

- *My landlord said that it was messing up the doors somehow, so he removed both of them.*
- *The landlord removed both of them; I don't know why.*
- *The door sweep on the front door came loose, so I removed it.*

Fifty-six participants who confirmed that they currently have program-provided door sweeps installed in their homes rated their satisfaction with the sweeps on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program door sweeps is very high at 9.63, and only 3.6% (2 out of 56) gave ratings of "7" or lower.

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The two customers with ratings of "7" or lower both rated their satisfaction with this measure at "5" out of 10, and they were asked the reason for their relatively low satisfaction with the door sweeps; these responses are listed below. Both of these customers report that these door sweeps are still installed in their homes.

- *It is not fitting well; it's up too high. You can still see through to the outdoors under the door. I had to put a rug underneath the door to block the drafts.*
- *I can't put my rug in front of the door anymore.*

About one in four surveyed participants (22.8% or 13 out of 57) already had door sweeps installed before participating in the Residential Neighborhoods program, as seen in Table 61 (these 13 participants with previously installed door sweeps had a total of 21 doors with sweeps previously installed). Prior to the program, nine respondents (15.8% of 57) say they intended to purchase and install door sweeps, while another five respondents (8.8% of 57) said they "maybe" would have installed door sweeps before participating in the program, while a large majority of 75.4% (43 out of 57) did not intend to purchase any door sweeps. None of the surveyed program participants (0 out of 57) have purchased any additional door sweeps since receiving measures from the program audit.

Table 61. Door Sweeps Installed Before the Program and Additional Door Sweeps Purchased (N=57)

	Customers (N)	Customers (%)
Previously installed door sweeps		
Already had door sweep installed – one door	5	8.8%
Already had door sweep installed – two doors	8	14.0%
Did not already have door sweep(s) installed	42	73.7%
Don't know / not specified	2	3.5%
Were you planning on purchasing door sweep before participating in the program?		
No	43	75.4%
No, already installed on all available doors	0	0.0%
Maybe	5	8.8%
Yes	9	15.8%
Don't know / not specified	0	0.0%
Additional door sweeps purchased since program		
Have not purchased additional door sweep(s)	57	100.0%
Purchased additional door sweep(s)	0	0.0%

Vinyl Weather Stripping for Doors Installations

As seen in Table 62, the 63 surveyed participants confirmed the installation of vinyl weather stripping on 84 doors, which is 84.0% of the 100 installations recorded by auditors.[19] Vinyl

[19] The 42 participants who confirmed that the auditor installed vinyl weather stripping for doors should have received vinyl weather stripping for 68 doors according to auditor records, however the customers claimed to have 80 doors weather stripped by the program. Fifteen customers (35.7% of 42) reported a different number of doors

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weather stripping for one of these doors (1.2% of 84 doors weather stripped) was installed by the customer; another customer (1.6% of 63 customers who received measures) claims the auditor left weather stripping behind that has not been installed yet.

Table 62. Measure Installation: Vinyl Weather Stripping for Doors

63 participants received vinyl weather stripping for doors according to auditor records	Customer count (N=63)	Measures installed count according to auditor records (N=100 doors)	Confirmed measures installed count (N=84 doors)
Auditor installed vinyl weather stripping for doors	65.1%	67.0%	94.0%
Auditor gave vinyl weather stripping for doors to customer, customer installed it	1.6%	1.0%	1.2%
Auditor gave vinyl weather stripping for doors to customer, customer has NOT installed it	1.6%	1.0%	0.0%
Did not receive vinyl weather stripping for doors	27.0%	27.0%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	4.8%	4.0%	4.8%

One customer who installed the vinyl weather stripping themselves was asked if this was easy to do, and they confirmed that it was. There is also one surveyed participant who claims they were given the vinyl weather stripping measure by the auditor; this customer still intends to install it in the future.

Customers who confirmed the installation of program-provided vinyl weather stripping for doors were asked if any of the weather stripping has been removed from where it was installed. As indicated in Table 63, at least some of the program-provided weatherstripping has been removed from about a third (31.0% or 13 out of 42) of households where it was installed, representing one in five doors (20.2% or 17 out of 84) that were weather-stripped by the program.

with weather stripping installed than auditor records: thirteen claim to have received measures for between one and three doors more than auditors recorded, and three customers claim to have received measures for one door fewer than auditors recorded. In addition, three customers did not know if they received vinyl weather stripping for doors, and according to program records these customers should have received weather stripping for four doors. Thus the total confirmed number of doors weather stripped is 80 confirmed and corrected by customers plus four where auditor records are assumed correct equals 84 doors with vinyl weather stripping provided by the program.

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Table 63. Removing Program-Provided Vinyl Weather Stripping for Doors

	Customers with confirmed installation percent (N=42)	Confirmed measures installed percent (N=84)
Has any of the vinyl weather stripping for doors that was installed through the Residential Neighborhood Program since been uninstalled or removed?		
No, all vinyl weather stripping for doors is currently installed	69.0%	65.5% installed
Yes, vinyl weather stripping for one door removed (other doors may remain installed)	21.4%	10.7% removed 9.5% installed
Yes, vinyl weather stripping for two doors removed (none remains installed)	9.5%	9.5% removed
Not sure if vinyl weather stripping for doors installed (did not answer questions about installation)	0.0%	4.8% assumed installed

The thirteen customers whose combined 17 doors had their weather stripping removed were asked who removed it and why. These responses are listed below; most of these customers report that the tape started coming unstuck and falling off on its own. In two cases the landlord removed the measure (15.4% of 13, in one case it was another weatherization program provided by "the city" (7.7% of 13) , and in the other ten cases (76.9% of 13) it was the customer (though they often said they didn't remove it so much as it fell off on its own).

Customers who removed vinyl weather stripping from one door (N=9)

- *It fell off because it wasn't sticking anymore.*
- *It started to peel off. It was not staying on.*
- *It 's falling out from front door.*
- *It was not removed, it's just falling off.*
- *The tape kept on getting unstuck. I tried several times to press it back in place, but it continued to come off.*
- *It worked its way loose from the area on the frame above the handle, maybe a couple of inches.*
- *It started peeling off, so about 10% is no longer attached. The landlord was working on the door and made it come loose.*
- *I had water damage, so I had to remove the tape from that door because it was coming undone.*
- *The door wouldn't shut all the way.*

Customers who removed vinyl weather stripping from two doors (N=4)

- *It's falling apart, crumbling, and falling off.*
- *I participated in another weatherization program; the city came around and put something else around it.*

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- *The landlord said that it was messing up the door, so they removed it.*
- *The tape kept on getting unstuck.*

Forty-two participants who confirmed that they had program-provided vinyl weather stripping installed on doors in their homes rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the vinyl weather stripping for doors is moderately high at 8.14 (though this is the lowest mean satisfaction rating of all the measures provided by this program), and 23.8% (10 out of 42) gave ratings of "7" or lower.

The ten customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with this measure; these responses are listed below. As with reasons for removing this measure, the main reason for low satisfaction is that the tape comes unstuck and peels off.

Customers who rated their satisfaction with vinyl weather stripping for doors at "5" to "7" out of ten (N=6)

- *It's falling apart, crumbling, and falling off.*
- *The landlord said that it was messing up the door.*
- *The tape kept on getting unstuck.*
- *It fell off because it wasn't sticking anymore.*
- *The foam insulation tape is actually coming undone. I keep on pressing on it, trying to make it re-stick, but it just falls off again.*
- *We couldn't get one of the doors to close. My husband had to cut some of the tape off.*

Customers who rated their satisfaction with vinyl weather stripping for doors at "1" out of ten (N=4)

- *It did not stay on.*
- *It's falling off.*
- *It's falling off and crumbling.*
- *The tape is always coming undone; it's not helping to insulate the doors at all.*

About one in three surveyed participants (33.3% or 14 out of 42) already had doors with vinyl weather stripping installed before participating in the Residential Neighborhoods program, as seen in Table 67 (these 14 participants with previously installed weather stripping had a total of 23 doors with weather stripping previously installed). Prior to the program, 14 respondents (33.3% of 42) say they intended to purchase and install vinyl weather stripping for doors, while another five respondents (11.9% of 42) said they "maybe" would have installed vinyl weather stripping on their doors before participating in the program, and one surveyed participant (2.4% of 42) said they already had weather stripping installed on every door. However, half (50.0% or 21 out of 42) did not intend to purchase any vinyl weather stripping for doors. Three of the surveyed program participants (7.1% of 42) have purchased enough additional measures to apply vinyl weather stripping to four more doors since receiving measures from the program audit.

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Table 64. Vinyl Weather Stripping for Doors Installed Before the Program and Additional Vinyl Weather Stripping Purchased (N=42)

	Customers (N)	Customers (%)
Previously installed vinyl weather stripping for doors		
Already had vinyl weather stripping for doors installed – one door	7	16.7%
Already had vinyl weather stripping for doors – two or more doors	7	16.7%
Did not already have vinyl weather stripping for doors installed	28	66.7%
Don't know / not specified	0	0.0%
Were you planning on purchasing vinyl weather stripping for doors before participating in the program?		
No	21	50.0%
No, already installed on all available doors	1	2.4%
Maybe	5	11.9%
Yes	14	33.3%
Don't know / not specified	1	2.4%
Additional vinyl weather stripping for doors purchased since program		
Have not purchased additional vinyl weather stripping for doors	39	92.9%
Purchased additional vinyl weather stripping for doors	3	7.1%

Caulking Doors Installations

As seen in Table 65, the 49 surveyed participants confirmed that 35 doors were caulked by the program, which is only 48.6%% of the 72 installations recorded by auditors.[20] A slight majority of 51.0% (25 out of 49) of customers who received this measure according to auditor records reported that they did not have any doors caulked by the program. None of the doors (0% of 35 confirmed installations) were caulked by the customers themselves.

[20] The 49 participants who confirmed that the auditor caulked doors should have had 72 doors caulked according to auditor records, however the customers claimed to have had 35 doors caulked. Seven customers (14.3% of 49) reported a different number of doors caulked than auditor records: according to auditor records these seven customers had 20 doors caulked, but when asked how many doors were caulked these respondents reported 16 doors caulked. In addition, twelve customers did not know if they had any doors caulked, and according to program records these customers should have had 19 of their doors caulked. Thus the total confirmed installed is 16 doors caulked confirmed and corrected by customers plus 19 doors where auditor records are assumed correct equals 35 doors caulked.

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Table 65. Measure Installation: Caulking Doors

49 participants received door caulk according to auditor records	Customer count (N=49)	Measures installed count according to auditor records (N=72)	Confirmed measures installed count (N=35)
Auditor caulked door(s)	24.5%	27.8%	45.7%
Auditor gave caulk to customer, customer caulked doors	0.0%	0.0%	0.0%
Auditor gave caulk to customer, customer has NOT caulked doors	0.0%	0.0%	0.0%
Did not receive door caulk	51.0%	45.8%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	24.5%	26.4%	54.3%

Customers who confirmed that their doors were caulked by the program were asked if any of the caulking has been removed from where it was installed. As indicated in Table 66, one surveyed participants (8.3% of 12 who confirmed installations) reported that caulking was removed from one door (2.9% of 35 measures confirmed installed).

Table 66. Removing Program-Provided Door Caulking

	Customers with confirmed installation percent (N=12)	Confirmed measures installed percent (N=35)
Have any of the door caulking that was installed through the Residential Neighborhood Program since been removed?		
No, all caulked doors are currently caulked	91.7%	42.9% installed
Yes, caulk removed from one door	8.3%	2.9% removed
Not sure if doors were caulked (did not answer questions about installation)	0.0%	54.3% assumed installed

The customer whose door had caulking removed was asked who removed it and why; their response is listed below.

- *The door wasn't shutting right, so my daughter removed the caulking.*

Twelve participants who confirmed that they currently have doors caulked by the program rated their satisfaction with the caulking on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is quite high at 8.83, and only 16.7% (2 out of 12) gave ratings of "7" or lower.

The two customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the door caulking; these responses are listed below.

- *The auditor didn't do all around the door but he came back and fixed it up so there isn't a problem.* (Satisfaction rating "7 out of 10".)

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- *The door wasn't shutting right, so we had to take the caulking off.* (Satisfaction rating "2 out of 10".)

A third of surveyed participants (33.3% or 4 out of 12) already had doors caulked before participating in the Residential Neighborhoods program, as seen in Table 67 (these four participants with previously caulked doors had a total of nine doors with caulking installed, though one participant added that the caulking on their two previously-caulked doors "*was really old and didn't work well*"). Prior to the program, five respondents (41.7% of 12) say they intended to purchase caulk and install it on their doors, while another two respondents (16.7% of 12) said they "maybe" would have intended to caulk their doors before participating in the program, while the remaining 41.7% (5 out of 12) did not intend to caulk any doors. None of the surveyed program participants (0 out of 12) have caulked any additional doors since receiving measures from the program audit.

Table 67. Doors Caulked Before the Program and Additional Caulk Purchased (N=12)

	Customers (N)	Customers (%)
Previously installed door caulk		
Already had one door caulked	0	0.0%
Already had two doors caulked	3	25.0%
Already had three or more doors caulked	1	8.3%
Did not already have doors caulked	8	66.7%
Don't know / not specified	0	0.0%
Were you planning on purchasing door caulk before participating in the program?		
No	5	41.7%
No, already installed on all available doors	0	0.0%
Maybe	2	16.7%
Yes	5	41.7%
Don't know / not specified	0	0.0%
Additional door caulk purchased since program		
Have not purchased additional door caulk	12	100.0%
Purchased additional door caulk	0	0.0%

HVAC Winterization Kit Installations

As seen in Table 68, the 24 surveyed participants who should have received winter kits for wall or window HVAC units confirmed that 26 units were installed, which is only 72.2% of the 36 installations recorded by auditors.[21] A majority of 54.2% (13 out of 24) of customers who received this measure according to auditor records reported that the auditor gave them the

[21] Five customers who received winter kits according to auditor records report that these measures were either not received, or were received but have not been installed yet. The 17 participants who confirmed that winter kits were installed should have had 24 kits installed according to auditor records, however the customers reported having only 22 kits installed: Two of these customers should have received two kits apiece according to auditor records, but when asked how many kits were installed these respondents reported only one kit per household was installed. In addition, two customers did not know if they had any winter kits installed, and according to program records these customers should have had four kits installed. Thus the total confirmed kits installed is 22 confirmed and corrected by customers plus four kits where auditor records are assumed correct equals 26 kits installed.

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measure and they installed it themselves, accounting for 61.5% (16 out of 26) measures that were confirmed installed by surveyed participants.[22]

Table 68. Measure Installation: Winter Kit for Wall or Window HVAC

24 participants received door caulk according to auditor records	Customer count (N=24)	Measures installed count according to auditor records (N=36)	Confirmed measures installed count (N=26)
Auditor installed kit(s)	16.7%	16.7%	23.1%
Auditor gave kit(s) to customer, customer installed	54.2%	50.0%	61.5%
Auditor gave kit(s) to customer, customer has NOT installed	16.7%	19.4%	0.0%
Did not receive winter kit	4.2%	2.8%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	8.3%	11.1%	15.4%

The thirteen customers who installed their winter kits themselves were asked if this was easy to do; nine (69.2% of 13) reported that it was easy, while three (23.1% of 13) reported that it was not easy, and one (7.7% of 13) was not sure.

The four customers who reported that they received winter kits from auditors which have not been installed yet report that they received a combined six kits, and all four of these customers (100%) say they do intend to install these kits.

Customers who confirmed that this measure was installed were asked if any of winter kits have been removed from where they was installed. As indicated in Table 69, 26.3% (5 out of 19) of surveyed participants who confirmed installations report that kits have since been uninstalled: The five participants whose measures were uninstalled accounted for 23.1% (6 out of 26) of measures that were confirmed installed.

Table 69. Removing Program-Provided Winter Kit for Wall or Window HVAC

	Customers with confirmed installation percent (N=19)	Confirmed measures installed percent (N=26)
Have any of the door caulking that was installed through the Residential Neighborhood Program since been removed?		
No, all kits installed kits are still installed	63.2%	61.5% installed
Yes, kit removed from one unit	21.1%	15.4% removed
Yes, kit removed from two units	5.3%	7.7% removed
Not sure if kits were installed (did not answer questions about installation)	10.5%	15.4% assumed installed

[22] Participants surveyed in the Carolina System for this evaluation had their homes audited by the program between March and August, 2013. Since the winter kit is intended for use in the winter, this may explain why this measure was usually left by auditors for the customers to install themselves. The participant survey was conducted in April and May of 2014, with the winter of 2013-14 intervening between the home audits and the survey.

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The customers whose kits were removed from HVAC units were asked who removed them and why. Their responses are listed below: Four of the five customers who removed this measure did so because of warmer outdoor weather (the kit is intended to wintertime use).

- *It was never completely installed because we couldn't do it properly, so I removed it.*
- *The weather improved, so I removed it.*
- *I took it off for spring just last week.*
- *I took it off because the weather got warm and I started using the A/C again.*
- *We wanted to start using the air conditioner because it was getting hot out, so my husband removed it.*

Seventeen participants who confirmed that they had winter kits installed by the program rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is quite high at 8.35, and 35.3% (6 out of 19) gave ratings of "7" or lower. The six customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the door caulking; these responses are listed below.

- *I couldn't get it installed.* (Satisfaction rating "1 out of 10")
- *I didn't know how to put it in. It doesn't look quite right but it seems to help.* (Satisfaction rating "6 out of 10")
- *The kit was fine. My husband had to install it. I don't know why the auditor didn't do it while he was here.* (Satisfaction rating "7 out of 10")
- *The second winter kit that was left with me to install on my A/C unit was too big for one of my units. I believe that those kits don't fit snugly, they don't do a good job of sealing up that area.* (Satisfaction rating "7 out of 10")
- *There is still air coming in.* (Satisfaction rating "7 out of 10")
- *I don't know.* (Satisfaction rating "7 out of 10")

Only two surveyed participants (11.8% of 17) already had winter kits before participating in the Residential Neighborhoods program, as seen in Table 70 (the two participants with previously installed kits had them installed on one unit apiece). Prior to the program, only one respondent (5.9% of 17) reports that they intended to purchase and install a winter kit, while another respondent (5.9% or 1 out of 17) said they "maybe" would have intended to install this measure before participating in the program, while the remaining 88.2% (15 out of 17) did not intend to. None of the surveyed program participants (0 out of 17) have purchased or installed any additional kits since receiving measures from the program audit.

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Table 70. HVAC Window Kits Installed Before the Program and Additional Kits Purchased (N=17)

	Customers (N)	Customers (%)
Previously installed HVAC winter kits		
Already had one kit installed	2	11.8%
Already had two or more kits installed	0	0.0%
Did not have any HVAC winter kits	15	88.2%
Don't know / not specified	0	0.0%
Were you planning on purchasing HVAC winter kits before participating in the program?		
No	15	88.2%
No, already installed on all units	0	0.0%
Maybe	1	5.9%
Yes	1	5.9%
Don't know / not specified	0	0.0%
Additional kits purchased since program		
Have not purchased additional HVAC winter kits	17	100.0%
Purchased additional HVAC winter kits	0	0.0%

Customers who confirmed the installation of program-provided winter kits for wall and window HVAC units were asked about their habits regarding seasonal location of their HVAC units. As indicated by Table 71, most respondents' winterized wall and window HVAC units can be removed for winter (88.2% or 15 out of 17).

Only 70.6% (12 out of 17) of participants who confirmed the installation of winter kits said that they always left their HVAC units in for winter in past years, compared to 82.4% (14 out of 17) saying that they left their removable units in place during the most recent winter (which occurred in between the home audits and this survey). Although the difference between these figures is based on two customers reporting different behavior in "previous years" versus "the most recent winter", these customers claim that they would have done the same thing during the recent winter with or without the program. Two customers report that their units are not removable, or that they are not sure if the unit is removable; logically, both of these customers' units were also left in place during the recent winter (if a customer does not know if their unit is removable, then they must not have not removed it). Thus all customers with this measure installed left their units in place for the most recent winter, which is logical since that is the purpose of this measure (to insulate removable HVAC units that are left in place for the winter) and these questions are only asked of customers with program-provided measures installed (i.e., customers who remove their window units during the winter do not need this measure, so would not have it installed).

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Table 71. Removing HVAC Units for Winter and Leaving Them in Place (N=17)

	Customers (N)	Customers (%)
Are any of the window or wall units winterized with the kit removable?		
No, all are permanently installed	1	5.9%
Yes, there is one removable unit	9	52.9%
Yes, there are two removable units	6	35.3%
Not sure	1	5.9%
In previous years, did you remove units for the winter or leave them in place?		
Always left in place during winter	12	70.6%
Sometimes removed, sometimes left in place	1	5.9%
Always removed for winter	1	5.9%
Unit is not removable / not sure if removable (therefore units are left in place for winter)	2	11.8%
Not applicable (HVAC units are new, not used in previous winters)	1	5.9%
What did you do with your units during the most recent winter? (After the home audit)		
Left units in place for winter, and would have done this regardless of the program	14	82.4%
Took units out for winter, and would have done this regardless of the program	0	0.0%
Left units in place for winter, but would have removed them without the program	0	0.0%
Took units out for winter, but would have left them in place without the program	0	0.0%
Unit is not removable / not sure if removable (therefore units are left in place for winter)	2	11.8%
Did not answer question (assume units were left in place[23])	1	5.9%

Vinyl Weather Stripping for HVAC Window Units Installations

As seen in Table 72, the six surveyed participants who received measures according to auditor records confirmed that five window units were weather stripped by the program, which is only 71.4% of the seven installations recorded by auditors.[24] Two customers (33.3% of 6) report that the auditor installed these measures, two customers (33.3% of 6) report that the auditor gave them the materials and they did the installation themselves, and two customers (33.3% of 2 out of 6) claim that they did not receive this measure.

[23] One participant who received winter kits for window AC units only acquired their AC units shortly before participating in the program, and did not previously have any AC units. Thus they did not answer the question about "previous winters" (not applicable since they had no AC units during previous winters). This participant did not answer the question about "the most recent winter" either, but since they reported that the winter kits were installed on both of their units, TecMarket Works assumes that these units must have been left in place for the winter.

[24] The four participants who confirmed that this measure was installed should have had five window units weather stripped according to auditor records, and collectively they do confirm five installations though two customers reported a different number of measures than auditor records: one customer confirmed two measures when auditor records showed one, and the other customer confirmed one measure when the auditor records showed two.

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Table 72. Measure Installation: Vinyl Weather Stripping for HVAC Window Units

6 participants received weather stripping for window units according to auditor records	Customer count (N=6)	Measures installed count according to auditor records (N=7)	Confirmed measures installed count (N=5)
Auditor installed weather stripping for window units	33.3%	28.6%	60.0%
Auditor gave weather stripping for window units to customer, customer installed	33.3%	42.9%	40.0%
Auditor gave weather stripping for window units to customer, customer has NOT installed	0.0%	0.0%	0.0%
Did not receive weather stripping for window units	33.3%	28.6%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	0.0%	0.0%	0.0%

Two customers reported installing a total of three of these measure themselves (60.0% of five measures confirmed installed); one of these customers said the measure was easy to install (50.0% of 2), and the other did not recall.

Customers who confirmed the installation of weather stripping for window units were asked if any measures have been removed from where they was installed. As indicated in Table 73, all measures are still installed and none have been removed.

Table 73. Removing Program-Provided Vinyl Weather Stripping for HVAC Window Units

	Customers with confirmed installation percent (N=4)	Confirmed measures installed percent (N=5)
Have any of the weather stripping for HVAC window units that was installed through the Residential Neighborhood Program since been removed?		
No, all weather stripping for HVAC window units is still in place	100.0%	100.0% installed
Yes, weather stripping for HVAC window units has been removed	0.0%	0.0% removed

Four participants who confirmed that they currently have weather stripping for HVAC window units installed by the program rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for this measure is high at 9.00, and only one participant (25.0% of 4) gave a rating of "7" or lower.

The customer who rated their satisfaction with this measure at "6 out of 10" was asked the reason for their relatively low satisfaction, and they responded "*there is still air coming in.*"

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None of the surveyed participants (0% of 4) already had weather stripping on window HVAC units before participating in the Residential Neighborhoods program, as seen in Table 74. Prior to the program, none of these respondents (0% of 4) say they intended to purchase and install this measure (or even that they "maybe" would have). Three-quarters (75.0% of 4) did not intend to purchase any measures, and the other participant (25.0% of 4) was not sure. None of the surveyed program participants (0 out of 4) have installed any additional weather stripping on window HVAC units since receiving measures from the program audit.

Table 74. Vinyl Weather Stripping for HVAC Window Units Installed before the Program and Additional Measures Purchased (N=4)

	Customers (N)	Customers (%)
Previously installed weather stripping		
Already had one or more units weather stripped	0	0.0%
Did not already have any units weather stripped	4	100.0%
Don't know / not specified	0	0.0%
Were you planning on purchasing weather stripping before participating in the program?		
No	3	75.0%
No, already installed on all available units	0	0.0%
Maybe	0	0.0%
Yes	0	0.0%
Don't know / not specified	1	25.0%
Additional weather stripping purchased since program		
Have not purchased additional weather stripping	4	100.0%
Purchased additional weather stripping	0	0.0%

Caulking Windows Installations

As seen in Table 75, the eleven surveyed participants who received this measure according to auditor records confirmed that eleven windows were caulked by the program, which is only 68.8% of the 16 installations recorded by auditors.[25] However only one of the eleven customers who received this measure (9.1%) confirmed that it was installed by the auditor, while 72.7% (8 out of 11) claim that they never received this measure and two customers (18.2% of 11) were not sure. However, it is common for participants to not be able to confirm measures that they did not know they received, have not personally seen after installation, or that are not significantly interesting to the participant.

[25] The one participant who confirmed that the auditor caulked windows should have had one window caulked according to auditor records, however this customers claimed to have had eight windows caulked. In addition, two customers did not know if they had any windows caulked, and according to program records these customers should have had three of their windows caulked. Thus the total confirmed installed is eight windows caulked confirmed and corrected by customers plus three windows where auditor records are assumed correct equals eleven windows caulked.

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Table 75. Measure Installation: Caulking Windows

11 participants received door caulk according to auditor records	Customer count (N=11)	Measures installed count according to auditor records (N=16)	Confirmed measures installed count (N=11)
Auditor caulked window(s)	9.1%	6.3%	72.7%
Auditor gave caulk to customer, customer caulked window(s)	0.0%	0.0%	0.0%
Auditor gave caulk to customer, customer has NOT caulked windows	0.0%	0.0%	0.0%
Did not receive window caulk	72.7%	75.0%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	18.2%	18.8%	27.7%

The customer who confirmed that their windows were caulked by the program was asked if any of the caulking has been removed from where it was installed, and they confirmed that all installations are still in place.

Only one participant confirmed that they currently have windows caulked by the program, and this customer rated their satisfaction with the caulking at "10 out of 10" on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is thus 10.0, and nobody (0% of 1) gave ratings of "7" or lower for this measure.

The only surveyed participant who confirmed this measure was installed did not have any windows caulked before the program, had not been intending to install any caulking before the program, and has not purchased any additional caulking for windows since the program.

Clear Glass Patch Tape Installations

As seen in Table 76, the six surveyed participants who received this measure according to auditor records confirmed that eight windows were patched by the program, which is 88.9% of the nine installations recorded by auditors.[26] Most of these measures were installed by auditors (66.7% or 4 out of 6), though one customer claims not to have received this measure (16.7% of 6) and one customer does not know for sure (16.7% of 6). None of the window patch tape (0% of 8 confirmed installations) was installed by the customers themselves.

[26] The four participants who confirmed that the auditor installed glass patch tape should have had six windows patched according to auditor records, and collectively they do confirm six installations though two customers reported a different number of measures than auditor records: one customer confirmed two measures when auditor records showed one, and the other customer confirmed one measure when the auditor records showed two. In addition, one customer did not know if they had any windows patched, and according to program records this customers should have had two of their windows patched. Thus the total confirmed installed is six windows patched confirmed and corrected by customers plus two windows where auditor records are assumed correct equals eight windows patched.

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Table 76. Measure Installation: Clear Glass Patch Tape

6 participants received clear glass patch tape according to auditor records	Customer count (N=6)	Measures installed count according to auditor records (N=9)	Confirmed measures installed count (N=8)
Auditor patched windows	66.7%	66.7%	75.0%
Auditor gave patch tape to customer, customer patched windows	0.0%	0.0%	0.0%
Auditor gave patch tape to customer, customer has NOT patched windows	0.0%	0.0%	0.0%
Did not receive patch tape	16.7%	11.1%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	16.7%	22.2%	25.0%

Customers who confirmed that their windows were patched by the program were asked if any of the patch tape has been removed from where it was installed. As indicated in Table 77, participants report that all installations are still in place.

Table 77. Removing Program-Provided Clear Glass Patch Tape

	Customers with confirmed installation percent (N=5)	Confirmed measures installed percent (N=8)
Have any of the clear glass patch tape that was installed through the Residential Neighborhood Program since been removed?		
No, all patch tape is still in place	80.0%	75.0% installed
Yes, patch tape has been removed	0.0%	0.0% removed
Not sure if patch tape installed (did not answer questions about installation)	20.0%	25.0% assumed installed

All four participants who confirmed that they currently have windows patched by the program rated their satisfaction with this measure at "10 out of 10" on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is thus 10.0, and nobody surveyed (0% out of 4) gave ratings of "7" or lower for this measure.

As seen in Table 78, all four customers (100%) who confirmed the installation of clear glass patch tape report that they did not have this measure installed before participating in the Residential Neighborhoods program, they had not been intending to install any before the program, and they have not purchased any additional patch tape since the program.

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Table 78. Windows Patched with Clear Glass Tape Before the Program and Additional Patch Tape Purchased (N=4)

	Customers (N)	Customers (%)
Previously installed patch tape		
Already had one or more windows patched	0	0.0%
Did not already have windows patched	4	100.0%
Don't know / not specified	0	0.0%
Were you planning on purchasing patch tape before participating in the program?		
No	4	100.0%
No, already installed on all windows	0	0.0%
Maybe	0	0.0%
Yes	0	0.0%
Don't know / not specified	0	0.0%
Additional patch tape purchased since program		
Have not purchased additional patch tape	4	100.0%
Purchased additional patch tape	0	0.0%

Water Heater Pipe Wrap Installations

As seen in Table 79, the 36 surveyed participants who received pipe wrapping confirmed that 69 linear feet of pipe were wrapped by the program, which is 92.0% of the 75 linear feet installed recorded by auditors.[27] About a quarter of participants report that they did not receive this measure (27.8% or 10 out of 36 receiving the measure according to program records). None of the pipe wrap (0% of 69 feet confirmed installed) was installed by the customers themselves.

Table 79. Measure Installation: Water Heater Pipe Wrap

36 participants received pipe wrap according to auditor records	Customer count (N=36)	Linear feet of measure installed according to auditor records (N=75)	Confirmed linear feet of measure installed (N=69)
Auditor wrapped pipes	61.1%	54.7%	81.2%
Auditor gave wrap to customer, customer wrapped pipes	0.0%	0.0%	0.0%
Auditor gave wrap to customer, customer has NOT wrapped pipes	0.0%	0.0%	0.0%
Did not receive pipe wrapping	27.8%	28.0%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	11.1%	17.3%	18.8%

[27] The 22 participants who confirmed that the auditor wrapped pipes should have had 41 feet of wrapping installed according to auditor records, however eight customers reported that they had a combined 15 feet of additional pipes wrapped beyond what auditor records showed (the other 14 participants who confirmed installations did not know how many feet of wrap was installed, so auditor records are assumed to be correct). In addition, four customers did not know if they had any pipes wrapped, and according to program records these customers should have had 13 feet of pipe wrap installed. Thus the total confirmed installed is 56 feet confirmed and corrected by customers plus 13 feet of wrap where auditor records are assumed correct equals 69 linear feet of pipe wrapped.

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Customers who confirmed that pipe wrap installed by the program were asked if there was previously any wrap on these hot water pipes: 86.4% (19 out of 22) said there was not, and the other 13.6% (3 out of 22) did not know.

Customers who confirmed that their pipes were wrapped by the program were asked if any of the pipe wrap has been removed from where it was installed. As indicated in Table 80, none of these participants (0% of 26 with confirmed installations) reported that wrap was removed from pipes.

Table 80. Removing Program-Provided Hot Water Pipe Wrap

	Customers with confirmed installation percent (N=26)	Confirmed linear feet of measure installed percent (N=69)
Have any of the pipe wrap that was installed through the Residential Neighborhood Program since been removed?		
No, all pipes wrapped are currently wrapped	84.6%	81.2% installed
Yes, some or all wrapping removed from pipe	0.0%	0.0% removed
Not sure if pipes were wrapped (did not answer questions about installation)	15.4%	18.8% assumed installed

Twenty-two participants who confirmed that they currently have pipes wrapped by the program rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided pipe wrap is quite high at 8.95, and only 9.1% (2 out of 22) gave ratings of "7" or lower.

The two customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the door caulking; these responses are listed below.

- *It's coming apart. It's not sticking. It's awful. It's cheap and falling apart.* (Satisfaction rating "1 out of 10")
- *I keep having to re-tape the insulation wrap as it comes undone, but other than that I like it.* (Satisfaction rating "7 out of 10")

Only one surveyed participant (4.5% of 22) already had hot water pipes wrapped before participating in the Residential Neighborhoods program, as seen in Table 81. Prior to the program, three respondents (13.6% of 22) say they intended to purchase and install pipe wrap, while another respondent (4.5% or 1 out of 22) said they "maybe" would have intended to wrap their pipes before participating in the program, while the remaining 81.8% (18 out of 22) did not intend to wrap any pipes. None of the surveyed program participants (0 out of 22) have wrapped any additional hot water pipes since receiving measures from the program audit.

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Table 81. Hot Water Pipes Wrapped Before the Program and Additional Wrap Purchased (N=22)

	Customers (N)	Customers (%)
Previously installed hot water pipe wrap		
Already had pipes wrapped	1	4.5%
Did not already have pipes wrapped	19	86.4%
Don't know / not specified	2	9.1%
Were you planning on purchasing pipe wrap before participating in the program?		
No	18	81.8%
No, already installed on all available pipe	0	0.0%
Maybe	1	4.5%
Yes	3	13.6%
Don't know / not specified	0	0.0%
Additional pipe wrap purchased since program		
Have not purchased additional pipe wrap	22	100.0%
Purchased additional pipe wrap	0	0.0%

Water Heater Tank Insulation Wrap Installations

As seen in Table 82, the 19 surveyed participants confirmed that 17 water heaters were insulated by the program, which is 89.5% of the 19 installations recorded by auditors.[28] Two customers (10.5% of 19) report that they did not receive this measure, and none of the measures (0% of 17 confirmed installations) were installed by the customers themselves.

Table 82. Measure Installation: Water Heater Tank Insulation Wrap

19 participants received door caulk according to auditor records	Customer count (N=19)	Measures installed count according to auditor records (N=19)	Confirmed measures installed count (N=17)
Auditor caulked door(s)	84.2%	84.2%	94.1%
Auditor gave caulk to customer, customer caulked doors	0.0%	0.0%	0.0%
Auditor gave caulk to customer, customer has NOT caulked doors	0.0%	0.0%	0.0%
Did not receive door caulk	10.5%	10.5%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	5.3%	5.3%	5.9%

Customers who confirmed that water heaters were insulated by the program were asked if any of the insulation has been removed from where it was installed. As indicated in Table 83, none of the surveyed participants (0.0% of 17 who confirmed installations) reported that insulation was removed.

[28] The 16 participants who confirmed that the auditor insulated their water heaters had 16 water heaters insulated according to auditor record. In addition, one customer did not know if they had their water heater insulated. Thus the total confirmed installed is 16 units insulated confirmed by customers plus one unit where auditor records are assumed correct equals 17 units insulated.

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Table 83. Removing Program-Provided Water Heater Tank Insulation

	Customers with confirmed installation percent (N=17)	Confirmed measures installed percent (N=17)
Have the water heater tank insulation that was installed through the Residential Neighborhood Program since been removed?		
No, insulation currently installed	94.1%	94.1% installed
Yes, insulation removed	0.0%	0.0% removed
Not sure if insulation was installed (did not answer questions about installation)	5.9%	5.9% assumed installed

Sixteen participants who confirmed that they currently have water heaters insulated by the program rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is very high at 9.73, and only 6.3% (1 out of 16) gave a rating of "7" or lower (this customer's satisfaction rating is "7 out of 10). The customer with relatively low satisfaction was asked why they gave this rating, and they responded "*the wrap came loose from the tank soon after it was installed.*"

None of the surveyed participants who confirmed the installation of this measure (0% of 16) already had insulation wrap on their water heater tanks before participating in the Residential Neighborhoods program, as seen in Table 84. Prior to the program, one respondent (6.3% of 16) say they intended to purchase and install insulating wrap on their water heater, while another respondent (6.3% or 1 out of 16) said they "maybe" would have intended to insulate their water heater before participating in the program, while the remaining 87.5% (14 out of 16) did not intend to insulate their water heaters before the program.[29]

[29] Participants were not asked if they have purchased additional water heater tank insulation wrap after participating the program, since this question is only asked of respondents who had the program-provided insulating wrap installed, and it is assumed that residences do not have more than one water heater.

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Table 84. Water Heater Tank Insulation Wrap Installed before the Program (N=16)

	Customers (N)	Customers (%)
Previously installed water heater tank insulation		
Already had insulation on tank	0	0.0%
Did not already have insulation on tank	16	100.0%
Don't know / not specified	0	0.0%
Were you planning on purchasing water heater tank insulation before participating in the program?		
No	14	87.5%
No, already installed on water heater	0	0.0%
Maybe	1	6.3%
Yes	1	6.3%
Don't know / not specified	0	0.0%

Water Heater Temperature Adjustments

As seen in Table 85, the 44 surveyed participants whose water temperature was checked according to auditor records confirmed that their water temperature was checked in 40 cases (90.9% of 44).[30] Only 9.1% (4 out of 44) of these participants report that they did not receive a check of their water heater temperature and none of the participants (0% of 44) checked the temperature themselves.

Table 85. Checking Water Heater Temperature

44 participants had their water temperature checked according to auditor records	Customer count (N=44)	Temps checked according to auditor records (N=44)	Confirmed temps checked (N=40)
Auditor checked temperature	56.8%	56.8%	62.5%
Customer checked temperature	0.0%	0.0%	0.0%
Did not receive temperature check	9.1%	9.1%	0.0%
Don't know (assuming auditor record is correct and temperature was checked)	34.1%	34.1%	37.5%

The 25 participants who confirmed that the auditor checked the temperature of their water heater were asked if any adjustments were made to the temperature settings. As seen in Table 86, 44.0% (11 out of 25) report that their temperature was adjusted, while 32.0% (8 out of 25) report that there was no adjustment and 24.0% (6 out of 25) are not sure.

[30] Twenty-five participants confirmed that the auditor checked the temperature of their hot water, and fifteen participants were not sure if this had been done or not. Thus the total confirmed temperature checks is 25 confirmed by customers plus 15 where auditor records are assumed correct equals 40 temperatures checked.

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Table 86. Adjusting Water Heater Temperature

25 participants confirmed that the auditor checked their water heater temperature	Customer count (N=25)
Auditor adjusted temperature	44.0%
Auditor did not make an adjustment	32.0%
Not sure if the temperature was adjusted or not	24.0%

The 25 participants who confirmed that the auditor checked the temperature of their water heater were also asked if they knew the temperature readings before and after any adjustments. Only one customer who did not confirm that their temperature was adjusted (7.1% of 14) was able to report the temperature reading from the home audit: this customer says their water heater was set to 90 degrees. Five customers who did have their temperatures adjusted (45.5% of 11) were able to give temperature readings: four of these customers pre-adjustment settings ranged from 130 to 180 degrees and all four were adjusted down to 120 degrees by the auditor, while the fifth participant had their water temperature turned down from 120 degrees to 104 degrees (they explained that this was "*due to young children in our home*").

Customers whose water heater temperature was checked were asked if any further adjustments have been made since the program audit. Table 87 shows that 92.0% (23 out of 25) of participants report no further adjustments, while one participant (4.0% of 25) confirms that there was a further adjustment made and one participant (4.0% of 25) is not sure.

Table 87. Undoing Water Heater Temperature Adjustments (N=25)

25 participants confirmed that the auditor checked their water heater temperature	Customer count (N=25)
Has anyone made any further changes to the temperature setting since the home audit?	
No, temperature has not been adjusted since audit	92.0%
Yes, temperature has been adjusted since audit	4.0%
Not sure if temperature has been adjusted since audit or not	4.0%

The customer whose water temperature was adjusted after the audit was asked who did this and what adjustment was made; they reported that "*building maintenance turned the temperature up to 125 degrees*". Overall, the five participants who were able to give specific temperature readings report that their water temperatures were adjusted down from an average setting of 143 degrees before the audit to 118 degrees afterwards (including one participant's post-audit adjustment).

Twenty-five participants who confirmed that their water temperature was checked during the program audit rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the temperature check is quite high at 9.36, and only 8.0% (2 out of 25) gave ratings of "7" or lower.

The two customers with ratings of "7" or lower were asked the reason for their relatively low satisfaction with the water temperature check; these responses are listed below.

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- *The temperature was too low; it didn't have any steam anymore.* (Satisfaction rating "2 out of 10"; this is the customer whose temperature was adjusted back up to 125 after the audit.)
- *I like the water to be hotter.* (Satisfaction rating "7 out of 10"; this is the customer whose temperature was adjusted down to 104 degrees due to small children in the home.)

Customers who received the temperature check without an adjustment seem to be more satisfied on the whole than those who confirmed that the auditor made a temperature adjustment, although this difference is entirely accounted for by the lower satisfaction of the two customers with adjustments who are quoted above. [31] Another way to state this is that 18.2% of 11 customers who confirmed temperature adjustments had complaints about this measure (indicated by satisfaction ratings of "7" or lower) while 0% of 11 customers who did not confirm temperature adjustments have complaints about this measure.

Only 20.0% (5 out of 25) program participants who confirmed that the auditor checked their water temperature report that they ever checked their water temperature before the program, and only 4.0% (1 out of 25) reports checking their water temperature on a regular basis. Three-quarters of surveyed participants (76.0% or 19 out of 25) have never checked the temperature on their water heaters.

Table 88. Checking Water Temperature before the Program (N=25)

	Customers (N)	Customers (%)
How often did you check the temperature on your water heater before participating in the program?		
Never checked	19	76.0%
Checked once or twice / a few times	4	16.0%
Checked regularly, once per year or more often	1	4.0%
Don't know	1	4.0%

Foam Insulation Spray Installations

As seen in Table 89, a minority of participants were able to positively confirm the installation of foam insulation spray measures. A third of participants (35.7% or 20 out of 56) who received this measure according to program records claim that they did not receive any foam insulation spray (accounting for 34.0% or 32 out of 94 cans of spray distributed according to auditor records). The 56 surveyed participants confirmed the installation of only 62 cans of insulation spray, which is 66.0% of the 94 installations recorded by auditors; this includes 42 cans (44.7% of 94) which are counted as installed according to auditor records because the customer did not know if

[31] Eleven surveyed participants said "no" or "don't know" when asked if the auditor adjusted their temperature, and these customers' average satisfaction rating for this measure is 9.82. Another eleven participants said "yes" when asked if the auditor adjusted their temperature, and these customers' average satisfaction rating is about a point lower at 8.91 (though this difference is not statistically significant due to small sample sizes). However if the two customers with adjustments who were less satisfied (ratings of "7" or lower) were removed from this group, the average satisfaction for the remaining nine customers with adjustments is 9.89, equivalent to the non-adjustment group.

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they had received the measure or not. None of the surveyed participants reported installing this measure themselves, or receiving any spare measures to install.

Table 89. Measure Installation: Foam Insulation Spray

56 participants received foam insulation spray according to auditor records	Customer count (N=56)	Measures installed count according to auditor records (N=94 cans of spray)	Confirmed measures installed count (N=62 cans of spray)
Auditor installed showerhead(s)	23.2%	21.3%	32.3%
Auditor gave foam insulation spray to customer, customer installed it	0.0%	0.0%	0.0%
Auditor gave foam insulation spray to customer, customer has NOT installed it	0.0%	0.0%	0.0%
Did not receive foam insulation spray	35.7%	34.0%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	41.1%	44.7%	67.7%

The thirteen participants who confirmed that foam insulation spray was installed were asked if they knew how much was installed; nine (69.2% of 13) could not estimate the amount, and the other four customers estimated that from "*less than one can*" to "*two cans*" were installed (averaging about one can per household). Three of these customers' estimates did match the auditor-recorded number of cans installed (the fourth customer estimated one can but the auditor recorded two cans), thus even among customers who confirmed that the foam spray was installed only about one in four (23.1% or 3 out of 13) were able to accurately recall the amount installed.

The thirteen customers who confirmed the installation of foam insulation spray were asked where in their home this insulation was installed; these responses are listed below. Eight of these thirteen responses identify kitchen and/or bathroom sinks and their pipes as the place in the home where this measure was installed, while four mentioned doors and three mentioned hot water heaters.

- *He sprayed the pipes from under the kitchen sink to outside the house.*
- *Under the kitchen sink and around a door.*
- *Under the kitchen sink, under the bathroom sink, and around the back door.*
- *Under my sinks.*
- *Under the house and under the kitchen sink.*
- *Under the sinks in the kitchen and the bathroom and the hot water heater.*
- *In the kitchen and maybe the bathroom.*
- *In the kitchen and two bathrooms.*
- *Around doors and the air conditioner.*
- *Around front and back doors.*
- *Around the hot water heater.*
- *It was used on the hot water heater, which is in a small closet just off of the kitchen.*
- *I don't recall.*

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Customers who confirmed the installation of foam insulation spray were asked if any of this insulation has been removed from where it was installed; all thirteen (100%) confirmed that all of the auditor-installed foam insulation spray is still installed.

Twelve participants who confirmed that they currently have program-provided foam insulation spray installed in their homes rated their satisfaction with the insulation spray on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for this measure is very high at 9.75, and none of these participants (0 out of 12) gave ratings of "7" or lower. Since none of the customers gave ratings of "7" or lower, none of them were asked to explain why they were less than satisfied with this measure.

A third of surveyed participants who confirmed the installation of program-provided foam insulation spray (30.8% or 4 out of 13) already had foam insulation in their homes, as seen in Table 90. Prior to the program, only three respondents (23.1% of 13) had intended to purchase foam insulation spray, while another respondents (7.7% of 13) said they "maybe" would have installed foam insulation spray before participating in the program, but a large majority of 69.2% (9 out of 13) did not intend to purchase foam insulation spray. One of the surveyed program participants (7.7% of 13) has purchased an additional can of foam insulation spray (one can) on their own since receiving this measure from the program audit.

Table 90. Foam Insulation Spray Installed Before the Program and Additional Insulation Spray Purchased (N=13)

	Customers (N)	Customers (%)
Previously installed showerheads		
Already had foam insulation spray installed	4	30.8%
Did not already have foam insulation spray installed	9	69.2%
Don't know / not specified	0	0.0%
Were you planning on purchasing any foam insulation spray before participating in the program?		
No	9	69.2%
Maybe	1	7.7%
Yes	3	23.1%
Don't know / not specified	0	0.0%
Additional foam insulation spray purchased since program		
Have not purchased additional foam spray	12	92.3%
Purchased additional foam insulation spray	1	7.7%

HVAC Filters and Filter Change Calendar Installations

As seen in Table 91, the 64 surveyed participants who received a year's supply of HVAC filters and/or the filter change calendar according to auditor records confirmed that 44 of them received filters from the program, which is 68.8% of the 64 measures recorded by auditors. Only 61.4% (27 out of 44) of customers confirming they received filters also confirmed that they received the filter change calendar (customers who are not sure if they received the calendar can be assumed

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to not be using the calendar, whether or not they actually received it[32]). There were also three customers (4.7% of 64) who report that they received the calendar but not the filters. About one in four participants who received these measures according to auditor records (26.6% or 17 out of 64) could not confirm the receipt of either the filters or calendar (including one customer who reported not receiving any filters but was not sure about the calendar).

Table 91. Measure Installation: HVAC Filters and Filter Change Calendar

64 participants received filters and/or calendar according to auditor records	Customer count (N=64)	Confirmed filters received count (N=44)
Received filters and calendar	42.2%	61.4%
Received filters but not calendar	10.9%	15.9%
Received filters, not sure if received calendar	15.6%	22.7%
Received calendar but not filters	4.7%	-
Did not receive filters or calendar	25.0%	-
Did not receive filters, not sure if received calendar)	1.6%	-

Customers who confirmed the receipt of either of these measures were asked if the auditor changed their filter during the audit.[33] As indicated in Table 92, three-quarters of those who reported receiving filters say that the auditor changed filters during the audit (72.7% or 32 out of 44) and one participant (2.3% of 44) changed the filter himself during the audit. The lone customer who changed the filter himself confirmed that this was "easy" to do.

Table 92. Changing Filters During the Home Audit (N=44)

	Confirmed filters received (N=44)	Percentage
Did you or the auditor change your A/C or heater filter during their visit to your home?		
Yes, auditor changed filter	32	72.7%
Yes, I changed the filter	1	2.3%
No, filter was not changed	8	18.2%
Don't know	3	6.8%

As seen in Table 93, three-quarters of participants who confirmed that the received the filters and the calendar (77.8% or 21 out of 27) report that they are using the calendar and changing filters though only about half (51.9% or 24 out of 27) confirm that they are changing the filters as often as suggested, while 22.2% (6 out of 27) are changing them less frequently than the calendar suggests and none (0% of 27) are changing filters more often than suggested. Another 14.8% (4

[32] Program participants are supposed to receive the filters and the calendar together, since they are intended to be used together. This survey asked them to confirm the receipt of both items separately, and customers often report that they did not receive both items. However, this is more likely due to incorrect recall by participants rather than auditors failing to deliver both measures; in particular they are less likely to recall the calendar (46.9% or 30 out of 64) than the filters (68.8% or 44 out of 64), indicating many may have "forgotten about" or "lost" the calendar. However, the energy savings for this set of measures are provided by the filters and not the calendar (the calendar is just a reminder to use the filters).

[33] Three customers who confirmed the receipt of the calendar but not the filters also confirmed that no filters (0% of 3) were changed during their home audits (not shown in Table 73).

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out of 27) are changing their filters regularly without using the calendar, and only 7.4% (2 out of 27) are not changing their filters at all.

Among the 17 participants who confirmed receiving the filters but not the calendar, only half (47.1% or 8 out of 17) confirm that they are regularly changing filters, though another 23.5% (4 out of 17) are not sure (perhaps indicating that someone else in the household is responsible for changing filters). Among the three customers who report receiving the calendar but not the filters, one says they are using the calendar to change filters that they did not acquire from the program[34] (33.3% of 3), one is changing their own filters without using the calendar (33.3% of 3) and one is not changing their filters at all (33.3% of 3).

Table 93. Using the Filter Change Calendar (N=47)

	Confirmed calendar and filters received (N=27)	Confirmed filters received but not calendar (N=17)	Confirmed calendar but not filters (N=3)
Have you been using the filter change calendar and changing your filters regularly since the Residential Neighborhood Program audit?			
Yes, I am using the calendar and changing filters as the calendar suggests	51.9%	0.0%	0.0%
Yes, I am using the calendar and changing filters more often than the calendar suggests	0.0%	0.0%	0.0%
Yes, I am using the calendar and changing filters less often than the calendar suggests	22.2%	0.0%	33.3%
Yes, I am using the calendar and changing filters, don't know if more or less often than suggested	3.7%	0.0%	0.0%
Yes, I have been changing filters but not using the calendar	14.8%	47.1%	33.3%
No, not using calendar or changing filters	7.4%	29.4%	33.3%
Don't know	0.0%	23.5%	0.0%

Seven participants who report that they use the calendar but change their filters less often than suggested gave estimates of how often they do change their filters: six of these customers report changing filters from between "every month or two" up to "every four months" and average 2.3 months between changing filters, while the seventh customer says only "*I check it monthly but if it's clean I don't change it.*"

Five customers who report that they received the calendar and are changing filters without using the calendar were asked why they are not using the calendar. These responses are listed below.

Participants who confirmed receiving both filters and calendar (N=4)

- *I am not sure where the calendar is.*

[34] This customer changes filters less often than the calendar suggests, and explained their usage of the calendar as follows: "*I just use the calendar for reference, or a reminder. I use my own filters and I change them about every two or three months, depending on the season and how visually dirty the filter appears.*"

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- *I know to change the filter at the start of the month.*
- *I write the date I changed the filter on the filter, and then write that I changed the filter on the calendar.*
- *I just go by if the filter looks like it needs to be changed. If it looks dirty, I change it.*

Participants who confirmed receiving calendar but not filters (N=1)

- *I know how often to change it according to the type of filters that I buy.*

The five participants who are changing filters without using the calendar were also asked how often they change their filters: three of these (60% of 5) change their filters every month, one changes them every other month, and the fifth explained "*I change it when it gets dirty. I really don't use the heater often because my oxygen machine emits so much heat.*"

Seven participants confirmed receiving the filters but reported that they are not changing them, and they were asked why not. These responses are listed below; interestingly, most of the customers who do not recall receiving the calendar usually point to the lack of the calendar as the reason that they are not changing the filters. In contrast, the customers who recall receiving the calendar say they are too busy or just forgot.

Participants who confirmed receiving both filters and calendar (N=2)

- *Because I'm a busy man. I'm not at home a whole lot because I work a lot. I have more important things to do.*
- *It passed my mind.*

Participants who confirmed receiving filters but not calendar (N=5)

- *I never got the calendar.*
- *I did not receive the calendar.*
- *I've misplaced the calendar.*
- *I'm not sure that I ever received the calendar.*
- *I'm not sure where any of that stuff is.*

Twenty-six participants who confirmed that they received the filter change calendar provided by the program rated their satisfaction with the calendar, and 43 participants who confirmed receiving the year's supply of HVAC filters rated their satisfaction with the filters, both using a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction ratings for the program-provided calendar and filters are quite high at 9.35 and 9.47 respectively, and only 7.7% (2 out of 26) of calendar raters and 4.7% (2 out of 43) of filter raters gave satisfaction ratings of "7" or lower for these measures. These customers' explanation for their relatively low satisfaction scores are listed below.

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Participants who rated the calendar at "7 out of 10" or lower (N=2)

- *It's nice they gave me one, but I don't use it.* (rating "6 out of 10")
- *It's not that I'm not satisfied with the calendar. The auditor put it in a place that's out of the way, so I just don't really use it at all.* (rating "7 out of 10")

Participants who rated the filters at "7 out of 10" or lower (N=2)

- *The filters provided by the program are kind of flimsy and cheap compared to the filters I was previously using which I bought myself.* (rating "5 out of 10")
- *They're just those little cheap ones.* (rating "5 out of 10")

Seven out of ten surveyed participants who confirmed receiving the calendar or filters (70.2% or 33 out of 47) report that they were already planning to purchase HVAC filters before participating in the Residential Neighborhoods program, however two in ten (21.3% or 10 out of 43) had not been intending to purchase any filters, as seen in Table 94. Only three participants (6.4% of 47) have purchased additional filters since participating in the program; these three participants have purchased from three to six filters on their own, averaging 5.0 filters purchased apiece.

Table 94. Purchasing HVAC Filters Before and After Participating in the Program

	Confirmed calendar and filters received (N=27)	Confirmed filters received but not calendar (N=17)	Confirmed calendar but not filters (N=3)	Total confirmed either measure received (N=47)
Were you planning to purchase HVAC filters before receiving filters from the program				
Yes	70.4%	76.5%	33.3%	70.2%
Maybe	11.1%	0.0%	0.0%	6.4%
No	14.8%	23.5%	66.7%	21.3%
Don't know / not specified	3.7%	0.0%	0.0%	2.1%
Have you purchased any additional HVAC filters since participating in the program?				
Yes	3.7%	5.9%	33.3%	6.4%
No	96.3%	94.1%	66.7%	93.6%

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Before participating in the program, 42.6% (20 out of 47) of participants who confirmed the receipt of these measures were already changing their filters on a near-monthly basis, though 17.0% (8 out of 47) were changing them less often than every three months. Overall, the 42 participants who were able to provide an estimate on the number of months between filter changes reported changing the filters every 2.8 months on average.

Table 95. Changing HVAC Filters Before and After Participating in the Program

	Total confirmed calendar and/or filters received (N=47)
How often were you changing your filters before you participated in this program?	
More often than every other month	42.6%
Every other month up to every three months	29.8%
Less often than every three months	17.0%
Other response, listed below	8.5%
Don't know	2.1%

Four surveyed participants gave "other" responses when asked how often they changed their filters before participating in the program, which are listed below.

- *I only changed it when I thought it needed it, if the filter looked dirty.*
- *Before, I would only change the filter when it looked to be really dirty.*
- *I really don't use the heater often because my oxygen machine emits quite a bit of heat.*
- *I change the filters every other month in the summer and monthly in the winter.*

Among 29 participants who used these measures and reported specific time periods for changing their filters both before and after the program, three (10.3%) reported changing their filters more frequently after the program (these three customers went from changing filters an average of every 3.5 months to once every 1.3 months), and none (0% of 29) reported changing their filters less frequently after the program.

Switch Plate Wall Thermometer Installations

As seen in Table 96, most participants confirmed receiving switch plate wall thermometers (89.2% or 66 out of 74 who received this measure according to auditor records). According to auditor records, one of these customers received two thermometers, while the rest received one apiece. Overall, customers confirmed the installation of 70 out of 75 (93.3%) thermostats received according to auditor records.[35] None of the surveyed participants reported installing this measure themselves, or receiving any spare measures to install later.

[35] Sixty-six participants confirmed that the auditor installed the installation of 67 thermometers, while three participants did not recall if they received a thermostat. Thus the total confirmed thermostats installed is 67 confirmed by customers plus 3 where auditor records are assumed correct equals 70 installed.

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Table 96. Measure Installation: Switch Plate Wall Thermometer

74 participants received wall thermometers according to auditor records	Customer count (N=74)	Measures installed count according to auditor records (N=75)	Confirmed measures installed count (N=70)
Auditor installed thermometer	89.2%	89.3%	95.7%
Auditor gave thermometer to customer, customer installed it	0.0%	0.0%	0.0%
Auditor gave thermometer to customer, customer has NOT installed it	0.0%	0.0%	0.0%
Did not receive thermometer	6.8%	6.7%	0.0%
Don't know (assuming auditor record is correct and measure was installed)	4.1%	4.0%	4.3%

Table 97 shows where in the home switch plate wall thermometers were installed: a third are installed in hallways (33.3% or 22 out of 66), and a quarter are installed in bedrooms (25.8% or 17 out of 68).

Table 97. Switch Plate Wall Thermometer: Room Installed (N=66)

66 participants confirmed the installation of thermometers	Count	Percent
Hallway	22	33.3%
Bedroom	17	25.8%
Kitchen	9	13.6%
Dining room	7	10.6%
Den / computer room / office	4	6.1%
Living room / family room	3	4.5%
Bathroom	2	3.0%
Other, listed below	2	3.0%

Two participants reported "other rooms" where their thermometers were installed; these are listed below.

- *At the bottom of the stairs, by the TV.*
- *In the kitchen hallway.*

Nearly half of participants surveyed (45.5% or 30 out of 66 who confirmed the installation of thermometers) did not have any thermometers in their home before the program, as seen in Table 98.

Table 98. Number of Thermometers in the Home After the Program (N=66)

66 participants confirmed the installation of thermometers	Count	Percent
One thermometer (none before the program)	30	45.5%
Two thermometers (one before the program)	34	51.5%
Three thermometers (two before the program)	2	3.0%

One participant who received a thermometer has moved it to a different room in their home, but none of the thermometers have been removed completely, as seen in Table 99. The participant

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who moved their thermometer moved it from the master bedroom to the laundry room, and explained: "*the laundry room is not insulated and we wanted to watch the temperature in that room for the safety of the pipes.*"

Table 99. Removing Program-Provided Switch Plate Wall Thermometer

	Customers with confirmed installation percent (N=69)	Confirmed measures installed percent (N=70)
Has the thermometer that was installed through the program since been removed?		
No, installation is still in place	65	94.3% installed
Yes, moved to somewhere else in the home	1	1.4% installed
Yes, thermometer is no longer installed	0	0.0% removed
Not sure if thermometer was installed (did not answer questions about installation)	3	4.3% assumed installed

Customers who confirmed receiving wall thermometers from the program were asked how often they use them. Table 100 indicates that nearly two-thirds (62.1% or 41 out of 66) check their thermometers at least once a week, and the frequency of use by customers who did not previously have thermometers in their homes is similar to the frequency among customers who did previously have thermometers in their homes.

Table 100. Frequency of Checking the Program-Provided Thermometer (N=66)

	Customers with thermometers before audit (N=36)	Customers with no thermometer before audit (N=30)	Total confirming thermometer installed (N=66)
How often do you check the thermometer that was installed through this program?			
More than once a day	13.9%	6.7%	10.6%
About once a day	16.7%	26.7%	21.2%
Once every few days	30.6%	16.7%	24.2%
About once a week	2.8%	10.0%	6.1%
Less often than once a week	27.8%	26.7%	27.3%
Never	8.3%	13.3%	10.3%

Participants who confirmed the installation of the wall thermometer were asked if they have made any adjustments to their heating or cooling settings since the program. Table 101 indicates that about one participant in four (25.8% or 17 out of 66) turned their heat down in the winter, but only about one in twenty turned their cooling temperature up in the summer (4.5% or 3 out of 66). Customers who did not previously have a thermometer in their home are twice as likely to report turning their heat down (36.7% or 11 out of 30) compared to those who already had thermometers (16.7% or 6 out of 36; this difference is significant at $p<.05$ using Student's t-test). However, the behavior patterns between these two groups are not significantly different when it comes to cooling adjustments in the summer.

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Table 101. Heating and Cooling Adjustments since Installation of the Thermometer (N=66)

	Customers with thermometers before audit (N=36)	Customers with no thermometer before audit (N=30)	Total confirming thermometer installed (N=66)
Have you made any adjustments to your heating settings in the winter since the thermometer was installed?			
No changes	72.2%	43.3%	59.1%
Yes, turned temperature up	5.6%	10.0%	7.6%
Yes, turned temperature down	16.7%	36.7%	25.8%
Yes, with no effect or unexplained	5.6%	6.7%	6.1%
Don't know	0.0%	3.3%	1.5%
Have you made any adjustments to your heating settings in the summer since the thermometer was installed?			
No changes	72.2%	70.0%	71.2%
Yes, turned temperature up	2.8%	6.7%	4.5%
Yes, turned temperature down	0.0%	3.3%	1.5%
Yes, with no effect or unexplained	5.6%	10.0%	7.6%
Don't know	0.0%	6.7%	3.0%
Not applicable (no air conditioning)	19.4%	3.3%	12.1%

The 26 customers who reported adjusting their heating temperatures in the winter (39.4% of 66 with thermometers installed) were asked what changes were made: On average, these customers turned their heating down by 2.7 degrees Fahrenheit.

The nine customers who reported adjusting their cooling temperatures in the summer (13.6% of 66) were also asked what changes were made: The average adjustment made by these customers is to set the cooling back (raise the temperature) by 1.4 degrees Fahrenheit.

Sixty-five participants who confirmed that they currently have wall thermometers supplied by the program installed in their homes rated their satisfaction with this measure on a ten-point scale where "10" is the most satisfied. As seen previously in Table 24, the mean satisfaction rating for the program-provided door caulking is quite high at 9.11, and only 10.8% (7 out of 66) gave a rating of "7" or lower. The seven participants who gave ratings of "7" or lower were asked the reasons for their relatively low ratings, which are listed below; four of these customers report that they have trouble reading the display.

- *When the switch plate wall thermometer was first installed I checked it every day, but it was always at the same temperature. I still look at it a couple times during the week just to see if it has changed, but it doesn't.*
- *I'm not so sure that the switch plate thermometer was reading correctly, it always felt warmer than what the thermometer reading was saying. I have basically stopped looking at it.*

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- *It does not do anything, I don't understand the purpose of that switch plate wall thermometer. I even asked the auditor what it was for and he could not explain it to me.*
- *It is too small for me to read.*
- *The numbers are too small to read clearly.*
- *It's hard to read.*
- *I don't understand the numbers because it's in Centigrade.*

Additional Actions to Save Energy in the Home

A majority of 60.0% (48 out of 80) of surveyed participants report that they have taken additional steps to save energy since participating in the Residential Neighborhoods Program. These actions are categorized in Table 102; the only actions mentioned by at least 10% of surveyed participants are turning off lights when not in use (22.5% or 18 out of 80) and using less heating (11.3% or 9 out of 80)

Table 102. Additional Actions to Save Energy since Participating in the Program (N=80)

	Count	Percent
Have not taken any additional actions	32	40.0%
Have taken additional actions	48	60.0%
Actions taken:		
Turn off lights when not in use	18	22.5%
Use less heat / turn down thermostat	9	11.3%
Turn electronics off / unplug	7	8.8%
Caulk/tape doors/windows	4	5.0%
Add insulation to walls, floors, ceilings, attics	4	5.0%
Upgrade HVAC system	3	3.8%
Maintain steady temp / do not adjust thermostat	3	3.8%
Upgrade windows / doors	3	3.8%
Use curtains / shades to control heat/light	3	3.8%
Keep doors / windows shut	2	2.5%
Use efficient lighting / CFLs	2	2.5%
Added space heaters	2	2.5%
Turn down temp of water heater	2	2.5%
Upgrade to Energy Star appliances	1	1.3%
Conserving water (other than clothes washing)	1	1.3%
Use fans to circulate air better	1	1.3%
Use stove / oven less	1	1.3%
Close off rooms / don't use entire house	1	1.3%
Outlet / switch gasket insulators	1	1.3%
Unique actions, listed below	7	8.8%

Percentages total to more than 100% because respondents could take multiple actions.

Seven respondents reported taking unique actions to save energy, which are listed below.

- *I put in new power vents underneath the house.*
- *I upgraded my circuit breaker box.*

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- *I installed blinds.*
- *I installed a water purifier on my faucet.*
- *I've educated my children about ways to save energy.*
- *I'm making sure those energy efficiency efforts are still installed properly.*
- *I applied for a city program to make my house more energy efficient.*

What Participants Learned from Residential Neighborhoods

TecMarket Works asked participants "*what would you say are the most important things you learned from the Residential Neighborhood Program?*" and recorded up to three responses per respondent. These responses are categorized in Table 103; the lessons learned cover a broad range of topics, with the most-mentioned being "saving energy" in general (17.5% or 14 out of 80), the need to weatherize and plug leaks (17.5% or 14 out of 80), that measures and steps to save energy also save money on utility bills in the long run (15.0% or 12 out of 80), about the benefits of CFLs and efficiency lighting (13.8% or 11 out of 80) and that Duke Energy offers programs to help their customers (10.0% or 8 out of 80). Only about one in seven customers could not name anything that they learned by participating in this program (13.8% or 11 out of 80).

Table 103. What Participants Learned by Participating in the Residential Neighborhoods Program (N=80)

What are the most important things you learned from this program?	Count	Percent
About saving energy (general measures)	14	17.5%
Need to plug drafts / weatherize	14	17.5%
Measures save money on bills / cost effective over time	12	15.0%
About CFLs / efficient lighting	11	13.8%
Duke Energy has programs to help customers / Duke cares	8	10.0%
Turn off / unplug unused electronics	7	8.8%
Use less heating and cooling / how to use a thermostat	7	8.8%
About saving water (aerators & showerheads)	5	6.3%
Closing blinds / keeping doors shut	4	5.0%
My home needed efficiency improvements / that I should use less energy	4	5.0%
Turn off lights when not in use	3	3.8%
My home was already very efficient / I am doing things right	3	3.8%
Change HVAC filters regularly	3	3.8%
Duke is trying to lower customer bills	2	2.5%
Save energy by hot water adjustment	2	2.5%
Unique responses, listed below	14	17.5%
Don't know / nothing	11	13.8%

Percentages total to more than 100% because respondents could give multiple responses.

Fourteen participants gave unique responses when asked what were the most important things they learned from the program, which are listed below.

- *I learned how to check my home for air leaks.*

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- *I learned that it is important to replace some of the things you might already have installed in the past.*
- *I know the home repairs should be kept up.*
- *It set me off on replacing and fixing items in my home to make my home more efficient.*
- *I learned how they'd been around to other communities. I was surprised to hear that.*
- *I am more aware about the utility bill now.*
- *The air conditioners are heavy, so it's nice I can leave it in the window this year.*
- *They did the work they were supposed to do and didn't mess around.*
- *They took the time to answer questions at the meeting.*
- *I have a better general awareness.*
- *It gave me an awareness of my home in general. Nothing particularly stands out thought.*
- *That sometimes you can get something for nothing.*
- *The reports I get in the mail give me more information than any of the programs.*
- *That they use cheap material.*

What Participants Liked Most about Residential Neighborhoods

TecMarket Works asked participants what was their favorite thing about participating in this program; their responses are shown in Table 104. Positive comments about the audit and the auditors were the most frequently mentioned (by 32.5% or 26 out of 80), followed by the fact that the program and/or measures were free (27.5% or 22 out of 80), the informational and educational aspects of the program (17.5% or 14 out of 80), and saving money on utility bills (17.5% or 14 out of 80).

Table 104. What Participants Liked Most About the Residential Neighborhoods Program (N=80)

What was your favorite thing about participating in this program?	Count	Percent
Home audit / advice and assistance from auditor	26	32.5%
Free program / free measures	22	27.5%
Saving money on energy bills	14	17.5%
Education and information gained	14	17.5%
Saving energy / conservation	13	16.3%
Like measures received, listed below	13	16.3%
Improvements to the home	10	12.5%
Duke Energy wants to help customers	6	7.5%
Participation was easy / convenient	1	1.3%
Unique responses, listed below	3	3.8%
Don't know / nothing	4	5.0%

Percentages total to more than 100% because respondents could give multiple responses.

Three participants made unique comments about their favorite aspect of the program, which are listed below.

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- *The community meeting was great. We got to meet more of the people in our neighborhood. We're retired, so I always enjoy a reason to get out and socialize and they even served barbeque.*
- *I like that they gave us gifts at the community meeting.*
- *It was great to find out that I was already doing everything right.*

Thirteen participants mentioned specific measures received as being their favorite aspect of the program; these are listed below.

- *I like that they're changing the lights, which seem to last a long time.*
- *I liked getting the light bulbs.*
- *That I got the bulbs and the strips around the door preventing air from going through. Everything he did I needed. I think it really helped.*
- *I liked receiving the heater and air conditioner filters and I like the CFL light bulbs. The offering of these items has saved me some money that I would have had to spend on these necessary items.*
- *The night light!! I love, love, love it!*
- *I like the new low-flow showerheads, I can tell the difference from my old ones, these seem to be using less water while still doing a good job as a showerhead.*
- *Receiving things, especially the furnace filters and faucet aerator. The program was beneficial, even without the light bulbs.*
- *I really liked having those door sweeps installed; they make a big difference in keeping cold, drafty air out.*
- *Weather stripping around the door helped me a lot, because I'm short and couldn't reach that high to install it myself. The weatherstripping keeps a lot of air from going past the door and saves a lot now.*
- *I use the thermometer.*
- *I like that they put up a motion detector light outside.*[36]
- *My favorite part was all the things the auditor brought out.*
- *I was very pleased with the program and the things that they offered me.*

What Participants Liked Least about Residential Neighborhoods

TecMarket Works also asked the surveyed participants what they liked least about the program. Their responses are shown in Table 105. Two-thirds of participants (67.5% or 54 out of 80) could not name a least favorite aspect of the program. The only other response categories mentioned by more than 5% of participants are that they disliked measures they received (13.8% or 11 out of 80) or didn't receive a measure they wanted or expected (6.3% or 5 out of 80).

[36] The Residential Neighborhoods program does not include outdoor light sensors.

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Table 105. What Participants Liked Least About Residential Neighborhoods (N=80)

What was your least favorite thing about this program?	Count	Percent
Did not like measures, listed below	11	13.8%
Did not receive measures, listed below	5	6.3%
Not saving any money / rates going up	3	3.8%
Difficulty scheduling audit / inconvenient	2	2.5%
Wanted more free items	2	2.5%
Unique responses, listed below	4	5.0%
No complaints / nothing / don't know	54	67.5%

Percentages total to more than 100% because respondents could give multiple responses.

Four respondents made unique comments regarding their least favorite part of participating in the program, which are listed below.

- *My least favorite thing was the lack of an informational pamphlet. I would reference such written material regularly if it was available.*
- *I wish that they had offered more CFL light bulb size options.*
- *I didn't like that the landlord came back and took the sweeps off the doors.*
- *The program didn't help me at all; it was a waste of time and effort.*

Eleven participants said their least favorite thing about this program was a measure or measures they received. These responses are listed below.

- *I don't like the water pressure of the low-flow showerhead and the water pressure of the faucet aerators.*
- *The water pressure in the kitchen sink is too low.*
- *I don't really like the aerators that were installed on the faucets in my kitchen and bathrooms, I'd like to have more water pressure coming out of the faucets.*
- *The hot water is not hot enough.*
- *I don't like how the hot water tank insulation looks, although it does work well. It just doesn't look good.*
- *The light bulbs are too dim.*
- *The furnace filters that he brought did not work for my furnace, and the light bulbs did not fit our ceiling fan lamps.*
- *The door sweep doesn't fit properly.*
- *I didn't care too much for the things they put at the bottom of the door. I have to step sideways to wipe my feet now.*
- *The stripping around the door fell off.*

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- *They used cheap stuff which is falling apart and falling off.*

Five participants said their least favorite thing about this program is that they did not receive measures that they were promised or expected; four out of five of these complaints involve not receiving the year's supply of HVAC filters, and in three of these cases the customer reports that the auditor told them they would return with the filters or send them later, but this did not happen.

- *I didn't get the filters I was promised. The man said he was out of filters, but that he would send me some, but I never got any; I had to go and buy them myself. I did not receive many of the items you say I was supposed to receive.*[37]
- *The auditor said he was going out to get some filters for my heater and he never came back.*
- *My least favorite thing was that auditor never returned with the HVAC filters he promised.*
- *I didn't get any filters for the furnace.*
- *I didn't get a new refrigerator. He mentioned that sometimes they replace refrigerators for you.*[38]

Program Improvements and Additional Services

TecMarket Works asked surveyed participants "*are there things that this program could have provided that you think would have made more people want to participate?*" These suggestions are shown in Table 106 below. The most common recommendations are for the auditors to provide more information to customers during the audit (13.8% or 11 out of 80) and to provide more measures and services (12.5% or 10 out of 80). No other category of response was mentioned by more than 10% of participants, and half of surveyed customers (48.8% or 39 out of 80) did not have any suggestions.

[37] Survey respondents were asked about all of the measures that they received according to the auditor records; survey questions about a particular measure were not asked if the auditor records did not show that the measure was installed.

[38] The Residential Neighborhoods program does not replace refrigerators.

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Table 106. Participants' Suggestions for Increasing Program Participation (N=80)

	Count	Percent
Auditor should provide more information / explanation during audit	11	13.8%
Include additional measures / services, listed below	10	12.5%
Provide more information about the program ahead of time	5	6.3%
Highlight no cost to customer (free)	5	6.3%
Highlight utility bill savings	4	5.0%
More mailings and flyers	4	5.0%
Need security assurance (strangers in the home)	4	5.0%
More advertising	3	3.8%
Highlight eligibility (renters qualify)	2	2.5%
More recruiting and auditing on evenings and weekends to get working people	2	2.5%
People will participate when they see others are participating	2	2.5%
Negative comments, listed below	3	3.8%
Unique suggestions, listed below	10	12.5%
Don't know / nothing / fine as is	39	48.8%

Percentages total to more than 100% because respondents could give multiple suggestions.

Ten respondents suggested additional measures and services; these suggestions are listed below.

- *Something that this program could have provided would be a wider variety of CFL light bulb types. With the screw in part that goes into the bulb, this program only offers the male socket, the bigger size, customers need small male light bulb sizes. It would have helped me tremendously because most of the bulbs provided by the program did not fit in places where I needed them.*
- *I think that if the program offered a wider variety of the energy saving CFL lights, more people would sign up for the program. Those specialty CFLs are expensive and can be hard to find, so I think more people would be interested in getting those from this program.*
- *I would have liked if the auditor would have left me with more light bulbs. I think the program should give you a CFL bulb for every socket that you have in your home. They could either leave the bulbs with you, or just replace all standard incandescent bulbs with new CFLs. Also, as this program continues in the future, I think the weather stripping for around the doors should be better, I think that weather stripping fell off rather quickly.*
- *The windows in this apartment are very inefficient and I can feel air coming in through them in winter. It would be a great help if there was something that you could do to help with them.*
- *Include help in upgrading windows.*
- *I'd like plastic for the windows.*
- *They could provide plastic for the window to keep the air from coming in.*
- *The program could provide additional weatherization services.*
- *Everything was fine, except the hot water being too low; people probably have a problem with that.*

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- *The auditor said he did not have the right size furnace filters on his truck and that he would send them, but never did get the filters.*

Ten respondents made unique suggestions, which are listed below.

- *I am disabled and have learned that conversation can move mountains. Duke Energy needs to communicate with people and then they'll generate more interest in programs like this.*
- *I never called to enroll in the program, but then when I saw the truck I took advantage of the opportunity. Since that was the way I ended up being part of the program, I guess that my suggestion would be to have those auditors come thru the neighborhoods more often and have them ready to take care of people's home right then and there.*
- *Advertise the contact phone number more. I wrote out and gave the phone number to five of my friends. They did not know about the program before I told them.*
- *Maybe they could emphasize how the customer basically does not have to do any of the work themselves besides signing up and being there when the auditor is there.*
- *I think if people could see some examples of what they will actually receive and what sort of benefits that come along with those things, more people would be more apt to get involved.*
- *This is a middle to lower-income community. I wish there was some way to test where the most energy is in use. I've been in the house for 14 years. I just wish that could have been possible.*
- *I think that they should offer everybody the program instead of just picking certain neighborhoods.*
- *Provide more education in weatherizing in general.*
- *I don't know why anybody wouldn't want them to come in to check their house.*
- *A lot of our street lights are out. I have called that in to the city but they are still out.*

Three respondents offered negative comments rather than suggestions, which are listed below.

- *Well, I think if this program really offered all the things they said they would, then they should have no problem getting people to be a part of it. Maybe it all sounded too good to be true, maybe that's why people won't participate because they think that doing this stuff probably won't save them any money.*
- *My bill was $89 and now it is $98. Why?*
- *You know how people can be with work orders. The landlord needs to take care of things.*

Participants were also asked, "*are there any additional services that you would like the Residential Neighborhood Program to provide that it does not currently provide?*" Twenty-five surveyed participants (31.3% of 80) offered suggestions, which are listed below.

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- *Maybe call up the participants 6 months after the audit and installations were performed and ask how the improvements are holding up. See if any additional work needs to be done or if any installations need to be fixed or replaced.*
- *The program could provide a pamphlet detailing ways to save energy. Duke could also upgrade the electrical service for old homes.*
- *I wish there was some way to test where the most energy is in use.*
- *Expand the program to measure the amount of water our home uses.*
- *I would like that there were more water savings like on my washing machine. I need new piping.*
- *Like houses, they might have holes in the walls and floors, check for stuff like that.*
- *More assistance on upgrading windows.*
- *The Residential Neighborhood Program could provide more home weatherization services.*
- *I think a great service to offer is cleaning out the air ducts in the home.*
- *A service that should be offered is performance checkups on A/C and heating units. Also, if they could evaluate your home appliances like your fridge and washer and dryer and such to see how energy efficient they are, or are not.*
- *The program should provide maintenance for our heating and cooling units. I think it would be a great service if they would check over our heating and cooling units to make sure they are running efficiently, and perhaps provide tips as to how the homeowner/landlord can keep the units running efficiently.*
- *The program could evaluate the HVAC system and offer discounts, or some kind of assistance, with upgrading and making the units more efficient.*
- *Repair light switches that are not working. Supply light switch covers.*
- *I would like to see a wider variety of CFL light bulbs to replace all of the bulbs in and around my home. Especially I would like exterior sensor security lights which are energy efficient.*
- *Perhaps offer CFL bulbs that are more universal, or a wider variety of sizes of CFLs so they can fit in all potential light sockets in the home.*
- *I would like to get some 100 watt light bulbs, I want standard bulbs or some sort of energy efficient light besides CFL. The CFL lights that this program offers are not bright enough for me. Another service that the program should provide is to install programmable thermostats in the customer's homes.*
- *Installing or providing clear window plastic would be a great heat saving service.*
- *They could provide plastic for the window to keep the air from coming in.*
- *I heard that some of the people who participated in the program did not receive the motion detector lights and do want them.*[39]
- *I wish they would cut trees for us. I want them to do more tree removal and trim branches more when needed and upon customer request.*

[39] The Residential Neighborhoods program does not provide motion detectors.

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- *I would like the program to provide tree trimming services.*
- *Lower rates for participating in programs. It's so easy to fall behind in payment so reduction in rates would be helpful. It's hard to keep up on a fixed income.*
- *I would have liked a bigger incentive, like a discount on my bill because I participated in the program. I think that if there was a one-time credit on the person's energy bill, it would be a good incentive for people to sign up.*
- *The program could provide bill credits or incentives.*
- *I would like an explanation on why my payment went up. I thought my bill would go down?!*

Finally, surveyed participants were asked "*are there any other things that you would like to see changed about the program*?" Fifteen respondents (18.8% of 80) offered suggestions, which are listed below.

- *I would have liked a confirmation that my application had been received. I waited a long time between sending in the application and having the auditor come to my home. I started wondering if my application had gotten lost. One day I saw a Duke Energy truck in the neighborhood and spoke with the employees. They saw my name on the computer and then visited my home later that same day.*
- *If you're not paying attention, I don't know, there's a lot of throw away material. They need more visibility for the program, more advertisement.*
- *Do this program more frequently, and try to reach more people.*
- *Offer this program more often.*
- *I think that they should offer everybody the program instead of just picking certain neighborhoods. They picked the poor side of town, I would say. They picked the poorest neighborhood.*
- *They should have only one consultant doing the audits, not to different groups. It needs to be clearer that Home Energy House Call and this program are two different programs. Both are listed through Duke. It should have been more clear in the marketing.*
- *The guy came out and my mother-in-law, who was visiting at the time, was very interested. The Duke Energy rep she spoke to on the phone told her that there was no such program. The communication there might have been a little better. It kind of scared her a little bit because then she thought the people who visited our house were not from Duke, but we saw Duke Energy on the side of the trucks and everything. I called customer service and found out there was such a program and let her know. It was all very confusing.*
- *When they send the auditors out I would like for them to be more knowledgeable about their products.*
- *They should explain more what they're doing. They told me what they were doing, but not why.*
- *It would have been nice if the auditors had a history of my home from the last audit that they did.*

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- *I think the auditors should check the windows more, I'm not sure if they checked to see how efficient or sufficient my windows are.*
- *It would be great if the program would check and evaluate the insulation of the home. It would be nice to know if we could use more insulation in certain areas of the house. And, of course, if there was a need for additional insulation, the program would offer to install the additional insulation or at least offer a reduced rate resource to get the insulation installed.*
- *Something that this program could have provided would be a wider variety of CFL light bulb types. With the screw in part that goes into the bulb, this program only offers the male socket, the bigger size, customers need small male light bulb sizes. It would have helped me tremendously because most of the bulbs provided by the program did not fit in places where I needed them.*
- *They just need to follow through with what they claim they will do. If they make all these efforts and I still don't save any money on my utility bill, I should receive some sort of incentive for my time and efforts involved.*
- *They should use better quality material. Duke is trying to impress us but it's not working.*

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Non-Participant Survey Results

Non-Participant Program Awareness

TecMarket Works contacted 123 non-participating customers in the Carolina system, and two-thirds (66.7% or 82 out of 123) said they recalled hearing something about the Residential Neighborhood program in their community. The awareness levels are broken out by state in Table 107; the differences between customers in North and South Carolina are not statistically significant.

Table 107. Awareness of the Residential Neighborhood Program

Base: all contacted non-participants	North Carolina (N=43)	South Carolina (N=80)	Total (N=123)
Aware of program	63.8%	72.1%	66.7%
Not aware of program	37.2%	27.9%	33.3%

Customers who had not heard anything about this program before the survey call were disqualified based on their lack of awareness (customers who were called for the non-participant surveys were also disqualified if someone in their household participated in the program).

Non-participant customers who qualified for the survey were asked how they first learned about the Residential Neighborhood program; these responses are shown in Table 108. The three most frequently-mentioned sources of program awareness for non-participants are letters and postcards from Duke Energy (40.0% or 32 out of 80), door-hangers from Duke Energy (20.0% or 16 out of 80) and home visits from Duke Energy (18.8% or 15 out of 80).

The percentage of non-participants mentioning mailings and home visits as sources of awareness are similar to the percentages of program participants mentioning these sources, though non-participants are more likely to report learning about the program from door hangers (12.5% or 10 out of 80 participants found out about the program through door hangers, compared to 31.3% or 25 out of 80 non-participants including those who did not recall Duke Energy as the organization leaving the door hangers; this difference is significant at $p<.05$ using Student's t-test. See *Awareness and Understanding of the* Program on page 34).

There is one significant difference between non-participants in North and South Carolina: North Carolina customers are much more likely to have learned about the program from a door-hanger left by Duke Energy (38.7% or 12 out of 31, compared to only 8.2% or 4 out of 49 South Carolina customers; this difference is statistically significant at $p<.05$ using Student's t-test). This is both because North Carolina customers are more likely to mention receiving door-hangers in general (45.2% or 14 out of 31 including those who were not sure of the source, compared to 22.4% or 11 out of 49 for South Carolina), and because North Carolina customers who received door-hangers are more likely to report that these communications came from Duke Energy (85.7% or 12 out of 14 North Carolina customers who received door-hangers said they came from Duke Energy, compared to only 36.4% or 4 out of 11 South Carolina customers).

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Table 108. Source of Awareness of the Residential Neighborhood Program

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Received a letter or postcard in the mail from Duke Energy	32.3%	44.9%	40.0%
Received a letter or postcard in the mail from landlord	3.2%	0.0%	1.3%
Received a letter or postcard in the mail but not sure who it was from	3.2%	8.2%	6.3%
Received a door-hanger from Duke Energy	38.7%	8.2%	20.0%
Received a door-hanger but not sure who it was from	6.5%	14.3%	11.3%
Someone from Duke Energy visited my home to tell me about it	16.1%	20.4%	18.8%
Someone visited my home to tell me about it, not sure what organization	0.0%	2.0%	1.3%
Heard about a community event promoting the program but did NOT attend	3.2%	6.1%	5.0%
Attended a community event promoting the program	3.2%	2.0%	2.5%
Someone from Duke Energy called to tell me about the program	0.0%	4.1%	2.5%
Someone else called to tell me about the program	0.0%	0.0%	0.0%
I called Duke Energy (or someone else) for information or help	0.0%	0.0%	0.0%
Friends / Family / Neighbors (word of mouth)	6.5%	8.2%	7.5%
Through another agency or organization (listed below)	0.0%	4.1%	2.5%
Media (*"I saw it on TV"*)	0.0%	2.0%	1.3%
Online (Duke Energy or other websites)	0.0%	0.0%	0.0%
Some other way (listed below)	3.2%	4.1%	3.8%
Don't know / not specified	3.2%	2.0%	2.5%

Percentages total to more than 100% because respondents could give multiple responses.

Two South Carolina non-participants mentioned becoming aware of the program through other agencies or organizations; these responses are listed below.

- *Northwest Community Center.*
- *I can't recall.*

Three non-participants mentioned becoming aware of the program "some other way"; these responses are listed below.

- *I saw their truck driving around in the neighborhood.* (NC)
- *I noticed small billboards promoting the program in our neighborhood.* (SC)
- *I saw someone walking around the neighborhood handing out information; I think they were from Duke Power.* (SC)

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Only two surveyed non-participants in the Carolina System (2.5% of 80) said that they attended the community meeting to promote the program. These customers were asked to rate their satisfaction with the information presented at the meeting, the staff and presenters, and the community meeting overall: the mean ratings for all three of these measures are 9.5 (one customer gave all "9" ratings and the other gave all "10" ratings). Since these customers were very satisfied with the meeting, they were not asked to give suggestions for improving it.

Non-Participants' Understanding of the Program

Surveyed non-participants were asked to describe in their own words what they thought the Residential Neighborhood program was about and what it would do for them: "*Please describe what you understood was required of participants in this program, and what you could have received in return had you participated in Duke Energy's Residential Neighborhood Program. (What is this program about / what would they do?)*" These responses are categorized below in Table 109.

The aspects of the program that are most likely to be recalled by non-participants are "receiving free energy-saving measures" (mentioned by 31.3% or 25 out of 80) and "visiting the home for a free energy audit" (30.0% or 24 out of 80); both of these are "correct" responses that accurately describe the program. Four more categories of response were mentioned by at least 10% of surveyed non-respondents: "saving money on energy bills" (11.3% or 9 out of 80) and "receiving home weatherization" (11.3% or 9 out of 80) are also both accurate responses, while "visiting the home to inspect systems and measure energy usage" (11.3% or 9 out of 80) is only partially correct (these responses describe the home audit but not its actual purpose). Another common response, "participation requires landlord's permission" (10.0% or 8 out of 80), is an accurate description of a potential barrier to participation (many of the customers mentioning this aspect did not participate because their landlord did not give permission). Only 16.3% (13 out of 80) of surveyed non-participants could not answer this question ("don't know / not specified").

Only one of the differences by state shown in Table 109 is statistically significant: Customers in South Carolina are more likely to respond with "we are already efficient / not interested" (8.2% or 4 out of 49, compared to 0% of 31 for North Carolina respondents; this difference is significant at $p<.10$ using Student's t-test).

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Table 109. Non-Participants' Understanding of the Residential Neighborhood Program

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Receive free energy-saving measures (bulbs, aerators, sweeps, etc.)	32.3%	30.6%	31.3%
Visit home for free energy audit and energy-saving information	29.0%	30.6%	30.0%
Saving money on energy bills	16.1%	8.2%	11.3%
Receive home weatherization / seal leaks (doors, windows, insulation, etc.)	12.9%	10.2%	11.3%
Visit home to inspect systems / measure energy usage	12.9%	10.2%	11.3%
Participation would require my landlord's permission / for homeowners only	6.5%	12.2%	10.0%
Attending community meeting to discuss energy issues & learn about energy efficiency	6.5%	8.2%	7.5%
We are already efficient / don't need what this program offers / not interested	0.0%	8.2%	5.0%
Learning how to save energy (other than through audit or meeting)	3.2%	4.1%	3.8%
Other responses (listed below)	12.9%	14.3%	13.8%
Don't know / not specified	19.4%	14.3%	16.3%

Percentages total to more than 100% because respondents could give multiple responses.

Eleven non-participants surveyed in the Carolina system gave "other" responses when asked to describe the program, which are listed below. Many of these responses are either vague ("*make the neighborhood better*") or inaccurate ("*get some kind of coupon for free stuff*").

North Carolina (N=4)

- *I think they were trying to make the neighborhood better.*
- *It was supposed to be a program where they'd fix things in your house.*
- *I don't think there was anything that you would receive.*
- *I think it was a program offered only for our area since it seems like a low income neighborhood.*

South Carolina (N=7)

- *There would be an environmental impact towards helping the environment. The neighborhood's overall energy efficiency would improve. I also remember that they offered appliance pick-up.*
- *They were doing things to help make your house warmer.*
- *They offered an upgrade on my house to save energy.*
- *I think Duke is trying to make a push for local residents to save energy.*
- *My neighbor told me a little bit about it; they said it was something about how to make your home more efficient.*
- *They were supposed to inspect your home, tell you where your leaks were, tell you how you could save energy, and then you would get some kind of coupon for free stuff.*

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- *I believe that anybody who lived in that neighborhood could participate.*

The top responses for non-participants' understanding of the program mirror the top responses for program participants (reported in Table 21 on page 37), though a significantly larger percentage of participants are able to name these benefits of the program. For example, the top response for both groups is "installing measures", mentioned by 57.5% or 46 out of 80 participants but only 31.3% or 25 out of 80 non-participants, a difference which is significant at $p<.05$ using Student's t-test. Participants are also significantly more likely than non-participants to mention the home audit, home weatherization, saving energy and saving money on utility bills (all $p<.05$), though this is not surprising considering that participants have actually participated in the program before they were asked their understanding of the program (their experience with the program is first-hand, rather than based only on communications about the program).

As indicated by Table 110, more than half of non-participants who were aware of the program believed that they would have been eligible to participate (55.0% or 44 out of 80). Only 10.0% (8 out of 80) believed that they would not have been eligible, while another 35.0% (28 out of 80) were not sure if they were eligible or not. There are no significant differences between states.

Table 110. Non-Participants' Understanding of Their Eligibility to Participate in the Residential Neighborhood Program

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Think I would have been eligible	58.1%	53.1%	55.0%
Do not think I would have been eligible	6.5%	12.2%	10.0%
Don't know if I would have been eligible	35.5%	34.7%	35.0%

The 44 surveyed non-participants who believe that they would have been eligible to participate in the Residential Neighborhoods program were asked why they did not participate in the program. These responses are listed and categorized below; a plurality of these customers (43.2% or 19 out of 44) did not participate due to issues with availability and scheduling.

Customers Who Believe They Qualify for the Program: Not Available / Scheduling / Too Busy (N=19)

- *At the time I was busy and didn't have time to get involved with anything else.*
- *At the time I was still on active duty. I was unavailable to participate in the program because I was working and would not be at home.*
- *At the time that the program was offered, I was very busy, I had no time. I want to participate in the program now though! I know that my house would really benefit from those improvements and I believe that my utility bills are way too high right now.*
- *From the times that they were available, and times I was home from work, our schedules didn't mesh together.*
- *I had just moved here at the time the program was offered and I was just getting familiar with the area.*
- *I missed it because of my job. My hours at my job are uncertain. I couldn't give them a specific time I could be there. At the time, I lived by myself.*

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- *I was not at home when they came around to talk to me about the program. I work during the day, I wanted to participate, but I was not available to sign up for the program when they came door to door.*
- *I was not at home when they came around with the information and I work 8 a.m. to 5 p.m. every weekday, so I was unable to participate.*
- *I know my house needs a lot of work done to it and I was hoping they'd come back later on down the road after I'd done some of the stuff I need to do. I need new windows and a lot of other things.*
- *I was too busy, I really wanted to go, I even had the meeting written in my calendar but, I had to work and was unable to make the meeting.*
- *I was working like six days a week. I work road construction, paving, so I leave really early in the morning and, by the time I get home, it's like 8:00.*
- *It took place during the workday and I could not afford to take the time off work.*
- *It was just bad timing for me; I was fixing to move to Missouri.*
- *They put a number on there, but I was working during the time they would come back around.*
- *I was not feeling well. I was sick and unable to attend the meeting.*
- *I was out of town for my job.*
- *I was too busy at the time.*
- *I didn't have the time.*
- *I just didn't get around to it.*

Customers Who Believe They Qualify for the Program: Not Interested / Already Efficient / Already Participated in a Similar Program (N=8)

- *I did the one through the city that was exactly like it, so I felt I didn't need it.*
- *I had already had something like this done to my home a little bit ago.*
- *My sister's granddaughter got materials through school, so I got the whole kit. The kit included light bulbs, a showerhead, and tape. I didn't see any sense in duplicating what I got.*
- *My bill says that I was really low energy so I didn't do it. I have a very energy efficient home already.*
- *They said I was pretty energy-efficient and that the only thing it sounded like I might need is a little bit of insulation around one of the outside doors. I didn't really need the program.*
- *We really didn't need anything; our house was already approved to be energy efficient.*
- *My energy bills have always stayed the same, and then this cold snap hit and my bills doubled. I just wasn't concerned at that time.*
- *I didn't want anyone coming into my house and telling me what I need.*

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Customers Who Believe They Qualify for the Program: Applications / Paperwork / Miscommunications (N=8)

- *After I got my landlord to sign the paper, I lost all the information including a phone number to call and make the appointment.*
- *I got the papers signed by my landlord, but they never came back to pick them up.*
- *Because the flyer did not state my apartment complex, I had no idea that the information was for me or that it applied to my apartment complex.*
- *I needed my landlord's approval, and he said yes, but I didn't get the paper back to Duke in time.*
- *I assumed the two programs were the same. I guess I thought that the free light bulbs I requested and never received was the same as this Neighborhood program.*
- *The first time it was offered I did not fill out the information card by the due date. I think they are offering the program again, but I have to fill out the information card before March 1st, I have not filled it out yet.*
- *I misplaced the paperwork; it was something from my doorknob.*
- *I didn't know what else I had to do.*

Customers Who Believe They Qualify for the Program: Landlord Permission / Rental Issues (N=4)

- *An approval letter from my landlord was needed to be able to do the program. My landlord was unavailable to do the approval. The landlord was only going to be available the day after the deadline to apply to the program.*
- *I needed permission from my landlord. My landlord is out of town a lot, and was at that time, so I couldn't get him to sign the paperwork in time. Duke Energy told me the paper had to be signed in order to have them come. My landlord was gone then.*
- *We had to get management to sign-off before it could take place. I asked them, but management wouldn't sign-off on it.*
- *Well, if I'm remembering right, I had to fill out some information about my house and then have my landlord sign it and maybe fill some information out themselves. My landlord lives out of state, so it was inconvenient for me to get her to do the necessary work to be able to participate, that's why I didn't participate. I would have participated if I could.*

Customers Who Believe They Qualify for the Program: Don't Want to Let Strangers into the Home (N=3)

- *I am by myself and I was scared.*
- *My home was in disarray and I didn't want anyone coming in.*
- *The house was a mess and two of my kids' rooms you can't even get into. My kids are hoarders and you can't even get to the windows without climbing over everything in the room.*

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Customers Who Believe They Qualify for the Program: Don't Know (N=2)

- *I just didn't really know anything about it; maybe I received the information too far after the program was offered.*
- *I can't remember.*

The 28 surveyed non-participants who did not know if they would have been eligible to participate in the Residential Neighborhoods program were asked why they did not apply or seek more information about the program. These responses are listed and categorized below; the most frequent category of response again has to do with scheduling and availability (mentioned by 39.3% or 11 out of 28 non-participants who were not sure if they qualified for the program).

Customers Who Are Not Sure If They Qualify for the Program: Not Available / Scheduling / Too Busy (N=11)

- *We were always out and nobody would have been here at the time.*
- *I am overly consumed with work and my family so I had no time to do any extra programs.*
- *I just didn't have time at the time they came around. I had a whole bunch of stuff going on.*
- *I was having work done around my house and I told them I preferred not to do it right then.*
- *I was real sick at the time and I didn't want to deal with it.*
- *I was still grieving over the loss of my wife and having to take care of my two girls as a single parent. I had other things on my mind at that time.*
- *I was the only income and I had a lot going on taking up time.*
- *It was during my work hours.*
- *It was just that I had other things going on and I wasn't interested at that time.*
- *It was just timing; it was a busy time of the year and I did not get around to looking further into the program.*
- *When I thought about it, it was too late.*

Customers Who Are Not Sure If They Qualify for the Program: Not Interested / Already Efficient / Already Participated in a Similar Program (N=4)

- *I already had energy-efficient light bulbs. I just didn't see any sense in doing it.*
- *I already upgraded my house. I saw no need to participate.*
- *My house is already snug. I really don't know if there's anything else I could do. I didn't need it.*
- *I didn't want to do any of their programs.*

Customers Who Are Not Sure If They Qualify for the Program: Applications / Paperwork / Miscommunications (N=3)

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- *I tried to get them to come to my house by telling one of my neighbors to have them come over because they were out in the neighborhood. They never did come by, though. I wanted to participate.*
- *He was supposed to come back, but he didn't that I know of; he probably returned when I wasn't there.*
- *I wanted to participate, but I didn't get the paperwork signed in time.*

Customers Who Are Not Sure If They Qualify for the Program: Don't Want to Let Strangers into the Home (N=1)

- *I did not want anybody entering my home.*

Customers Who Are Not Sure If They Qualify for the Program: Landlord Permission / Rental Issues (N=1)

- *I didn't call my landlord in time. I don't own this place and I didn't know what had to be done.*

Customers Who Are Not Sure If They Qualify for the Program: Other Barriers to Participation (N=4)

- *For one thing, I am on oxygen and it's a bother to do anything like that. If I have to walk around, and show them where everything electrical is, I can't really walk around and do that.*
- *I was told they wouldn't do it because of the dogs.*
- *I didn't have any money to do it. I figured it cost money.*
- *I'm not sure what the income requirement would be.*

Customers Who Are Not Sure If They Qualify for the Program: Don't Know (N=4)

- *I honestly didn't pay any attention to it.*
- *It probably slipped my mind.*
- *Nobody's ever asked me about it. I don't know.*
- *I don't know.*

All non-participants were next asked if there were "any other reasons" why they did not participate in the program. Twenty-two non-participants (27.5% of 80) gave additional reasons why they did not participate, which are categorized and listed below.

Most of the customers who believe they qualify for the program mentioned scheduling and availability (83.3% or 5 out of 6), while most of the customers who believe they do not qualify mentioned landlord and renter issues (62.5% or 5 out of 8). Customers who are not sure if they qualify for the program gave a wider variety of responses, with the most common being that they are not interested because their homes are already sufficiently efficient (37.5% or 3 out of 8).

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Customers Who Believe They Qualify for the Program: Other Reasons for Not Participating (N=6)

- *I was really busy at the time.*
- *It was too much bother.*
- *The time was a concern, with my work schedule. My hours fluctuate so much.*
- *We weren't available; it wasn't a good time.*
- *I didn't have transportation to the meeting place.*
- *I already have a lot of energy saving things in place.*

Customers Who Believe They Do Not Qualify for the Program: Other Reasons for Not Participating (N=8)

- *I don't own my home. I didn't pay too much attention after that my friend said I couldn't do it because I'm a renter; I didn't pay much attention to the letter after that.*
- *I thought the program was only open to home owners.*
- *I'm a renter. I figured the stuff they offered for your home was only open to home owners to have. Also, I figure my home is already pretty energy efficient and I most likely did not need to do any energy efficiency related efforts.*
- *I'm a renter.*
- *We are renters; we thought that the program was only open to home owners.*
- *The income requirements would have made me ineligible.*
- *Well, I think I have done enough to try to make my home energy efficient, I saw no need to participate in the program. My Home Energy Report shows that I'm one of the most efficient homes in the area.*
- *I am busy and gone for long periods of time. I also just did many things in my home to save energy.*

Customers Who Are Not Sure If They Qualify for the Program: Other Reasons for Not Participating (N=8)

- *I don't know what I could do different. I'm already watching my energy bill and they're pretty low.*
- *I figured that I'm good on energy in my house and I probably did not need those things.*
- *We already practice energy-efficient stuff and try to be a little green.*
- *They had a dinner or something at the community center, but I wasn't able to make it. I'm in school and I just forgot about the whole thing.*
- *I didn't know who to contact to see if they were going to have another one at a later date.*
- *We would have had to have a piece of paper filled out with our landlord. I don't think it would have been an issue, though.*
- *Usually there are only programs out there for single mothers, not for single fathers like me.*

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- *I live in a very old house and I assumed that the program would not apply to my living quarters and it would be too expensive to do any upgrades for this house. I figured my house would not qualify to be in the program.*

Non-Participants Recommending the Program to Others

Non-participants who believe they would have qualified for the Residential Neighborhood program are more likely to report that they recommended this program to others (45.9% or 17 out of 37) compared to non-participants who did not believe (or were not sure) that they qualified for the program (25.0% or 8 out of 32; this difference is statistically significant at $p<.05$ using Student's t-test). However, among non-participants who recommended the program to others there are no significant differences between the numbers of recommendations given by customers who believe they would have qualified and those who believe they do not qualify or who are not sure.

Table 111. Non-Participants Recommending the Program to Other People

Base: non-participants who are aware of the program[40]	Believe they qualify (N=37)	Believe they do not qualify or not sure (N=32)	Total (N=69)
Recommended program to friends, neighbors or relatives (total)	**45.9%**	**25.0%**	**36.2%**
Recommended to 1-4 other people	35.1%	15.6%	26.1%
Recommended to 5 or more other people	5.4%	3.1%	4.3%
Recommended, don't know how many other people	5.4%	6.3%	5.8%
Did not recommend program	**54.1%**	**71.9%**	**62.3%**
Don't know / not specified	**0.0%**	**3.1%**	**1.4%**
Mean number of recommendations (among customers who made recommendations)	2.5	3.5	2.8
Median number of recommendations (among customers who made recommendations)	2	2	2
Maximum number of recommendations	7.5[41]	10	10

Non-Participant Recommendations for Increasing Participation

Non-participant customers were asked "*Are there things that this program could have provided that you think would have caused more people such as yourself to want to participate?*" Their responses are categorized below in Table 112; a little less than half of survey respondents had no suggestions (47.5% or 38 out of 80). Overall, the two most frequently-mentioned categories of response have to do with information (13.8% or 11 out of 80) and communications about the program (12.5% or 10 out of 80).

There are a few significant differences between states: North Carolinians are more likely to mention security concerns (9.7% or 3 out of 31), while South Carolinians are more likely to mention making weekend and evening hours available (14.3% or 7 out of 49) and highlighting

[40] Due to a survey programming error, the first eleven non-participant customers interviewed in the Carolina System were not asked about recommending the program to other people. Results are reported based only on the responses of the 69 customers in the Carolina System who were asked these questions.

[41] One customer said they recommended the program to "*seven or eight*" other people, which is reported (and included in calculations) as 7.5 recommendations.

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the free energy-saving measures (8.2% or 4 out of 49; these differences are all significant at p<.10 using Student's t-test).

Table 112. Non-Participants' Suggestions for Improving Program Participation

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Give customers more / better information about this program	16.1%	12.2%	13.8%
Suggestions for improving communications about program (listed below)	12.9%	12.2%	12.5%
Make more weekend and evening hours available for audits	3.2%	14.3%	10.0%
Make program available again / more than once per year	3.2%	6.1%	5.0%
Give out more light bulbs / measures / emphasize free measures	0.0%	8.2%	5.0%
Landlord would not allow me to participate / renter issues	6.5%	4.1%	5.0%
Security concerns about letting people into the home	9.7%	2.0%	5.0%
Comments about participation and income requirements (listed below)	3.2%	4.1%	3.8%
Give more advance notice ahead of the program being available	0.0%	4.1%	2.5%
Lower the rates / payment issues (not program related)	3.2%	2.0%	2.5%
Make it easier to sign-up / enroll	3.2%	0.0%	1.3%
Other program-related suggestions or comments (listed below)	0.0%	4.1%	2.5%
No suggestions / don't know	54.8%	44.9%	48.8%

Percentages total to more than 100% because respondents could give multiple responses.

Ten non-participants in the Carolina System made suggestions about improving communications about the program to improve participation; these responses are listed below.

- *The mailer that I received about the program just looked like your average junk mail; it looked like an advertisement. Since my friends and neighbors had already mentioned the program I paid attention to the mailer, otherwise I would have just thrown out the information without a second thought. Perhaps if the information sent out was more personalized to the customer, it might gain more attention.*
- *Maybe, on the outside of the envelope, they could put something like important cost-savings information, which is something that would make it look more official. Or, better yet, they could include the program information with billing instead of as a separate mailing to save on postage.*
- *I think the information they gave was more than enough. I think it should have been brought to the housing authority's attention because I do participate in the board meetings and could have brought it to them. I think the presentation about it was more than enough to get people interested.*

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- *I think more people would have applied for the program if we were like listed, or our apartment complex was listed as eligible. Another suggestion would be for Duke Energy to put a note in our bills, encouraging us to see if we qualify for the program.*
- *My neighborhood seems like a very low income area and with that you typically have people who lack in education or literacy. I think if there was more education offered in regards to energy efficiency, like maybe more hands-on interaction and more door to door efforts you'd get a better result in participation.*
- *Maybe offer some more of these programs. Have them scheduled for the future so we have an opportunity for another time to go to the meeting. Or maybe offer something by mail, phone, or online for the people who can't physically go to the meeting.*
- *Offer more information; consider different ways of contacting people like email perhaps.*
- *It would have been nice to have a Duke representative come door-to-door to explain the program.*
- *I had no excuse to not participate; I guess if they just try to get on people a little harder they might have more people doing it.*
- *Duke Energy needs a better way for people to hear about their program, rather than just people talking about it.*

Three non-participants had comments about income eligibility. At least one of these comments reflects confusion about the income qualifications for the program (this program does not have any income requirements).

- *People like myself who didn't meet the income requirements probably just trashed this. Regardless of your income level, they're going to charge you whatever they want to, I mean, they're reporting record profits and still raising the rates.*
- *Try to make it clear to the people right away that the program is open to all Duke Energy customers.*
- *If the customer service representative can be knowledgeable about the details of the program, and they have different income categories for the program, then that would be good.*

Two non-participant customers in the Carolina System gave miscellaneous suggestions or comments that did not fit into the categories listed in Table 112; these responses are listed below.

- *What they told me sounded pretty good. The timing was just off for me. I was in the process of doing work on my home. There just wasn't any purpose at that time with all the improvements I was doing. The windows were replaced since then.*
- *They might include some program which includes a payment plan when you choose to make energy efficient home improvements. Or maybe get an incentive on your utility bill for participating in the program.*

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Non-Participant Actions to Save Energy in the Home

Non-participants were asked if they have taken any steps to save energy in their homes in the past year. Overall, 81.3% (65 out of 80) said that they have taken actions to save energy, and the actions they took are categorized in Table 113. The most frequently mentioned actions include using efficient light bulbs (37.5% or 30 out of 80), turning off lights when not in use (25.0% or 20 out of 80), and sealing door and window leaks (15.0% or 12 out of 80).

There are only two statistically significant differences between states: North Carolina customers are more like to mention turning non-lighting items off when not in use (12.9% or 4 out of 31) and performing regular HVAC maintenance (6.5% or 2 out of 31; both different from South Carolina customers at $p<.10$ using Student's t-test).

Table 113. Non-Participants' Steps Taken to Save Energy in the Past Year

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Did not take steps to save energy	**9.7%**	**20.4%**	**16.3%**
Took steps to save energy (total)	**87.1%**	**77.6%**	**81.3%**
Use more efficient light bulbs / CFL, LED	41.9%	34.7%	37.5%
Turn off lights when not in use / use less light	29.0%	22.4%	25.0%
Seal leaks / caulk, tape, plastic on windows, doors	9.7%	18.4%	15.0%
Use less heating (turn down thermostat, dress warmly)	12.9%	10.2%	11.3%
Turn items off when not in use / unplug, use power strips	12.9%	4.1%	7.5%
Added insulation to walls, ceilings, attic, floor	9.7%	6.1%	7.5%
Do not adjust thermostat (maintain steady temperature)	3.2%	8.2%	6.3%
Use less cooling (turn down or turn off AC)	3.2%	6.1%	5.0%
Upgrade to more efficient appliances / Energy Star	3.2%	4.1%	3.8%
Upgrade HVAC system	6.5%	2.0%	3.8%
Use stove/oven less	6.5%	2.0%	3.8%
Upgrade windows, doors	3.2%	2.0%	2.5%
Regular HVAC maintenance	6.5%	0.0%	2.5%
Conserving water	3.2%	2.0%	2.5%
Unique actions (listed below)	12.9%	8.2%	10.0%
Don't know / not specified	**3.1%**	**2.0%**	**2.5%**

Percentages total to more than 100% because respondents could give multiple responses.

Eight non-participants in the Carolina System mentioned unique actions they have taken to save energy; these responses are listed below.

- *I installed new siding.*
- *We got a new water heater.*
- *I had a new roof put on with 35-year anti-sun shingles, or something like that.*
- *I had an appointment for Duke to come out and install a Power Manager device; they came yesterday. It's supposed to save me $32.*
- *I only heat the parts of the house that I actually use in the winter and close off the other rooms.*
- *I use ceiling fans to try to circulate the air around my home.*

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- *I have an electric stove, so I try to cook in the morning.*
- *I had a city inspection, much like this one [the Residential Neighborhoods program].*

Non-Participant Satisfaction with Duke Energy

Surveyed non-participants are generally satisfied with Duke Energy; Figure 8 shows the distribution of satisfaction ratings scores. The mean satisfaction rating among all surveyed non-participants in the Carolina System is 8.01 on a 10-point scale where "10" is the most satisfied, and the median ratings score is 8.[42] South Carolina residents give Duke Energy slightly higher satisfaction ratings (mean 8.25 versus 7.63 for North Carolina), though the difference in mean ratings scores between states is not statistically significant.

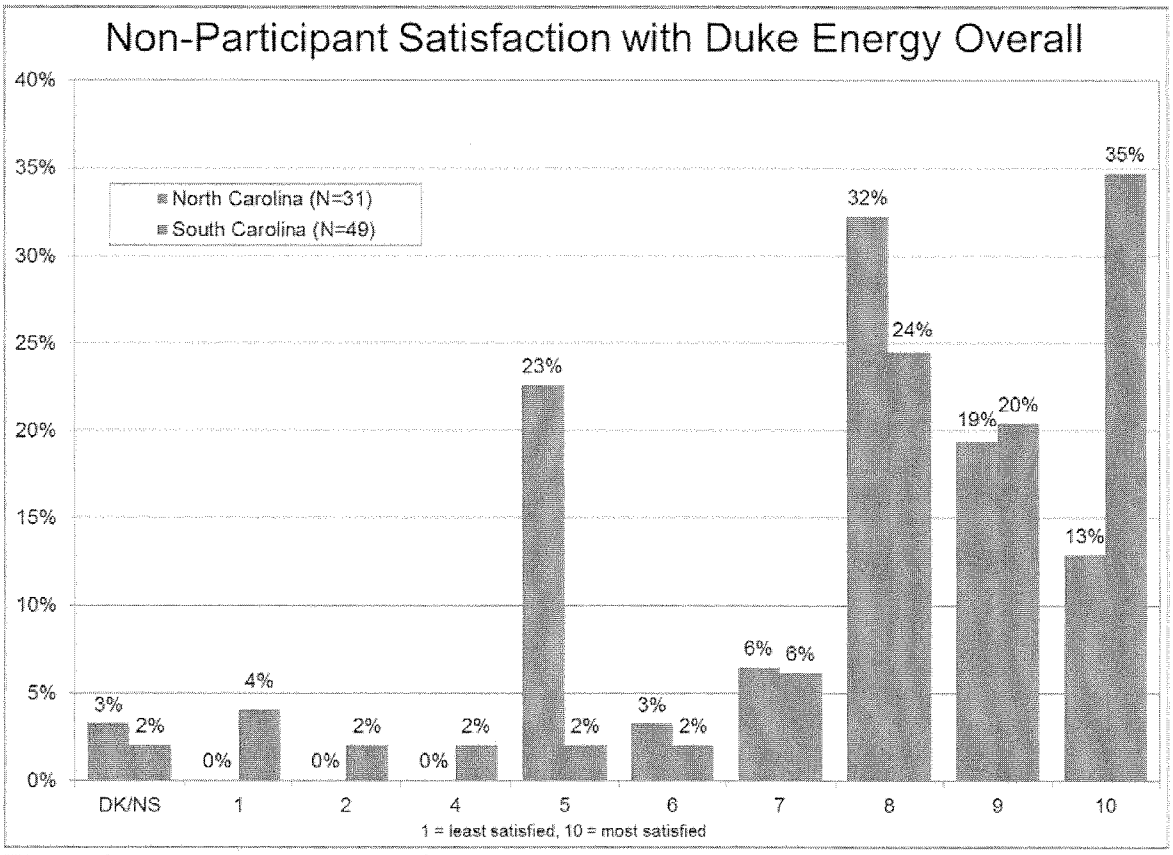

Figure 8. Non-Participant Satisfaction with Duke Energy Overall

Nineteen non-participants (23.8% of 80 surveyed) rated their satisfaction with Duke Energy at "7" or less, and these customers were asked how their satisfaction could be improved. Their

[42] Among 80 surveyed program participants in the Carolina System, the mean satisfaction rating for Duke Energy is 8.71 (as seen in *Satisfaction with Duke Energy* on page 25). The mean rating of 8.01 among non-participants is lower, though this difference is not quite statistically significant at $p<.10$ using Student's t-test. Satisfaction with Duke Energy is associated with satisfaction with the program (see *Predicting Overall Program Satisfaction* on page 31), and may also be a driver of participation (i.e., customers who are more satisfied with Duke Energy are more likely to participate in Duke Energy programs, and customers who are less satisfied are less likely to participate in programs).

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responses are listed by state below; most of these comments have to do with rates and billing, particularly in South Carolina.

North Carolina (N=10)

- *I know they're working diligently to get people's power back on. Duke Energy needs to have numbers to call for a status updates to find out if your power is back on or not when you're away from home.*
- *I've had some difficulties with power being restored to one of my houses I recently renovated for a new tenant. The power was not turned on at the time I indicated it needed to be and it caused problems as far as being able to finish the project and getting the place ready for the new tenant to move in by the time I had earlier indicated. Somebody at Duke dropped the ball on this and I'm not happy about it.*
- *It's one of those days I need them and I wish I didn't. Meter reading should be done by a person getting out of their vehicle and coming to physically read it, not driving by with a scanner and a computer. If somebody protests something, they don't say anything. They don't care about the community; all they care about is control. Duke Energy is just a little too big for their britches.*
- *Like with the coal ash problem, Duke Energy needs to stop making excuses about that pollution and just clean it up. Also, the customer service needs to be better. Whenever I have an issue with my electricity it always takes them forever to help me get the problem fixed.*
- *Since November, I haven't been getting any kilowatt hours on my bill and I had to call in and let them know of their mistake. My bill was wrong and they weren't trying to rectify it. I called it this month and hopefully it will be fixed.*
- *Once, I went to pay the bill and I was $1 or something short and very close to having the power cut off, but they want it all. I'm mean, they could cut a break. Not everybody can come up with all that money.*
- *They don't give senior citizens like me a break. If you're late on your bill, they just cut you off. You could be a little more lenient with people over 50. I don't get much assistance, no Medicare, I get food stamps. I only have a part-time job. If you're on a fixed income, you need a little break.*
- *My bill's been really high. I haven't been using my heat too high. Each room has its own thermostat with no numbers.*
- *The rates are too high.*
- *They should lower their rates.*

South Carolina (N=9)

- *Duke could perform better maintenance on power lines and electrical boxes.*
- *My energy bills are still very high even though I'm doing things to not consume excess energy.*
- *The cost of my utilities has gone way, way up and I am not doing anything different as far as using energy. Ever since that new meter was installed my utility costs are out of hand*

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high. Last month my bill was $298! I know that I'm not using that much power, I'm using the same amount I always have, but it costs much more.

- *It doesn't really matter how energy-efficient you are, you're still going to pay their high rates, while they post record profits.*
- *They have a monopoly in our area. The last rate increase that we got, it just wasn't necessary. Energy is something you have to have, you just have to suck it up. Don't increase the rates.*
- *The cost of the Kilowatt hour has gotten quite high, I'd like to see the cost go down for our utilities.*
- *My bill has been so high.*
- *The rates are too high. It's been hard these last three months.*
- *We could be notified ahead of time of large increases in rates.*

Table 114 indicates that 60.0% (48 out of 80) of surveyed non-participants felt more positive about Duke Energy based on what they know about the Residential Neighborhood program, including 20.0% (16 out of 80) who said they felt "much more positive" toward Duke Energy. Only 6.3% (5 out of 80) non-participants said the program made them feel more negative towards Duke Energy, while 32.5% (26 out of 80) said they felt about the same. There are no statistically significant differences between North and South Carolina customers.

Table 114. Changes in Non-Participants' Attitude toward Duke Energy Based on Knowledge of the Residential Neighborhoods Program

Base: non-participants who are aware of the program	North Carolina (N=31)	South Carolina (N=49)	Total (N=80)
Much more positive toward Duke Energy	12.9%	24.5%	20.0%
Somewhat more positive	41.9%	38.8%	40.0%
About the same	35.5%	30.6%	32.5%
Somewhat more negative	6.5%	2.0%	3.8%
Much more negative	0.0%	4.1%	2.5%
Don't know / not specified	3.2%	0.0%	1.3%

Non-participants who said they felt more positive or more negative towards Duke Energy based on what they know about the Residential Neighborhoods program were asked why they felt more positive or more negative. These responses are listed and categorized below; as indicated above in Table 114, there are about ten times as many "more positive" comments as there are "more negative" comments.

Much more positive (N=16)

- *Anyway they can help you save on your energy bill is good.*
- *Because in most states I've been in, I've never seen any other companies offer any sort of programs like this. It's great how Duke Energy is making efforts towards saving energy for their business and for their customers. Anything that saves money is good in my opinion.*

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- *Because when talking about your energy company, sometimes you feel out of control, like you as the individual customer have no say or impact towards improving the energy situation. I like that Duke is trying to help out their customers on an individual basis.*
- *I appreciate that Duke is trying to help their customers save energy.*
- *I got the help I needed.*
- *I grew up with Duke Energy. I like it that Duke Energy provides you with some leeway. If you don't have enough money to make your electric bill that month, they work with you; I tip my hat to them because most energy companies don't let you do that.*
- *I see that Duke Energy wants to help me save money on my energy bills with these programs, and that is a plus.*
- *I think is good that they're willing to go out in the community to help people, to take the initiative to do this. This program makes me feel much more positive about them. The only problem I have with them is that they gave the guy who rented my house before my phone number by accident and he kept calling me for a refund that Duke was supposed to mail to him. They probably just read off a list of numbers associated with my address, but he knew I lived in this house, so he wrote down the one he knew wasn't his. He also would come by and check my mail when I wasn't home. I tried to complain, but I pay online, so it was too hard to do. I had to change my number because of this, so that's the only reason I gave them a nine instead of a ten.*
- *I think that any assistance is beneficial and results in positive opinions about the company. Anything offered to help with energy costs helps with our feeling towards Duke.*
- *It is great thing you are doing to help us folks out.*
- *It seems like Duke Energy was trying to help us out with our utility charges which is great. Also, by contacting each of us individually it makes us feel important, like our participation and opinions are important to Duke; it's good to be considered individually.*
- *It sounds like Duke is really trying to help folks out with their houses and their power bills. Also because, if we have a power outage, it doesn't take forever to get the power back on. I think Duke is doing a great job.*
- *Just for Duke Energy to offer services like free light bulbs and someone coming to your house to check your efficiency is a big step on their part; they didn't have to do that.*
- *My attitude would be even better if they come to my house again with this program.*
- *That's a lot of good ideas for things. You get a surprise like this winter and it really opens your eyes. This program sounds very good.*
- *They took the initiative to reach out to the neighborhood and the residents to help out with the cost of the bills. Some type of assistance was a good thing.*

Somewhat more positive (N=32)

- *Anything that is going to help folks out is a good thing.*
- *Duke Energy works with people and understands when people have high bills they can't pay. I would like it if this program came around again. I'd like to consider it, but the timing has to be right, not spring or summer.*

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- *I am glad that they are trying to do something about energy use.*
- *I can see how these programs are helping people so I think those are good efforts on Duke Energy's part.*
- *I like the free bulbs that Duke sent me. If they didn't give them to me I wouldn't be using them on my own.*
- *I mean, I like Duke Energy, I think they do a good job. I think these programs they offer really can help a lot of people.*
- *I really don't know if those improvements given in the program really work because I did not do the program. It sounds good though.*
- *I think it's good that they're helping customers get their bill in line.*
- *I think this is a very good thing that they do for people.*
- *I thought it was real nice from what I'd seen, but I thought you couldn't do it if you didn't own your home.*
- *I'm glad to see that they are trying to help people out and I think their efforts to save energy help the environment.*
- *I'm only feeling somewhat more positive about Duke because their rates are too high. I like that they have these programs to help people with their homes though.*
- *I've never had any problems with Duke Energy and I like that they have these programs to help people out.*
- *I've never had problems with Duke, they have great customer service and with programs like these, it seems like they are concerned for their customers' well-being.*
- *It seems like they are trying to help people save energy; it seems like they do care. Duke Energy has worked with us several times when we were close to having our lights turned off, and I have a CPAP machine that needs to be on, or I'd be dead.*
- *It seems like you guys are making some kind of effort to help us out.*
- *It's positive if they help people.*
- *My light bill is still kind of high. I'm on disability, so I can't afford that much a month.*
- *The offering of the light bulbs through Duke Energy brought my opinion up. We appreciate any help we can get.*
- *Seeing how Duke Energy cares to help us heat our homes and make them more efficient to try to save us money is a good thing.*
- *The gentleman that I talked to was very helpful and my neighbors all did it. I have done a few things and my bill has gone down.*
- *There's always something that you might miss.*
- *They gave me those light bulbs free of charge to help me save energy.*
- *They make you have a better understanding and help you lower your energy bills.*
- *They try to get the customers to conserve energy; that helps us out a little more.*
- *They're coming around helping people save energy and all that. I hope they do it again this summer!*
- *They're trying to help out folks with lower incomes.*

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- *This program's a good thing for people who need it. It's a good thing for Duke to bring it to people, but somebody's making money somewhere. They don't do this stuff for nothing. You have to pay to play.*
- *We all need to be helping with saving energy, and I can see with offering this program that Duke is trying to do their part.*
- *What they were trying to do was a great thing. They pay some of the money themselves to get stuff done.*
- *Y'all are trying to help us with our bills. Duke's always going the extra mile, passing out light bulbs and giving help like that.*
- *I don't know.*

Somewhat more negative (N=3)

- *My power bill was incorrect, so this has put a damper on things. I think they just do these things, like this program, to make themselves look better in the community. They don't care about the community. They don't listen to us.*
- *The prices are so high and getting higher, even though I'm not using as much.*
- *We're not seeing a change in our power bill versus last year. We've made all these adjustments this past year and haven't seen a change. The power bills have gone up so much, we've had to install solar panels at work.*

Much more negative (N=2)

- *Every year they report increased profits, while everyone's bills go up, regardless of income. They don't have many programs for the seniors and the poor. You either pay what they tell you or get your power cut off. It would be nice if they expanded the income requirements for this program.*
- *The program is probably a rip off. I don't like any little programs where some stranger has to come into my home.*

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Appendix A: Counts of Participants for Billing Analysis

Participant Since YYYYMM	Number of New Participants in Each Month
201303	56
201304	100
201305	119
201306	307
201307	124
201308	401
201309	361
201310	302
201311	445
201312	629
201401	463
201402	325
201403	984
201404	1269
201405	912
201406	767
201407	514
201408	69

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Appendix B: Estimated Model

This appendix presents the complete model estimated for the billing analysis. The model includes indicators for each month (the YYYYMM variable), temperature, and the participation variables.

Variables:

- Interaction of monthly binary indicator and temperature:
  - 201012 – 201408: Binary indicator variables for that YYYYMM
  - CDD*MonthlyID: product of monthly CDD and binary monthly variables
  - HDD* MonthlyID: product of monthly CDD and binary monthly variables
- Indicator variables for participation in other Duke Energy programs:
  - Free_cfl: Residential Smart $aver Energy Efficiency: CFL
  - CFL_promo: Residential Smart $aver Energy Efficiency: Discounted CFL
  - CFL_special: Residential Energy Efficiency: Specialty Bulbs
  - K12: Energy Education for Schools
  - HEHC: Home Energy House Call
  - lowinc_weath: Low Income Weatherization
  - PER-OHEC: Personalized Energy Report
  - appl_recycle: Appliance Recycling Program
  - insul_seal_date: Residential Smart $aver: Insulation and Seal
  - refrige_replace: Refrigerator replacement program (included in the analysis whereas no participation)
  - furnace_replace: Furnace replacement program (included in the analysis whereas no participation)
  - smsvr_HVAC: Residential Smart $aver HVAC
  - HVAC_tuneup_date: Residential Smart $aver HVAC tune up (included in the analysis whereas no participation)
  - Property_mgr: Residential Smart $aver: Property Manager CFLs
  - MyHER: My Home Energy Report

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Number of Observations Read	281382
Number of Observations Used	281382

Dependent Variable: kwhd

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8250	93634249.4	11349.6	63.97	<.0001
Error	273131	48455708.6	177.4		
Corrected Total	281381	142089958.0			

R-Square	Coeff Var	Root MSE	kwhd Mean
0.658979	40.77580	13.31947	32.66514

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Account_Id	8146	78311901.75	9613.54	54.19	<.0001
cdd*monthID	45	7934142.79	176314.28	993.83	<.0001
hdd*monthID	46	7365957.26	160129.51	902.60	<.0001
k12_date	1	11.87	11.87	0.07	0.7959
Insul_Seal_date	1	11.42	11.42	0.06	0.7997
Free_CFL	1	1203.14	1203.14	6.78	0.0092
cfl_promo	1	8.23	8.23	0.05	0.8295
cfl_special	1	7.20	7.20	0.04	0.8403
HEHC	1	438.65	438.65	2.47	0.1159
lowinc_weath	1	490.88	490.88	2.77	0.0962
PER_OHEC	1	318.12	318.12	1.79	0.1805
SmSvr_HVAC	1	10.05	10.05	0.06	0.8119
Appl_Recycle	1	6.64	6.64	0.04	0.8466
Property_Mgr	1	2296.47	2296.47	12.94	0.0003
MyHER	1	2512.17	2512.17	14.16	0.0002
part	1	14932.74	14932.74	84.17	<.0001

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Source	DF	Type III SS	Mean Square	F Value	Pr > F
cdd*monthID	45	5676757.168	126150.159	711.07	<.0001
hdd*monthID	46	7327886.607	159301.883	897.94	<.0001
k12_date	1	8.935	8.935	0.05	0.8224
Insul_Seal_date	1	12.771	12.771	0.07	0.7885
Free_CFL	1	1401.022	1401.022	7.90	0.0050
cfl_promo	1	16.448	16.448	0.09	0.7608
Source	DF	Type III SS	Mean Square	F Value	Pr > F
cfl_special	1	3.734	3.734	0.02	0.8847
HEHC	1	445.266	445.266	2.51	0.1131
lowinc_weath	1	516.458	516.458	2.91	0.0880
PER_OHEC	1	325.125	325.125	1.83	0.1758
SmSvr_HVAC	1	14.422	14.422	0.08	0.7756
Appl_Recycle	1	4.639	4.639	0.03	0.8715
Property_Mgr	1	2551.777	2551.777	14.38	0.0001
MyHER	1	2159.766	2159.766	12.17	0.0005
part	1	14932.744	14932.744	84.17	<.0001

Parameter		Estimate		Standard Error	t Value	Pr > |t|
cdd*monthID	201012	0.12242608	B	1.4813726	0.08	0.9341
cdd*monthID	201101	0.01047102	B	0.4774856	0.02	0.9825
cdd*monthID	201102	1.00762539	B	0.1205422	8.36	<.0001
cdd*monthID	201103	0.22185978	B	0.0255465	8.68	<.0001
cdd*monthID	201104	0.07958351	B	0.0075044	10.60	<.0001
cdd*monthID	201105	0.07911493	B	0.0025031	31.61	<.0001
cdd*monthID	201106	0.07939523	B	0.0007300	108.76	<.0001
cdd*monthID	201107	0.07489890	B	0.0005254	142.56	<.0001
cdd*monthID	201108	0.07589485	B	0.0006331	119.88	<.0001
cdd*monthID	201109	0.07752588	B	0.0020414	37.98	<.0001
cdd*monthID	201110	0.07712457	B	0.0106534	7.24	<.0001
cdd*monthID	201111	0.17346772	B	0.0443337	3.91	<.0001
cdd*monthID	201112	-0.23843323	B	0.1620752	-1.47	0.1413
cdd*monthID	201201	0.20785646	B	0.0531915	3.91	<.0001
cdd*monthID	201202	0.25913327	B	0.0486594	5.33	<.0001
cdd*monthID	201203	0.09739021	B	0.0093475	10.42	<.0001
cdd*monthID	201204	0.11469817	B	0.0060616	18.92	<.0001
cdd*monthID	201205	0.08658451	B	0.0018908	45.79	<.0001
cdd*monthID	201206	0.08466735	B	0.0008824	95.95	<.0001
cdd*monthID	201207	0.07368587	B	0.0005264	139.99	<.0001
cdd*monthID	201208	0.07905480	B	0.0006773	116.72	<.0001
cdd*monthID	201209	0.07431302	B	0.0018157	40.93	<.0001
cdd*monthID	201210	0.15079504	B	0.0104384	14.45	<.0001
cdd*monthID	201211	0.48038836	B	0.0548442	8.76	<.0001
cdd*monthID	201212	3.14400440	B	0.4670784	6.73	<.0001
cdd*monthID	201301	0.56975469	B	0.1465595	3.89	0.0001
cdd*monthID	201302	0.76368526	B	0.2383061	3.20	0.0014
cdd*monthID	201303	0.14057106	B	0.0265282	5.30	<.0001

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Parameter		Estimate		Standard Error	t Value	Pr > |t|
cdd*monthID	201304	0.09226234	B	0.0131384	7.02	<.0001
cdd*monthID	201305	0.06593390	B	0.0038088	17.31	<.0001
cdd*monthID	201306	0.07456326	B	0.0008957	83.24	<.0001
cdd*monthID	201307	0.07529974	B	0.0006564	114.71	<.0001
cdd*monthID	201308	0.07771548	B	0.0008072	96.27	<.0001
cdd*monthID	201309	0.08431202	B	0.0013751	61.31	<.0001
cdd*monthID	201310	0.12102001	B	0.0073569	16.45	<.0001
cdd*monthID	201311	0.25199087	B	0.0497445	5.07	<.0001
cdd*monthID	201312	0.67511172	B	0.0635582	10.62	<.0001
cdd*monthID	201401	0.97797623	B	0.2507453	3.90	<.0001
cdd*monthID	201402	4.29999516	B	0.3486099	12.33	<.0001
cdd*monthID	201403	0.38457056	B	0.0323087	11.90	<.0001
cdd*monthID	201404	0.10311979	B	0.0079558	12.96	<.0001
cdd*monthID	201405	0.07420068	B	0.0019305	38.44	<.0001
cdd*monthID	201406	0.07537367	B	0.0008021	93.97	<.0001
cdd*monthID	201407	0.07438252	B	0.0009009	82.56	<.0001
cdd*monthID	201408	-0.00035747	B	0.0232243	-0.02	0.9877
hdd*monthID	201011	-0.13304777		0.0103494	-12.86	<.0001
hdd*monthID	201012	0.04141844		0.0003951	104.82	<.0001
hdd*monthID	201101	0.04408070		0.0003038	145.12	<.0001
hdd*monthID	201102	0.04468261		0.0005760	77.58	<.0001
hdd*monthID	201103	0.04971754		0.0009587	51.86	<.0001
hdd*monthID	201104	0.07141765		0.0028957	24.66	<.0001
hdd*monthID	201105	0.12641956		0.0101477	12.46	<.0001
hdd*monthID	201106	0.12548474		0.0312087	4.02	<.0001
hdd*monthID	201107	0.21061278		0.0739400	2.85	0.0044
hdd*monthID	201108	0.48853786		0.0699229	6.99	<.0001
hdd*monthID	201109	0.13973767		0.0100157	13.95	<.0001
hdd*monthID	201110	0.07365867		0.0021197	34.75	<.0001
hdd*monthID	201111	0.05473029		0.0008758	62.49	<.0001
hdd*monthID	201112	0.05242333		0.0005400	97.09	<.0001
hdd*monthID	201201	0.04857181		0.0004157	116.85	<.0001
hdd*monthID	201202	0.04776258		0.0005891	81.07	<.0001
hdd*monthID	201203	0.06792506		0.0015994	42.47	<.0001
hdd*monthID	201204	0.06579443		0.0028816	22.83	<.0001
hdd*monthID	201205	0.15438145		0.0076109	20.28	<.0001
hdd*monthID	201206	0.08986214		0.0308475	2.91	0.0036
hdd*monthID	201207	0.23735480		0.0550991	4.31	<.0001
hdd*monthID	201208	0.21913417		0.0868698	2.52	0.0117
hdd*monthID	201209	0.19385673		0.0092089	21.05	<.0001
hdd*monthID	201210	0.06207532		0.0018681	33.23	<.0001
hdd*monthID	201211	0.05270682		0.0005324	99.00	<.0001
hdd*monthID	201212	0.05179656		0.0004550	113.83	<.0001
hdd*monthID	201301	0.04944975		0.0004038	122.46	<.0001

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Parameter		Estimate	Standard Error	t Value	Pr > |t|
hdd*monthID	201302	0.04616824	0.0004003	115.34	<.0001
hdd*monthID	201303	0.04854534	0.0005156	94.15	<.0001
hdd*monthID	201304	0.06273890	0.0020151	31.13	<.0001
hdd*monthID	201305	0.14097334	0.0060986	23.12	<.0001
hdd*monthID	201306	0.27111413	0.0344485	7.87	<.0001
hdd*monthID	201307	0.75227106	0.5459625	1.38	0.1682
hdd*monthID	201308	0.64648682	0.0836063	7.73	<.0001
hdd*monthID	201309	0.23497863	0.0125078	18.79	<.0001
hdd*monthID	201310	0.07431079	0.0020218	36.75	<.0001
hdd*monthID	201311	0.05209481	0.0006242	83.46	<.0001
hdd*monthID	201312	0.04551292	0.0005830	78.07	<.0001
hdd*monthID	201401	0.04740798	0.0003332	142.29	<.0001
hdd*monthID	201402	0.04654439	0.0003836	121.35	<.0001
hdd*monthID	201403	0.04988105	0.0005253	94.95	<.0001
hdd*monthID	201404	0.06945916	0.0018043	38.50	<.0001
hdd*monthID	201405	0.15354932	0.0064585	23.77	<.0001
hdd*monthID	201406	0.39260212	0.0408723	9.61	<.0001
hdd*monthID	201407	18.42271508	6.4661767	2.85	0.0044
hdd*monthID	201408	-36.33626290	215.5990767	-0.17	0.8662
k12_date		-0.06574948	0.2929747	-0.22	0.8224
Insul_Seal_date		-1.68582223	6.2833457	-0.27	0.7885
Free_CFL		0.27569834	0.0981067	2.81	0.0050
cfl_promo		1.56743195	5.1477852	0.30	0.7608
cfl_special		-0.19005964	1.3100903	-0.15	0.8847
HEHC		0.85054143	0.5368744	1.58	0.1131
lowinc_weath		2.41266070	1.4140526	1.71	0.0880
PER_OHEC		-0.73461637	0.5426533	-1.35	0.1758
SmSvr_HVAC		0.37324155	1.3090581	0.29	0.7756
Appl_Recycle		-0.14340946	0.8868349	-0.16	0.8715
Property_Mgr		-0.62212566	0.1640377	-3.79	0.0001
MyHER		-0.35044884	0.1004404	-3.49	0.0005
part		-1.07687179	0.1173765	-9.17	<.0001

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Appendix C: Engineering Algorithms

CFLs

General Algorithm

Gross Summer Coincident Demand Savings

$$\Delta kW = ISR \times units \times \left[\frac{Watts_{base} - Watts_{ee}}{1000}\right] \times CF \times WHF_d$$

Gross Annual Energy Savings

$$\Delta kWh = ISR \times units \times \left[\frac{(Watts \times HOURS)_{base} - (Watts \times HOURS)_{ee}}{1000}\right] \times 365 \times WHFe$$

where:

ΔkW = gross coincident demand savings
ΔkWh = gross annual energy savings
units = number of units installed under the program
$Watts_{ee}$ = connected load of energy-efficient lamp = 15.8
$Watts_{base}$ = connected load of baseline lamp
HOURS = Average daily hours of use
CF = coincidence factor = 0.081
WHFe = Waste heat factor for annual electricity consumption = 0.963
WHFd = Waste heat factor for demand = 1.169

The coincidence factor for this analysis was taken from Duke Energy's residential lighting logger study performed in the Carolinas with participants from the 2012 CFL campaigns.

The waste heat factor for annual energy consumption depends on the HVAC system, heating fuel type, and location. The waste heat factors for annual energy consumption were taken from DOE-2 simulations of the residential prototype building described at the end of this Appendix. The weights were determined through appliance saturation data from the Home Profile Database supplied by Duke Energy.

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Charlotte, NC

Heating Fuel	Heating System	Cooling System	Weight	WHFe
Other	Any except Heat Pump	Any except Heat Pump	0.0042	1.069
		None	0.0004	0
Any	Heat Pump	Heat Pump	0.2782	0.9
Gas Propane Oil	Central Furnace	None	0.0067	0
		Room/Window	0.5508	1.069
		Central AC		1.069
Electricity	Electric baseboard/ central furnace	None	0.0030	0.57
		Room/Window	0.1493	0.69
		Central AC		0.69
None	None	Any	0.0074	1
Total Weighted Average			1	0.963

The waste heat factor for demand depends on the cooling system type. The HVAC interaction factors for summer peak demand were taken from DOE-2 simulations of the residential prototype building described at the end of this Appendix.

Charlotte, NC

Cooling System	Weight	WHFd
None	0.0074	0
All other	0.9926	0.170
Total Weighted Average		0.169

Air Sealing – Reduce Infiltration Measures

Gross Summer Coincident Demand Savings

$\Delta kW_S = units \times (\Delta cfm/unit) \times (kW / cfm) \times DF_S \times CF_S$

Gross Annual Energy Savings

$\Delta kWh = units \times (\Delta cfm/unit) \times (kWh / cfm)$

$\Delta therm = units \times (\Delta cfm / unit) \times (therm / cfm)$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
units	= number of buildings sealed under the program
Δcfm/unit	= unit infiltration airflow rate (ft^3/min) reduction for each measure
DF	= demand diversity factor = 0.8
CF	= coincidence factor = 1.0
kW/cfm	= demand savings per unit cfm reduction
kWh/cfm	= electricity savings per unit cfm reduction
therm/cfm	= gas savings per unit cfm reduction

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Unit cfm savings per measure

The cfm reductions for each measure were estimated from equivalent leakage area (ELA) change data taken from the ASHRAE Handbook of Fundamentals (ASHRAE, 2001). The equivalent leakage area changes were converted to infiltration rate changes using the Sherman-Grimsrud equation:

$$Q = ELA \times \sqrt{A \times \Delta T + B \times v^2}$$

where:

A	= stack coefficient ($ft^3/min\text{-}in^{4}\text{-}°F$) = 0.015 for one-story house
ΔT	= average indoor/outdoor temperature difference over the time interval of interest (°F)
B	= wind coefficient ($ft^3/min\text{-}in^{4}\text{-}mph^2$) = 0.0065 (moderate shielding)
v	= average wind speed over the time interval of interest measured at a local weather station at a height of 20 ft (mph)

The location specific data are shown below:

Location	Average outdoor temp	Average indoor/outdoor temp difference	Average wind speed (mph)	Specific infiltration rate (cfm/in^2)
Charlotte	60	8	6.9	1.57

Measure ELA impact and cfm reductions are as follows:

Measure	Unit	ELA change (in^2/unit)	ΔCfm/unit
Weather stripping	Linear foot	0.089	0.058
Caulking	linear foot	0.047	0.031
Door Sweeps	each	0.3	0.197
Foam Insulation Spray	sink	0.6	0.392

Unit energy and demand savings

The energy and peak demand impacts of reducing infiltration rates were calculated from infiltration rate parametric studies conducted using the DOE-2 residential building prototype models, as described at the end of this Appendix. The savings per cfm reduction by heating and cooling system type are shown below. These data were weighted according to the HVAC system type weights shown above.

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Heating Fuel	Heating System	Cooling System	kWh/cfm	kW/cfm	therm/cfm
Other	Any except Heat Pump	Any except Heat Pump	2.48	0.00248	0
Any	Heat Pump	Heat Pump	10.37	0.00248	0
Gas Propane Oil	Central Furnace	None	0	0	0.0743
		Room/Window	2.48	0.00248	0.0743
		Central AC	2.48	0.00248	0.0743
	Other	None	0	0	0.0743
		Room/Window	2.48	0.00248	0.0743
		Central AC	2.48	0.00248	0.0743
Electricity	Central furnace	None	17.01	0.00990	0.000
		Room/Window	18.54	0.01485	0.000
		Central AC	18.54	0.01485	0.000
	Electric baseboard	None	17.01	0.00990	0.000
		Room/Window	18.54	0.01485	0.000
		Central AC	18.54	0.01485	0.000
	Other	None	17.01	0.00990	0.000
		Room/Window	18.54	0.01485	0.000
		Central AC	18.54	0.01485	0.000
Total Weighted Average			7.21	0.00439	0.0414

Low-Flow Showerhead

Gross Summer Coincident Demand Savings

$$\Delta kW_S = units \times ISR \times \%Elec \times \frac{(GPD_{base} - GPD_{ee}) \times 8.33 \times \overline{\Delta T}}{3412 \times 24 \times RE} \times DF_x \times CF_s$$

Gross Annual Energy Savings

$$\Delta kWh = \boldsymbol{units} \times ISR \times \%Elec \times \frac{(GPD_{base} - GPD_{ee}) \times 8.33 \times \overline{\Delta T}}{3412 \times RE} \times 365$$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
units	= number of units installed under the program
GPD_{base}	= daily hot water consumption before installation
GPD_{ee}	= daily hot water consumption after flow reducing measure installation
ΔT	= average difference between entering cold water temperature and the shower use temperature
RE	= water heater recovery efficiency (0.98)
DF	= demand diversity factor for electric water heating

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CF	= coincidence factor
8.33	= conversion factor (Btu/gal-°F)
3412	= conversion factor (Btu/kWh)
24	= conversion factor (hr/day)
365	= conversion factor (days/yr)
100000	= conversion factor (Btu/therm)

Showerhead

GPD_{base} = showers/week / 7 x 2.87 gpm x 5 minutes/shower

GPD_{ee} = showers/week / 7 x 1.75 gpm x 5 minutes/shower

Showers/wk = 10.9 per showerhead (from survey data)

ΔT

City	Average cold water temperature	Shower use temperature	Average ΔT
Charlotte	60.3 °F	100°F	39.7°F

Demand diversity factor = 0.1

Coincidence factor = 0.4

The diversity and coincidence factors were taken from *Engineering Methods for Estimating the Impacts of DSM Programs, Volume 2* (EPRI, 1993). These values are typical for the residential water heating end-use in a summer peaking utility.

Faucet Aerators

ΔkWH = ISR * ((((GPMbase - GPMlow) / GPMbase) * # people * gals/day * days/year * DR) / F/home) * 8.3 * (Tft - Tmains) / 1,000,000) / DHW Recovery Efficiency / 0.003412

Where:

ISR = In Service Rate or fraction of units that get installed
GPMbase = Gallons Per Minute of baseline faucet = 2.2
GPMlow = Gallons Per Minute of low flow faucet = 1.5
# people = Average number of people per household = 2.46
gals/day = Average gallons per day used by all faucets in home = 10.9
days/y = Days faucet used per year = 365
DR = Percentage of water flowing down drain (if water is collected in a sink, a faucet aerator will not result in any saved water) = 50%
F/home = Average number of faucets in the home = 3.5
8.3 = Constant to convert gallons to lbs

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Tft = Assumed temperature of water used by faucet = 80
Tmains = Assumed temperature of water entering house = 60.3
DHW Recovery Efficiency = Recovery efficiency of electric hot water heater = 0.98
0.003412 = Constant to converts MMBtu to kWh

ΔkW = ΔkWh/hours * CF

Where:
Hours = Average number of hours per year spent using faucet
= (Gal/person * # people * 365) / F/home / GPM / 60
= (10.9 * 2.46 * 365) / 3.5 / 2.2 / 60
= 21 hours
CF = Summer Peak Coincidence Factor for measure = 0.00262

Hot Water Pipe Wrap

For electric DHW systems:

ΔkWh = ((1/Rexist – 1/Rnew) * (L * C) * ΔT * 8,760)/ ηDHW / 3413

Where:
Rexist = Pipe heat loss coefficient of uninsulated pipe (existing) (Btu/hr-°F-ft) = 1.0
Rnew = Pipe heat loss coefficient of insulated pipe (new) (Btu/hr-°F-ft) = 5
L = Length of pipe from water heating source covered by pipe wrap (ft)
C = Circumference of pipe (ft) (Diameter (in) * π * 0.083) = 0.196ft
ΔT = Average temperature difference between supplied water and outside air temperature (°F) = 60°F
8,760 = Hours per year
ηDHW = Recovery efficiency of electric hot water heater = 0.98
3413 = Conversion from Btu to kWh

ΔkW = ΔkWh/8760

Where:
ΔkWh = kWh savings from pipe wrap installation
8760 = Number of hours in a year (since savings are assumed to be constant over year).

Water Heater Tank Wrap and Temperature Turn-Down

$$\Delta kWh = units \times \frac{(UA_{base} - UA_{ee}) \times \overline{\Delta T}}{3413 \times \eta_{elec}} \times 8760$$

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$\Delta kW = \Delta kWh/8760$

Where:

ΔkW = gross coincident peak demand savings
ΔkWh = gross annual electricity savings
units = number of water heaters installed under the program
UAbase= overall heat transfer coefficient of base water heater (Btu/hr-°F) = 4.1
UAee= overall heat transfer coefficient of improved water heater (Btu/hr-°F) = 3.3
ΔT = temperature difference between the water inside the tank and the ambient air (°F) = 60
3413 = conversion factor (Btu/kWh)
8760 = conversion factor (hr/yr)
$\eta elec$= electric water heater recovery efficiency = 0.98

Tank heat loss coefficients estimated from the energy factor:

$$UA = \frac{\frac{1}{EF} - \frac{1}{RE}}{67.5 \times \left(0.000584 - \frac{1}{RE \times Cap}\right)}$$

where: Cap = tank element heat output =15,400 Btu/hr

The EF for uninsulated (0.86) and insulated (0.88) tanks were taken from the Draft Ohio TRM.

Prototypical Building Model Description

The impact analysis for many of the HVAC related measures are based on DOE-2.2 simulations of a set of prototypical residential buildings. The prototypical simulation models were derived from the residential building prototypes used in the California Database for Energy Efficiency Resources (DEER) study (Itron, 2005), with adjustments make for local building practices and climate. The prototype "model" in fact contains 4 separate residential buildings; 2 one-story and 2 two-story buildings. The each version of the 1 story and 2 story buildings are identical except for the orientation, which is shifted by 90 degrees. The selection of these 4 buildings is designed to give a reasonable average response of buildings of different design and orientation to the impact of energy efficiency measures. A sketch of the residential prototype buildings is shown in Figure 9.

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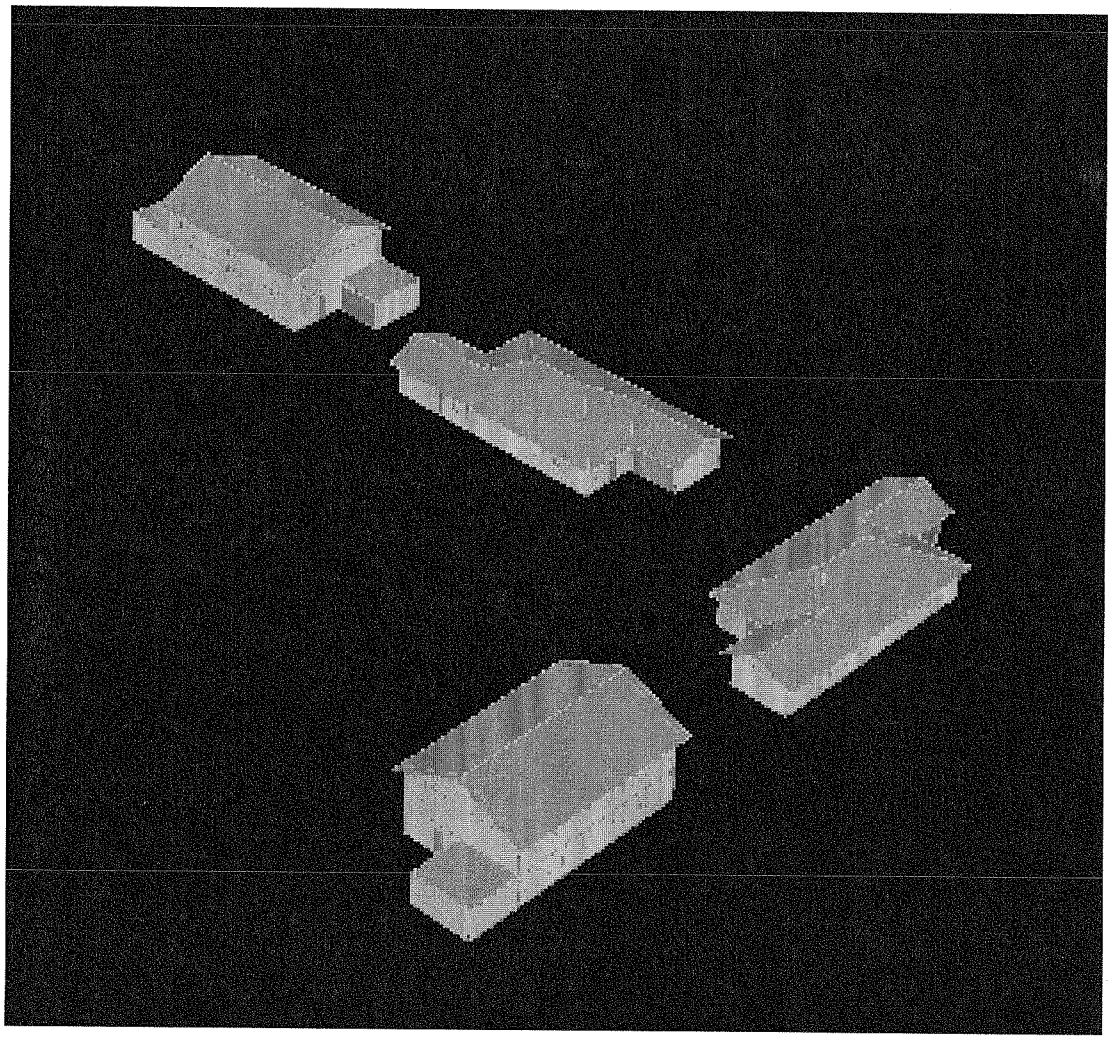

Figure 9. Computer Rendering of Residential Building Prototype Model

The general characteristics of the residential building prototype model are summarized below:

Residential Building Prototype Description

Characteristic	Value
Conditioned floor area	1 story house: 1465 SF 2 story house: 2930 SF
Wall construction and R-value	Wood frame with siding, R-11
Roof construction and R-value	Wood frame with asphalt shingles, R-19
Glazing type	Single pane clear
Lighting and appliance power density	0.51 W/SF average
HVAC system type	Packaged single zone AC or heat pump
HVAC system size	Based on peak load with 20% oversizing. Average 640 SF/ton
HVAC system efficiency	SEER = 8.5
Thermostat setpoints	Heating: 70°F with setback to 60°F Cooling: 75°F with setup to 80°F

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Characteristic	Value
Duct location	Attic (unconditioned space)
Duct surface area	Single story house: 390 SF supply, 72 SF return Two story house: 505 SF supply, 290 SF return
Duct insulation	Uninsulated
Duct leakage	26%; evenly distributed between supply and return
Cooling season	Charlotte – April 17th to October 6th
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 3 air changes per hour

References

Itron, 2005. "2004-2005 Database for Energy Efficiency Resources (DEER) Update Study, Final Report," Itron, Inc., J.J. Hirsch and Associates, Synergy Consulting, and Quantum Consulting. December, 2005. Available at http://eega.cpuc.ca.gov/deer

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Appendix D: Memo: Low Income Programs and Freeridership

TecMarket Business Center
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Oregon, WI 53575

Memorandum

To: Roshena Ham, Duke Energy
From: Nick Hall, David Ladd, TecMarket Works, and Matthew Joyce
Date: January 15, 2014
Subject: Low Income Programs and Freeridership

On October 29, 2013, the North Carolina Public Utility Commission issued an order approving Duke Energy's Rider filing. Ordering Paragraph 8 of this order states:

> *That in future EM&V studies, DEC shall either specifically assess free ridership of low-income programs and incorporate the findings from participant surveys into the Company's free ridership calculations or shall provide justification showing that such assessment is unnecessary or that using a specific proxy for a free ridership estimate is reasonable.*[43]

This memorandum addresses that statement as follows.

Typically, low income evaluation studies have indicated that program participation by people near 150% of federal poverty thresholds have zero to very low freeridership levels. Studies have found that low-income households do not typically invest in energy-efficient measures on their own, but tend to acquire them via utility programs, social programs, low-income support efforts, and promotional giveaways. The higher price of consumable measures (such as CFLs versus incandescent bulbs), and the capital investment required for home improvements such as high efficiency HVAC and other equipment upgrades, represents a significant cost barrier for low income populations. Occasionally these economic realities appear to be at odds with freeridership survey data.

Within the field of survey research there is the concept of socially acceptable response bias in which people respond to questions regarding their behavior in a way that reflects what they think is the socially correct answer. This concept applies to market segments

[43] Order approving DSM/EE Rider and Requiring Filing of Proposed Customer Notice, filed October 29, 2013, in *Application Approval of Demand Side Management and Energy Efficient Cost Recovery Rider*, Docket Number E-7 Sub 1031.

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differently. For example, the low-income sector does not want to be seen as being unable to do the "correct" behavior, so they respond that they would have done that "correct" behavior even when they do not have the resources to undertake that behavior. This is the reason why we sometimes see freerider scores within market sectors that do not have the financial capability to take a more costly action, but still report that they would have taken that action in the absence of the program. The degree of this false response bias is not known, however the concept, especially within the low-income sector responding to questions about what they perceive as socially acceptable behavior, is widely held with the social research community.

As a result, the NTG ratio used within the energy program evaluation community for low-income programs is typically set in both policy decisions and supported in evaluation findings at around 1.0, representing few freeriders associated with utility-sponsored programs. Historically the net-to-gross ratio of 1.0 has been applied to numerous low income program evaluations. For example, the table below lists examples from thirteen evaluation reports, policy documents, evaluation plans, annual reports, conference papers, commission hearings and Public Utility Commission case documents of the past ten years covering multiple states and jurisdictions.

A list of references for these documents follows the table, including URLs for documents currently available online.

The review of the research conducted on this topic as summarized below (with findings highlighted), provides sufficient justification that evaluations for utility energy efficiency programs, including Duke Energy's, continue the use of a 0% freeridership rates for low-income programs.

State and Year	Document	Low Income NTG policy/approach
Pennsylvania 2012	Evaluation Framework 2013	• Quote: *"[The] Commission recognizes that the calculation of NTG ratios is inexact at best. 'Free riders' are difficult and expensive to calculate, but even more difficult and costly to calculate is 'spillover'."*[67] *The PA PUC believes that, based on published studies, these two effects often come close to offsetting each other and result in a NTG ratio close to 1.0.*[68] [See TecMarket Works comment in bullet below] *Due to the substantial additional costs to calculate "freeriders" and "spillover," the PA PUC questions whether it is cost-effective to use ratepayer funds for these analyses, only to find that the NTG ratio is close to 1.0. No stakeholders have provided evidence to the contrary, so the PA PUC will continue to mandate that the EDCs calculate the NTG ratio as they did for Phase I."*[69] *Footnote text:* [69] *"Pennsylvania Public Utility Commission, Energy Efficiency and Conservation Program Implementation Order, at page 83, at Docket No M-2012-2289411, (Phase II Implementation Order), entered August 3, 2012."* p. 59 • TecMarket Works comment: Without counting the additional market effects induced energy savings.
Pennsylvania	PPL Annual	• Summary: Net to Gross ratio set to 1.0 for Low-Income WRAP

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State and Year	Document	Low Income NTG policy/approach
2010	Report	program. p. 9 • Quote: *"There is no free-ridership in this low income weatherization program. Measures are installed at no cost to these income eligible customers. In addition, no adjustments were made to compute savings net of freeridership for the Act 129 programs. Until directed otherwise by the SWE, the EM&V CSP will collect data and report the information for program process improvements only."* p. 58
New York 2007-2008	Evaluation Plan 2013	• Quote: *"The primary method of estimating program impacts for 2007-2008 CY participants was a full billing analysis. Impact evaluations of low income programs often exclude evaluation of Net-to-Gross (NTG) under the presumption that free ridership and spillover effects are small and offset each other. The prior evaluation's pilot NTG study found that for EmPower the factors virtually offset each other and recommended a NTG rate of 1.0. Therefore, a NTG assessment is excluded from the first cycle evaluation scope."* p. 8-9. • TecMarket Works comment: At this time there are no recommendations or considerations being contemplated by the NY Commission to change the 1.0 NTG assumption. (Mr. Hall is the lead advisor to the NY Commission on evaluation research approaches and lead evaluation manager for the development of NY evaluation protocols and technical manuals providing policy oversight to all evaluation contactors conducting studies in NY.)
New York 2007-2008	Impact Evaluation Report	• Quote: *"For EmPower, as is the case for many low income efficiency retrofit programs, the assumption has been that the net-to-gross ratio (NTGR) is 1.0, that is, that the program does not have free riders or spillover. A pilot net-to-gross (NTG) study was conducted to assess the validity of this assumption. The pilot effort indicates that both free ridership and spillover occur within the low income population. The NTG approach was consistent with the methods used in the evaluation of other NYSERDA programs, and the results indicate a free rider rate of 17% and spillover of 14%, for a combined NTG of 0.97. The program savings were not adjusted by the NTG ratio since this initial study was designed as a pilot. In addition, the NTG ratio of 0.97 is extremely close to the value of 1.00 currently in use."* Executive Summary p. 2 • Quote: *"The pilot study of net effects clearly demonstrated that there are net effects associated with the Empower Program. With an estimated FR rate of 17% and spillover of 14%, the overall NTGR is 0.97, which is very close to the current estimate of 1.00. Since this was a pilot effort and the result was so close to 1.00, the evaluated gross savings are reported for the Program without any adjustments for net effects. However, this study reflects the results for program years 2007 and 2008, and it is possible that the magnitude of the net effects may change in the future."* Executive Summary p. 9 • Quote: *"The 2007-2008 CY evaluation concluded the share of savings from large multi-family buildings did not warrant a separate NTG analysis at that time." Footnote text: "The pilot NTG evaluation undertaken as part of the CY 2007-2008 evaluation found a NTG ratio of approximately 1.0. A NTG of 1.0*

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State and Year	Document	Low Income NTG policy/approach
		is a common assumption for low income evaluations." p. 9 footnote
Michigan 2012	Utilities Commission Hearing	• *Quote: "Consumers Energy also proposes to maintain the 1.0 NTG ratio for its pilot, low income, and educational programs." (Proposal approved by Public Services Commission) p. 4*
Wyoming 2011	Impact Evaluation Report	• Quote: *"Low-income programs generally experience no freeridership or spillover; consequently net program savings equal gross program savings."* p. 2-4
Nevada 2009	Nevada Power Integrated Resource Plan 2010 to 2029	• Summary: Freeridership rates for Low Income Weatherization NPC NTGRs = 0.0% Table 49: Demand Side Plan p. 95 • Quote: *"The Commission order in Docket No. 06-08020, refer to stipulation, paragraph 4, the order stated that "freeridership or spillover do not need to be considered in the financial analysis of the low-income programs. Net-to-Gross Ratio of 100% has been used in the economic evaluation of this program."* Section C, p. 15
Maine 2007	Impact Evaluation Report	• Quote: *"Freeridership, defined as program purchases that participants claim they would have made on their own in the absence of the program, was assumed to be zero because the refrigerators and CFLs were provided free of charge."* p. 83
Ontario 2005	Ontario Energy Board Case Document	• Quote: *"Therefore the rule of thumb estimate for programs specifically targeted at low income customers ought to be zero."* p. 9
General 2011	IEPEC conference poster	• Quote: *"Freeridership is not usually considered to be an important issue in the evaluation of low - income efficiency programs, as participants in these programs rarely undertake energy efficiency improvements in the absence of the program."* p. 3
Wisconsin 2009-2010	IEPEC conference paper	• Summary: *All energy savings from large multifamily building direct-install weatherization programs including low-income are due to the intervention of the EE program.* (see discussion on p. 2-4)

References:

1. *"State of North Carolina Utilities Commission Docket No. E-7, Sub 2031: In the Matter of Application of Duke Energy Carolinas, LLC for Approval of Demand-Side Management and Energy Efficiency Cost Recovery Rider", June 4, 2013, page 21.*
2. *Statewide Evaluation Team (GDS Associates, Nexant, Research Into Action, Apex Analytics), "Evaluation Framework for Pennsylvania Act 129 Phase II Energy Efficiency and Conservation Programs", Public Utilities Commission, Pennsylvania, 2013, page 59. http://www.puc.pa.gov/Electric/pdf/Act129/SWE_PhaseII-Evaluation_Framework063013.pdf*
3. *PPL Electric and The Cadmus Group, "Annual Report to the Pennsylvania Public Utility Commission for the period ending May 2010 Program Year 1", Public Utilities Commission, Pennsylvania, 2010, pages 9, 58. https://www.pplelectric.com/save-energy-and-money/~/media/PPLElectric/Shared%20Content/master-pages/act-129/Docs/energy_efficiency/PY1_AnnualReport_Final_091410.pdf*
4. *NYSERDA, "EmPower Program Final Detailed Evaluation Plan", March 28, 2013, pages 8-9.*
5. *Medgal & Associates for NYSERDA, "2007-2008 Empower New York Program Impact Report", April 2012, pages ES-2, ES-9.*

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6. *"State of Michigan Public Services Commission Case No. U-16670: In the Matter of the Application of Consumers Energy Company to Amend Its Energy Optimization Plan", November 7, 2012, page 4. http://efile.mpsc.state.mi.us/efile/docs/17138/0009.pdf*

7. *The Cadmus Group for Rocky Mountain Power Wyoming "Low-Income Weatherization Program Evaluation", October 18, 2011, page 11. http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/DSM_WY_LowIncome_Weath_2011.pdf*

8. *Nevada Power, "Triennial Integrated Resource Plan 2010-2029: Demand Side Plan, Vol. 5 Book 1", 2009, Table 49: Demand Side Plan page 95 and Section C page 15. http://www.swenergy.org/news/news/documents/file/2009-07-NV_Power_DSM_Plan_01.pdf*

9. *Nexus Market Research and RLW Analytics for Efficiency Maine, "Process and Impact Evaluation of the Low Income Appliance Replacement Program", December 21, 2007, page 83.*

10. *Indeco Strategic Consulting for Ontario Energy Board, "CDM Free Riders and Attribution Benefits", 2005, page 9. http://www.ontarioenergyboard.ca/documents/cases/EB-2005-0523/honi_submission_tabd_211205.pdf*

11. *Jacqueline Berger of APPRISE (Applied Public Policy Research Institute for Study and Evaluation), "Evaluating Low - Income Energy Efficiency Programs" Poster Summary, presented at IEPEC 2011 conference, Boston, page 3. http://www.iepec.org/conf-docs/papers/2011PapersTOC/papers/141.pdf#page=1*

12. *Don Hynek, Barbara Smith and Megan Levy of Wisconsin Division of Energy Services, "The Great White Whale in Weatherization: A Large Multifamily Building Program" presented at the 2011 IEPEC conference, Boston, pages 2-4. http://www.iepec.org/conf-docs/papers/2011PapersTOC/papers/007.pdf*

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Appendix E: Management Interview Instrument

We are conducting this interview to obtain your opinions about and experiences with the Residential Neighborhood program. We'll talk about the Residential Neighborhood program and its objectives, your thoughts on improving the program, and the technologies the program covers. The purpose of this study is to capture the program's current operations as well as help identify areas where the program might be improved. Your responses will feed into a report that will be shared with Duke Energy and the state regulatory agency. I want to assure you that the information you share with me will be kept confidential; we will not identify you by name. However, you may provide some information or opinions that could be attributed to you by virtue of your position and role in this program. If there is sensitive information you wish to share, please warn us and we can discuss how best to include that information in the report.

The interview will take about an hour to complete. Do you have any questions for me before we begin?

Program Background and Objectives

1. Please describe your role and scope of responsibility in detail.
2. How long have you been involved with the program?
3. (PM only) Describe the evolution of the Program. Why was the program created, and has the program changed since it was it first started?
4. Have there been any recent changes been made to your duties since you started?
    a. If YES, please tell us what changes were made and why they were made. What are the results of the change?
5. In your own words, please describe the Program's objectives. (e.g. enrollment, energy savings, non-energy benefits)
6. Can you please walk me through the program's implementation, starting with how the program is marketed and how you target your customers, through how the customer participates?
    a. Marketing/Targeting: How & Who
    b. Enrollment/Participation
7. Of the program objectives you mentioned earlier, do you feel any of them will be particularly easy to meet, and why?
8. Which program objectives, if any, do you feel will be relatively difficult to meet, and why?

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9. Are there any objectives you feel should be revised prior to the end of this program cycle? If yes, why?

Vendors

10. Do you use any vendors or contractors to help implement the program?
    a. What responsibilities do they have?
    b. Are there any areas in which think they can improve their services?
11. *(If not captured earlier)* Please explain how activities of the program's vendors, customers and Duke Energy are coordinated.
    a. Do you think methods for coordination should be changed in any way? If so, how and why?

Measures/Incentives

12. Describe your quality control and process for tracking participants, shipments, and other program data.
13. Do you believe that the program currently offers the right energy efficient products to meet your customers' needs?
    a. If not, what products would you like to add?
14. Is the program offering enough of an incentive to motivate your customers to participate?
    a. If not, what do you think should be changed, and why?

Vendor Staff Training

15. Describe any program orientation training and development approach you use for the Program.
    a. How do you ensure that staff are getting adequate program training and updated program information?
    b. Can we obtain training materials that are being used?
16. Do you have any suggestions for improving their effectiveness?

Improvements

17. Are you currently considering any changes to the program's design or implementation?
    a. What are the changes?

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b. What is the process for deciding whether or not to make these changes?

18. Do you have suggestions for improvements to the program that would increase participation rates, or is Duke Energy happy with the current level of participation?

19. Do you have suggestions for increasing energy impacts *per participant*, given the same participation rates, or is Duke Energy happy with the current per participant impact?

20. Overall, what would you say about the program is working really well?

    a. Is there anything in this program you could highlight as a best practice that other utilities might like to adopt?

21. What area needs the most improvement, if any?

    a. (If not mentioned before) What would you suggest can be done to improve this?

22. Are there any other issues or topics we haven't discussed that you feel should be included in this report?

23. Do you have any further questions for me about this study or anything else?

24. Thank you!

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Appendix F: Participant Survey Instrument

Surveyor Name*

_____

Survey ID*

_____

State*
( ) Kentucky
( ) Ohio
( ) North Carolina
( ) South Carolina

Measures*
You must enter a number for each measure.
If you enter 0, no questions will be asked of that measure

	number
A. AC/Heat Filters Year Supply AND/OR Change Filter Calendar	_____
B. Aerators	_____
C. Caulking Doors	_____
D. Caulking Windows	_____
E. Clear Glass Patch Tape	_____
F. CFL, 13 Watt	_____
G. CFL, 18	_____

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Watt	
H. Door Sweeps	
I. Foam Insulation Spray	
J. HVAC Winter Kit for Wall/Window Unit	
K. Low-flow Showerheads	
L. Switch Plate Wall Thermometer	
M. Vinyl Weather Stripping All HVAC Window Units	
N. Vinyl Weather Stripping Doors	
O. Water Heater Pipe Wrap	
P. Water Heater Tank Insulation Wrap	
Q. Water	

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Heater Temperature Adjustment	

Complete ALL of the above information fields BEFORE calling each customer. The numbers above will be used to determine which questions are asked and imported into some questions.

Hello, my name is _____. I am calling from TecMarket Works on behalf of Duke Energy to conduct a customer survey about the Residential Neighborhood Program. May I speak with _____ please?

If person talking, proceed. If person is called to the phone reintroduce.

If not home, ask when would be a good time to call and schedule the call-back:
Interviewer: if the customer you are calling has only a small number of measures installed, tell them the survey will take "about 30 minutes". If they have a larger than average number of measures, tell them the survey will take "45 minutes to an hour". If they have an average/moderate number of measures, then tell them "about 45 minutes" as written below.

We are conducting this survey to obtain your opinions about the Residential Neighborhood Program in which your household participated. We are not selling anything. If you complete the survey, we will send you a $25 check for your time. The survey will take about 45 minutes, sometimes less. Your answers will be confidential, and will help us to make improvements to the program to better serve others. May we begin the survey?

for answering machine 1st through penultimate attempts:
Hello, my name is [full name] and I am calling from TecMarket Works on behalf of Duke Energy to conduct a customer survey regarding the Residential Neighborhood Program. This program provided free energy assessments and installed energy-saving improvements in your home. I am sorry I missed you. I will try again another time.

for answering machine - Final Attempt:
Hello, my name is [name] and I am calling from TecMarket Works on behalf of Duke Energy to conduct a customer survey regarding the Residential Neighborhood Program. This program provided free energy assessments and installed energy-saving improvements in your home. This is my last attempt at reaching you, my apologies for any inconvenience.

0. Do you still live at [*address from calling sheet*] ?*
( ) Yes
( ) No or DK/NS

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1. Do you recall participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

2. **This program was provided through Duke Energy and provided residents in your area with free home energy assessments and, if needed, the free installation of energy-saving home improvements such as insulation, weather stripping, light bulbs, faucet aerators and showerheads. Do you remember participating in this program?** *
( ) Yes
( ) No
( ) DK/NS

If No or DK/NS terminate interview and go to next participant.
Click NEXT below to record this disqualification.

3. How did you first learn about, or hear about, Duke Energy's Residential Neighborhood Program?*
(Check all that apply)
[ ] Received a letter or postcard in the mail describing the program
3a. Who sent the letter or postcard?:
_____ *
[ ] Received a "door hanger" describing the program
3b. Who left the door hanger?: _____ *
[ ] Attended a community event promoting the program
[ ] Someone visited my home to tell me about the program
3c. What organization was this person from?:
_____ *
[ ] Someone from Duke Energy called to tell me about the program
[ ] Someone else called to tell me about the program
3d. *Specify person/organization*: _____ *
[ ] I called Duke Energy for information or help
[ ] I called someone else for information or help
3e. *Specify person/organization*: _____ *
[ ] Friends, family, or neighbors (word-of-mouth)
[ ] Media (TV, radio, newspapers, news reports, advertising, etc.)
3f. *Specify sources*: _____ *
[ ] Online (Duke Energy or any other websites)
3g. *Specify sites*: _____ *
[ ] Through another agency or organization (Church, CAP, Energy Assistance, etc.)
3h. *Specify organizations*: _____ *
[ ] Some other way
3i. *Specify*: _____ *
[ ] DK/NS

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4. What was the main reason you choose to participate in the Residential Neighborhood Program?*

(do not read list, check one response)

( ) To save money on utility bills
( ) To save energy in my home
( ) To help the environment / "green" reasons
( ) Friends/neighbors/family encouraged me
( ) To obtain weatherization services or home repairs
( ) To make home more comfortable
( ) For the education and information provided
( ) For the home energy assessment / audit
( ) For the energy efficiency measures
( ) Past experience with another energy efficiency program
Specify program and sponsor: _____*
( ) Because it was free
( ) Because it was from Duke Energy
( ) Other: _____*
( ) DK/NS

4a. Were there any other reasons you chose to participate in this program?*

Repeat up to three times or until 'no other reasons' response.

[ ] No other reason
[ ] To save money on utility bills
[ ] To save energy in my home
[ ] To help the environment / "green" reasons
[ ] Friends/neighbors/family encouraged me
[ ] To obtain weatherization services or home repairs
[ ] To make home more comfortable
[ ] For the education and information provided
[ ] For the home energy assessment / audit
[ ] For the energy efficiency measures
[ ] Past experience with another energy efficiency program
Specify program and sponsor: _____*
[ ] Because it was free
[ ] Because it was from Duke Energy
[ ] Other: _____*
[ ] DK/NS

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5. We are interested in learning what people understood about how the program operated. Please describe what you understood was required of you as a participant in the program and what you would receive in return for your participation.*
(probe for details and fill in responses below)

_____
_____
_____
_____

Details on Energy Efficiency Items Installed: Only ask questions about the measures that were installed in the respondent's home (see page 1 of survey).

Now I'd like to talk about the energy efficiency items that you received for participating in this program.

CFLs

17. I'd like to talk about the compact fluorescent light bulbs, also called CFLs, which you received from this program. Our records indicate that you received [question("value"), id="556"] 13-watt CFLs and [question("value"), id="557"] 18-watt CFLs, is this correct?*
( ) Yes
( ) No
( ) DK/NS

if no, ask
*enter zero "0" for DK/NS, but try to get at least a minimum number.**

	number
17a. How many 13-watt CFLs did you receive?	_____ ____
17a. How many 18-watt CFLs did you receive?	_____ ____

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18. Next I am going to read six statements. Please tell me which best describes the installation of the CFL light bulbs that were provided to you by this program*
(READ BOLDFACE RESPONSES)
( ) Did not receive any CFLs
( ) The auditor installed all of the bulbs and did not leave any extras.
( ) The auditor installed some of the bulbs and left some more bulbs, which I installed myself.
( ) The auditor installed some of the bulbs and left some extras, which have not been installed.
( ) The auditor gave me bulbs and I installed all of them myself.
( ) The auditor gave me bulbs and I installed some of them myself, and also have some left over.
( ) The auditor gave me bulbs and I have not installed any of them yet.
( ) DK/NS

If participant did not receive CFLs, skip to next measure.

If uninstalled CFLs remain, ask q19 and subsequent questions about uninstalled bulbs.

19a. How many 13-watt CFLs do you have which have not been installed yet?:*
( ) 0
( ) 1 or more *Specify number:* : _____*
( ) DK/NS

19b. How many 18-watt CFLs do you have which have not been installed yet?:*
( ) 0
( ) 1 or more *Specify number:* : _____*
( ) DK/NS

Continue with Q20a-Q20g only if they have one or more spare bulbs in q19a or Q19b; otherwise skip ahead to Q21.

20a. What have you done with the remaining CFLs that were not installed?*
(check all that apply)
[ ] Put them in storage / closet / shelf
[ ] Gave them away
[ ] Threw them out / Recycled them
[ ] Other *specify what was done and to how many bulbs*:
_____*
[ ] DK/NS

*If "Gave them away", ask Q20b-c:**
20b. You said you gave away some of the bulbs. To whom did you give them?:
_____

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20c. How many did you give away?:

_____

If "threw out / recycled", ask:
20d. How many bulbs did you throw away or recycle?*

_____

If "put them in storage", ask:
20e. How many bulbs that you received from this program do you currently have stored for future use?*

_____

20f. Do you plan on eventually installing and using all of the free CFLs that you were provided through this program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "yes", skip ahead to q20i

If "no" to Q20f, ask Q20g and then SKIP AHEAD TO Q21:

20g. Why not?*

_____
_____
_____
_____

If "maybe" or "DK/NS" to Q20f, ask:
20h. Why are you not sure you will use them all?*

_____
_____
_____
_____

If "Yes, maybe or DKNS" in Q20f

20i. How long do you think it will be before you will have installed all of the free bulbs you received from the Duke Energy program?*
( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years

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( ) Never
( ) DK/NS

q21. 1st Installed Bulb[44]

INTERVIEWER: record answers for up to three CFLs installed by the program; if they installed fewer than three CFLs, ask about one or two bulbs as appropriate.

Now I'm going to ask you about three of the bulbs you put into light fixtures...
1stInstalled Bulb - 18 watt
21. For the first CFL, please tell me about one of the 18-watt bulbs that was installed; that is, the brighter, higher-wattage bulbs that were installed. In which room was this bulb installed?*
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Bedroom 2
( ) Bedroom 3 or other bedroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Bathroom
( ) Other: _____*

21a. Are you sure this bulb that was installed by the Residential Neighborhood Program was an 18-watt bulb?*
( ) Yes, it is an 18-watt bulb
( ) No, it is a 13-watt bulb
( ) DK/NS

If "No, it is a 13-watt bulb ", ask them to pick an 18-watt bulb and go back to Q21; if they cannot, then check "No, it is a 13-watt bulb" and continue

If "DK/NS (don't know/not sure)", ask them if there are any installed bulbs that they know for sure are 18-watt bulbs and go back to Q21; if they cannot, then check "DK/NS" and continue.

[44] Two repetitive survey sections are not shown in this appendix; the versions of Q21 through Q23 shown here are for customers who received both 13-watt and 18-watt CFLs. For computer-assisted survey programming purposes, there are alternate versions of these same questions which are asked for customers who received only one wattage of bulb (a series for 13-watt bulbs and a series for 18-watt bulbs). These alternate versions of the questions are identical to the versions shown in this appendix except for the wattages of bulbs mentioned (customers who only received 13-watt bulbs are not asked about 18-watt bulbs and vice versa).

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21b. Was the bulb that was previously installed in this fixture or lamp a standard bulb or a CFL?*
( ) Standard Incandescent
( ) CFL
( ) Other: _____*
( ) There was no bulb in the socket
( ) DK/NS

21c. How many watts was the old bulb that was removed?*
( ) Less than 44
( ) 45-70
( ) 71-99
( ) 100 or more
( ) DK/NS

21d. What happened to the old bulb that was removed?*
( ) Recycled It
( ) Threw it away
( ) Stored it
( ) Auditor took it with them
( ) Other: _____*
( ) DK/NS

21e. On average, approximately how many hours per day is this light used?*
( ) Less than 1
( ) 1 to 2
( ) 3 to 4
( ) 5 to 10
( ) 11 to 12
( ) 13 to 24
( ) DK/NS

21f. Did the hours of use for this fixture increase, decrease or stay the same since the old bulb was replaced with the CFL?*
( ) Increased
( ) Decreased
( ) Stayed the same
( ) DK/NS

If Increased ask
21g. How many hours per day more?*

_____

If decreased, ask
21h. How many hours per day less?*

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2nd Installed Bulb - 13 watt

22. Please tell me about one of the 13-watt bulbs that was installed; that is, the less-bright, lower-wattage bulbs that were installed. In which room was this bulb installed?*
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Bedroom 2
( ) Bedroom 3 or other bedroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Bathroom
( ) Other: _____*

22a. Are you sure this bulb that was installed by the Residential Neighborhood Program was an 13-watt bulb?*
( ) Yes, it is an 13-watt bulb
( ) No, it is a 18-watt bulb
( ) DK/NS

If "No, it is an 18-watt bulb", ask them to pick a 13-watt bulb and go back to Q22; if they cannot, then check "No, it is an 18-watt bulb" and continue.

If "DK/NS", ask them if there are any installed bulbs that they know for sure are 13-watt bulbs and go back to Q22; if they cannot, then check "DK/NS" and continue.

22b. Was the bulb that was previously installed in this fixture or lamp a standard bulb or a CFL?*
( ) Standard Incandescent
( ) CFL
( ) Other: _____*
( ) There was no bulb in the socket
( ) DK/NS

22c. How many watts was the old bulb that was removed?*
( ) Less than 44
( ) 45-70
( ) 71-99
( ) 100 or more
( ) DK/NS

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22d. What happened to the old bulb that was removed?*
( ) Recycled It
( ) Threw it away
( ) Stored it
( ) Auditor took it with them
( ) Other: _____ *
( ) DK/NS

22e. On average, approximately how many hours per day is this light used?*
( ) Less than 1
( ) 1 to 2
( ) 3 to 4
( ) 5 to 10
( ) 11 to 12
( ) 13 to 24
( ) DK/NS

22f. Did the hours of use for this fixture increase, decrease or stay the same since the old bulb was replaced with the CFL?*
( ) Increased
( ) Decreased
( ) Stayed the same
( ) DK/NS

If Increased ask
22g. How many hours per day more?*

_____

If decreased, ask
22h. How many hours per day less?*

_____

3rd Installed Bulb - either 18-watt or 13-watt
Note: let customer choose which bulb to discuss, depending upon what they received.

23. For the third CFL, please choose either a 13-watt or 18-watt bulb that was installed in your home. In which room was this bulb installed?*
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Bedroom 2
( ) Bedroom 3 or other bedroom
( ) Hall

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( ) Closet
( ) Basement
( ) Garage
( ) Bathroom
( ) Other: _____ *

23a. Was this bulb that was installed one of the 13 watt bulbs or one of the 18 watt bulbs?*
( ) 13 watt
( ) 18 watt
( ) DK/NS

If "DK/NS", ask them if they can choose another bulb where they do know the wattage and go back to Q23; if they cannot identify the wattage of any other bulbs, check "DK/NS" and continue.

23b. Was the bulb that was previously installed in this fixture or lamp a standard bulb or a CFL?*
( ) Standard Incandescent
( ) CFL
( ) Other: _____ *
( ) There was no bulb in the socket
( ) DK/NS

23c. How many watts was the old bulb that was removed?*
( ) Less than 44
( ) 45-70
( ) 71-99
( ) 100 or more
( ) DK/NS

23d. What happened to the old bulb that was removed?*
( ) Recycled It
( ) Threw it away
( ) Stored it
( ) Auditor took it with them
( ) Other: _____ *
( ) DK/NS

23e. On average, approximately how many hours per day is this light used?*
( ) Less than 1
( ) 1 to 2
( ) 3 to 4
( ) 5 to 10
( ) 11 to 12
( ) 13 to 24
( ) DK/NS

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23f. Did the hours of use for this fixture increase, decrease or stay the same since the old bulb was replaced with the CFL?*
( ) Increased
( ) Decreased
( ) Stayed the same
( ) DK/NS

If Increased ask
23g. How many hours per day more?*

_____

If decreased, ask
23h. How many hours per day less?*

_____

24. How many standard incandescent bulbs do you have in storage to replace bulbs that burn out?*
( ) None
( ) One or more *(record number)*: _____ *
( ) DK/NS

If they have one or more incandescent bulbs in storage in Q24, ask Q24a:

24a. If one of the free CFLs that was installed through the Residential Neighborhood Program burns out, will you replace it with an incandescent bulb, another CFL, or some other type of bulb?*
(check all that apply)
[ ] CFL
[ ] Incandescent bulb
[ ] Halogen
[ ] LED
[ ] It depends on which socket burns out (or other factors)
[ ] DK/NS

If "It depends on which socket burns out (or other factors)", ask:

24b. Why do you say that?*

_____
_____
_____
_____

25. Have you removed any of the CFLs that were installed through the Residential Neighborhood Program?*
( ) Yes

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( ) No
( ) DK/NS

If Yes to q25, ask 25a, 25b and 25c
25a. How many?*

_____

25b. Why did you remove them?*
(Select all that apply)
[ ] Not bright enough
[ ] Did not like the color of the light
[ ] The light was too bright
[ ] Too slow to start
[ ] Burned out
[ ] Not working properly
[ ] Did not like appearance/shape of the bulbs
[ ] Other *specify* : _____*

25c. What are the wattages of the bulbs you removed?*
(Enter the number of bulbs disposed for each wattage – the total number of bulbs should match Q25a)
# of 13-watt bulbs: _____
# of 18-watt bulbs: _____
# of DK/NS bulbs: _____

26. On a scale of 1 to 10 with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the free CFLs bulbs you received.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less
26a. Why were you less than satisfied with the CFLs?*

_____
_____
_____
_____

Q27 bulb descriptions if needed:

Incandescent bulbs are the most common type of light bulb. It features a screw-base and is known for providing bright, warm light instantly.

Halogen light bulbs are similar to incandescent bulbs, but are known to be more energy-efficient than standard incandescent bulbs; they tend to be used in indoor and outdoor flood lighting, indoor recessed lighting, tracked lighting, and in floor and desk lamps.

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CFLs, also known as compact fluorescent light bulbs, are energy-saving light bulbs that have a "twisty" shape, like a soft-serve ice cream cone.

LEDs, also known as "light-emitting diodes", are a type of lighting that uses multiple tiny bulbs, or diodes, that are wired together on one lamp.

27. Currently, there are a number of types of light bulbs available for purchase in the market, like CFL bulbs, Halogen bulbs, standard incandescent bulbs, and LED bulbs among others. Thinking about the next ten light bulbs you will purchase, how many will be...*
Interviewer: read descriptions of the types of bulb if respondents seem unclear on anything about them.

Total MUST equal 10. use DK/NS to balance total if needed
_____**Standard incandescent light bulbs**
_____**Halogen light bulbs**
_____**CFL light bulbs**
_____**LED light bulbs**
_____"Other" bulb types
_____DK/NS

27a. *if "other" is more than Zero, specify what "other" type(s) of bulb.*
_____

28. Did you have any CFLs installed in your home before receiving CFL bulbs from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If yes to Q28, ask Q28a to Q28c:
28a. How many?*
_____

28b. Where did you get the CFLs you were using in your home before receiving the bulbs from the Residential Neighborhood Program?*
(Do not read list, check all that apply)
[ ] Assistance office (CAP Agency, Energy Assistance Program)
[ ] Another Duke Energy program *Ask:* What program?:
_____*
[ ] A program from a company other than Duke Energy *Ask:* What program?:
_____*
[ ] Purchased at a store *Ask:* What store?:
_____*
[ ] Some other way *Ask:* What way?:
_____*

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[ ] DK/NS

28c. How many years have you been using CFLs?*
( ) Never used until recently (first time user)
( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other *specify*: _____*
( ) DK/NS

28d. Do you currently have any CFL bulbs in storage to replace bulbs that burn out?*
( ) None
( ) One or more *record number*: _____*
( ) DK/NS

28e. How many of these spare CFL bulbs that you currently have in storage are CFLs that you received from the Residential Neighborhood Program? Please include any spare bulbs the auditor left behind, and any bulbs installed by you or the auditor that may have been removed.*
( ) None
( ) One or more *record number*: _____*
( ) DK/NS

29a. Were you planning on buying CFLs for your home before you received light bulbs from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already have them installed in all available sockets

29b. Have you purchased any additional CFLs since receiving some from the Residential Neighborhood Program?*
( ) Yes *29c.* How Many?: _____*
( ) No
( ) DK/NS

30. Before you received the free CFLs from the Residential Neighborhood Program, did you have any LED light bulbs installed in your home?*
( ) Yes
( ) No
( ) DK/NS

If yes to Q30, ask Q30a, b, c and d

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30a. How many?*

_____

30b. Where did you get the LEDs were you using in your home before receiving CFLs from the Residential Neighborhood Program?*
(Do not read list, check all that apply)
[ ] Assistance office (CAP Agency, Energy Assistance Program)
[ ] Another Duke Energy program :
_____*
[ ] A program from a company other than Duke Energy :
_____*
[ ] Purchased at a store : _____*
[ ] Some other way : _____*
[ ] DK/NS

30c. How many years have you been using LEDs?*
( ) Have never used LED light bulbs at all
( ) Never used until recently (first time user)
( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other: _____*
( ) DK/NS

30d. Do you have any LED bulbs in storage to replace bulbs that burn out?*
( ) None
( ) One or more *record number*: _____*
( ) DK/NS

31. Were you planning on buying LEDs for your home before you received the CFL bulbs from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) No, already have LEDs installed in all available sockets
( ) Maybe
( ) Don't Know

LFS. Low-flow Showerhead

LFS-1. Did you or the auditor install any low-flow showerheads provided through the program?*
( ) Yes, I installed
( ) Yes, auditor installed

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( ) No, I received a showerhead, but it has not been installed yet
( ) No, I did not receive a showerhead
( ) DK/NS
If "No' or "DK/NS" skip to next measure.

If "yes, I installed"
LFS-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install"
LFS-1b. Do you plan on using this item?*
( ) Yes
( ) No
( ) DK/NS
If "no" or "DK/NS"

LFS-1c. Why not?*

_____
If "yes, I installed" or "yes, auditor installed" in LFS-1, ask LFS-2 to LFS-4:

LFS-2a. How many low-flow showerheads did you receive from the Residential Neighborhood Program?*
( ) 1
( ) 2
( ) 3 or more: _____*

LFS-2b. Have any of the low-flow showerheads that were installed through the Residential Neighborhood Program since been uninstalled or removed?*
( ) Yes, one uninstalled
( ) Yes, two uninstalled
( ) No, all showerheads are still currently installed
( ) other: _____*
( ) DK/NS

If "yes" to LFS-2b, ask LFS-2c-d:
LFS-2c. Why were the low-flow showerheads removed?*

_____
LFS-2d. Who removed them?*

_____

Interviewer: answer LFS-2e., based on previous responses (# of units installed in 2a, minus units removed in 2b).
This is not a question for participant.

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*LFS-2e. Number of low-flow showerheads provided by the program which are currently installed in the home**
( ) 0
( ) 1
( ) 2

If "one" in LFS-2e., ask LFS-3a:
LFS-3a. Typically how many showers per week are taken using this showerhead?*
( ) 0 to 4
( ) 5 to 10
( ) 11 to 15
( ) 16 to 20
( ) 21 or more
( ) DK/NS

If "two" in LFS-2e., ask LFS-3b-c:
LFS-3b. Typically how many showers per week are taken using the showerhead that gets used most often?*
( ) 0 to 4
( ) 5 to 10
( ) 11 to 15
( ) 16 to 20
( ) 21 or more
( ) DK/NS

If "two" in LFS-2e., ask LFS-3b-c:
LFS-3c. And how many showers per week are typically taken using the second showerhead?*
( ) 0 to 4
( ) 5 to 10
( ) 11 to 15
( ) 16 to 20
( ) 21 or more
( ) DK/NS

If "one" in LFS-2e., ask LFS-3d:
LFS-3d. Would you estimate that the amount of water coming out of this showerhead is...*
( ) Less than it was with the old showerhead
( ) About the same as with the old showerhead
( ) More than with the old showerhead

If "two" in LFS-2e., ask LFS-3e-f:
LFS-3e. For the showerhead that gets used most often, would you estimate that the amount of water coming out of this showerhead is...*
( ) Less than it was with the old showerhead
( ) About the same as with the old showerhead

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( ) More than with the old showerhead

LFS-3f. For the second showerhead, would you estimate that the amount of water coming out of this showerhead is…*
( ) Less than it was with the old showerhead
( ) About the same as with the old showerhead
( ) More than with the old showerhead

Everyone continues with LFS-4:
LFS-4. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the low-flow showerhead(s).*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in LFS-4, ask LFS-4a:
LFS-4a. Why were you less than satisfied with the low-flow showerhead?*

_____
_____
_____
_____

LFS-4b. Did you have any low-flow showerheads installed in your home before participating in the Residential Neighborhood Program?*
( ) Yes
LFS-4c. How many? : _____*
( ) No
( ) DK/NS

LFS-4d. Were you planning on buying a new low-flow showerhead for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already have them installed in all showers

LFS-4e. Have you purchased any additional low-flow showerheads since participating in the Residential Neighborhood Program?*
( ) Yes
LFS-4f. How many? : _____*
( ) No
( ) DK/NS

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FA. Faucet Aerators

FA-1. Did you or the auditor install any faucet aerators provided through the program?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received aerator(s) but they have not been installed yet
( ) No, I did not receive aerator(s)
( ) DK/NS

If "No" or "DK/NS", skip to next measure.

If "yes, I installed"
FA-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install"
FA-1b. Do you plan on using this item?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS"
FA-1c. Why not?*

_____

If "yes, I installed" or "yes, auditor installed" in FA-1, ask FA-2a, FA-3a and FA-4a (and any applicable follow-up questions), then continue from FA-5:

FA-2a. How many aerators were installed on faucets in your kitchen?*
( ) 0
( ) 1
( ) 2
( ) 3
( ) DK/NS

If "one or more" in FA-2a, ask FA-2b-g:
FA-2b. Did the faucets in your kitchen already have aerators on them that had to be removed before installing the aerators provided by the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

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If YES in FA-2b and "two" or "three" in FA-2a then ask:
FA-2c. How many old aerators were removed?*

_____

FA-2d. Have any of the kitchen aerators that were installed through the Residential Neighborhood Program since been uninstalled or removed?*
( ) Yes, one uninstalled
( ) Yes, two uninstalled
( ) Yes, three uninstalled
( ) No, all kitchen aerators are still currently installed
( ) DK/NS

If "yes" to FA-2d, ask FA-2e-f
FA-2e. Why were the kitchen aerators removed?*

_____

FA-2f. Who removed them?*

_____

FA-2g. Would you estimate that the amount of water coming out of your kitchen faucets with newly-installed aerators is...*
( ) Less than before installing the aerator
( ) About the same as before installing the aerator
( ) More than before installing the aerator
( ) DK/NS

FA-3a. How many aerators were installed on faucets in your bathroom(s)?*
( ) 0
( ) 1
( ) 2
( ) 3
( ) DK/NS

If "one or more" in FA-3a, ask FA-3b-g:
FA-3b. Did the faucets in your bathroom already have aerators on them that had to be removed before installing the aerators provided by the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES to 3b and "two" or "three" in FA-3a then ask:
FA-3c. How many old aerators were removed?

_____

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FA-3d. Have any of the bathroom aerators that were installed through the Residential Neighborhood Program since been uninstalled or removed?*
( ) Yes, one uninstalled
( ) Yes, two uninstalled
( ) Yes, three uninstalled
( ) No, all bathroom aerators are still currently installed
( ) DK/NS

If "yes" to FA-2d, ask FA-2e-f
FA-3e. Why were the bathroom aerators removed?*

_____

FA-3f. Who removed them?*

_____

FA-3g. Would you estimate that the amount of water coming out of your bathroom faucets with newly-installed aerators is...*
( ) Less than before installing the aerator
( ) About the same as before installing the aerator
( ) More than before installing the aerator
( ) DK/NS

FA-4a. How many aerators were installed on faucets in your home in places other than the kitchen and bathroom?*
( ) 0
( ) 1
( ) 2
( ) 3
( ) DK/NS

If "one or more" in FA-4a, ask FA-4b to h:
FA-4b. In which room(s) was this (were these) aerator(s) installed?*

_____

FA-4c. Did the faucets located in rooms other than bathrooms and the kitchen already have aerators on them that had to be removed before installing the aerators provided by the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

if Yes:
FA-4d. How many <u>old</u> aerators were removed?*

_____

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FA-4e. Have any of the aerators that were installed someplace other than a bathroom or kitchen been uninstalled or removed?*
( ) Yes, one uninstalled
( ) Yes, two uninstalled
( ) Yes, three uninstalled
( ) No, all aerators are still currently installed
( ) DK/NS

If "yes" to FA-4e, ask FA-4f-g:
FA-4f. Why were the aerators removed?*

_____

FA-4g. Who removed them?*

_____

FA-4h. Would you estimate that the amount of water coming out of these faucets with newly-installed aerators is…*
( ) Less than before installing the aerator
( ) About the same as before installing the aerator
( ) More than before installing the aerator
( ) DK/NS

FA-5. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the faucet aerators.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) N/A

If 7 or less in LFS-4, ask LFS-4a:
FA-5a. Why were you less than satisfied with the aerator(s)?*

_____
_____
_____
_____

FA-5b. Did you have any faucet aerators installed in your home before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
FA-5c. How many aerators were in your home, and in which rooms were they located?*

_____

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FA-5d. Were you planning on buying any faucet aerators for your home before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already have them installed in all available faucets

FA-5e. Have you purchased any additional faucet aerators since receiving aerators from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
FA-5f. How many?*

_____

FIS. Foam Insulation Spray

FIS-1. Did you or the auditor install any foam insulation spray provided through the program?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received foam insulation spray but it has not been installed yet
( ) No, I did not receive foam insulation spray
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in FIS-1, ask FIS-1a
FIS-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in FIS-1, ask FIS-1b:
FIS-1b. Do you plan on using the foam insulation spray?*
( ) Yes
( ) No
( ) DK/NS

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If "no" or "DK/NS" in FIS-1b, ask FIS-1c:
FIS-1c. Why not?*

_____

If "yes, I installed" or "yes, auditor installed" in FIS-1, ask QFIS-2a-QFIS-3e:
FIS-2a. Where in your home was the foam insulation spray used?*

_____

FIS-2b. Do you know how much foam insulation spray was used?*
( ) Yes *specify*: _____ *
( ) No or DK/NS

FIS-2c. Did the installer from the Residential Neighborhood Program leave you with any extra foam insulation spray that was not installed at the time?*
( ) Yes
( ) No
( ) DK/NS

FIS-2d. Has any of the foam insulation spray provided by the Residential Neighborhood Program been removed from where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to QFIS-2d, ask QFIS-2e-g:
FIS-2e. How much of the foam insulation spray was removed? Would you say . . .*
( ) All of it,
( ) Most of it,
( ) Some of it, or
( ) Only a small portion?
( ) DK/NS

FIS-2f. Why was the foam insulation spray removed?*

_____
_____
_____
_____

FIS-2g. Who removed it?*

_____
_____
_____
_____

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FIS-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the foam insulation spray.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in QFIS-3, ask QFIS-3a:
FIS-3a. Why were you less than satisfied with the foam insulation spray?*

_____
_____
_____
_____

FIS-3b. Did you have foam insulation spray installed in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

FIS-3c. Were you planning on buying any foam insulation spray for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

FIS-3d. Have you purchased any additional foam insulation spray since participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
FIS-3e. How many cans did you purchase?*

_____

WSD. Vinyl Weather Stripping – Doors

WSD-1. Did you or the auditor install any foam vinyl weather stripping tape, provided through the program, around doors?*
If participant is uncertain about what this is, explain that it is a foam "spongy" peel and stick tape that goes around doors.
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received weather stripping tape for doors, but it has not been installed yet

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( ) No, I did not receive weather stripping tape for doors
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

If "yes, I installed" in WSD-1, ask WSD-1a:
WSD-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in WSD-1, ask WSD-1b:
WSD-1b. Do you plan on using this item?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in WSD-1b, ask WSD-1c:
WSD-1c. Why not?*

_____

If "yes, I installed" or "yes, auditor installed" in WSD-1, ask WSD-2a-WSD-3f:
WSD-2a. How many doors in your home were weather stripped with the foam vinyl tape provided by the Residential Neighborhood Program?*
( ) One or more *specify number of doors*:
_____ *
( ) None
( ) DK/NS

WSD-2b. Has the foam vinyl tape provided by the Residential Neighborhood Program been removed from any of the doors where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to WSD-2b, ask WSD-2c-e:
WSD-2c. How many doors had the foam vinyl weather stripping tape installed but then removed?*

_____

WSD-2d. Why was the weather stripping tape removed?*

_____

WSD-2e. Who removed it?*

_____

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WSD-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with weather stripping tape for doors.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in WSD-3, ask WSD-3a:
WSD-3a. Why were you less than satisfied with the weather stripping tape for doors?*

_____
_____
_____
_____

WSD-3b. Did you have any weather stripping tape installed around doors in your home before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
WSD-3c. For how many doors?*

_____

WSD-3d. Were you planning on buying any weather stripping tape for your home's doors before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already have tape installed around all available doors

WSD-3e. Have you purchased any additional weather stripping tape for doors since receiving some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
WSD-3f. For how many doors?*

_____

WW. Vinyl Weather Stripping – HVAC window units

WW-1. Did you or the auditor install any foam vinyl weather stripping tape, provided through the program, around window air conditioning units?*

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If participant is uncertain about what this is, explain that it is a foam "spongy" peel and stick tape that goes around their air conditioners.
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received weather stripping tape for window A/C but it has not been installed yet
( ) No, I did not receive weather stripping tape for window A/C
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

If "yes, I installed" in WW-1, ask WW-1a:
WW-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in WW-1, ask WW-1b:
WW-1b. Do you plan on using this item?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in WW-1b, ask WW-1c:
WW-1c. Why not?*
_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in WW-1, ask WW-2a-WW-3f:
WW-2a. How many windows in your home with A/C units were weather stripped with the foam vinyl tape provided by the Residential Neighborhood Program?*
( ) One or more, specify number of windows:
_____ *
( ) None
( ) DK/NS

WW-2b. Has the foam vinyl tape provided by the Residential Neighborhood Program been removed from any of the window A/C units where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to WW-2b, ask WW-2c-e:
WW-2c. How many window A/C units had the foam vinyl weather stripping tape installed but then removed?*

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_____

WW-2d. Why was the weather stripping tape removed?*

_____

WW-2e. Who removed it?*

_____

WW-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the weather stripping tape for window air conditioning units.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in WW-3, ask WW-3a:
WW-3a. Why were you less than satisfied with the weather stripping tape for window air conditioning units?*

_____
_____
_____
_____

WW-3b. Did you have any weather stripping tape installed around windows with A/C units in your home before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
WW-3c. For how many A/C units?*

_____

WW-3d. Were you planning on buying any weather stripping tape for your home's windows with A/C units before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) Maybe
( ) No
( ) DK/NS
( ) No, already have tape installed around all available windows

WW-3e. Have you purchased any additional weather stripping tape for windows with A/C units since receiving some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

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If YES, ask:
WW-3f. For how many A/C units?*

_____

WK. HVAC Winter Kit for Wall/Window Unit

WK-1. Did you or the auditor install the winter kit for wall or window air conditioning units that was provided through the program?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received the kit but it has not been installed yet
( ) No, I did not receive the winter kit for A/C units
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in WK-1, ask WK-1a
WK-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in WK-1, ask WK-1b-c:
WK-1b. How many kits did you receive? (*if needed*: That is, how many wall or window air conditioning units did the auditor leave you winter insulation kits for?)*
( ) one
( ) two
( ) three
( ) DK/NS

WK-1c. Do you plan on using this item/these items?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in WK-1c, ask WK-1d:
WK-1d. Why not?*
_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in WK-1, ask WK-2a to WK-3g
WK-2a. How many wall or window air conditioning units in your home were winterized using the kit provided by the Residential Neighborhood Program?*

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( ) One or more winterized using kit *specify number of units*:
_____*
( ) None
( ) DK/NS

WK-2b. Has the winter kit for wall or window air conditioning units provided by the Residential Neighborhood Program been removed from any of the A/C units where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to WK-2b, ask WK-2c-e:
WK-2c. How many window A/C units had the winter kit installed but then removed?*
_____

WK-2d. Why was it removed?*
_____

WK-2e. Who removed it?*
_____

WK-2f. Are any of the window or wall units winterized with the kit removable? In other words, is the A/C unit permanently attached, or can it be taken out of the wall or window in winter?*
( ) One or more removable units, *specify number of units:*:
_____*
( ) None are removable / all are permanently installed *SKIP TO WK-3a*
( ) DK/NS *SKIP TO WK-3a*

If "one or more" to WK-2f, ask WK-2g
WK-2g. In previous years, have you removed any A/C units from walls or windows for the winter, or do you leave the units in place all year round?*
( ) Always removed units during winter
( ) Sometimes removed units during winter, sometimes left them in
( ) Always left units in place during winter
( ) DK/NS

If "one or more" to WK-2f, ask WK-2h
WK-2h. Which of the following statements best describes the situation with your wall or window A/C units during the most recent winter?
*(READ RESPONSES)**
( ) I left the units in place through the winter, and would have done so whether or not I participated in the Residential Neighborhood Program.
( ) I took the units out for the winter, and would have done so whether or not I participated in the Residential Neighborhood Program.

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( ) I left the units in place through the winter, though if I had not participated in the Residential Neighborhood Program, I probably would have taken them out for the winter.
( ) I took the units out for winter, though if I had not participated in the Residential Neighborhood Program, I probably would have left them in place for the winter.
( ) DK/NS *(Do Not Read)*

WK-3a. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the winter kit for wall or window air conditioning units.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in WK-3a, ask WK-3b:
WK-3b. Why were you less than satisfied with the winter kit for wall or window air conditioning units?*

_____
_____
_____
_____

WK-3c. Did you have a winter kit for wall or window air conditioning units installed in your home before you received one by participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
WK-3d. For how many A/C units?*

_____

WK-3e. Were you planning on buying a new winter kit for wall or window air conditioning units for your home before you received one by participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

WK-3f. Have you purchased any additional winter kits for wall or window air conditioning units since participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:

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WK-3g. For how many A/C units?*

_____

CD. Caulking Doors

CD-1. Did you or the auditor install any caulking, provided through the program, around doors?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received caulk for doors but it has not been installed yet
( ) No, I did not receive caulk for doors
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in CD-1, ask CD-1a
CD-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in CD-1, ask CD-1b:
CD-1b. Do you plan on using the caulk for your doors?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in CD-1b, ask CD-1c:
CD-1c. Why not?*
_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in CD-1, ask CD-2a-e:
CD-2a. How many doors in your home were caulked using the supplies provided by the Residential Neighborhood Program?*
( ) One or more *specify number of doors*:
_____*
( ) None
( ) DK/NS

CD-2b. Has the caulking provided by the Residential Neighborhood Program been removed from any of the doors where it was installed?*
( ) Yes

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( ) No, all installations are still in place
( ) DK/NS

If "yes" to CD-2b, ask CD-2c-e:
CD-2c. How many doors had the caulking installed but then removed?*

_____

CD-2d. Why was the caulk removed?*

_____

CD-2e. Who removed it?*

_____

CD-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the door caulking.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in CD-3, ask CD-3a:
CD-3a. Why were you less than satisfied with the door caulking?*

_____
_____
_____
_____

CD-3b. Did you have caulking installed on any doors in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
CD-3c. For how many doors?*

_____

CD-3d. Were you planning on buying any door caulking for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

CD-3e. Have you purchased any additional caulking for doors since participating in the Residential Neighborhood Program?*

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( ) Yes
( ) No
( ) DK/NS

If YES, ask:
CD-3f. For how many doors?*

_____

CW. Caulking Windows

CW-1. Did you or the auditor install any caulking, provided through the program, around windows?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received caulk for windows but it has not been installed yet
( ) No, I did not receive caulk for windows
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in CW-1, ask CW-1a
CW-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in CW-1, ask CW-1b
CW-1b. Do you plan on using the caulk for your windows?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in CW-1b, ask CW-1c:
CW-1c. Why not?*

_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in CW-1, ask CW-2a to CW-3f
CW-2a. How many windows in your home were caulked using the supplies provided by the Residential Neighborhood Program?*
( ) One or more *specify number of windows*:
_____ *
( ) None

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( ) DK/NS

CW-2b. Has the caulking provided by the Residential Neighborhood Program been removed from any of the windows where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to CW-2b, ask CW-2c-e:
CW-2c. How many windows had the caulking installed but then removed?*

_____

CW-2d. Why was the caulk removed?*

_____
_____
_____
_____

CW-2e. Who removed it?*

_____
_____
_____
_____

CW-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the window caulking.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in CW-3, ask CW-3a:
CW-3a. Why were you less than satisfied with the window caulking?*

_____
_____
_____
_____

CW-3b. Did you have caulking installed on any windows in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
CW-3c. For how many windows?*

_____

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CW-3d. Were you planning on buying any window caulking for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

CW-3e. Have you purchased any additional caulking for windows since participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
CW-3f. For how many windows?*

_____

DS. Door Sweeps

DS-1. Did you or the auditor install any door sweeps, provided through the program, under your doors?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received door sweeps but they have not been installed yet
( ) No, I did not receive door sweeps
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in DS-1, ask DS-1a

DS-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in 1, ask 1b
DS-1b. Do you plan on using the door sweeps?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in DS-1b, ask DS-1c
DS-1c. Why not?*

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_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in DS-1, ask DS-2a to DS-3f

DS-2a. How many doors in your home currently have door sweeps provided by the Residential Neighborhood Program?*

( ) One or more *specify number of doors*:
_____ *
( ) None
( ) DK/NS

DS-2b. Have any of the door sweeps that were installed through the Residential Neighborhood Program been uninstalled or removed?*

( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to DS-2b, ask DS-2c to DS-2e

DS-2c. How many doors had door sweeps installed but then removed?*

_____

DS-2d. Why was the door sweep removed?*

_____
_____
_____
_____

DS-2e. Who removed it?*

_____
_____
_____
_____

DS-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the door sweeps.*

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in DS-3, ask DS-3a

DS-3a. Why were you less than satisfied with the door sweeps?*

_____
_____
_____
_____

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DS-3b. Did you have sweeps installed on any doors in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
DS-3c. For how many doors?*

_____

DS-3d. Were you planning on buying any door sweeps for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

DS-3e. Have you purchased any additional door sweeps since participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
DS-3f. For how many doors?*

_____

GT. Clear Glass Patch Tape

GT-1. Did you or the auditor install the clear glass patch tape, provided through the program, on any windows in your home?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received clear glass patch tape but it has not been installed yet
( ) No, I did not receive clear glass patch tape
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in GT-1, ask GT-1a
GT-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

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If "no, I received but did not install" in 1, ask 1b
GT-1b. Do you plan on using the clear glass patch tape?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in GT-1b, ask GT-1c
GT-1c. Why not?*

_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in GT-1, ask GT-2a to GT-3f
GT-2a. How many windows in your home were patched using clear glass patch tape provided by the Residential Neighborhood Program?*
( ) One or more *specify number of windows*:
_____*
( ) None
( ) DK/NS

GT-2b. Has the clear glass patch tape provided by the Residential Neighborhood Program been removed from any of the windows where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to GT-2b, ask 2c to 2e
GT-2c. How many windows had the clear glass patch tape installed but then removed?*

_____

GT-2d. Why was the clear glass patch tape removed?*

_____
_____
_____
_____

GT-2e. Who removed it?*

_____
_____
_____
_____

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GT-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the clear glass patch tape.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in GT-3, ask 3a
GT-3a. Why were you less than satisfied with the clear glass patch tape?*

_____
_____
_____
_____

GT-3b. Did you have clear glass patch tape installed on any windows in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
GT-3c. For how many windows?*

_____

GT-3d. Were you planning on buying any clear glass patch tape for your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

GT-3e. Have you purchased any additional clear glass patch tape for windows since participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
GT-3f. For how many windows?*

_____

PW. Water Heater Pipe Wrap

PW-1. Did you or the auditor wrap any insulation, provided through the program, around hot water pipes?*
( ) Yes, I installed
( ) Yes, auditor installed

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( ) No, I received hot water pipe wrap but it has not been installed yet
( ) No, I did not receive hot water pipe wrap
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in PW-1, ask 1a
PW-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" in 1, ask 1b
PW-1b. Do you plan on using the hot water pipe insulation wrap?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in PW-1b, ask 1c
PW-1c. Why not?*

_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in PW-1, ask 2a to 3f
PW-2a. Was there any old insulation that had to be removed before installing the new hot water pipe insulation wrap?*
( ) Yes
( ) No
( ) DK/NS

PW-2b. Do you know about how many feet of hot water pipe was wrapped with insulation?*
( ) Yes *Specify number of feet*: _____*
( ) No / DK/NS

PW-2c. Did the installer from the Residential Neighborhood Program leave you with any extra hot water pipe insulation wrap that was not installed at the time?*
( ) Yes
( ) No
( ) DK/NS

If "yes" to PW-2c:
PW-2d. About how many extra feet of hot water pipe insulation wrap did they leave you with?*

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_____

PW-2e. Has any of the hot water pipe insulation wrap that was provided by the Residential Neighborhood Program been removed from where it was installed?*
( ) Yes
( ) No, all installations are still in place
( ) DK/NS

If "yes" to PW-2e, ask PW-2f-h:
PW-2f. About how many feet of hot water pipe insulation wrap was removed?*

_____

PW-2g. Why was the hot water pipe insulation wrap removed?*

_____
_____
_____
_____

PW-2h. Who removed it?*

_____
_____
_____
_____

PW-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the hot water pipe insulation wrap.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in PW-3, ask 3a
PW-3a. Why were you less than satisfied with the hot water pipe insulation wrap?*

_____
_____
_____
_____

PW-3b. Did you have hot water pipe insulation wrap installed in your home before participating in the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

PW-3c. Were you planning on buying any insulation for your hot water pipes before participating in the Residential Neighborhood Program?**
( ) Yes
( ) No

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( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

PW-3d. Have you purchased any additional hot water pipe insulation wrap since participating in the Residential Neighborhood Program?**
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
PW-3e. How many feet of hot water pipe insulation wrap did you purchase?*
_____

TW. Water Heater Tank Insulation Wrap

TW-1. Did you or the auditor install any insulation, provided through the program, on your hot water heater tank?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received hot water tank insulation wrap but it has not been installed yet
( ) No, I did not receive hot water tank insulation wrap
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" ask
TW-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

If "no, I received but did not install" , ask
TW-1b. Do you plan on using the hot water tank insulation wrap?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in TW-1b, ask TW-1c
TW-1c. Why not?*
_____
_____
_____
_____

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If "yes, I installed" or "yes, auditor installed" in TW-1, ask TW-2a to TW-3c

TW-2a. Has the hot water tank insulation wrap that was provided by the Residential Neighborhood Program been removed from where it was installed?*

( ) Yes
( ) No, all installations are still in place
( ) DK/NS

TW-2b. Why was the hot water tank insulation wrap removed?*

_____

TW-2c. Who removed it?*

_____

TW-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the hot water tank insulation wrap.*

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in TW-3, ask 3a

TW-3a. Why were you less than satisfied with the hot water tank insulation wrap? (specify:)*

_____
_____
_____
_____

TW-3b. Did you have any insulation wrap installed on your hot water tank before participating in the Residential Neighborhood Program?*

( ) Yes
( ) No
( ) DK/NS

TW-3c. Were you planning on buying insulation to wrap your hot water tank before participating in the Residential Neighborhood Program?*

( ) Yes
( ) No
( ) Maybe
( ) DK/NS
( ) No, already installed every place possible

TA. Water Heater Temperature Adjustment

TA-1. During the Residential Neighborhood Program audit, did you or the auditor check the temperature of your hot water heater?*

( ) Yes, I did

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( ) Yes, auditor did
( ) No, the auditor left tool/instructions for checking the temperature but I haven't done it yet
( ) No, the water temperature was not checked
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I checked" in TA-1, ask TA-1a
TA-1a. Was it easy to check the temperature?*
( ) Yes
( ) No
( ) DK/NS

TA-2a. Do you recall what temperature your hot water heater was set at when it was first checked during the Residential Neighborhood Program audit?*
( ) Yes
specify temperature: _____*
( ) No or DK/NS

TA-2b. After checking the temperature of your hot water heater, were any adjustments made to the temperature setting during the Residential Neighborhood Program audit?*
( ) Yes
( ) No
( ) DK/NS

If "yes" in TA-2b, ask 2c:
TA-2c. Do you know what temperature your hot water heater was set to after being adjusted?*
( ) Yes
specify temperature: _____*
( ) No or DK/NS

TA-2d. Has anyone made any further changes to the temperature setting on your hot water heater since the auditor from the Residential Neighborhood Program visited your home?*
( ) Yes
( ) No
( ) DK/NS

If YES to 2d, ask 2e and 2f
TA-2e. Who adjusted your temperature settings after the visit from the auditor?*

_____

TA-2f. What adjustment was made to the temperature setting?*
Record "up" or "down" and the number of degrees changed.

_____

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TA-3. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the adjustments made to your hot water heater temperature settings.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in TA-3, ask TA-3a:
TA-3a. Why were you less than satisfied with the adjustments made to your hot water heater temperature settings?*

_____
_____
_____
_____

TA-3b. How often did you check the temperature on your water heater before participating in the Residential Neighborhood Program?*
( ) Never checked
( ) Checked once or twice / a few times
( ) Regularly, but less often than once per year
( ) Regularly, once per year or more frequently
( ) DK/NS

SP. Switch Plate Wall Thermometer

SP-1. During the Residential Neighborhood Program audit, did you or the auditor install the switch plate wall thermometer that was provided through the program?*
( ) Yes, I installed
( ) Yes, auditor installed
( ) No, I received the wall thermometer but it has not been installed yet
( ) No, did not receive wall thermometer
( ) DK/NS

If "No, I did not receive ' or "DK/NS" skip to next measure.

if "Yes, I installed" in SP-1, ask SP-1a
SP-1a. Was it easy to install?*
( ) Yes
( ) No
( ) DK/NS

if "Yes, I installed" in SP-1, ask SP-1a
SP-1b. Do you plan on using the switch plate wall thermometer?*
( ) Yes
( ) No
( ) DK/NS

If "no" or "DK/NS" in SP-1b, ask 1c:

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SP-1c. Why not?*

_____
_____
_____
_____

If "yes, I installed" or "yes, auditor installed" in SP-1, ask SP-2a to SP-2c
SP-2a. Where was the switch plate wall thermometer installed in your home? (Which room?)*

_____
_____
_____
_____

SP-2b. Including the switch plate wall thermometer you received from the Residential Neighborhood Program, how many thermometers are there in your home now?*
This includes the thermometer that is part of a Thermostat
( ) 1
( ) 2
( ) 3
( ) 4 or more
( ) DK/NS

SP-2c. Has the switch plate wall thermometer that was provided by the Residential Neighborhood Program been removed from where it was installed?*
( ) Yes, moved to somewhere else in the home
( ) Yes, no longer installed in the home
( ) No, installation is still in place
( ) DK/NS

If "yes, moved elsewhere" to SP-2c, ask SP-2d-e then continue from SP-3a:
SP-2d. Where was the switch plate wall thermometer moved to?*

_____

SP-2e. Why was the switch plate wall thermometer moved?*

_____
_____
_____
_____

If "yes, no longer installed" to SP-2c, ask SP-2f-g then skip to SP-4:
SP-2f. Why was the switch plate wall thermometer removed?*

_____
_____
_____
_____

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SP-2g. Who removed it?*

_____

SP-3a. About how often would you say you check the temperature reading on the new switch plate wall thermometer you received from the Residential Neighborhood Program?*
( ) More often than once a day
( ) About once a day
( ) Once every few days
( ) About once a week
( ) Less often than once a week
( ) Never
( ) DK/NS

SP-3b. Have you made any adjustments to your heating settings in the winter since the new switch plate wall thermometer was installed?*
( ) Yes *Ask 3c*
( ) No
( ) DK/NS

SP-3c. What adjustments have you made to the temperature setting?*
(If applicable, record "up" or "down" and the number of degrees changed.)

_____

SP-3d. Have you made any adjustments to your cooling settings in the summer since the new switch plate wall thermometer was installed?*
( ) Yes *Ask 3e*
( ) No
( ) DK/NS
( ) NA

SP-3e. What adjustments have you made to the temperature setting?*
(If applicable, record "up" or "down" and the number of degrees changed.)

_____

SP-4. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the switch plate wall thermometer.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less in SP-4, ask 4a:
SP-4a. Why were you less than satisfied with the switch plate wall thermometer?*

_____
_____
_____
_____

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F. A/C and Heat Filters / Change Filter Calendar

F-1a. Did the auditor from the Residential Neighborhood Program give you a year's supply of air conditioner and heater filters?*
( ) Yes
( ) No, did not receive filters
( ) DK/NS

F-1b. Did the auditor from the Residential Neighborhood Program give you a calendar for keeping track of when to change the filters?*
( ) Yes
( ) No, did not receive calendar
( ) DK/NS

If "No" or "DK/NS" responses to both F-1a and F-1b, then skip ahead to next measure now.

If "yes" to either F-1a or F-1b, then continue with F-1c to F-2d:

F-1c. Did you or the auditor from the Residential Neighborhood Program change your A/C or heater filter during their visit to your home?*
( ) Yes, auditor changed filter
( ) Yes, I changed filter
( ) No, did not change filter during audit
( ) DK/NS

If "yes, I changed filter" in F-1c, ask F-1d
F-1d. Was changing the filter easy to do?*
( ) Yes
( ) No
( ) DK/NS

F-1e. Have you been using the filter change calendar and changing your filters regularly since the Residential Neighborhood Program audit?*
( ) Yes, I am using the calendar and changing filters
( ) Yes I have been changing filters, but I am not using the calendar
( ) No, not using calendar or changing filters
( ) DK/NS

If "yes, I am using the calendar and changing filters" in F-1e, ask F-1f:
F-1f. Have you been changing the filters every time the calendar suggests, more frequently, or less frequently?*
( ) As calendar suggests
( ) More frequently
ask: **How much more frequently?** :
_____ *

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( ) Less frequently
ask: **How much less frequently?** :
_____*
( ) Other *specify*: _____*
( ) DK/NS

If "yes, changing filters but not using calendar" in F-1e, ask F-1g-h
F-1g. Why are you not using the filter change calendar?*

_____

F-1h. How often do you change the filter?*

_____

If "no, not using calendar or changing filters" in F-1e, ask F-1i:
F-1i. Why are you not using the A/C and heater filters that were provided by the Residential Neighborhood Program?*

_____

F-2. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the filter change calendar that was provided by the program.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) NA

If 7 or less in F-2, ask F-2a
F-2a. Why were you less than satisfied with the filter change calendar?*

_____
_____
_____
_____

F-2b. On a scale from 1-10, with 1 indicating that you were very dissatisfied, and 10 indicating that you were very satisfied, please rate your satisfaction with the A/C and heater filters that were provided by the program.*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) NA

If 7 or less in F-2b, ask F-2c
F-2c. Why were you less than satisfied with the A/C and heater filters?*

_____
_____
_____
_____

F-2d. How often were you changing your A/C and heater filters before you participated in the Residential Neighborhood Program?*

_____

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F-2e. Were you planning on buying any A/C or heater filters before you received some from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

F-2f. Have you purchased any additional A/C or heater filters since receiving a year's supply from the Residential Neighborhood Program?*
( ) Yes
( ) No
( ) DK/NS

If YES, ask:
F-2g. For how many filters did you purchase?*

_____

Interviewer: Ask q120 to the end of the survey for all respondents.

120. We are interested in learning what Duke Energy might offer in order to convince people like yourself to participate in programs like the Residential Neighborhood Program. Are there things that this program could have provided that you think would have made more people want to participate?*

_____
_____
_____
_____

I would now like to ask about your satisfaction with different aspects of the Residential Neighborhood Program. I will read a list of items, after I read each item please tell me how satisfied you are with that item. Please indicate on a 1 to 10 scale with a 10 meaning you are very satisfied and a 1 meaning you are very dissatisfied.

121. How satisfied are you with the convenience of enrolling in the Residential Neighborhood Program?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
121a. How could this be improved?*

_____
_____
_____
_____

122. How satisfied are you with the knowledge of the auditor who visited your home?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

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If 7 or less,
122a. How could this be improved?*

_____
_____
_____
_____

123. How satisfied are you with the helpfulness of the auditor who visited your home?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
123a. How could this be improved?*

_____
_____
_____
_____

124. Now I'm going to ask you about community meetings. Did you attend the community meeting in your neighborhood for the Residential Neighborhoods Program?*
( ) Yes
( ) No
( ) DK/NS

125. Next I am going to read you some more statements about the community meeting. As before, please rate your satisfaction with each aspect of the community meeting on a 1 to 10 scale, where 10 means very satisfied and 1 means very dissatisfied. How satisfied are you with the information presented about the Residential Neighborhood Program at the community meeting?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
125a. How could this be improved?*

_____
_____
_____
_____

If Yes to q124, ask q126 and q127
126. Using the same 1-to-10 rating scale, how satisfied are you with the staff and presenters at the community meeting?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
126a. How could this be improved?*

_____

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_____
_____
_____

127. How would you rate your overall satisfaction with the Residential Neighborhood Program?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
127a. How could this be improved?*
_____
_____
_____
_____

(Ohio only)
128. If you were rating your overall satisfaction with the Residential Neighborhood Program, would you say you were…*
( ) Very Satisfied,
( ) Somewhat Satisfied,
( ) Neither Satisfied nor Dissatisfied,
( ) Somewhat Dissatisfied, or
( ) Very Dissatisfied?
( ) Refused
( ) DK/NS

(Ohio only)
128a. Why do you give it that rating?*
_____
_____
_____
_____

129. And, overall how would you rate your satisfaction with Duke Energy?*
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
129a. How could this be improved?*
_____
_____
_____
_____

130. How much time was there between the day you signed up for the Residential Neighborhood Program and the day the auditor visited your home to install energy efficiency measures?*

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_____

131. Would you say that the time between signing up and the auditor's visit was ...*
( ) Too long,
( ) About right, or
( ) Too short?
( ) DK/NS

132. How about the length of time the auditor was at your home, was it ...*
( ) Too long,
( ) About right, or
( ) Too short?
( ) DK/NS

133. What was your favorite thing about participating in the Residential Neighborhood Program?*
_____
_____
_____
_____

134. What was your least favorite thing about participating in the Residential Neighborhood Program?*
_____
_____
_____
_____

135. What would you say are the most important things you learned from the Residential Neighborhood Program?*
After each response, ask Anything else? *if No, go to q136*
a: _____
b: _____
c: _____

136. Have you taken any additional steps to save energy in your home since participating in the Residential Neighborhood Program?*
( ) Yes *ask q137*
( ) No
( ) DK/NS

137. What actions have you taken to save energy?*
After each response, ask Anything else? *if No, go to q138*
a: _____
b: _____

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c: _____
d: _____

138. Are there any additional services that you would like the Residential Neighborhood Program to provide that it does not currently provide?*

_____
_____
_____
_____

139. Are there any other things that you would like to see changed about the Residential Neighborhood Program?*

_____
_____
_____
_____

140. Did you recommend this program to any of your friends, neighbors, or relatives?*
( ) Yes
( ) No
( ) DK/NS

If yes,
140a. How many people have you recommended the program to?*

_____

141. The Residential Neighborhood Program was provided by Duke Energy. As a result of this program, would you say your attitude toward Duke Energy is more positive, more negative, or about the same?*
(If more positive/negative, ask if "much more" positive/negative or "somewhat more" positive/negative.)
( ) Much more positive
( ) Somewhat more positive
( ) About the same *Skip to Q142*
( ) Somewhat more negative
( ) Much more negative
( ) DK/NS *Skip to Q142*

If "more positive" or "more negative" in Q141, then ask Q141a:
141a. Why do you say that?*

_____
_____
_____
_____

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The next set of questions deal with some effects that the program may have had on you and your household.

As a result of your participation in this program....

142. Has your knowledge of how to save energy and reduce your utility bill increased, stayed the same, or decreased?*
(If increased or decreased, ask if a lot or somewhat)
( ) Increased a lot
( ) Increased somewhat
( ) Stayed about the same
( ) Decreased somewhat
( ) Decreased a lot
( ) DK/NS

143. Have your monthly utility bills increased, stayed the same, or decreased?*
(If increased or decreased, ask if a lot or somewhat)
( ) Increased a lot
( ) Increased somewhat
( ) Stayed about the same
( ) Decreased somewhat
( ) Decreased a lot
( ) DK/NS

If "increased" or "decreased" in Q143, then ask Q143a
143a. Could you provide an estimate of how much your monthly utility bill, on average, has changed per month since you participated in this program?

*We are not asking for the total amount of their bills, just the amount of CHANGE in their bills.**

_____

Finally, we have some general demographic questions...

d1. In what type of building do you live?*
( ) Single-family home, detached construction
( ) Single family home, factory manufactured/modular
( ) Single family, mobile home
( ) Row House
( ) Two or Three family attached residence-traditional structure
( ) Apartment (4 + families)---traditional structure
( ) Condominium---traditional structure
( ) Other: _____
( ) Refused
( ) DK/NS

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d2. What year was your residence built?*
( ) 1959 and before
( ) 1960-1979
( ) 1980-1989
( ) 1990-1997
( ) 1998-2000
( ) 2001-2007
( ) 2008-present
( ) DK/NS

d3. How many rooms are in your home (excluding bathrooms, but including finished basements)?*
( ) 1-3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10 or more
( ) DK/NS

d4. Which of the following best describes your home's heating system?*
Check all that apply
[ ] None
[ ] Central forced air furnace
[ ] Electric Baseboard
[ ] Heat Pump
[ ] Geothermal Heat Pump
[ ] Other: _____
[ ] DK/NS

d5. How old is your heating system?*
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d6. What is the primary fuel used in your heating system?*
( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane

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( ) Other: _____
( ) DK/NS

d7. What is the secondary fuel used in your primary heating system, if any?*
( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other: _____
( ) None
( ) DK/NS

d8. Do you use one or more of the following to cool your home?*
(Mark all that apply)
[ ] None, do not cool the home
[ ] Heat pump for cooling
[ ] Central air conditioning
[ ] Through the wall or window air conditioning unit
[ ] Geothermal Heat pump
[ ] Other *(please specify?)*: _____
[ ] DK/NS

d9. How many window-unit or "through the wall" air conditioner(s) do you use?*
( ) None
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) DK/NS

d10. What is the fuel used in your cooling system?*
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other: _____
[ ] None
[ ] DK/NS

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d11. How old is your cooling system?*
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d12. What is the fuel used by your water heater?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other: _____
[ ] No water heater
[ ] DK/NS

d13. How old is your water heater?*
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) More than 19 years
( ) DK/NS

d14. What type of fuel do you use for indoor cooking on the stovetop or range?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other: _____
[ ] No stovetop or range
[ ] DK/NS

d15. What type of fuel do you use for indoor cooking in the oven?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other: _____
[ ] No oven

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[ ] DK/NS

d16. What type of fuel do you use for clothes drying?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other: _____
[ ] No clothes dryer
[ ] DK/NS

d17. About how many square feet of living space are in your home?*
(Do not include garages or other unheated areas)
Note: A 10-foot by 12 foot room is 120 square feet
( ) Less than 500
( ) 500 to 999
( ) 1000 to 1499
( ) 1500 to 1999
( ) 2000 to 2499
( ) 2500 to 2999
( ) 3000 to 3499
( ) 3500 to 3999
( ) 4000 or more
( ) DK/NS

d18. Do you own or rent your home?*
( ) Own
( ) Rent

d19. How many levels are in your home (not including your basement)?*
( ) One
( ) Two
( ) Three

d20. Does your home have a heated or unheated basement?*
( ) Heated
( ) Unheated
( ) No basement
( ) DK/NS

d21. Does your home have an attic?*
( ) Yes
( ) No
( ) DK/NS

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d22. Are your central air/heat ducts located in the attic?*
( ) Yes
( ) No
( ) DK/NS
( ) N/A

d23. Does your house have cold drafts in the winter?*
( ) Yes
( ) No
( ) DK/NS

d24. Does your house have sweaty windows in the winter?*
( ) Yes
( ) No
( ) DK/NS

d25. Do you notice uneven temperatures between the rooms in your home?*
( ) Yes
( ) No
( ) DK/NS

d26. Does your heating system keep your home comfortable in winter?*
( ) Yes
( ) No
( ) DK/NS

d27. Does your cooling system keep your home comfortable in summer?*
( ) Yes
( ) No
( ) DK/NS

d28. Do you have a programmable thermostat?*
( ) Yes
( ) No
( ) DK/NS

d28b. How many thermostats are there in your home?*
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4 or more
( ) DK/NS

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d29. What temperature is your thermostat set to on a typical summer weekday afternoon?*
( ) Less than 69 degrees
( ) 69-72 degrees
( ) 73-78 degrees
( ) Higher than 78 degrees
( ) Off
( ) DK/NS

d30. What temperature is your thermostat set to on a typical winter weekday afternoon?*
( ) Less than 67 degrees
( ) 67-70 degrees
( ) 71-73 degrees
( ) 74-77 degrees
( ) 78 degrees or higher
( ) Off
( ) DK/NS

d31. Do you have a swimming pool, hot-tub or spa?*
( ) Yes
( ) No

Read all answers until they reply
d32. Would a two-degree increase in the summer afternoon temperature in your home affect your comfort..*
( ) Not at all
( ) Slightly
( ) Moderately, or
( ) Greatly
( ) DK/NS

d33. How many people live in this home?*
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

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d34. How many of them are teenagers?* *(age 13-19)*
If they ask why: Explain that teenagers are generally associated with higher energy use.
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d35. How many persons are usually home on a weekday afternoon?*
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d36. Are you planning on making any large purchases to improve energy efficiency in the next 3 years?*
( ) Yes
( ) No
( ) DK/NS

The following questions are for classification purposes only and will not be used for any other purpose than to help Duke Energy continue to improve service.

d37. What is your age group?*
Read all.
( ) 18-34
( ) 35-49
( ) 50-59
( ) 60-64
( ) 65-74
( ) Over 74
( ) Prefer not to answer

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d38. Please indicate your annual household income.*
Read all in bold.
( ) Under $15,000
( ) $15,000-$29,999
( ) $30,000-$49,999
( ) $50,000-$74,999
( ) $75,000-$100,000
( ) Over $100,000
( ) Prefer Not to Answer
( ) DK/NS

We've reached the end of the survey. As I mentioned earlier, we will send you a $25 check for your time and feedback today. Should we send the $25 to *{address on calling sheet}*, **or would a different address be better?**

Confirm Name & complete address from calling sheet. If needed, make any changes to Name or Address on calling sheet, and mark "Changed Info" column.
You should receive your $25 check in about 4-6 weeks. It will come in an envelope from our company: TecMarket Works.

(politely end call)
Thank you for taking our survey. Your response is very important to us.

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Appendix G: Non-Participant Survey Instrument

Use four attempts at different times of the day and different days before dropping from contact list. Call times are from 10:00 a.m. to 8:00 p.m. EPT Monday through Saturday. No calls on Sunday. (Sample size N = 80 per state)

Note: Only read words in bold type. Italics are instructions.

State
( ) North Carolina
( ) South Carolina

Hello, my name is *(full name)* . I am calling from TecMarket Works on behalf of Duke Energy to conduct a customer survey about the Residential Neighborhood Program. May I speak with _____ please?

If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back:

We are conducting this survey to obtain your opinions about an energy efficiency program that took place recently in your neighborhood. We are not selling anything. If you qualify, the survey will take about 10 minutes and when we are done with the survey I will confirm your address and we will send you $15 for your time. Your answers will be confidential, and will help us to make improvements to the program to better serve others. May we begin the survey?
Note: If this is not a good time, ask if there is a better time to schedule a callback.

for answering machine 1st through penultimate attempts:
Hello, my name is [*name*] and I am calling on behalf of Duke Energy to conduct a customer survey about energy efficiency. I am sorry I missed you. I will try again another time.

for answering machine - Final Attempt:
Hello, my name is [*name*] and I am calling on behalf of Duke Energy to conduct a customer survey about energy efficiency. This is my last attempt at reaching you, my apologies for any inconvenience.

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1. **Do you recall hearing anything about Duke Energy's Residential Neighborhood Program?**
   ( ) Yes
   ( ) No
   ( ) DK/NS

If NO or DK/NS to q1
2. **This program was provided through Duke Energy and provided residents in your area with free home energy assessments and, if needed, the free installation of energy-saving home improvements.**
Were you aware of this program's existence before now
   ( ) Yes
   ( ) No
   ( ) DK/NS

If NO or DK/NS to q2
Sorry, you do not qualify to take this survey, becuase you are not aware of the program.
Politely terminate interview.

3. **Did anyone in your household participate in this program?**
   ( ) Yes
   ( ) No
   ( ) DK/NS

If YES to q3, ask q3a-b, then politely terminate interview.
3a. **Who in your household signed up for the program? What is your relationship to this person?** _____

3b. **What was done to your home through this program?** _____

If YES to q3,
Sorry, you do not qualify to take this survey, because somebody in your home participated in the program.

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4. **How did you first learn about or hear about Duke Energy's Residential Neighborhood Program?**
(Check all that apply)

[ ] Received a letter or postcard in the mail describing the program
4a. **Who sent the letter or postcard?** _____
[ ] Received a "door hanger" describing the program
4b. **Who left the door hanger?** _____
[ ] Heard about a community event promoting the program, though did not attend
[ ] Attended a community event promoting the program
[ ] Someone visited my home to tell me about the program
4c. **What organization was this person from?** _____
[ ] Someone from Duke Energy called to tell me about the program
[ ] Someone else called to tell me about the program
4d. *Specify person/organization* _____
[ ] I called Duke Energy for information or help
[ ] I called someone else for information or help
4e. *Specify person/organization* _____
[ ] Friends, family or neighbors (word of mouth)
[ ] Media (TV, radio, newspapers, news reports, advertising, etc.)
4f. *Specify sources* _____
[ ] Online (Duke Energy or any other websites)
4g. *Specify sites* _____
[ ] Through another agency or organization (Church, CAP, Energy Assistance, etc.)
4h. *Specify organizations* _____
[ ] Some other way
4i. *specify* _____
[ ] DK/NS

If "Attended a community event promoting the program" is checked in Q4, ask Q5a-h; otherwise skip ahead to Q6.

5a. **Next I am going to read you some statements about the community meeting you attended. Please rate your satisfaction with each aspect of the community meeting on a 1 to 10 scale, where 10 means very satisfied and 1 means very dissatisfied. How satisfied are you with the information presented about the Residential Neighborhood Program at the event?**
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
5b. **How could this be improved?** _____

5c. **Using the same 1-to-10 rating scale, how satisfied are you with the staff and presenters at the community meeting?**
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,

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5d. **How could this be improved?** _____

5e. **And how would you rate your <u>overall satisfaction</u> with the community meeting for the Residential Neighborhood Program?**
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
5f. **How could this be improved?** _____

6. **We are interested in learning what people understood about how this program operated, including people who did not participate. Please describe what you understood was required of participants in this program, and what you could have received in return had you participated in Duke Energy's Residential Neighborhood Program? (What is this program about / what would they do?)**
Probe for details and record response _____

7. **Do you think you would have been eligible to participate in this program?**
( ) Yes
( ) No
( ) DK/NS

If Yes,
7a. **Why didn't you participate in Duke Energy's Residential Neighborhood Program?**
_____

If DK/NS,
7b. **Why didn't you apply or inquire about participating in Duke Energy's Residential Neighborhood Program?** _____

8a. **Were there any other reasons you chose not to participate in this program?** _____

8b. **Even though you did not participate, did you recommend this program to any of your friends, neighbors or relatives?**
( ) Yes
( ) No
( ) DK/NS

If yes,
8c. **How many people have you recommended the program to?**
( ) Number _____
( ) DK/NS

9. **We are interested in learning what we might offer in order to convince people like yourself to participate in programs like the Residential Neighborhood Program. Are there things that this program could have provided that you think would have caused more people such as yourself to want to participate?** _____

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10. **Have you taken any steps to save energy in your home in the past year?**
( ) Yes
( ) No
( ) DK/NS

10a-d. **What actions have you taken to save energy?**
After each response, ask: **Anything else?**
Response: 10a. _____
Response: 10b. _____
Response: 10c. _____
Response: 10d. _____

11. **The Residential Neighborhood Program was provided by Duke Energy. As a result of what you know about this program, would you say your attitude toward Duke Energy is more positive, more negative, or about the same?**
(If more positive/negative, ask if "much more" positive/negative' or "somewhat more" positive/negative.)
( ) Much more positive
( ) Somewhat more positive
( ) About the same
( ) Somewhat more negative
( ) Much more negative
( ) DK/NS

If "more positive" or "more negative" in Q11, then ask Q11a:
11a. **Why do you say that?** _____

12. **Next, please rate your overall satisfaction with Duke Energy on a 1 to 10 scale, where 10 means very satisfied and 1 means very dissatisfied.**
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
12a. **How could this be improved?** _____

The last set of questions deal with household characteristics. These questions are optional and you do not need to give any information that you are uncomfortable with, but please keep in mind that any and all information you provide will remain confidential.

d1. **In what type of building do you live?**
( ) Single-family home, detached construction
( ) Single family home, factory manufactured/modular
( ) Single family, mobile home
( ) Row House
( ) Two or Three family attached residence-traditional structure
( ) Apartment (4 + families)---traditional structure

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( ) Condominium---traditional structure
( ) Other _____
( ) Refused
( ) DK/NS

d2. **What year was your residence built?**
( ) 1959 and before
( ) 1960-1979
( ) 1980-1989
( ) 1990-1997
( ) 1998-2000
( ) 2001-2007
( ) 2008-present
( ) DK/NS

d3. **How many rooms are in your home (excluding bathrooms, but including finished basements)?**
( ) 1-3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10 or more
( ) DK/NS

d4. **Which of the following best describes your home's heating system?**
Check all that apply
[ ] None
[ ] Central forced air furnace
[ ] Electric Baseboard
[ ] Heat Pump
[ ] Geothermal Heat Pump
[ ] Other _____
[ ] DK/NS

d5. **How old is your heating system?**
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

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d6. **What is the primary fuel used in your heating system?**

( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other _____
( ) DK/NS

d7. **What is the secondary fuel used in your primary heating system, if any?**

( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other _____
( ) None
( ) DK/NS

d8. **Do you use one or more of the following to cool your home?**
(Mark all that apply)

[ ] None, do not cool the home
[ ] Heat pump for cooling
[ ] Central air conditioning
[ ] Through the wall or window air conditioning unit
[ ] Geothermal Heat pump
[ ] Other *(please specify)* _____
[ ] DK/NS

d9. **How many window-unit or "through the wall" air conditioner(s) do you use?**

( ) None
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) DK/NS

d10. **What is the fuel used in your cooling system?**

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] None

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[ ] DK/NS

d11. **How old is your cooling system?**

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d12. **What is the fuel used by your water heater?**

(Mark all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No water heater
[ ] DK/NS

d13. **How old is your water heater?**

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) More than 19 years
( ) DK/NS

d14. **What type of fuel do you use for indoor cooking on the stovetop or range?**

(Mark all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No stovetop or range
[ ] DK/NS

d15. **What type of fuel do you use for indoor cooking in the oven?**

(Mark all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____

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[ ] No oven
[ ] DK/NS

d16. **What type of fuel do you use for clothes drying?**
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No clothes dryer
[ ] DK/NS

d17. **About how many square feet of living space are in your home?**
(Do not include garages or other unheated areas)
Note: A 10-foot by 12 foot room is 120 square feet
( ) Less than 500
( ) 500 to 999
( ) 1000 to 1499
( ) 1500 to 1999
( ) 2000 to 2499
( ) 2500 to 2999
( ) 3000 to 3499
( ) 3500 to 3999
( ) 4000 or more
( ) DK/NS

d18. **Do you own or rent your home?**
( ) Own
( ) Rent

d19. **How many levels are in your home (not including your basement)?**
( ) One
( ) Two
( ) Three

d20. **Does your home have a heated or unheated basement?**
( ) Heated
( ) Unheated
( ) No basement

d21. **Does your home have an attic?**
( ) Yes
( ) No

d22. **Are your central air/heat ducts located in the attic?**

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( ) Yes
( ) No
( ) N/A
( ) DK/NS

d23. **Does your house have cold drafts in the winter?**
( ) Yes
( ) No
( ) DK/NS

d24. **Does your house have sweaty windows in the winter?**
( ) Yes
( ) No
( ) DK/NS

d25. **Do you notice uneven temperatures between the rooms in your home?**
( ) Yes
( ) No
( ) DK/NS

d26. **Does your heating system keep your home comfortable in winter?**
( ) Yes
( ) No
( ) DK/NS

d27. **Does your cooling system keep your home comfortable in summer?**
( ) Yes
( ) No
( ) DK/NS

d28. **Do you have a programmable thermostat?**
( ) Yes
( ) No
( ) DK/NS

d28b. **How many thermostats are there in your home?**
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4 or more
( ) DK/NS

d29. **What temperature is your thermostat set to on a typical summer weekday afternoon?**
( ) Less than 69 degrees
( ) 69-72 degrees

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( ) 73-78 degrees
( ) Higher than 78 degrees
( ) Off
( ) DK/NS

d30. **What temperature is your thermostat set to on a typical winter weekday afternoon?**
( ) Less than 67 degrees
( ) 67-70 degrees
( ) 71-73 degrees
( ) 74-77 degrees
( ) 78 degrees or higher
( ) Off
( ) DK/NS

d31. **Do you have a swimming pool, hot-tub or spa?**
( ) Yes
( ) No

Read all answers until they reply
d32. **Would a two-degree increase in the summer afternoon temperature in your home affect your comfort..**
( ) **Not at all**
( ) **Slightly**
( ) **Moderately, or**
( ) **Greatly**
( ) DK/NS

d33. **How many people live in this home?**
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d34. **How many of them are teenagers?** *(age 13-19)*
If they ask why: Explain that teenagers are generally associated with higher energy use.
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5

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( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d35. **How many persons are usually home on a weekday afternoon?**
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d36. **Are you planning on making any large purchases to improve energy efficiency in the next 3 years?**
( ) Yes
( ) No
( ) DK/NS

The following questions are for classification purposes only and will not be used for any other purpose than to help Duke Energy continue to improve service.

d37. **What is your age group?**
Read all.
( ) **18-34**
( ) **35-49**
( ) **50-59**
( ) **60-64**
( ) **65-74**
( ) **Over 74**
( ) Prefer not to answer

d38. **Please indicate your annual household income.**
Read all.
( ) **Under $15,000**
( ) **$15,000-$29,999**
( ) **$30,000-$49,999**
( ) **$50,000-$74,999**
( ) **$75,000-$100,000**
( ) **Over $100,000**
( ) Prefer Not to Answer
( ) DK/NS

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We've reached the end of the survey. As I mentioned earlier, we would like to send you $15 for your time and feedback today. Should we send it to *{address on calling sheet}*, or would a different address be better?

Confirm Name & complete address from calling sheet. If needed, make any changes to Name or Address on calling sheet, and mark "Changed Info" column.

You should receive your $15 check in about 4-6 weeks. It will come in an envelope from our company: TecMarket Works.

(politely end call)

Thank you for taking our survey. Your response is very important to us.

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Appendix H: Demographics and Household Characteristics

Participant Survey Households

In what type of building do you live? * State

			State		Total
			North Carolina	South Carolina	
In what type of building do you live?	Single-family home, detached construction	Count	36	33	69
		% within State	81.8%	91.7%	86.3%
	Single family home, factory manufactured/modular	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Two or Three family attached residence-traditional structure	Count	3	1	4
		% within State	6.8%	2.8%	5.0%
	Apartment (4 + families)---traditional structure	Count	4	1	5
		% within State	9.1%	2.8%	6.3%
	Other: *Side-by-side duplex*	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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What year was your residence built? * State

			State		Total
			North Carolina	South Carolina	
What year was your residence built?	1959 and before	Count	19	9	28
		% within State	43.2%	25.0%	35.0%
	1960-1979	Count	11	8	19
		% within State	25.0%	22.2%	23.8%
	1980-1989	Count	0	2	2
		% within State	0.0%	5.6%	2.5%
	1990-1997	Count	2	2	4
		% within State	4.5%	5.6%	5.0%
	1998-2000	Count	1	3	4
		% within State	2.3%	8.3%	5.0%
	2001-2007	Count	2	6	8
		% within State	4.5%	16.7%	10.0%
	2008-present	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	DK/NS	Count	8	6	14
		% within State	18.2%	16.7%	17.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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How many rooms are in your home (excluding bathrooms, but including finished basements)? * State

			State		Total
			North Carolina	South Carolina	
How many rooms are in your home (excluding bathrooms, but including finished basements)?	4	Count	13	8	21
		% within State	29.5%	22.2%	26.3%
	5	Count	13	13	26
		% within State	29.5%	36.1%	32.5%
	6	Count	12	8	20
		% within State	27.3%	22.2%	25.0%
	7	Count	1	5	6
		% within State	2.3%	13.9%	7.5%
	8	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	9	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	1-3	Count	3	1	4
		% within State	6.8%	2.8%	5.0%
	10 or more	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Which of the following best describes your home's heating system?	North Carolina N=44		South Carolina N=36		Total N=80	
None	0	0.0%	0	0.0%	0	0.0%
Central forced air furnace	32	72.7%	20	55.6%	52	65.0%
Electric Baseboard	7	15.9%	0	0.0%	7	8.8%
Heat Pump	1	2.3%	12	33.3%	13	16.3%
Geothermal Heat Pump	0	0.0%	0	0.0%	0	0.0%
Gas pack / gas log fireplace	2	4.5%	0	0.0%	2	2.5%
Other: listed below	2	4.5%	2	5.6%	4	5.0%
Don't know	0	0.0%	2	5.6%	2	2.5%

May total to more than 100% because respondents could give multiple responses.

Four respondents mentioned "other" types of heating system; these are listed below.

- *Electric fireplace*
- *Kerosene heater*
- *Infrared propane space heater*
- *Thermal ceiling cable heat*

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How old is your heating system? * State

			State		Total
			North Carolina	South Carolina	
How old is your heating system?	0-4 years	Count	11	10	21
		% within State	25.0%	27.8%	26.3%
	5-9 years	Count	4	3	7
		% within State	9.1%	8.3%	8.8%
	10-14 years	Count	7	5	12
		% within State	15.9%	13.9%	15.0%
	15-19 years	Count	1	7	8
		% within State	2.3%	19.4%	10.0%
	19 years or older	Count	5	3	8
		% within State	11.4%	8.3%	10.0%
	DK/NS	Count	16	8	24
		% within State	36.4%	22.2%	30.0%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

What is the primary fuel used in your heating system? * State

			State		Total
			North Carolina	South Carolina	
What is the primary fuel used in your heating system?	Electricity	Count	14	16	30
		% within State	31.8%	44.4%	37.5%
	Natural Gas	Count	30	16	46
		% within State	68.2%	44.4%	57.5%
	Propane	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Other: *gas pack natural gas*	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Other: *kerosene*	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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What is the secondary fuel used in your primary heating system, if any? * State

			State		Total
			North Carolina	South Carolina	
What is the secondary fuel used in your primary heating system, if any?	Electricity	Count	2	6	8
		% within State	4.5%	16.7%	10.0%
	Natural Gas	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Other: *space heaters*	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	Other: *wood fire place*	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Don't know	Count	0	2	2
		% within State	0.0%	5.6%	2.5%
	None	Count	41	26	67
		% within State	93.2%	72.2%	83.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Do you use one or more of the following to cool your home?	North Carolina N=44		South Carolina N=36		Total N=80	
None, do not cool the home	0	0.0%	0	0.0%	0	0.0%
Heat pump for cooling	1	2.3%	9	25.0%	10	12.5%
Central air conditioning	28	63.6%	18	50.0%	46	57.5%
Through the wall or window air conditioning unit	16	36.4%	8	22.2%	24	30.0%
Geothermal Heat pump	0	0.0%	0	0.0%	0	0.0%
Fans (ceiling, window, portable)	0	0.0%	0	0.0%	0	0.0%
Gas pack for cooling	2	4.5%	1	2.8%	3	3.8%
Don't know	0	0.0%	1	2.8%	1	1.3%

May total to more than 100% because respondents could give multiple responses.

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How many window-unit or through the wall air conditioner(s) do you use? * State

			State		Total
			North Carolina	South Carolina	
How many window-unit or through the wall air conditioner(s) do you use?	1	Count	10	5	15
		% within State	22.7%	13.9%	18.8%
	2	Count	5	3	8
		% within State	11.4%	8.3%	10.0%
	3	Count	2	0	2
		% within State	4.5%	0.0%	2.5%
	None	Count	27	28	55
		% within State	61.4%	77.8%	68.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

What is the fuel used in your cooling system?	North Carolina N=44		South Carolina N=36		Total N=80	
Electricity	42	95.5%	32	88.9%	74	92.5%
Natural Gas	2	4.5%	3	8.3%	5	6.3%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no cooling system)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	1	2.8%	1	1.3%

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How old is your cooling system? * State

			State		Total
			North Carolina	South Carolina	
How old is your cooling system?	0-4 years	Count	11	12	23
		% within State	25.0%	33.3%	28.8%
	5-9 years	Count	8	6	14
		% within State	18.2%	16.7%	17.5%
	10-14 years	Count	7	4	11
		% within State	15.9%	11.1%	13.8%
	15-19 years	Count	0	8	8
		% within State	0.0%	22.2%	10.0%
	19 years or older	Count	5	2	7
		% within State	11.4%	5.6%	8.8%
	DK/NS	Count	13	4	17
		% within State	29.5%	11.1%	21.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

What is the fuel used by your water heater?	North Carolina N=44		South Carolina N=36		Total N=80	
Electricity	27	61.4%	30	83.3%	57	71.3%
Natural Gas	14	31.8%	5	13.9%	19	23.8%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
No water heater	0	0.0%	0	0.0%	0	0.0%
DK/NS	3	6.8%	1	2.8%	4	5.0%

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How old is your water heater? * State

			State		Total
			North Carolina	South Carolina	
How old is your water heater?	0-4 years	Count	11	8	19
		% within State	25.0%	22.2%	23.8%
	5-9 years	Count	9	6	15
		% within State	20.5%	16.7%	18.8%
	10-14 years	Count	5	10	15
		% within State	11.4%	27.8%	18.8%
	15-19 years	Count	1	1	2
		% within State	2.3%	2.8%	2.5%
	More than 19 years	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	DK/NS	Count	18	10	28
		% within State	40.9%	27.8%	35.0%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

What type of fuel do you use for indoor cooking on the stovetop or range?	North Carolina N=44		South Carolina N=36		Total N=80	
Electricity	35	79.5%	32	88.9%	67	83.8%
Natural Gas	9	20.5%	4	11.1%	13	16.3%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no stove)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

What type of fuel do you use for indoor cooking in the oven?	North Carolina N=44		South Carolina N=36		Total N=80	
Electricity	35	79.5%	34	94.4%	69	86.3%
Natural Gas	9	20.5%	2	5.6%	11	13.8%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane						
None (no oven)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

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What type of fuel do you use for clothes drying?	North Carolina N=44		South Carolina N=36		Total N=80	
Electricity	30	68.2%	29	80.6%	59	73.8%
Natural Gas	2	4.5%	3	8.3%	5	6.3%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no dryer)	12	27.3%	4	11.1%	16	20.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

About how many square feet of living space are in your home? * State

			State		Total
			North Carolina	South Carolina	
About how many square feet of living space are in your home?	Less than 500	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	500 to 999	Count	8	0	8
		% within State	18.2%	0.0%	10.0%
	1000 to 1499	Count	10	11	21
		% within State	22.7%	30.6%	26.3%
	1500 to 1999	Count	4	2	6
		% within State	9.1%	5.6%	7.5%
	2000 to 2499	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	DK/NS	Count	20	23	43
		% within State	45.5%	63.9%	53.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Do you own or rent your home? * State

			State		Total
			North Carolina	South Carolina	
Do you own or rent your home?	Own	Count	29	29	58
		% within State	65.9%	80.6%	72.5%
	Rent	Count	15	7	22
		% within State	34.1%	19.4%	27.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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How many levels are in your home (not including your basement)? * State

			State		Total
			North Carolina	South Carolina	
d19 How many levels are in your home (not including your basement)?	One	Count	38	34	72
		% within State	86.4%	94.4%	90.0%
	Two	Count	6	2	8
		% within State	13.6%	5.6%	10.0%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your home have a heated or unheated basement? * State

			State		Total
			North Carolina	South Carolina	
Does your home have a heated or unheated basement?	Heated	Count	1	2	3
		% within State	2.3%	5.6%	3.8%
	Unheated	Count	5	2	7
		% within State	11.4%	5.6%	8.8%
	No basement	Count	38	31	69
		% within State	86.4%	86.1%	86.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your home have an attic? * State

			State		Total
			North Carolina	South Carolina	
Does your home have an attic?	Yes	Count	35	25	60
		% within State	79.5%	69.4%	75.0%
	No	Count	7	10	17
		% within State	15.9%	27.8%	21.3%
	DK/NS	Count	2	1	3
		% within State	4.5%	2.8%	3.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Are your central air/heat ducts located in the attic? * State

			State		Total
			North Carolina	South Carolina	
Are your central air/heat ducts located in the attic?	Yes	Count	13	5	18
		% within State	29.5%	13.9%	22.5%
	No	Count	20	17	37
		% within State	45.5%	47.2%	46.3%
	N/A	Count	4	9	13
		% within State	9.1%	25.0%	16.3%
	DK/NS	Count	7	5	12
		% within State	15.9%	13.9%	15.0%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your house have cold drafts in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have cold drafts in the winter?	Yes	Count	26	17	43
		% within State	59.1%	47.2%	53.8%
	No	Count	18	19	37
		% within State	40.9%	52.8%	46.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your house have sweaty windows in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have sweaty windows in the winter?	Yes	Count	16	10	26
		% within State	36.4%	27.8%	32.5%
	No	Count	28	26	54
		% within State	63.6%	72.2%	67.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Do you notice uneven temperatures between the rooms in your home? * State

			State		Total
			North Carolina	South Carolina	
Do you notice uneven temperatures between the rooms in your home?	Yes	Count	27	19	46
		% within State	61.4%	52.8%	57.5%
	No	Count	17	17	34
		% within State	38.6%	47.2%	42.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your heating system keep your home comfortable in winter? * State

			State		Total
			North Carolina	South Carolina	
Does your heating system keep your home comfortable in winter?	Yes	Count	37	33	70
		% within State	84.1%	91.7%	87.5%
	No	Count	7	3	10
		% within State	15.9%	8.3%	12.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Does your cooling system keep your home comfortable in summer? * State

			State		Total
			North Carolina	South Carolina	
Does your cooling system keep your home comfortable in summer?	Yes	Count	37	32	69
		% within State	84.1%	88.9%	86.3%
	No	Count	4	4	8
		% within State	9.1%	11.1%	10.0%
	DK/NS	Count	3	0	3
		% within State	6.8%	0.0%	3.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Do you have a programmable thermostat? * State

			State		Total
			North Carolina	South Carolina	
Do you have a programmable thermostat?	Yes	Count	23	20	43
		% within State	52.3%	55.6%	53.8%
	No	Count	19	16	35
		% within State	43.2%	44.4%	43.8%
	DK/NS	Count	2	0	2
		% within State	4.5%	0.0%	2.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

How many thermostats are there in your home? * State

			State		Total
			North Carolina	South Carolina	
How many thermostats are there in your home?	0	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	1	Count	30	29	59
		% within State	68.2%	80.6%	73.8%
	2	Count	9	5	14
		% within State	20.5%	13.9%	17.5%
	3	Count	3	1	4
		% within State	6.8%	2.8%	5.0%
	4 or more	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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What temperature is your thermostat set to on a typical summer weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical summer weekday afternoon?	Less than 69 degrees	Count	4	5	9
		% within State	9.1%	13.9%	11.3%
	69-72 degrees	Count	17	18	35
		% within State	38.6%	50.0%	43.8%
	73-78 degrees	Count	9	7	16
		% within State	20.5%	19.4%	20.0%
	Off	Count	9	2	11
		% within State	20.5%	5.6%	13.8%
	DK/NS	Count	5	4	9
		% within State	11.4%	11.1%	11.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

What temperature is your thermostat set to on a typical winter weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical winter weekday afternoon?	Less than 67 degrees	Count	7	4	11
		% within State	15.9%	11.1%	13.8%
	67-70 degrees	Count	12	5	17
		% within State	27.3%	13.9%	21.3%
	71-73 degrees	Count	7	10	17
		% within State	15.9%	27.8%	21.3%
	74-77 degrees	Count	8	11	19
		% within State	18.2%	30.6%	23.8%
	78 degrees or higher	Count	3	3	6
		% within State	6.8%	8.3%	7.5%
	Off	Count	2	1	3
		% within State	4.5%	2.8%	3.8%
	DK/NS	Count	5	2	7
		% within State	11.4%	5.6%	8.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Do you have a swimming pool, hot-tub or spa? * State

			State		Total
			North Carolina	South Carolina	
Do you have a swimming pool, hot-tub or spa?	Yes	Count	0	3	3
		% within State	0.0%	8.3%	3.8%
	No	Count	44	33	77
		% within State	100.0%	91.7%	96.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Would a two-degree increase in the summer afternoon temperature in your home affect your comfort * State

			State		Total
			North Carolina	South Carolina	
Would a two-degree increase in the summer afternoon temperature in your home affect your comfort	Not at all	Count	24	16	40
		% within State	54.5%	44.4%	50.0%
	Slightly	Count	11	11	22
		% within State	25.0%	30.6%	27.5%
	Moderately, or	Count	4	2	6
		% within State	9.1%	5.6%	7.5%
	Greatly	Count	2	3	5
		% within State	4.5%	8.3%	6.3%
	DK/NS	Count	3	4	7
		% within State	6.8%	11.1%	8.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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How many people live in this home? * State

			State		Total
			North Carolina	South Carolina	
How many people live in this home?	1	Count	25	10	35
		% within State	56.8%	27.8%	43.8%
	2	Count	8	11	19
		% within State	18.2%	30.6%	23.8%
	3	Count	7	9	16
		% within State	15.9%	25.0%	20.0%
	4	Count	0	3	3
		% within State	0.0%	8.3%	3.8%
	5	Count	3	3	6
		% within State	6.8%	8.3%	7.5%
	Prefer not to answer	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

How many of them are teenagers? * State

			State		Total
			North Carolina	South Carolina	
How many of them are teenagers?	0	Count	40	27	67
		% within State	90.9%	75.0%	83.8%
	1	Count	1	6	7
		% within State	2.3%	16.7%	8.8%
	2	Count	0	2	2
		% within State	0.0%	5.6%	2.5%
	3	Count	2	0	2
		% within State	4.5%	0.0%	2.5%
	4	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Prefer not to answer	Count	1	0	1
		% within State	2.3%	0.0%	1.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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How many persons are usually home on a weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
How many persons are usually home on a weekday afternoon?	0	Count	7	5	12
		% within State	15.9%	13.9%	15.0%
	1	Count	27	15	42
		% within State	61.4%	41.7%	52.5%
	2	Count	6	9	15
		% within State	13.6%	25.0%	18.8%
	3	Count	2	6	8
		% within State	4.5%	16.7%	10.0%
	5	Count	0	1	1
		% within State	0.0%	2.8%	1.3%
	Prefer not to answer	Count	2	0	2
		% within State	4.5%	0.0%	2.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

Are you planning on making any large purchases to improve energy efficiency in the next 3 years? * State

			State		Total
			North Carolina	South Carolina	
Are you planning on making any large purchases to improve energy efficiency in the next 3 years?	Yes	Count	3	11	14
		% within State	6.8%	30.6%	17.5%
	No	Count	34	21	55
		% within State	77.3%	58.3%	68.8%
	DK/NS	Count	7	4	11
		% within State	15.9%	11.1%	13.8%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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What is your age group? * State

			State		Total
			North Carolina	South Carolina	
What is your age group?	18-34	Count	2	3	5
		% within State	4.5%	8.3%	6.3%
	35-49	Count	6	8	14
		% within State	13.6%	22.2%	17.5%
	50-59	Count	12	1	13
		% within State	27.3%	2.8%	16.3%
	60-64	Count	6	6	12
		% within State	13.6%	16.7%	15.0%
	65-74	Count	12	11	23
		% within State	27.3%	30.6%	28.8%
	Over 74	Count	5	6	11
		% within State	11.4%	16.7%	13.8%
	Prefer not to answer	Count	1	1	2
		% within State	2.3%	2.8%	2.5%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Please indicate your annual household income * State

			State		Total
			North Carolina	South Carolina	
Please indicate your annual household income	Under $15,000	Count	17	14	31
		% within State	38.6%	38.9%	38.8%
	$15,000-$29,999	Count	7	10	17
		% within State	15.9%	27.8%	21.3%
	$30,000-$49,999	Count	6	5	11
		% within State	13.6%	13.9%	13.8%
	$50,000-$74,999	Count	4	1	5
		% within State	9.1%	2.8%	6.3%
	Prefer Not to Answer	Count	8	3	11
		% within State	18.2%	8.3%	13.8%
	DK/NS	Count	2	3	5
		% within State	4.5%	8.3%	6.3%
Total		Count	44	36	80
		% within State	100.0%	100.0%	100.0%

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Non-Participant Survey Households

In what type of building do you live? * State Crosstabulation

			State		Total
			North Carolina	South Carolina	
In what type of building do you live?	Single-family home, detached construction	Count	23	42	65
		% within State	74.2%	85.7%	81.3%
	Single family home, factory manufactured/modular	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	Single family, mobile home	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	Two or Three family attached residence-traditional structure	Count	4	4	8
		% within State	12.9%	8.2%	10.0%
	Apartment (4 + families)---traditional structure	Count	4	1	5
		% within State	12.9%	2.0%	6.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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What year was your residence built? * State Crosstabulation

			State		Total
			North Carolina	South Carolina	
What year was your residence built?	1959 and before	Count	11	16	27
		% within State	35.5%	32.7%	33.8%
	1960-1979	Count	7	10	17
		% within State	22.6%	20.4%	21.3%
	1980-1989	Count	0	2	2
		% within State	0.0%	4.1%	2.5%
	1990-1997	Count	1	3	4
		% within State	3.2%	6.1%	5.0%
	1998-2000	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	2001-2007	Count	0	5	5
		% within State	0.0%	10.2%	6.3%
	2008-present	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	DK/NS	Count	12	11	23
		% within State	38.7%	22.4%	28.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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How many rooms are in your home (excluding bathrooms, but including finished basements)? * State

			State		Total
			North Carolina	South Carolina	
How many rooms are in your home (excluding bathrooms, but including finished basements)?	1 to 3	Count	3	0	3
		% within State	9.7%	0.0%	3.8%
	4	Count	5	10	15
		% within State	16.1%	20.4%	18.8%
	5	Count	14	18	32
		% within State	45.2%	36.7%	40.0%
	6	Count	5	14	19
		% within State	16.1%	28.6%	23.8%
	7	Count	2	6	8
		% within State	6.5%	12.2%	10.0%
	10 or more	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
	DK/NS	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Which of the following best describes your home's heating system?	North Carolina N=31		South Carolina N=49		Total N=80	
None	0	0.0%	0	0.0%	0	0.0%
Central forced air furnace	22	71.0%	24	49.0%	46	57.5%
Electric Baseboard	5	16.1%	4	8.2%	9	11.3%
Heat Pump	1	3.2%	13	26.5%	14	17.5%
Geothermal Heat Pump	0	0.0%	0	0.0%	0	0.0%
Gas pack / gas log fireplace	1	3.2%	0	0.0%	1	1.3%
Other: listed below	1	3.2%	8	16.3%	9	11.3%
Don't know	1	3.2%	3	6.1%	4	5.0%

May total to more than 100% because respondents could give multiple responses.

Nine respondents mentioned "other" types of heating system; these are listed below.

- *Heat pump is broken, using space heaters* (N=2)
- *Space heaters* (N=2)
- *Portable plug-in heaters*
- *Portable oil heater*
- *Freestanding natural gas heater with a blower*
- *Wall-mounted interior natural gas furnace in the living room*

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- *Refused to answer*

How old is your heating system? * State

			State		Total
			North Carolina	South Carolina	
How old is your heating system?	0-4 years	Count	5	11	16
		% within State	16.1%	22.4%	20.0%
	5-9 years	Count	6	7	13
		% within State	19.4%	14.3%	16.3%
	10-14 years	Count	1	6	7
		% within State	3.2%	12.2%	8.8%
	15-19 years	Count	2	3	5
		% within State	6.5%	6.1%	6.3%
	19 years or older	Count	5	5	10
		% within State	16.1%	10.2%	12.5%
	DK/NS	Count	12	17	29
		% within State	38.7%	34.7%	36.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

What is the primary fuel used in your heating system? * State

			State		Total
			North Carolina	South Carolina	
What is the primary fuel used in your heating system?	Electricity	Count	9	27	36
		% within State	29.0%	55.1%	45.0%
	Natural Gas	Count	20	19	39
		% within State	64.5%	38.8%	48.8%
	Oil	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
	Propane	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	Refused	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	DK/NS	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
Total		Count	31	49	80

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	% within State	100.0%	100.0%	100.0%

What is the secondary fuel used in your primary heating system, if any? * State

			State		Total
			North Carolina	South Carolina	
What is the secondary fuel used in your primary heating system, if any?	Electricity	Count	5	3	8
		% within State	16.1%	6.1%	10.0%
	Natural Gas	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
	None	Count	24	45	69
		% within State	77.4%	91.8%	86.3%
	DK/NS	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Do you use one or more of the following to cool your home?	North Carolina N=31		South Carolina N=49		Total N=80	
None, do not cool the home	0	0.0%	0	0.0%	0	0.0%
Heat pump for cooling	2	6.5%	10	20.4%	12	15.0%
Central air conditioning	17	54.8%	22	44.9%	39	48.8%
Through the wall or window air conditioning unit	9	29.0%	17	34.7%	26	32.5%
Geothermal Heat pump	0	0.0%	0	0.0%	0	0.0%
Fans (ceiling, window, portable)	0	0.0%	1	2.0%	1	1.3%
Gas pack for cooling	1	3.2%	0	0.0%	1	1.3%
Don't know	2	6.5%	0	0.0%	2	2.5%

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How many window-unit or through the wall air conditioner(s) do you use? * State

			State		Total
			North Carolina	South Carolina	
How many window-unit or through the wall air conditioner(s) do you use?	1	Count	5	8	13
		% within State	16.1%	16.3%	16.3%
	2	Count	4	6	10
		% within State	12.9%	12.2%	12.5%
	3	Count	0	3	3
		% within State	0.0%	6.1%	3.8%
	4	Count	0	2	2
		% within State	0.0%	4.1%	2.5%
	DK/NS	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
	10210	Count	21	30	51
		% within State	67.7%	61.2%	63.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

What is the fuel used in your cooling system?	North Carolina N=31		South Carolina N=49		Total N=80	
Electricity	30	96.8%	48	98.0%	78	97.5%
Natural Gas	0	0.0%	0	0.0%	0	0.0%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no cooling system)	0	0.0%	1	2.0%	1	1.3%
DK/NS	1	3.2%	0	0.0%	1	1.3%

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How old is your cooling system? * State

			State		Total
			North Carolina	South Carolina	
How old is your cooling system?	0-4 years	Count	9	15	24
		% within State	29.0%	30.6%	30.0%
	5-9 years	Count	7	12	19
		% within State	22.6%	24.5%	23.8%
	10-14 years	Count	1	6	7
		% within State	3.2%	12.2%	8.8%
	15-19 years	Count	3	2	5
		% within State	9.7%	4.1%	6.3%
	19 years or older	Count	2	3	5
		% within State	6.5%	6.1%	6.3%
	DK/NS	Count	9	11	20
		% within State	29.0%	22.4%	25.0%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

What is the fuel used by your water heater?	North Carolina N=31		South Carolina N=49		Total N=80	
Electricity	18	58.1%	39	79.6%	57	71.3%
Natural Gas	10	32.3%	8	16.3%	18	22.5%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
No water heater	0	0.0%	0	0.0%	0	0.0%
DK/NS	3	9.7%	4	8.2%	7	8.8%

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How old is your water heater? * State Crosstabulation

			State		Total
			North Carolina	South Carolina	
How old is your water heater?	0-4 years	Count	7	12	19
		% within State	22.6%	24.5%	23.8%
	5-9 years	Count	4	7	11
		% within State	12.9%	14.3%	13.8%
	10-14 years	Count	1	7	8
		% within State	3.2%	14.3%	10.0%
	15-19 years	Count	2	4	6
		% within State	6.5%	8.2%	7.5%
	More than 19 years	Count	2	1	3
		% within State	6.5%	2.0%	3.8%
	DK/NS	Count	15	18	33
		% within State	48.4%	36.7%	41.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

What type of fuel do you use for indoor cooking on the stovetop or range?	North Carolina N=31		South Carolina N=49		Total N=80	
Electricity	28	90.3%	44	89.8%	72	90.0%
Natural Gas	3	9.7%	5	10.2%	8	10.0%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no stove)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

What type of fuel do you use for indoor cooking in the oven?	North Carolina N=31		South Carolina N=49		Total N=80	
Electricity	27	87.1%	44	89.8%	71	88.8%
Natural Gas	3	9.7%	5	10.2%	8	10.0%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no oven)	1	3.2%	0	0.0%	1	1.3%
DK/NS	0	0.0%	0	0.0%	0	0.0%

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What type of fuel do you use for clothes drying?	North Carolina N=31		South Carolina N=49		Total N=80	
Electricity	25	80.6%	42	85.7%	67	83.8%
Natural Gas	0	0.0%	2	4.1%	2	2.5%
Oil	0	0.0%	0	0.0%	0	0.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no dryer)	6	19.4%	6	12.2%	12	15.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

About how many square feet of living space are in your home? * State

			State		Total
			North Carolina	South Carolina	
About how many square feet of living space are in your home?	500 to 999	Count	2	6	8
		% within State	6.5%	12.2%	10.0%
	1000 to 1499	Count	10	19	29
		% within State	32.3%	38.8%	36.3%
	1500 to 1999	Count	0	3	3
		% within State	0.0%	6.1%	3.8%
	2500 to 2999	Count	2	0	2
		% within State	6.5%	0.0%	2.5%
	DK/NS	Count	17	21	38
		% within State	54.8%	42.9%	47.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Do you own or rent your home? * State

			State		Total
			North Carolina	South Carolina	
Do you own or rent your home?	Own	Count	14	30	44
		% within State	45.2%	61.2%	55.0%
	Rent	Count	17	19	36
		% within State	54.8%	38.8%	45.0%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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How many levels are in your home (not including your basement)? * State

			State		Total
			North Carolina	South Carolina	
How many levels are in your home (not including your basement)?	One	Count	26	43	69
		% within State	83.9%	87.8%	86.3%
	Two	Count	5	6	11
		% within State	16.1%	12.2%	13.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your home have a heated or unheated basement? * State

			State		Total
			North Carolina	South Carolina	
Does your home have a heated or unheated basement?	Heated	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
	Unheated	Count	4	3	7
		% within State	12.9%	6.1%	8.8%
	No basement	Count	26	45	71
		% within State	83.9%	91.8%	88.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your home have an attic? * State

			State		Total
			North Carolina	South Carolina	
Does your home have an attic?	Yes	Count	18	24	42
		% within State	58.1%	49.0%	52.5%
	No	Count	13	25	38
		% within State	41.9%	51.0%	47.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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Are your central air/heat ducts located in the attic? * State

			State		Total
			North Carolina	South Carolina	
Are your central air/heat ducts located in the attic?	Yes	Count	3	4	7
		% within State	9.7%	8.2%	8.8%
	No	Count	14	19	33
		% within State	45.2%	38.8%	41.3%
	N/A	Count	13	23	36
		% within State	41.9%	46.9%	45.0%
	DK/NS	Count	1	3	4
		% within State	3.2%	6.1%	5.0%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your house have cold drafts in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have cold drafts in the winter?	Yes	Count	20	22	42
		% within State	64.5%	44.9%	52.5%
	No	Count	11	27	38
		% within State	35.5%	55.1%	47.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your house have sweaty windows in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have sweaty windows in the winter?	Yes	Count	8	15	23
		% within State	25.8%	30.6%	28.8%
	No	Count	22	33	55
		% within State	71.0%	67.3%	68.8%
	DK/NS	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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Do you notice uneven temperatures between the rooms in your home? * State

			State		Total
			North Carolina	South Carolina	
Do you notice uneven temperatures between the rooms in your home?	Yes	Count	20	29	49
		% within State	64.5%	59.2%	61.3%
	No	Count	11	19	30
		% within State	35.5%	38.8%	37.5%
	DK/NS	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your heating system keep your home comfortable in winter? * State

			State		Total
			North Carolina	South Carolina	
Does your heating system keep your home comfortable in winter?	Yes	Count	23	42	65
		% within State	74.2%	85.7%	81.3%
	No	Count	6	7	13
		% within State	19.4%	14.3%	16.3%
	DK/NS	Count	2	0	2
		% within State	6.5%	0.0%	2.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Does your cooling system keep your home comfortable in summer? * State

			State		Total
			North Carolina	South Carolina	
Does your cooling system keep your home comfortable in summer?	Yes	Count	28	42	70
		% within State	90.3%	85.7%	87.5%
	No	Count	3	6	9
		% within State	9.7%	12.2%	11.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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Do you have a programmable thermostat? * State

			State		Total
			North Carolina	South Carolina	
Do you have a programmable thermostat?	Yes	Count	15	21	36
		% within State	48.4%	42.9%	45.0%
	No	Count	15	27	42
		% within State	48.4%	55.1%	52.5%
	DK/NS	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

How many thermostats are there in your home? * State

			State		Total
			North Carolina	South Carolina	
How many thermostats are there in your home?	0	Count	0	3	3
		% within State	0.0%	6.1%	3.8%
	1	Count	28	41	69
		% within State	90.3%	83.7%	86.3%
	2	Count	2	3	5
		% within State	6.5%	6.1%	6.3%
	3	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	4 or more	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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What temperature is your thermostat set to on a typical summer weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical summer weekday afternoon?	Less than 69 degrees	Count	9	12	21
		% within State	29.0%	24.5%	26.3%
	69-72 degrees	Count	7	19	26
		% within State	22.6%	38.8%	32.5%
	73-78 degrees	Count	10	11	21
		% within State	32.3%	22.4%	26.3%
	Off	Count	4	1	5
		% within State	12.9%	2.0%	6.3%
	DK/NS	Count	1	6	7
		% within State	3.2%	12.2%	8.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

What temperature is your thermostat set to on a typical winter weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical winter weekday afternoon?	Less than 67 degrees	Count	3	3	6
		% within State	9.7%	6.1%	7.5%
	67-70 degrees	Count	8	17	25
		% within State	25.8%	34.7%	31.3%
	71-73 degrees	Count	7	10	17
		% within State	22.6%	20.4%	21.3%
	74-77 degrees	Count	7	13	20
		% within State	22.6%	26.5%	25.0%
	78 degrees or higher	Count	2	1	3
		% within State	6.5%	2.0%	3.8%
	Off	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
	DK/NS	Count	3	5	8
		% within State	9.7%	10.2%	10.0%
Total		Count	31	49	80

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		% within State	100.0%	100.0%	100.0%

Do you have a swimming pool, hot-tub or spa? * State

			State		Total
			North Carolina	South Carolina	
Do you have a swimming pool, hot-tub or spa?	Yes	Count	0	3	3
		% within State	0.0%	6.1%	3.8%
	No	Count	31	46	77
		% within State	100.0%	93.9%	96.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Would a two-degree increase in the summer afternoon temperature in your home affect your comfort * State

			State		Total
			North Carolina	South Carolina	
Would a two-degree increase in the summer afternoon temperature in your home affect your comfort	Not at all	Count	14	17	31
		% within State	45.2%	34.7%	38.8%
	Slightly	Count	4	10	14
		% within State	12.9%	20.4%	17.5%
	Moderately	Count	7	11	18
		% within State	22.6%	22.4%	22.5%
	Greatly	Count	4	8	12
		% within State	12.9%	16.3%	15.0%
	DK/NS	Count	2	3	5
		% within State	6.5%	6.1%	6.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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How many people live in this home? * State

			State		Total
			North Carolina	South Carolina	
How many people live in this home?	1	Count	9	10	19
		% within State	29.0%	20.4%	23.8%
	2	Count	10	24	34
		% within State	32.3%	49.0%	42.5%
	3	Count	6	9	15
		% within State	19.4%	18.4%	18.8%
	4	Count	5	1	6
		% within State	16.1%	2.0%	7.5%
	5	Count	0	4	4
		% within State	0.0%	8.2%	5.0%
	6	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
	Prefer not to answer	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

How many of them are teenagers? * State

			State		Total
			North Carolina	South Carolina	
How many of them are teenagers?	0	Count	25	45	70
		% within State	80.6%	91.8%	87.5%
	1	Count	4	3	7
		% within State	12.9%	6.1%	8.8%
	2	Count	2	0	2
		% within State	6.5%	0.0%	2.5%
	Prefer not to answer	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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How many persons are usually home on a weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
How many persons are usually home on a weekday afternoon?	0	Count	3	3	6
		% within State	9.7%	6.1%	7.5%
	1	Count	14	23	37
		% within State	45.2%	46.9%	46.3%
	2	Count	6	16	22
		% within State	19.4%	32.7%	27.5%
	3	Count	2	4	6
		% within State	6.5%	8.2%	7.5%
	4	Count	5	0	5
		% within State	16.1%	0.0%	6.3%
	5	Count	1	2	3
		% within State	3.2%	4.1%	3.8%
	Prefer not to answer	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Are you planning on making any large purchases to improve energy efficiency in the next 3 years? * State

			State		Total
			North Carolina	South Carolina	
Are you planning on making any large purchases to improve energy efficiency in the next 3 years?	Yes	Count	2	12	14
		% within State	6.5%	24.5%	17.5%
	No	Count	25	28	53
		% within State	80.6%	57.1%	66.3%
	DK/NS	Count	4	9	13
		% within State	12.9%	18.4%	16.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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What is your age group? * State

			State		Total
			North Carolina	South Carolina	
What is your age group?	18-34	Count	8	5	13
		% within State	25.8%	10.2%	16.3%
	35-49	Count	4	12	16
		% within State	12.9%	24.5%	20.0%
	50-59	Count	5	9	14
		% within State	16.1%	18.4%	17.5%
	60-64	Count	5	6	11
		% within State	16.1%	12.2%	13.8%
	65-74	Count	4	8	12
		% within State	12.9%	16.3%	15.0%
	Over 74	Count	4	7	11
		% within State	12.9%	14.3%	13.8%
	Prefer not to answer	Count	1	2	3
		% within State	3.2%	4.1%	3.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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Please indicate your annual household income * State

			State		Total
			North Carolina	South Carolina	
Please indicate your annual household income	Under $15,000	Count	11	15	26
		% within State	35.5%	30.6%	32.5%
	$15,000-$29,999	Count	9	6	15
		% within State	29.0%	12.2%	18.8%
	$30,000-$49,999	Count	1	6	7
		% within State	3.2%	12.2%	8.8%
	$50,000-$74,999	Count	3	2	5
		% within State	9.7%	4.1%	6.3%
	$75,000-$100,000	Count	1	1	2
		% within State	3.2%	2.0%	2.5%
	Over $100,000	Count	0	1	1
		% within State	0.0%	2.0%	1.3%
	Prefer Not to Answer	Count	6	15	21
		% within State	19.4%	30.6%	26.3%
	DK/NS	Count	0	3	3
		% within State	0.0%	6.1%	3.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

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Appendix I: Auditor Training Guide

Duke RNP 2014
Technican Manual.pdf

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Appendix J: Flyer at Kick-off Event

DUKE ENERGY.

We want to help you and your neighbors save money and energy at home.

Please join us to learn more about the FREE walkthrough energy assessments we'll be performing in your neighborhood through our Residential Neighborhood Program. There will be demonstrations of our **FREE energy-saving products** and a **FREE meal**. Also, learn how to enter our sweepstakes for a chance to win a **$500 gift card**. After the presentation, you are invited to join us for a **FREE** showing of Frozen**. Don't forget your blankets, lawn chairs, and FM radios!

Enroll now and you could be our lucky winner!*

Greenwood's Auto Drive In
3109 Hwy 25 South
Greenwood, SC 29646

Wednesday, August 13, 2014
Begins at 7:30 p.m.

RSVP by calling 855.767.3853

The Residential Neighborhood Program is a FREE walkthrough energy assessment and improvement program for qualified customers.

In the days following this neighborhood event, an Energy Specialist will visit your house to perform a walkthrough assessment that will show you where your home is wasting energy.

During the FREE walkthrough assessment, we'll also give you up to 16 energy-saving products and services that could help you save money on your electric bill. These energy-saving measures can cost up to $210, but we'll give them to you for free – and install them, too. Services provided are based on your home's specific energy usage and needs.

Learn more at duke-energy.com/rnp

* Enter to win our sweepstakes and read complete terms and conditions on our website. No participation necessary to enter.
**Disney's Frozen is rated PG. Parental Guidance Suggested. Some Material May Not Be Suitable for Children.

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Residential Neighborhood Program

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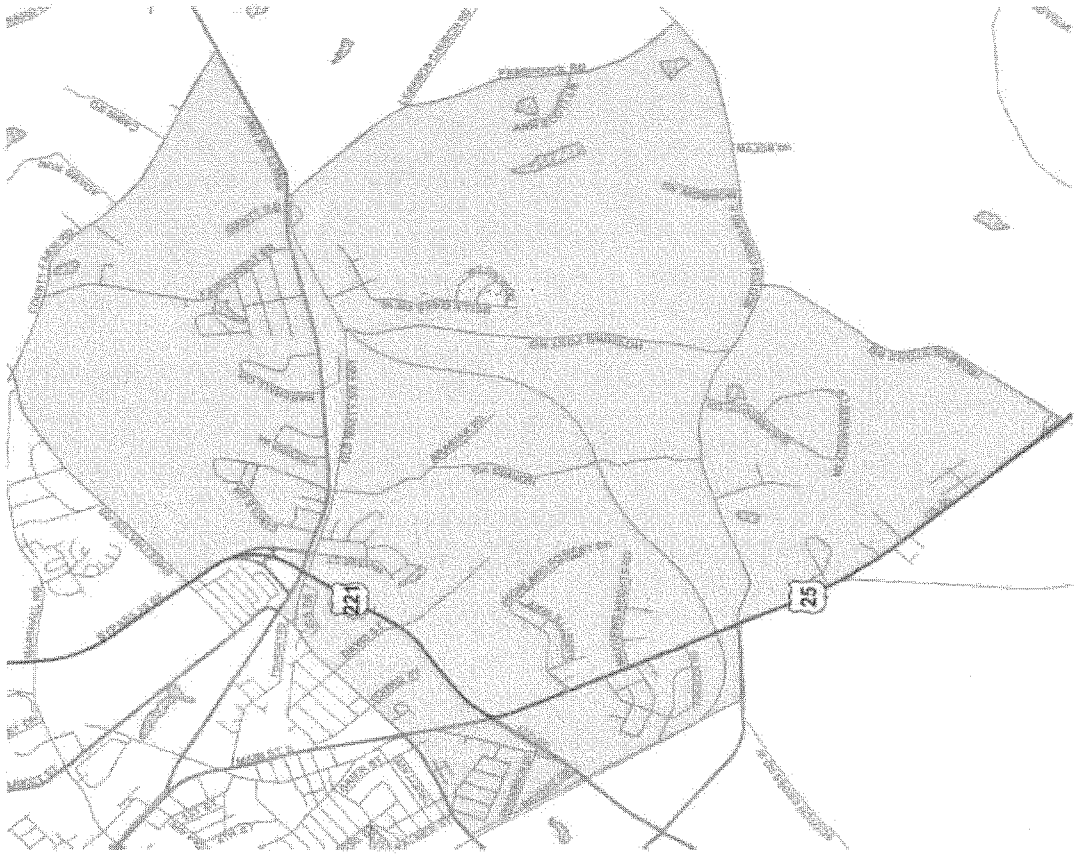
All Duke Energy residential customers within the shaded area are eligible to participate.

DUKE ENERGY.



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Appendix K: EISA Schedule and CFL Baseline

As stipulated in the Energy Independence and Security Act (EISA) of 2007, manufacturers of standard incandescent screw-based light bulbs must begin producing bulbs which use at least 27% less energy for a similar lumen output. The law is being phased in as seen in Table 115. As a result, it is necessary to adjust the baseline wattage that a CFL should be evaluated against throughout its effective useful life (EUL).

Table 115. EISA Schedule

Current Bulb Wattage	New EISA Compliant Wattage	Standard Effective Date
100	72	1/1/2012
75	53	1/1/2013
60	43	1/1/2014
40	29	1/1/2014

TecMarket Works has developed a dynamic approach to estimating future CFL baseline wattages wherein each year of a CFL's EUL is prescribed a baseline value based on the most current research on the availability of standard incandescent light bulbs in the marketplace. Much of this research, to this point, has focused on 100-watt bulbs as they were the first to phase out and therefore offer the most robust data. The effect of EISA on the availability of other incandescent bulb wattages as they are phased out is expected to be similar.

Such an approach is necessary because of the difference in EUL between the efficient and baseline technologies in question (one year for an incandescent and five years for a CFL). In the absence of the program, it is assumed that each year a new incandescent bulb would have to be purchased. The average wattage of this purchase decreases each year with the eroding availability of the standard incandescent bulbs due to EISA. Table 116 contains the baseline wattages from which savings are estimated.

Table 116. Baselines by Year and Wattage

100-watt			75-watt			60-watt			40-watt		
Year	Phase	Baseline	Year	Phase	Baseline	Year	Phase	Baseline	Year	Phase	Baseline
2012	0%	100	2012	0%	75	2012	0%	60	2012	0%	40
2013	55%	84.6	2013	0%	75	2013	0%	60	2013	0%	40
2014	60%	83.2	2014	60%	61.8	2014	0%	60	2014	0%	40
2015	70%	80.4	2015	80%	57.4	2015	55%	50.65	2015	60%	33.4
2016	80%	77.6	2016	100%	53	2016	60%	49.8	2016	80%	31.2
2017	90%	74.8	2017	100%	53	2017	70%	48.1	2017	100%	29
2018	100%	72	2018	100%	53	2018	80%	46.4	2018	100%	29

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A study completed in January of 2013 found that nearly half of retailers surveyed (44.6% or 45 out of 101) still have a supply of 100-watt incandescent light bulbs in stock[45]. The primary conclusion of this study was that 100-watt bulb availability for 2012 was not substantially impacted by EISA to the degree that energy impact baseline calculations should be adjusted for savings estimations in 2012, but that a phased-in calculation approach for 2013 and beyond is warranted. Accordingly, baselines are discounted starting in the year following the standard effective date of the respective wattage's phase out per EISA, not in the same year.

An additional adjustment was considered that would further delay the effects of EISA to account for standard wattage incandescent bulbs that remain in storage beyond the time that they are no longer available for purchase. A review of Duke Energy's residential efficiency program evaluations for 2012 and 2013 revealed that the number of incandescent bulbs stored in a typical home is insufficient to justify the use of such an adjustment.

A more recent study has found that 100-watt bulbs reached 24% availability seven quarters after the EISA standard took effect[46]. This approach assumes a 10% reduction in availability, for each year after the second until 100-watt bulbs are completely phased out. At this point, baseline wattage is set at EISA's minimally compliant wattage, taken from Table 115.

[45] Indiana Statewide Core Program Evaluation Team. "Indiana 2012 EISA Bulb Availability Study." June 20, 2013. Pg. 3.
[46] Cadmus Group. "Summary of EISA2007 Lighting Survey Results for DP&L Q1, Q2, &Q3 2013." Memorandum. October 11, 2013. Pg. 2.

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Appendix L: DSMore Table

Impacts ⇨ / Technology ⇩	Product code	State	EM&V gross savings (kWh/unit)	EM&V gross kW (coincident peak/unit)	EM&V gross kW (non-coincident peak/unit)	Unit of measure	Combined spillover less freeridership adjustment	EM&V net savings (kWh/unit)	EM&V net kW (coincident peak/unit)	EM&V net kW (non-coincident peak/unit)	EM&V load shape (yes/no)	EUL (whole number)
Residential Neighborhood Program		NC, SC	357	0.0964	0.1112	participant	2.1%	350	0.0944	0.1089	no	7
Program wide			**357**	**0.0964**	**0.1112**		**2.1%**	**350**	**0.0944**	**0.1089**		**7**

I/A

Ham Exhibit E

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Final Report

Process and Impact Evaluation of the Residential Energy Efficient Appliance and Devices: Lighting - Specialty Bulbs Program in the Carolina System

Prepared for
Duke Energy
139 East Fourth Street
Cincinnati, OH 45201

November 19, 2014

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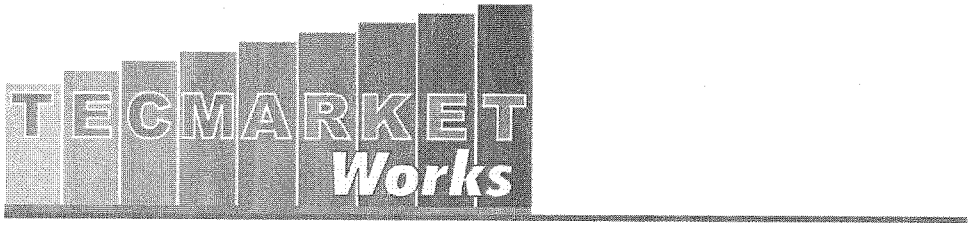

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Executive Summary

Duke Energy's Specialty Bulb Program sells discounted specialty CFLs and LEDs to qualifying residential customers in the Carolina System via an online store. These include three-way bulbs, dimmable bulbs, outdoor bulbs, reflectors (recessed), candelabras[1], capsules (A Line), and globes in both CFL and LED varieties. Adoption is encouraged through discount pricing, the convenience of online ordering and home delivery. The online store also has lighting-associated educational elements.

Duke Energy effectively combines low cost marketing vehicles such as email, website promotions, and direct mail with sophisticated targeting techniques to ensure high conversion rates at low acquisition costs. Participants are very satisfied with their experience purchasing light bulbs at the Savings Store, giving an average overall program satisfaction rating of 9.15 on a ten-point scale where "10" is most satisfied.

Key Findings and Recommendations

This section presents the key findings and recommendations identified through this evaluation.

Significant Process Evaluation Findings

Significant Process Evaluation Findings from the Management Section can be found in the section titled *Key Findings* on page 49.

Significant Process Evaluation Findings from the Participant Surveys can be found in the section titled *Key Findings* on page 137.

Significant Process Evaluation Findings from the Non-Participant Surveys can be found in the section titled *Key Findings* on page 188.

Significant Impact Evaluation Findings

- From the logger study, the average daily hours of use across all bulb and room types and adjusted for day length is estimated to be 4.19 hours/day.
  - See Table 135 on page 221.
- The average wattage of a bulb replaced by a program bulb is 47.7 watts.
  - See Table 137 on page 222.
- From the logger study, the coincidence factor for demand is estimated to be 14.8%.
  - See Figure 43 on page 219.
- The power fractions for estimating the average percent of maximum power used by dimmable and 3-way bulbs are 79.7% and 61.4% respectively.
  - See Table 134 on page 220.
- The average gross savings per bulb shipped are 38.5 kWh; the average coincident peak kW savings per bulb shipped are 0.0042 kW.

[1] Also known as decorative lamps, candles, flame tips, blunt tips, and torpedos. Manufacturers are not consistent with how they label/group products. For this report, these are referred to as candelabras for consistency.

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  - See Table 135 on page 215.
- Effective useful life of program savings is estimated to be seven years.
  - See *Effective Useful Life* on page 224.
- Freeridership is estimated at 27.2% and spillover is estimated at 4.3%, for a NTGR of 75.9%.
  - See *Net to Gross Ratio Calculation* on page 212.

Process Evaluation Recommendations

From the Management Section

For a full explanation of recommendations see section titled "Recommendations" beginning on page 52.

- **Continue to complete the changes necessary to enable CSR-aided phone purchases of specialty bulbs.** At the time of this evaluation, customer service representatives (CSRs) from Energy Federation Inc. (EFI), the program's ecommerce provider, cannot take phone orders from customers who prefer to speak to a human being rather than using a computer.
- **Consider upgrading the energy savings calculator on the Duke Energy public website** at http://www.duke-energy.com/residential-savings-store/ so that the public version of the calculator features the same interactive functionality as the version installed on the Savings Store website. If this is feasible with Duke Energy website technology and policy, making this upgrade will enable more customers to see how much they can save with specialty bulbs prior to requiring them to log on to the Savings Store itself.
- **Test and improve the Savings Store's search features.** Because web search functionality yielded inconsistent results or failed to find items using key words commonly found on the website, the Savings Store's search features should be tested and improved to accurately reflect store inventories using the Savings Store's names for bulb types and application types, as well as for entries with singular and plural spelling and associated terms such as lighting, bulb, and other common words and phrases.
- **Test the suggested website usability improvements.** TecMarket Works recommends that, wherever feasible with EFI's online website platform, the various website usability improvements suggested throughout the management section be implemented and tested using A/B split testing to compare the results of multiple versions to determine whether more customers take action with or without the suggested changes. The Content Experiment feature of Google Analytics can be used for this purpose.
- **Consider curtailing customer ability to ship purchases to addresses located outside of Duke Energy's service territory**.
- **Consider expanding program offerings** to include additional specialty bulb types, as well as smart devices for home automation, and other efficiency measures.

From the Participant Surveys

- **Consider routinely monitoring competitors' pricing on bulbs and shipping.** Most customers are aware of the price of energy-efficient light bulbs at local retailers and

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through other online stores, and many of them are directly comparing Savings Store prices to the competition. Price is perhaps the most important driver of Savings Store purchases. This does not mean having the lowest price for every bulb, however many customers will only pay a small premium for the convenience of online ordering if they can find equivalent bulbs available at a lower price elsewhere.

  - Shipping costs should also be noted when monitoring competitors' pricing. Most Savings Store customers are experienced online shoppers and have had their expectations for what shipping should cost set from their experience with other retailers (such as offering free shipping on orders over a certain amount).
  - Price comparisons can be an effective marketing tool. Duke Energy should consider including favorable comparisons to competitors' pricing in advertising for the Savings Store. These comparisons could also include shipping price and policy comparisons.

- **Consider the effects of multi-pack pricing.** Multi-packs of light bulbs that offer increased savings on the per-bulb price drive a significant number of customers to purchase additional bulbs so that they can get "the best deal"; this often results in the purchase of more bulbs than will be immediately installed, with the extra bulbs stored for future use. Duke Energy should consider the positive effects of multi-pack pricing (to drive additional sales), and also the effect this may have on program impacts (distributing bulbs that will not be installed immediately will dilute the savings per bulb, a corollary effect of selling additional "spare bulbs" that customers don't need immediately).
- **Explain the Savings Store limits are on price, not on quantity of bulbs**. Most customers who are aware of the limit on incented light bulbs did not realize that they could purchase more bulbs of the same type beyond these limits, albeit at a higher price without the incentive and from a different section of the site. Duke Energy should also consider streamlining the order process and/or the display of bulbs on the site in a way that doesn't involve customers having to go to a different page to order additional non-incented bulbs.
- **More prominently display information on bulb physical dimensions and threading.** One of the more common issues reported by customers regarding the bulb information presented at the Savings Store, and related requests for more information, involves the physical dimensions of bulbs and their socket threading; this is because some customers are seeking energy-efficient bulbs for unusual and difficult-to-fit sockets in their home. This information is included on the "product specifications" tab for each bulb, but some customers who are seeking this information are not finding it; perhaps a more prominent link labeled "product dimensions" or "socket size/type" could help. In addition to including this information for all bulbs sold at the Savings Store, Duke Energy should also consider the variety of bulb dimensions and threading available when deciding on additions to or subtractions from the Savings Store's offerings.
- **Continue efforts to market the Savings Store to customers who have already shopped at the Store.** Customers who purchased bulbs from the Savings Store still have a significant number of incandescent specialty bulbs in their homes, and a large majority of them say they intend to shop the Store again in the future.

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From the Non-Participant Surveys

- **Consider increasing the frequency of advertising to induce greater participation by non-participants.** Given that 88.8% of non-participants are experienced CFL users and that 61.3% of non-participants were too busy or didn't need bulbs at the time they received marketing materials from the program, it is likely that increasing the frequency of advertising will induce non-participants to visit and make purchases from the Savings Store.
- **Where feasible, use strategic target marketing to focus extra discounts on those customers believed to be still using incandescents and halogens.** Given that nearly two thirds (64.6%) of non-participants self-identified as price conscious shoppers, lower pricing would likely encourage more of them to make purchases from the Savings Store, but perhaps at the risk of customers placing bulbs in storage. Such an approach could help to prompt first-time Store buyers without offering deeper discounting to potential freeriders who already know they want specialty bulbs and are merely looking for the lowest price which may be available at a local retailer.
- **Consider adding alternative forms of payment such as PayPal and debit cards.** The website currently accepts payments via credit cards, check, or money order.

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Introduction and Purpose of Study

Summary Overview

This document presents the evaluation report for Duke Energy's Residential Specialty Bulb Program as it was administered in the Carolina System. The evaluation was conducted by TecMarket Works, Matthew Joyce, and BuildingMetrics, Inc.

Summary of the Evaluation

The findings presented in this report were calculated using survey data from program participants and non-participants as shown in Table 1.

Table 1. Evaluation Date Ranges

Evaluation Component	Sample Pull: Start Date of Participation	Sample Pull: End Date of EMV Sample	Dates of Analysis
Participant Surveys	May 13, 2013	December 31, 2013	Surveys conducted from April 17, 2014 through May 28, 2014
Non-participant Surveys	April 26, 2013	December 31, 2013	Surveys conducted from May 15, 2014 through June 5, 2014
Management Interviews	February 27, 2014	July 31, 2014	Interviews conducted and analyzed from February 27, 2014 to July 31, 2014
Engineering Estimates	April 26, 2013	December 31, 2013	June-July 2014
Lighting Logger Study	May 13, 2013	December 31, 2013	Metering period from May 8, 2014 through July 3, 2014

Surveyed participants were asked how many program-provided CFLs and LEDs are currently installed in light fixtures. Additional, more specific information was collected for at least one installation from each specialty bulb category purchased (indoor reflector, outdoor reflector, globe, candelabra, three-way spiral, dimmable spiral, efficient capsule, and standard spiral bulbs) or a minimum of three installations if a customer purchased fewer than three types of specialty bulb (customers with fewer than three installations overall were asked about all of their program bulb installations). The information collected includes the location of the installed program bulbs, the type and wattage of the bulbs that they replaced, and the average hours per day that they are in use. The decision to limit the number of installations about which to collect detailed information to a maximum of three total or one per bulb category (whichever is greater) was made in the interest of time and evaluation cost, as the surveys are lengthy. The information

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gathered about program bulb installations covered a majority of the program bulbs installed by surveyed participants and provides sufficiently robust data about all of the incented specialty bulb categories. Data was also collected about non-program bulbs installed in specialty sockets and specialty bulbs in storage. Results of this survey of 136 customers in the Carolina System who purchased program bulbs during the evaluation period are presented in the *Participant Surveys* section of this report.

To assess barriers to, and interest in, program participation, TecMarket Works conducted phone surveys with a random sample of 80 non-participants, including 49 non-participants who visited the Savings Store website but did not make a purchase and 31 non-participants who received marketing materials from Duke Energy but did not visit the website or make a purchase. Results of the non-participant survey are presented in the *Non-Participant Surveys* section of this report, and some key differences and similarities between survey groups are highlighted in the *Participant and Non-Participant Survey Comparisons* section.

An impact analysis was performed for all specialty bulbs by room type and can be seen in Table 138. However, it should be noted that individual room type samples are of insignificant size to achieve statistical relevance and are presented as anecdotal evidence. The impacts are based on an engineering analysis of the impacts associated with the self-reported installs identified through the participant surveys. The hours of use were determined through a logger study and are adjusted to reflect yearly averages using the daylength algorithm developed via a larger logger study conducted in California that documented the monthly change in lighting usage due to seasonal variances in day length. This approach is explained in detail in the *Daylength Adjustment* section.

This report is structured to provide program impact estimations per bulb purchased from the online store as well as overall program savings based on an extrapolation of these results to the full participant population, which includes participants from April 26, 2013 through December 31, 2013 (n=8,060 customers).

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Description of Program

Duke Energy's Specialty Bulb Program sells discounted CFLs and LEDs to qualifying residential customers in the Carolina System via an online store. The program website, called the Duke Energy Savings Store, was launched in April of 2013. The Specialty Bulb program is designed to extend the market penetration of energy efficient lighting beyond the replacement of conventional incandescent bulbs to specialty applications including: dimmables, three-ways, reflectors (recessed), capsules (A Line), candelabras, and globes. Adoption is encouraged through incentive pricing, the convenience of online ordering and home delivery, and educational elements that break down barriers by explaining the differences between buying lighting based upon lumens instead of watts, and by helping customers to choose the most appropriate bulbs for different applications. The educational aspects of the Savings Store are also intended to encourage spillover demand for energy efficient specialty bulbs that are sold through conventional retail channels.

The Duke Energy Savings Store website can only be accessed by verified Duke Energy customers whose bulb purchases are individually tracked so that personal incentive limits can be enforced. Customers who desire to buy more bulbs than allowed by the program's incentive limits can do so, but the additional bulbs must be purchased without Duke Energy discounts.

Program Eligibility

To be eligible for the program, participants must be customers with active residential electric accounts in Duke Energy's North Carolina or South Carolina service territories. Both property owners and renters are eligible. Customers on the Greenwood, South Carolina rate plan are not eligible.

Program Participation

Program participation is primarily tracked based upon customer purchases of specialty bulbs. According to Duke Energy's tracking of unique account numbers associated with bulb purchases during 2013, there were 6,294 North Carolina and 1,766 South Carolina participants (Table 2). The combined total for the Carolina System was 8,060 for the time period between program inception on April 26, 2013 and Dec 31, 2013. Program participation may arguably be considered higher if Energy Store website visitors who do not buy any specialty bulbs are also considered.

Table 2. Program Participation

	Time Period: Apr 26, 2013 to Dec 31, 2013	
Territory	**Number of Purchasing Customers**	**Number of Specialty Bulbs Purchased**
North Carolina	6,294	90,780
South Carolina	1,766	26,277
Carolina System	8,060	117,057

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Methodology

Overview of the Evaluation Approach

This evaluation had four components: management interviews, participant surveys, non-participant surveys, and an impact analysis based on engineering algorithms and data collected from loggers in a sample of participants' homes.

Study Methodology

Management Interviews

TecMarket Works conducted interviews with Duke Energy's product manager, marketing communications manager, and senior market research analyst. We also spoke with four representatives from Energy Federation Incorporated (EFI), including the vice president of sales, vice president of strategic development, program manager, and call center manager.

The interviews considered program design, execution, operations, staff and customer interactions, data tracking and transfer methods, and personal experiences in order to identify any implementation issues and discuss opportunities for improvement. Interview guides were used to ensure a full and complete battery of questions were addressed to the interview subjects. Sample guides are shown in *Appendix A: Management Interview Instrument* and *Appendix B: Vendor Interview Instrument.*

Participant Surveys

TecMarket Works fielded a phone survey with randomly selected participants in order to measure satisfaction and to identify areas for program improvement. One hundred and thirty-six (136) interviews were completed with customers in the Carolina System who purchased bulbs from the Savings Store between May 13, 2013 and December 31, 2013 according to program records. One hundred and six (106) participants surveyed live in North Carolina (77.9% or 106 out of 136) and 30 live in South Carolina (22.1% or 30 out of 136).

Non-Participant Surveys

TecMarket Works fielded a phone survey with randomly selected non-participants in order to identify barriers to program participation. Eighty (80) interviews were completed in the Carolina System with customers who received marketing materials and/or who visited the Savings Store website between May 13, 2013 and December 21, 2013, but who had not made any purchases as of the date the data was pulled on May 12, 2014. Sixty-seven surveys (83.8% of 80) were completed with non-participants in North Carolina and thirteen surveys (16.3% of 80) were completed with non-participants in South Carolina. Of these, 49 people were deemed to be website-visiting non-participants and 31 were considered to be non-visiting non-participants.

Impact Analysis

Engineering algorithms taken from the Draft Ohio Technical Resource Manual (TRM) were used to estimate savings. Data inputs to the algorithm were determined through the logger study (hours of use, coincidence factor, power fractions), the participant survey (baseline wattage), program tracking data (energy efficient wattage), and an appliance saturation study (HVAC

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interaction factors). These unit energy savings values were applied to customers in the engineering analysis sample.

Data collection methods, sample sizes, and sampling methodology

Management Interviews

Interviews and follow up exchanges were conducted by phone with seven staff members from Duke Energy and EFI. Conversations ranged from half an hour to two and half hours. The interview instruments can be seen in *Appendix A: Management Interview Instrument* and *Appendix B: Vendor Interview Instrument.*

Participant Surveys

Duke Energy provided TecMarket Works with a list of 12,799 records of program participants in the Carolina System (9,910 from North Carolina and 2,889 from South Carolina). After removing records with missing contact information, duplicate records, "do not contact" numbers and customers who have recently been surveyed about other programs, the sample list consisted of 6,274 contactable customers. The survey was conducted by telephone by TecMarket Works staff from the list of 6,274 participant customers in the Carolinas System, and 136 respondents completed the survey (106 from North Carolina and 30 from South Carolina). The survey instrument can be found in *Appendix C: Participant Survey Instrument.*

Non-Participant Surveys

Duke Energy provided TecMarket Works with a list of 75,564 records of non-participants in the Carolina System (59,163 from North Carolina and 16,401 from South Carolina). After removing records with missing contact information, duplicate records, "do not contact" numbers and customers who have recently been surveyed about other programs, as well as removing customers who did not receive marketing communications about the program during 2013 and customers who have made purchases from the Savings Store, the sample list consisted of 29,970 contactable non-participants. The contact list was further subdivided into 3,338 customers who visited the Savings Store site in 2013 without making a purchase, and 26,632 customers who received marketing materials during 2013 but who did not visit the Savings Store site. The survey was conducted by telephone by TecMarket Works staff from the list of 29,970 non-participant customers in the Carolina System, and 80 respondents completed the survey (67 from North Carolina and 13 from South Carolina). The survey instrument can be found in *Appendix D: Non-Participant Survey Instrument.*

Lighting Loggers

The impact analysis uses a combination of the participant survey (n= 136 respondents) and the lighting logger study (n= 114 loggers) to estimate program savings. Logger study participants were recruited as part of the participant survey.

Number of completes and sample disposition for each data collection effort

Management Interviews

Seven out of seven management representatives were contacted in 2014 for a 100% response rate.

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Participant Surveys

From the sample list of 6,274 customers, 1,547 participants in the Carolina System were called between April 17, 2014 and May 28, 2014, and a total of 136 usable telephone surveys were completed (106 from North Carolina and 30 from South Carolina) yielding a response rate of 8.8% (136 out of 1547).

Non-Participant Surveys

From the sample list of 29,970 customers, 971 non-participants in the Carolina System were called between May 15, 2014 and June 5 , 2014, and a total of 80 usable telephone surveys were completed (67 from North Carolina and 13 from South Carolina) yielding a response rate of 8.2% (80 out of 971).

Lighting Loggers

From the 136 participant survey respondents, 50 were recruited to participate in the logger study, a recruitment rate of 36.8%. Into these 50 households, 122 loggers were installed. One participant left on vacation during the metering period. Their three loggers were not retrievable in time for this evaluation report. A further five loggers were thrown out of the sample for bad or corrupted data, leaving a total of 114 loggers used to estimate impacts.

Table 3 Summary of Data Collection Efforts

Data Collection Effort	Size of Population in Sample	# of Successful Contacts	Sample Rate
Management Interviews	7	7	100%
Participant Surveys	6,274	136	2.2%
Non-Participant Surveys	29,970	80	0.3%
Lighting Loggers	136	50	36.8%

Expected and achieved precision

Participant Surveys

The survey sample methodology had an expected precision of 90% +/- 9.1% and an achieved precision of 90% +/- 7.0%.

Non-Participant Surveys

The survey sample methodology had an expected precision of 90% +/- 9.2% and an achieved precision of 90% +/- 9.2%.

Lighting Loggers

The expected precision of the average daily hours of use and coincidence factor was +/- 10% at 90% confidence. The achieved precision was +/-19.3% at 90% confidence for the hours of use and +/-24.5% at 90% confidence for the coincidence factor. This is based on the mean overall values and the standard deviation of the individual estimates compared to the mean. Achieved precision is less than planned as a result of the much wider than expected range of bulb hours of usage observed in the metering study. This is attributable to the numerous different bulb types included in the study, each with a different usage pattern, resulting in a higher than expected coefficient of variation.

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Description of baseline assumptions, methods and data sources

Baseline assumptions were determined through a combination of phone surveys and onsite surveys with customers providing self-reported values of baseline lamp watts and operating hours. Lighting loggers were used to measure actual lamp operating hours. Robust data concerning HVAC system fuel and type was available from Duke Energy's Home Profile Database (appliance saturation survey type data) in the Carolina System. Interaction factors derived from this data were used in favor of deemed values from secondary sources as they recognize only Duke Energy customers and, therefore, more accurately represent the participant population. A breakdown of these factors by system and fuel type can be seen in *Appendix K: Impact Algorithms*.

Description of measures and selection of methods by measure(s) or market(s)

A mixture of CFL and LED bulbs of different types were offered through the online store:

- CFL - Indoor Reflector (Recessed)
- CFL - Outdoor Reflector (Recessed Outdoor)
- CFL - Dimmable Reflector (Recessed Dimmable)
- CFL - Globe
- CFL - Candelabra
- CFL – Three-way spiral
- CFL - Dimmable Spiral
- CFL - Capsule (A Line)
- LED - Reflector (Recessed LED)
- LED - Capsule (A Line LED)

The Draft Ohio TRM's impact algorithms were enhanced with primary data, specifically appropriate waste heat factors were used that are indicative of climate characteristics similar to those observed in North Carolina and its various climates and used to calculate energy savings along with the results of the participant survey and lighting logger study. All customers are in the residential market.

Threats to validity, sources of bias and how those were addressed

Bulb installations and baseline wattage were self-reported by the surveyed participants. There is a potential for social desirability bias[2] but the customer has no vested interest in their reported measure adoptions, therefore this bias is expected to be minimal. There is a potential for bias in the engineering algorithms, which was minimized through the use the lighting logger study to determine actual average daily hours of use values and of building energy simulation models, which are considered to be state of the art for building shell and HVAC system analysis.

[2] Social desirability bias occurs when a respondent gives a false answer due to perceived social pressure to "do the right thing."

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Management Interviews

Program History and Development

The Specialty Bulb program is a recent addition to Duke Energy's Energy Efficiency Portfolio. The program was officially opened to qualifying residential customers in North Carolina and South Carolina on April 26, 2013, but the concept was conceived two years prior in 2011. The impetus for the program arose from the success of Duke Energy's Residential Smart $aver Energy Efficiency Products Program, which bypasses the need for customers to visit brick and mortar stores by directly mailing up to 15 free CFLs to customer homes. As increasing numbers of customers ordered these standard 13 and 18 Watt CFLs, Duke Energy recognized the opportunity to encourage their customers to adopt energy efficient specialty bulbs as well.

The procedures and platforms developed for the free CFL program—including marketing methods, account verification procedures, ordering tools, and a database for tracking how many free CFLs each customer received—served as foundational elements for building the Specialty Bulb program. However, because Duke Energy did not intend to fully subsidize the costs of the specialty bulbs, significant upgrades and entirely new systems were required; most notably an e-commerce platform for selling and distributing discounted specialty bulbs to qualifying customers.

Duke Energy requested proposals from third party vendors and in the spring of 2012 the utility selected Energy Federation Incorporated (EFI) of Southborough, Massachusetts. EFI is a non-profit organization that specializes in helping utilities to promote and deliver energy efficient lighting and other items via utility-branded e-commerce solutions.

Program Goals and Performance

The primary goal of the program is to increase household energy savings by advancing customer adoption of energy efficient lighting from the replacement of incandescent bulbs with standard spiral CFLs to also include specialty CFLs and LEDs, such as three-way bulbs, dimmable bulbs, outdoor bulbs, reflectors (recessed), candelabras, capsules (A Line), and globes. The program achieves its goals through customer education and the use of financial incentives that reduce the final purchase price of the bulbs for the customer.

To set budgets and measure program performance, Duke Energy established overall goals for specialty bulb sales on the website, but it did not fix targets for individual bulb types. During the first eight months of program operation, Duke Energy expected to sell 61,685 specialty bulbs in North Carolina. The program actually sold 90,780 bulbs, which represents 147% of the 2013 goal. For South Carolina the goal was set for 17,675 bulbs, and the actually program sold 26,277. This represents 149% of the 2013 goal for South Carolina. A month by month breakdown of overall specialty bulb sales is presented in Table 4, which shows that sales peaked in October 2013 and again in December of the same year. Table 5 presents bulb purchases sorted by bulb type. It shows that CFL reflectors and globes were the most popular bulb types, followed by CFL candelabras and capsules (A Line).

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Table 4. 2013 Program Goals vs. Actual Performance

Month in 2013	Number of Bulb Purchases of All Types							
	NC				SC			
	Goal	Actuals*	Variance	% Goal	Goal	Actual	Variance	% Goal
May	9,071	3,931	-5,140	43%	2,599	1,163	-1,436	45%
June	9,071	11,408	2,337	126%	2,599	2,656	57	102%
July	9,071	8,631	-440	95%	2,599	2,602	3	100%
August	9,071	4,917	-4,154	54%	2,599	1,757	-842	68%
September	9,071	7,097	-1,974	78%	2,599	2,040	-559	78%
October	7,257	21,508	14,251	296%	2,079	6,064	3,985	292%
November	4,536	12,685	8,149	280%	1,300	4,385	3,085	337%
December	4,536	20,603	16,067	454%	1,300	5,610	4,310	432%
Total	61,685	90,780	29,095	147%	17,675	26,277	8,602	149%

Table 5. Number of 2013 Bulb Purchases by Type

Bulb Type	Number of 2013 Incented Bulb Purchases*								
	NC			SC			Total Carolina System		
	Goal	Actual	% Goal	Goal	Actual	% Goal	Goal	Actual	% Goal
CFL Capsule (A Line)	4,624	14,018	303.2%	1,325	4,304	324.8%	5,949	18,322	308%
CFL Three-Way Spiral	2,312	5,838	252.5%	666	1,630	244.7%	2,978	7,468	251%
LED Capsule (A Line LED)	2,312	5,011	216.7%	661	1,402	212.1%	2,973	6,413	216%
CFL Candelabra	9,253	14,388	155.5%	2,651	4,124	155.6%	11,904	18,512	156%
CFL Globe	12,338	19,424	157.4%	3,535	4,988	141.1%	15,873	24,412	154%
CFL Outdoor Reflector (Recessed Outdoor)	6,169	7,676	124.4%	1,767	2,261	128.0%	7,936	9,937	125%
CFL Dimmable Spiral	3,084	3,412	110.6%	884	934	105.7%	3,968	4,346	110%
CFL Indoor Reflector (Recessed)	18,877	19,216	101.8%	5,408	6,105	112.9%	24,285	25,321	104%
CFL Dimmable Reflector (Recessed Dimmable)	2,098	1,334	63.6%	601	413	68.7%	2,699	1,747	65%
LED Reflector (Recessed LED)	6,169	463	7.5%	177	116	65.5%	6,346	579	9%
Total	**67,236**	**90,780**	**135.0%**	**17,675**	**26,277**	**148.7%**	**84,911**	**117,057**	**138%**

EFI's online reporting tools also provided the following customer data regarding customer orders. Table 6 shows that between April 26 and Dec 31, 2013, the Duke Energy Savings Store for the Carolina System had 8,060 unique customers who placed a combined total of 8,822

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orders for 117,057 bulbs. This equates to an average of 14.5 bulbs per customer and an average of 35 orders per day. Note that the numbers displayed in Table 6 are based upon EFI order reporting and do not reflect distinctions between order dates and shipping dates. As a result the time periods do not exactly match the bulb counts in Table 4 and Table 5.

Table 6. Monthly Order Tracking

Month 2013	Number of Unique Customers			Total # Orders	# Bulbs Ordered	# Bulbs/ Order	Avg. Order/ Day	Avg Bulb/ Customer
	NC	SC	System					
April + May	404	101	505	576	5,094	9	19	10.1
June	733	179	912	999	14,064	14	33	15.4
July	512	133	645	722	11,233	16	23	17.4
August	342	109	451	507	6,674	13	16	14.8
September	526	143	669	757	9,137	12	25	13.7
October	1,545	424	1,969	2,133	27,572	13	69	14.0
November	759	270	1,029	1,119	17,070	15	36	16.6
December	1,473	407	1,880	2,009	26,213	13	65	13.9
Total	6,294	1,766	8,060	8,822	117,057	13	35	14.5

Program Products and Incentive Levels

When it came to product selection Duke Energy decided to offer its customers a variety of the most commonly used specialty bulbs to replace conventional incandescent bulbs. "There are thousands of bulbs on the market. We didn't want to try to replicate the number of choices available in a big box store, but we did want to ensure that people have a positive experience," said the Duke Energy Product Manager. "So we looked at types of bulbs, different technologies, efficiency levels, bulb life, and other lighting factors like lumens. Then we worked with EFI to select the brands and bulbs that would cover the most common applications and deliver the most value for the lowest price." While the Energy Store's product inventory has continued to evolve over time, for its initial 2013 offerings Duke Energy chose to provide: CFL and LED capsules (A Line), CFL and LED reflectors, CFL globes, CFL candelabras, and CFL standard, dimmable, and three-way spirals. All bulbs are Energy Star qualified and most are offered in a variety of wattages as shown in Table 7.

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Table 7. 2013 Products and Incentive Levels

Product List			EFI Store	Duke Energy	Customer	Customer
Bulb Type	Category	Watt	Base Item Cost	Incentive Amount	Final Purchase Price	Maximum Purchase Limit
CFL Reflector (Recessed)	Indoor Reflector	12	$3.00	$2.52	$0.48	15
		14	$3.35	$2.52	$0.83	
		23	$6.75	$2.52	$4.23	
	Outdoor Reflector	23	$4.95	$3.34	$1.61	6
	Dimmable Reflector	15	$12.95	$5.00	$7.95	12
LED Reflector (Recessed)	Reflector	9.5	$36.25	$7.00	$29.25	15
		13	$27.95	$7.00	$20.95	
		10	$46.00	$7.00	$39.00	
CFL Globe	Globe	9	$3.00	$1.70	$1.30	12
		14	$3.00	$1.70	$1.30	
CFL Candelabra	Candelabra	5	$4.50	$2.11	$2.39	12
		7	$3.95	$2.11	$1.84	
		9	$3.65	$2.11	$1.54	
CFL Spiral	Three-Way	12.22.33	$7.45	$3.67	$3.78	6
	Dimmable	23	$6.75	$4.40	$2.35	6
CFL (Capsule)	A Line	14	$3.35	$1.94	$1.41	15
		18	$4.95	$1.94	$3.01	
LED (Capsule)	A Line	11	$15.95	$7.00	$8.95	
CFL Spiral	Standard Spiral	13	$1.80	$0.00	$1.80	N/A
		20	$1.85	$0.00	$1.85	N/A

As shown in the table above, incentive levels are specific to each bulb type and wattage, so final purchase prices for the customer can vary for bulbs within the same product family. For instance, CFL reflectors have a common incentive amount of $2.52 per bulb, yet the bulbs' base item costs range from $3 each for a 12 Watt reflector to $6.75 for a 23 Watt reflector. As a result, after the incentive is applied, these bulbs will cost customers $0.48 for a 12 Watt and $4.23 for a 23 Watt, respectively.

Incentive levels were determined by assessing specialty bulb prices in the retail marketplace and then considering the full range of costs to customers who make online purchases from the Duke Energy Savings Store, including product cost, any applicable sales tax, plus shipping expenses. These retail factors were weighed against program budget, wholesale costs and discounts obtained by EFI, and other factors such as retaining the ability for Duke Energy to offer its customers extra incentives to purchase larger quantities of bulbs or to reduce shipping costs.

When setting bulb incentive levels, Duke Energy also considered other issues such as the differences between shopping online and in stores. For example, in-store shopping allows customers to examine and compare physical products; it encourages impulse buying through

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product placements at registers and end caps; and it provides the opportunity for same day purchase and installation. But in retail stores product information is often scarce. So customers must depend on the knowledge of sales associates or do their research in advance. Online shopping allows customers to shop when it is convenient for them, including when stores are not typically open for business; it delivers products by mail directly to the home, and it can offer customers a variety of educational and product information in advance of their making the purchase decision. Because these non-financial attributes can have an influence on sales, Duke Energy factored them into its overall pricing calculus in order to ensure that the Duke Energy Savings Store fit appropriately in its e-commerce niche.

Operational Roles

Program operational roles are assigned as follows: Duke Energy provides overall program oversight and quality assurance, marketing, and customer authentication. EFI provides the e-commerce platform for the Duke Energy Savings store, including the online storefront, shopping cart, and secure credit card processing. EFI also manages purchase limits for each account, bulb inventory, fulfills orders, arranges shipping (through the U.S. Post Office and United Parcel Service), handles customer service, and deals with returns and warranty replacements. These roles are discussed in more detail under the relevant sections below.

Program Marketing

Duke Energy promotes awareness of its Specialty Bulb program through a combination of general and targeted marketing efforts. General marketing efforts began with program webpages and links on the Duke Energy website, bill inserts, and a press release to coincide with the public launch of the program. Electronic marketing began with pop-up messaging appearing on the Duke Energy My Account Online System (OLS) that encouraged customers to click through to visit the new store. These efforts were followed by a direct mail campaign that targeted three subsets of Duke Energy customers: 1) those who had previously purchased CFLs at retailers using Duke Energy's discount coupons, 2) those who had ordered free CFLs; and 3) OLS account users, since they are known to be savvy web users. An email campaign followed the direct mail campaign. Initially these efforts were rolled out in sequence in the months following the program launch to give Duke Energy and EFI time to fine tune the systems for customer authentication and data transfer (see *Customer Authentication* below). Then in the fall of 2013 the program team stepped up its efforts with a combined campaign that incorporated all of the above-mentioned elements in the same month, as well as mentions on the Duke Energy online employee portal to promote greater awareness of the program within the company. No paid advertising was used during 2013, but it was planned for 2014.

As the Duke Energy Product Manager explained, "Marketing the free CFL program was fairly straightforward since 'free' is a no-brainer motivational tool for a lot of people. But now we're asking customers to actually pay for a portion of the bulbs." This presents more of a challenge in terms of refining the program's offer (including which bulbs get promoted in the marketing materials and the level of discounts for bulbs and shipping) and the creative (which messages resonate best with different customer groups). For this reason, Duke Energy experimented with different marketing pieces. Some pieces feature selected bulbs, while other show the entire product line in the Savings Store. Still others have experimented with different discount offers to

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reduce the cost of shipping. Figure 1 below provides a sample excerpt from an email promotion. Other marketing samples can be found in *Appendix E: Marketing Examples*.

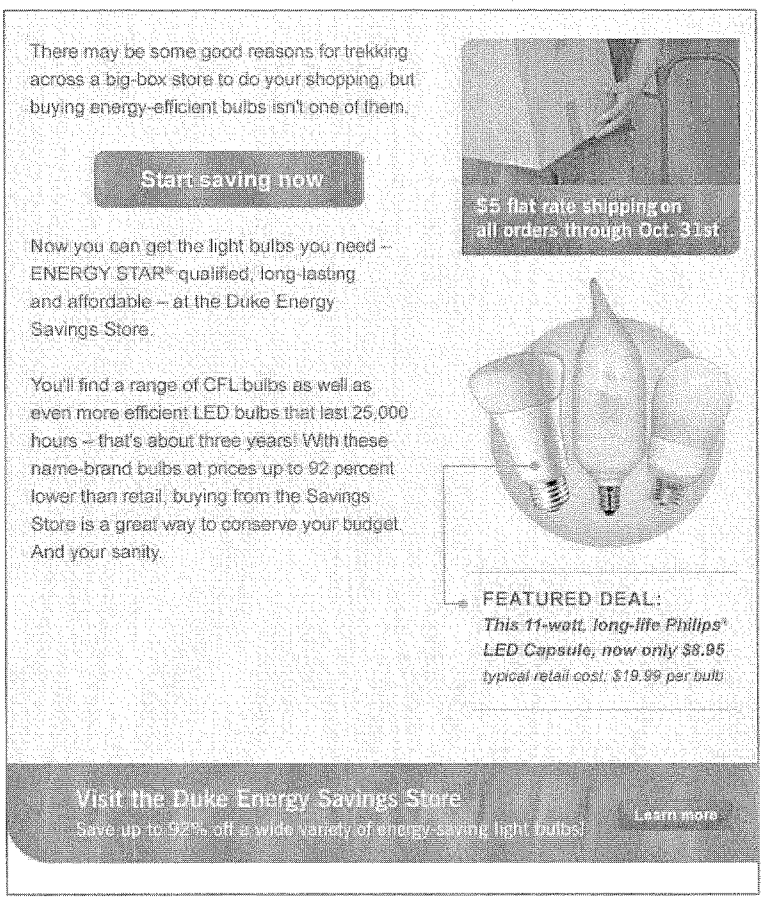

Figure 1. Sample Excerpt from Email Promotion

The utility also employs an array of tools and techniques to track and improve the effectiveness of its marketing efforts: Mailing lists are compared against authentication records to determine which customers responded to direct mail campaigns. Separate and campaign-specific URLs are used for bill inserts, while click-through rates are tracked for email messages and OLS pop-up intercepts are tracked with weekly reports designed to capture response rates. Duke Energy's Google Analytics account is used to track web traffic on the public website, as well as follow through traffic to the EFI Duke Energy store landing page. EFI's Google Analytics and other e-commerce measurement systems track customer activities on the Savings Store itself.

To further enhance the program's marketing, the many digital data points collected from the various tracking systems are subsequently fed into propensity modeling tools from Duke Energy's Market Analytics group. These modules crunch external data such as Experian and PRIZM segmentation data and then combine it with Duke Energy program participation records to identify the common attributes shared by customers who have responded to previous efficiency offers. The most significant characteristics are then fed back into the models so that

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millions of Duke Energy customers can be sifted for those who are most likely to respond to the program's next marketing effort.

While not falling specifically within the 2013 timeframe of the evaluation, it is worth noting that in early 2014 Duke Energy also refined its marketing with an A/B Split Test of 400 direct mail pieces, with 200 customers receiving an offer for $5 flat rate shipping and equal number of recipients seeing an offer for free shipping on orders over $25. Once respondents get to the online store, customers from both groups can participate in either offer, but the test was designed to better determine the most cost-effective ways to encourage visits and subsequent purchases. This split testing is mentioned because planning for it began in 2013.

TecMarket Works considers techniques such as sequential and combined marketing campaigns, the use of unique URLs, customer-specific response tracking, propensity modeling, and split testing to constitute best practices in program marketing.

Customer Authentication

Numerous utilities employ online stores to sell their customers discounted light bulbs. The most common methods they use to confirm that online store visitors actually live within a utility's service territory are to either validate by checking the customer's residential address zip codes or for the vendor to compare account numbers entered by the website visitor with account numbers provided by the utility. While these methods suffice, neither method provides the online store vendor with up-to-date records regarding previous customer participation in energy efficiency programs. Duke Energy already possessed a more sophisticated system than this, and the utility wanted to use it for this program.

Duke Energy's previously established CFL distribution systems enable the utility to identify customers at the household level and track their participation down to the demand side management program that was responsible for providing a specific number of CFLs. "We wanted a vendor who would allow us to use our existing systems to authenticate customers before they accessed the vendor's e-commerce platform. That way we could confirm eligibility and track customer participation at the individual account level ourselves, and then redirect the customers to the vendor's online store to make their purchases," explained the Duke Energy Product Manager. With a data push from Duke Energy's computer system to the vendor's website, the vendor would have all the customer information needed to confirm eligibility for making purchases, as well as confirming the customer's account status as a residential customer of North Carolina or South Carolina (as opposed to being an eligible business customer who can buy discounted bulbs via a separate energy efficiency program for commercial customers), receive.

This concept necessitated significant planning and technical adaption on the parts of Duke Energy and EFI. In the end, the complete process—from initially building the online website to finally testing that all data exchange procedures were working correctly—took the better part of a year before the Savings Store was ready to launch. However, once the system was ready, customers could access Duke Energy's authentication systems to verify their eligibility. Then the utility's computer systems would push the relevant customer data to EFI so that the vendor

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would have the customer's account information, including real-time eligibility for incentive discounts on light bulbs.

Because each state service territory is served by its own online storefront, one part of the authentication process also ensures that customers are automatically directed to their state-appropriate Store. As of the time of this evaluation, the North Carolina and South Carolina state websites appear to be identical, but by maintaining different online storefronts the system can readily accommodate state-specific changes as necessary.

Login Process

There are two ways to access the Duke Energy Savings Store: via the webpage for the program on the Duke Energy public website at http://www.duke-energy.com/residential-savings-store/ or via a link from within Duke Energy's OLS. If customers enter via the public website they must first enter either their account number or the phone number associated with the account (Figure 2). They must also enter the last four digits of the social security number associated with the account. If customers access the Savings Store via the OLS they will have been through the authentication and thus they can go directly to the Savings Store.

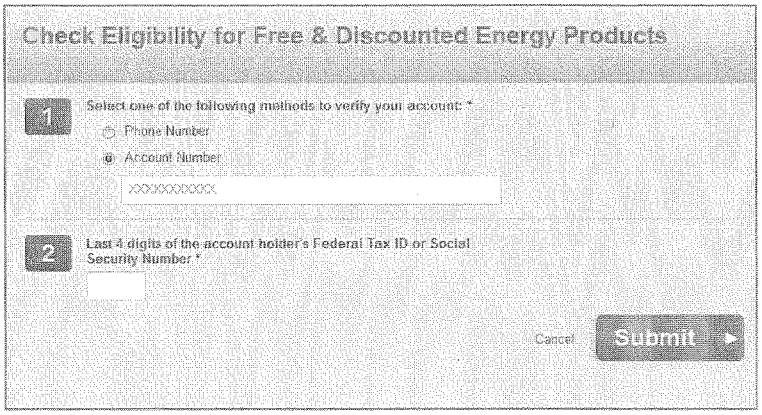

Figure 2. Login Screen for Authentication

By design, customers cannot access the Duke Energy Savings Store without first going through Duke Energy's authentication process. If someone tries to visit the site directly whether that's via a bookmark/favorite or via a link from another website, their web browser will display an error message that points them back to the public webpage for the program for verification.

After authentication, customers are shown a Bulb Order pop-up screen that displays the number of free CFLs that they have requested and allows the customer to obtain more free CFLs if they are still eligible. It also displays a section showing their eligibility to shop for discounted specialty bulbs (Figure 3). Clicking the "Shop Now" button on the Bulb Order pop-up screen automatically redirects customers to the Duke Energy Saving Store website, which is hosted by EFI.

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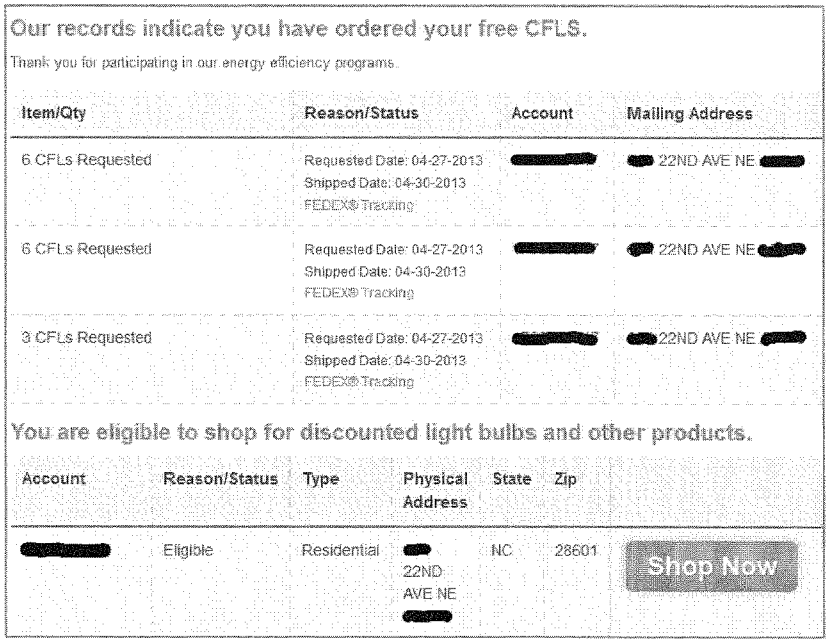

Figure 3. Bulb Count and Eligibility Screen

Prior to August of 2013 the login process involved an additional step after customers clicked the "Shop Now" button. Originally they were redirected to the pop-up screen that displayed their customer profile information, as well as the terms and conditions for website use. Customers were required to read the page and click the submit button before being transferred to the Savings Store.

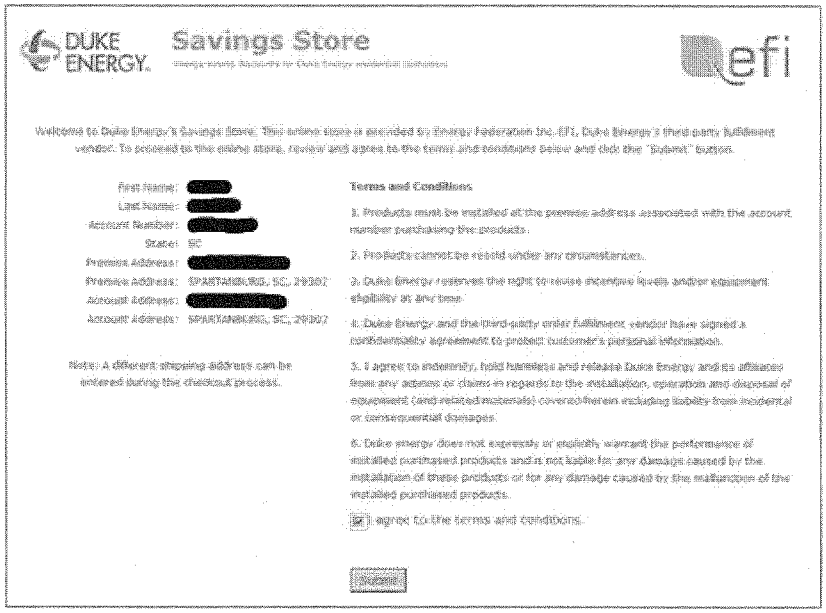

Figure 4. Customer Profile Page

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As the site went live and visitor traffic built up, it became apparent that customers were having difficulty moving beyond the profile page to the EFI store due to technical data handing issues. As a result, visitors received an error message indicating "token already in use." This error caused confusion and at least temporarily hindered thousands of people from reaching the Savings Store. The problem was diagnosed and ultimately resolved, not by merely fixing the technical glitch, but rather by eliminating the entire step in the login process. Instead the profile page was removed and the T&Cs were moved to the end of the shopping cart buying process. This move also addressed customer objections to the need to review and agree to terms and conditions before they knew what the program was offering. TecMarket Works commends Duke Energy on this decision since it eliminated a barrier to entry for customers, allowing more people to browse the Savings Store and ensuring that only those people who intended to make a purchase needed to review their address on file and agree to the terms and conditions.

Duke Energy Savings Store Website

Once the authentication process has been completed visitors are automatically redirected from the authentication pop-up windows to the Duke Energy Savings Store home page. The primary elements of Savings Store website are all reviewed in this section, including navigation, customer education, products, and the shopping process. Numerous screen capture images from the website are shown in this section of the evaluation. Additional images can be seen in *Appendix F: Website Screen Images*.

Website Navigation

The Savings Store home page is arranged in a traditional grid layout with a large central column surrounded by smaller left and right columns to the sides and a footer below (Figure 5). In the central space a 50-second welcome video automatically launches when the page is first loaded. The video shows an actress who orients the visitor to the site's shopping assistance tools and other helpful resources. She also mentions current special promotions, such as discounts on shipping. The left hand column of the home page is devoted to website navigation. The bottom of the page consists of a series of three boxes: a promotion for discounted shipping, featured bulbs for sale, and an energy efficiency savings calculator. The right hand column also contains three boxes: 1) the Help Resources tool references in the welcome video; 2) a separate lighthearted video that shows CFLs installing themselves around the house; and 3) a box showing the most popular bulb sold at the Savings Store. As visitors move beyond the home page and further into the Savings Store, the right hand column also displays products in the shopping cart and an itemized order history.

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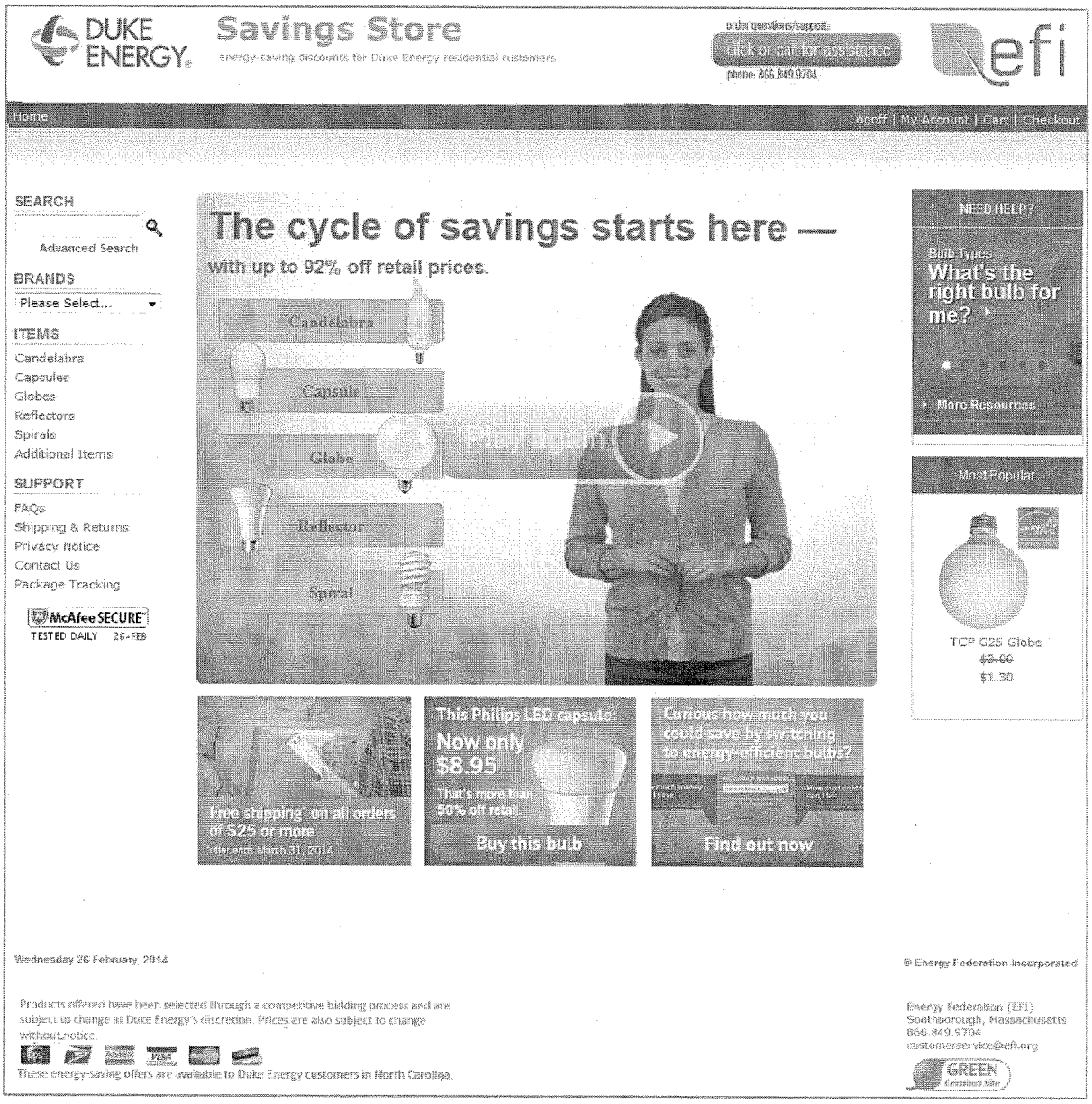

Figure 5. Duke Energy Savings Store Home Page

As a result of the well-considered layout and the various tools provided, website navigation is straightforward and self-explanatory. The left side navigation column remains constant for virtually all pages on the site. It provides visitors with a useful set to tools for finding what they are looking for, including: a search feature; a pull down menu listing bulb manufacturers; a list of quick access links for bulb types; and a separate set of links for support features, such as FAQs, shipping and returns, privacy notice, contact us, and package tracking. Throughout the website, in-text links are colored blue, and they display an underline when visitors mouse over them.

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In addition to these standard navigational elements, a thin horizontal navigation strip at the top of each page displays breadcrumbs to indicate where the visitor is within the website. For instance, when a visitor is looking at a MaxLite A21 bulb the breadcrumbs show the following: Home » Capsules » CFL Capsules » MaxLite A21. The navigation strip also permanently displays links for: Logoff | My Account | Cart | Checkout, making these features readily accessible at all times. TecMarket Works considers the addition of this navigation strip to be a best practice for utility web design.

Website Search Function

The Savings Store offers two levels of search functionality: basic and advanced (Figure 6). The basic feature searches for key words entered. The advanced search function allows visitors to refine their searches by bulb category (candelabra, capsule, etc.), manufacturer, price, and date. When we tested both the basic and advanced search functions the results were mixed. Some keyword searches yielded results consistent with the website inventory, while others did not. Specific findings are shown in the list below Figure 6.

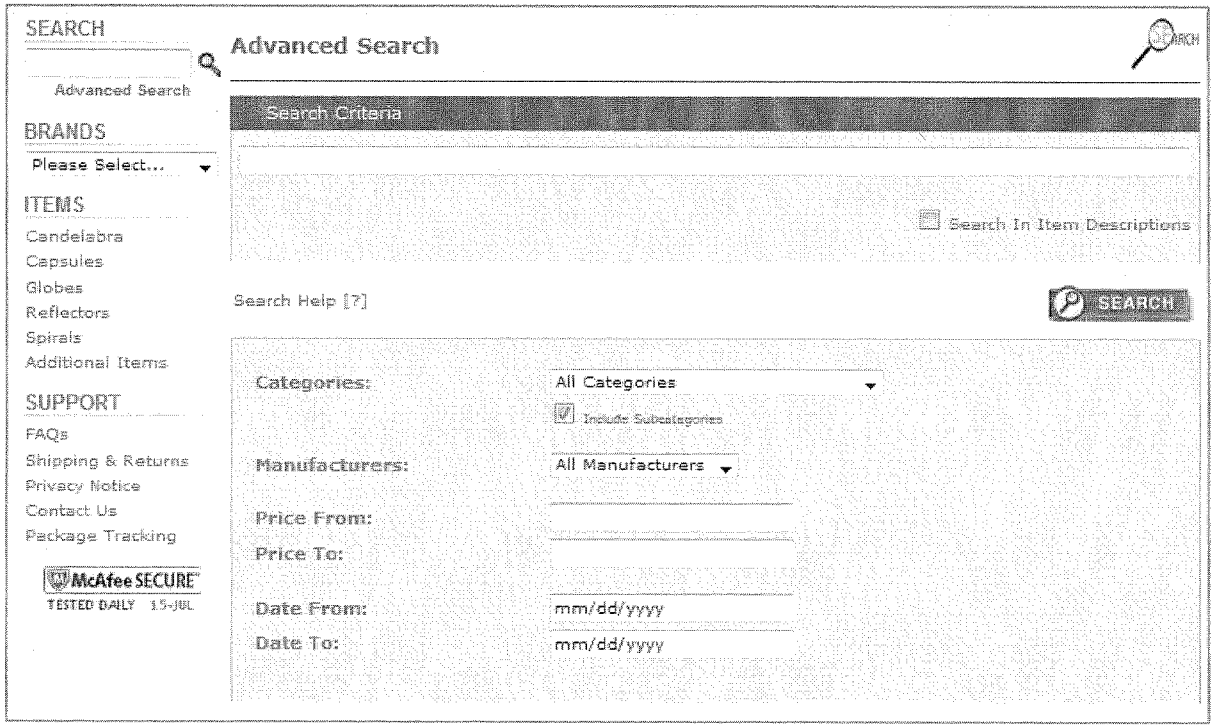

Figure 6. Website Search Function

Bulb Type Search Issues

- "Spiral" showed five results, including four three-way spirals (incented and non-incented), and one non-incented normal 13 W spiral, but it didn't find dimmable spirals, which are sold at the Savings Store.
- While "spiral" showed five results, "spirals" yielded zero items. Likewise "candelabra" resulted in 12 items, but "candelabras" resulted in zero. Since customers may enter singular or plural terms, both should terms be coded into the search function.

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- "Capsule" and "capsules" both resulted in no items found. This prominent category of bulbs should be coded in.
- "Globe" and "globes" both showed eight items found. No issues were noted.
- "Reflector" resulted in 28 products, including both CFLs and LEDs. But when "CFL reflector" and "LED reflector" were searched they each returned just two items respectively. Search terms should be broadened to reveal all bulbs that fit these descriptions.
- "Three-way" found five items, yet "3 way" resulted in seven items. Since customers may enter either phrase, the results should be coded so that all items are found with both terms.
- "Dimmable" resulted in 33 products found, but "dimmables" yielded none. "Dimmable lighting" yielded 15 hits. We recommend that search coding be extended to accommodate plurals and possible word combinations containing the bulb type name, as well as commonly associated words such as light, lighting, bulb, bulbs, and light bulb, and alternative spellings such as lightbulb.

Application Type Search Issues

- "Ceiling" yielded six candelabra products, but failed to list other bulb types such as spirals and capsules which may also be used in ceiling fixtures.
- "Table lamp" found 87 products, but "floor lamp," "pendant," "mounted ceiling," and "vanity" resulted in no bulbs, despite the fact that these words are prominently mentioned alongside table lamps as application types.
- "Recessed" and "recessed light" yielded 28 items, but "recessed lighting" found only 22.
- "Sconce" and "wall sconce" both found six items.
- "Track," "track light," and "track lighting" all yielded 14 results.

At the time of this evaluation TecMarket Works considers the Savings Store's search functionality to be in need of the changes noted above, as well as other improvements along the lines of the examples provided. However, we do note that some of these search issues may be resolved in the process of making currently planned website upgrades, since EFI indicates that product filtering will be considerably enhanced under its pending ecommerce platform replacement, which is scheduled for autumn of 2014.

Customer Education and Shopping Assistance

Perhaps one of the most distinguishing features of the Duke Energy Savings Store is its set of resources for providing visitors with shopping assistance. Duke Energy considers customer education to be a significant mission of the Savings Store. "One of the big advantages of buying from a retail store is that people can take their old bulb in with them and compare to the ones on the shelf so they get the right replacement. But that means they're likely to buy the same kind of inefficient bulb they used before" said the Duke Energy Product Manager. "We wanted to build tools that mimic looking at what's on the store shelf, but also go beyond that so that customers really understand their options and know they are buying the right thing. That way they will not have to worry about returning it because it was wrong."

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Pop-Up Shopping Guides

To this end, Duke Energy hired a third-party firm, Capstrat, to help develop a series of online resource modules to help with customer education. Those educational resources are clustered in the upper right hand column of the website where an array of links lead to informative pop-up boxes designed to assist customers in identifying the kinds of bulbs they need by application (track lighting, recessed lights, table and floor lamps, pendant lights, wall sconces, mounted ceiling lights, and vanity light), and by bulb type (reflector, globe, candelabra, spiral, capsule). Each pop-up tab provides a brief text description, accompanying photograph, and quick access links to enable customers to shop for that type of bulb. Other pop-up boxes explain the benefits of energy efficient lighting and discuss how to recycle the bulbs safely. The resource modules also contain a section that clarifies the difference between watts and lumens. This includes a text explanation, an online video called *Energy 101: Lumens* made by the U.S. Department of Energy, and a comparison/conversion chart so customers can look up the old incandescent bulbs they are familiar with and find CFLs with similar lumen levels.

Savings Calculator

Another educational feature on the site is an interactive savings calculator that allows customers to see how much money and carbon they will save by replacing their old bulbs with more efficient CFLs (Figure 7). A drop down menu enables the user to select the approximate square footage of their home. Then the number of bulbs of each type can be entered into the calculator. With each change the calculator displays the amount of money to be saved on the purchase, as well as the total financial savings on the customer's Duke Energy electric bill over the course of a year. Calculations are based upon bulb type, average hours of use, presumed wattage of the old bulbs, and the Duke Energy rate factor for that state. The calculator also shows the total number of pounds of carbon saved per year and the equivalent of how many trees would have to be planted in order to offset that same amount of carbon. Although the calculator shows these savings in aggregate, it is possible to enter one bulb at time to see the individual savings per bulb.

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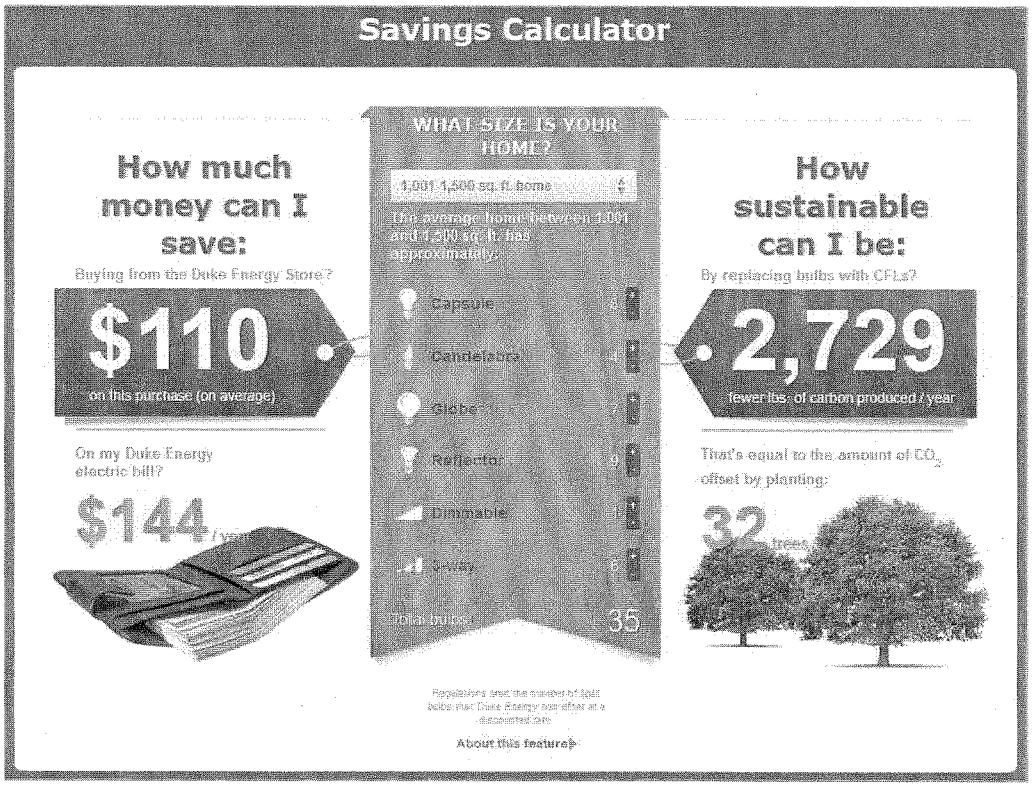

Figure 7. Savings Calculator

According to the "About this feature" link on the calculator, its programming uses inputs and assumptions from the 2010 U.S. Lighting Market Characterization report released by the U.S. Department of Energy; ENERGY STAR reports on lifetime savings in electricity costs of CFLs and savings in pounds of carbon dioxide per average CFL bulb; as well as the Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator.

A similar looking savings calculator is shown on the program's public web page on the residential Duke Energy website. However, that version of the calculator does not have the interactive features that are available on the Savings Store version. Instead it displays pre-programmed bulb counts and their associated savings as a single fixed example. While interactive functionality may not be necessary on the public website, TecMarket Works suggests that Duke Energy investigate the feasibility of upgrading the public calculator since its interactive functionality would encourage more customers to see how much they can save before making the effort to log on to the Store.

TecMarket Works considers this interactive calculator to be a worthy feature at the Duke Energy Savings Store because the meaningful information provided by the calculator helps to shift customer buying decisions from a short-term focus on the immediate financial savings at the time of purchase to the broader considerations of the overall value obtained during the lifetime of bulb use. This additional context demonstrates one of the key benefits of online shopping given that retailers are unlikely to reproduce this feature in retail stores.

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Frequently Asked Questions
Answers to frequently asked questions can be found via the FAQ link on the left hand navigation column. Common questions and answers cover a wide range of topics including: why Duke Energy is providing energy saving products, incentive limits, shipping options and delivery times, payment and warranty information, and who and how to call for further assistance. Rather than being displayed as a traditional HTML webpage, the FAQs are shown as an online PDF so that they can be readily downloaded to the visitor's computer or mobile device.

Summary
While all of the above mentioned information, pop-up shopping guides, video, savings calculator, and FAQs can all be rightly called customer education tools, none appear to be presented as separate education components. Rather they are all well-integrated website elements to help Duke Energy's customers to make better purchasing decisions and have a more complete user experience. TecMarket Works commends Duke Energy for its exemplary efforts in creating a user-friendly online shopping experience.

Product Display and Pricing

As discussed above, customers can access individual product pages in a variety of ways, including direct search-term entry, search by brand, and navigation by following links for bulb types. This last method guides customers through a sequence of web pages that begin with photographs showing one or more common uses for a bulb type, such as floor and table lamps, and a paragraph-long description of the overall bulb category. For example, capsule bulbs are described as follows:

> *These bulbs, which are also known as "A" lamps, most closely resemble traditional incandescents although capsules are slightly larger in size. These encapsulated style light bulbs are especially suitable for use in open fixtures in which the bulb will be visible.*

After this brief description, customers see a sentence telling them the purchase limits for incented bulbs in that category. Links to CFL or LED bulb types are also shown. The next page in the sequence displays product summaries of the bulbs within the category (Figure 8). Summaries include an image of the bulb, bulb name and model number, wattage, lumens, bulb life, and a price breakdown showing the discounts offered. More details are available one level deeper by clicking on the bulb name link.

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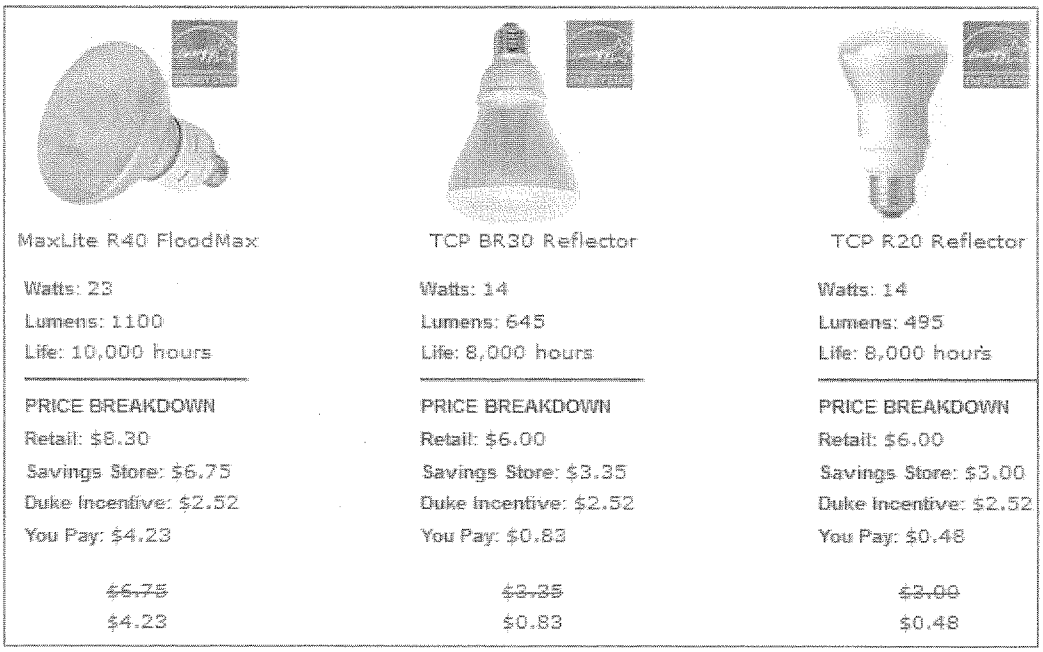

Figure 8. Initial Multiple Product Display

While these summary pages are adequate to the role they fill within the website, TecMarket Works offers several suggestions that may help to improve the customer experience. We mention these as suggestions rather than specifically as program recommendations. We do this in order to encourage Duke Energy and EFI to review the Savings Store's Google Analytics to assess website traffic flow and then to experiment and test the effectiveness of our suggestions. For instance, A/B Split Testing can be used to test each suggestion individually in order to determine if more customers take action without or with each change. Our suggestions are summarized in Figure 9 on page 35.

Website Links

CSS style sheets on the website denote in-text links with a subtle blue coloring. While many online shoppers can be assumed to be generally aware that colored text indicates a link to more information, not every site visitor may be aware of this. As a result, some percentage of online customers may not be clicking links to get additional information. This can cause customer confusion and lost sales. Changing link text to a more distinct color or adding underlines may make links more prominent. Another way to help customers to realize more information is available would be to include a "more information" button on the product summary page (see Figure 9 for example). We suggest that Duke Energy and EFI explore which options work best with the website platform.

Bulb Wattage and Brightness

Although the customer education section of the website does an admirable job of explaining to customers the similarities and differences between traditional incandescent bulbs and newer CFLs and LEDs, those comparative features are not carried over to the product display pages. This can present challenges for customers who are accustomed to years of identifying light bulbs based upon their incandescent wattage. As a result, when site visitors view product descriptions

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listing watts, lumens, and bulb life they must either 1) draw upon prior knowledge of product comparisons; 2) find their way to the "About Brightness" table (this is two clicks away if they know where it is); or 3) continue without the extra information. This trio of poor choices can be improved by either including a line of text citing the most similar incandescent bulb in terms of wattage (see Figure 9 for an example), and/or by providing a link directly to the "About Brightness" table, which is already programmed to appear as a pop-up window on top of the existing page so customers do not lose their place on the product page. Improvements such as these will make mental comparisons easier for the customer and may increase sales since it will increase customer knowledge and comfort with idea of buying an "unknown" bulb online.

Bulb Pricing

In order for customers to appreciate the discount pricing that Duke Energy is providing to them, the website shows a breakdown of various incentives applied to each bulb. Pricing begins with a retail price that is set based on EFI market analysis. After this retail figure, price reductions are shown in sequence, including the base EFI store price, the Duke Energy incentive amount, and the final price. TecMarket Works considers showing customers the discounts to be a good idea because it reminds them of the prices they would likely be paying elsewhere and it reinforces the savings that the customer is receiving as a result of visiting the Savings Store. However, we also note the potential for customer confusion arising from the display of so many different amounts. The potential confusion seems possible given that the phrases "Savings Store" and "Duke Incentive" may not be clear to some people. One way to mitigate potential confusion and to further reinforce the amount savings being offered would be to present the math for customers so that they see the difference between the original and final prices. See Figure 9 for an example.

Add to Cart

Currently the initial bulb summary page does not include a button to add the item to the shopping cart. In order to actually purchase the bulb the customer must first access the detailed information page by clicking the blue in text link associated with the bulb product name. This step, and any associated loss in the sales funnel, could be eliminated if an "add to cart" button is inserted below the item description as shown in the suggestion in Figure 9. TecMarket Works offers this suggestion while recognizing that such a change would be necessarily dependent upon a combination of web design and underlying web coding details that would still allow for customers to purchase quantities of bulbs at multi-pack discount prices.

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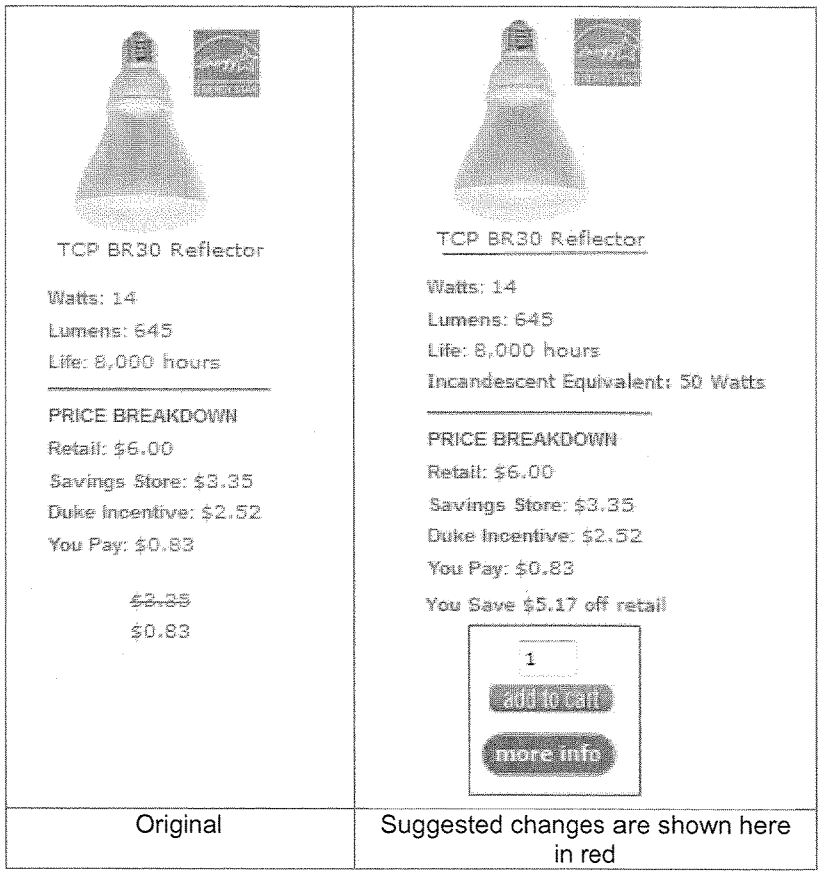

Figure 9. Suggested Changes for Multiple Product Display

Once customers click beyond the product summary pages they are taken to product specific pages that contain a description and picture of the bulb (Figure 10). Below this basic information the visitor sees four tabs: program pricing, estimated savings, product specifications, and installation instructions. The page defaults to the pricing tab.

Above each tabbed page is a product image of the specialty bulb (Figure 10). In some cases there is a link directly below the picture of the bulb that reads "Click to Enlarge." Clicking on the link brings up a separate pop-up window with a larger image of the bulb. This feature is inconsistently implemented throughout the website. For instance, it is available for candelabras and capsules, but not available for spirals and reflectors. At a minimum, we recommend that the feature be consistently implemented throughout. For extra measure, we suggest adding more product images taken from different angles or, if possible, adding viewing software that allows the visitor to pivot and turn the image to see different points of view. This could help increase sales by increasing customer confidence that the new specialty bulb is similar to the old bulb they already have.

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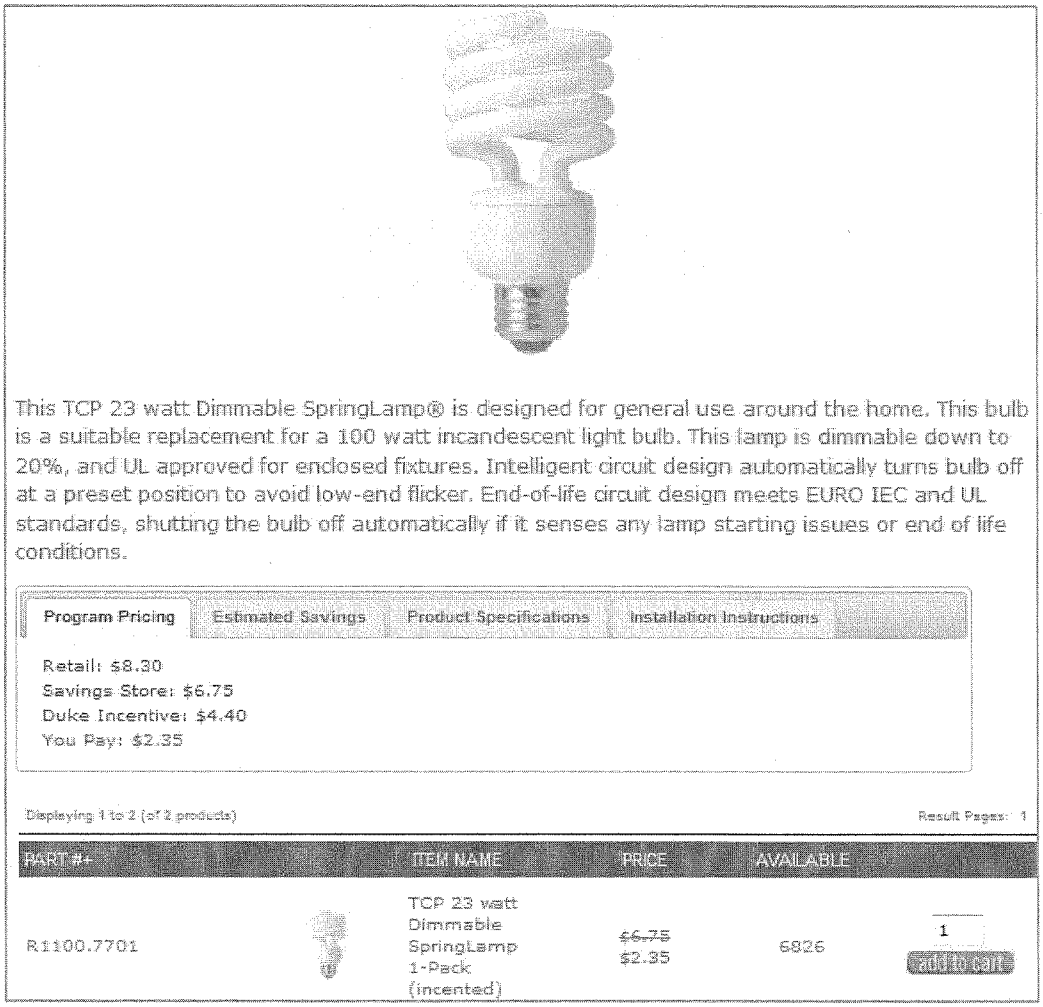

Figure 10. Individual Product Display (webpage excerpt)

Program Pricing Tab

The Pricing tab shows a product table that includes part number, bulb image, item name, price, available, and an "Add to cart" button with a quantity box. The available column shows the number of bulbs in stock or the date of expected availability if the item is currently out of stock. Our suggestions for this tab are duplicative of those discussed for the price summary page.

Estimated Savings Tab

The Estimated Savings tab displays a tab that compares old technology with that of the new bulb. This includes: electric demand in Watts, utilization (hours per day), and annual use (kWh). For the new bulb, the table also shows annual electricity savings (kWh), annual carbon savings (pounds), annual dollar savings, and expected product life. Units of measure are explained in a paragraph below the table. These comparison tables are well considered. However, they might be even more helpful if they also included additional information such as lumens and color temperatures, given that these bulb characteristics determine the brightness and color of the light, which are often key criteria in customer decision making.

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Product Specifications Tab

The Product Specification tab shows manufacturer specifications for their bulbs. Because this information is not standardized across manufacturers, the level of information provided and its order of presentation vary considerably, as shown in Table 8. This lack of standardization makes product comparisons difficult. Moreover, without a primer for clarification, some specification terms listed, such as "Color Rendering: 84 CRI" and "Base Type: E26" may be confusing to those customers who are unfamiliar with them.

Table 8. Non-Standard Product Specifications

Bulb 1	Bulb 2
• ***Dimensions:*** *Width 2.4 inches (61 mm), Length 4.4 inches (112 mm)* • ***Light Output:*** *700 lumens* • ***Color Temperature:*** *2,700 degrees Kelvin* • ***Color Rendering:*** *84 CRI* • ***Rated Lifetime:*** *8,000 hours* • ***Minimum Start Temperature:*** *-20 degrees Fahrenheit* • ***Maximum Operating Temperature:*** *160 degrees Fahrenheit* • ***Power Specifications:*** *120 volts AC, 60 Hz, 0.21A, 14w* • ***Base Type:*** *E26* • ***Manufacturer Warranty:*** *1 Year*	• ***Light Output:*** *1,100 lumens (60 to 75 watt incandescent equivalent)* • ***Electrical Specifications:*** *120 volts, 60 Hz, 18 watts* • ***Dimensions:*** *2.6 inch diameter, 5.1 inch length* • ***Color Temperature:*** *2,700 degrees Kelvin* • ***Rated Life:*** *8,000 hours* • ***Certifications:*** *UL* • ***Manufacturer Warranty:*** *Two Year*

While TecMarket Works is quick to point out that these same issues apply to all companies that sell light bulbs at wholesale or retail, we also note that the web pages on the Duke Energy Savings Store provide the opportunity to customize information in a way that is difficult for those who sell products on store shelves. Since Duke Energy indicates that it seeks to provide a web-based shopping experience that is above and beyond the retail experience, we suggest that the utility and EFI consider standardizing and explaining the product specifications for the 22 items listed for sale on the Duke Energy Savings Store.

Installation Tab

The Installation Instructions tab provides the same set of directions for every bulb.

> *Prior to installing this light bulb, turn power off to the socket at the switch. If it had previously been on allow the existing light bulb to cool. Unscrew the existing light bulb by turning counter clockwise. Install this new light bulb by turning it clockwise until it is secure in the socket. Do not over-tighten.*

While screwing in a light bulb is so basic that it is the subject of countless jokes, we commend Duke Energy and EFI for the thoroughness with which they have considered their customers' experiences. However, we suggest a minor improvement in order to take the opportunity to promote the safe practice of protecting the bulbs from breakage by changing the instructions to encourage customers to screw and unscrew the bulbs via the base of the bulb rather than grasping the glass portion, which might break and risk injury and/or release mercury in the case of CFLs.

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Moreover, we also note that while basic screw-in installation instructions apply to virtually all the bulbs, we found that installation directions had not been edited for bulbs that use a GU10 base such as MR16s. Because MR16 bulbs use metal pins instead of a screw in base, they are the one type of bulb sold at the Savings Store that customers may be unsure how to install. We recommend a minor edit to the instructions for any bulbs lacking a screw in base in order to explain any differences.

New Feature Suggestions

Current website functionality allows visitors to simultaneously view bulbs of the same type, such as two different models of CFL capsules. This enables them to compare summary information including watts, lumens, bulb life, and price. But visitors cannot compare bulbs of different types, such as CFL vs LED capsules. This limitation requires visitors to click back and forth and thus hinders their ability to compare different technologies. Furthermore, the current website functionality also does not allow for detailed comparisons between bulbs, such as simultaneously viewing estimated savings and product specifications. TecMarket Works considers these functional limitations to be high priority improvements in order to enhance the customer experience. Duke Energy and EFI have already indicated that they agree with this assessment and report that they are in the process of making system upgrades that will enable these features by the fall of 2014.

One important website visitor challenge that did not yet appear to be planned is the ability for customers to compare their old bulbs with the new bulbs sold on the website. As mentioned earlier in this evaluation, one of the advantages of retail sales is that customers can bring their old bulbs into the store and look through the items on store shelves until they find a match for the bulb's shape and base. This visual confirmation generates confidence in the purchase. While making physical comparisons is impossible through a website, providing a collection of photographs or drawings to help identify old bulbs would be fairly easy. An excellent example with images of bulb shapes and base-types can be found on the light bulb buyers guide page of Amazon.com.[3] Furthermore, clicking on the image or shape for the old bulb could bring up a list of possible replacements. TecMarket Works offers this suggestion as an additional way to address Duke Energy's mission to encourage as many of its customers to swap out old bulbs as possible.

On a related note, we also offer the following suggestions. As discussed above, those customers who are new to CFLs and LEDs tend to associate the brightness of light bulbs based upon on their wattage. This lack of familiarity with lumens and light colors makes it challenging for them to find suitable replacements for their older technologies, and thus may be inhibiting purchase behaviors. For this reason, we suggest that Duke Energy consider adding a Brightness Comparison tab to its list of other product tabs. This tab could display light bulb fact boxes developed by Energy Star, as well as the lumen to watts comparison graphic shown in the

[3]http://www.amazon.com/gp/feature.html/ref=amb_link_356841462_1?ie=UTF8&docId=1002234061&pf_rd_m=ATVPDKIKX0DER&pf_rd_s=product-alert&pf_rd_r=1XK8CAY99M4TXE02YDH5&pf_rd_t=201&pf_rd_p=1740479022&pf_rd_i=B002NH5TTA

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Lumens 101 video or a bar chart similar to that on Amazon.com.[4] Examples are shown in Figure 11.

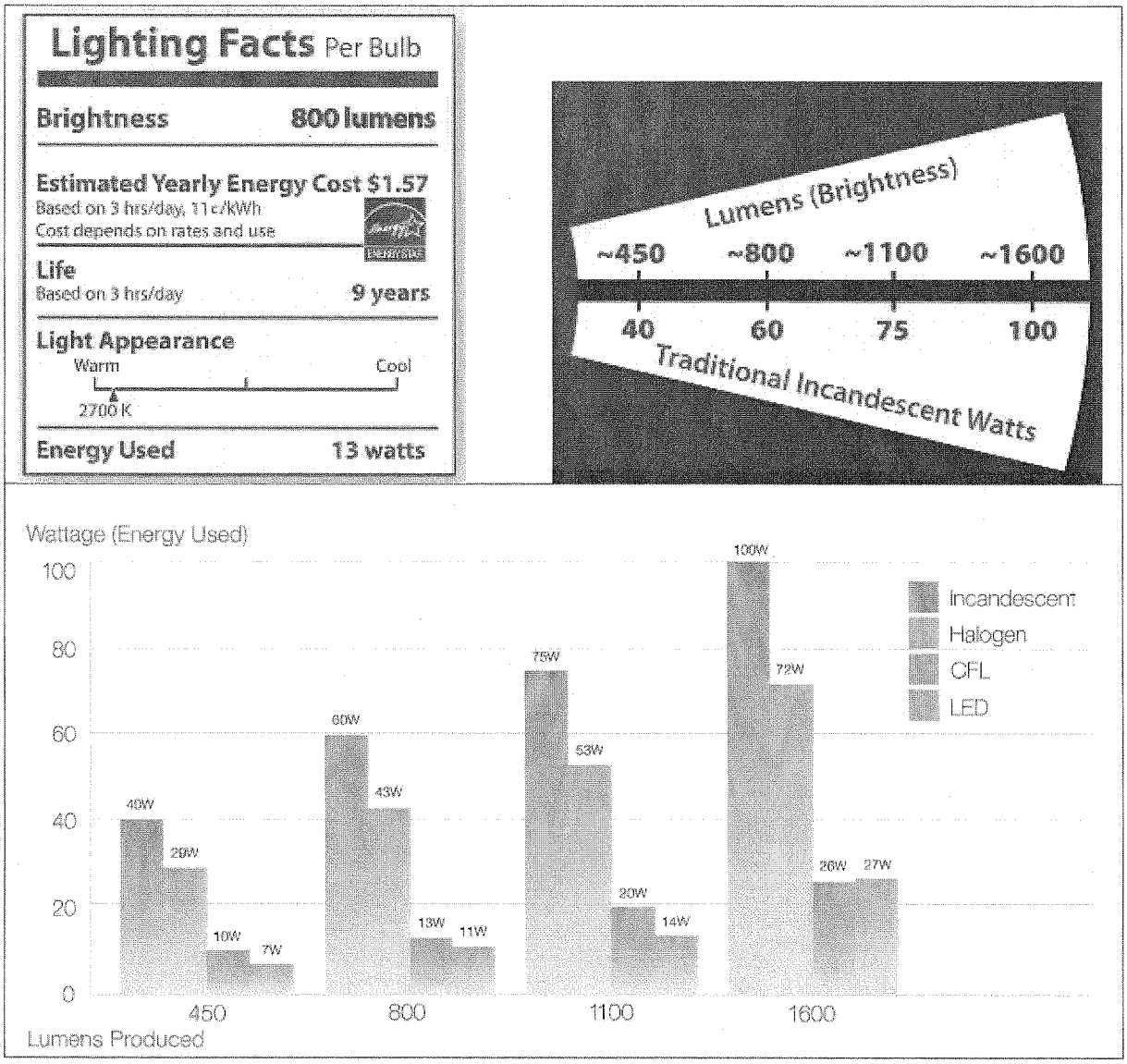

Figure 11. Light Bulb Facts

Lighting appearance is another area where many customers may require assistance. For this reason it may also be helpful to provide an information resources tab with explanations and visual images to educate customers about how light temperatures affect light color and influence mood. The Energy Star website provides a ready example at http://www.energystar.gov/index.cfm?c=cfls.pr_cfls_color. TecMarket Works considers this

[4] http://www.amazon.com/gp/feature.html/ref=amb_link_356841462_1?ie=UTF8&docId=1002234061&pf_rd_m=ATVPDKIKX0DER&pf_rd_s=product-alert&pf_rd_r=1XK8CAY99M4TXE02YDH5&pf_rd_t=201&pf_rd_p=1740479022&pf_rd_i=B002NH5TTA

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particular suggestion to be of lesser importance given the limited number of bulb types offered through the Savings Store.

Shopping Cart and Purchase Process

Shopping Cart Functionality

The Duke Energy Savings Store's shopping cart functionality meets the conventional standards for e-commerce. Product descriptions include a field for entering item quantity and an "Add to Cart" button. The cart can be accessed at any time via the navigation ribbon along the top of the page. The cart displays part numbers, item descriptions and prices (Figure 12). If an item is out of stock, then an expected-available date is prominently displayed in red text. Items in the cart can be easily removed and quantities can be edited. Subtotals can be updated with a click of a button.

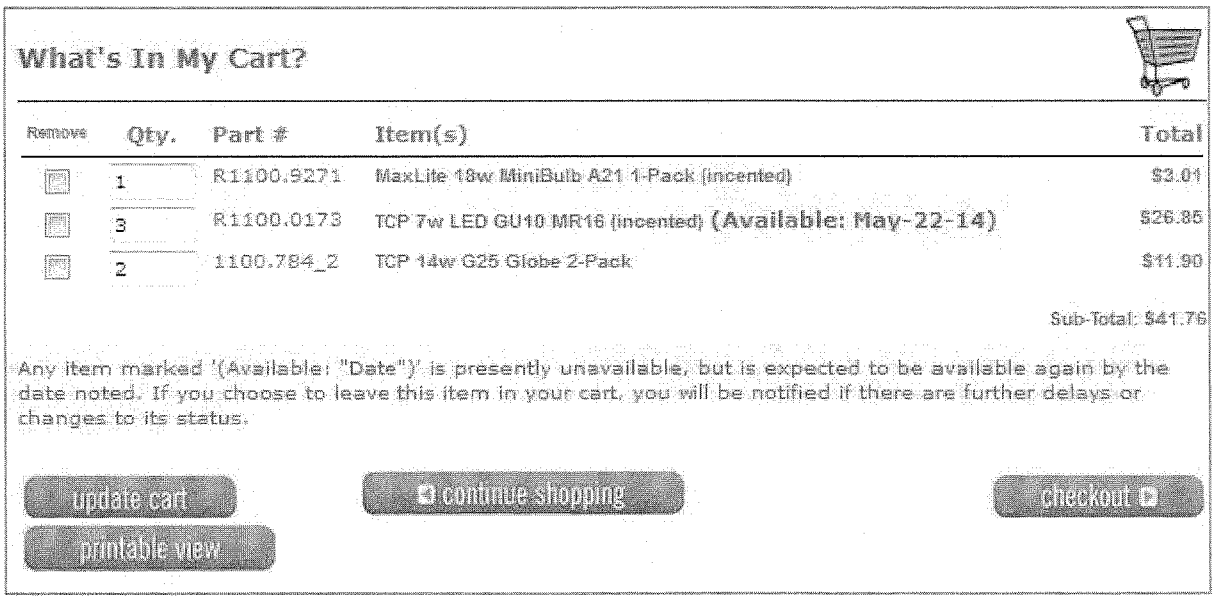

Figure 12. Shopping Cart

Visitors can print a record of items in their carts and save the cart contents so that their bulb selections will be available the next time they visit the site (Figure 13). While the save function is helpful, there is no link for the feature shown within the cart itself as there is for printing. Instead the save feature is displayed in the right-hand column of the website below the permanently displayed Resources and CFL video boxes, which means that on small screens it may not be noticeable since it will appear below the fold. This less than prominent placement makes the save feature less likely to be used. Because this feature is already available and useful for customers, TecMarket Works suggests that if feasible Duke Energy add a "Save Cart" button to the list of buttons displayed in the cart, or otherwise move the display box to make the function more obvious for site visitors.

Special website functionality also allows customers to use more than one shopping cart at a time (Figure 13). While this feature was primarily designed to aid business customers who may have multiple departments making purchases, the feature is available to residential customers as well.

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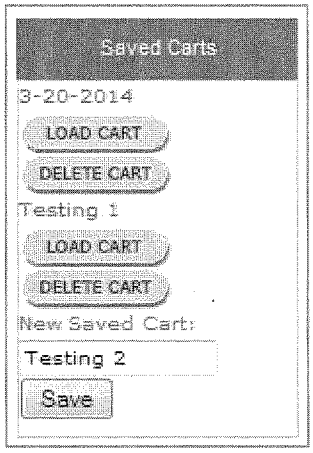

Figure 13. Saved Shopping Carts

Exceeding Incentive Limits and Buying Non-Incented Bulbs

The Duke Energy Savings Store permits customers to order more bulbs than are allowed by the incentive limits, but doing so triggers a message at the bottom of their shopping cart. A representative message is shown below:

> *The purchase limit for incented CFL capsules is 15 per account. Please adjust the quantity in your cart to proceed. Note that you may still order more of these products beyond the limit through the non-incented portion of this online store. Click here to purchase additional products without purchase limits.*

Customers cannot move further into the checkout process unless the quantity of bulbs is reduced to within limits. This must be done manually by deleting the original quantity and entering a lower number. Having done this, customers can click the link which redirects them to a different section of the website that stocks identical bulbs at higher costs since they are priced without the incentive amounts offered by Duke Energy. This approach makes it possible for customers to order as many bulbs as they want without exceeding Duke Energy's preset incentive limits. Duke Energy tracks these non-incented bulb purchases separately.

The Savings Store's non-incented bulb inventory can be accessed directly via the Additional Items link in the left side navigation list or via the website search function. While these additional methods of accessing non-incented bulbs are admirable from an ease of navigation point of view, TecMarket Works found them to be potentially problematic from a customer savings perspective, since visitors can mistakenly purchase non-incented bulbs when they are eligible to receive the incentive discount.

As shown in Figure 14 below, the first few items consistently shown in the search results are the non-incented bulbs. Incented items lower down on the list are shown at a lower price. As presented, the search results require visitors to first notice that the same bulbs are offered at two different prices and then to select the lower price option. Unless visitors do so, they will end up purchasing non-incented bulbs when they are eligible for incented bulbs. In addition to causing a

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potential customer equity problem, this may also lead to lower customer satisfaction when customers discover their error.

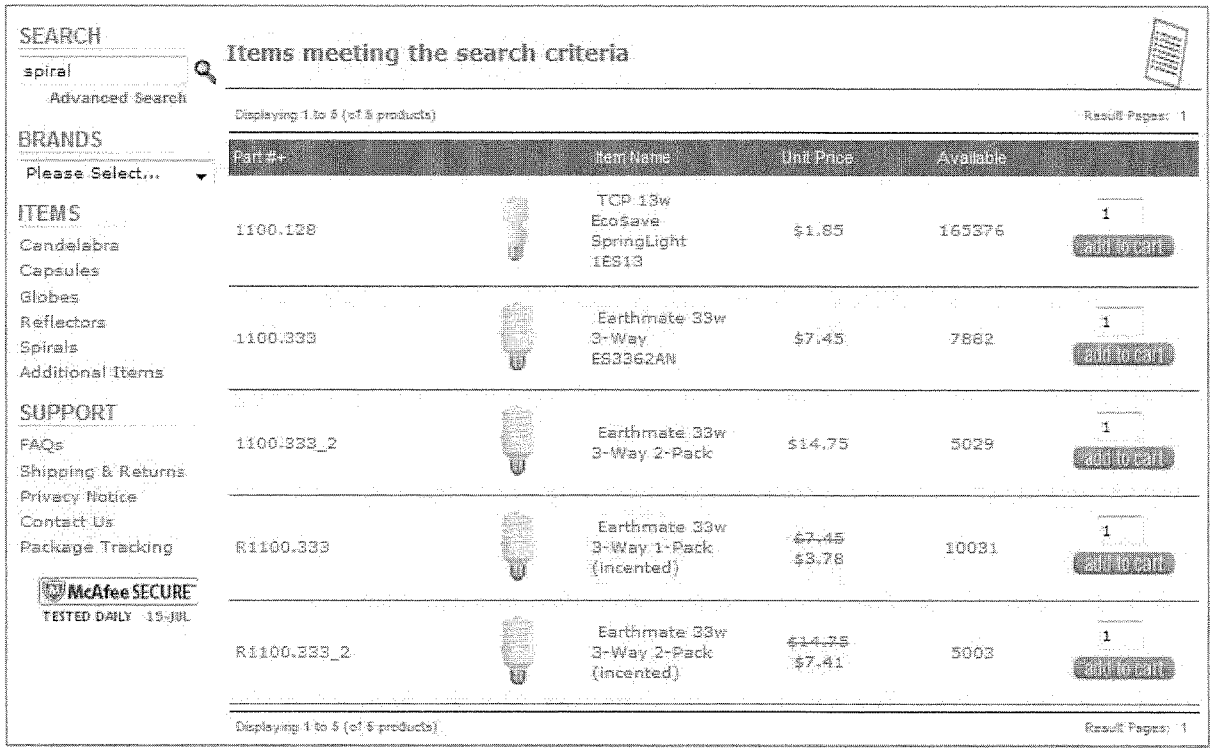

Figure 14. Website Search Results

Presenting the incented bulbs first would be a simple improvement to help reduce the likelihood of these potential problems. Other potential improvements include not showing non-incented bulbs in the search results, or only allowing customers to see non-incented bulbs if they have reached their incentive limits. TecMarket Works recognizes that any such improvements may require significant programming changes. So rather than prescribing a specific solution we encourage Duke Energy and EFI to take necessary steps to make it explicit to website visitors that the same bulbs can be purchased at a lower price.

The Checkout Process

The checkout process occurs across four separate webpages. The first page provides customers the opportunity to enter a shipping address and select a delivery method. The second page collects credit card payment information and requires customers to accept the terms and conditions of the program, including that the bulbs cannot be resold and that they must be installed on a property associated with the Duke Energy account. The third page offers a final chance to confirm the order. The fourth page indicates the customer has successfully completed the transaction. TecMarket Works considers the addition of a confirmation page to be a best practice for web transactions, particularly for those of a financial nature.

Customers can also opt to pay by check or money order. If customers choose to pay by mail, they must complete the checkout process and then mail payment (payable to Energy Federation)

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along with a printed copy of their order to EFI. Orders are shipped upon receipt of payment. While this feature makes Duke Energy's discounted bulbs available to customers who may not possess credit cards, EFI representatives told us that very few customers availed themselves of the option.

Inventory Management

The Duke Energy Savings Store sells approximately two dozen different kinds of specialty bulbs. The number of bulb types has changed slightly as the program team has refined the product mix and adjusted to changes in the marketplace. Although Duke Energy's selection of bulb types represents a tiny fraction of the more than 1,500 different SKU items that EFI stocks for its various customers, the overall volume of bulbs sold each month by Duke Energy places the utility among EFI's largest clients. To help ensure that inventories for Duke Energy remain intact, EFI sets aside products stocked for the utility so that they aren't inadvertently pulled for other clients. EFI constantly monitors its inventories, while the Duke Energy Product Manager reviews inventory on a weekly basis.

EFI has a strong track record of maintaining inventories. However, they can run out of stock due to: 1) forecasting mistakes when marketing response rates are higher than expected; 2) manufacturing issues; or 3) shipping delays, such as those caused by weather. If an item is placed on back order, the Savings Store website is updated with an anticipated available date. The date shown is typically one week longer than the actual expected date, in order to better manage customer expectations.

EFI has a service level agreement that at least 95% of orders each month will ship complete. Only once, in June of 2013, did performance slip slightly below the mark. In other months during 2013, performance for this metric has varied between 98% and 100%. If inventory issues do happen to cause EFI to send a partial shipment, there is no charge to the customer for the second delivery, which is sent via the same delivery method as originally selected.

Shipping and Delivery

Customer bulb purchases are typically fulfilled within two business days of the order being received, which represents a best practice in this field. Bulb delivery dates depend upon the type and speed of shipping selected by the customer. The program allows customers to choose between shipping via the U.S. Post Office or United Parcel Service. Application programming interfaces (API's) from these shippers allow shipping costs and times to be automatically calculated on the website based on delivery speed, zip code, and weight of the order. Discounted shipping rates are also shown during times when Duke Energy is offering additional customer incentives, such as $5 flat rate shipping or free shipping on orders of $25 or more.

A webpage on the Savings Store enables customers to track UPS packages using the order number or the UPS tracking number. Packages sent via the post office aren't trackable from the Store website, but a phone number for the post office is provided.

During checkout customers can add new mail delivery addresses. While the majority of customers have the same service and delivery address, Duke Energy recognized that some customers may wish to have their bulbs delivered elsewhere, such as a place of business or a

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second home. Customers can enter delivery addresses anywhere in the United States, as well as any overseas U.S. military installation. TecMarket Works acknowledges this gesture toward customer convenience, but we also point out the potential to degrade energy savings by allowing incented bulbs be shipped, and presumably installed, outside of Duke Energy's service territory. This has the potential to reduce the energy savings that Duke Energy can claim as a result of the programs' operations.

With this in mind we reviewed the 19,704 (n= 118,192 bulbs[5]) records of customer sales in the Carolina System during 2013 to determine how prevalent the issue was. Of the 4,340 (n= 26,499 bulbs) sales records for South Carolina, only 45 (n= 249 bulbs) were sent out state. This represents 0.9% of South Carolina sales. Of the 15,364 (n= 91,693 bulbs) sales records for North Carolina, 244 (n= 1,205) were sent out state. This represents 1.3% of North Carolina sales. The detail provided in the report did not allow us to conclusively determine if any out of state addresses still were within Duke Energy service territories in other states. Nor was is it possible to determine if customers chose to have bulbs shipped to an out-of-state location such as a work address and then personally brought their purchased bulbs home to their residences within North Carolina or South Carolina.

Call Center

EFI provides 17 customer service representatives (CSRs) who are trained to handle Duke Energy's program. Each state Store has its own unique phone number for residential customers, and the EFI phone system automatically indicates where the call is originating.

According to the Duke Energy and EFI spokespeople that we interviewed, overall call center operations have run smoothly. During 2013 the call center met all of its service level requirements, including answering at least 70% of calls within 30 seconds. In most cases greater than 85% were answered within that time. The average call takes three minutes.

From the point of view of customer service, the primary challenge for the program had nothing to do with CSR performance or website functionality. Instead it revolved around the fact that at the time of this evaluation, CSRs could not take phone orders for Duke Energy customers. The limitation arises from the customized authentication process that requires all website visitors to enter their residential account number or phone number and the last four digits of their social security number into Duke Energy's system in order to verify eligibility. This includes the CSRs.

To compensate, the CSRs must talk Duke Energy customers through the process and coach them as they navigate the website. "Our people are very familiar with the website, but they can't access it themselves," explained EFI's call center manager. "Instead we launch a mockup of the appropriate state website and the customer tells us what page they're on. We click along with them, but we're doing it in parallel. We can't see what they're seeing, which can be a challenge if the customer isn't particularly computer savvy. Sometimes computer terminology like look for

[5] The official total number of program bulbs distributed in the Carolina System during 2013 is 117,057. The total of 118,192 bulbs used for this calculation comes from EFI store data, which was the only source available to identify which orders have shipping and billing addresses in different states. The discrepancy between the EFI store data total and the official Carolina System total is due to data-cleaning by Duke Energy; the 118,192 total was generated by an EFI reporting tool based on raw store records.

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the 'icon' gets lost in translation. It can take a long time and those calls are frustrating for the customer."

The obvious solution is to permit the CSRs to take orders for Duke Energy customers, just as the EFI CSRs do for other utility clients. The challenge is to do so in a way that works with the authentication system. At the time of this evaluation Duke Energy and EFI had agreed on a plan for the changes, which is as follows: After the CSR explains the authentication requirement, customers can opt to give the CSR their account numbers and the last four digits of the social security numbers. Then the CSR can log in on behalf of the customer and place the order. This approach would require no technology changes and a minimum of additional training on the part of the CSRs. The plan was expected to be implemented by August of 2014.

In addition to improving customer service, this change is also expected to help increase specialty bulb sales. This is because until it becomes possible for EFI to take orders by telephone, the only location where Duke Energy can publish the EFI call center phone number is on the Store website itself. Once CSRs can take phone orders, the call center phone numbers can be included in future marketing materials. Order volumes would then be expected to increase by the number of customers who prefer to speak to a live person rather than navigating the website to purchase their new bulbs.

During 2013, the program received an average of 10 calls per day. During the midst of a marketing campaign that volume might rise to 40 calls per day. TecMarket Works considers this to be a low call volume given the number of sales generated each week. The low call volume is the direct result of the self-service nature of purchasing the bulbs online.

While customers can and do contact the call center directly, the call center manager indicated that a high percentage of the calls received for the Savings Store come as transfers from Duke Energy's customer service call center. Regardless of whether the call originates from Duke Energy or directly from the customer, EFI CSRs are trained to answer calls as official Duke Energy representatives in order to facilitate consistent customer service. This same warm transfer approach also applies in reverse. When EFI CSRs receive customer requests for their free CFLs, which are offered through a separate efficiency program, the CSRs transfer the callers back to Duke Energy rather than simply providing a phone number.

CSR training begins with classroom lessons and then progresses into side-by-side training with a trainer. Initially the trainee observes as the trainer handles the calls. Then the roles reverse with the trainer monitoring as the CSR handles the calls. On average it takes four to eight weeks before the CSR is working independently. Training topics include operational tasks such as using the phone system and software, soft skills such as customer service etiquette, and inventory familiarization. Then the CSRs begin to learn about utility specific programs. In Duke Energy's case that specialized training includes such things as: basic guidelines for identifying the utility's program; incentive limits; and protocols for transferring calls back and forth with the Duke Energy customer service call center. The training also necessarily covers how to use the mockups to guide callers through the Duke Energy Store, and it will cover the new process for logging in to the Savings Store as the customer in order to place orders directly once that is implemented.

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Whereas some call centers script virtually all possible customer interactions, EFI's approach favors informed conversation over canned answers. "Customers get turned off when somebody is reading off a script, so we don't use lot of that. Instead we hire people who can talk on the phone and generate rapport," explained EFI's call center manager. "We aggregate all the program information and put it in a program guide so our people can bring up a page with all the information they need to answer questions."

At year-end 2013, the five most commonly asked questions involved:

1. Trouble placing orders online
2. Inquiries about bulbs and applications, such as the difference between directional bulbs versus spotlights
3. Status of orders
4. Replacement requests for damage products
5. Requests for free CFLs (a separate Duke Energy program)

All incoming calls are recorded and monitored for training and quality assurance. CSRs receive monthly coaching with a call center supervisor, during which time they review calls, discuss areas for improvement, and share best practices. Although Duke Energy retains the option to review the recordings, the EFI call center manager indicated that thus far the utility had not done so.

Quality Assurance

Quality assurance for the program is addressed on several levels. EFI's order assembly process maintains redundant systems that allow it to double check every customer order for accuracy. EFI also conducts regular inspections of all physical inventory and the vendor regularly audits its on-floor operational processes to ensure that its fulfillment processes operate as smoothly and as accurately as possible.

All specialty bulbs sold through the Duke Energy Savings Store are warranted by EFI for one year. Beyond that time, the manufacturers' warranties apply. If a bulb arrives damaged; if it burns out; or if it otherwise becomes defective within the first twelve months, customers can call EFI's call center to request a replacement. EFI provides new bulbs and covers the shipping costs with no proof required. Broken and defective bulb replacements are noted and coded into daily quality assurance tracking. Summary reports are provided monthly. Customers can also arrange to return working bulbs if they do not like them or if the wrong item was ordered. These returns and exchanges are also recorded daily and reported monthly.

According to program tracking reports, out of the 117,057 bulbs shipped to Carolina System customers during 2013, only 62 customers reported a total of 75 broken or defective bulbs. Of these, 52 bulbs were defective and 23 arrived broken. This represents less than one tenth of one percent of bulbs sold.

EFI closely monitors all product QA reports for the Duke Energy program, as well as QA reporting for its other clients. EFI adjusts its suppliers and inventory as necessary to maintain

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consistently high quality for every item it sells. For instance, in one incident a bulb supplier announced backorder delays of three weeks due to a plant closure in Southeast Asia. In response, EFI immediately removed the supplier's bulbs from the website to curtail new orders; insisted on delivery of bulbs to meet existing orders within seven days; and rapidly replaced the supplier's bulb item with one from a firm with a reputation for providing consistent supply. The plant closure caused some customer orders to ship as partial completes for a few days, but it did not cause EFI to fall below its monthly service level agreement of 95% monthly orders to be shipped complete.

EFI and Duke Energy cited no notable issues with service level agreements regarding product quality, shipping breakage, or returns. Nor have any quality assurances issues arisen with any other aspect of the program.

Data Tracking and Reporting

Duke Energy and EFI take full advantage of the tracking and reporting opportunities made possible through online metrics and customer tracking. That tracking begins with OLS intercept reports that indicate which customers saw promotions for the Savings Store when they accessed their accounts online. Reviewing which customers clicked through to the Store helps Duke Energy to further refine its targeting and marketing messaging.

The team also tracks the success rate of customers who are authenticating and passing through to the Savings Store. Once on the Store itself, EFI systems track virtually every click the customer makes. Website traffic flow analysis reveals the most frequently followed links, the amount of time spent on each page, and the relative popularity of webpage elements such as images, videos, and online resources and tools.

"These analytics are great for identifying trends and patterns, but web tracking also has its limitations," explained EFI's Vice President of Strategic Development, "So we've also created scorecards profiling the number of products sold, average order size, the most popular items being purchased, frequency, and other shopping details to give Duke greater richness around the web metrics."

These and other details are made available for Duke Energy through a suite of online tools that can be used 24/7 to obtain daily updates for the following reports:

- Customer List
- Order Detail
- Order Summary
- Shipped Summary
- Open Order
- Participation Upload
- Returns
- Replacement Returns
- Customer Cart
- Invoice Summary by Measure ID

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- Shipping Cost

These self-service reports are supplemented with EFI's monthly reports that summarize program activities and measure performance against the program's service level agreements. No significant concerns or issues were reported in regard to the reporting tools.

Management Coordination and Communication

Team members on both sides report positive working relationships, with each side providing experiences and insights that complement and strengthen the other firm. For instance, the Savings Store represents Duke Energy's first foray into the online retail arena. As such, the utility is drawing upon EFI's expertise in e-commerce and product distribution. In turn, Duke Energy's authentication and other technical requirements required a new level of sophistication from EFI's web programmers.

Duke Energy representatives characterized the EFI team members as "knowledgeable," "patient," "flexible and accommodating." In turn, the EFI team spoke highly of their Duke Energy colleagues, referring to them as "understanding" and "a pleasure to work with."

Team members from Duke Energy and EFI meet semi-monthly to discuss marketing strategy. They also meet monthly to reconcile accounting, review program performance, as well as to plan improvements and changes. In addition to these regular phone conferences, the team meets in person quarterly. These regularly scheduled meetings are supplemented by daily phone and email exchanges as necessary to address program operations and implement any upgrades and fixes.

No communication or relationship challenges or issues were reported by any party.

Planned Improvements and Desired Program Changes

The team responsible for Duke Energy Savings Store takes a proactive approach to program improvements. They have a steady list of planned feature upgrades to the Savings Store, as well as other enhancements intended to improve the customer experience and make program management easier. The most significant change will be a complete replacement of EFI's ecommerce system with a new platform called Magento, which is owned (and used) by eBay. The new platform will enable the following improvements.

- Native support for mobile devices
- Visitor-selectable product filtering
- Visitor -selectable product comparisons by feature or specification
- Dynamic presentation of associated savings information ($, kWh, etc...)
- Product review/rating functionality
- Customized shopping experience, allowing products to be recommended based on visitor behavior
- Dynamic price presentation based on program rules
- Additional promotion models (e.g. buy X and automatically get Y for free)
- Support for additional shipping calculation methodologies and discount options

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- Support for additional payment methods (such as Google Wallet, PayPal)
- Integration with social media apps
- Embedded customer sales support
- More flexible site structure, allowing store elements to be easily repositioned and custom designed
- Improved video functionality
- More complete integration with Google Analytics

The transition to the Magento platform was expected to be completed by the fall of 2014.

Another planned program improvement, albeit one without a scheduled date, is the development of an automated customer survey system that sends email messages requesting feedback about the Store, its product offerings, and any issues needing correction. The initial delivery plan for the survey is to include a feedback request and a web link along with the order-confirmation email that is automatically generated by EFI. This approach offers the advantage of requesting feedback from every customer, but the timing makes it less useful for collecting customer thoughts regarding shipping, physical products, and post-sale follow up support. For this reason, Duke Energy was considering changing the timing or sending a separate request after product delivery.

Other program improvements discussed by members of the team included enhanced marketing forecasts and improved EFI reporting tools. The desire for increased accuracy of marketing forecasts arises from a desire to ensure the EFI maintains sufficient inventory to meet demand. EFI recognizes Duke Energy's current ability to drive tens of thousands of customers (across its multiple service territories) to the Savings Store within just a few days of a new marketing campaign and the utility's continuously refined targeting that drives up bulb sales. For this reason, the team already coordinates and plans its marketing efforts well in advance, but they indicate that they are still striving to improve their predictive abilities regarding the effectiveness of marketing lists and promotional offers.

Finally, more than one member of the combined team discussed desires for enhanced EFI reporting tools, including a dashboard for an at-a-glance overview, and new abilities to track and report sales information in additional ways. No details or timelines for these changes were provided.

Evaluation and Recommendations

Key Findings

- Duke Energy's Specialty Bulb Program sells discounted specialty CFLs and LEDs to qualifying residential customers in the Carolina System via an online store. Adoption is encouraged through discount pricing, the convenience of online ordering and home delivery. The online store also has lighting-associated educational elements.
    - See section titled *Description of Program* on page 12.

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- The program website, called the Duke Energy Savings Store, was launched in April of 2013. It can only be accessed by Duke Energy customers (verified via account number) whose bulb purchases are individually tracked so that personal incentive limits can be enforced.
  - See section titled *Program History and Development* on page 17.

- The program sells three-way bulbs, dimmable bulbs, outdoor bulbs, reflectors (recessed), candelabras, capsules (A Line), and globes in both CFL and LED varieties. CFL reflectors and globes were the most popular bulb types, followed by CFL candelabras and capsules.
  - See section titled *Program Goals and Performance* on page 17.

- Between program inception on April 26, 2013 and December 31, 2013, the Duke Energy Savings Store served 8,060 unique customers from the Carolina System, including 6,294 North Carolina customers and 1,766 South Carolina customers.
  - See section titled *Program Goals and Performance* on page 17.

- The program sold 90,780 bulbs to North Carolina customers during 2013, which represents 147% of goal. It sold 26, 277 bulbs in South Carolina, which represents 149% of goal. Together Carolina System customers placed a combined total of 8,822 orders for 117,057 bulbs. This equates to an average of 15 bulbs per customer and an average of 35 orders per day.
  - See section titled *Program Goals and Performance* on page 17.

- Duke Energy effectively combines low cost marketing vehicles such as email, website promotions and intercepts, and direct mail with sophisticated targeting techniques to ensure high conversion rates at low acquisition costs.
  - See section titled *Program Marketing* on page 21.

- Overall, the website functions well and is deliberately designed for visitor usability, but it still presents opportunities for improvement, which are detailed in this report.
  - See section titled *Duke Energy Savings Store Website* on page 26.

- The program also has no significant issues with quality assurance. Nor does it have any notable customer service issues or challenges.
  - See section titled *Quality Assurance* on page 12.

- All members of the Duke Energy and EFI teams report positive working relations.
  - See section titled *Management Coordination and Communication* on page 48.

Evaluation

- Overall Duke Energy's Specialty Bulb program is well-designed and well-run. The Duke Energy Savings Store website is successfully educating customers and encouraging them to save energy by making it fast and easy to replace their old, inefficient specialty bulbs with new, affordable energy efficient models.

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- Program participation is strong in the Carolina System. Between program inception on April 26, 2013 and December 31, 2013, the Duke Energy Savings Store for the Carolina System served 8,060 unique customers. According to Duke Energy's tracking of unique account numbers associated with bulb purchases during that time, there were 6,294 North Carolina customers and 1,766 South Carolina customers. Program participation may arguably be considered even higher if Energy Store website visitors who do not buy any specialty bulbs are also considered.

- During the first eight months of program operation, Duke Energy expected to sell 61,685 specialty bulbs in North Carolina. The program actually sold 90,780 bulbs to North Carolina customers, which represents 147% of the 2013 goal. For South Carolina the goal was set for 17,675 bulbs, and the actually program sold 26, 277. This represents 149% of the 2013 goal for South Carolina. Together Carolina System customers placed a combined total of 8,822 orders for 117,057 bulbs. This equates to an average of 14.5 bulbs per customer and an average of 35 orders per day.

- Duke Energy approaches marketing for the Specialty Bulb Program in a systematic manner that reaches out to its residential customers with free and low cost vehicles, such as online promotions and bill inserts, while simultaneously deploying sophisticated segmentation techniques that target those customers who are most likely to make purchases online and take advantage of the program's incentives. Conversion rates are tracked step-by-step for every customer for every campaign, starting with initial responses for each marketing vehicle, through authentication and website visits, to the final individual items purchased at the Savings Store. This combination of low cost yet highly sophisticated approaches helps to ensure healthy participation rates while keeping the program's overall customer acquisition costs down.

- The Duke Energy Savings Store website is well designed for easy visitor usability, although the site still presents some opportunities for continued fine-tuning, as discussed in the recommendations section below. The planned upgrade of the website's entire e-commerce platform in the fall of 2014 should bring significantly increased functionality.

- In terms of the variety of specialty bulbs offered by the program, the product inventory appears to be well chosen and deliberately limited so that a wide range of bulb applications are met with a small number of bulb types. This stocking strategy facilitates easier decision making for customers, and it helps to simplify inventory management. EFI demonstrates consistently strong performance with its inventory maintenance, as well as with shipping and delivery. The program also has no significant issues with quality assurance.

- The program has no customer service issues or challenges, except for EFI's stated desire to make all changes necessary to enable its CSRs to take phone orders for customers.

- Call volume for the program currently averages 10 calls per day with spikes of up to 40 calls per day during the midst of major marketing efforts. This low volume can be attributed to strong website design and the self-service nature of online purchases.

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- All parties agree that the Duke Energy and EFI teams work well together, sharing common goals and working collaboratively to ensure the program is as effective as possible. The combined team's considerable start up efforts to ensure computer system compatibility and smooth data handling are now bearing dividends in terms of a seamless customer experience.

- In summary, TecMarket Works considers this to be a robust energy efficiency program that well serves the customers in Duke Energy's Carolina system. Moreover, the success of the program promises well for the potential expansion of inventory to include non-lighting energy savings devices as well.

Recommendations

1. **Continue to complete the changes necessary to enable CSR-aided phone purchases of specialty bulbs.** At the time of this evaluation only those customers who have been verified via Duke Energy's authentication system can make purchases at the Savings Store. This limitation prohibits EFI's CSRs from taking phone orders and thus reduces the program's potential sales by those customers who prefer to speak to a human rather than using a computer.

2. We also encourage the program implementation teams at Duke Energy and EFI to **continue to work closely to refine the accuracy of their marketing forecasts** in order to help ensure that adequate stocks of specialty bulbs are available for delivery upon receipt of customer orders.

3. **If feasible, consider upgrading the energy savings calculator on the Duke Energy public website** at http://www.duke-energy.com/residential-savings-store so that the public version of the calculator features the same interactive functionality as the version installed on the Savings Store website. Doing so will enable more customers to see how much they can save with specialty bulbs prior to requiring them to log on to the Store itself.

4. **Test and improve the Savings Store's search features.** Because web search functionality yielded inconsistent results or failed to find items using key words commonly found on the website, the Savings Store's search features should be tested and improved to accurately reflect store inventories using the Store's names for bulb types and application types. The search function should also yield accurate results when visitors include associated terms such as lighting, bulb, and other common words and phrases. Likewise the search feature should yield accurate results for entries with singular and plural spelling, such as spiral and spirals.

5. **Test the suggested website usability improvements.** Although the program team plans to update the Savings Store's e-commerce platform by the fall of 2014, the Store's overall website design should be continually refined and optimized as well. With that mind, we offer the following suggestions to help improve customer education, streamline site visitor usability, and increase sales.

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- Changing link text to a more distinct color or adding underlines may make links more prominent.
- Adding a "more information" button on the product summary page may help customers to realize additional information is available.
- Customer bulb comparison with older incandescent bulbs may be eased by including text citing the most similar incandescent bulb in terms of wattage and lumens, or by inserting a link to the "About Brightness" table.
- Including an "Add to Cart" button on the initial bulb summary page will eliminate the need for customers to make additional clicks before buying the item they want.
- Creating a Brightness comparison tab or otherwise providing additional information such as lumens and color temperature with the other information in the Estimated Savings tab area may facilitate easier customer decision making. Including an Energy Star-style light bulb facts and lumen comparison chart will also be helpful to customers. The Energy Star website[6] provides an example.
- Provide the consistent ability for visitors to see larger images of the bulbs they want to buy and show the bulbs from multiple points of view. This will make it easier for customers to assure themselves they are buying a bulb comparable to the old one they currently have.
- Consider standardizing and explaining the currently haphazard product specifications provided for the items listed for sale on the Duke Energy Savings Store.
- Make a minor edit to the installation instructions for MR16 bulbs and other bulb types that do not comply with the standard "screw-in" instructions.
- Enable a feature that allows customers to select and compare CFL and LED bulbs at a detailed level, including watts, lumens, bulb life, price, estimated savings and product specifications.
- Showing photographs or drawings of bulb types and shapes will make it easier for customers to compare their old bulbs with the new bulbs offered for sale on the website. An excellent example of this approach can be found on the light bulb buyers guide page of Amazon.com.[7] Furthermore, clicking on the image or shape for the old bulb could bring up a list of possible replacements.
- Insert a "Save Cart" button into the list of buttons displayed in the shopping cart, or otherwise move the display box to make the save function more obvious for site visitors.

6. TecMarket Works considers the above mentioned bullet list of ideas to be suggestions rather than formal recommendations. We do however formally recommend that Duke Energy and EFI use some form of systematic testing measures, such as A/B Split Testing, to determine if more customers take action with or without the above mentioned suggestions. For example, split testing can be measured using the Content Experiment feature of Google Analytics, which enables simultaneous testing of multiple web pages to

[6] http://www.energystar.gov/index.cfm?c=cfls.pr_cfls_color

[7] http://www.amazon.com/gp/feature.html/ref=amb_link_356841462_1?ie=UTF8&docId=1002234061&pf_rd_m=ATVPDKIKX0DER&pf_rd_s=product-alert&pf_rd_r=1XK8CAY99M4TXE02YDH5&pf_rd_t=201&pf_rd_p=1740479022&pf_rd_i=B002NH5TTA

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see which versions of page content and designs are most effective. We recognize that other testing techniques may be more applicable to the program's website platform and encourage Duke Energy and EFI to explore the most appropriate options.

7. **Consider limiting the customer's ability to purchase and ship specialty bulbs to addresses located outside of Duke Energy's service territory.** While the ability to do so represents proactive customer service and may therefore help to increase customer satisfaction, it also fosters the opportunity for incented bulbs to be installed in locations where Duke Energy cannot appropriately claim savings.

8. Because this program involves incentives paid to customers for items sold elsewhere at retail prices, we encourage Duke Energy to **carefully watch the marketplace for technology and pricing changes and to adjust incentive levels accordingly**, particularly as LED prices continue to drop. As retail store pricing becomes more competitive with Savings Store pricing, the need for incentives will shift or diminish.

9. Finally, we suggest that Duke Energy **consider the possibility of expanding the program to promote the adoption of additional specialty bulb types**, as well as smart devices for home automation, and other efficiency measures, such as those for saving water or tightening building envelopes.

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Participant Surveys

Awareness and Participation in the Program

All surveyed participants are aware of their participation in this program (100% of 136), and 97.8% (133 out of 136) confirmed that they purchased the same type and quantity of bulbs as shown in program records (three customers reported purchasing a different number or type of bulbs than program records).

A majority of surveyed program participants in the Carolina System first learned about the Savings Store from letters and brochures they received in the mail (mentioned by 56.6% or 60 out of 106 North Carolina customers and 60.0% or 18 out of 30 South Carolina customers), as seen in Figure 15. More than one participant in four mentioned learning about the Savings Store from messaging at the Duke Energy website (25.5% or 27 out of 106 North Carolinians and 33.3% or 10 out of 30 South Carolinians), and roughly one participant in ten mentioned emails from Duke Energy (13.2% or 14 out of 106 North Carolinians and 6.7% or 2 out of 30 South Carolinians). There are no statistically significant differences between states in terms of how they learned about the program.

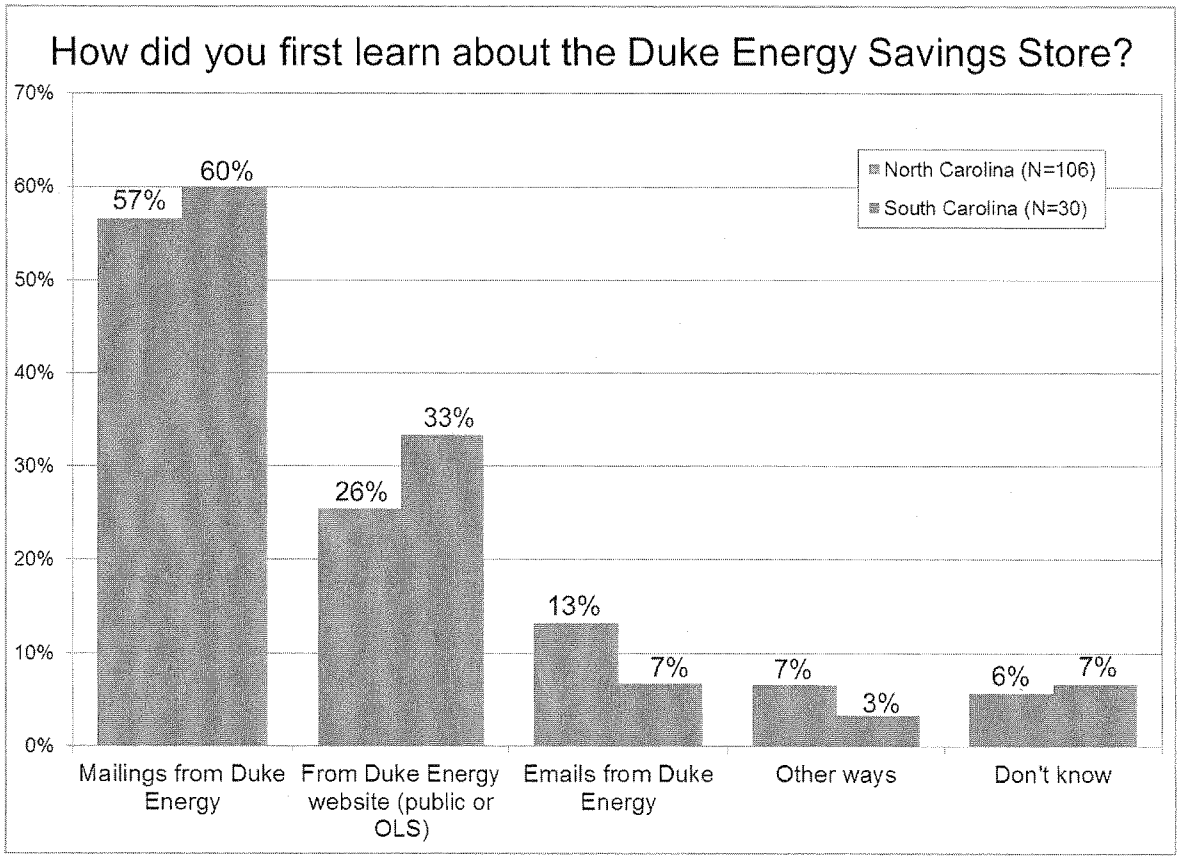

Figure 15. Source of Awareness for Duke Energy's Savings Store (N=136)
Percentages total to more than 100% because participants could name multiple sources of awareness.

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Eight surveyed customers (5.9% of 136) named "other" sources of awareness of the program, which are listed below.

- *Recommendation of a friend / family / neighbor / co-worker.* (N=3 North Carolina)
- *I called Duke Energy for information.* (N=2 North Carolina)
- *I found the Savings Store when searching the web for dimmable light bulbs that would work on a timer.* (North Carolina)
- *Possibly in the newspaper.* (South Carolina)
- *I read or saw something in the media, but I can't remember where.* (North Carolina)

Factors Motivating Participation

Participants were asked to list all of the reasons that they purchased light bulbs from the Savings Store, including the main reason for their participation; these results are shown in Figure 16. The most-mentioned reason overall is to save money on light bulb purchases, which is the main reason for participation for 51.5% of customers (70 out of 136), and a secondary reason for another 22.1% (30 out of 136). Saving money on purchases is also the only reason for participation mentioned by a majority of surveyed customers (overall 73.5%, or 100 out of 136). The second most-mentioned reason for buying bulbs from the Savings Store is to save energy, mentioned by about a third of surveyed customers (overall 31.6% or 43 out of 136). Another quarter of participants mentioned saving money on energy bills (overall 23.5% or 32 out of 136).

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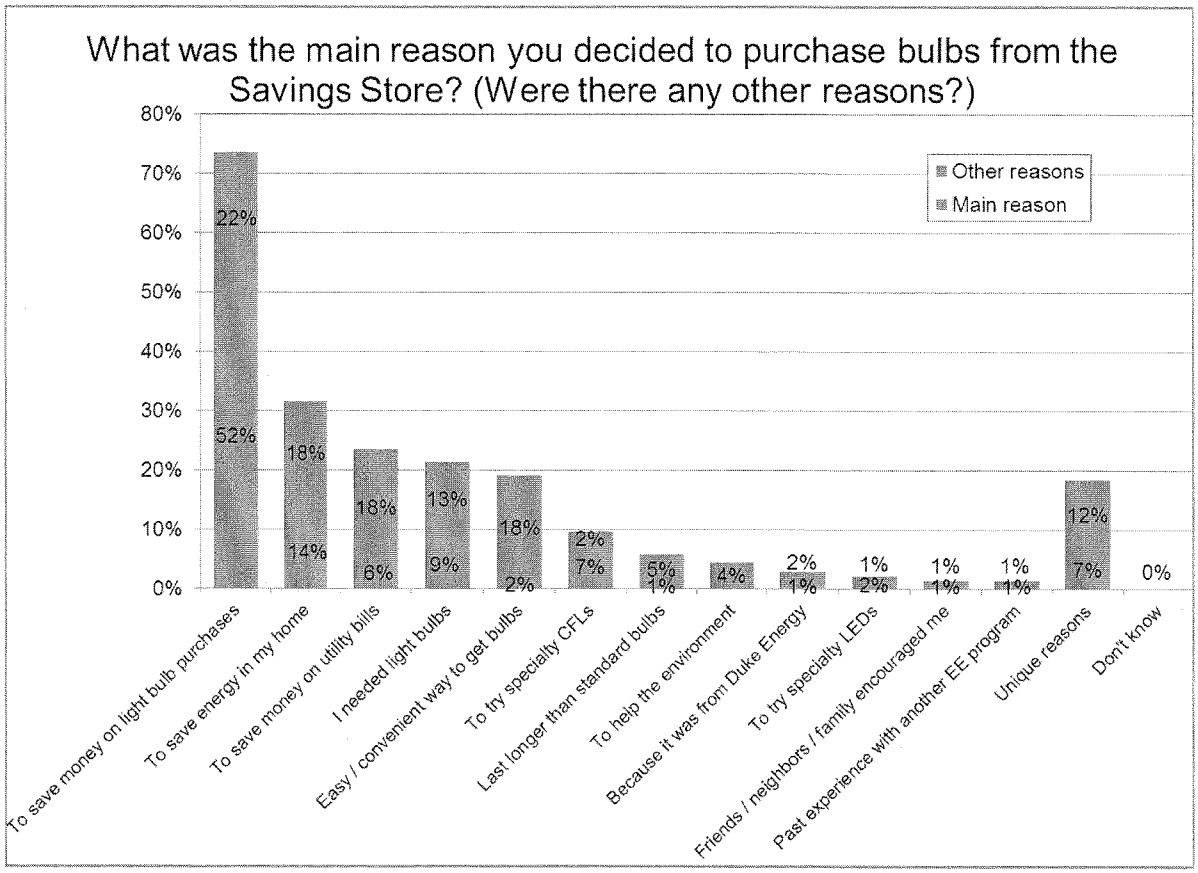

Figure 16. Factors Motivating Light Bulb Purchases from the Savings Store (N=136)
"Other reason" percentages total to more than 100% because participants could name multiple "other" reasons. "Main reason" percentages total to 100% because participants could only name one "main" reason.

Twenty-five participants (overall 18.4% of 136) gave unique reasons for purchasing bulbs from the Savings Store, which are listed below.

Unique main reasons (N=9)

- *I had some of the free CFLs from Duke, but they didn't fit my ceiling fans.*
- *I wanted to convert our three-way lights to CFLs.*
- *To get a better, brighter light for my sister.*
- *We are looking to go with the newest technology in our new addition.*
- *I was looking for various LEDs.*
- *These bulbs are much cooler to operate in the summer.*
- *You can't buy standard incandescent bulbs anymore.*
- *I am gradually trying to convert to the newer bulbs.*
- *I wanted to have spare bulbs available when my old bulbs burn out.*

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Unique other reasons (N=16)

- *The Savings Store offers high-quality bulbs.* (N=2)
- *The website said these bulbs were of a better quality than the free bulbs.*
- *I wanted to try a different brand of CFLs. I've purchased CFLs from Lowe's and they did not last long at all.*
- *The availability of desired bulb types, and availability of desired lumens levels.*
- *The availability of the specialty bulbs that I wanted.*
- *I went to the Savings Store because I was having trouble finding the exact bulbs I needed.*
- *They had the correct bulb type and the soft light.*
- *The availability of efficient three-way bulbs.*
- *I wanted three-way CFLs at a certain wattage and the Savings Store had what I wanted.*
- *Duke offered bulbs I had not seen before, like the candelabras, and others that I'd seen at much higher prices, like the three-way CFLs.*
- *They have bulbs that run cooler, and that give off better light.*
- *We are continuing the process of changing our lighting over from the old incandescents.*
- *I like the curly shape of CFLs.*
- *I decided to buy the bulbs from the Savings Store once they offered the free or reduced shipping.*
- *The shipping and handling charges were reasonable.*

Two participants (overall 1.5% of 136) mentioned their experience with other energy efficiency programs; these programs are listed below.

- *The Home Energy House Call audit.* (Main reason)
- *Our home is Energy Star certified.* (Other reason)

Participants were also asked "*Why do you think that Duke Energy is providing discounted specialty bulbs to their customers?*" Table 9 shows that the top explanations given by customers are that Duke Energy wants to save energy for economic reasons (32.4% or 44 out of 136), Duke Energy wants to save their customers money (29.4% or 30 out of 136), and Duke Energy wants to save energy for environmental reasons (22.1% or 30 out of 136).

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Table 9. Why Customers Think Duke Energy is Offering the Program (N=136)

	Carolina System (count)	Carolina System (percent)
Duke Energy wants to save energy for economic reasons	44	32.4%
Duke Energy wants to save their customers money	40	29.4%
Duke Energy wants to save energy for environmental reasons	30	22.1%
Duke Energy wants to look good / public relations	18	13.2%
Duke Energy wants to encourage their customers to save energy	15	11.0%
Duke Energy wants to avoid building new power plants	10	7.4%
The government is forcing Duke Energy to do it	10	7.4%
Duke Energy wants customers to try CFLs & LEDs / get people used to the new bulbs	7	5.1%
Duke Energy wants to be able to better control demand / peak loads / avoid brownouts and outages	5	3.7%
Unique responses, listed below	9	6.6%
I don't know why Duke Energy is doing this	16	11.8%

Percentages total to more than 100% because participants can give multiple responses.

Nine surveyed customers gave unique explanations as to why they think Duke Energy is offering this program; these are listed below.

- *The government is subsidizing the cost of the bulbs.*
- *The government gives Duke Energy money to push the green agenda.*
- *They need to cut back on production usage to handle all the demand. This also discourages people from setting up their own solar and wind power systems that Duke would need to buy back.*
- *The bulbs use less energy, so Duke can do their rate hikes and still make the same amount of money.*
- *Duke Energy wants to get more money from customers.*
- *Duke Energy wants more customers.*
- *Duke wants to increase energy efficiency awareness in order to solidify their customer base.*
- *Doing it this way is convenient and less expensive.*
- *I think it's a noble cause.*

Savings Store Website Information and Tools

As seen in Table 10, only about a third of surveyed customers recalled the information resources at the Savings Store website (34.6% or 47 out of 136), and only about one in five customers (19.1% or 26 out of 136) recalled something that stood out as useful or important to them.

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Table 10. Recalling Useful and Important Information from the Savings Store Site (N=136)

	Carolina System (count)	Carolina System (percent)
The website provides a number of resources designed to provide additional information, including written explanations and videos about bulb types and uses, brightness, and bulb recycling and safety Do you recall any of these informational resources?		
Yes, recall information resources and something specific stood out as useful or important	26	19.1%
Yes, recall information resources but nothing stood out as useful or important (including can't recall anything that stood out)	21	15.4%
No, do not recall information resources	80	58.8%
Don't know / can't recall	9	6.6%

The 26 customers who recalled something useful or important were asked what it was; these responses are listed below.

- *The part that showed how much money I would save was important.*
- *I was able to see the actual bulb itself; I could see what I was going to be getting. What's more, the layout really popped. It made you want to look more at the variety of bulbs offered.*
- *I watched two of the videos and found the descriptions helpful in finding exactly what I needed.*
- *I was looking at the detail and the comparisons and, from the comparison, I was able to choose what I needed.*
- *The information about the LEDs offered by the Saving Store was useful.*
- *The video that demonstrates the functionality of dimmable LEDs was useful.*
- *The information about the three-way bulb was important, to see which type would last the longest and fit in the light I wanted to put it in.*
- *The information about bulb dimmability was useful.*
- *The information about the instant on was useful.*
- *I remember reading about bulb types to see if certain bulbs could be used for both indoor and outdoor sockets.*
- *They were the recommendations on where a specific bulb could or should be used. For example, the description said that my bulbs were designed to be used for bathroom mirrors. That's where I wanted to use them.*
- *The information about bulb usage is useful.*
- *The information about bulb usage and brightness is useful.*
- *I like the part that gave information about bulb brightness.*
- *I remember the information about light quality, in particular the brightness or lumens, and the difference in the type of light: yellowy light versus blue light.*

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- *The text information and overall descriptions were useful. Also the energy savings and information about how different qualities of light look.*
- *It was useful to see how you compare the old and new bulbs in terms of wattage.*
- *I used it for figuring out the brightness of the bulbs. I am familiar with watts from incandescents, I'm not familiar with lumens. I had to use that reference tool to compare watts to lumens.*
- *Mainly, I liked the part that told about the equivalencies between CFL and regular light bulbs and talked about wattage and about the different types of bulbs.*
- *The wattage information was useful.*
- *The wattage and brightness information was useful.*
- *I recall additional specifications about the bulbs that were useful: the lumens and the expected bulb lifespan.*
- *The information about proper CFL disposal.* (N=4)

As seen in Table 11, only about a third of surveyed customers recalled the Energy Savings Calculator tool at the Savings Store website (34.6% or 47 out of 136), and only about one in five customers (19.1% or 26 out of 136) actually viewed this tool. Furthermore, only about half of those who viewed the tool (53.8% or 14 out of 26) were aware that the tool was interactive.

Table 11. Recalling the Energy Savings Calculator Tool from the Savings Store site (N=136)

	Carolina System (count)	Carolina System (percent)
The Duke Energy Savings Store features an Energy Savings Calculator that you can use to calculate the amount of money you'll save on bulb purchases and on your Duke Energy bill. It also shows how much CO2 you'll offset by using more energy efficient bulbs. Do you recall the Energy Savings Calculator?		
Yes, recall calculator tool: viewed it, and was aware that the tool is interactive	14	10.3%
Yes, recall calculator tool: viewed it, but was not aware that the tool is interactive	12	8.8%
Yes, recall calculator tool but did not view it (including can't recall if tool was viewed)	21	15.4%
No, do not recall calculator tool	84	61.8%
Don't know / can't recall	5	3.7%

Number of Visits to the Savings Store and Number of Purchases

Participants were asked how they accessed the Savings Store website. As seen in Table 12, nearly a third use a link from their Online Services (OLS) accounts (30.1% or 41 out of 136), and about a quarter each mentioned links from the public website (24.3% or 33 out of 136) and entering the URL directly into the browser (23.5% or 32 out of 136). About one participant in seven (14.0% or 19 out of 136) could not recall how they accessed the Savings Store site.

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Table 12. Accessing the Savings Store Website (N=136)

	Carolina System (count)	Carolina System (percent)
Via a link in my Online Services account (OLS)	41	30.1%
Via a link on the Duke Energy public website	33	24.3%
Entered URL directly into browser	32	23.5%
Used an online link received via email, social media, etc.	10	7.4%
Used a web browser favorite / bookmark	3	2.2%
Used information from mailing	3	2.2%
Unique methods, listed below	3	2.2%
Don't know / can't recall	19	14.0%

Responses total to more than 100% because respondents could give multiple responses.

Three participants (2.2% of 136) reported unique methods of ordering bulbs from the Savings Store, which are listed below.

- *I called customer service and they told me how to get to the site.*[8]
- *I don't own a computer, and did not visit the Savings Store online. I used the brochure to figure out which bulbs I wanted and then had my girlfriend place the order online for me.*[9]
- *I submitted my Savings Store order via mail.*[10]

Participants were asked how many times they visited the Savings Store website before they made a purchase. Table 13 indicates that four out of five participants (80.1% or 109 out of 136) purchased light bulbs on their first or second visit to the Savings Store, though 17.6% (24 out of 136) visited three or more times before purchasing.

Table 13. Number of Visits to Savings Store Before Purchasing Light Bulbs (N=136)

	Carolina System (count)	Carolina System (percent)
Made purchase during first visit to the Savings Store	60	44.1%
Made purchase during second visit	49	36.0%
Made purchase during third of fourth visit	21	15.4%
Made purchase on fifth visit or later	3	2.2%
Did not personally visit the Savings Store site	2	1.5%
Don't know / can't recall	1	0.7%

Participants were also asked how many times they have visited the Store in total, and how many times they have made purchases in total.[11] On average, surveyed participants visited the Savings

[8] At the time of this evaluation it was not possible to place orders by phone. In this case the customer is referring to obtaining help logging on to the Savings Store site where the purchase was made.
[9] Since this respondent was identified as a participant according to program records, the respondent's friend must have used the survey respondent's account information to log on to the Savings Store website.
[10] There currently is no mail option for ordering bulbs from the Savings Store, although customers can pay by mail by printing out the online order form and mailing it with a check.

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Store site 2.3 times apiece (with 61.0% or 83 out of 136 visiting two or more times); the median number of visits per participant is two, and the maximum reported number of times visiting the site is "*12 to 14 times*". Most survey participants (83.8% or 114 out of 136) have only purchased bulbs from the Savings Store one time, though 14.7% of participants (20 out of 136) report having made more than one purchase (19 customers, or 14.0% of 136, made two purchases; one customer, or 0.7% of 136, made three purchases). Overall, most participants (56.6% or 77 out of 136) have visited the Savings Store more times than they have made purchases from the Store, while a minority of 38.2% (52 out of 136) have made a purchase every time they visited the Store and the other 5.1% of participants (7 out of 136) either were not sure or did not answer all of the questions.

Participants who visited the Savings Store website more times than they made purchases from the site were asked for the reasons why they visited the Savings Store without making a purchase. Table 14 shows that nearly half of these participants said they were "just checking the prices" (45.5% or 35 out of 77), while 19.5% (15 out of 77) were "just looking to see what was there." About one participant in ten (10.4% or 8 out of 77) was making comparisons to other retailers.

Table 14. Reasons for Visiting the Savings Store without Making a Purchase (N=77)

Base: 77 customers who visited the Savings Store more times than they have made purchases from the Savings Store	**Carolina System (count)**	**Carolina System (percent)**
Just checking the prices	35	45.5%
Just looking to see what was there	15	19.5%
Making comparisons with other retailers	8	10.4%
Was not ready to make a purchase	6	7.8%
Looking for specific information about bulbs	5	6.5%
Could not decide which bulbs to buy	4	5.2%
Had unanswered questions	3	3.9%
Too busy to complete order / ran out of time	2	2.6%
Unique reasons, listed below	6	7.8%
Don't know / can't recall	3	3.9%

Responses total to more than 100% because respondents could give multiple responses.

Eight participants reported that they visited the Savings Store to make comparisons with other retailers; these retailers are listed below.

- Lowe's (N=5)
- Home Depot (N=3)
- Walmart (N=3)
- Target

[11] The sample list of program participants was filtered to only include customers who made purchases between May 13, 2013 and December 31, 2013, and who did not make any purchases between January 1, 2014 and May 12, 2014 (the date the data was pulled for creating the sample list). However, surveyed participants may have made additional visits to the store site in 2014 without making a purchase, and it is also possible (though unlikely) that they may have made additional purchases from the Savings Store between the time the sample list was pulled (May 12, 2014) and the conclusion of the participant survey (Jun 5, 2014).

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- K-Mart
- Amazon.com

This list totals to more than eight responses because customers could mention multiple retailers.

Six participants reported that they visited the Savings Store without making a purchase because they "were not ready" to do so; their explanations as to why they were not ready at the time are listed below.

- *I needed to look around my house to see what I already had and what I needed.*
- *I had to go around my house and see which bulbs I needed to buy.*
- *I had to check and see what I needed.*
- *I was considering the quantity I really wanted to buy.*
- *I wanted to discuss the bulbs with my wife before making a purchase.*
- *I wanted to discuss it with my husband before purchasing the bulbs.*

Five participants reported that they were looking for specific information about the bulbs available at the Store; customers' descriptions of what they were looking for are listed below.

- *I was looking for specific lumens.*
- *I wanted to compare energy consumption.*
- *I wanted to see the technical aspects of the bulbs.*
- *I wanted to compare their LEDs to the ones made by Cree, Inc.*
- *I wanted to see the information about the bulbs to make sure that they would fit my fixtures.*

Four participants reported that they visited the Savings Store without making a purchase because they "could not decide which bulbs to buy"; their explanations as to why they could not decide at the time are listed below.

- *I was worried about which sizes would fit in the fixtures.*
- *I needed to confirm light bulb sizes to make sure that recessed lighting would not stick out from the fixture.*
- *I was worried about what size globe lights I needed.*
- *I was trying to make sure I was correctly matching the type of bulb I needed.*

Three participants reported that they visited the Savings Store without making a purchase because they "had unanswered questions"; their descriptions of these questions are listed below.

- *I purchased several bulbs from other places and I wanted to make sure that I would be buying the proper bulb for my garage fixture. Each bulb I previously bought at Lowe's and Home Depot burnt out within a few days.*

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- *I wanted to know the color of light that the bulbs emitted.*
- *I needed bright lights that would be safe in a particular fixture and I needed more information about that.*

Six participants reported unique reasons for visiting the Savings Store without making a purchase; these reasons are listed below.

- *I wanted candelabra CFLs and they did not have them, so I went back to the site over a number of weeks in hopes that they would have the CFL candelabras available for me to buy.*
- *I was looking for the LEDs that I use in various outlets.*
- *I had some problems with the website, but I don't spend a lot of time shopping online, so it was tricky for me.*
- *I wanted to help guide my neighbor through the log-in process.*
- *I was probably showing my kids the site.*
- *I ordered and received free bulbs on my first visit.*[12]

Ordering and Shipping Light Bulbs from the Savings Store

Table 15 shows that customers overwhelmingly used credit cards (93.4% or 127 out of 136) to pay for their orders from the Savings Store; only three customers (2.2% of 136) reported paying by check or money order. However, about one customer in six (16.2% or 22 out of 136) would have preferred another method of buying their light bulbs other than ordering them online from the Savings Store; the largest number of these customers merely stated a preference for shopping in stores to ordering online (9.6% or 13 out of 136).

Table 15. Methods of Paying for Savings Store Purchases (N=136)

	Carolina System (count)	Carolina System (percent)
Paid for Savings Store order by credit card	127	93.4%
Paid for Savings Store order by check / money order	3	2.2%
Don't recall how Savings Store order was paid for	6	4.4%
Would have preferred another method for purchasing bulbs:		
Prefer purchasing bulbs at a local store	13	9.6%
Prefer using coupons at local stores	3	2.2%
Would prefer to order by telephone	3	2.2%
Would prefer mail order	2	1.5%
Would prefer having bulb charges added to utility bill	2	1.5%
Would not have preferred using another method	114	83.8%

Responses to preferred methods for purchasing bulbs total to more than 100% because respondents could suggest multiple alternate methods.

[12] The Savings Store does not provide free light bulbs. However, the initial online authentication process offers customers who are eligible for free CFLs through other Duke Energy programs the opportunity to request free bulbs.

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The three customers who paid for their light bulbs by check or money order were asked how long they waited from the day they mailed their payment to the day they received their bulbs: one customer reported "*five to seven days*", one said "*two weeks or more*" and the third did not recall.

As seen in Table 16, about half of surveyed customers could not recall what method they used for shipping (46.3% or 63 out of 136 "don't know"). Forty-two customers said they shipped by U.S. Post, and another six customers said they chose the "cheapest" or "standard" shipping option; assuming these were also shipped by U.S. Post, then about twice as many customers used this shipping method (combined 35.3% or 48 out of 136) compared to UPS (United Parcel Service, 18.4% or 25 out of 136). Two-thirds of customers (66.9% or 91 out of 136) are aware that there is a feature for tracking the shipping status of their orders, though only about one in eight (13.2% or 18 out of 136) actually used the tracking feature. Customers who shipped by UPS and U.S. Post are equally likely to have used the tracking feature (14.3% or 6 out of 42 confirmed postal customers and 16.0% or 4 out of 25 UPS customers).

Table 16. Shipping and Tracking Orders from the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
Order shipped by U.S. Postal Service	42	30.9%
Order shipped by UPS	25	18.4%
"*Whatever was cheapest*" or "*standard shipping*"	6	4.4%
Can't recall how order was shipped	63	46.3%
Aware of order tracking feature and used it	18	13.2%
Aware of order tracking feature and did not use it	70	51.5%
Aware of order tracking feature and can't recall if used it	3	2.2%
Not aware of order tracking feature	45	33.1%

The eighteen customers who used the order tracking feature were asked how they accessed this feature. According to Table 17, the most common method was using the package tracking links at the Savings Store website (38.9% or 7 out of 18). Two customers (11.1% of 18) used more than one method to track their orders (one customer used both the Savings Store site link and their "My Account" link, and one customer used the Savings Store link and also UPS web tracking).

Table 17. Accessing Order Tracking (N=18)

Base: 18 customers who used the order tracking feature	Carolina System (count)	Carolina System (percent)
Savings Store package tracking links	7	38.9%
UPS web tracking feature	3	16.7%
Through "My Account" at Duke Energy website	2	11.1%
Calling the phone number to check on post office delivery	2	11.1%
Received an automatic email update about shipping status	1	5.6%
Don't know / can't recall	5	27.8%

Responses total to more than 100% because respondents could use multiple methods to track their orders.

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Defective Bulbs and Return Policies

Although one in ten surveyed participants reported that they received at least one damaged or defective bulb (9.6% or 13 out of 136), only 2.9% (4 out of 136) have actually returned light bulbs that they ordered from the Savings Store, as seen in Table 18. Half of the customers who returned merchandise received new light bulbs and half took a refund (2 out of 4 for each).

Table 18. Damaged and Defective Bulbs and Returning Bulbs (N=136)

	Carolina System (count)	Carolina System (percent)
Bulbs arrived damaged or defective	13	9.6%
Bulbs became defective or burned out since installation	20	14.7%
Returned bulbs for any reason	4	2.9%
Returned bulbs and received a replacement	2	1.5%
Returned bulbs and received a refund	2	1.5%

The four customers who returned light bulbs were asked how many bulbs of what types were returned, why they returned them, and the outcome of their returns; these responses are listed below. These customers were also asked to rate their satisfaction with the return process on a ten-point scale where "10" is highest, and all four customers gave their experience with returning merchandise the highest possible "10 out of 10" rating (even though one of these customers received replacement bulbs that don't work in their sockets).

- *The twelve candelabra bulbs did not work in the sockets in my dining room fixture and the six outdoor reflectors were sent in a box labeled indoor reflectors, so I didn't even try those.* [Customer took refund for bulbs, and currently has incandescent bulbs installed in these sockets.]
- *I returned eight indoor reflector CFLs because I meant to order outdoor reflectors, and one candelabra and five globe bulbs that didn't fit into the fixtures that I wanted to use them in.* [Customer took refund for bulbs, but has CFLs currently installed in these sockets.]
- *One outdoor reflector bulb arrived non-working. Duke quickly replaced the bulb with a three-pack, which we were pleased with.* [Customer received a replacement and has a CFL currently installed in this socket.]
- *The four candelabra bulbs I ordered did not work upon arrival. They were returned and replaced, but the replacement bulbs do not work either. The fixture does not recognize there are light bulbs in there.* [Customer received replacement bulbs, but currently has incandescent bulbs installed in these sockets.]

Customer Support

Table 19 shows that customers who need assistance are more likely to use telephone support (8.1% or 11 out of 136) than the Contact Us feature at the Savings Store website (0.7% or 1 out of 136).

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Table 19. Contacting Customer Support (N=18)

	Carolina System (count)	Carolina System (percent)
Duke Energy has a support telephone number for assistance with the Savings Store website. Did you call the phone number at any point?		
Yes, called support	11	8.1%
No, did not call support	113	83.1%
Not aware of the phone number / don't know	12	8.8%
The website also has a Contact Us feature that can be used to email questions to the Savings Store's support team. Did you use the Contact Us feature?		
Yes, used Contact Us feature	1	0.7%
No, did use Contact Us feature	121	89.0%
Not aware of Contact Us feature / don't know	14	10.3%

The few customers who did use customer support gave high ratings of satisfaction: on a ten-point scale where "10" is most satisfied, the eleven customers who used phone support gave an average satisfaction rating of 9.45 and the one customer who used the Contact Us feature rated their satisfaction at "10 out of 10". Since none of these customers rated their satisfaction at "7" or lower, none were asked for suggestions for improving these aspects of the program.

Recommending the Program

Surveyed participants were asked if they told any of their friends, neighbors or relatives about the Savings Store, and if so to how many people they told. Three out of five participants (61.0% or 83 out of 136) reported that they did recommend the Savings Store to others, and the range of reported recommendations per participant ranges from one to fifty-five, with an average of 5.2 and a median of three recommendations per participant recommending the Savings Store.

Most of the people who participants told about the Savings Store are either friends (33.6% or 145 out of 431 recommendations) or family members (31.3% or 135 out of 431), followed by neighbors (10.0% or 43 out of 431) and church congregations (12.8% or 55 out of 431, although this includes one customer who told fifty members of their congregation about the program). As indicated by Table 20, virtually all communications between participants and people they told about the program were face-to-face "word of mouth" communications (97.6% or 81 out of 83).

Table 20. Methods of Telling Others about the Savings Store (N=83)

Base: 83 customers who told others about the Savings Store	Carolina System (count)	Carolina System (percent)
Word of mouth (in person)	81	97.6%
Email	2	2.4%
Facebook	1	1.2%
Twitter	0	0.0%
Web site forum	0	0.0%
Other method, listed below	1	1.2%
Don't know / can't recall	0	0.0%

Responses total to more than 100% because respondents could give multiple responses.

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One surveyed participant mentioned a unique method of telling others about the program, listed below.

- *I brought three ladies into my home so they could see the light bulbs for themselves.*

Participant Satisfaction

Participants were asked to rate various aspects of the program on a 1 to 10 scale, with "1" being the lowest possible rating and "10" being the highest. Table 21 shows the respondents' mean satisfaction scores with various aspects of the program and for the Savings Store overall.

The Savings Store gets a high overall satisfaction rating from program participants, with a mean of 9.15 on a 10-point scale. The most popular aspects of the program involve the mechanics of online shopping: the ease of using the shopping cart function (mean rating 9.35), ease of completing purchases (9.32), delivery time for receiving the bulbs (9.26), ease of logging on to the website (9.23) and ease of navigating the website (9.20). The mean ratings for store return practices, the online "Contact Us" feature and telephone support are also very high (mean ratings 9.45 up to 10.0), though these aspects of the program only applied to small numbers of participants (most customers did not need to return merchandise or contact support and thus did not rate these aspects of the program). These high satisfaction scores with the mechanical aspects of online shopping indicate that EFI is doing an excellent job at providing the e-commerce platform for Duke Energy's Savings Store. TecMarket Works notes that these scores are higher than most satisfaction scores seen within the energy efficiency program evaluation field, including satisfaction scores for programs that do not require customers to pay a portion of the cost for their own measures out-of-pocket as this one does.

The least popular aspects of the program are the helpfulness of the energy savings calculator tool (mean rating 7.42 out of 10) and the helpfulness of information resources at the web site (mean rating 7.86), though only a minority of participants rated these aspects of the program (because most customers did not use the energy savings calculator or recall any of the informational resources at the website). Two other aspects of the program having to do with the information presented at the website also received somewhat lower ratings: the helpfulness of the energy savings estimate per bulb (8.64) and the helpfulness of the bulb descriptions (8.76). Satisfaction with the order tracking feature was also somewhat lower (8.61), though most customers did not rate this aspect since they did not use order tracking.

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Table 21. Mean Satisfaction Ratings for the Savings Store and Aspects of the Specialty Bulbs Program (N=136)

	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Satisfaction with the Savings Store overall	9.15	135	9.6%
Satisfaction with store return practices	10.00	4	0.0%
Satisfaction with "Contact Us" feature provided for store	10.00	1	0.0%
Satisfaction with phone support provided for store	9.45	11	0.0%
Ease of using the shopping cart function at the web site	9.35	128	3.1%
Ease of completing purchase online	9.32	133	6.8%
Satisfaction with delivery time for bulb order	9.26	133	9.0%
Ease of logging on to website	9.23	132	4.5%
Ease of navigating website	9.20	130	6.9%
Satisfaction with price of bulbs	9.04	133	13.5%
Ease of finding the items you were looking for	8.79	134	14.2%
Helpfulness of bulb descriptions	8.76	131	16.8%
Helpfulness of energy savings estimate per bulb	8.64	99	18.2%
Satisfaction with order tracking feature	8.61	18	16.7%
Helpfulness of informational resources at web site	7.86	43	32.6%
Helpfulness of the energy savings calculator	7.42	24	33.3%

Customers who gave ratings of "7" or lower on a ten-point scale were asked the reason for their relatively low ratings. These responses are listed in *Appendix H: Suggestions for Improving the Program.*

Customers' Favorite and Least Favorite Things About the Savings Store

Customers were asked to name their favorite thing about the Savings Store; these responses are shown in Table 22. A majority of 59.6% (81 out of 136) mentioned the low price for light bulbs, though interestingly no one surveyed (0.0% of 136) mentioned saving money through lower utility bills. The convenience of online shopping and home delivery was mentioned by about a third of customers (34.6% or 47 out of 136), and one in five mentioned that the website layout, information and tools made shopping for bulbs easy to do (19.9% or 27 out of 136).

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Table 22. Customers' Favorite Things about the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
Reduced prices for light bulbs	81	59.6%
Convenience of online shopping & home delivery / not having to go to the store	47	34.6%
Website layout, info & tools made it easy to shop for bulbs	27	19.9%
Selection & variety of bulbs offered	17	12.5%
Quality of the light bulbs	5	3.7%
Quick delivery	4	2.9%
Saving energy	2	1.5%
Saving time	2	1.5%
Saving money on utility bills	0	0.0%
Helping the environment	0	0.0%
Unique responses, listed below	2	1.5%
Don't know / nothing	4	2.9%

Percentages total to more than 100% because participants could name multiple favorite things.

Two survey participants mentioned unique favorite things about the program, which are listed below.

- *Just the fact that it exists. Duke Energy doesn't have to offer their customer discounted LEDs, but yet they do.*
- *I liked the free delivery.*

Customers were also asked to name their least favorite things about the Savings Store, which are shown in Table 23. Half of the surveyed customers (52.9% or 72 out of 136) could not name a least favorite thing about the Savings Store. The most-mentioned issues customers have are with the limits on incented bulbs (mentioned by 9.6% or 13 out of 136) and the information presented at the website (7.4% or 10 out of 136), followed by complaints about the selection of bulbs available (5.9% or 8 out of 136) and the quality of the bulbs that were purchased (5.1% or 7 out of 136).

In contrast to 59.6% (81 out of 136) of customers mentioning the Savings Store's prices as their *favorite* thing about the program, only 2.9% (4 out of 136) mentioned the price of the bulbs as their *least* favorite thing.

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Table 23. Customers' Least Favorite Things about the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
Nothing / don't know	72	52.9%
Limit on quantity of discounted bulbs that can be purchased	13	9.6%
Wanted more or better info on website, listed below	10	7.4%
Selection of bulbs available, listed below	8	5.9%
Complaints about bulb quality, listed below	7	5.1%
Could not find a specific bulb I was looking for, listed below	4	2.9%
Price / can get these bulbs as cheap or cheaper elsewhere	4	2.9%
The cost of shipping	4	2.9%
Cumbersome log on / hard to find link	4	2.9%
Hard to navigate / difficult to compare bulbs, make choices	3	2.2%
Having to use Internet / want phone or mail order option	3	2.2%
Delivery time took too long	2	1.5%
Confused by single bulbs versus multi-packs	2	1.5%
Unique responses, listed below	8	5.9%

Percentages total to more than 100% because participants could name multiple least favorite things.

Eight customers gave unique responses to the question about their least favorite thing about the Savings Store; these are listed below. Two of these comments involve additional issues with the limit on incented bulbs (not just that the limit exists, but that it caused confusion or problems).

- *I was misled by the limit of bulbs I could buy, I didn't know I could still get more at a slightly higher price.*
- *I didn't realize there was a bulb limit until I got ready to check out; I had to go back and change my order after I had made my choices after I saw the limit.*
- *The pricing structure makes it sound like you're getting good deal, even though you're not. The descriptions will say, 'this bulb's list price is $15.95, but you can buy it here for $7.95.' Nobody pays list price. You don't see $16 compact fluorescent bulbs in the stores.*
- *I wish I'd known sooner I could buy bulbs at these prices.*
- *The energy savings estimates I saw there were not impressive.*
- *I don't like the mercury in the bulbs, but since the government is phasing out the incandescent bulbs the CFLs are a necessary evil.*
- *The only thing I didn't like was having to stop and measure the sockets.*
- *Duke's customer service was my least favorite part. I did not get all the bulbs I ordered nor was my refund request processed.*

Ten customers made comments about the information presented at the Savings Store website; these are listed below.

- *I didn't care for the CO2 calculator.*
- *The bulb descriptions could be better.*

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- *I wanted more information about the brightness of the bulbs.*
- *I disliked not being able to find information about the color of light that the bulbs emitted.*
- *I didn't like the lack of adequate descriptions, pertaining specifically to the delay in brightness when the CFLs start up.*
- *I disliked the lack of detailed bulb specifications, wattage equivalency comparisons, and also the lack of comparative photos.*
- *I disliked not being able to see what I was ordering.*
- *I didn't like that the site did not prominently display uses for the bulbs.*
- *It didn't really say on the site that they were limiting the number of bulbs because of the discounted price.*
- *I disliked the confusing transitions between bulb types on the website.*

Eight customers made comments about the selection of bulbs available the Savings Store website; these are listed below. Three of these customers wanted more LED options in particular.

- *I thought that there was a rather limited selection of bulb types and wattages available. I was a little surprised by the small range of selection.*
- *The selection could have been better.*
- *There are very limited options for candelabra bulbs.*
- *There weren't a lot of choices. I would have like to see more LED options, and different base types.*
- *I would like a better selection of bulbs, especially the LEDs.*
- *There are not enough LED choices.*
- *I disliked that brighter, higher wattage bulbs were not available.*
- *They need more pretty designer bulbs for visible areas.*

Seven customers made comments about the qualities of the light bulbs they purchased from the Savings Store website; these are listed below. Four customers' least favorite thing about the program is that their CFLs take too long to warm up to full brightness.

- *The outdoor reflectors I bought burned out quickly.*
- *I don't like the quality of the CFL capsules because they are flickering in my bathroom sockets.*
- *The candelabras didn't fit into my overhead fan. It takes regular sized light bulbs and not the smaller base ones.*
- *The candelabra bulbs don't warm up quick enough.*
- *The outdoor reflectors don't fit in the sockets I bought them for and the globes lights I bought need time warm up.*
- *I didn't like the delay in brightness when the CFLs start up.*

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- *I don't love the performance of CFLs in general; they take too long to get to full light. But that's really not a big deal.*

Four customers could not find specific light bulbs they were looking for at the Savings Store; these comments are listed below.

- *They only had one choice for dimmable bulbs. I wanted a smaller size.*
- *I could not find dimmable CFL or LED candelabra bulbs.*
- *I was looking for 45W flood lamps for the kitchen.*
- *They only had a 13 watt and then a 20 watt. I wanted something brighter, though I'm not exactly sure on the wattage.*

Satisfaction with Light Bulbs Purchased from the Savings Store

Customers who installed the light bulbs they purchased from the Savings Store were asked to rate their satisfaction with these bulbs on a ten-point scale where "10" means most satisfied. Table 24 shows that customers are generally satisfied with the program bulbs, which receive an overall mean ratings of 8.97 out of ten. The light bulbs that receive the highest satisfaction scores are the capsule LEDs (9.72 based on 18 ratings), globe CFLs (9.21 based on 34 ratings) and dimmable indoor reflector CFLs (9.60 but based on only five ratings).

The bulbs with the lowest satisfaction scores are dimmable spiral CFLs (8.73 based on 22 ratings, with 22.7% or 5 out of 22 giving ratings of "7" or lower), non-dimmable indoor reflector CFLs (8.77 based on 31 ratings, with 22.6% or 7 out of 31 giving ratings of "7" or lower) and indoor reflector LEDs (8.00 but based on only three ratings, none of which were "7" or lower); mean satisfaction ratings higher than "8 out of 10" still represent a high level of customer satisfaction, but there may be more room for improvement with these specialty bulb types.

Overall, LEDs received a slightly higher satisfaction rating (9.48 based on 21 ratings) than CFLs (8.95 based on 233 ratings). None of the surveyed customers rated their satisfaction with LEDs from the Savings Store at "7" or lower (0.0% out of 21), compared to about one in six customers (15.9% or 37 out of 233) who rating Savings Store CFLs at "7" or less.

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Table 24. Mean Satisfaction Ratings for Light Bulbs Purchased from the Savings Store

Base: customers who installed program bulbs and gave satisfaction ratings	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Capsule (A Line) total	9.16	49	8.2%
- *CFL*	*8.88*	*32*	*12.5%*
- *LED*	*9.72*	*18*	*0.0%*
CFL - Three-way spiral	8.98	43	14.0%
CFL - Candelabra	8.97	36	16.7%
Indoor reflector (recessed) total	8.81	37	18.9%
- *CFL - Non-dimmable*	*8.77*	*31*	*22.6%*
- *CFL - Dimmable*	*9.60*	*5*	*0.0%*
- *LED - Dimmable*	*8.00*	*3*	*0.0%*
CFL - Globe	9.21	34	8.8%
CFL - Outdoor reflector (recessed outdoor)	8.90	30	20.0%
CFL - Dimmable spiral	8.73	22	22.7%
CFL - Standard spiral (non-incented bulbs)	NA	NA	NA
Total for CFLs	**8.95**	**233**	**15.9%**
Total for LEDs	**9.48**	**21**	**0.0%**
Grand total all bulbs	**8.97**	**251**	**14.7%**

Respondents were only asked to give one satisfaction rating per category of specialty bulb that they purchased, not separately for different types of bulbs that they purchased within a category. One survey respondent purchased both capsule CFLs and LEDs and two respondents purchased more than one type of indoor reflector bulb, which is why the valid N's for subtotals of these bulbs types add up to more than the total valid N (this is also why the valid N for the grand total for all bulbs is three less than the combined totals for CFLs and LEDs). Respondents were not asked to rate their satisfaction with (non-incented) standard spiral CFLs from the Savings Store.

Thirty-seven surveyed participants who gave ratings of "7" or less for their satisfaction with Savings Store bulbs were asked how this could be improved; these responses are listed below by specialty bulb type. All 37 of these customers (100%) purchased CFLs from the Savings Store, and none (0%) purchased LEDs. The most frequent complaints from customers about these CFLs is that they take too long to reach full brightness. Some customers who are less satisfied also report bulbs burning out or working defectively as reasons for their lower satisfaction, particularly with the three-way CFLs.

CFL - Capsule (A Line) (N=4)

- *They take too long to brighten up.*
- *It takes a while to get up to full lighting level and it flickers.*
- *The bulbs flicker, or kind of change in intensity, which I find unsatisfactory.*
- *I don't like the coloring of the light in some fixtures.*

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CFL - Three-Way Spiral (N=6)

- *I was less than satisfied with the three-way CFLs because I paid more for them and they burnt out quickly.*
- *I have concerns about the durability of CFL bulbs. One of the three-way bulbs I ordered ceased working soon after it was installed.*
- *The one we used burned out right away and we haven't bothered putting another three-way bulb in its place.*
- *One of the three-way bulbs doesn't work. It only has one level of brightness. I'll probably use it someday. The CFLs are not as bright as the incandescents and the light is yellowish even though I got the ones that aren't supposed to be yellowish.*
- *I have one three-way bulb that doesn't work well but I can wiggle it around to get it to work. I've moved to different three-way lamps to see if was a problem with the fixture but it has the same problem in all fixtures. I still have it installed but it is in a lamp that doesn't get used often.*
- *I wish that it had come in lower wattage. I wanted it to be a softer light. That's why it's never off the low setting.*

CFL - Candelabra (N=6)

- *I had two burn out; it's also weird that they take time to warm up, although that's not as big a deal with dimmable lights. I'm probably just used to incandescent bulbs.*
- *I have to wait for them to warm up.*
- *It takes a while to brighten up.*
- *It takes them a while to warm up and that's the first light I flip on when I get in the house. It's like Williamsburg in here, like I've just lit some candles, very dim.*
- *They are quite slow to come up to full lighting, but once up they stay that way and are nice. It takes perhaps at least 20 to 30 seconds.*
- *The candelabra CFLs take way too long to warm up to full brightness, especially compared to incandescent bulbs. The new CFLs took about a minute or two to warm up, when I would first turn on the light it seemed as if the light was not even on. It took a long time for us to get used to that, I still don't like it.*

CFL - Indoor Reflector (Recessed) Non-Dimmable (N=7)

- *One of them burned out within 24 hours.*
- *I guess because they don't come to a full brightness right away. It seems like they take one minute to get to their full light potential and I wish it was faster.*
- *They take a while to come up to full brightness. When I turn the light on in my kitchen I want full light right away.*
- *They need time to warm up.*
- *They take too long to come up to full brightness.*
- *They take too long to come up to full lighting level.*
- *The light is too bright and it's not the right color of light.*

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CFL - Globe (N=3)

- *I was less than satisfied because the globe bulbs take too long reach full brightness.*
- *They take too long to get to full lighting level and I think that they use more energy while they are warming up.*
- *I don't like that you can see the spiral inside. I've never liked the way that the spirals looked and I was hoping that the globe would hide the spiral better.*

CFL - Outdoor Reflector (Recessed) (N=6)

- *They last longer than the halogens but they still burned out pretty quick.*
- *The outdoor reflector bulbs take too long to brighten up and one of the bulbs ceased working soon after installation.*
- *The bulbs are slow to come up to full lighting power.*
- *They don't get bright very quickly. It takes too long for them to get bright, about two minutes.*
- *They take too long to come to full lighting.*
- *There was one that didn't fit in the socket but we will use it in a different socket in the future.*

CFL - Dimmable Spiral (N=5)

- *One made a popping sound and burnt out after only about 50 hours of use. I always would like the lights to come to full brightness faster.*
- *It's not up to what I expected. The bulb takes 15 to 20 minutes to get up to full power, but then it works fine.*
- *The light quality is not as good as incandescent bulbs. It is too dim for me.*
- *The bulbs were larger than I anticipated them being.*
- *They are a little too big.*

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Satisfaction with Duke Energy

Satisfaction with Duke Energy was generally high among these program participants, with a mean rating of 8.34 on a ten-point scale where "10" means "very satisfied", and more than a third of surveyed participants (36.8% or 50 out of 136) rate their satisfaction with Duke Energy at "10 out of 10", the highest possible score. The full distribution of responses is shown in Figure 17; the difference between states is not statistically significant (the mean satisfaction rating for North Carolina customers is 8.33, and the mean ratings for South Carolina customers is 8.37).

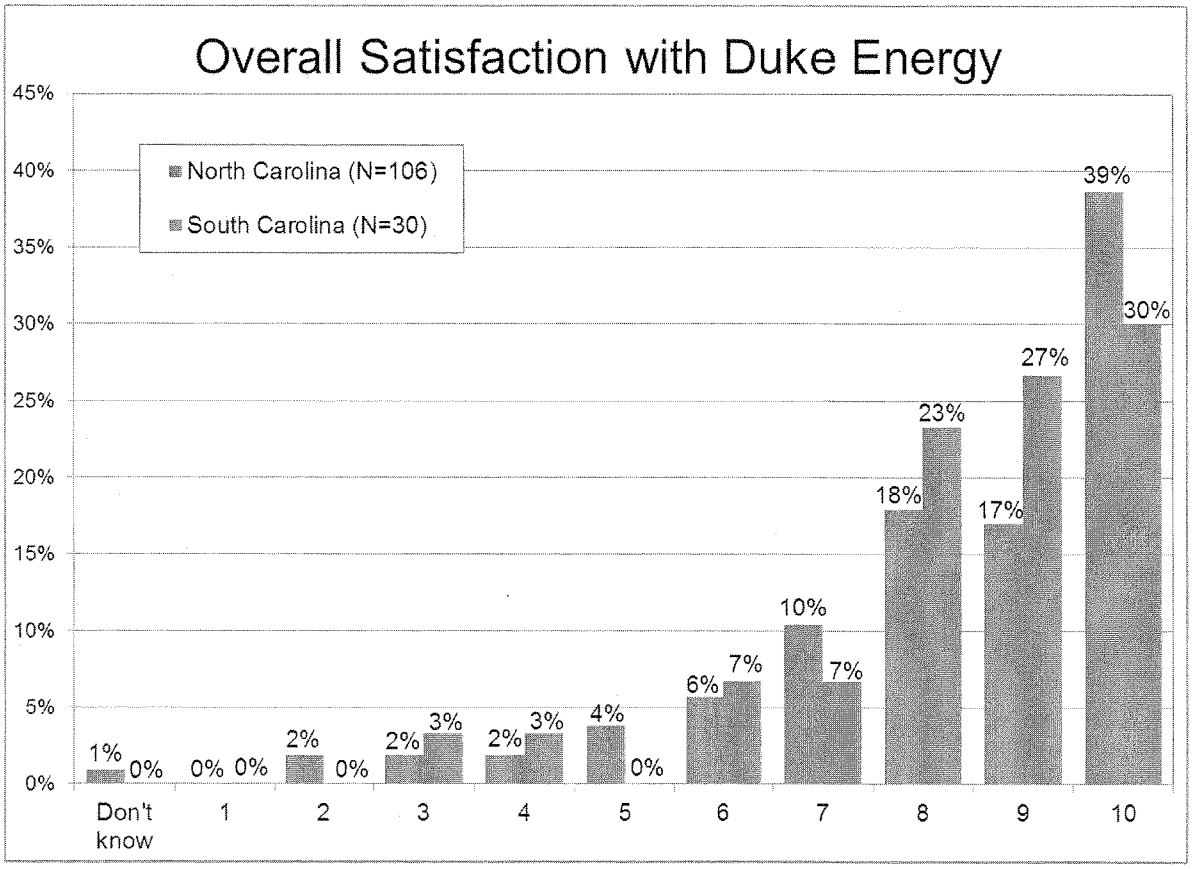

Figure 17. Program Participants' Overall Satisfaction with Duke Energy (N=136)

Thirty-three participants (24.3% of 136) rated their satisfaction with Duke Energy at "7" or less on a ten-point scale and were asked how this situation could be improved; these responses are listed in *Appendix H: Suggestions for Improving the Program.*

Predicting Overall Program Satisfaction

Table 25 shows the correlations between overall program satisfaction and ten ratings which could be used to predict program satisfaction, plus the correlation between program satisfaction and whether the customer received non-functional bulbs, had bulbs become non-functional after installation, or returned any bulbs that they bought from the Savings Store. All ten ratings of aspects of the program, and satisfaction with Duke Energy, are highly correlated to satisfaction with the Savings Store. However, none of the defective or returned bulb variables are

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significantly correlated with program satisfaction; the negative correlations for receiving non-functional bulbs and having bulbs become non-functional after installation indicate that having defective or damaged bulbs does lower program satisfaction (though not significantly), but the returns do not lower satisfaction on the whole (the coefficient for returning bulbs is not negative).

Table 25. Correlations with Overall Program Satisfaction

	Correlation with program satisfaction (Pearson's r)	Significance
Ease of navigating website	.667	p<.01
Ease of using shopping cart	.585	p<.01
Satisfaction with price of bulbs	.546	p<.01
Helpfulness of bulb descriptions	.532	p<.01
Helpfulness of energy savings estimates per bulb	.519	p<.01
Ease of logging on to website	.507	p<.01
Ease of completing purchase	.506	p<.01
Ease of finding items I was looking for	.500	p<.01
Satisfaction with delivery time	.380	p<.01
Satisfaction with Duke Energy overall	.329	p<.01
Returned bulbs to Savings Store	.049	--
Received damaged bulbs from Savings Store	-.099	--
Bulbs from Savings Store became defective or burned out after installation	-.150	--

Next, simple linear regressions were performed to predict overall participant satisfaction with the program using ratings of satisfaction for ten different aspects of the program plus three variables for damaged, defective and returned bulbs. Two models were used: a stepwise model that selects predictors based on incremental improvements to the model (producing the most efficient model that predicts the most variance using the fewest predictors), and a "complete" model that uses all predictors simultaneously (which represents the maximum variance that can be explained using this set of predictors).

The two regression models produce consistent results, in that both indicate that two of the most important aspects of the program which influence overall program satisfaction are the ease of navigating the website (a positive influence), and having Savings Store bulbs become non-functional after installation (a negative influence). The two models also produce very similar levels of variance explained, indicating that the non-significant predictors included in the complete model have little additional effect.

The stepwise algorithm is iterative, adding or subtracting predictors from the model based on predetermined criteria. For the model presented in Table 26, predictors are added to the model as

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long as their coefficients, when added to the model are significant at the p<.10 level, and removed from the model if the significance of their coefficients falls below p<.20 (due to multicollinearity with other predictors added to the model on subsequent steps). The algorithm will take as many steps as necessary until all predictors that meet the criteria have been added to (or subtracted from) the model. For this model, the algorithm added five predictors (and removed none) in order to arrive at the final regression equation in five steps.

The two most significant predictors of overall program satisfaction are basic e-commerce usability measures: ease of using the shopping cart and ease of navigating the website. Two additional predictors which are also significantly related to program satisfaction in a positive direction are the helpfulness of energy savings estimates per bulb and satisfaction with Duke Energy. Having bulbs burn out or become defective after installation is also a significant predictor with a negative coefficient in this model (indicating that customers who installed "bad" bulbs are less satisfied with the program overall).

Table 26. Stepwise Regression to Predict Overall Program Satisfaction (N=86[13])

Predictor	Beta coefficient	Significance
Ease of using shopping cart	.300	p<.01
Ease of navigating website	.291	p<.01
Helpfulness of energy savings estimates per bulb	.227	p<.01
Satisfaction with Duke Energy overall	.196	p<.05
Bulbs from Savings Store became defective or burned out after installation	-.270	p<.01

The five-predictor regression model above produced using the stepwise method predicts 62.0% of the variance in overall program satisfaction (R-squared), and is significant at the p<.01 level using ANOVA. Beta coefficients are standardized values and indicate the relative importance of the predictors in the model (absolute value of 1.0 would indicate that the predictor determines the predicted variable perfectly, and zero indicates no effect at all). Negative coefficients represent negative influence (indicating that installing defective bulbs lowers predicted program satisfaction).

For the "complete" model shown in Table 27, all thirteen predictors are used simultaneously to predict overall program satisfaction. Since there are no criteria used to determine which predictors are included in the model, most of the predictors do not reach the level of statistical significance. However the complete model does show the maximum amount of variance in overall satisfaction that can be explained using this set of predictors.

[13] Though there are 136 participants in this survey, the number of valid cases used for regression models is 86 due to "listwise" deletion of missing data. In order to be included in the model, a participant had to give valid answers to all questions used in the model; 50 customers who are missing one or more ratings were excluded. For a similar reason, ratings questions with fewer than 50% valid responses are not included in these models.

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Table 27. "Complete" Regression to Predict Overall Program Satisfaction (N=86)

Predictor	Beta coefficient	Significance
Ease of navigating website	.308	p<.01
Helpfulness of energy savings estimates per bulb	.181	p<.05
Ease of completing purchase	.175	-
Satisfaction with Duke Energy overall	.121	-
Satisfaction with price of bulbs	.108	-
Ease of using shopping cart	.103	-
Ease of logging on to website	.095	-
Helpfulness of bulb descriptions	.064	-
Satisfaction with delivery time	.042	-
Returned bulbs to Savings Store	.018	-
Received damaged bulbs from Savings Store	-.011	-
Ease of finding items I was looking for	-.078	-
Bulbs from Savings Store became defective or burned out after installation	-.260	p<.01

The "complete" thirteen-predictor regression model shown above predicts 64.8% of the variance in overall program satisfaction (R-squared), and is significant at the p<.01 level using ANOVA. The additional non-significant predictors in the "complete" model only increase the variance explained by 2.8% over the stepwise model. Only three of the thirteen predictors in this model have significant coefficients: ease of navigating the website, usefulness of energy-saving estimates and having installed bulbs burn out or become defective (which leads to lower program satisfaction). All three of these variables are also significant predictors in the stepwise regression model, however satisfaction with Duke Energy and ease of using the shopping cart are significant in the stepwise model but not in the "complete" model.

Comparing the correlations in Table 25 (relationship between predictors and program satisfaction one-at-a-time) with the regression model in Table 27 (relationship between predictors and program satisfaction all-at-once) indicates that although all program ratings are significantly related to program satisfaction by themselves, most become non-significant in the presence of other, more significant predictors in the regression model. This indicates multicollinearity between the predicting variables (the predictors are highly correlated to each other as well as to the predicted overall program satisfaction), though the one rating that consistently appears as a top predictor of program satisfaction is the ease of navigating the website.

While installing program bulbs that burn out or become defective is not significantly correlated to program satisfaction by itself (as seen by the non-significant correlation in Table 25), in the presence of ratings that positively predict program satisfaction this becomes a significant negative predictor. The unstandardized coefficients for this negative predictor are -.79 in the stepwise model and -.76 in the "complete" regression model which indicates that, regardless of a

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customer's ratings for the website and shopping experience, installing program bulbs that go "bad" quickly reduces overall satisfaction ratings by about 0.8 points on a ten-point scale (there were only 20 out of 136 surveyed respondents who reported that their installed program bulbs burned out or became defective, as seen in Table 18). However, receiving damaged bulbs and returning merchandise to the store are not significant predictors by themselves (in the correlation table) or in any of the regression models.

Factors that Influence Light Bulb Purchases

Surveyed participants were asked to rate the importance of several factors when choosing light bulbs for their home on a ten-point scale where "10" means most important and "1" means not at all important. Table 28 shows the mean ratings of importance; three factors received very high scores averaging higher than 9.0: the purchase price of bulbs (9.08), the energy savings (9.07) and cost savings on utility bills (9.05). Factors involving selection and availability are also important, receiving average scores in the 8.0 to 8.6 range, while the least important factors for choosing light bulbs are recommendations of friend and family (5.00), ability to dim the lights (5.38), recommendations from utility companies (6.27) and the appearance and attractiveness of the bulb (6.34).

Table 28. Importance Ratings for Factors When Choosing Light Bulbs (N=136)

	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Purchase price of the bulb	9.08	136	11.0%
Energy savings	9.07	135	11.9%
Cost savings on utility bill	9.05	132	10.6%
Selection of output levels and wattage available	8.57	136	19.1%
Availability of the bulb at stores and websites where you normally shop	8.06	131	29.8%
Availability of utility programs or services that offer bulbs to you directly	7.97	131	32.1%
Environmental concerns	7.76	136	30.1%
Ease of bulb disposal	7.20	122	43.4%
Speed at which bulb comes up to full lighting level	6.85	135	48.9%
Attractiveness or appearance of bulb	6.34	135	57.8%
Recommendations from the utility company	6.27	132	57.6%
Ability to dim the lighting level	5.38	133	59.4%
Recommendations from family / friends	5.00	131	74.8%

Surveyed customers were also asked to rate the influence of a number of factors on their decision to purchase specialty bulbs through Duke Energy's Savings Store on a ten-point scale where "10" means most influential and "1" means not at all influential; these ratings are shown in Table 29. The three highest-rated factors in terms of influence on purchasing from the Savings Store mirror customers' highest-rated factors for choosing which bulbs to buy for their home: the price of the bulbs (9.25), saving money on utility bills (9.21) and saving energy (9.18). The convenience of home delivery (9.08) and convenience of online ordering (8.65) also received very high influence scores, followed by selection of bulb types (8.49) and selection of wattage

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levels (8.30), though the selection of brands has far less influence (4.51). Advertising by mail received a higher mean influence score (7.43) compared to advertising received while accessing online accounts (6.18) and advertising on the public section of the Duke Energy website (5.02). Recommendations of friends and family have little influence (3.92), while recommendations received through websites and social media have even less influence (2.55).

Table 29. Influence Ratings for Deciding to Purchase Bulbs from the Savings Store (N=136)

	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Reduced price of bulbs at Savings Store	9.25	132	7.6%
Desire to save money on utility bills	9.21	136	8.1%
Desire to save energy	9.18	136	6.6%
Convenience of home delivery	9.08	136	8.8%
Convenience of online ordering	8.65	135	14.8%
Selection of types of bulbs for different purposes	8.49	136	17.6%
Selection of different wattages of bulbs	8.30	136	22.1%
Information provided at Savings Store site	8.09	128	31.3%
Advertising via mailings received from Duke Energy	7.43	130	36.9%
Advertising when I accessed my online account at Duke Energy website	6.18	116	51.7%
Advertising on Duke Energy's public website	5.02	126	69.8%
Brands of bulbs available	4.51	128	80.5%
Recommendation of friends / family (including through email and social media)	3.92	130	83.8%
Online recommendation of someone you don't know personally (web forums and social media)	2.55	130	93.1%

Survey participants were asked to explain the reasons for their influence ratings for the reduced price of bulbs, convenience of online ordering and the information provided at the Savings Store website. These comments can be found in *Appendix I: Explanations of Influence Ratings*.

Effects of Pricing, Packaging and Incentive Limits on Purchase Decisions

Three-quarters of surveyed Savings Store customers (77.2% or 105 out of 136) are aware that the light bulbs offered there are available at a reduced price.[14] Table 30 also shows that a majority of customers (52.9% or 72 out of 136) report that they purchased more light bulbs than they otherwise would have due to the reduced pricing, while 36.0% (49 out of 136) said the reduced pricing had no effect and 3.7% (5 out of 136) reported that the pricing actually made them purchase fewer bulbs.

[14] The Savings Store website presents a price breakdown which begins with the "retail" price for each bulb, followed by a slightly lower "Savings Store" price and then a further "Duke incentive" deduction is shown, resulting in the final "You Pay" price which is usually half or less of the original "retail" price.

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Nearly half of customers surveyed (43.4% or 59 out of 136) also reported that they purchased more bulbs than they otherwise would have due to the availability of low-priced multi-packs of bulbs, compared to a slight majority of 50.7% (69 out of 136) who said multi-packs had no effect on the number of bulbs purchases (none of the customers said that the availability of multi-packs caused them to buy fewer bulbs). Among the 59 customers who said they purchased more bulbs due to the availability of multi-packs, 54 provided estimates for how many of the bulbs they purchased were due to the availability of multipacks; these customers report that about half of the bulbs they purchased (an average of 8.5 bulbs apiece out of the 17.9 bulbs apiece that they ordered from the Savings Store) were due to the availability of multi-packaging. Furthermore, the 59 customers who said that multi-packs caused them to buy more bulbs purchased significantly more bulbs (17.7 bulbs apiece) than the 69 customers who said they were not influenced by multi-packaging (11.4 bulbs apiece; this difference is significant at $p<.05$ using Student's t-test). In other words, customers who were influenced to purchase more bulbs by multi-packaging options purchased 55% more bulbs than customers who were not so influenced. Overall, according to customers' estimates of the effect of multi-packaging, about a quarter of bulbs sold are attributable to multi-packaging (at least 23.8% or 456 out of 1,917 bulbs purchased by all surveyed participants, which does not include the five customers who said they purchased more due to multi-packaging but did not provide an estimate for the number of bulbs).

Table 30. Reduced Pricing, Multi-Packs and Light Bulb Purchases (N=136)

	Carolina System (count)	Carolina System (percent)
Do you recall if Duke Energy was offering a reduced price for bulbs?		
Yes, price was reduced	105	77.2%
No, price was not reduced	14	10.3%
Don't know / can't recall	17	12.5%
Did the pricing on the site cause you to buy		
More light bulbs than you would have otherwise	72	52.9%
Fewer bulbs than you would have otherwise	5	3.7%
Have no influence on the number of bulbs purchased	49	36.0%
I purchased as many bulbs as I could at the incented price	4	2.9%
Other volunteered responses, listed below	2	1.5%
Don't know	4	2.9%
Did the availability of low-priced multi-packs cause you to buy		
More light bulbs than you would have otherwise	59	43.4%
Fewer bulbs than you would have otherwise	0	0.0%
Have no influence on the number of bulbs purchased	69	50.7%
I purchased as many bulbs as I could at the incented price	2	1.5%
Don't know	6	4.4%

Two participants volunteered unique responses to the question about whether pricing caused them to purchase a different number of bulbs than they otherwise would have. These responses are listed below.

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Effect of pricing on number of bulbs purchased: volunteered unique responses (N=2)

- *I would have purchased the same amount, but I purchased different types of bulbs to try them out.*
- *I would have ordered more bulbs if the shipping cost had been less. The cost of the bulbs had no influence nor did the availability of multi-packs.*

Only half of surveyed customers (50.0% or 68 out of 136) are aware that there are limits on the number of bulbs that can be purchased at the fully-incented price, as seen in Table 31. Among customers who were aware of the incentive limit, more than a third (38.2% or 26 out of 68) said that the limit kept them from ordering all the light bulbs they wanted, and a similar number (41.2% or 28 out of 68) are aware that they could have purchased additional bulbs at a non-incented price elsewhere on the site. In other words, 58.8% (40 out of 68) of customers who were aware of the incentive limit were not aware that they could have purchased non-incented bulbs beyond the incentive limit (including customers who "don't know / can't recall").

Table 31. Incentive Limits and Light Bulb Purchases (N=136)

	Carolina System (count)	Carolina System (percent)
Were you aware that there are limits on the number of each type of bulb that you can order from the Savings Store at the final discounted [incented] price?		
Yes, aware of limits	68	50.0%
Not aware of limits / thought there were no limits	68	50.0%
Did the limit on bulbs keep you from ordering all the bulbs you wanted?	***Base: N= 68 customers who were aware of limits***	
Yes	26	38.2%
No	41	60.3%
Don't know / can't recall	1	1.5%
Did you know that you can buy more bulbs than the discounted-price limit allows if you go to another section of the Store that sells the same bulbs at a slightly higher price?	***Base: N= 68 customers who were aware of limits***	
Yes	28	41.2%
No	34	50.0%
Don't know / can't recall	6	8.8%

Customers who said that they did not purchase all of the bulbs they wanted due to the incentive limits were asked what types of bulbs they wanted to buy more of, as shown in Table 32. There is a fairly even spread across several bulb types, with no more than five customers mentioning any one category of light bulb (19.2% of 26 customers who would have purchased more bulbs without the incentive limit, but only 3.7% out of 136 customers surveyed overall). However, none of these participants (0.0% of 26) wanted to purchase more dimmable CFL or dimmable LED indoor reflectors than the incentive limit.

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Table 32. Purchases Limited by Incentive Limits by Bulb Type (N=26)

Base: 26 customers who said that the limit on bulbs kept them from ordering all of the bulbs they wanted	**Carolina System (count)**	**Carolina System (percent)**
What kind of bulbs would you have ordered more of if they were available at the final discounted [incented] price?		
CFL - Indoor reflector (recessed), non-dimmable	5	19.2%
CFL - Candelabra	5	19.2%
CFL - Outdoor reflector (recessed outdoor)	4	15.4%
CFL - Three-way spiral	4	15.4%
CFL - Capsule (A Line)	4	15.4%
LED - Capsule (A Line LED)	4	15.4%
CFL - Dimmable spiral	3	11.5%
CFL - Globe	2	7.7%
CFL - Dimmable reflector (recessed dimmable)	0	0.0%
LED - Dimmable reflector (recessed dimmable LED)	0	0.0%
Don't know / can't recall	2	7.7%

Percentages total to more than 100% because participants could mention more than one bulb type.

Table 33 compares customers who say the incentive limits prevented them from buying as many bulbs as they wanted to according to whether or not they are aware that they can buy bulbs beyond the incentive limit, albeit at a higher (non-incented) price. The customers who are aware that they can buy bulbs past the limit are significantly more likely to have wanted to purchase more CFL and LED capsules (30.8% or 4 out of 13), while customers who are not aware are more likely to have wanted to purchase more non-dimmable indoor reflector CFLs (30.8% or 4 out of 13); these differences between groups are significant at $p<.10$ using Student's t-test (significant differences are marked with boldface italics in the table). This seems to imply that it was the higher cost of non-incented bulbs rather than the limit per se which kept these customers from ordering more capsule bulbs, but customers who wanted more indoor reflectors were more likely to not realize that they could have purchased more (though if they were aware that they could have purchased more of these bulbs, the higher cost beyond the limit may still have been a barrier to actually purchasing more bulbs).

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Table 33. Purchases Limited by Incentive Limits by Bulb Type for Customers Who Are Aware and Not Aware of Being Able to Purchase Bulbs Beyond the Incentive Limit (N=26)

Base: 26 customers who said that the limit on bulbs kept them from ordering all of the bulbs they wanted	Aware of being able to buy bulbs past the limit (N=13)	Not aware of being able to buy bulbs past the limit (N=13)
What kind of bulbs would you have ordered more of if they were available at the final discounted [incented] price?		
CFL - Indoor reflector (recessed), non-dimmable	***7.7%***	***30.8%***
CFL - Candelabra	15.4%	23.1%
CFL - Outdoor reflector (recessed outdoor)	15.4%	15.4%
CFL - Three-way spiral	7.7%	23.1%
CFL - Capsule (A Line)	***30.8%***	***0.0%***
LED - Capsule (A Line LED)	***30.8%***	***0.0%***
CFL - Dimmable spiral	7.7%	15.4%
CFL - Globe	7.7%	7.7%
CFL - Dimmable reflector (recessed dimmable)	0.0%	0.0%
LED – Dimmable reflector (recessed dimmable LED)	0.0%	0.0%
Don't know / can't recall	7.7%	7.7%

Percentages total to more than 100% because participants could mention more than one bulb type.

Intention to Purchase Light Bulbs if the Savings Store had not Been Available

If the Savings Store had not been available, only a quarter of customers surveyed (25.0% or 34 out of 136) would have purchased the same bulbs at the same time. Half (50.0% or 68 out of 136) would have purchased fewer bulbs, while another quarter (25.0% or 34 out of 136) would have purchased the bulbs at a later time, and about one customer in ten (11.8% or 16 out of 136) would not have purchased light bulbs at all. (These percentages total to more than 100% because some customers would have purchased fewer bulbs and done so at a later time; all outcomes are presented separately in Table 34.)

Table 34. Intention to Buy Light Bulbs in the Absence of the Program (N=136)

If the Savings Store had not been available, would you have . . . ?	Carolina System (count)	Carolina System (percent)
Purchased the same amount of bulbs at the same time	34	25.0%
Purchased fewer bulbs at the same time	46	33.8%
Purchased fewer bulbs at a later time	22	16.2%
Purchased same number of bulbs at a later time	3	2.2%
Purchased bulbs at a later time, not sure how many	9	6.6%
Would not have purchased any bulbs	16	11.8%
Don't know / not sure	6	4.4%

Twelve of the 22 customers who would have purchased fewer bulbs at a later time were able to specifically estimate how long their order would have been delayed: these twelve customers estimate that their purchase would have been delayed an average of 6.8 months if the Savings

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Store had not been available, and the median estimated delay is six months. None of the three customers who would have purchased the same amount of bulbs at a later time were able to estimate how long their purchase would have been postponed. Most of the customers who said they would have delayed their light bulb orders in the absence of the program, but who did not provide specific time estimates for the delay, gave responses like "*I would purchase light bulbs as needed as my current bulbs burn out*", though in two cases respondents said they would have delayed their purchases "*until these bulbs become available in local stores*".

Of the 46 customers who would have purchased fewer bulbs at the same time, 42 provided estimates of how many fewer bulbs they would have purchased: these 42 customers purchased 688 bulbs from the Savings Store (average 16.4 apiece), and without the Savings Store they report that they would have purchased only 316 bulbs at that time (7.5 apiece, less than half as many bulbs).

The 22 customers who would have purchased fewer bulbs at a later time purchased 334 bulbs from the Savings Store (average 15.2 apiece), and without the Savings Store they report that they would have purchased only 123.5 bulbs (5.6 apiece, nearly two-third fewer bulbs).

The 16 customers who would not have purchased any bulbs in the absence of the program purchased 219 Savings Store bulbs (average 13.7 apiece).

Across all 136 surveyed program participants, 1,917 bulbs were purchased (average 14.1 apiece), but in the absence of the program at least 801.5 of these bulbs (5.9 apiece) would not have been purchased. Overall, between a third and half of the light bulbs purchased by surveyed participants (41.8% or 801.5 out of 1,917) would not have been purchased without the Savings Store.

Customers who say they would have purchased the same amount of bulbs at the same time in the absence of the program only purchased an average of 10.3 Savings Store bulbs apiece (351 bulbs bought by 34 customers). This is the smallest number of bulbs-per-participant of any of the groups shown in Table 34, and is significantly lower than the amount of bulbs purchased by the customers who would have purchased fewer bulbs in the absence of the program (15.9 bulbs apiece among 68 customers who would have purchased fewer bulbs; this difference is significant at $p<.05$ using ANOVA).

Intention to Shop for Light Bulbs at the Savings Store in the Future

As seen in Table 35, 39.0% (53 out of 136) of surveyed participants say that the Savings Store will be one of the first places they shop the next time they need light bulbs, and another 25.0% (34 out of 136) say they will "definitely" shop at the Savings Store again. Overall nine out of ten customers (89.0% or 122 out of 136) report that will at least "probably" shop at the Savings Store again, and only 2.9% (4 out of 136) say that they will "probably not" or "never" shop at the Savings Store again.

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Table 35. Future Intention to Shop for Light Bulbs at the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
The Savings Store will be one of the first places I go the next time I need light bulbs	53	39.0%
I will definitely shop at the Savings Store again	34	25.0%
I will probably shop at the Savings Store again	34	25.0%
I may or may not shop at the Savings Store again	11	8.1%
I will probably not shop at the Savings Store again	3	2.2%
I will never shop at the Savings Store again	1	0.7%

Customers were also asked to rate the likelihood that they would make purchases from the Savings Store again in the future on a ten-point scale, where "10" is most likely and "1" is not at all likely. The average likelihood rating given by these program participants is 8.63, with a median rating of nine. About half of participants surveyed (48.5% or 66 out of 136) gave the highest possible "10 out of 10" rating for their likelihood of shopping at the Savings Store again.

Table 36 indicates that shopping at the Savings Store makes most customers more likely to purchase and install CFLs (61.8% or 84 out of 136), but has less effect on customers' interest in using LED light bulbs (only 28.7% or 39 out of 136 say they are more likely to use LEDs after the program). There are also small percentages who say that the program will make them less likely to use CFLs (2.9% or 4 out of 136) and less likely to use LEDs (5.9% or 8 out of 136).

Table 36. Program Effect on Likelihood of Purchasing Efficient Light Bulbs (N=136)

	Carolina System (count)	Carolina System (percent)
Did your experience ordering energy-efficient specialty bulbs from the Savings Store make it more or less likely that you would purchase and install CFLs in the future?		
More likely	84	61.8%
Neither more nor less likely	48	35.3%
Less likely	4	2.9%
Did your experience ordering energy-efficient specialty bulbs from the Savings Store make it more or less likely that you would purchase and install LEDs in the future?		
More likely	39	28.7%
Neither more nor less likely	89	65.4%
Less likely	8	5.9%

Customers who say they are more likely or less likely to purchase and install efficient bulbs after participating in the program were asked for the reason why. Table 37 shows responses for customers who are more likely to use CFLs and Table 38 shows responses for customers who are more likely to use LEDs.

"Saving energy" is the most-mentioned reason for being more likely to use both CFLs (29.8% or 25 out of 84) and LEDs (41.0% or 16 out of 39). However, the second most-mentioned reason for being more likely to use CFLs is "savings money on utility bills" (27.4% or 23 out of 84),

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while for LEDs it is "the qualities of the light bulb (including light quality)" (30.8% or 12 out of 39).

Table 37. Why Customers are More Likely to use CFLs as a Result of Participating in the Program (N=84)

Base: 84 customers who are more likely to purchase and install CFLs due to their experience with the Savings Store	Carolina System (count)	Carolina System (percent)
Saving energy	25	29.8%
Saving money on utility bills	23	27.4%
Saving money on bulb purchases at Savings Store	14	16.7%
Efficient bulbs last longer than the old bulbs	14	16.7%
Like qualities of the efficient bulbs / quality of light	13	15.5%
I was not previously aware that EE specialty bulbs exist	8	9.5%
Incandescents are becoming unavailable	7	8.3%
Helping the environment / "green" reasons	6	7.1%
Ease and convenience of online ordering at Savings Store	6	7.1%
I now have experience with using these bulbs	5	6.0%
EE bulbs give off less heat	2	2.4%
Unique reasons, listed below	4	4.8%

Percentages total to more than 100% because participants could mention more than one reason.

Four surveyed participants gave unique reasons for why they will use CFLs more after participating in the program; their reasons are listed below.

- *I am more likely to use CFLs because of their availability at the Savings Store.*
- *I am more likely to use CFLs because they are trending right now.*
- *I'll just keep doing the change-over from incandescent to CFLs; that change is not in question.*
- *CFLs are the most reasonable replacement for incandescent lights.*

Table 38. Why Customers are More Likely to use LEDs as a Result of Participating in the Program (N=39)

Base: 39 customers who are more likely to purchase and install LEDs due to their experience with the Savings Store	Carolina System (count)	Carolina System (percent)
Saving energy	16	41.0%
Like qualities of the efficient bulbs / quality of light	12	30.8%
Efficient bulbs last longer than the old bulbs	7	17.9%
Saving money on utility bills	6	15.4%
I now have experience with using these bulbs	5	12.8%
Saving money on bulb purchases at Savings Store	4	10.3%
EE bulbs give off less heat	2	5.1%
Helping the environment / "green" reasons	1	2.6%
I was not previously aware that EE specialty bulbs exist	0	0.0%
Incandescents are becoming unavailable	0	0.0%
Ease and convenience of online ordering at Savings Store	0	0.0%
Unique reasons, listed below	8	20.5%

Percentages total to more than 100% because participants could mention more than one reason.

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Eight surveyed participants gave unique reasons for why they will use LEDs more after participating in the program; their reasons are listed below. Five of these customers (62.5% of 8) expressed an interest in trying LEDs and/or learning more about LEDs, while three customers (37.5% of 8) mentioned how the higher price of LEDs is a factor.

- *I've been installing LEDs when I can find them on sale.*
- *I want to try them, and your prices make me want to try them even more.*
- *As the price of LED bulbs comes down, I would be more likely to go to the Savings Store to find the selection and best price.*
- *I'm interested in learning more about LEDs.*
- *I might try LEDs if I understood them better.*
- *I would like to try LED's to see if they are brighter than CFL's.*
- *I might try them because I don't associate Duke with junk. If Duke is selling something, it has to be good.*
- *I am more likely to use LEDs because of their availability at the Savings Store.*

Four surveyed participants said that participating in this program made them *less* likely to purchase and install CFLs in the future; their explanations as to why are listed below.

- *I am not satisfied with the warm-up time of candelabra CFLs; they take too long to get up to the full brightness.*
- *I eventually want to switch all of my bulbs to LEDs. I like LEDs much more than CFLs because they last longer.*
- *I am less likely to use the CFLs because they lack longevity.*
- *I have decided that I'm not going to use CFLs.*

Eight surveyed participants said that participating in this program made them less likely to purchase and install LEDs in the future; their explanations as to why are listed below. Four of these customers (50.0% of 8) said that LEDs are too expensive relative to other bulbs, and three customers (37.5% of 8) said it was because they are not familiar enough with LEDs.

- *I am less likely to use LEDs because I don't know much about them.*
- *I am less likely to use LEDs because I am unfamiliar with them, and CFLs serve my needs.*
- *I am less likely to use LEDs because I'm unfamiliar with them.*
- *The current purchase price of LEDs is still too high for me to consider using them.*
- *It's the price. LEDs are costly.*
- *I am less likely to use LEDs because of the higher cost per bulb.*
- *I find LEDs are too expensive now compared to CFLs.*
- *It didn't have anything to do with the store. LED illumination is not the same as CFLs; it's not my cup of tea.*

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Program Bulb Installations

Duke Energy provided program records listing all light bulb sales through the Savings Store, and TecMarket Works interview staff confirmed the bulb types and totals with participant survey respondents.[15] The customer-confirmed bulbs purchased by surveyed participants are shown in Table 39. Among the eight major types of light bulbs sold at the Savings Store, none were purchased by a majority of customers: the most popular bulb type is capsules, which were purchased by 42.6% (58 out of 136) of surveyed participants (combined LED and CFL capsules). The least commonly ordered bulbs are dimmable spiral CFLs (17.6% or 24 out of 136) and the non-incented standard spiral CFLs (4.4% or 6 out of 136). Among LEDs, the capsules accounted for the vast majority of sales (92.1% or 117 out of 127 LEDs ordered by survey participants).

Customers who ordered non-dimmable indoor reflector CFLs ordered the largest number of bulbs per order (9.5), and the types of bulbs with the fewest bulbs per customer ordering are indoor reflector LEDs (3.3) and three-way CFLs (4.0). In total, surveyed participants ordered a total of 14.1 bulbs apiece on average, and 93.4% (1790 out of 1917) of the bulbs ordered were CFLs. Among the 17.6% (24 out of 136) of customers who ordered LEDs, the average number of LEDs per order was 5.3, compared to 14.3 CFLs per customer ordering CFLs (91.9% or 125 out of 136 customers ordered CFLs).

Only about one in ten surveyed customers (9.6% or 13 out of 136) ordered both CFLs and LEDs, which is slightly more than the percentage that ordered exclusively LEDs (8.1% or 11 out of 136). Four out of five customers surveyed (82.4% or 112 out of 136) ordered exclusively CFLs.

[15] For this survey, the confirmation of program records was remarkably high with 97.8% (133 out of 136) customers agreeing with the program records as to which bulbs they purchased and how many. The three customers who did not agree with customer records reported purchasing an additional six outdoor reflector CFLs, additional six non-incented standard spiral CFLs, and one fewer three-way CFL. Thus program records showed these 136 customers purchasing 1906 light bulbs, but the customer confirmed total is 1917 bulbs (0.6% more than the program records total).

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Table 39. Types of Light Bulbs Purchased from the Savings Store by Program Participants

Participant-corrected from program records	Participants ordering (N=136)	Percent of Participants ordering	Bulbs ordered (N=1917)	Percent of bulbs ordered	Average bulbs per participant ordering
Capsule (A Line) total	58	42.6%	407	21.2%	7.0
- *CFL*	*38*	*27.9%*	*290*	*15.1%*	*7.6*
- *LED*	*22*	*16.2%*	*117*	*6.1%*	*5.3*
CFL - Three-way spiral	48	35.3%	190	9.9%	4.0
CFL - Candelabra	46	33.8%	335	17.5%	7.3
Indoor reflector (recessed) total	40	29.4%	362	18.9%	9.1
- *CFL - Non-dimmable*	*34*	*25.0%*	*322*	*16.8%*	*9.5*
- *CFL - Dimmable*	*5*	*3.7%*	*30*	*1.6%*	*6.0*
- *LED - Dimmable*	*3*	*2.2%*	*10*	*0.5%*	*3.3*
CFL - Globe	39	28.7%	293	15.3%	7.5
CFL - Outdoor reflector (recessed outdoor)	36	26.5%	174	9.1%	4.8
CFL - Dimmable spiral	24	17.6%	115	6.0%	4.8
CFL - Standard spiral (non-incented bulbs)	6	4.4%	41	2.1%	6.8
Total for CFLs	**125**	**91.9%**	**1790**	**93.4%**	**14.3**
Total for LEDs	**24**	**17.6%**	**127**	**6.6%**	**5.3**

Table 40 shows the distribution of bulbs ordered by surveyed participants compared to program records provided by Duke Energy for all incented light bulbs sold through the Savings Store to Carolina System customers in 2013. Surveyed participants purchased a larger proportion of three-way CFLs (10.1% of bulbs ordered versus 6.4% among all Carolinas participants) and more dimmable spiral CFLs (6.1% versus 3.7% among all Carolinas participants), and somewhat fewer indoor reflector non-dimmable CFLs (17.2% versus 21.6% among all Carolinas participants) and globe CFLs (15.6% versus 20.9% among all Carolinas participants). Overall, 6.8% of survey participant bulbs ordered are LEDs compared to 6.0% of all Carolinas customer orders in 2013.

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Table 40. Survey Participant Bulbs Ordered Compared to Program Records

This table does not include non-incented bulb categories (standard spiral CFLs and holiday LEDs)	Survey participants incented bulbs ordered (N=1876)	Survey participant percent of bulbs	Program records from Duke Energy incented bulbs ordered in Carolinas from April 26 to Dec 31, 2013 (N=117,057)	Program records percent of bulbs	Survey proportion indexed to program records (100=same proportion)
Capsule (A Line) total	407	21.7%	24,735	21.1%	103
- *CFL*	*290*	*15.5%*	*18,322*	*15.7%*	*99*
- *LED*	*117*	*6.2%*	*6,413*	*5.5%*	*114*
CFL - Three-way spiral	190	10.1%	7,468	6.4%	159 *
CFL - Candelabra	335	17.9%	18,512	15.8%	113 *
Indoor reflector (recessed) total	362	19.3%	27,726	23.6%	82 *
- *CFL - Non-dimmable*	*322*	*17.2%*	*25,321*	*21.6%*	*79 **
- *CFL - Dimmable*	*30*	*1.6%*	*1,747*	*1.5%*	*107*
- *LED - Dimmable*	*10*	*0.5%*	*579*	*0.5%*	*108*
CFL - Globe	293	15.6%	24,412	20.9%	75 *
CFL - Outdoor reflector (recessed outdoor)	174	9.3%	9,937	8.5%	109
CFL - Dimmable spiral	115	6.1%	4,346	3.7%	165 *
Total for CFLs	**1749**	**93.2%**	**110,065**	**94.0%**	**99**
Total for LEDs	**127**	**6.8%**	**6,992**	**6.0%**	**114**

* *Asterisks denote a statistically significant difference at p<.05 or better using Student's t-test.*

Disposition of Savings Store Light Bulbs

Table 41 shows the disposition of Savings Store light bulbs purchased by survey participants in terms of bulb counts, and Table 42 presents the same data in percentages. Overall, 59.9% (1149 out of 1917) of Savings Store bulbs purchased by these participants are currently installed, though the installation rate is significantly higher for LEDs (80.3% or 102 out of 127) than CFLs (58.5% or 1047 out of 1790). Another third of program bulbs (31.4% or 602 out of 1917) are currently in storage for future use and, relating to the difference in installation rates, a significantly higher percentage of Savings Store CFLs are in storage (32.8% or 588 out of 1790) compared to LEDs (11.0% or 14 out of 127). About one bulb in twenty has been disposed of already[16] (4.5% or 87 out of 1917) and the status of the other 4.1% of these program bulbs (79 out of 1917) are not known.[17]

[16] These are bulbs that have been disposed of for any reason, including burning out, being or becoming defective, not fitting or functioning with fixtures, and bulbs given away to other people. Bulbs that were returned to the Savings Store are not included (non-functional bulbs that were replaced by functional bulbs are only counted once, and bulbs that were returned for cash or credit are not counted in the total bulbs received by survey participants).
[17] There are 79 bulbs purchased by survey respondents whose disposition is unknown; in some cases, the survey participant could not answer the question about what happened to the bulbs they purchased, and in other cases the participant had more installations than the survey asked them about. Survey participants are only asked about a maximum of three installations or one installation per bulb type (if more than three types of bulbs are installed).

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Table 41. Disposition of Savings Store Light Bulbs: Bulb Counts

	Bulbs currently installed	Bulbs in storage	Bulbs disposed (minus bulbs replaced)	Bulbs don't know	Total bulbs ordered (N=1917)
Capsule (A Line) total	251	140	3	13	407
- *CFL*	*159*	*126*	*2*	*3*	*290*
- *LED*	*92*	*14*	*1*	*10*	*117*
CFL - Three-way spiral	115	67	8	0	190
CFL - Candelabra	199	100	28	8	335
Indoor reflector (recessed) total	205	101	30	26	362
- *CFL - Non-dimmable*	*174*	*93*	*29*	*26*	*322*
- *CFL - Dimmable*	*21*	*8*	*1*	*0*	*30*
- *LED - Dimmable*	*10*	*0*	*0*	*0*	*10*
CFL - Globe	189	90	0	14	293
CFL - Outdoor reflector (recessed outdoor)	96	63	15	0	174
CFL - Dimmable spiral	77	33	3	2	115
CFL - Standard spiral (non-incented bulbs)	17	8	0	16	41
Total for CFLs	1047	588	86	69	**1790**
Total for LEDs	102	14	1	10	**127**
Grand total all bulbs	1149	602	87	79	**1917**

Table 42. Disposition of Savings Store Light Bulbs: Bulb Percentages

Rows total to 100%	Bulbs currently installed	Bulbs in storage	Bulbs disposed (minus bulbs replaced)	Bulbs don't know	Total bulbs ordered (N=1917)
Capsule (A Line) total	61.7%	34.4%	0.7%	3.2%	407
- *CFL*	*54.8%*	*43.4%*	*0.7%*	*1.0%*	*290*
- *LED*	*78.6%*	*12.0%*	*0.9%*	*8.5%*	*117*
CFL - Three-way spiral	60.5%	35.3%	4.2%	0.0%	190
CFL - Candelabra	59.4%	29.9%	8.4%	2.4%	335
Indoor reflector (recessed) total	56.6%	27.9%	8.3%	7.2%	362
- *CFL - Non-dimmable*	*54.0%*	*28.9%*	*9.0%*	*8.1%*	*322*
- *CFL - Dimmable*	*70.0%*	*26.7%*	*3.3%*	*0.0%*	*30*
- *LED - Dimmable*	*100.0%*	*0.0%*	*0.0%*	*0.0%*	*10*
CFL - Globe	64.5%	30.7%	0.0%	4.8%	293
CFL - Outdoor reflector (recessed outdoor)	55.2%	36.2%	8.6%	0.0%	174
CFL - Dimmable spiral	67.0%	28.7%	2.6%	1.7%	115
CFL - Standard spiral (non-incented bulbs)	41.5%	19.5%	0.0%	39.0%	41
Total for CFLs	58.5%	32.8%	4.8%	3.9%	**1790**
Total for LEDs	80.3%	11.0%	0.8%	7.9%	**127**
Grand total all bulbs	59.9%	31.4%	4.5%	4.1%	**1917**

Table 43 shows the disposition of bulbs by type in terms of the average numbers of bulbs per respondent. For example, this table shows that the 24 surveyed participants who purchased LEDs purchased an average of 5.3 LEDs apiece, while the 125 customers who purchased CFLs

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purchased an average of 14.3 CFLs apiece. The average number of bulbs purchased per type ranges from 3.3 indoor reflector LEDs per customer ordering this type of bulb up to 9.5 non-dimmable indoor reflector CFLs per customer ordering those bulbs. The typical customer surveyed purchased an average of 14.1 bulbs in total, and currently has 4.4 of these bulbs in storage and has disposed of 0.6 of their bulbs.

Table 43. Disposition of Savings Store Light Bulbs: Average Number of Bulbs per Participant Ordering Bulbs

	Bulbs purchased per customer	Bulbs installed per customer	Bulbs in storage per customer	Bulbs disposed per customer	Don't know bulbs per customer
Capsule (A Line) total (N=58)	7.0	4.3	2.4	0.1	0.2
- *CFL (N=38)*	*7.6*	*4.2*	*3.3*	*0.1*	*0.1*
- *LED (N=22)*	*5.3*	*4.2*	*0.6*	*0.0*	*0.4*
CFL - Three-way (N=48)	4.0	2.4	1.4	0.2	0.0
CFL - Candelabras (N=46)	7.3	4.3	2.2	0.7	0.1
Indoor reflector (recessed) total (N=40)	9.1	5.1	2.5	0.8	0.7
- *CFL - Non-dimmable (N=34)*	*9.5*	*5.1*	*2.7*	*0.9*	*0.8*
- *CFL - Dimmable (N=5)*	*6.0*	*4.2*	*1.6*	*0.2*	*0.0*
- *LED - Dimmable (N=3)*	*3.3*	*3.3*	*0.0*	*0.0*	*0.0*
CFL - Globes (N=39)	7.5	4.8	2.3	0.4	0.0
CFL - Outdoor reflectors (recessed outdoor) (N=36)	4.8	2.7	1.8	0.4	0.0
CFL - Dimmable spiral (N=24)	4.8	3.2	1.4	0.1	0.1
CFL - Standard spiral (N=6) (non-incented bulbs)	6.8	2.8	1.3	0.0	2.7
Total for CFLs (N=125)	14.3	8.4	4.7	0.7	0.6
Total for LEDs (N=24)	5.3	4.3	0.6	0.0	0.4
Grand total all bulbs (N=136)	14.1	8.4	4.4	0.6	0.6

Program Bulbs Stored for Future Use

Table 44 shows the reasons why customers with stored Savings Store bulbs have not installed all of their bulbs yet. Only about a quarter of surveyed customers (26.5% or 36 out of 136) confirmed that they have installed (or disposed of) every light bulb that they purchased from the Savings Store. Among the majority who do have spare program bulbs left over, the major reasons for not installing these bulbs are that they are not needed yet: 49 customers (36.0% of 136) still have incandescent bulbs in place and are waiting for them to burn out, while 42 customers (30.9% of 136) report that they already have specialty bulbs in every socket where they will fit. However, nearly one participant in ten (8.8% or 12 out of 136) reports that they have Savings Store bulbs that will not work with a lamp or fixture for which they were intended; there were fewer mentions of aesthetic concerns (2.2%), CFLs being slow to achieve full brightness (2.2%) and bulbs not being dimmable (1.5%). None (0.0%) of the participants surveyed complained about bulbs being too dim (or too bright) for their intended use however.

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Table 44. Reasons for Not Installing Stored Light Bulbs from the Savings Store (N=136)

Thinking of the specialty bulbs that you purchased from the Savings Store that you have stored for later use, what are the reasons that you have not installed all of these bulbs?	Carolina System (count)	Carolina System (percent)
Waiting for other standard bulbs to burn out	49	36.0%
I already have new specialty bulbs installed everywhere they will fit	42	30.9%
The other lamps or light fixtures in my home don't work with the new specialty bulbs	12	8.8%
Bulbs are for a project that is not completed yet (remodeling rooms, moving households)	5	3.7%
I need help with the installation / can't do it by myself	3	2.2%
I don't like the way the new specialty bulbs look in some of my fixtures	3	2.2%
The new specialty bulbs take too long to get to full brightness	3	2.2%
The new specialty bulbs do not work on a dimmer switch	2	1.5%
I just have not got around to it yet	2	1.5%
The new specialty bulbs are too dim / too bright for where I wanted to put them	0	0.0%
Unique reasons, listed below	2	1.5%
Don't know	3	2.2%
Do not have any Savings Store bulbs in storage (all bulbs are installed or disposed)	36	26.5%

Percentages total to more than 100% because participants could mention more than one reason.

Two surveyed participants gave unique reasons for not installing all of their Savings Store light bulbs; these are listed below.

- *We will upgrade all the bulbs on one fixture when one of the bulbs burns out.*
- *We only have six standard bulbs installed anymore, and they are rarely used.*

Surveyed customers with spare program bulbs in storage for future use were asked if they intend to use their stored bulbs, and how long they think it will take to use all of these stored bulbs. As seen in Table 45, intention to use stored program bulbs by type runs from a low of 87.5% (21 out of 24) for outdoor reflectors up to 100.0% for stored indoor reflectors, globes, dimmable spirals and standard spirals. Generally only slightly more than half of customers with spare bulbs are able to estimate how long it will take them to use all of their installed bulbs; estimates of how many months to use stored bulbs by type ranges from a low of 14.6 months for indoor reflectors up to more than 20 months for three-way bulbs (20.1 months), globe bulbs (21.0 months), dimmable spirals (22.8 months) and standard spirals (30.0 months based on one estimate). This indicates that most customers who purchase bulbs from the Savings Store may not need to purchase replacement bulbs for at least a year or two (as seen previously in Table 44, at least 71.3% or 97 out of 136 surveyed participants have spare program bulbs in storage).

Dividing the estimated average number of months to use stored program bulbs by the number of bulbs in storage yields an estimate of the number of months customers believe they will go between bulb replacements. Indoor reflector bulbs are estimated to be consumed the fastest, with stored bulbs estimated to be used every 3.4 months on average, while three-way CFLs are

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estimated to be consumed the slowest, with stored bulbs being used an average of every 10.1 months.[18]

Table 45. Intent to Use Stored Bulbs among Customers with Program Bulbs in Storage

Bases: number of customers with some program bulbs in storage	Percent who definitely intend to use stored bulbs	Percent who are able to estimate how long it will take to use stored bulbs	Average estimated months to use stored bulbs (among those able to estimate)	Average number of stored program bulbs per customer with stored bulbs	Average estimated months per stored bulb
Capsule (A Line) (N=33)	93.9%	60.6%	16.2	4.2	3.9
Three-way spiral (N=32)	93.8%	53.1%	20.1	2.0	10.1
Candelabra (N=29)	93.1%	59.3%	16.5	3.4	4.8
Indoor reflector (recessed) (N=24)	100.0%	58.3%	14.6	4.3	3.4
Globe (N=20)	100.0%	60.0%	21.0	4.4	4.8
Outdoor reflector (recessed outdoor) (N=24)	87.5%	54.2%	19.8	2.6	7.6
Dimmable spiral (N=12)	100.0%	41.7%	22.8	2.8	8.3
Standard spiral (N=2) (non-incented bulbs)	100.0%	50.0%	30.0	4.0	7.5

Customers with extra program bulbs in storage who are not certain in their intention to use their stored program bulbs in the future were asked why not; these responses are listed below (one customer has both spare candelabra and three-way CFLs that they do not intend to use).

- *I don't know.* (Eight spare capsule CFLs)
- *I don't know.* (Two spare capsule CFLs)
- *I plan to return the bulbs; I got something totally different than I thought I was getting. I thought I was getting a six-pack of each, but I ended up with one of each bulb.* (One spare three-way CFL and one spare candelabra CFL)
- *I ordered four three-way bulbs. The first one I installed burned out quickly and I didn't replace it with one of the other three-way CFLs purchased at the same time. I am not sure if I will switch it to one of those bulbs, ever. Right now I have a non-three-way CFL installed there.* (Three spare three-way CFLs)
- *They don't fit in my overhead fan. It takes regular-sized light bulbs. I called Duke Energy to see if I could buy an adapter but Duke doesn't sell them. They advised me to buy them at a department store but none carry the adapter. Lowe's said they used to and that I can order them online but I need five and that's about $50.* (Six spare candelabra CFLs)
- *They don't fit into the socket. The back of the bulb doesn't allow the bulb to be screwed in. The fixture was installed in the late 1970s.* (Two spare outdoor reflector CFLs)

[18] The expected lifespan of CFL and LED bulbs is much longer than three to ten months. However customers may be referring to how long currently installed incandescent bulbs will last until they need to be replaced with program bulbs. It is also possible that customers who answered this question may tend to underestimate how long efficient bulbs will last; about 40% of respondents were unable to estimate how long their stored program bulbs will last.

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- *One of the CFLs didn't fit into the socket I tried to put it in, but we will most likely be able to use it somewhere eventually.* (One spare outdoor reflector CFL)
- *I have become more interested in solar-powered outdoor lighting.* (Two spare outdoor reflector CFLs)

Table 46 indicates that the effect of reduced pricing and low-priced multi-packaging had a significant effect on customers purchasing spare bulbs that they did not need immediately. Seventy-one customers reported that the reduced pricing caused them to purchase more bulbs than they otherwise would have, and these households have an average of 5.8 program bulbs currently in storage which is nearly twice as many as respondents giving other responses (3.0 or less per household). Fifty-nine customers who reported that multi-pack pricing caused them to purchase more bulbs than they would have otherwise have an average of 6.4 stored program bulbs per household, which is more than twice as many bulbs as households giving other responses (2.9 or less per household). Both of these differences between groups are statistically significant at $p<.05$ using ANOVA (also see Table 30 for complete responses to these survey questions). This analysis indicates that even when pricing does not motivate customers to purchase more bulbs than they otherwise would have, the average participant household is still purchasing about three light bulbs more than their immediate installation needs (out of an average of 14.1 program bulbs purchased per surveyed household).

Table 46. Stored Bulbs and the Effect of Reduced Pricing and Multi-Packaging (N=136)

Numbers in cells are the average number of spare program bulbs currently in storage per household (total all bulb types)	**More bulbs than otherwise**	**Same number of bulbs**	**Fewer bulbs than otherwise**	**Don't know / other responses**
Reduced pricing caused customer to purchase . . .	5.8	2.9	3.0	2.6
Availability of low-priced multi-packs caused customer to purchase . . .	6.4	2.9	NA	2.1

Program Bulbs Disposed Of

Surveyed participants who disposed of program bulbs were asked how many were disposed of as well as how and why; these responses are listed for each bulb type below. The number of customers disposing of each particular type of bulb is relatively small, so these findings are more anecdotal than quantitative. Generally, the most common reason for disposing of program bulbs is that they have burned out; some customers also report receiving damaged or defective bulbs, or bulbs that don't fit in their intended fixtures. Many of the customers who received unusable bulbs did not try to return them for replacements or refunds, but merely threw the bulbs away. These customers also seem more likely to throw their non-working CFLs in the trash than to dispose of them properly. A handful of customers also gave working bulbs to friends and family members, including one customer who purchased light bulbs as a gift and never intended to use them herself.

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Candelabra bulbs disposed of (N=10)

- *Two of the bulbs didn't work. When we screwed them in they flashed briefly and then went forever dark. My husband threw them away.*
- *I had four defective bulbs that would not light, so I returned them for replacements.*
- *I ordered twelve candelabra bulbs, but they didn't fit my fixture. They sent me a return label and I shipped them back via UPS or the Post Office, I don't recall.*
- *The bulb was too long to fit in the fixture for which it was intended, so I returned it.*
- *One bulb burned out, so my husband changed it.*
- *One of the bulbs burned out, so I recycled it.*
- *Two of the bulbs burned out in a couple of months, so I threw them away.*
- *Two of the candelabra bulbs burned out, so I am keeping them in a box to get rid of them the next time I go to the recycling center.*
- *I gave all six of them to my daughter, as she needed and wanted candelabra bulbs for her home.*
- *I gave one of my spare bulbs to a friend to try out.*

Outdoor reflector (recessed outdoor) bulbs disposed of (N=8)

- *They sent the wrong bulbs. The box was labeled Indoor Reflector bulbs. They sent me a return label and I sent them back.*
- *One outdoor reflector bulb arrived non-working and was replaced by Duke. I wrapped up the non-working bulb and threw it in the trash.*
- *Three of these bulbs have burned out so far. They are still in place because they are too hard for me to reach.*
- *One of the bulbs didn't work, so I took it apart then threw it away.*
- *One of the bulbs burned out, so I recycled it.*
- *One of the bulbs burned out; it is sitting in a box waiting to be recycled.*
- *One of the outdoor reflector bulbs stopped working after only a few months of use; I threw it in the trash.*
- *I had two leftover outdoor bulbs that I wasn't using, so I gave them away to friends.*

Three-way bulbs disposed of (N=7)

- *One bulb arrived non-working, so I threw it in the trash.*
- *Two of the three-way bulbs burned out quickly; I threw them in the trash.*
- *One bulb burned out, so I threw it away.*
- *One of the three different light levels stopped working, so I threw the bulb away.*
- *The lowest level beam burned out. I threw the bulb away, but now I know better to take it to Lowe's for proper disposal.*
- *One of the bulbs burned out, but I'm not sure what happened to it. My son comes to take care of that for me and he takes the bulbs with him.*

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- *One three-way bulb burned out, so I disposed of it at the dump where they take CFLs for recycling.*

Indoor reflector (recessed) bulbs disposed of (N=6)

- *I ordered 15 indoor reflectors, and seven of them arrived broken. I threw the broken ones away.*
- *I ordered twelve indoor reflectors but they didn't fit, so I gave them all to a family member who could use them.*
- *One of the bulbs burned out within 24 hours. I don't remember what we did with it.*
- *One of the bulbs ceased working, so I wrapped it up and threw it in the trash.*
- *One of the bulbs burned out, so I recycled it at Lowe's.*
- *I had meant to buy outdoor reflector CFLs instead of indoor reflector CFLs, so I returned them. However, I am still using the indoor reflector LEDs that I ordered at the same time.*

Globe bulbs disposed of (N=5)

- *I ordered five globes but they didn't fit, so I returned them.*
- *One of the globes didn't light up, so I threw it away.*
- *One of the globes broke, so I threw it away.*
- *One of the globes was flickering. It is still in a box in my house; I will recycle it when I get more bad ones.*
- *I got these six globe bulbs to give to a family member as a gift.*

Capsule (A Line) bulbs disposed of (N=4)

- *One of the capsule bulbs burned out, so my husband changed it.*
- *My wife dropped one of the capsules and it broke.*
- *I had extra capsule bulbs in storage so I gave one to my daughter.*
- *One of the capsules was not the right color of light for where I wanted to use it. I still have the bulb and will use it somewhere else.*

Dimmable spiral bulbs disposed of (N=3)

- *One of the bulbs burned out in a week or two, so I threw it away.*
- *One of them burned out, so I disposed of it.*
- *One bulb burned out, so I recycled it.*

Light Bulb Installations by Room

Table 47 shows how many rooms in participant households have different types of program bulbs installed. Standard spirals (2.5 rooms per household), three-way bulbs (2.1 rooms) and capsule bulbs (2.0 rooms) are the bulb types which are installed in the most places, while outdoor

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reflectors (1.4 locations[19]), candelabras (1.5 rooms) and globes (1.6 rooms) are installed in the fewest number of places.

Table 47. Number of Rooms Where Program Bulbs are Installed

Bases: number of customers with bulbs of each type currently installed	Number of rooms with bulbs installed	Average number of rooms installed per household
Capsule (A Line) (N=50)	102	2.0
Three-way spiral (N=42)	87	2.1
Candelabra (N=35)	53	1.5
Indoor reflector (recessed) (N=37)	67	1.9
Globe (N=34)	53	1.6
Outdoor reflector (recessed outdoor) (N=30)	43	1.4
Dimmable spiral (N=22)	38	1.7
Standard spiral (N=4) (non-incented bulbs)	10	2.5

Surveyed participants were asked to answer questions about the installation of program bulbs, including where in their home those bulbs are installed. Table 48 shows a cross tabulation of bulb types by rooms installed (note that this table does not show numbers of bulbs installed or the number of participants installing bulbs; the counts in this table are the counts of surveyed installation sites by bulb type[20]).

The largest number of surveyed installations are in living and family rooms (71 installation sites), followed by bedrooms (36 master bedrooms plus 13 "other" bedrooms), bathrooms (45 sites), kitchens (39 sites), and outside on the exterior of the home (33 sites). Some bulb types are closely related to installation locations, such as outdoor reflectors being installed on the exterior of the home (93.3% or 28 out of 30 installations), globe bulbs being installed in bathrooms (73.0% or 27 out of 37) and three-way bulbs being installed in living and family rooms (59.3% or 32 out of 54). However, for the remaining bulbs types no room received more than about a third of the bulbs of that type installed. In particular, capsule bulbs are installed in many different

[19] Unlike the other light bulbs sold at the Savings Store, outdoor reflectors are primarily intended for outdoor use and thus are not generally installed in "rooms" (though these bulbs may be installed in more than one exterior location). Among the 30 customers with installed outdoor reflectors from the Savings Store, 28 (93.3%) had these bulbs installed on the exteriors of their homes; the other two customers installed these bulbs "*on the back porch*" and "*in the carport*" (locations which are probably at least semi-exposed to the outdoors).

[20] Customers who purchased three or more types of bulbs were asked about one installation of each bulb type. Customers who purchased two bulb types were asked about one installation of each bulb type, plus a third installation of either type. Customers who purchased only one type of bulb were asked about up to three installations of that bulb type. However, some customers who purchased Savings Store bulbs of a given type had not installed any of them by the time of this evaluation survey (shown as "none installed" in Table 48), and not all customers had as many bulbs installed as this survey asks them about (for example, a customer who bought one type of bulb and only had them installed in one or two places would not be able to answer questions about a third installation). There are also customers who had more installations in their home than they were surveyed about (though the methodology was to survey about at least one installation of every bulb type per household). This data collection approach is not exhaustive, but is meant to maximize installation data collected while not letting the survey interviews get too long or too complicated. Out of 1149 program bulbs reported installed by survey participants, data was collected about 304 installations which account for 914 program bulbs (79.5% of 1149 bulbs reported installed).

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locations throughout the home (no more than 17.1% or 12 out of 70 capsule bulbs were installed in any one type of room).

Table 48. Rooms in the Home Where Program Bulbs are Installed

Cells are counts of surveyed installations	Capsule (A Line)	Three -way	Candel -abra	Indoor reflect.	Globe	Out-door reflect.	Dim. spiral	Std. spiral	Total
Living/family room	12	32	4	12	2	0	6	3	**71**
Bathroom	9	0	4	2	27	0	3	0	**45**
Kitchen	10	0	9	17	0	0	3	0	**39**
Master bedroom	11	12	2	3	4	0	4	0	**36**
Other bedroom	8	2	1	1	0	0	0	1	**13**
Outdoors/exterior	3	0	1	0	0	28	1	0	**33**
Dining room	2	2	12	2	2	0	5	0	**25**
Office/den	6	5	2	2	0	0	1	0	**16**
Hall	3	1	4	1	1	0	1	0	**11**
Closet	1	0	0	0	0	0	0	0	**1**
Other (specify)	5	0	1	2	1	2	2	1	**14**
Total installations	**70**	**54**	**40**	**42**	**37**	**30**	**26**	**5**	**304**
None installed	8	6	11	3	5	6	2	2	**43**

Fourteen installations described by surveyed participants were categorized as "other" rooms or locations in the home; these are listed below, along with the type and number of bulbs installed there.

Capsule (A Line) installations (N=5)

- *Laundry room: installed four bulbs.*
- *Laundry room: installed one bulb.*
- *Storage room: installed one bulb.*
- *"Breakfast room": installed five bulbs.*
- *"Bonus room": installed two bulbs.*

Indoor reflector (recessed) installations (N=2)

- *"Kitchen/den/dining room": installed six bulbs.*
- *"Bonus room": installed two bulbs.*

Outdoor reflector (recessed outdoor) installations (N=2)

- *Carport: installed two bulbs.*
- *Back porch: installed four bulbs.*

Dimmable spiral installations (N=2)

- *Porch: installed two bulbs.*
- *One bulb unknown: "I lost track of where that bulb is; it is used somewhere like a normal spiral bulb because it didn't fit the fixtures for the dimmable lighting."*

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Globe installations (N=1)

- *Breakfast nook: installed five bulbs.*

Candelabra installations (N=1)

- *Exercise room: installed four bulbs.*

Standard spiral installations (N=1)

- *Sun porch: installed four bulbs.*

The average number of program bulbs installed per room is three (3.0), but varies from an average of fewer than two in bedrooms (1.9 bulbs per master bedroom and 1.8 per "other" bedroom) to up to four or more in bathrooms (4.0 bulbs), kitchens (4.1 bulbs) and dining rooms (4.3 bulbs). Table 49 also shows that dimmable bulbs are most often found in dining rooms, where more than a third of the bulbs replaced with program bulbs were dimmable (37.0% or 40 out of 108 bulbs). None of the surveyed participants had dimmable bulbs installed in halls or closets (0.0%), and only one reported having dimmable bulbs installed outdoors (5.4% of bulbs replaced with program bulbs); dimmable bulbs are also rarely found in bathrooms (6.7% of bulbs replaced with program bulbs).

Table 49. Bulbs Installed per Room and Dimmable Bulbs per Room

	Surveyed installations	Total bulbs installed	Average bulbs per installation	Dimmable bulbs replaced	Percent of dim. bulbs
Living/family room	71	170	2.4	17	10.0%
Bathroom	45	180	4.0	12	6.7%
Kitchen	39	158	4.1	30	19.0%
Master bedroom	36	69	1.9	6	8.7%
Other bedroom	13	24	1.8	2	8.3%
Outdoors/exterior	33	93	2.8	5	5.4%
Dining room	25	108	4.3	40	37.0%
Office/den	16	37	2.3	7	18.9%
Hall	11	29	2.6	0	0.0%
Closet	1	3	3.0	0	0.0%
Other locations	14	43	3.1	7	16.3%
Total	**304**	**914**	**3.0**	**126**	**13.8%**

Sometimes when customers install new light bulbs it is part of a larger remodeling project. Customers who installed program bulbs were asked if they made any changes to the fixture other than installing new light bulbs. As indicated by Table 50, overall about one installation in twenty-five (3.9% or 10 out of 252) involves changing something about the fixture beyond replacing the light bulbs. Capsule bulb installations are the most likely to involve fixture changes (10.0% or 5 out of 50 customers installing these bulbs), followed by indoor reflectors (8.1% or 3 out of 37).

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Table 50. Other Changes to Fixtures besides Light Bulb Replacement

Bases: number of customers with bulbs of each type currently installed	Customers who made changes to fixtures (count)	Customers who made changes to fixtures (percent)
Capsule (A Line) (N=50)	5	10.0%
Three-way spiral (N=42)	0	0.0%
Candelabra (N=35)	0	0.0%
Indoor reflector (recessed) (N=37)	3	8.1%
Globe (N=34)	0	0.0%
Outdoor reflector (recessed outdoor) (N=30)	1	3.3%
Dimmable spiral (N=22)	1	4.5%
Standard spiral (N=4) (non-incented bulbs)	0	0.0%
All surveyed installations (N=254)	10	3.9%

The ten installations that involved additional fixture changes beyond replacing light bulbs are listed by specialty bulb type below.

Capsule (A Line) installations (N=5)

- *I had to install flexible shafts and Y-adaptors that were 60 watt.*
- *It was part of a new construction.*
- *The old fixture was just an open socket on a beam; now the ceiling is finished and the light is recessed.*
- *We remodeled the room.*
- *We removed the dimmer feature.*

Indoor reflector (recessed) installations (N=3)

- *I installed this fixture. There wasn't a fixture here previously.*
- *I re-wired the fixture to have fewer lights controlled by the one switch.*
- *I changed the switch from dimmable to non-dimmable.*

Outdoor reflector (recessed outdoor) installations (N=1)

- *I changed the sensitivity of the motion detector and slightly increased the amount of time that the lights are on once triggered.*

Dimmable spiral installations (N=1)

- *I replaced the light fixture with a newer one.*

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Previously Installed Light Bulbs

Table 51 shows that more than three out of four installed Savings Store bulbs replaced incandescent or halogen light bulbs (78.6% or 718 out of 914 bulbs), while 15.9% (145 out of 914) replaced CFLs and only 0.2% (2 out of 914) replaced LED lighting. About one program bulb in thirty, or 3.4% (31 out of 914), was installed in a previously empty socket (or in a newly installed fixture where there previously was no socket).

Table 51. Types of Previously Installed Bulbs Replaced by Program Bulbs

	Total bulbs installed	Incand. / halogen	CFL	LED	No bulb in socket	Don't know
Living/family room	170	75.3%	17.1%	0.0%	4.1%	3.5%
Bathroom	180	87.8%	12.2%	0.0%	0.0%	0.0%
Kitchen	158	82.9%	13.9%	0.0%	3.2%	0.0%
Master bedroom	69	68.1%	26.1%	0.0%	0.0%	5.8%
Other bedroom	24	54.2%	33.3%	0.0%	0.0%	12.5%
Outdoors/exterior	93	90.3%	3.2%	2.2%	0.0%	4.3%
Dining room	108	64.8%	21.3%	0.0%	13.9%	0.0%
Office/den	37	78.4%	21.6%	0.0%	0.0%	0.0%
Hall	29	72.4%	13.8%	0.0%	13.8%	0.0%
Closet	3	0.0%	100.0%	0.0%	0.0%	0.0%
Other locations	43	86.0%	11.6%	0.0%	0.0%	2.3%
Total	**914**	**78.6%**	**15.9%**	**0.2%**	**3.4%**	**2.0%**

Table 52 shows the average wattage of replaced light bulbs by room type; the highest-wattage bulbs previously installed were exterior bulbs (89.2 watts per bulb) and bulbs installed in living and family rooms (57.5 watts) and master bedrooms (52.0 watts) along with "other" miscellaneous locations (62.6 watts). The lowest average wattages per bulb by room (not including one participant who had three 13-watt CFLs in a closet) are found in dining rooms (29.9 watts), halls (33.9 watts) and bathrooms (40.6 watts). Overall, the average wattage of light bulbs replaced by Savings Store bulbs is 49.6 watts (average wattages include previously-installed efficient lighting as well as standard bulbs).

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Table 52. Wattage of Previously Installed Bulbs Replaced by Program Bulbs

	Total bulbs installed	Program bulbs replaced other bulbs	No bulbs previously in sockets	Bulbs for which participants reported wattage	Average wattage of replaced bulbs[21]
Living/family room	170	157	7	124	57.5
Bathroom	180	180	0	146	40.6
Kitchen	158	153	5	126	49.0
Master bedroom	69	65	0	50	52.0
Other bedroom	24	21	0	7	40.6
Outdoors/exterior	93	89	0	52	89.2
Dining room	108	93	15	77	29.9
Office/den	37	37	0	33	42.0
Hall	29	25	4	23	33.9
Closet	3	3	0	3	13.0
Other locations	43	42	0	42	62.6
Total	**914**	**865**	**31**	**683**	**49.6**

Eighteen bulbs which participants could not recall ("don't know" type of bulb) are not shown in this table; therefore, the two middle columns total to 18 fewer bulbs than the leftmost "total bulbs" column. "Bulbs for which participants reported wattage" is the valid number of bulbs used to compute watts per replaced bulb.

Table 53 shows what participants did with their previously installed bulbs after replacing them with Savings Store bulbs. The bulbs from about half of these installations (47.9% or 140 out of 292) are thrown away, while another 8.9% (26 out of 292) are recycled. Bulbs from a third of program installations (33.2% or 97 out of 292) are being stored for future use, while the old bulbs from one installation in twenty are given away to other people (4.8% or 14 out of 292) and in 1.4% of installations (4 out of 292) the old bulbs were moved into other sockets and are still being used. Customers are most likely to store their old bulbs that were replaced by program candelabra bulbs (44.7% or 17 out of 38), dimmable spirals (43.5% or 10 out of 23) and three-way bulbs (40.7% or 22 out of 54).

[21] Average wattage of replaced bulbs only includes installations that replaced previously-installed light bulbs where the respondent was able to recall the wattage of the replaced bulbs. This average does not include "no bulbs previously installed" (which would represent zero watts previously used). All types of bulbs (incandescent, halogen, CFL and LED) are combined in the average wattage of replaced bulbs, and adjustment factors are applied for dimmable and three-way bulbs. Wattages reported here include 15 installed un-incented spiral CFLs from the Savings Store which are counted as spillover rather than gross program savings in the Impact section.

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Table 53. Disposal of Previously Installed Bulbs

Rows total to 100%. Base: 292 installations with valid responses	Thrown away	Recycled	Given away	Stored for future use	Being used in different socket	Multiple outcomes	Don't know
Capsule (A Line) (N=68)	45.6%	17.6%	2.9%	26.5%	2.9%	4.4%	0.0%
Three-way spiral (N=54)	44.4%	7.4%	7.4%	40.7%	0.0%	0.0%	0.0%
Indoor reflector (recessed) (N=39)	51.3%	12.8%	7.7%	25.6%	0.0%	0.0%	2.6%
Candelabra (N=38)	50.0%	2.6%	0.0%	44.7%	2.6%	0.0%	0.0%
Globe (N=37)	54.1%	2.7%	2.7%	27.0%	0.0%	10.8%	2.7%
Outdoor reflectors (recessed outdoor) (N=28)	50.0%	7.1%	7.1%	35.7%	0.0%	0.0%	0.0%
Dimmable spiral (N=23)	39.1%	4.3%	8.7%	43.5%	0.0%	4.3%	0.0%
Standard spiral (N=5)	60.0%	0.0%	0.0%	0.0%	20.0%	0.0%	20.0%
Total (N=292)	**47.9%**	**8.9%**	**4.8%**	**33.2%**	**1.4%**	**2.7%**	**1.0%**

Intention to Install Efficient Lighting in the Absence of the Program and in the Future

Surveyed participants were asked what type of bulbs they would have installed in the sockets where they installed Savings Store bulbs if this program had not been available. Table 55 indicates that although 42.0% (105 out of 250) of surveyed installations would have had CFLs installed in them even in the absence of the program, a slightly larger 45.6% (114 out of 250) would have had incandescent bulbs installed. Very few installations would have received LED bulbs in the absence of the program (0.8% or 2 out of 250), and most halogen bulbs that would have been installed would have gone outside (15.2% or 5 out of 33 outdoor installations, accounting for 62.5% of 8 installations where halogen bulbs would have been used in the absence of the program).

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Table 54. Type of Bulbs That Would Have Been Installed in the Absence of the Program by Room

Rows total to 100%. Base: 250 installations by bulb type[22]	Incandescent	Halogen	CFL	LED	Leave sockets empty	Don't know
Living/family room (N=56)	46.4%	1.8%	42.9%	0.0%	1.8%	7.1%
Bathroom (N=39)	56.4%	0.0%	35.9%	0.0%	0.0%	7.7%
Kitchen (N=36)	41.7%	2.8%	44.4%	0.0%	2.8%	8.3%
Master bedroom (N=24)	45.8%	0.0%	41.7%	0.0%	0.0%	12.5%
Other bedroom (N=6)	50.0%	0.0%	50.0%	0.0%	0.0%	0.0%
Outdoors/exterior (N=33)	33.3%	15.2%	39.4%	3.0%	0.0%	9.1%
Dining room (N=23)	47.8%	0.0%	43.5%	4.3%	4.3%	0.0%
Office/den (N=12)	33.3%	0.0%	58.3%	0.0%	0.0%	8.3%
Hall (N=8)	87.5%	0.0%	12.5%	0.0%	0.0%	0.0%
Closet (N=1)	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Other locations (N=12)	33.3%	8.3%	50.0%	0.0%	0.0%	8.3%
Total (N=250)	**45.6%**	**3.2%**	**42.0%**	**0.8%**	**1.2%**	**7.2%**

Table 55 shows what types of light bulbs would have been installed in the absence of the program by specialty bulb type, rather than by room as shown in Table 54. The bulbs types which are least likely to have been replaced with efficient lighting in the absence of the program are candelabra bulbs (31.4% or 11 out of 35), globe bulbs (32.4% or 11 out of 24) and outdoor reflectors (33.3% or 10 out of 30); correspondingly, candelabras (65.7% or 23 out of 35) and globes (58.8% or 20 out of 34) are the bulb types most likely to have been replaced with incandescent bulbs in the absence of the program. Outdoor reflectors are the bulbs most likely to have been replaced with halogen bulbs in the absence of the program (20.0% or 6 out of 30 outdoor reflector installations, accounting for 75.0% of 8 installations where halogen bulbs would have been used in the absence of the program). Overall, the specialty bulb category that is most likely to be replaced with efficient bulbs even in the absence of the program is capsule bulbs (60.0% or 30 out of 50 would have purchased CFLs or LEDs anyway if the Savings Store had not been available).

[22] Surveyed participants were asked what type of bulbs they would have installed in the absence of the program only for the first bulbs of a type that were installed. Thus if a customer was asked about two or more installations of a particular bulb type, they were only asked what they would have done in the absence of the program once. Questions about additional bulb installations beyond the first of a particular type are limited to the bulb that was replaced and the usage of the socket. Therefore the question about intentions in the absence of the program is asked once "per respondent per bulb type" (a respondent who installed three types of bulbs is asked once for each bulb type, regardless of how many installations per bulb type).

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Table 55. Type of Bulbs That Would Have Been Installed in the Absence of the Program by Specialty Bulb Type

Rows total to 100%. Base: 250 installations by bulb type	Incandescent	Halogen	CFL	LED	Leave sockets empty	Don't know
Capsule (A Line) (N=50)	30.0%	2.0%	56.0%	4.0%	0.0%	8.0%
Three-way spiral (N=42)	50.0%	0.0%	40.5%	0.0%	0.0%	9.5%
Indoor reflector (recessed) (N=37)	40.5%	2.7%	45.9%	0.0%	5.4%	5.4%
Candelabra (N=35)	65.7%	0.0%	31.4%	0.0%	0.0%	2.9%
Globe (N=34)	58.8%	0.0%	32.4%	0.0%	0.0%	8.8%
Outdoor reflectors (recessed outdoor) (N=30)	36.7%	20.0%	33.3%	0.0%	0.0%	10.0%
Dimmable spiral (N=22)	40.9%	0.0%	50.0%	0.0%	4.5%	4.5%
Standard spiral (N=0)	NA	NA	NA	NA	NA	NA
Total (N=250)	**45.6%**	**3.2%**	**42.0%**	**0.8%**	**1.2%**	**7.2%**

Next, participants were asked what type of lighting they will install when their current program bulbs burn out. Table 56 shows that after participating in this program, customers are only intending to install incandescent bulbs in 3.6% (9 out of 250) of installations and none of the surveyed customers plan to install any halogen bulbs (0.0% of 250). Overwhelmingly, these customers say they intend to install CFLs in the places where Savings Store bulbs are currently installed (84.0% or 210 out of 250), and the number of installations where customers plan to install LEDs is also much higher after the program (10.0% or 25 out of 250) compared to their intentions in the absence of the program (0.8% or 2 out of 250).

Table 56. Type of Bulbs That Will Be Installed When Savings Store Bulbs Burn Out by Room

Rows total to 100%. Base: 250 installations by bulb type	Incandescent	Halogen	CFL	LED	Leave sockets empty	Don't know
Living/family room (N=56)	3.6%	0.0%	80.4%	16.1%	0.0%	0.0%
Bathroom (N=39)	0.0%	0.0%	97.4%	0.0%	0.0%	2.6%
Kitchen (N=36)	0.0%	0.0%	77.8%	13.9%	0.0%	8.3%
Master bedroom (N=24)	12.5%	0.0%	75.0%	8.3%	0.0%	4.2%
Other bedroom (N=6)	0.0%	0.0%	83.3%	16.7%	0.0%	0.0%
Outdoors/exterior (N=33)	0.0%	0.0%	93.9%	6.1%	0.0%	0.0%
Dining room (N=23)	8.7%	0.0%	73.9%	17.4%	0.0%	0.0%
Office/den (N=12)	8.3%	0.0%	83.3%	8.3%	0.0%	0.0%
Hall (N=8)	12.5%	0.0%	75.0%	12.5%	0.0%	0.0%
Closet (N=1)	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Other locations (N=12)	0.0%	0.0%	91.7%	0.0%	0.0%	8.3%
Total (N=250)	**3.6%**	**0.0%**	**84.0%**	**10.0%**	**0.0%**	**2.4%**

Table 57 shows the same data as the previous table, only by specialty bulb type rather than by room. For every bulb type except dimmable spirals, at least 90% of surveyed participants plan to purchase efficient lighting to replace their program bulbs when they burn out; however, three out of 22 (13.6%) customers who installed dimmable spirals from the program intend to install incandescent bulbs in these sockets in the future. A third of the capsule bulb installations (32.0%

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or 16 out of 50) are intended to be replaced with LED bulbs in the future; program capsule bulbs are currently installed in 64.0% of the 25 installations where customers intend to put LEDs in the future.

Table 57. Type of Bulbs That Will Be Installed When Savings Store Bulbs Burn Out by Specialty Bulb Type

Rows total to 100%. Base: 250 installations by bulb type	Incandescent	Halogen	CFL	LED	Leave sockets empty	Don't know
Capsule (A Line) (N=50)	2.0%	0.0%	58.0%	32.0%	0.0%	8.0%
Three-way spiral (N=42)	7.1%	0.0%	88.1%	4.8%	0.0%	0.0%
Indoor reflectors (recessed) (N=37)	0.0%	0.0%	89.2%	5.4%	0.0%	5.4%
Candelabra (N=35)	2.9%	0.0%	91.4%	5.7%	0.0%	0.0%
Globe (N=34)	2.9%	0.0%	94.1%	2.9%	0.0%	0.0%
Outdoor reflectors (recessed outdoor) (N=30)	0.0%	0.0%	96.7%	3.3%	0.0%	0.0%
Dimmable spiral (N=22)	13.6%	0.0%	81.8%	4.5%	0.0%	0.0%
Standard spiral (N=0)	NA	NA	NA	NA	NA	NA
Total (N=250)	**3.6%**	**0.0%**	**84.0%**	**10.0%**	**0.0%**	**2.4%**

Table 58 presents the average hours of use for sockets where Savings Store bulbs have been installed by room. The rooms where bulbs get the most hours of use are kitchens (6.3 hours per day), offices and dens (5.6 hours) and living and family rooms (4.7 hours). Aside from one participant who put program bulbs in a closet (used 0.3 hours per day), the bulbs that get used the least are in bathrooms (2.4 hours per day) and "other" (not master) bedrooms (2.2 hours). There are some slight differences by room in terms of the hours of use before and after the program; the overall average hours of use per bulb rounds off to 4.3 hours per day for sockets with program bulbs installed after the program, and to 4.2 hours of usage per day before the program bulbs were installed.

Table 58. Program Bulb Hours of Use by Room

Base: 293 installations by bulb type with valid responses	Average hours of use per bulb (current)	Average hours of use per bulb (before program)
Living/family room (N=68)	4.7	4.5
Bathroom (N=45)	2.4	2.4
Kitchen (N=39)	6.3	6.3
Master bedroom (N=36)	3.7	3.7
Other bedroom (N=12)	2.2	2.4
Outdoors/exterior (N=31)	4.1	3.8
Dining room (N=23)	4.9	4.6
Office/den (N=15)	5.6	5.6
Hall (N=10)	2.7	2.2
Closet (N=1)	0.3	0.3
Other locations (N=13)	3.9	3.9
Total (N=293)	**4.3**	**4.2**

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Table 59 presents the average hours of use for sockets where Savings Store bulbs have been installed by specialty bulb type. The types of specialty bulbs that have the highest hours of use are capsule bulbs (5.3 hours per day) and three-way bulbs (5.5 hours), while the least hours of use are for standard spirals (2.3 hours) and globe bulbs (2.9 hours).

Table 59. Program Bulb Hours of Use by Bulb Type

Base: 293 installations by bulb type with valid responses	**Average hours of use per bulb (current)**	**Average hours of use per bulb (before program)**
Capsule (A Line) (N=69)	5.3	5.1
Three-way spiral (N=52)	5.5	5.6
Indoor reflector (recessed) (N=40)	4.6	4.4
Candelabra (N=38)	4.1	4.1
Globe (N=37)	2.9	2.9
Outdoor reflector (recessed outdoor) (N=28)	3.8	3.5
Dimmable spiral (N=24)	3.7	3.3
Standard spiral (N=5)	2.3	2.3
Total (N=293)	**4.3**	**4.2**

CFLs and LEDs Installed Before Participating in the Program

Table 60 indicates that 85.3% of participants (116 out of 136) already had some CFLs installed in their homes before purchasing bulbs from the Savings Store. The 113 surveyed customers who already had CFLs installed before the program and who were able to answer the question "how many?" had an average of 13.8 CFLs apiece before the program; including the 17 customers who did not have any CFLs installed before the program, the average number of CFLs installed before the program is 12.0 per household (not including those who did not know if or how many CFLs they had installed). The median number of CFLs per surveyed household installed before the program is ten.

Half of the customers with CFLs installed before the program (51.7% or 60 out of 116) have been using CFLs for four years or more, and 92.2% (107 out of 116) have been using CFLs for more than a year.

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Table 60. Preinstalled CFLs (N=136)

	Carolina System (count)	Carolina System (percent)
Did you have any CFLs installed before participating in this program?		
No	17	12.5%
Yes, from 1 to 5	22	16.2%
Yes, from 6 to 11	40	29.4%
Yes, 12 or more	51	37.5%
Yes, don't know how many	3	2.2%
Don't know	3	2.2%
How long have you been using CFLs?	***N=116 customers with CFLs before the program***	
Never until recently (first time user)	4	3.4%
One year or less (but previous to program participation)	3	2.6%
One to two years	12	10.3%
Two to three years	21	18.1%
Three to four years	14	12.1%
Four years or more	60	51.7%
Don't know	2	1.7%

Table 61 indicates that nearly one customer in four (22.8% or 33 out of 136) had LEDs installed before participating in the Specialty Bulbs program. The 31 surveyed customers who already had LEDs installed before the program and who were able to answer the question "how many?" had an average of 4.6 LEDs apiece before the program; including the 102 customers who did not have any LEDs installed before the program, the average number of LEDs installed before the program is 1.1 per household (not including those who did not know if or how many LEDs they had installed). The median number of LEDs per surveyed household installed before the program is zero (since a majority of customers had zero LEDs).

Only about one in ten customers with LEDs installed before the program (9.7% or 3 out of 31) have been using LEDs for more than three years, while about half (45.2% or 14 out of 31) have been using LEDs for less than a year.

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Table 61. Preinstalled LEDs (N=136)

	Carolina System (count)	Carolina System (percent)
Did you have any LEDs installed before participating in this program?		
No	102	75.0%
Yes, from 1 to 5	23	16.9%
Yes, from 6 to 11	4	2.9%
Yes, 12 or more	4	2.9%
Yes, don't know how many	0	0.0%
Don't know	3	2.2%
How long have you been using LEDs?	***N=31 customers with LEDs before the program***	
Never until recently (first time user)	5	16.1%
One year or less (but previous to program participation)	9	29.0%
One to two years	6	19.4%
Two to three years	7	22.6%
Three to four years	1	3.2%
Four years or more	2	6.5%
Don't know	1	3.2%

Figure 18 shows the distribution of preinstalled CFLs, LEDs and total energy-efficient bulbs (CFLs plus LEDs). A third of these customers (32.4% or 44 out of 136) already had fifteen or more efficient bulbs installed before purchasing bulbs from the Savings Store, and only 11.0% (15 out of 136) did not have any efficient bulbs. In total, the 130 customers who answered the questions about the number of efficient bulbs installed before the program confirmed the installation of 1701 efficient bulbs (1559 CFLs and 142 LEDs), for an average of 13.1 efficient bulbs per household (not including the 15 customers with zero efficient bulbs installed before the program, the average is 14.8 efficient bulbs per household with efficient bulbs installed). Overall, the median number of efficient bulbs installed is 10 bulbs per household.

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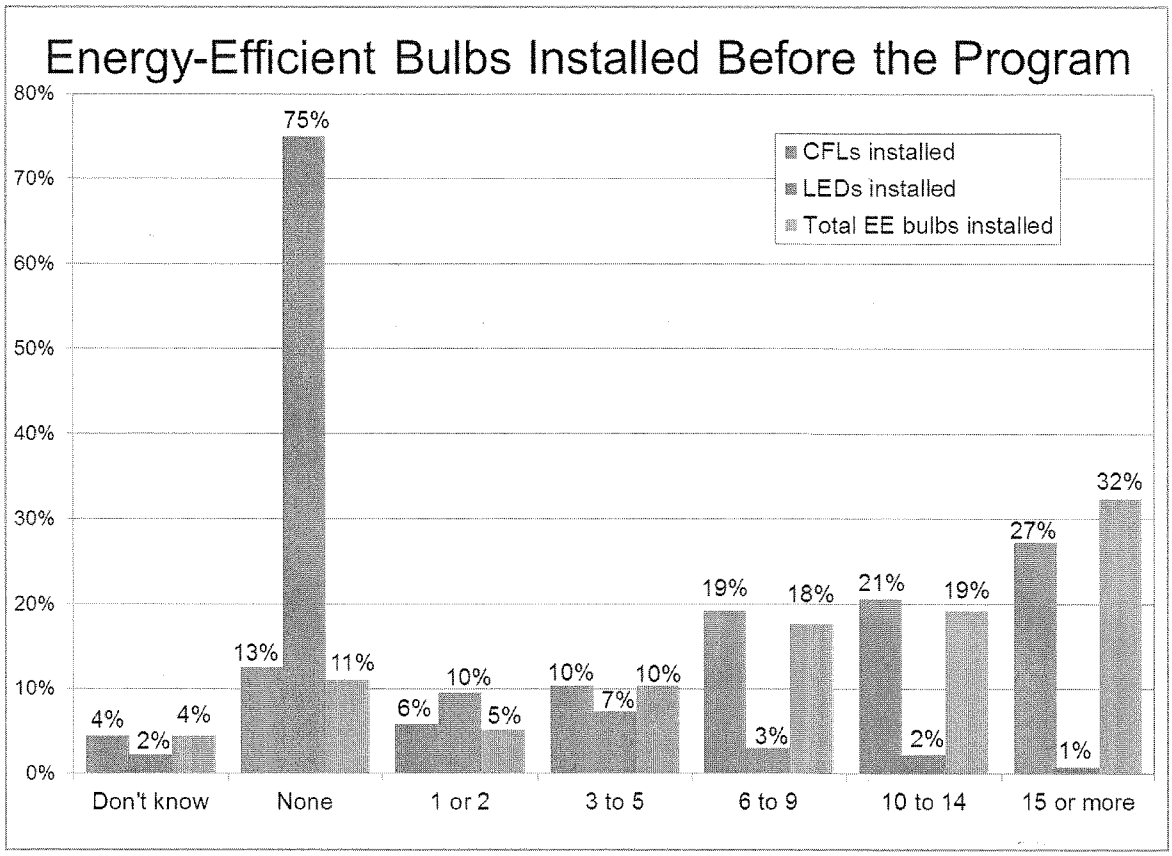

Figure 18. Energy-Efficient Bulbs Installed before Participating in the Program (N=136)
When calculating total EE bulbs installed, customers who did not know if they had any LEDs installed are assumed to have zero LEDs installed. Customers who reported having CFLs or LEDs installed but who were not able to answer "how many?" are reported as "don't know".

Incandescent and Halogen Light Bulbs Installed in Participant Households

Surveyed participants were asked how many incandescent or halogen lights they have installed in their homes, how many of these are "standard encapsulated bulbs" (i.e., "A Line" bulbs), and how many of these standard capsule bulbs are used for more than two hours per day. Table 62 indicates that these customers' homes still have a decent number of incandescent and halogen light bulbs installed: 81.6% or 111 out of 136 have at least one old bulb installed, and the overall average is 10.0 incandescent and halogen bulbs installed per household. However, a large number of these incandescents are non-standard bulb types; only 59.5% (800 out of 1344.5 bulbs[23]) are the regular capsule-style (type "A") bulbs.

Furthermore, just 18.7% (149.5 out of 800) of the capsule-style incandescent and halogen bulbs are being used more than two hours per day. Overall, only 27.2% (37 out of 136) of Savings Store customers surveyed have at least one standard capsule bulbs that is in use more than two

[23] Fractional numbers of bulbs are due to some respondents answering with ranges instead of specific amounts (for example, "*6 or 7 bulbs*" is reported as 6.5 bulbs, which is the midpoint of the range given by the respondent).

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hours per day, and the average across all participants is only 1.1 of these bulbs installed per household. Only one out of every nine incandescent or halogen bulbs installed in these customers' homes (11.1% or 149.5 out of 1344.5 bulbs) is both capsule-style and used more than two hours per day.

Table 62. Use of Capsule-Style Incandescent and Halogen Bulbs in the Home (N=136)

	Carolina System (count)	Carolina System (percent)
What is your best estimate of the total number of light bulbs currently installed in your home that are incandescent or halogen bulbs?		
None	23	16.9%
1 to 2	13	9.6%
3 to 5	26	19.1%
6 to 9	22	16.2%
10 to 14	18	13.2%
15 or more	32	23.5%
Don't know	2	1.5%
Total number of incandescent and halogen bulbs installed	1344.5	
Average per household (base N=134 valid responses)	**10.0**	
How many of these incandescent or halogen bulbs are standard capsule bulbs? (By standard capsule bulbs, I mean the most common type of light bulb shape.)		
None	46	33.8%
1 to 2	16	11.8%
3 to 5	27	19.9%
6 to 9	18	13.2%
10 to 14	10	7.4%
15 or more	17	12.5%
Don't know	2	1.5%
Total number of incandescent and halogen capsule-style bulbs installed	800	
Average per household (base N=134 valid responses)	**6.0**	
How many of these incandescent or halogen standard capsule bulbs are installed in sockets that are typically used for more than two hours a day?		
None	97	71.3%
1 to 2	16	11.8%
3 to 5	14	10.3%
6 to 9	3	2.2%
10 to 14	3	2.2%
15 or more	1	0.7%
Don't know	2	1.5%
Total number of incandescent and halogen capsule-style bulbs installed which are used more than two hours per day	149.5	
Average per household (base N=134 valid responses)	**1.1**	

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Specialty Bulbs in Participant Households

Survey participants were asked a series of questions to determine how many specialty bulbs are currently in use in their homes, and what kind of bulbs are in those sockets. This can be used to determine opportunities to install further efficient bulbs in these households. Table 63 shows how many participants have bulbs of each type in their homes, and the numbers of bulbs in participant households. The most common type of specialty bulbs are outdoor reflectors, present in 75.0% (102 out of 136) of surveyed participant households. However, the largest number of installed specialty bulbs are candelabras, which account for 19.9% (757 out of 3800) of the specialty bulbs installed in participant households. The average number of specialty bulbs installed per household by type ranges from 3.0 for three-way bulbs to 8.7 for candelabras (including only the households that have a given type of bulb installed).

Table 63. Specialty Bulbs Installed in Participant Households[24]

	Participant count (N=136)	Participants (percent)	Total bulb count (N=3800)	Bulbs (percent)	Bulbs per household with this type of bulb
Dimmable spiral	71	52.2%	569	15.0%	8.0
Three-way spiral	82	60.3%	249	6.6%	3.0
Indoor reflector (recessed)	64	47.1%	543	14.3%	8.5
Outdoor reflector (recessed outdoor)	102	75.0%	438	11.5%	4.3
Globe	70	51.5%	541	14.2%	7.7
Candelabra	87	64.0%	757	19.9%	8.7
CFL or LED capsule (A Line)	63	46.3%	454	11.9%	7.2
Other specialty bulbs	43	31.6%	249	6.6%	5.8

Participant percentages total to more than 100% because participants can have multiple types of bulbs installed.

Table 64 shows how many bulbs of each type are CFLs, LEDs and incandescent and halogen bulbs. The specialty bulb types where participants still have the largest number of incandescent and halogen bulbs installed are candelabras (62.4% or 472 out of 757 bulbs) and dimmable bulbs (50.4% or 287 out of 569). The bulb types which these customers have already mostly converted to efficient bulbs are three-ways (69.9% or 174 out of 249), indoor reflectors (67.4% or 366 out of 543) and globes (64.7% or 350 out of 541). LEDs have the largest penetration in the categories of efficient capsule bulbs (27.3% or 124 out of 454) and dimmable bulbs (19.8% or 112 out of 569), and account for fewer than 10% of bulbs currently installed in the other types of

[24] The results presented in Table 63 reflect survey participant responses, but several caveats should be noted: some categories may overlap (for example a bulb can be both dimmable and a candelabra and thus would be counted in both rows), and "efficient capsules" is a unique category in that a standard incandescent capsule is not considered a specialty bulb (whereas for all of the other categories shown in the table incandescent bulbs of that type are considered specialty bulbs). Furthermore, inconsistent responses were corrected where possible (such as the number of bulb types not adding up to the total number of bulbs reported) and of course some respondents were unable to answer all of the questions. Thus the total bulb count and bulb percentages shown in the table should be considered approximations (some bulbs are being double-counted while others are not counted at all); this is also why there is no row presented for "total specialty bulbs". However, participant-level counts, percentages and the bulbs per household for each individual specialty bulb type are not affected by issues with overlapping categories.

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specialty sockets.

Table 64. Energy-Efficient and Standard Specialty Bulbs in Participant Households

	Total bulb count	CFLs (bulb count)	LEDs (bulb count)	Incandescent or halogen (bulb count)	Total EE bulbs (percent)	Standard bulbs (percent)
Dimmable spiral	569	158	112	287	47.5%	50.4%
Three-way spiral	249	170	4	64	69.9%	25.7%
Indoor reflector (recessed)	543	333	33	160	67.4%	29.5%
Outdoor reflector (recessed outdoor)	438	178	31	184	47.7%	42.0%
Globe	541	336	14	179	64.7%	33.1%
Candelabra	757	248	31	472	36.9%	62.4%
CFL or LED capsule (A Line)	454	324	124	NA	100.0%	NA
Other specialty bulbs[25]	249	66	2	69	27.3%	27.7%

Bulb counts by type are less than the total number of bulbs per type due to missing data (customers who could not state a number of bulbs are not shown in this table). Percentages of bulbs total to less than 100% for the same reason.

Customers were also asked if they had any spare incandescent bulbs in storage to replace specialty bulbs that burn out. As seen in Table 65, half of the specialty incandescent bulbs these customers have in storage are either candelabras (30.1% or 158 out of 525 spare bulbs) or bulbs meant for dimmable sockets (20.0% or 105 out of 525); this reinforces the finding from Table 64 that these are also the categories of bulbs that have the highest percentage of incandescent and halogen bulbs still installed in homes. While candelabras are also the category of incandescent specialty bulb these customers are most likely to have in storage (22.8% or 31 out of 136 respondents), the second most common spare incandescent bulbs are three-ways (16.9% or 23 out of 136, though these customers only have an average of 1.8 of these bulbs in storage per household). Participants are least likely to have spare incandescent indoor reflectors in storage (9.6% or 13 out of 136).

[25] The columns shown for "other specialty bulbs" add up to much less than 100% because customers were much less likely to know what types of bulbs these are ("don't know" bulbs are not shown in the table) and because some of these bulbs are neither CFLs, LEDs nor standard bulbs (e.g., fluorescent tubes).

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Table 65. Incandescent Bulbs in Storage for Future Use in Specialty Sockets

	Have incandescents in storage count (N=136)	Have incandescents in storage (percent)	Total spare incandescent bulbs (N=525)	Spare incandescent bulbs (percent)	Bulbs per household with this type of bulb
Dimmable spiral	20	14.7%	105	20.0%	5.3
Three-way spiral	23	16.9%	42	8.0%	1.8
Indoor reflector (recessed)	13	9.6%	69	13.1%	5.3
Outdoor reflector (recessed outdoor)	16	11.8%	55	10.5%	3.4
Globe	21	15.4%	74	14.1%	3.5
Candelabra	31	22.8%	158	30.1%	5.1
Other specialty bulbs	7	5.1%	22	4.2%	3.1

Participant percentages total to more than 100% because participants can have multiple types of bulbs installed.

Future Light Bulb Purchase Intentions

Surveyed customers were asked how many of the next ten light bulbs they purchase will be standard incandescent (or halogen), CFL and LED bulbs. As seen in Table 66, nine out of ten participants surveyed reports that they intend to buy CFLs (89.1% or 114 out of 128) and more than a third intend to purchase LEDs (37.5% or 48 out of 128), but only one in six intends to buy any standard incandescent or halogen bulbs (17.2% or 22 out of 128).

The majority of bulbs these customers intend to purchase in the future will be CFLs (73.9% or 944 out of 1278 bulbs), though about one bulb in five will be an LED (20.0% or 256 out of 1278) and only about one bulb in twenty will be standard incandescent or halogen bulbs (6.1% or 78 out of 1278). These results indicate greater intent to purchase LEDs, and less intent to purchase standard incandescent and halogen bulbs, compared to other recent lighting programs evaluated in Duke Energy territories.[26]

[26] The "next ten bulbs" series of questions was adopted by TecMarket Works in 2013, and as of the time of the current evaluation has only been previously used for low-income program evaluations in the Carolina System. Perhaps the most comparable previous study would be the *Process and Impact Evaluation of the Residential Smart $aver Energy Efficiency Products (CFLs) Program in Kentucky*, published in May 2014 with participant surveys conducted in May and June of 2013. That evaluation of a program which distributes free spiral CFLs found the distribution of customers' next ten intended bulb purchases after the program to be 33.3% incandescent and halogen bulbs, 61.8% CFLs and just 4.8% LEDs.

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Table 66. Purchase Intent: Next Ten Bulbs Purchased

Of the Next Ten Light Bulbs You Purchase, How Many Will Be...?	All Surveyed Participants Who Answered This Question (Valid N=128)
% of surveyed customers who intend to buy at least one incandescent and/or halogen bulb	17.2%
% of surveyed customers who intend to buy at least one CFL bulb	89.1%
% of surveyed customers who intend to buy at least one LED bulb	37.5%
	All Bulbs To Be Purchased (N=1278)[27]
Percentage of next ten bulbs that will be incandescent and/or halogen bulbs	6.1%
Percentage of next ten bulbs that will be CFL bulbs	73.9%
Percentage of next ten bulbs that will be LED bulbs	20.0%

Percentages in the first three rows total to more than 100% because participants could give multiple responses. Percentages in the bottom three rows are mutually exclusive and add up to 100%.

Figure 19 presents the distribution of future bulb purchases in the form of an area chart as a visual aid: the Y-axis shows the distribution of bulbs intended to be purchased, and the X-axis shows all 128 valid responses sorted by the distribution of bulb types. A majority of 67 out of 128 customers surveyed (52.3%) say they intend to purchase exclusively CFLs for their next ten bulbs (the center green area which extends from the top to the bottom of the chart).

The chart also shows significant intentions to purchase LEDs (the blue area on the right of the chart), including 9.4% (12 out of 128) of customers who intend to purchase LEDs exclusively the next time they need light bulbs (where the blue area extends from the top to the bottom of the chart).

Intentions to purchase incandescent and halogen bulbs among these customers is limited (red areas of the chart): only one customer surveyed (0.8% of 128) intends to purchase exclusively incandescent and halogen bulbs, and only seven customers (5.5% of 128) intend to purchase even half incandescent and halogen bulbs out of the next ten bulbs purchased. There are also a handful of customers who still intend to purchase the old standard bulbs in addition to both LEDs and CFLs (the "red spikes on the blue stairs" on the right side of the chart); this may indicate that this handful of customers have some specialized or old fixtures that they believe won't work with the more-efficient bulbs. It could also mean that some of these customers are "jumping ahead of the adoption curve" by installing LEDs before they have replaced all of their old incandescents and halogens (rather than replacing all the old bulbs with CFLs first); another possibility is that these are customers who want energy-efficiency lighting but have problems using efficient bulbs for some purposes (issues with light color and brightness, warm-up time, etc.).

[27] All 136 respondents were asked the question about the next ten bulbs they intend to purchase. Eight respondents said they "don't know" what any of their next ten bulbs purchased will be, and across the other 128 respondents there were another two bulbs that were designated "don't know" (i.e., the customer knew what some of their next ten bulbs purchased would be, but did not know all ten). When calculating the percentage of incandescent/halogen, CFL and LED bulbs purchased, "don't know" bulbs are not included in the analysis. Thus the base number of intended bulb purchases is 1278 bulbs (10 bulbs times 128 respondents minus two "don't know" bulbs).

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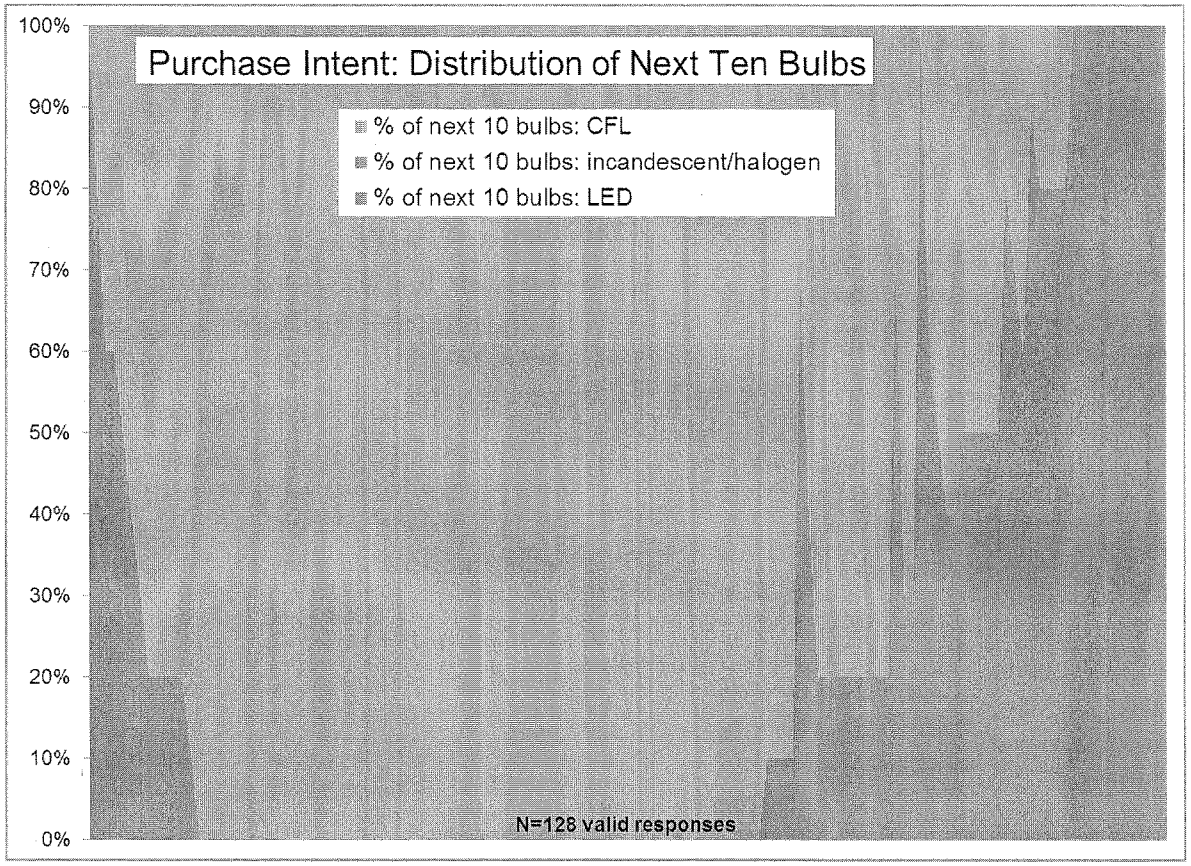

Figure 19. Area Chart of Intentions for Next Ten Bulbs Purchased (N=128)
Eight survey participants (5.9% of 136) "don't know" what kind of bulbs they will buy in the future, and are not included in this chart.

Additional CFLs and LEDs Purchased Since Shopping at the Savings Store

Table 67 indicates that about one customer in five (18.4% or 25 out of 136) has purchased additional energy-efficient light bulbs through another source since shopping at the Savings Store; the percentage purchasing additional CFLs is 11.0% (15 out of 136) while 8.1% (11 out of 136) purchased additional LEDs (only one customer, or 0.7% of 136, purchased both additional CFLs and LEDs). The 25 customers who purchased additional bulbs of either type purchased an average of 6.5 efficient bulbs apiece.

Most of these additional bulbs purchased are standard spiral CFLs (50.9% or 83 out of 163 additional bulbs purchased), while only 7.4% (12 out of 163) are specialty CFLs. Standard or capsule-style[28] LEDs account for 16.0% (26 out of 163) of additional bulbs purchased, while

[28] A "standard LED" is generally in the shape of a capsule (i.e., the classic A-type bulb shape), while a "standard CFL" has a spiral shape. Thus "capsule CFLs" are considered a type of specialty bulb for this analysis, while "capsule LEDs" are not. There is no LED equivalent to a "spiral CFL" (the spiral shape is unique to fluorescent lighting technology).

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specialty LEDs are more common, accounting for 25.8% (42 out of 163) of additional bulbs purchased.

Table 67. Efficient Bulbs Purchased since Participating in the Program

	Participants (Total N=136)	Participants (percent)	Bulbs purchased (Total N=163)	Bulbs purchased (percent)
CFL - Standard spiral	12	8.8%	83	50.9%
CFL – Capsule (A Line)	2	1.5%	6	3.7%
CFL - Standard or capsule	4	2.9%	26	16.0%
CFL - Outdoor reflector (recessed outdoor)	1	0.7%	2	1.2%
LED - Outdoor reflector (recessed outdoor LED)	2	1.5%	4	2.5%
CFL - Indoor reflector (recessed)	0	0.0%	0	0.0%
LED - Indoor reflector (recessed LED)	1	0.7%	14	8.6%
CFL - Globe	0	0.0%	0	0.0%
LED - Globe	0	0.0%	0	0.0%
CFL - Candelabra	0	0.0%	0	0.0%
LED - Candelabra	2	1.5%	11	6.7%
CFL - Three-way	0	0.0%	0	0.0%
LED - Three-way	0	0.0%	0	0.0%
CFL - Dimmable	0	0.0%	0	0.0%
Other type of CFL: "*short bulbs*"	1	0.7%	4	2.5%
Other type of LED: "*appliance bulbs*"	1	0.7%	2	1.2%
Other type of LED: "*flame lights, smaller than candelabras*"	1	0.7%	6	3.7%
Other type of LED: "*PA four-foot tube*"	1	0.7%	5	3.1%
Did not purchase additional bulbs	107	78.7%	NA	NA
Don't know / can't recall	4	2.9%	NA	NA
Total CFLs	**15**	**11.0%**	**95**	**58.3%**
Total LEDs	**11**	**8.1%**	**68**	**41.7%**

Customers who purchased additional efficient bulbs after participating in the program were also asked how many of these bulbs are currently installed; as seen in Table 68, the overall installation rate is 89.6% (146 bulbs installed out of 163 purchased). LEDs are somewhat more likely to be installed (94.1% or 64 out of 68) compared to CFLs (86.3% or 82 out of 95; this difference is significant at $p<.10$ using Student's t-test).

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Table 68. Installation of Additional Bulbs Purchased since Participating in the Program

	Bulbs purchased (Total N=163)	Bulbs installed (Total N=146)	Distribution of bulbs installed	Installation rate (installed / purchased)
CFL - Standard spiral	83	75	51.4%	90.4%
Specialty CFLs	12	7	4.8%	58.3%
Total additional CFLs	**95**	**82**	**56.2%**	**86.3%**
LED - Standard or capsule	26	24	16.4%	92.3%
Specialty LEDs	42	40	27.4%	95.2%
Total additional LEDs	**68**	**64**	**43.8%**	**94.1%**
Total all additional bulbs	**163**	**146**	**100.0%**	**89.6%**

The 25 customers who purchased additional efficient bulbs were asked where they purchased them; these responses are listed below. More than half of these customers got their bulbs at Lowe's or Home Depot (combined 56.0% or 14 out of 25), and only four (16.0% of 25) specified that they purchased these bulbs from online stores (though it is possible that some of the big box store customers may have used those retailers' websites to order their bulbs).

- *Lowe's* (N=7)
- *Home Depot* (N=6)
- *Lowe's or Home Depot*
- *Walmart* (N=3)
- *Sam's Club*
- *Costco*
- *Harris-Teeter* [a local supermarket chain]
- *Amazon.com*
- *Ebay.com*
- *Bulbs.com*
- *Somewhere online, but not Amazon.*
- *Don't know*

A majority of the participants who purchased additional efficient bulbs (60.0% or 15 out of 25) reported that the additional bulbs they purchased could have purchased them from the Savings Store, as seen in Table 69. The fifteen customers (11.0% of 136 surveyed) who could have purchased bulbs at the Savings Store but did not were asked why not; these responses are categorized in the table below and listed afterward. Two of these customers (1.5% of 136 surveyed) had negative experiences shopping at the Savings Store, and three (2.2% of 136 surveyed) cited the incentive limits as a reason for buying bulbs somewhere other than the Savings Store.

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Table 69. Purchasing Additional Bulbs Elsewhere Instead of the Savings Store (N=25)

Base: 25 customers who purchases additional efficient bulbs after participating in the program	**Carolina System (count)**	**Carolina System (percent)**
Additional bulbs purchased are of a type that is not available at the Savings Store	8	32.0%
Not sure if additional bulbs purchased are available at the Savings Store	2	8.0%
Additional bulbs purchased are of a type that could have been purchased from the Savings Store	15	60.0%
Reasons for not purchasing additional bulbs at the Savings Store	***N=15 customers who could have purchased their bulbs at Savings Store but did not***	
Found low(er) prices elsewhere (without reaching incentive limit)	5	33.3%
Needed light bulbs right away	4	26.7%
Convenience of finding bulbs when shopping at a store / impulse buy	3	20.0%
Negative experience shopping at the Savings Store	2	13.3%
Reached incentive limit at Savings Store, bulbs are cheaper elsewhere without incentive	2	13.3%
Reached incentive limit at Savings Store, did not know I could buy more than the limit	1	6.7%

Percentages of reasons for not purchasing bulbs total to more than 100% because respondents can give multiple reasons.

The verbatim comments of the fifteen customers who purchased additional bulbs elsewhere when they could have purchased them from the Savings Store are listed below, along with notes about their bulb purchases when relevant. Interestingly, all three of the customers who cited the incentive limits as a reason for not buying additional bulbs at the Savings Store purchased additional LEDs rather than CFLs.

- *Because of the negative experiences I had with Duke's Savings Store.* [This customer thought they had ordered a multipack of candelabras from the Savings Store but only received one bulb, which they have not installed and say they plan to return. They purchased an additional six spiral CFLs at Lowe's.]
- *I had a disappointing experience with the Savings Store. Lowe's offers the same bulbs at a low price.* [This customer apparently intended to purchase a six-pack of spiral CFLs from the Savings Store but instead purchased one three-way CFL, which they then installed in a regular socket. They purchased one additional capsule CFL at Lowe's.]
- *Because I was limited to being able to get only twelve of the CFL candelabra bulbs at the Duke Energy Store.* [This customer purchased eight additional candelabra LEDs at Costco.]
- *I reached the limit on the number of discounted bulbs I could buy through the Savings Store. I could then purchase the bulbs elsewhere at a cheaper price.* [This customer purchased twelve additional capsule LEDs at Home Depot.]

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- *I hit the limit on the discounted price and the higher price wasn't slight.* [This customer purchased six additional capsule LEDs from Ebay.com.]
- *Because of the price; I need to check the Savings Store again to see if they've adjusted their prices. They might be more competitive now.* [This customer purchased a pack of 16 additional spiral CFLs at Sam's Club.]
- *I had a coupon from Home Depot; they gave me 30% off.*
- *These CFLs I found at Walmart were cheaper than the Duke website.*
- *They were highly discounted at the food store; it was an impulse buy.*
- *It was just easier to get the CFLs at the store. I saw them in a display and the price was right so I bought them.*
- *I didn't purchase these bulbs through the Savings Store because I was at Lowe's one day and it was convenient to buy them there.*
- *My bulbs burned out and I needed to replace them right away.*
- *I needed the bulbs immediately.*
- *I needed them right away.*
- *Because I needed them right that second.*

Customers who purchased additional bulbs after participating in the program were also asked to rate the influence of their Savings Store experience on their decision to purchase additional efficient light bulbs on a ten-point scale, where "10" means most influential and "1" means not at all influential. The average influence rating among the 21 customers who gave ratings is 5.48 and the median is 7.0, indicating moderate influence. Customers were also asked to give explanations for their influence ratings scores, which are listed below. Interestingly, both of the customers who cited their negative experiences with the Savings Store as the reason they did not buy their additional bulbs there both gave "10 out of 10" ratings for the influence of the program on their additional purchases.

Customers who gave "10 out of 10" (highest possible) ratings for the influence of the Savings Store on additional bulb purchases (N=6)

- *The Saving Store did not have the LED that I needed.* [This customer purchased two additional outdoor reflector LEDs; the Savings Store only offered CFL outdoor reflectors during the time period being evaluated.]
- *I could only get enough CFL candelabras for my chandelier. I had to go somewhere else for the rest that I needed, as I could only get twelve at the Savings Store.*
- *I wanted to buy more bulbs through the Savings Store, but had reached the limit on the number of discounted bulbs I could purchase, so I went elsewhere.*
- *I got something totally different than I thought I was getting. I thought I was getting a six-pack of each, but I ended up with one bulb each. It seemed very misleading to me. I just ordered the wrong bulbs at the wrong price.*
- *I had a disappointing experience with the Savings Store. Lowe's has low pricing in addition to being able to see what you're getting.*

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- *From past experience, I knew that the Savings Store would likely take at least three days to deliver an order, so I decided to purchase the bulbs elsewhere.*

Customers who gave "7, 8 or 9 out of 10" ratings for the influence of the Savings Store on additional bulb purchases (N=5)

- *The Savings Store was my first foray into using CFLs.*
- *The website made me realize that I wanted to put CFLs in that fixture.*
- *I would have ordered them from the Savings Store but they were not offered so I had to purchase them elsewhere.*
- *I got them elsewhere because I had hit the limit.*
- *These CFLs were less expensive at Walmart than at the Duke site.*

Customers who gave "2, 3, 4, 5 or 6 out of 10" ratings for the influence of the Savings Store on additional bulb purchases (N=2)

- *I dislike the ones I bought from the Savings Store because they are dimmer than I like. I bought some at Walmart because they are supposed to be a brighter light.*
- *The Savings Store was not very influential because they did not offer the type of appliance bulbs I was looking for.*

Customers who gave "1 out of 10" (lowest possible) ratings for the influence of the Savings Store on additional bulb purchases (N=8)

- *I wanted specific LEDs for my home.* [This customer purchased six additional capsule LEDs from Bulbs.com.]
- *My bulbs burned out and I needed to replace them right away.*
- *There is no relationship between the two purchases; the additional bulbs I purchased were 50% off, and we needed four. It was an impulse buy.*
- *If you need them that minute, you get what you need, where you can get it.*
- *The Savings Store did not factor into my decision because I needed bulbs more quickly than shipping would allow.*
- *We were in the store looking at new lighting fixtures. We decided not to go with a new fixture, but upgrade the light bulbs instead.*
- *The Savings Store did not factor into these purchases, because I was already using CFLs.*
- *We were already using CFLs for a long time before we ordered the specialty bulbs.*

Additional Actions to Save Energy in the Home

Four out of ten program participants (39.7% or 54 out of 136) report that they have taken additional steps to save energy since purchasing light bulbs at the Duke Energy Savings Store. These actions are categorized in Table 70; the most common category of action is adding insulation (9.6% or 13 out of 136 customers surveyed).

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Table 70. Additional Actions to Save Energy since Participating in the Program (N=136)

	Carolina System (count)	Carolina System (percent)
Have not taken any additional actions	82	60.3%
Have taken additional actions	54	39.7%
Actions taken:		
Add insulation to walls, floors, ceilings, attics, ducts	13	9.6%
Caulk / tape / weather-strip doors and/or windows	10	7.4%
Upgrade HVAC system	10	7.4%
Upgrade to Energy Star appliances	10	7.4%
Use less heat / turn down thermostat	9	6.6%
Turn off lights when not in use	6	4.4%
Home Energy House Call / home energy audit	6	4.4%
Upgrade windows / doors	6	4.4%
Use less cooling / turn down or turn off AC	5	3.7%
Install programmable thermostat	3	2.2%
Insulate water heater / water pipes	2	1.5%
Regular HVAC maintenance	2	1.5%
Use curtains / shades to control heat / light	2	1.5%
Unique actions, listed below	17	12.5%

Percentages total to more than 100% because respondents could take multiple actions.

Seventeen respondents reported taking unique actions to save energy, which are listed below.

- *I signed up for Power Manager about a month ago.*
- *We added insulated vinyl siding.*
- *We bought faucet aerators and a low-flow toilet.*
- *We have started doing things like hanging up our clothes instead of using the dryer.*
- *We purchased an infrared space heater and are not using the heat pump as much.*
- *The upstairs south-facing windows now have reflective film.*
- *I run laundry at night instead of the day.*
- *I reduced the number of bulbs in some light fixtures.*
- *I put administration control in place where I'm watching others' television use.*
- *I had new plumbing installed and had all the pipes and conduits insulated.*
- *I checked the existing wiring and the hot water heater.*
- *We replaced faulty outlets and a circuit breaker.*
- *We do regular assessments of the house to see where improvements need to be made to make the house more efficient.*
- *I finally got around to fixing my solar power set up.*
- *I'm a part of a "green" group in my neighborhood.*
- *We have been trying to teach our grandchildren to be aware of using energy wisely.*
- *Ours is an Energy Star home.*

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Participation and Interest in Other Duke Energy Programs

Table 71 shows other Duke Energy programs in which surveyed customers have participated. More than nine out of ten of these customers (91.9% or 125 out of 136) have participated in at least one other program, with the most popular being free CFLs (80.9% or 110 out of 136), MyHER (48.5% or 66 out of 136), Online Services (48.5% or 66 out of 136) and Power Manager (25.7% or 35 out of 136).

Table 71. Participation in Other Duke Energy Programs (N=136)

	Carolina System (count)	Carolina System (percent)
Free CFLs	110	80.9%
My Home Energy Report	66	48.5%
Online Services	66	48.5%
Power Manager	35	25.7%
Home Energy House Call	26	19.1%
Residential Smart $aver	8	5.9%
Appliance Recycling	4	2.9%
None of the above	10	7.4%
Don't know / can't recall	1	0.7%

Percentages total to more than 100% because respondents can participate in multiple programs.

Customers were asked to rate their interest in participating in some of the Duke Energy programs that they are not currently participating in; these ratings (on a ten-point scale where "10" means most interested and "1" means not at all interested) are shown in Table 72. The handful of customers who report that they have not received free CFLs yet show a very high interest in this program (mean interest rating 9.24 among the 29 customers not currently participating who were able to give interest ratings); this is not surprising, considering they are already participants in the Specialty Bulbs program via their purchase of efficient light bulbs at the Savings Store. My Home Energy Report and Residential Smart $aver received interest ratings over 6.0, which are the next most popular programs among non-participants. Home Energy House Call and Appliance Recycling also received moderate interest scores just under 6.0, and the lowest-rated program is Power Manager with an average interest rating of 5.08 (which is a moderate, not low, interest score).

Table 72. Interest in Other Duke Energy Programs (N=136)

	Non-participants Valid N (not including don't know)	Rating of interest (mean)
Free CFLs	29	9.24
My Home Energy Report	68	6.62
Power Manager	96	5.08
Home Energy House Call	111	5.90
Residential Smart $aver	124	6.37
Appliance Recycling	130	5.82

Surveyed participants were also asked to rate their interest in potential programs that could be offered in the future: "*Duke Energy is interested in providing further services that might be of interest to customers. I am going to read a list of possible services that Duke Energy may*

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consider offering. Please rate your interest in the following services on a scale of 1-to-10, with 1 indicating that you would not be interested, and 10 indicating that you would be very interested." The mean interest ratings are shown below in Table 73; the most popular proposal is rebates for home improvements (mean interest rating 7.59 out of 10), with home energy audits with inspections and recommendations being the only other program to receive a mean interest rating higher than 6.0. The other proposed programs received moderate interest ratings around 5.0, while the least popular proposal is a social networking site to discuss solutions with energy experts (mean interest rating 2.87 out of 10).

Table 73. Interest in Potential Further Services from Duke Energy (N=136)

	Valid N (not including don't know)	Rating of interest (mean)
Rebates for energy-efficient home improvements	135	7.59
Home energy audits or inspections of your home with specific recommendations for improvements	135	6.35
Help in finding energy-efficient equipment and appliances	135	5.52
Inspection services of work performed by contractors	136	5.08
Financing for energy-efficient home improvements	134	4.99
Help in finding weatherization contractors to make your home more efficient	134	4.84
Social networking sites such as Facebook and Twitter to read about or discuss energy-efficient solutions with energy experts	132	2.87

Participants were also asked, "*what other services could Duke Energy provide to help improve home energy efficiency?*" Thirty surveyed participants (22.1% of 136) offered suggestions, which are listed below.

- *More marketing about how safe CFLs are and facts like that where you can target the elderly or other people who are suspicious of newer technologies.*
- *Duke could educate their customers about the little things they can do to save energy. Also, push for LEDs and high-efficiency HVAC systems, and make it easier for vendors to participate in Duke Energy programs.*
- *I wish they would send me another brochure about the different bulb types.*
- *A program that monitors the power usage of household appliances that can provide a detailed description about where and when power is being used. Maybe you could measure the consumption at the fuse box to get consistent readings instead of using a device*
- *A program that checks your home for air leaks and a program that provides rebates for energy efficient water heaters installed.*
- *Provide a list of honest contractors that can do insulation.*
- *Duke could provide a home insulation program.*
- *Offer rebates for energy-efficient windows.*

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- *Duke could provide a program that would install programmable thermostats.*
- *If they had a compatible app I could use with my new thermostat, I would buy it and I would use it.*
- *Pick up old stoves with the appliance recycling program.*
- *An option to 'lease to own' appliances through Duke.*
- *It would be nice if Duke would sell appliances again; we're going back 50 years, now. I used to live next to the manager of Duke in Wilkesboro.*
- *Duke could provide financing for new heat pumps.*
- *Duke should make a small space heater that is safe and effective. It would be nice if Duke had a solar program that would help people install a solar panel or two that people could pay Duke back for over time.*
- *Something to help out renters, like a program that works with landlords to replace outdated heaters.*
- *Something that helps out people in mobile homes.*
- *It would be great if they could offer some solar or wind energy to their customers, or offer to help the customer find and install these renewable energies. I'd love to have solar energy for my home but I would need help accessing it.*
- *If Duke Energy wants to promote home energy efficiency through social media then they should allow their employees access to their social media accounts during the workday.*
- *Advertise or provide more information about new technology such geothermal.*
- *Duke Energy should provide more education about how the time of day and usage of certain appliances is best in the early morning or evenings when the demand for power is less overall.*
- *I like any information available online to help us use our electrical in an efficient way is great. Maybe Duke could set goals of potential maximum energy efficiency with the MyHER, or neighborhoods or businesses.*
- *Duke could offer incentives for energy efficient home improvements and for reducing energy usage. Duke could provide information and incentives for switching to natural gas, wind, and solar power.*
- *Duke could provide assistance with purchasing and installing solar technologies.*
- *Duke could provide assistance with solar and wind power technologies.*
- *Duke could provide more information and financial incentives for solar power.*
- *Introduce a solar power incentive.*
- *Decrease the cost of individual power producers and don't charge customers to install solar power. I'd also like to sell excess power back to the grid.*
- *I know Duke Energy has no plans of going into a solar program, but that would be a great plan if they had one.*
- *Cut rates and hold back shareholder profits.*

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Program Improvements and Additional Offerings

TecMarket Works asked surveyed participants "*are there any other bulbs or energy efficiency items that you'd like to be able to order at the Savings Store?*" These suggestions are shown in Table 74 below.

The most common suggestions involve requests for additional types of light bulb (combined 39.7% or 54 out of 136), though among those who specified a bulb type there was more interest in expanding LED offerings (12.5% or 17 out of 136) than CFL offerings (8.1% or 11 out of 136). A slight majority of surveyed customers (55.9% or 76 out of 136) did not have any suggestions.

Table 74. Suggestions for Additional Bulbs or Items to Offer at the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
Additional types of bulb (LED vs. CFL not specific), listed below	26	19.1%
Additional types of LED, listed below	17	12.5%
Additional types of fluorescent lighting (including CFLs), listed below	11	8.1%
Insulation and weatherizing items, listed below	2	1.5%
Other items, listed below	7	5.1%
Don't know / nothing	76	55.9%

Percentages total to more than 100% because respondents could give multiple suggestions.

Twenty-six respondents made suggestions relating to light bulb types and options that were not specific to LEDs or CFLs; these are listed below.

- *For some fixtures, I really prefer a clear light bulb. I'd like to see more clear glass light bulb options, not white or clouded glass.*
- *I wish they had natural daylight, or cool light, features; that would be a plus if they were offered.*
- *Prettier designs for visible areas, and more globe options.*
- *I would like to be able to order more aesthetically-pleasing bulbs for my chandeliers.*
- *More types of candelabra bulbs.*
- *I don't know if they even exist, but I would like a candelabra-shaped bulb with a larger socket, a socket that would fit in a standard bulb socket.*
- *I have kitchen lights that are open and they have standard bases; I thought they were candelabra bases but I was wrong. I'd like to have bulbs with a standard base, but flame-shaped, or another fancier shape. Maybe Duke could offer adaptors to put small-base bulbs in regular sockets.*
- *They could have more selection of decorative, candelabra and globe-type, bulbs.*
- *They need to offer the short bulbs.*
- *A smaller size dimmable bulb.*

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- *I would like to see the availability in something in dimmable downlights, CFL or LEDs, in a warm or soft light.*
- *Dimmable CFL or LED candelabra bulbs, and refrigerator and oven bulbs.*
- *I would like to be able to order refrigerator bulbs.*
- *The Savings Store could offer bulbs for ranges, refrigerators, and night lights.*
- *They need to have high-lumen outdoor floodlights bulbs available; I need something higher than what they offer.*
- *I'd like to order bright outdoor 150W equivalent floodlights.*
- *150W equivalent reading light.*
- *45W flood lamp bulbs.*
- *I would like to be able order the small 20W under-cabinet bulbs.*
- *Dimmable candelabras and lower-wattage three-ways.*
- *Lower wattage three-way bulbs.*
- *I saw some bug zapper lamps at Lowe's, and low-wattage 25W-equivalent bulbs for lamps.*
- *I want the yellow bulbs that are bug lights.*
- *I'd like to be able to order dimmable halogen bulbs.*
- *I would like to be able to order night lights.*
- *They could also offer lighting fixtures.*

Seventeen respondents made suggestions relating specifically to LED bulbs; these are listed below.

- *I would like the Savings Store to offer Cree brand LED bulbs.*
- *Include PA LED four-foot tubes.*
- *I would like to see color-changing, remote-controlled LEDs at the Savings Store.*
- *I would like a better selection of LED bulbs. I think that there were 40W-equivalent bulbs, but I'd prefer to get some that are 60-100W equivalent.*
- *I'd like a greater variety of bulbs, and LED 'can' ceiling lights.*
- *Include more specialty LEDs like candelabras.*
- *I want LED candelabra bulbs.*
- *I would like LED globe lights. I'd like more LED light bulb options.*
- *Include a three-way LED lamp.*
- *I would like to a see greater selection of specialty and basic LEDs.*
- *I would like a larger selection of LEDs.*
- *More LED choices.*
- *I would like LED light bulbs to be offered at the Savings Store.*
- *I would like to see better selection and prices for LEDs.*
- *I would like to try the LEDs if they weren't so expensive.*

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- *I would like to be able to order heavily-subsidized LED bulbs.*
- *I'd like to try LEDs; I don't know much about them, though.*

Eleven respondents made suggestions relating specifically to CFLs and fluorescent lighting; these are listed below.

- *The lights I have on my front porch are capsule CFLs which are slow to get to full brightness. I would like CFLs that are quicker to full brightness.*
- *Brighter CFL bulbs.*
- *I was looking for some CFLs we could use at the church; it had to be a specific size. I looked and it was not available at the Savings Store. The lights I need are for hanging church ceiling lights, I'm not sure how else to describe them.*
- *Smaller CFLs that can fit into fans.*
- *I would like to order smaller-based CFL bulbs for some of my specialty overhead fixtures.*
- *Adapters to make the smaller-based candelabras fit into a regular sized base or make a candelabra CFLs that fit in regular sockets.*
- *More candelabra CFLs.*
- *I'd like a higher-wattage CFL capsule bulb.*
- *I'd like to buy dimmable CFLs that are smaller and lower in wattage that what you currently offer.*
- *CFL night lights.*
- *Four-foot and eight-foot fluorescent tubes.*

Two respondents suggested weatherization and insulation items; these are listed below.

- *I would like to be able purchase weatherstripping, insulation, and silver window tape.*
- *Before winter, I'd like to get the wrapping insulation for pipes.*

Seven respondents suggested additional items not related to lighting or weatherization; these are listed below.

- *Anti-vampiric power strips.*
- *I would like to be able to order filters for my furnace, because at home you can easily go and find the size you need.*
- *I would like to be able to order an energy-saving water filter for the sink.*
- *I would like to be able to order USB cell phone chargers.*
- *They could offer CO2 and smoke alarms.*
- *Offer refrigerators, heat pumps and air conditioners.*
- *If they offered other green products besides light bulbs, that would be neat.*

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Customers were also asked if there were any additional features they would like to see at the Savings Store website. Only ten surveyed participants (7.4% of 136) offered suggestions, which are listed below.

- *I'd like the website to work better on tablets.*
- *I would like the ability to mouse-around more quickly on the Savings Store website.*
- *Add a button at the Duke Energy homepage that would easily connect you to the Saving Store.*
- *I'd like to be able to order more easily and quickly by check.*
- *Provide confirmation as to what exactly you're buying, the number of bulbs and whether it's a multipack.*
- *In the descriptions of each CFL and LED, I'd like the bulbs to have an incandescent watt equivalent. Show a comparison to the incandescents because watts are what most people are familiar with.*
- *I'd like to see better descriptions of each bulb, both visual and literal.*
- *I would like the descriptions to include the dimensions of the bulbs.*
- *I would like more information about candelabra bulbs.*
- *I'd like to see a suggested use of each type of bulb.*

Customers were asked "w*hat do you think could be done to get more people such as yourself to buy light bulbs from the Savings Store?*" As seen in Table 75, the most frequent suggestions are to improve and increase advertising, particularly in traditional media (39.7% or 54 out of 136) and by direct mail (32.4% or 44 out of 136); no other categories of suggestion were mentioned by more than 10% of customers surveyed.

Table 75. Suggestions for Getting More Customers to Buy Light Bulbs from the Savings Store (N=136)

	Carolina System (count)	Carolina System (percent)
More / better advertising in traditional media (not mail or web)	54	39.7%
More / better advertising by mail (bill inserts, etc.)	44	32.4%
More / better advertising online (email, social networks, etc.)	13	9.6%
Offer more discounts, sales, coupons / lower prices	13	9.6%
Focus on informing customers of utility bill savings	10	7.4%
Focus on informing customers of low bulb prices	8	5.9%
Offer free, discounted or flat-rate shipping / lower shipping rates	4	2.9%
Provide testimonials from satisfied customers	4	2.9%
Other suggestion, listed below	16	11.8%
Don't know / nothing	17	12.5%

Percentages total to more than 100% because respondents could give multiple suggestions.

Sixteen surveyed participants offered unique suggestions to get more people to buy light bulbs from the Savings Store; these are listed below.

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- *If you're not a Duke customer, can you use the store? Right now, you have to punch in your account number. I live in a community that has its service territory divided in half between Duke and a co-op. My church would like to buy these bulbs, but they're in the co-op's territory. The bulbs are more expensive elsewhere. If Duke would open up the store to non-Duke customers, with higher prices than Duke customers pay but still lower prices than retail, that would increase sales.*
- *Improve the Duke Energy name because the ash spill is ruining your reputation. It seems like management is 'tone deaf' to their customers' problems and complaints.*
- *The store needs a better selection.*
- *Duke could have more brands available at the store.*
- *Offer more LEDs.*
- *The store needs to provide better proof of energy savings.*
- *The store needs to provide real calculations on energy costs: to get more specific on how much money you will save from using CFLs.*
- *Duke could provide more accurate cost savings projections and improve the transparency of the order confirmation process.*
- *Duke Energy community outreach, and advertising via MyHER mailings.*
- *Duke needs to do more consumer education about CFLs and LEDs.*
- *Let people pay for the bulbs through Paypal or have them billed to their account.*
- *They should offer some other sort of non-online option to get the bulbs at the discounted price. Not everyone has a computer or the internet to have access to this Savings Store. I suggest offer an outlet store for people to go to.*
- *A lot of people don't have computers or the internet, so maybe send an order form along with the customer's utility bill.*
- *Duke could provide a toll-free phone number for placing Savings Store orders. I don't own a computer.*
- *Let people know that CFLs last longer than the standard incandescents and that they are pretty safe to use. Let people know that they need to be recycled and how to clean them up if they break a CFL.*
- *For myself, I think the Savings Store could generate more interest by offering solar-powered light fixtures.*

Finally, customers were asked "*how else might the Savings Store be improved?*" Thirty-two surveyed participants (23.5% of 136) offered suggestions, which are listed below.

- *On the first page, they should list all the links to things like the bulb descriptions. It was hard to navigate around my first couple of visits. They need everything about the store on one page, so you can go to directly what you want.*
- *Easier website navigation.*

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- *Make sure that once I sign into my Duke account, that I wouldn't have to create a new account for the Saving Store.*
- *Additional advertising could invigorate the Saving Store.*
- *This program needs more advertising and awareness.*
- *Send out more emails letting other people know about it and mail out coupons.*
- *The Savings Store could send email notifications of new promotions.*
- *Send a reminder email once in a while; out of sight out of mind.*
- *Duke could provide more accurate cost-savings estimates.*
- *The Savings Store could provide better bulb descriptions and size specifications.*
- *The descriptions of the bulbs could be improved.*
- *They need better descriptions.*
- *I don't remember them having good pictures of the bulbs or anything.*
- *The Savings Store could provide more information about bulb disposal and mercury concerns.*
- *Offer other energy saving items that customers can install themselves at a discounted price. Offer things like insulation, faucet aerators, water heater tank wraps, door insulation, et cetera.*
- *They need a bigger selection of bulb sizes and lighting levels.*
- *To carry more of a selection of outside waterproof bulbs and night lights.*
- *Offer more items, especially with LEDs.*
- *Duke could offer fluorescent tubes for under-counter lighting applications.*
- *Just keep on offering the cheap bulbs.*
- *More sales, like 50% off of your purchase, or buy one get one 50% off.*
- *Offer more savings on halogen or LEDs, offer cheaper LED options overall.*
- *They could have a better price for those bulbs.*
- *You could always reduce the prices.*
- *Lower the prices on LEDs.*
- *The Savings Store could increase the limit on the number of bulbs I can purchase.*
- *The site should let us know about the limit allotted per customer sooner. I suggest while we are shopping a particular bulb, the site lets us know what the limitation is at the final discounted price and right below it, offer the link to where we can get more.*
- *Once you've reached your limit, have a 'shop here' link and offer the same shipping and handling of $5.*
- *The Savings Store could offer free shipping, or at least a low-quantity threshold needed to receive free shipping.*
- *I'd be willing to pick my order up to avoid mailing the big box of packing peanuts.*
- *Duke could provide a toll-free phone number for placing Savings Store orders.*
- *It would be nice if the purchase amount would be added onto our monthly electric bill.*

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Key Findings

- TecMarket Works surveyed 136 Duke Energy customers who participated in the Specialty Bulbs program by purchasing light bulbs from the Savings Store website. Of these customers, 106 (77.9%) live in North Carolina and 30 (22.1%) live in South Carolina.
  - See section titled *Participant Surveys* on page 55.
- Most Specialty Bulb program participants have already adopted efficient bulb usage: 89.0% (121 out of 136) already had at least one efficient bulb (CFLs and/or LEDs) installed in their homes before the program, and the average number of efficient bulbs (of all kinds) installed before the program was 13.1 per household with a median of ten efficient bulbs per household.
  - See section titled *CFLs and LEDs Installed Before Participating in the Program* on page 112.
- Specialty Bulb program participants still have many incandescent bulbs installed in their homes, averaging 10.0 installed per household even after participating in this program. However, only 11.1% of these currently installed incandescent bulbs are standard capsule-style bulbs which are being used for more than two hours per day (an average of 1.1 per household); the vast majority of currently installed incandescent bulbs in participant households are either specialty bulbs or installed in little-used sockets.
  - See section titled *Incandescent and Halogen Light Bulbs Installed in Participant Households* on page 115.
- There are a wide array of specialty bulb types installed in program households: the most common type are outdoor reflector bulbs (found in 75.0% of households) and the least common are indoor reflectors (47.1%) and CFL and LED capsule bulbs (46.3%). Among customers who have a particular type of specialty bulb installed in their homes, the types that are most likely to still be incandescent are candelabra bulbs (62.4% of currently installed candelabras) and dimmable bulbs (50.4%), while the types that are most likely to have efficient bulbs are three-way bulbs (69.9% CFL or LED), indoor reflectors (67.4%) and globe bulbs (64.7%). The most common types of incandescent specialty bulbs found in storage in participant households are also candelabras (30.1% of all incandescent specialty bulbs currently in storage) and bulbs for dimmable sockets (20.0%).
  - See section titled *Specialty Bulbs in Participant Households* on page 117.
- The 136 surveyed program participants confirmed the purchase of 1917 program bulbs, or an average of 14.1 program bulbs per household. Only 6.6% (127 out of 1917) of these bulbs purchased are LEDs, with the rest being CFL bulbs. Four out of five program LEDs (80.3% or 103 out of 127) are installed in participant households, compared to only three out of five program CFLs (58.8% or 1047 out of 1790). Overall, nearly a third of program bulbs purchased are being stored for future use (31.4% or 602 out of 1917) while about one in twenty has been disposed of (4.5% or 87 out of 1917) and 59.9% (1149 out of 1917) are currently installed. The main reasons for storing program bulbs are "waiting for standard bulbs to burn out" (36.0% or 49 out of 136) and "already have specialty program bulbs everywhere they will fit" (30.9% or 42 out of 136).
  - See section titled *Program Bulb Installations* on page 92.

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- For surveyed installations almost 80% (78.6% -718 out of 914) of the bulbs that were replaced by program bulbs were low-efficiency incandescent or halogen bulbs indicating the program is converting most sockets from low efficiency to high efficiency bulbs. Only 16.1% (147 out of 914) of program bulbs replaced other efficient CFL or LED bulbs. Participants report that lamps with program bulbs installed are currently being used an average of 4.4 hours per day.
  - See section titled *Previously Installed Light Bulbs* on page 106.
- A majority of program participants (57.3% or 78 out of 136) first became aware of the Savings Store through mailings from Duke Energy. Online solicitations from Duke Energy through the public website or Online Services (customers' "My Account" page) were the second-most common way of learning about the program (27.2% or 37 out of 136), followed by emails from Duke Energy (11.8% or 16 out of 136).
  - See section titled *Awareness and Participation in the Program* on page 55.
- When asked for the main reason they chose to participate in this program (by purchasing bulbs from the Savings Store), a majority of 51.5% (70 out of 136) said it was to save money on light bulb purchases. Including secondary reasons for participation, the reduced price of bulbs was a motivating factor for 73.5% (100 out of 136) of participants overall. The next-most mentioned reasons for participation are saving energy (overall 31.6% or 43 out of 146) and saving money on utility bills (23.5% or 32 out of 136).
  - See section titled *Factors Motivating Participation* on page 56.
- When asked to rate the influence of various factors when choosing light bulbs for their home, the most important are the purchase price of the bulb (9.08 out of ten), energy savings (9.07) and saving money on utility bills (9.05). Some factors which have much less influence would include ease of disposal (7.20), speed at which bulbs reach full luminosity (6.85), the appearance of the bulb (6.34), the ability to dim (5.38) and recommendations from utilities (6.27) and family and friends (5.00).
  - See section titled *Factors that Influence Light Bulb Purchases* on page 82.
- Three-quarters of surveyed participants (77.2% or 105 out of 136) are aware that bulb prices are reduced by program incentives, but only 50.0% (68 out of 136) are aware that there is a limit on the number of bulbs of each type that can be purchased at the fully-incented price. A minority of 41.2% (28 out of 68) of customers who are aware of the limits are also aware that more bulbs can be purchased beyond these limits, though not at the same price. More than a third of these customers (38.2% or 26 out of 68) claim that the incentive limits kept them from ordering all of the bulbs they wanted.
  - See section titled *Effects of Pricing, Packaging and Incentive Limits on Purchase Decisions* on page 83.
- Only about one in five participants (19.1% or 26 out of 136) reported that they recalled something from the program information provided at the Savings Store site which stood out for them as useful or important, while more than three out of five (65.4% or 89 out of 136) could not recall any of the information resources found at the site.
  - See section titled *Savings Store Website Information and Tools* on page 59.
- Only about one in five participants (19.1% or 26 out of 136) reported that they used the energy savings calculator tool at the Savings Store site, while more than three out of five (65.4% or 89 out of 136) did not recall this tool being available at the site. Among participants who recalled the calculator tool, only a slight majority of 55.3% (26 out pf 47) used this tool. Among the customers who did use this tool, only a slim majority of

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53.8% (14 out of 26) were aware that this tool is interactive and that the settings can be changed to match their own household.

  - See section titled *Savings Store Website Information and Tools* on page 59.

- Although 91.2% (124 out of 136) of participants are aware that there is a telephone number for customer support, only 8.1% (11 out of 136) called the support line. Similarly, 89.7% (122 out of 136) are aware that there is a Contact Us link on the Savings Store site, but only one surveyed customer (0.7% of 136) actually used this link to contact support.
  - See section titled *Customer Support* on page 67.
- A slight majority of 52.9% (72 out of 136) of surveyed participants say that the reduced price of bulbs at the Savings Store caused them to buy more bulbs than they otherwise would have, while 43.4% (59 out of 136) say that the availability of low-price multi-packs caused them to purchase more bulbs than they otherwise would have. When asked to quantify how many more bulbs they purchased due to multi-pack pricing, customers reported that about a quarter of bulbs purchased (23.8% or 456 out of 1917 bulbs) were due to the effect of multi-pack pricing.
  - See section titled *Effects of Pricing, Packaging and Incentive Limits on Purchase Decisions* on page 83.
- Participants are very satisfied with their experience purchasing light bulbs at the Savings Store, giving an average overall program satisfaction rating of 9.15 on a ten-point scale where "10" is most satisfied and "1" is not at all satisfied. Satisfaction ratings are also very high (over 9.0) for aspects of the program having to do with the online shopping experience (using the shopping cart, navigating the site, delivery time, etc.), though ratings are a bit lower for informational aspects of the site such as the helpfulness of bulb descriptions (8.76), energy savings estimates (8.64) and the energy savings calculator tool (7.42 among 24 participants who used the tool). On the key measure of satisfaction with the price of bulbs sold at the Savings Store, the average rating is a healthy 9.04 out of ten. Most of these ratings are higher than the average rating given by program participants for their satisfaction with Duke Energy overall, which is only 8.34 out of ten. When asked for their favorite and least favorite aspects of the Savings Store, the most popular thing is the reduced price of light bulbs (59.6% or 81 out of 136) followed by the convenience of shopping online from home (34.6% or 40 out of 136), while the most common complaints are about the limit on the number of fully-incented bulbs that can be purchased (9.6% or 13 out of 136) and wanting more or better information available at the website (7.4% or 10 out of 136).
  - See section titled *Participant Satisfaction* on page 69.
- Participants were also asked to rate their satisfaction with the program bulbs they purchased: overall, installed CFLs received an average satisfaction rating of 8.95 while LEDs received an average rating of 9.48, for an overall program bulb average satisfaction rating of 8.97 on a ten-point scale. By specialty bulb category, the highest satisfaction ratings were given for program globe CFLs (9.21) and the lowest ratings were given for dimmable spiral CFLs (8.73).
  - See section titled *Satisfaction with Light Bulbs Purchased from the Savings Store* on page 74.
- A majority of 61.0% (83 out of 136) of participants surveyed told others about the program; the average number of recommendations among those telling others about the

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program is 5.2 and the median is three. Most of those informed about the program by participants are friends (33.6% or 145 out of 431 recommendations) and family members (31.3% or 135 out of 431), followed by church groups (12.8% or 55 out of 431) and neighbors (10.0% or 43 out of 431).

  - See section titled *Recommending the Program* on page 68.

- When participants were asked what they would have done if the Savings Store had not been available, 25.0% (34 out of 136) would have purchased the same bulbs at the same time anyway, while 11.8% (16 out of 136) would not have bought any bulbs at all. A majority of 58.8% (80 out of 136) would have either purchased fewer bulbs, delayed their purchase, or both. When asked what kind of bulb they would have installed in their program bulb sockets if the Savings Store bulbs had not been available, about half of sockets would have had incandescent or halogen bulbs (48.8% or 122 out of 250 installations) and slightly fewer would have had CFLs or LEDs (42.8%). However, when asked what type of bulb they will install when their program bulbs need replacing, the vast majority of participants intend to install more CFLs (84.0%) or LEDs (10.0%), and only a small handful intend to replace program bulbs with incandescent or halogen bulbs (3.6%).
  - See sections titled *Intention to Purchase Light Bulbs if the Savings Store had not Been Available* on page 87 and *Intention to Install Efficient Lighting in the Absence of the Program and in the Future* on page 108.
- When participants were asked if they intend to shop at the Savings Store again in the future, 64.0% (87 out of 136) said they "definitely will" or that "the Savings Store will be one of the first places I go for light bulbs". Only 2.9% (4 out of 136) say that they will "probably not" or "definitely not" shop at the Savings Store again.
  - See section titled *Intention to Shop for Light Bulbs at the Savings Store in the Future* on page 88.

Recommendations

- **Consider routinely monitoring competitors' pricing on bulbs and shipping.** Most customers are aware of the price of energy-efficient light bulbs at local retailers and through other online stores, and many of them are directly comparing Savings Store prices to the competition. Price is perhaps the most important driver of Savings Store purchases, so Duke Energy should consider routinely monitoring competitors' pricing to ensure that Savings Store pricing remains competitive. This does not mean having the lowest price for every bulb, however many customers will only pay a small premium for the convenience of online ordering if they can find equivalent bulbs available at a lower price elsewhere.
  - Shipping costs should also be noted when monitoring competitors' pricing. Most Savings Store customers are experienced online shoppers and have had their expectations for what shipping should cost set from their experience with other retailers (such as offering free shipping on orders over a certain amount).
  - Price comparisons can be an effective marketing tool. Duke Energy should consider including favorable comparisons to competitors' pricing in advertising for the Savings Store. These comparisons could also include shipping price and policy comparisons.

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- **Consider the effects of multi-pack pricing.** Multi-packs of light bulbs that offer increased savings on the per-bulb price drive a significant number of customers to purchase additional bulbs so that they can get "the best deal"; this often results in the purchase of more bulbs than will be immediately installed, with the extra bulbs stored for future use. Duke Energy should consider the positive effects of multi-pack pricing (to drive additional sales), and also the effect this may have on program impacts (distributing bulbs that will not be installed immediately will dilute the savings per bulb, a corollary effect of selling additional "spare bulbs" that customers don't need immediately).
- **Explain the Savings Store limits are on price not on quantity of bulbs**. Most customers who are aware of the limit on incented light bulbs did not realize that they could purchase more bulbs of the same type beyond these limits, albeit at a higher price without the incentive and from a different section of the site. Duke Energy should also consider streamlining the order process and/or the display of bulbs on the site in a way that doesn't involve customers having to go to a different page to order additional non-incented bulbs.
- **More prominently display information on bulb physical dimensions and threading.** One of the more common issues reported by customers regarding the bulb information presented at the Savings Store, and related requests for more information, involves the physical dimensions of bulbs and their socket threading; this is because some customers are seeking energy-efficient bulbs for unusual and difficult-to-fit sockets in their home. This information is included on the "product specifications" tab for each bulb, but some customers who are seeking this information are not finding it; perhaps a more prominent link labeled "product dimensions" or "socket size/type" could help. In addition to including this information for all bulbs sold at the Savings Store, Duke Energy should also consider the variety of bulb dimensions and threading available when deciding on additions to or subtractions from the Savings Store's offerings.
- **Continue efforts to market the Savings Store to customers who have already shopped at the Store.** Customers who purchased bulbs from the Savings Store still have a significant number of incandescent specialty bulbs in their homes, and a large majority of them say they intend to shop the Store again in the future.

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Non-Participant Surveys

To assess barriers to, and interest in, program participation, TecMarket Works conducted phone surveys with a random sample of non-participating Duke Energy customers. The non-participant survey comprised a total of 80 survey respondents from the Carolina System, including 67 from North Carolina and 13 from South Carolina. Respondents were categorized into two subgroups: people who visited the Duke Energy Savings Store online between April 26 and December 31, 2013, yet did not make a purchase; and Duke Energy customers who received the program's targeted marketing materials yet chose not to visit the online store. All survey respondents affirmed that they were aware of the existence of the Duke Energy Savings Store in order to qualify to continue with the telephone survey, which was fielded between May 15, 2014 and June 5, 2014.

The non-participant survey was aimed at addressing the following key questions:

- Are customers aware of the program, and if yes, how did they learn of the program?
- What is their interest in participation and what are the reasons behind non-participation?
- What are some ways the program could try to increase participation?
- What is their current level of CFL and LED usage?
- What can be done to improve the Duke Energy Savings Store website to enhance the visitor experience and encourage people to make purchases?
- What other items do customers desire that might be sold through the Duke Energy Savings Store?
- What are the demographic and household characteristics of this population? How do these characteristics compare to the participant population?

Among the 80 survey participants, 50 people (62.5%) indicated that they had visited the Savings Store, while 29 people (36.3%) said they had not. One person (1.3%) was unsure if they visited the Store. Another person (1.3%), initially counted among 50 visitors, next said they tried to visit the Store website but their log in was unsuccessful. Because these two respondents could not speak about their experiences on the Savings Store website, they were categorized as non-visitors and received the same skip logic-driven questions as those who did not attempt to visit the Savings Store. This brought the subgroup of non-visitors to 31 people or 38.8% of the survey population, while the remaining 49 people (61.3%) received the skip logic-driven questions for Store visitors. Sample sizes for individual survey questions varied and are noted throughout this analysis.

Overview

Overall the 80 non-participants we spoke to during the survey rated their satisfaction with Duke Energy at an average of 8.0 on a scale of 1 to 10 (Figure 20). Among those who actually visited the Duke Energy Savings Store, satisfaction with the website averaged 8.4, while satisfaction with the Savings Store's prices averaged 7.9. Individual facets of the customer experience while visiting the Store scored even higher. Ease of log in (9.3) and ease of navigation (9.3) led the way with helpfulness of bulb description (8.8), ability to find desired items (8.8), and helpfulness of energy savings estimates (8.6) following close behind. Ease of shopping cart use and ease of checkout scored near the top of scale at 9.7 each, but these average scores reflected very small

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sample sizes due to the skip logic of the survey and the fact that this survey population consisted of those who did not buy anything from the Store. These scores and other findings are discussed in more detail in the sections below.

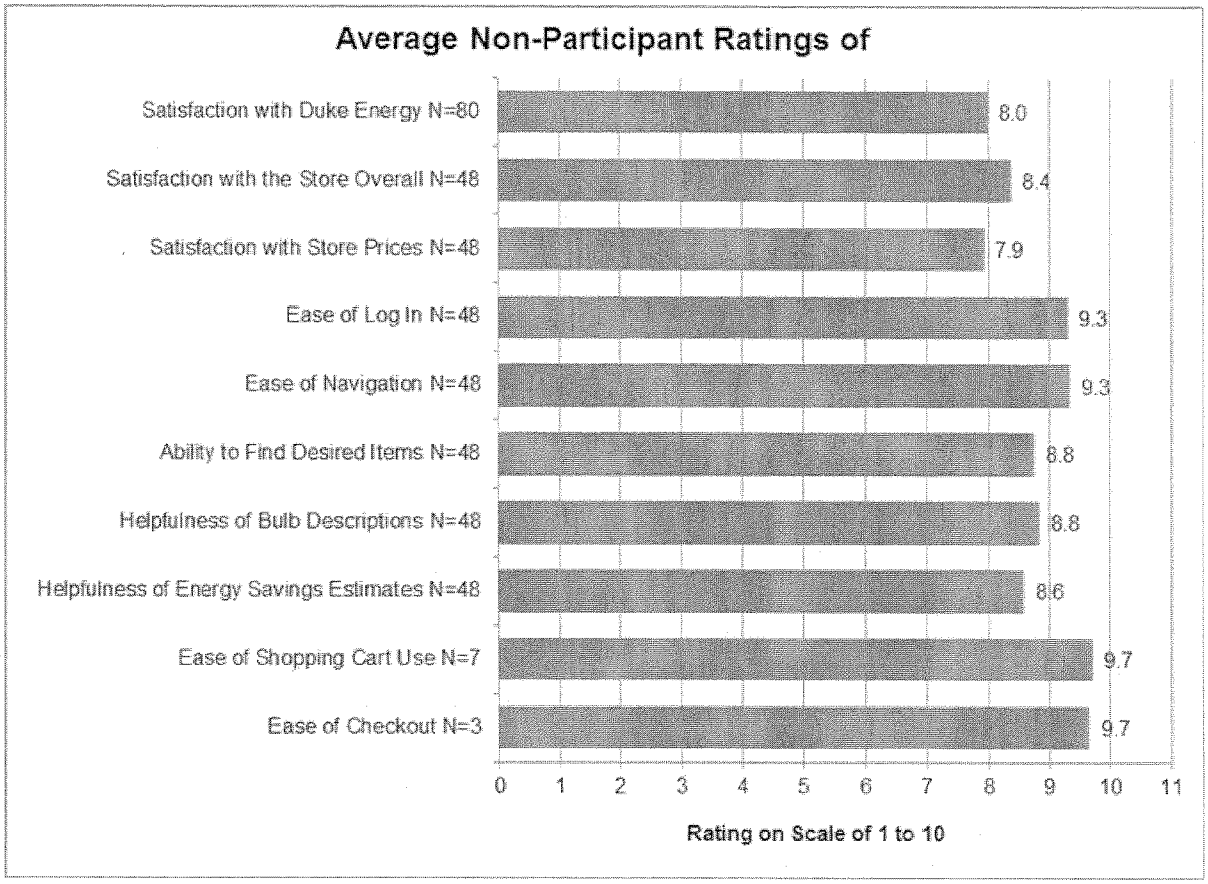

Figure 20. Average Non-Participant Ratings

Visitor Feedback

The skip logic of the survey separated non-participants into two distinct groups, those who had visited the Store and those who had not. Store visitors received a set of questions designed to capture their specific insights and experiences regarding the website, while non-visitors received more general questions about their attitudes and behaviors. The visitor-specific results are followed by separate sections that address non-visitor findings and then the results of survey questions posed to all non-participants.

Customer Awareness

In direct correspondence with the program's chosen marketing vehicles, survey respondents indicated that initial customer awareness of the Duke Energy Savings Store was primarily driven by three sources: a message in the online system (OLS) that is used to access customer accounts (38.8%), direct mail (26.5%), and bill inserts (24.5%). When combined together, direct mail and bill inserts totaled 45.0% when respondents giving both answers were counted only once. Other

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awareness vehicles, such as email and word of mouth, totaled less than 10.0% apiece. Exact amounts are shown in Figure 21.

Figure 21. Initial Non-Participant Awareness Methods

Three people (6.1%) indicated that they learned about the program in some way other than the primary response choices offered. These people gave the following verbatim responses:

- *Through a link from the free CFL bulb giveaway.*
- *Through Duke Energy's Home Energy House Call.*
- *I can't remember for certain, but it was either by mail or by e-mail.*

Methods of Access

Because viewing the Savings Store is only permitted after customers have successfully authenticated, all options for gaining online access converge at Duke Energy's web-based account validation system. To determine the most popular methods for arriving the validation point, the survey asked customers how they reached the Store. Forty three percent (42.9%) of respondents indicated that they came via a link from the "My Account" OLS system. An additional 22.4% of non-participants came via a link on Duke Energy's public website, while 18.4% of non-participants said they entered the URL directly into their web browser. These URLs directed customers to specific landing pages on the Duke Energy public website, bringing

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the combined total for those gaining access via the public website to 40.8%[29] and making that method roughly equivalent to the percentage arriving via OLS. An additional 10.2% said they were unsure of how they arrived, with the remaining survey respondents saying that they came via a variety of other methods including links in emails, social media, and web browser favorite/bookmark (Figure 22).

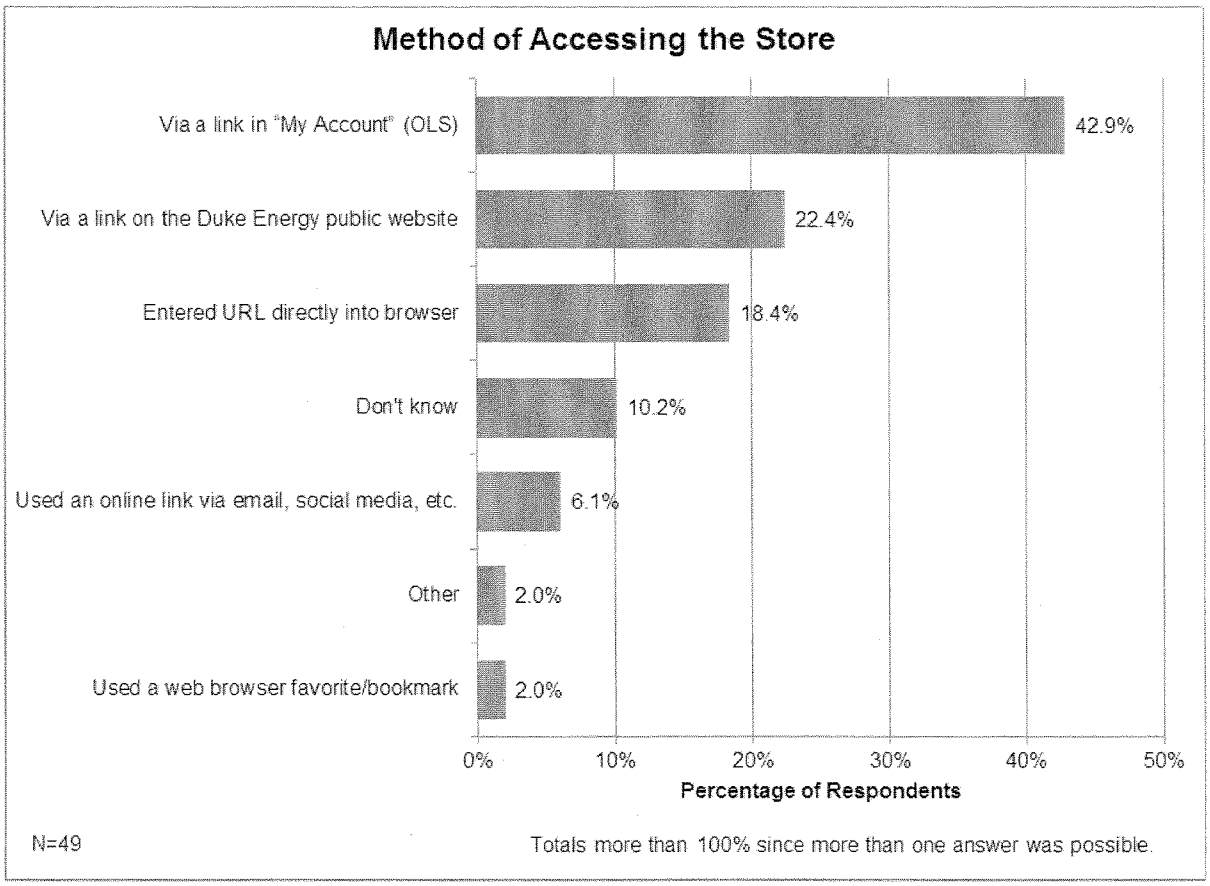

Figure 22. Methods of Accessing Store

Next, the survey responses were crosschecked with Duke Energy's online tracking data to see how customer recall of their method of access actually correlated with web traffic records. This analysis revealed that customer recall was less than completely accurate, although this level of accurate recall may be expected given that respondents could have visited the Savings Store up to nearly a year prior to the survey. When web traffic data was used to calculate customer arrival methods, the OLS proved to be most popular with 28 Store visitors (54.5%) coming that way, compared to 17 visitors (33.3%) who came via the public website. Data was not available for six people (11.7%). The comparison between customer recall and web traffic data revealed the following results as shown in Table 76.

[29] None of the respondents in the combined tally gave both answers.

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Table 76. Comparison of Recall and Web Traffic Data

Arrival Method According to Survey Response	# Responses	Arrival Method According to Web Traffic Data		
		OLS	Web	Data Unavailable
Via a link in "My Account" (OLS)	21	19	2	0
Via a link on the Duke Energy public website	11	4	5	2
Entered URL directly into browser	9	1	6	2
Don't know	5	2	2	1
Used an online link via email, social media, etc.	3	1	1	1
Used a web browser favorite/bookmark	1	0	1	0
Other	1	1	0	0
Total	51	28	17	6

Logging In

Of the 50 non-participants who reported that they had made an effort to visit the Savings Store, 96.0% indicated that they had logged in successfully, while one person (2.0%) had difficulty and another person (2.0%) was unsure. The person who reported difficulty, self-corrected during the next survey response and indicated that they did have a successful log in but a short visit since they are "not really computer savvy."

When asked to rate the ease of logging in on a ten-point scale where 1 is very difficult and 10 is very easy, survey respondents gave scores ranging from 2 to 9 with an average score of 9.3. Forty one out of 48 respondents (85.4%) rated the ease of log in as a 9 or 10. Only two people gave scores of 7 or lower (Table 77). Of these two people, one explained "I'm not computer savvy so my daughter helped me." The other explained their low score, saying "If a customer is already logged into their Duke Energy account then that customer's information should be automatically filled in on the Savings Store form." A cross-check of records revealed that this person logged into the Store on May 9, 2013, during which time the original log in process presented a terms and conditions page that asked customers to confirm their address. As explained earlier in this report, the Duke Energy program manager indicated that numerous customers had issues logging in during that time frame. As a result, a few months after the customer's visit, the program team removed the problematic step from the log in process thus making it easier for customers to access the Store.

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Table 77. Ease of Log In Process (Mean 9.3)

Rating	Frequency	Percent N=48	Valid Percent N=48
10	31	64.6%	64.6%
9	10	20.8%	20.8%
8	5	10.4%	10.4%
7	0	0.0%	0.0%
6	0	0.0%	0.0%
5	1	2.1%	2.1%
4	0	0.0%	0.0%
3	0	0.0%	0.0%
2	1	2.1%	2.1%
1	0	0.0%	0.0%
Don't know	0	0.0%	

Website Visitation

Although none of the Duke Energy customers targeted for the non-participant survey made a purchase at the online Store, 58.8% (47 out of 80) of them confirmed visiting the Store at least once. When these 47 non-participants who visited the Savings Store were asked how many times they visited, the number of visits ranged from 1 to 10 per person, with 1 visit apiece being the most common response (Figure 23). Overall, these respondents indicated that they visited an average of 2.3 times each, equivalent to the average number of visits among program participants who made a purchase (see *Number of Visits to the Savings Store and Number of Purchases* in the Participant Survey section).

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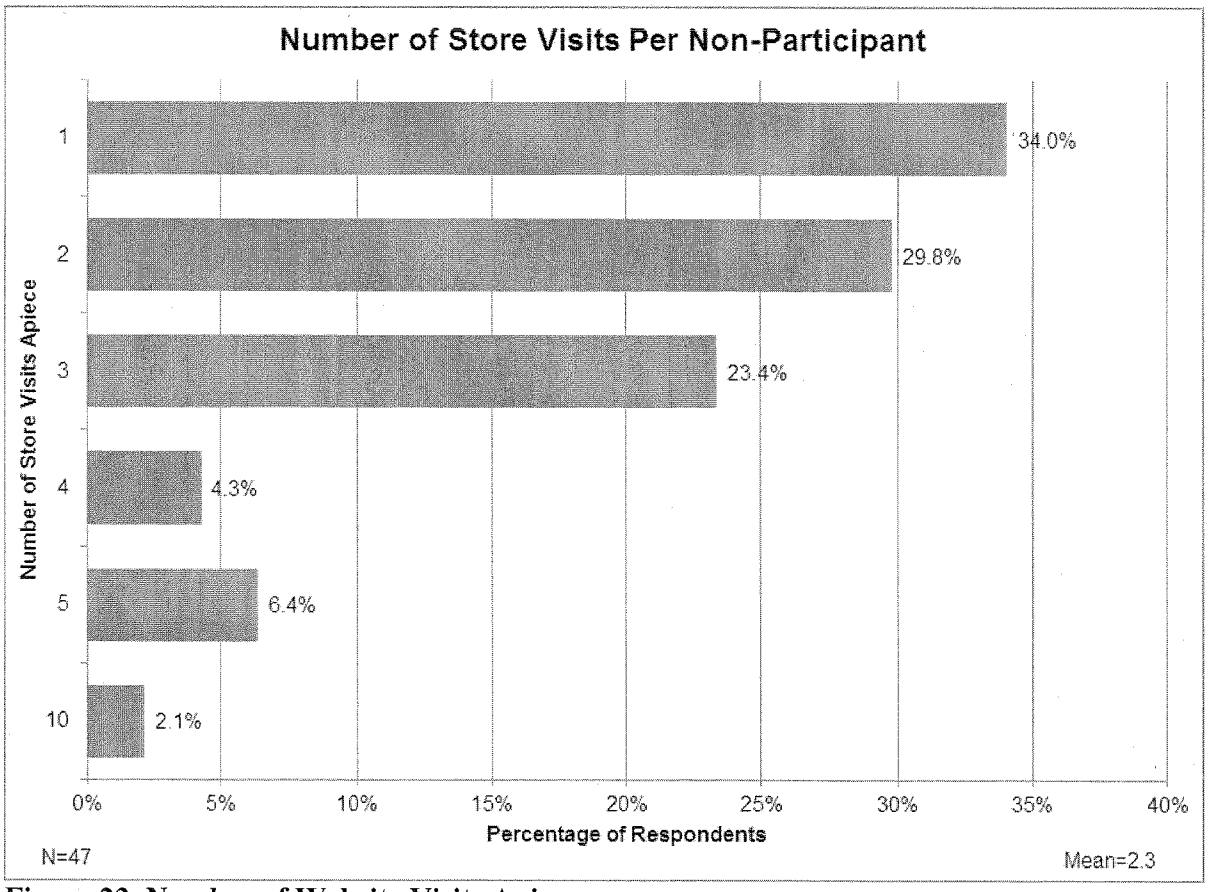

Figure 23. Number of Website Visits Apiece

When asked why they had visited the Savings Store without making a purchase, one quarter of respondents (25.4%) explained that they didn't need energy efficient bulbs at that time (Figure 24). A far higher percentage (81.3% or 39 of 48 respondents after any duplicate primary and secondary responses were removed) indicated that they had visited the Savings Store out of general curiosity, while 61.3% said they'd logged on specifically to check Duke Energy's prices, and another 12.7% said they were making general price comparisons with other retailers. Despite the fact that these people did not end up making a purchase from the Store, TecMarket Works considers the fact that 64.6% of non-participants (31 out of 48 respondents after any repetitive answers to the two price checking answers were removed) self-identified as price-conscious shoppers to be a positive sign because it suggests that they were in fact interested in energy efficient specialty bulbs and were now looking for the least expensive place to make their purchases.

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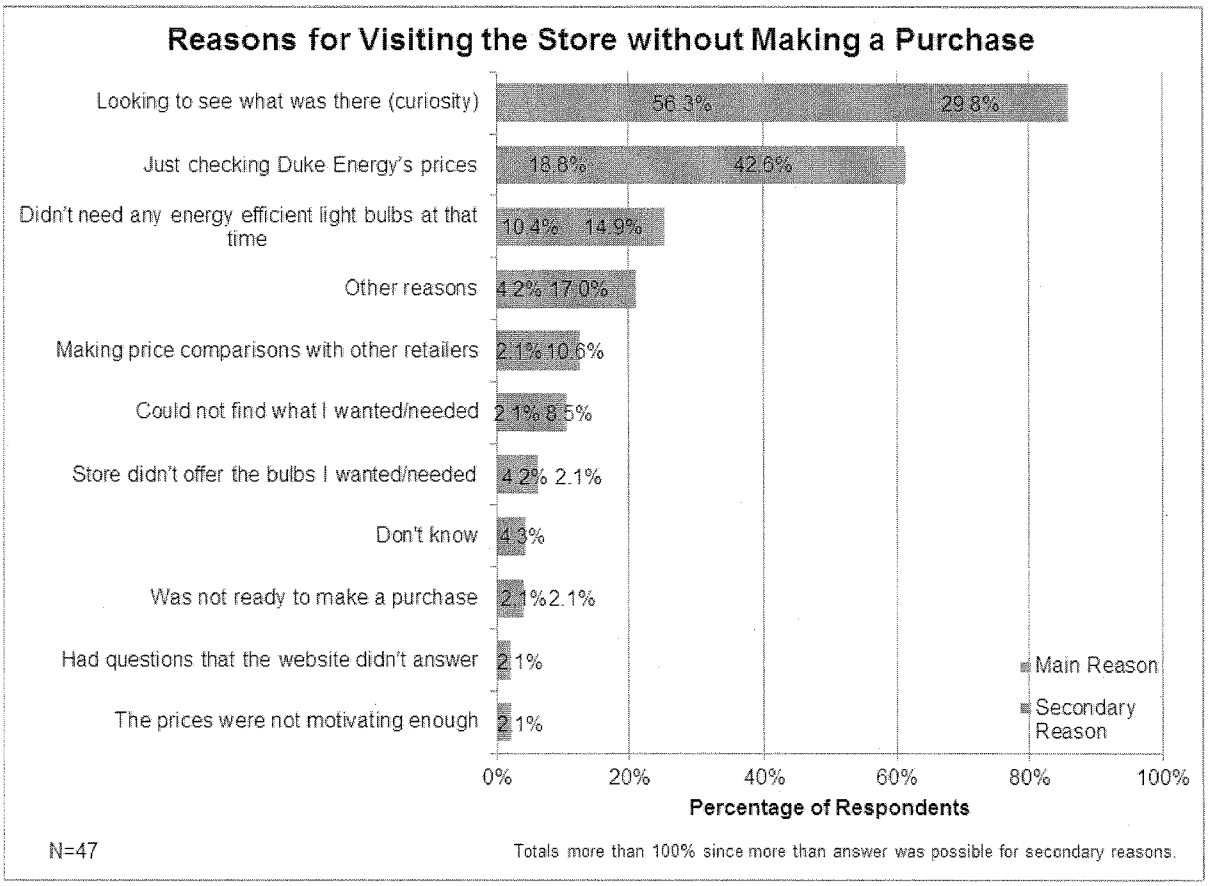

Figure 24. Reasons for Not Making a Purchase

In another positive sign, relatively few non-participants cited criticisms of the Store as their reasons for not making a purchase. Among those who did have issues with the Savings Store, 10.6% said they could not find what they needed, and 6.3% said they had determined that the Store didn't offer what they wanted. One respondent (2.1%) said they had questions that the website didn't answer, and a similar percentage (2.1%) specifically felt the Store's prices were not motivating enough. Some of these response categories contained follow up survey questions that solicited quotes revealing the thoughts behind their replies.

The prices were not motivating enough

- *The prices would have to be low enough to justify the hassle of ordering them online and waiting for delivery.*

Store didn't offer the bulbs I wanted/needed

- *I was looking for a bathroom full spectrum bulb.*

Had questions that the website didn't answer

- *It wasn't clear from the description whether I would be purchasing the correct ones for my fixtures in terms of size and usage.*

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"Other" reasons for not making a purchase totaled 21.2% of all responses. Among the explanations behind an "Other" response, only the first quote listed below suggests a shortcoming with the website. The rest cited largely personal reasons that are not within the control of the program. Note that only six quotes are shown since not everyone provided an explanation.

- *I didn't like the convoluted login and ordering process.*
- *We did not have the money to purchase bulbs at that time. (N=2)*
- *I was looking for items other than light bulbs. (N=2)*
- *We will be moving and I didn't want to leave the good bulbs behind.*
- *Was using the calculator feature to try to estimate energy savings.*
- *To look for my mother who needed regular CFLs.*

The survey also asked respondents a follow up question to identify which retailer or retailers they were using for price comparisons. These included:

- Home Depot (N=4)
- Lowe's (N=4)
- Walmart
- Amazon.com
- shineretrofit.com[30]

Website Navigation

Overall, Store visitors who did not make purchases gave the ease of navigating the website an average rating of 9.3 on a ten-point scale. Thirty-nine out of 48 respondents (81.3%) rated the ease of navigation at 9 or 10 out of 10 (Table 78). When we asked people who gave scores of 7 or lower to explain the reasons for their low ratings, no meaningful responses were generated. Six of these eight respondents didn't answer the question and one explained that she was not very good with the computer and relied on her daughter. With this mind, we conclude that even though the non-participants that we surveyed did not buy anything from the Savings Store, they were nonetheless quite pleased with the ease with which the website can be navigated.

[30] Note: While this represents an accurate customer response, the website URL was not an active web retailer at the time of this evaluation.

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Table 78. Ease of Website Navigation (Mean 9.3)

Rating	Frequency	Percent N=48	Valid Percent N=47
10	28	58.3%	59.6%
9	11	22.9%	23.4%
8	6	12.5%	12.8%
7	1	2.1%	2.1%
6	0	0.0%	0.0%
5	1	2.1%	2.1%
4	0	0.0%	0.0%
3	0	0.0%	0.0%
2	0	0.0%	0.0%
1	0	0.0%	0.0%
Don't know	1	2.1%	

In a related question, we asked Store visitors to rate their ability to find what they were looking for. Ratings ranged from 1 to 10 with a mean of 8.8. Two-thirds of respondents (66.7% or 32 out of 48) gave ratings of 9 or 10. Just seven people gave scores of 7 or less. When asked a follow-up question about what could be done to improve this, respondents suggested improvements including the following: better product descriptions, clearer bulb categories, making it easier to place orders, and better ability to compare their current bulbs to the new bulbs for sale. Their verbatim responses are shown in Table 80 below.

Table 79. Ability to Find Desired Items (Mean 8.8)

Rating	Frequency	Percent N=48	Valid Percent N=46
10	23	47.9%	50.0%
9	9	18.8%	19.6%
8	7	14.6%	15.2%
7	3	6.3%	6.5%
6	1	2.1%	2.2%
5	1	2.1%	2.2%
4	0	0.0%	0.0%
3	1	2.1%	2.2%
2	0	0.0%	0.0%
1	1	2.1%	2.2%
Not Applicable	2	4.2%	

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Table 80. Ability to Find Desired Items: Reasons for Scores of Less than 7

Score	Verbatim Comment
7	*I was looking for candelabra, dimmable, and outdoor flood LEDs.*
7	*I did not find what I was looking for. I don't remember exactly what it was.*
7	*I don't know.*
6	*The Savings Store could provide better categorizations and descriptions.*
5	*I didn't find the candelabra bulbs I was looking for.*
3	*I couldn't place my order then. There were too many steps to make a choice. I had to check my boxes of old bulbs to see how they compared and check my fixtures. The descriptions need to be improved for size and usage.*
1	*We could not find the small chandelier bulbs we were looking for.*

When we asked if an inability to find what they were looking for influenced visitors' decisions not to make a purchase from the Savings Store, 81.3% of respondents (39 out of 48) said no, compared to 18.8% (9 out of 48) who said that it did. Among the nine people who said they might have made a purchase if they had found what they wanted, two could not determine which new bulbs were compatible with their original bulbs, while five said they were unsuccessful in their attempt to find the specific types of bulbs they wanted. One person wanted a broader selection of LEDs and another did not remember. Their verbatim comments are shown below.

- *I couldn't place my order. There were too many steps to make a choice. I had to check my boxes of old bulbs to see how they compared and check my fixtures.*
- *I couldn't decide which bulbs to order because the ones available at the Savings Store seemed different than what I had.*
- *The Savings Store could offer a larger selection LED bulbs.*
- *I didn't find the candelabra bulbs that I needed.*
- *I was looking for candelabra, dimmable, and outdoor flood LEDs.*
- *I didn't find the higher intensity LEDs I was looking for.*
- *I did not find the daylight bulb I was looking for.*
- *I would have purchased the small chandelier bulbs if I had been able to find them.*
- *I did not find what I was looking for. I don't remember exactly what it was.*

Product Descriptions

Among those non-participants who actually visited the Savings Store, opinions of the bulb descriptions were quite favorable with an average score of 8.8 on ten-point scale (Table 81). Half (50.0%) of visitors rated the bulb descriptions at 10 out of 10 and another 8.3% (4 out 48) rated them a 9, while just 14.6% gave ratings of 7 or lower. No one gave a rating of lower than 5 out of 10.

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Table 81. Helpfulness of Bulb Descriptions (Mean 8.8)

Rating	Frequency	Percent N=48	Valid Percent N=45
10	24	50.0%	53.3%
9	4	8.3%	8.9%
8	10	20.8%	22.2%
7	3	6.3%	6.7%
6	1	2.1%	2.2%
5	3	6.3%	6.7%
4	0	0.0%	0.0%
3	0	0.0%	0.0%
2	0	0.0%	0.0%
1	0	0.0%	0.0%
Don't know	3	6.3%	

We asked those who gave scores of 7 or lower how the Savings Store could be improved. They gave the following suggestions, including providing more information about bulb dimensions and lumens. Verbatim comments are shown below.

Table 82. How Bulb Descriptions Can Be Improved

Score	Verbatim Comment
7	*I didn't know much about the LED efficiency and how some of the larger bulbs save you energy.*
7	*Duke could provide more information about bulb sizes.*
7	*The electrical requirements were good. The dimensions and usage were not clear.*
6	*More information about lumens and frequencies.*
5	*I already knew what I was looking for so I didn't really need the descriptions like another customer might.*
5	*Vague descriptions that don't seem to match up with the picture of the bulbs.*
5	*Duke could allow customers to enlarge the photos.*[31]

When asked if the product descriptions had any influence on their decision not to make a purchase from the Savings Store, 91.7% (44 out of 48) said "no", compared to 4.2% (2 out of 48) who said "yes" and a similar percentage that were unsure. When we asked the two respondents who said "yes" to explain more, they gave the following replies:

- *The descriptions of the bulbs were too vague so I went to a store to find the bulb that I needed.*
- *The electrical requirements were good. The dimensions and usage were not clear.*

[31] Note: This feature already exists on the Store, but it is inconsistently implemented across the website; some bulb images are capable of enlargement while others are not.

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Energy Savings Estimates

The Savings Store provides energy savings estimates in two places: with each bulb description and via the Energy Savings Calculator. To assess non-participant opinions on these elements of the website the survey asked people to rate the helpfulness of the energy savings estimates on a scale from 1 to 10. More than half (54.2% or 26 out of 48 respondents) gave ratings of 9 or 10 out of 10. The mean rating was 8.6, thus indicating the energy saving estimates were considered quite helpful even among those who did not make a purchase on the website (Table 83).

Moreover, when respondents were asked if the energy savings estimates had any influence on their decision not to make a purchase from the Savings Store, 100% said "no". Similarly, when asked if the financial savings estimates given by the Store had any influence on their decision not to make a purchase, 97.9% (47 out of 48) said "no," and 2.1% (one person) was unsure.

Table 83. Helpfulness of Energy Savings Estimates (Mean 8.6)

Rating	Frequency	Percent N=48	Valid Percent N=44
10	19	39.6%	43.2%
9	7	14.6%	15.9%
8	10	20.8%	22.7%
7	4	8.3%	9.1%
6	1	2.1%	2.3%
5	2	4.2%	4.5%
4	0	0.0%	0.0%
3	0	0.0%	0.0%
2	0	0.0%	0.0%
1	1	2.1%	2.3%
Don't know	4	8.3%	

Only 16.7% of respondents rated the helpfulness of the savings estimates of 7 or lower. To learn more we asked why they gave the low ratings. Credibility of the estimates was the most frequent reason given. Actual quotes are shown in the table below.

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Table 84. Why Energy Savings Estimates Were Less Than Helpful

Score	Verbatim Comment
7	*Duke Energy could provide independently verified energy savings estimates. I have no way of knowing whether Duke's claims are true.*
7	*Sometimes the bulbs don't last as long as they say they will. I also want bulbs that are bright; that have a high light output.*
7	*I don't know.*
7	*I don't know.*
6	*I can't compare it to actual use unless I try it.*
5	*The estimates are an average for rate of usage but they don't know the hours of usage.*[32]
5	*I guess the thing is I don't buy bulbs for energy savings. I buy them on brightness levels and light quality.*
1	*I didn't find the estimates believable. I don't see how they could calculate that.*

Store Pricing

The next sequence of survey questions explored non-participant opinion regarding Store pricing, including recall of discounts, satisfaction with prices, and the influence of pricing on their decision not to make a purchase from the Store.

Among Store visitors, 60.4% of respondents (29 out of 48) indicated that they recalled seeing discounted pricing during their visit, while 20.8% (10 out of 48) had no recall and another 18.8% (9 out of 48) said they were unsure.

Non-participant satisfaction with specialty bulb pricing at the Savings Store averaged 7.9 on a ten-point scale, with 54.2% (26 out of 48) rating their satisfaction at 9 or 10 out of 10, and 29.2% (14 out of 48) giving scores of 7 or lower (Table 85). When asked why they were less than satisfied, every one of these respondents indicated that they want lower prices. In numerous instances they made price comparisons with local and online retailers and found those options to be less expensive than the Savings Store after factoring in shipping costs and discount coupons at the retailers. Their comments are presented along with their scores in Table 86.

[32] This concern is already addressed on the website. In the area below the numeric energy estimates for each bulb the following statement can be found: "To the extent that your actual use is more or less than the hours per day referenced your annual kilowatt hour savings will be different, but this provides a common time frame to use for comparison. The formula for calculating your actual kilowatt hour usage is: Annual kWh = watts x (hours per day x 365) / 1000."

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Table 85. Non-Participant Satisfaction with Pricing (Mean 7.9)

Rating	Frequency	Percent N=48	Valid Percent N=45
10	16	33.3%	35.6%
9	10	20.8%	22.2%
8	5	10.4%	11.1%
7	3	6.3%	6.7%
6	5	10.4%	11.1%
5	0	0.0%	0.0%
4	1	2.1%	2.2%
3	3	6.3%	6.7%
2	1	2.1%	2.2%
1	1	2.1%	2.2%
Don't know	3	6.3%	

Table 86. Why Non-Participants Were Less Satisfied with Store Pricing

Score	Verbatim Comment
7	*If I looked for sales or coupons for the bulbs at local stores, the cost of the bulbs would be about the same.*
7	*The prices were not as low as I would have liked. Duke's Store would have been more attractive for purchasing if the prices were much lower than retail.*
7	*Because I know I can find similar bulbs for cheaper at other places. If I search online, I can find cheaper bulbs somewhere else like from Shineretrofit.com.*
6	*In some stores, you can find bulbs for just about the same price. And, in some stores prices are way higher. It just depends on how hard you want to shop around.*
6	*I compared pricing and was able to find the bulbs cheaper at Amazon and Home Depot.*
6	*The bulbs were more expensive than what Home Depot and Lowe's were offering via coupons.*
6	*It's been a while since I was there; there might have been one bulb that was priced a little higher than I expected, but I can't remember which one.*
6	*The bulbs were still a bit expensive.*
4	*I thought the bulb pricing would have been cheaper because of Duke's purchasing power.*
3	*I thought the price was too high.*
3	*The price was high but I haven't compared them to prices anywhere else.*
3	*I thought the prices were still too high.*
2	*It was still higher than a lot of retail stores.*
1	*I purchase LEDs on e-Bay for $7 a bulb.*

When asked if the Savings Store's pricing had any influence on their decision not to buy bulbs, 79.2% (38 out of 48) said "no", 18.8% (9 out of 48) said "yes", and 2.1% (1 out of 48) said they were unsure. When those who said "yes" were asked why the pricing was influential, all nine indicated that the Store's prices were too high to induce them to buy. Their actual comments are shown below.

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- *The pricing of the bulbs was disappointing. The savings weren't significant enough to justify the hassle of ordering them through the Store.*
- *I decided to purchase the bulbs at Home Depot because they were less expensive.*
- *The Savings Store pricing seemed a bit high. There were better coupon deals available for Lowe's and Home Depot.*
- *The prices were a little high.*
- *I thought the prices were still too high and that I could get them on sale at Walmart.*
- *Just because the prices were too high.*
- *I have bought them before and they've not been that expensive. I really thought it was going to be beneficial and it wasn't.*
- *I wanted them cheaper.*
- *The bulbs were priced very well but when I factored in the shipping it would cost more.*

Shopping Cart and Purchase Process

Although none of the non-participants that we spoke with made purchases at the Savings Store, we nonetheless asked if any of them had placed items in the shopping cart. Seven respondents or 14.6% of the 48 Store visitors indicated that they had. These respondents were asked to rate how easy it was to use the shopping cart on a ten-point scale. Their ratings ranged from 8 to 10 and averaged 9.7. A follow up question then asked if the shopping cart had any influence on their decision not to make a purchase. Everyone responded negatively, thus indicating that the shopping cart was considered easy to use and wasn't considered an impediment to sales.

The seven respondents who placed items in their shopping carts were asked if they started the checkout process, and three indicated that they had. These three people were asked to rate the ease of checkout on the same ten-point scale; their ratings range from 9 to10 and averaged 9.7. When asked if any elements of the checkout process influenced their decision not to make a purchase, two people (66.7% of 3) said "no" and one person (33.3%) said "yes". The person who said "yes" asked for a way to pick up bulbs at a Duke Energy payment center in order to avoid shipping costs. Their specific comment was as follows: "I feel like there should be a pick-up option to pick up the bulb order instead of having to pay shipping costs. I suggest having a Duke location, like where we have the option to pay our bills, to pick up the light bulbs."

The Savings Store is currently designed to accept payments online via credit card or by mail using check or money order. To assess which methods of payment were most preferred, the survey asked all 48 Store visitors to state their preference. Perhaps not surprisingly 87.5% of Store visitors mentioned credit cards as their preferred method of payment. However, somewhat more interestingly, 6.3% suggested paying via PayPal, while 4.2% wanted debit card processing, and 2.1% preferred to pay in cash. No one wanted to pay by check or money order.

Shipping and Delivery

Of the 48 site visitors who did not make a purchase, only 16.7% recalled shipping methods and delivery times. These eight people were asked what specifically they had noticed. Observations ranged from basic recall of shipping methods, to confusion regarding the "any carrier" shipping

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option,[33] to differing opinions regarding shipping costs and delivery times. Verbatim comments are shown below.

- *It said that "any carrier regular" is the cheapest shipping option, which does not make any sense. I don't know what or who the any carrier is.*
- *On the card mailed to me it talked about a special $5 shipping rate. In the future, if there's a big shipping cost hike, I will have to weigh the total bulb cost (including shipping) against the price at retail stores.*
- *I was planning to visit Duke and purchase at their store. You could pick the United States Postal Service and UPS.*
- *I noticed that the shipping costs seemed high.*
- *Free shipping with the purchase of $50 or more.*
- *I thought it was a normal shipping time.*
- *That they could be delivered quickly.*

When asked if shipping costs had any influence on their decision not to make a purchase from the Savings Store, three of the eight respondents (37.5%) who could speak to the topic indicated that it did have an influence. Likewise, two of the eight respondents (25.0%) indicated that the delivery times had an influence on their decision not to make a purchase. Their comments are quoted below.

Cost

- *The high shipping costs were the main reason I decided not to purchase bulbs through the Savings Store. Once those were factored in, I could buy the bulbs cheaper at Walmart.*
- *I did not want to spend extra for shipping.*
- *I didn't need enough bulbs to get me to the $50 mark and we don't really need so many CFLs or LEDs in storage.*

Delivery

- *The estimated time of delivery seems rather long. I'm looking at it right now and they give me an estimated arrival date of June 9th, which is 10 days from now. That's a long time to fill a small order of the two bulbs I currently have in my cart.*
- *I needed a bulb right away for a backup.*

Influence of Store on Decision Not to Make a Purchase

Despite the fact that the visiting non-participants we surveyed never made a purchase from the Duke Energy Savings Store, they collectively reported that the website design and features of the

[33] The "any carrier option" refers to the fact that the Savings Store offers three shipping methods including the U.S. Post Office, UPS, and "any carrier," which is the cheapest of the three choices. The carrier is not specified since the system selects the least expensive method, which can be UPS, USPS, or FedEx Post which uses a combination of FedEx and the U.S. Post Office.

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Store had little to do with their decisions not to buy energy efficient specialty bulbs (Table 87). More specifically, no more than 4.2% of respondents cited the Store's energy savings estimates, financial savings estimates, product descriptions, and shopping cart as an influence on their decision not to make a purchase. The ability to find desired items and pricing was an influence for 18.8% of visitors. Although delivery times, shipping methods, and payment options influenced some 25.0% to 37.5% respondents, only a small minority of non-participant customers got far enough with their Savings Store experience to have an opinion in these areas.

Table 87. Influence on Decision Not to Buy From Store

Website Element	Number Respondents	% Claiming No Influence	% Claiming Influence	% Not Sure of Influence
Energy savings estimates	48	100%	0%	0%
Shopping cart	7	100%	0%	0%
Financial savings estimates	48	97.7%	0%	2.1%
Product descriptions	48	91.7%	4.2%	4.2%
Ability to find desired items	48	81.2%	18.8%	0%
Pricing	48	79.2%	18.7%	2.1%
Delivery times	8	75.0%	25.0%	0%
Shipping methods	8	62.5%	37.5%	0%
Payment options	3	66.7%	33.3%	0%

Satisfaction with and Impressions of the Savings Store

Satisfaction is relatively strong among non-participants who visited the Savings Store despite the fact that they did not make a purchase. Of the 48 site visitors surveyed, the average satisfaction rating for the Duke Energy Savings Store is 8.4 on a ten-point scale. In all, 58.3% of respondents rated their satisfaction at 9 or 10 out of 10, while just 22.9% rated their satisfaction a 7 or lower (Table 88).

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Table 88. Non-Participant Satisfaction with Store (Mean 8.4)

Rating	Frequency	Percent N=48	Valid Percent N=47
10	19	39.6%	40.4%
9	9	18.8%	19.1%
8	8	16.7%	17.0%
7	3	6.3%	6.4%
6	5	10.4%	10.6%
5	1	2.1%	2.1%
4	0	0.0%	0.0%
3	0	0.0%	0.0%
2	1	2.1%	2.1%
1	1	2.1%	2.1%
Don't know	1	2.1%	

Eleven respondents who gave scores of 6 or less were asked to provide suggestions for improvement, the most frequent of which was lower prices with six mentions, followed by a better selection (three mentions) and lower shipping costs (two mentions), as shown in Table 89.

Table 89. Suggestions to Increase Satisfaction with the Savings Store

Suggestion Summary	Count	Percent of 11 Respondents
Lower prices	6	54.5%
Better selection	3	27.3%
Lower shipping costs	2	18.2%
Easier log on process	2	18.2%
Easier to find desired items	1	9.1%
Better descriptions	1	9.1%
Don't know	1	9.1%

Table 90. Why Non-Participants Were Less Satisfied with the Energy Savings Store

Score	Verbatim Comment
7	*The prices were still too high.*
7	*It took too many steps to log onto the website.*
7	*I don't know.*
6	*Duke could either reduce or eliminate the shipping costs.*
6	*The Savings Store could offer lower pricing and a better selection of LED bulbs.*
6	*The Savings Store could reduce their bulb pricing.*
6	*The Saving Store didn't have the LEDs I was looking for.*
6	*They need more in depth descriptions of the bulbs and maybe a cross reference.*
5	*The Savings Store could offer lower pricing, make it easier to find the items I'm looking for, and simply the online process.*
2	*It's a waste of time. If it really was a savings, with as much as I pay for electric, I don't know.*
1	*Cheaper LEDs, more types of LEDs, and free shipping.*

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What Non-Participants Liked Most

When non-participant visitors were asked what they liked most about the Savings Store, the ease of website use topped the list garnering 25.0% of replies. This was followed by the Store's prices at 22.9%, and 18.8% who appreciated the product selection. A summary of reasons is shown in Table 91, while the verbatim comments are listed in *Appendix J: Non-Participant Feedback.*

Table 91. What Is Liked Most About the Savings Store

Response	Count	Percent of 48 Respondents
Ease of website use	12	25.0%
Prices	11	22.9%
Product variety/selection	9	18.8%
Information provided	5	10.4%
Convenience	5	10.4%
Descriptions	3	6.3%
Energy savings	3	6.3%
Product display	3	6.3%
Variety of bulbs	3	6.3%
Availability	1	2.1%
Easy to get to from Duke website	1	2.1%
Don't know/Nothing	3	6.3%

What Non-Participants Liked Least

When asked what they liked least about the Savings Store, 39.6% of non-participant visitors could not name anything. Among those who gave constructive criticism, 12.5% indicated they could not find what they were looking for, 10.4% didn't like the cost of shipping, and 8.3% each were concerned about the prices and limited selection. Table 92 shows a count of common responses. The verbatim comments are listed in *Appendix J: Non-Participant Feedback.*

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Table 92 What Is Liked Least About the Savings Store

Response	Count	Percent of 48 Respondents
Couldn't find what I was looking for	6	12.5%
Cost of shipping	5	10.4%
Prices	4	8.3%
Limited selection	4	8.3%
Waiting for shipping	1	2.1%
Want to be billed later	1	2.1%
Figuring out appropriate replacements for old bulbs	1	2.1%
Online shopping	1	2.1%
Wanted efficiency items besides bulbs	1	2.1%
Inability to buy single bulbs[34]	1	2.1%
Product explanations	1	2.1%
Log in process	1	2.1%
Website functionality	1	2.1%
Nothing / don't know	19	39.6%

Non-Participant Suggested Items for Sale at Store

Because the non-participants visited the Savings Store without making a purchase, the survey sought to learn what other items Duke Energy might offer for sale to better align the Store's inventory with their needs. Respondents provided a wide ranging list of suggestions, including a greater variety of LEDs and other kinds of CFL bulbs for currently unaddressed specialty applications such as appliances, landscapes, grow lights, and photo studios. They also suggested non-lighting energy efficiency devices including power strips, smart thermostats, occupancy sensors, and lighting timers. Table 93 provides a summary list of their suggestions. *Appendix J: Non-Participant Feedback* shows a list of verbatim responses from customers who made suggestions.

[34] Note: This direct customer quote is inaccurate. Individual bulbs can be purchased from the Store.

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Table 93. Non-Participant Suggestions for New Items

Response	Count	Percent of 48 Respondents
Greater variety of LEDs	3	6.3%
Candelabra bulbs	3	6.3%
Energy saving power strips	3	6.3%
LED bulbs for appliances	2	4.2%
High intensity LEDs	1	2.1%
Dimmable LEDs	1	2.1%
Under cabinet LEDs	1	2.1%
50 W halogen equivalent LED spotlights	1	2.1%
CFL flicker light	1	2.1%
Daylight CFLs	1	2.1%
Quick start CFLs	1	2.1%
Outdoor reflectors	1	2.1%
Landscape bulbs	1	2.1%
Decorative lighting	1	2.1%
Photo studio bulbs	1	2.1%
Globe bulbs	1	2.1%
Recessed lighting	1	2.1%
Grow lights	1	2.1%
Plug-in bulbs which snap into place	1	2.1%
Light timers	1	2.1%
Light fixtures and replacement parts	1	2.1%
Smart thermostats	1	2.1%
NEST programmable thermostat	1	2.1%
Appliances	1	2.1%
Three prong plug adapters	1	2.1%
On-bill financing	1	2.1%
None / don't know	23	47.9%

Suggested Website Additions and Improvements

Surveyed non-participants were asked if they had any ideas for additions or improvements to the features of the website. While many respondents had no suggestions, the remainder offered a sizable list of ideas, including: an improved log in process, increased search functionality, better explanations of lumens and brightness, greater assistance for selecting the most appropriate bulb, lower prices, free shipping, payment plans, and assurances that the Store's credit card processing is secure. Their verbatim suggestions are listed in *Appendix J: Non-Participant Feedback.*

Non-Participant Bulb Buying Intentions

Alternative Methods of Buying Specialty Bulbs

Because these non-participants did not make a purchase, the survey specifically contained a question asking them if they would have preferred to purchase specialty bulbs via a method other than the Savings Store. Well over half of respondents (58.3% of 48) said no, compared to 37.5% who said yes, and 4.2% who were unsure. A follow up question asked the 18 people who

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answered yes which other methods they would have preferred. Fourteen respondents reported that they prefer to shop at a local store. Two wanted coupons for local stores; one person wanted to buy by phone; and another wanted to pay for bulbs via their Duke Energy bill.

Influence of Savings Store on Future Purchases

Future CFL Purchases

Despite the fact that none of the Store visitors made a purchase while on the website, a sizeable 58.3% (28 of 48 Store visitors) indicated that their visit made them more likely to purchase and install CFLs in the future. Forty two percent (41.7%) felt that their Store visits made them neither more nor less likely, and nobody (0%) said their visit made them less likely to purchase and use CFLs in the future. When asked why their visits to the Store made them more likely, respondents gave the following verbatim replies:

- *Because I now know of a cheap and easy way to get them, and because they will save me money in the long run.*
- *Because of the energy savings.*
- *Being able to look at all the different styles.*
- *CFLs are supposed to save money on the energy bill and they're not going to be selling the old type of bulbs soon.*
- *Cost.*
- *Honestly, since we put in the free CFLs, we have only changed one light bulb. They definitely last longer.*
- *I am more likely to use CFLs because Duke sends me eight free each year.*
- *I am more likely to use CFLs because they help reduce utility costs.*
- *I have extra CFLs in storage right now for replacements and by the time I'll need more bulbs the stores will only be selling CFLs.*
- *I like how they save so much money on my bills.*
- *I like that they don't get hot so I can touch them if I need to change one.*
- *I like the light fine after the CFLs warm up.*
- *I like them because of the purchase price of the bulb, the energy savings and the savings on my electric bill.*
- *I liked their description of how the light bulbs change your power.*
- *I think that we'll use the CFLs more in future because Duke Energy sent us some free CFLs and we really like them. So far haven't really needed any more bulbs for the house but I'm sure that we'll need some of those specialty bulbs shortly.*
- *I want the cost savings.*
- *I want the energy savings.*
- *I will be using either CFLs or LEDs, depending on where I need the light.*
- *I will use CFLs because of the cost savings in my electric bill.*
- *I would rather buy from a reputable source, it's easier online, and the savings should be competitive with a big box store.*

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- *I'm just trying to save electricity in the home.*
- *It saves on the energy bills.*
- *The CFLs are supposed to save money on the energy bill and they are supposed to last longer.*
- *The CFLs are supposed to save money on the energy bill and they are supposed to last longer.*
- *The CFLs don't get as hot and are more energy efficient.*
- *They save energy and last longer.*
- *When I need more CFLs in the future I know where to get them at a lower price.*
- *When we built the house five years ago it was difficult to find the different specialty CFLs but they're easier to find now and they are a better quality bulb than you used to get. They have a better light quality.*

Future LED Purchases

Among these same 48 Store visitors, fewer respondents indicated that their visits to the Savings Store made them more likely to buy and install LEDs in the future (35.4%), compared to a majority (56.3%) who said they were neither more nor less likely. No one (0%) indicated that their visit to the Store made them less likely to buy and use LEDs in the future, although 8.3% said they were unsure. When asked why they were more likely to purchase and install LEDs after visiting the Store, non-participants gave the following replies:

- *CFLs take forever to get bright and that drives me insane. CFLs also don't seem as bright as a normal light bulb.*
- *I like that they are easy to order via the Savings Store. I like that they last long. I also like that when they burn out they quietly quit working.*
- *I really like the little flame LEDs that I got from QVC. They're nice and bright for such a tiny bulb and it seems like they last forever.*
- *I like the color options.*
- *I want the cost savings.*
- *I was able to find the smaller spotlight LEDs that are the equivalent to the 50-watt Halogens that we had been using at Home Depot after I found out the Saving Store didn't sell them. Since trying them we like them a lot more because they don't give off as much heat as the halogens.*
- *I will be using either CFLs or LEDs, depending on where I need the light. I want the best energy-efficient lighting to help me to save money. I will try different products to see how they best work, or if they don't work.*
- *If the price is right on the Saving Store website I will get them there because I know they're expensive but more efficient.*
- *If they are in the Savings Store at a price as good as retail stores.*
- *I'm just trying to save electricity in the home.*
- *LEDs are supposed to save money on the energy bill.*

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- *LEDs seem like they last longer.*
- *The CFLs are supposed to save money on the energy bill and they are supposed to last longer.*
- *The LEDs don't get as hot and are more energy efficient but they're too expensive,*
- *There is no warm up time for maximum brightness of the LED, they're brighter, and last longer than other bulbs.*
- *They have a long life. They are safer than CFLs which I heard emit some dangerous rays.*
- *They save energy and last longer.*

Future Purchases Specifically at the Energy Savings Store

In addition to asking non-participants about their intention to buy and use CFLs and LEDs in general, they were also asked about their intention to shop for efficient bulbs at the Savings Store. More than one-quarter of survey respondents (26.3%) said they are confident that they plan to shop for specialty bulbs from the Savings Store in the future, and an additional 35.0% said they probably will do so. Another 27.5% said they may or may not shop at the Store, while only 10.0% indicated that they have no intentions of shopping at the Savings Store in the future (Figure 25).

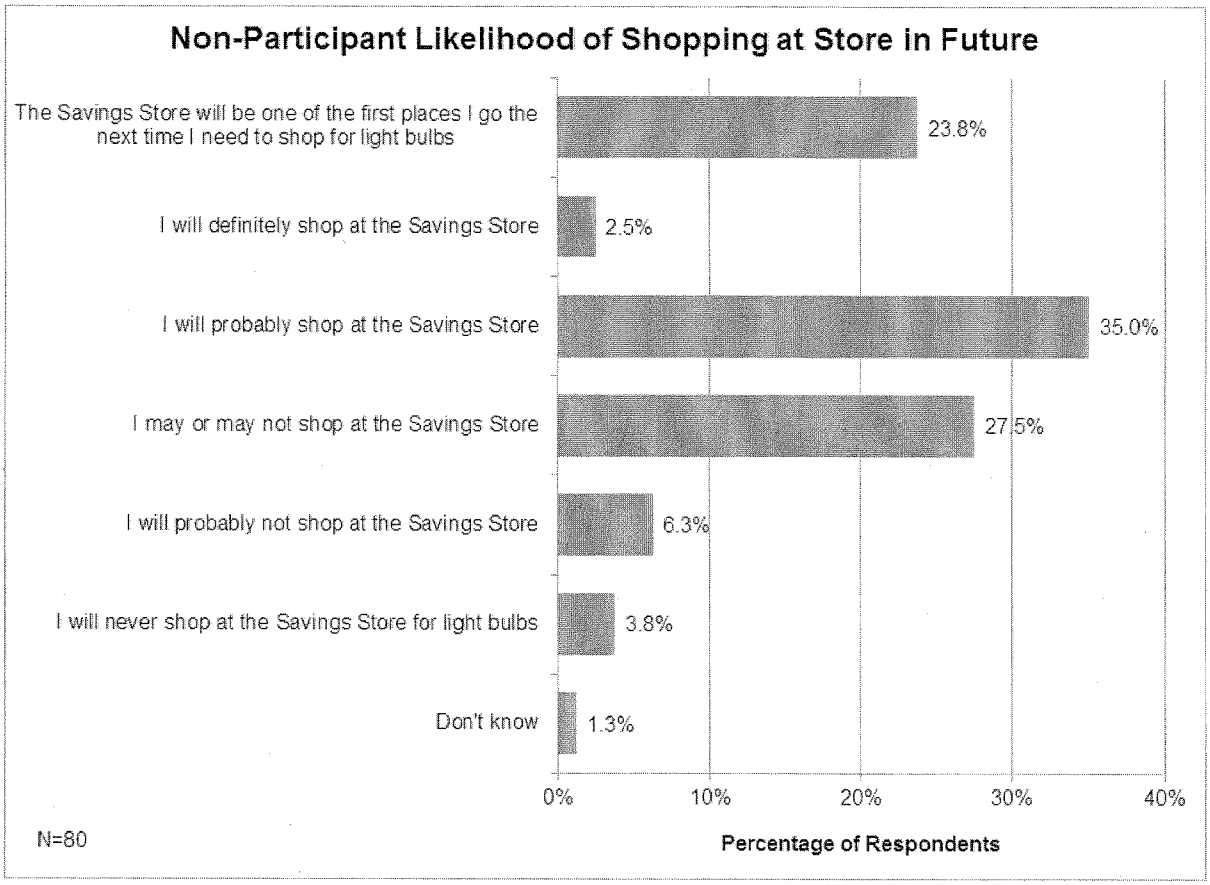

Figure 25. Non-Participant Likelihood of Shopping at Store in Future

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When asked why the Savings Store would be one of the first places they shop for bulbs, the 19 non-participants who were most likely to shop at the Savings Store responded as follows:

- *As I haven't actually been to the website I am interested in finding out what it offers. I've got enough specialty lighting in the home that I'm interested in checking out what you carry. I really just haven't had the time to go to the website.*
- *As soon as I need light bulbs, I'll go there.*
- *I always go to multiple websites to price check items.*
- *I am interested in the reduced prices and I hope that the website will carry a larger selection on specialty LEDs in the future.*
- *I can use these bulbs without worrying they'll wear out; they last a long time.*
- *I like the convenience of not having to go into a store and shop.*
- *I like to compare prices and see if the Saving Store carries the bulbs that I'm looking for.*
- *I like to compare prices and see if the Saving Store carries the bulbs that I'm looking for before I decide where I will be making my purchase from. (N=2)*
- *I noticed that they offered good prices for the bulbs. It's a good deal.*
- *I rent and am unable to make any changes to the apartment that might break my lease.*
- *I will probably go there to get started with. But if the prices go up, I'll keep looking elsewhere.*
- *I'm pleased with the bulbs I got for free from Duke; I have them all through my house.*
- *I'm so curious to get on there and see the savings.*
- *It's easy to get to the Store and the bulbs they sell last a long time.*
- *Now that I've looked at the website more, I can see that it's not terrible. If prices are good, I might as well get them from Duke. I mostly base any purchase on price.*
- *One big thing is the price. And they get delivered to your home. You don't have to run out to buy them.*
- *That is the store that is more convenient for me.*
- *The bulbs are cheaper and the customer service is very good.*

Suggestions to Increase Future Store Purchases

Non-participant customers were asked "*What do you think could be done to get more people such as yourself to buy light bulbs from the Savings Store?*" Increased advertising was by far the most frequently mentioned idea with nearly half (47.5%) of non-participants suggesting it. This was followed by lower prices, free shipping, and offering a wider selection of inventory. Table 94 provides a summary of suggestions. A list of verbatim feedback is available in *Appendix J: Non-Participant Feedback.*

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Table 94. Non-Participant Suggestions to Increase Store Purchases

Response	Count	Percent of 80 Respondents
Increased marketing/advertising	38	47.5%
Greater discounts/lower prices	8	10.0%
Free shipping	7	8.8%
Increased product selection	6	7.5%
Compare and show savings potential	3	3.8%
Encourage word of mouth	2	2.5%
Coupon codes in bills	2	2.5%
Limited time offers	2	2.5%
Customer testimonials	1	1.3%
Customer surveys	1	1.3%
More product bundling	1	1.3%
Better customer educational tools	1	1.3%
First time buyer deals	1	1.3%
Simplified log in process	1	1.3%
Brick and mortar store	1	1.3%
Customer loyalty program	1	1.3%
Open it up to non-customers.	1	1.3%
Raise rates so people are more interested in conserving energy	1	1.3%
No suggestions	13	16.3%

Non-Visitor Feedback

While the sections above describe responses from non-participants who visited the Store but did not make a purchase, this next section details insights garnered from the 31 surveyed non-participants who did not visit the Store.

Initial Awareness of Store among Non-Visitors

Among the non-participants who never visited the Savings Store, the majority (54.8%) learned of the Store via an advertisement in their bill. The next most popular methods for learning about the Store were direct mail (25.8%), viewing a message while accessing their accounts online (16.1%), and via word of mouth (12.9%). Other methods accounted for less than 10.0% each (Figure 26).

When responses from people customers who did not visit the Store are compared with responses from non-participants who did visit the Store, non-visitors were more than twice as likely as visitors to recall receiving a printed message with their bills (54.8% versus 24.5%), while non-participants who visited the Store were more than twice as likely to recall seeing ads shown via the My Account OLS system (38.8% versus 16.1%). Comparisons between these two groups are shown in the figure below.

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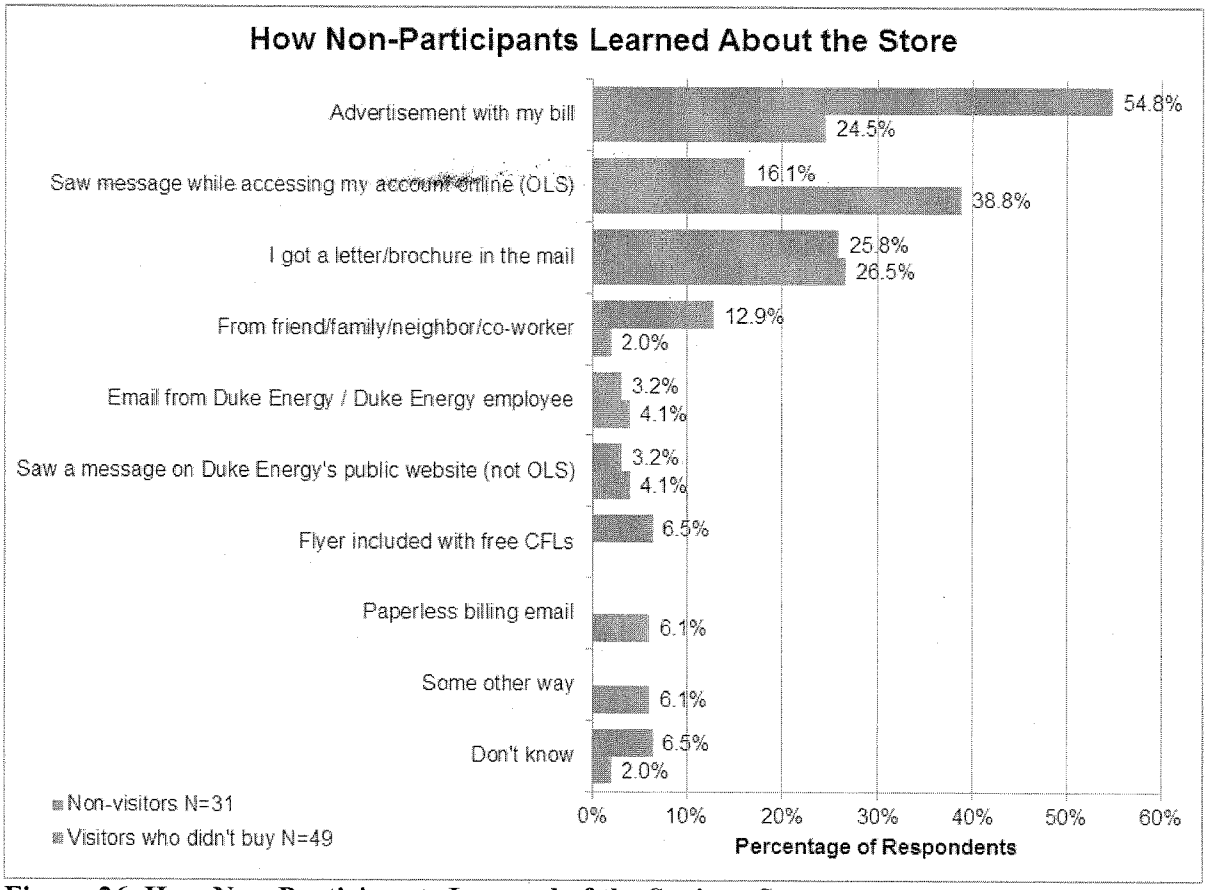

Figure 26. How Non-Participants Learned of the Savings Store

Reasons for Not Visiting the Savings Store

Customers who did not visit the Savings Store were asked to give one "main reason" for not visiting the site, and then asked if they had any additional "other reasons" for not visiting. Among these non-participants, the most common main reason for not visiting the Savings Store was that they "did not need energy efficient light bulbs at the time" (29.0%). This was followed by being "too busy at the time" (19.4%). Together these two reasons account for nearly half (48.4%) all primary reasons (Figure 27). When secondary reasons are included with the primary reasons, "not needing energy efficient bulbs at the time" is mentioned as a reason for not visiting the Store by 41.9% of non-visitors.

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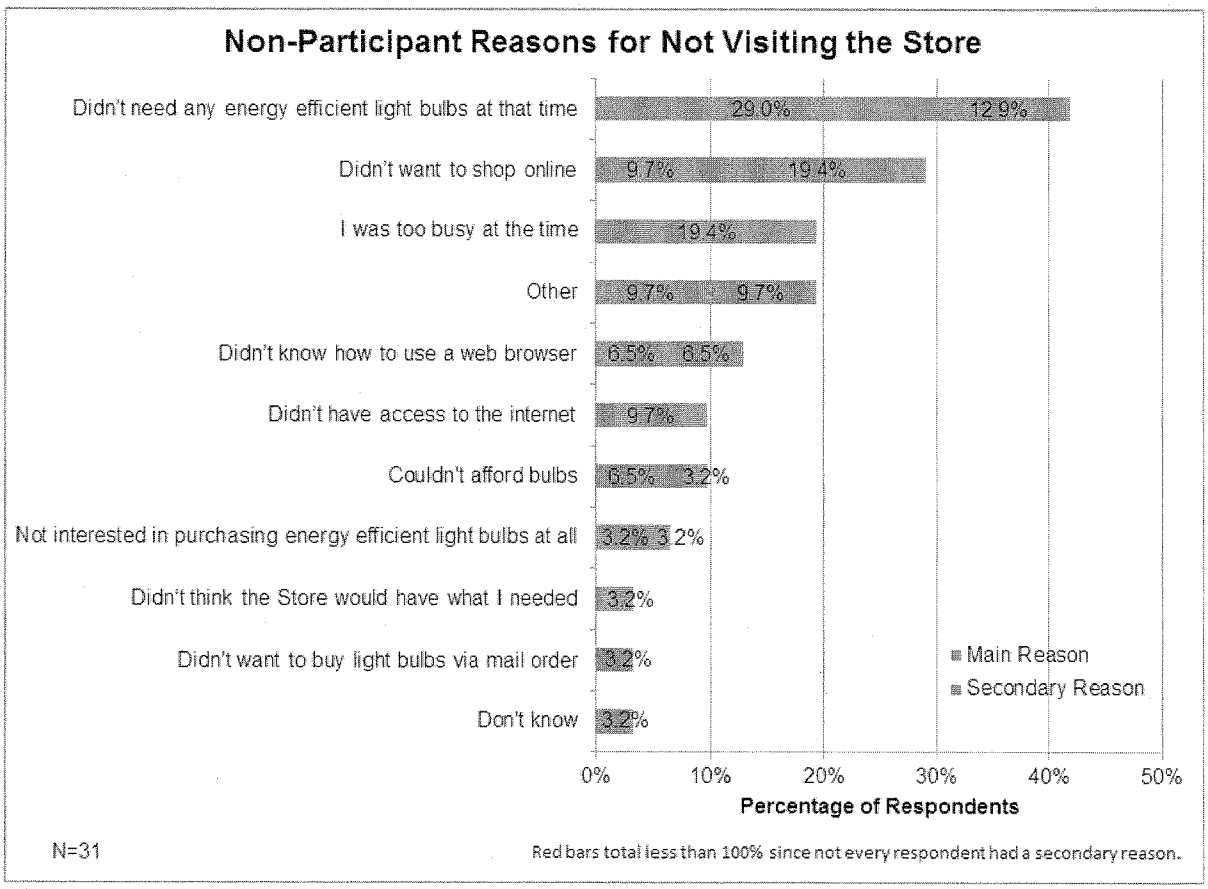

Figure 27. Reasons for Not Visiting Store

"Didn't want to shop online" was the second most frequently given reason for not visiting the Savings Store with 29.1% of non-visitors giving this reason. This sizeable percentage indicates that despite enhanced marketing efforts, online shopping will remain a barrier for a minority of customers who prefer shopping in retail stores. Several respondents provided unique or "Other" explanations that are quoted below.

- *I'm not well.*
- *Not interested after getting online to compare.*
- *I don't like CFLs and I don't know about LED.*
- *I did not know it existed because I just glanced at the flyers and didn't know there was a store. I knew Duke Power was offering discounted light bulbs though.*
- *I didn't know what the motive was. I thought it was just more light bulbs or finding ways to save electric.*

Non-Visitor Suggestions to Increase Store Visitation

Non-visitors were asked what Duke Energy could do to encourage people like themselves to visit the Store. Respondents provided "fresh" ideas such as offering incentives for first time buyers, emphasizing the connection between Home Energy House Call and MyHER and the Savings

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Store, increasing repeat messaging, sending a mail order catalog, and using more radio and TV advertising. They also made suggestions for activities that Duke Energy was already doing, including sending bill inserts and explaining the financial and environmental savings potential of the new energy saving bulbs. Their responses are shown verbatim in *Appendix J: Non-Participant Feedback.*

Non-Visitor Suggestions for Store Inventory

Customers who did not visit the Savings Store were asked if they had any suggestions for items the Savings Store might offer to make shopping there more attractive to people like themselves. While relatively few respondents offered suggestions, "fresh" ideas included: motion detecting light systems, window blinds and other low cost efficiency measures, and electrical breakers. Other responses mentioned items already sold at the Store, such as three-way CFLs, or suggested vague notions such as "apartment renter appropriate" items. These suggestions are listed in *Appendix J: Non-Participant Feedback.*

Non-Visitor Suggestions for Store Discounts

When asked to suggest ideas for Store discounts, non-visitors provided a number of meaningful ideas including: a frequently mentioned request for free shipping, offering buy-one-get-one-free deals, making explicit guarantees for free replacements, giving reward points with each purchase, and offering Walmart gift cards as incentives for larger purchases. A full list of their comments is shown in *Appendix J: Non-Participant Feedback.*

Non-Visitor Attitudes toward Duke Energy

Non-visitors were asked how they felt toward Duke Energy as a result of what they know about the Savings Store. More than half (53.1%) said they felt more positively toward their utility, while 43.8% indicated that they felt about the same. When respondents were asked why they felt as they did, they offered both positive and negative answers. On the positive side, numerous customers expressed statements of trust and confidence in Duke Energy. On the negative side, one customer's impressions were diminished by the Dan River coal ash spill. Verbatim comments are shown below Figure 28.

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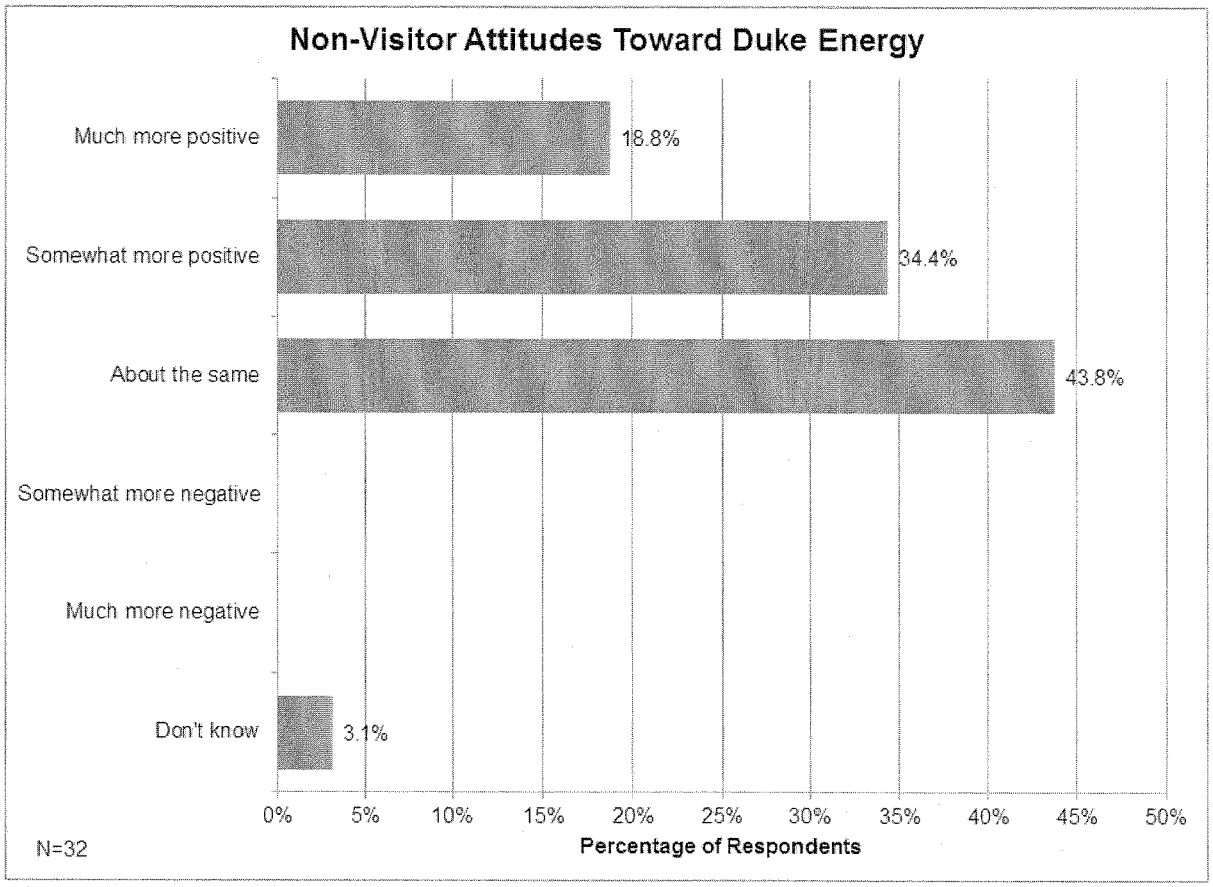

Figure 28. Non-Visitor Attitudes toward Duke Energy

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Table 95. Non-Visitor Attitudes Explained

Rating	Reason
Much more positive	*I will check out the site now that I took this survey.*
Much more positive	*I'm very skeptical about a lot of the products that I see, but if they're from the Duke Energy, I trust them.*
Much more positive	*I'd feel more positive if they make it a good source for light bulbs.*
Much more positive	*You save more and I enjoy my savings with the free light bulbs I got. It really cuts down on the bills. I'm saving over $100 a month now.*
Much more positive	*They opened up a whole new realm for me where I can get a light bulb guaranteed to last, rather than Walmart bulbs that don't last at all.*
Much more positive	*My attitude is much more positive because Duke is offering reduced pricing for products I need.*
Somewhat more positive	*It's nice that Duke Energy is trying to encourage people to conserve power and be a bit more green.*
Somewhat more positive	*I am glad they have programs to help people.*
Somewhat more positive	*They are trying to help people to save money.*
Somewhat more positive	*I live near where they had the ash spill. I care about our environment and I want them to care about it. I also don't like seeing a whole page ad about what they're going to do in the newspaper knowing what it costs.*
Somewhat more positive	*I like that they have the bulbs, but what I don't like is the places you have to go to pay your light bill. I don't like to pay that dollar to pay my bill. They need their own place like they used to have, a place nearby that I can walk to.*
Somewhat more positive	*You fleshed out the idea.*
Somewhat more positive	*My attitude is somewhat more positive because, well, how excited should I possibly be about light bulbs?*
Somewhat more positive	*The Saving Store would be a positive experience for me. The lower prices offered would help me get the specialty bulbs that I've putting off getting. Duke Energy sent me the free spiral CFLs and I liked them after I tried them. It was easy for me to get more at Walmart because I knew what they looked like.*
Somewhat more positive	*It seems like Duke Energy is doing something nice for their customers but they are probably just doing this so the grid doesn't get overtaxed. But it's good of them to do the website anyways because I'm sure it helps some people not get overwhelmed when they are shopping for bulbs. There's just so many to choose from at the store right now.*
Somewhat more positive	*I've been with Duke Power a long time and just recently they started offering the light bulbs. If I need a light bulb right away, it doesn't matter about the shipping time.*
Somewhat more positive	*I don't really have any dealings with them. Their service is good.*

Combined Non-Participant Feedback

Both subgroups of non-participants (website visitors and non-visitors) answered questions regarding overall satisfaction with Duke Energy, previous experience with energy efficient lighting, future purchases, additional energy saving actions taken, and more.

Satisfaction with Duke Energy

Non-participants, including Store visitors and non-visitors, were generally satisfied with Duke Energy, rating their overall satisfaction at with a mean score of 9.0 on a scale of 1 to 10. Half of all respondents (50% or 40 out of 80) rated their satisfaction at a 9 or 10, while nearly one third (32.5% or 26 out of 80) rated their satisfaction at a 7 or less (Table 96).

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Table 96. Non-Participant Satisfaction with Duke Energy (Mean 8.0)

Rating	Frequency	Percent N=80	Valid Percent N=80
10	31	38.8%	38.8%
9	9	11.3%	11.3%
8	14	17.5%	17.5%
7	13	16.3%	16.3%
6	3	3.8%	3.8%
5	3	3.8%	3.8%
4	0	0.0%	0.0%
3	1	1.3%	1.3%
2	3	3.8%	3.8%
1	3	3.8%	3.8%
Don't know	0	0.0%	

Those people who gave scores of 7 or lower were asked to explain why they were not satisfied. Their comments included mentions of: negativity arising from Dan River coal ash spill, rate increases, customer service issues, power reliability, and other matters. Table 97 shows customer ratings and verbatim comments regarding the reasoning behind them.

Table 97. Why Non-Participants Were Less Satisfied with the Duke Energy

Rating	Reason
7	*We were out of power for three days this winter, I realize there are priorities as to what areas get their power restored first, but more effort into getting power failures fixed faster would be an improvement.*
7	*It's more about things going on politically and other stuff. I'd like them to do more with green energy.*
7	*So far, everything seems to be pretty good.*
7	*I don't like having to go to these little, very small places to pay my bill where it's crowded.*
7	*Nothing. I've been with them for years and years.*
7	*Duke Energy could be more environmentally conscious, and promote alternative energies such as solar power.*
7	*Duke Energy could offer lower rates.*
7	*I thought the rate hikes were a little high on us consumers, even though Duke asked for more than they received. I haven't had a raise in four years, but the bill has gone up every year.*
7	*They butchered a bunch of trees around my house and the customer service did not do anything about it. I called and complained three times. I don't think anything was ever done. This happened all over Greensboro.*
7	*About a year and half ago Duke Energy put up new power lines and poles and they left the old extra poles still standing. I was told that Duke Energy would pick them up in a few months but they have not. I don't like how it makes my yard look. Otherwise Duke Energy does a good job overall.*
7	*Duke Energy makes a large profit every year, but the rates keep going up. Duke Energy also seems like they don't care about the environment. It seems that way because of the*

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	Dan River spill and all the other sites were they have had spills.
7	*My bill could go up from the coal ash spill that's going on. They've announced that they're going to offset the cost by passing it down to the consumers.*
7	*The rates are too high for a company that makes such a high profit. Their website charges a $1.25 Western Union convenience fee for paying bills.*
6	*The rates are too high and that makes it hard to pay the bills.*
6	*Duke needs to clean up the coal ash spill. Also, they should provide more data, tools, and help for customers on ways to reduce energy usage.*
6	*I signed up for the Rate-of-Use test pilot, which is a two year pilot, but we find that it's inconvenient because power is more expensive when we want to be using more power and we weren't informed about the extra monthly fee. Also, I have problems with the Duke Energy website when I go to the "show screen of usage." I always get an error alert. I've tried multiple browsers and removing cookies like I was advised to do, but it hasn't made a difference.*
5	*Their whole power rates; everything; they're the only power company around. They jack the rates up on everybody. I live in a one bedroom apartment and I had a power bill that was outrageous, almost $500.*
5	*My bill has gone up twice since we moved here three years ago and we haven't changed anything in the house. I'm assuming that the rates keep going up and that is annoying.*
5	*Lower their rates and give me more time to pay.*
3	*The situation with the coal ash spill. Plus I thought that the recent merger was bad.*
2	*My overall satisfaction, as it relates to the community as a whole and the coal ash spill, is low. I basically don't trust the company. And, as a result, I'm less likely to be buying online from them. The Duke CEO expects to pass everything along to the consumers.*
2	*Duke needs to tell the truth, clean up coal ash spill, and not force their customers pay for it.*
2	*In the Carolinas, Duke Energy backed the Democratic Party with corporate funds. They got in the middle of political backing, Duke Energy should not use their money, which comes from their customers, to fund the Democratic Convention, or any sort of political affiliates.*
1	*Actions speak louder than words. We hear rumors that they're going to make all their customers pay for this ash cleanup. I'd like to see them be genuine in their concerns for their customers and for their environment. There ought to be some alternative energy other than coal or nuclear. You should do what is right for all, not just a few.*
1	*Duke Energy could be more compassionate towards their customers. I experienced two months of unreliable Duke power service. Then they required me to include a $200 security deposit on my account. Since they're a monopoly, I had no choice. Duke could greatly improve their customer service.*
1	*I disapprove of the constant rate increases. It would be extremely helpful if Duke could offer lower rates to households where someone is disabled or for seniors. Also, I don't like how Duke Energy is being handled. Duke is trying to get help paying for the spill but people shouldn't have to pay for Duke's mistakes. Duke Energy has a lot of commercials that aren't necessary since they are a monopoly. Instead they could use the money to clean the spill.*

Why Duke Energy Is Providing Specialty Bulbs

Non-participants were asked why they thought Duke Energy was providing Specialty Bulbs through the Savings Store. Customers offered a wide range of opinions, the most prevalent of which as that Duke Energy wants to save energy for economic reasons (42.5%). Saving energy for environmental reasons (35.0%) and to save customers money (30.0%) rounded out the top three most popular responses. A full accounting of reasons is shown in Figure 29 and a list of replies from the "Other" category is listed below.

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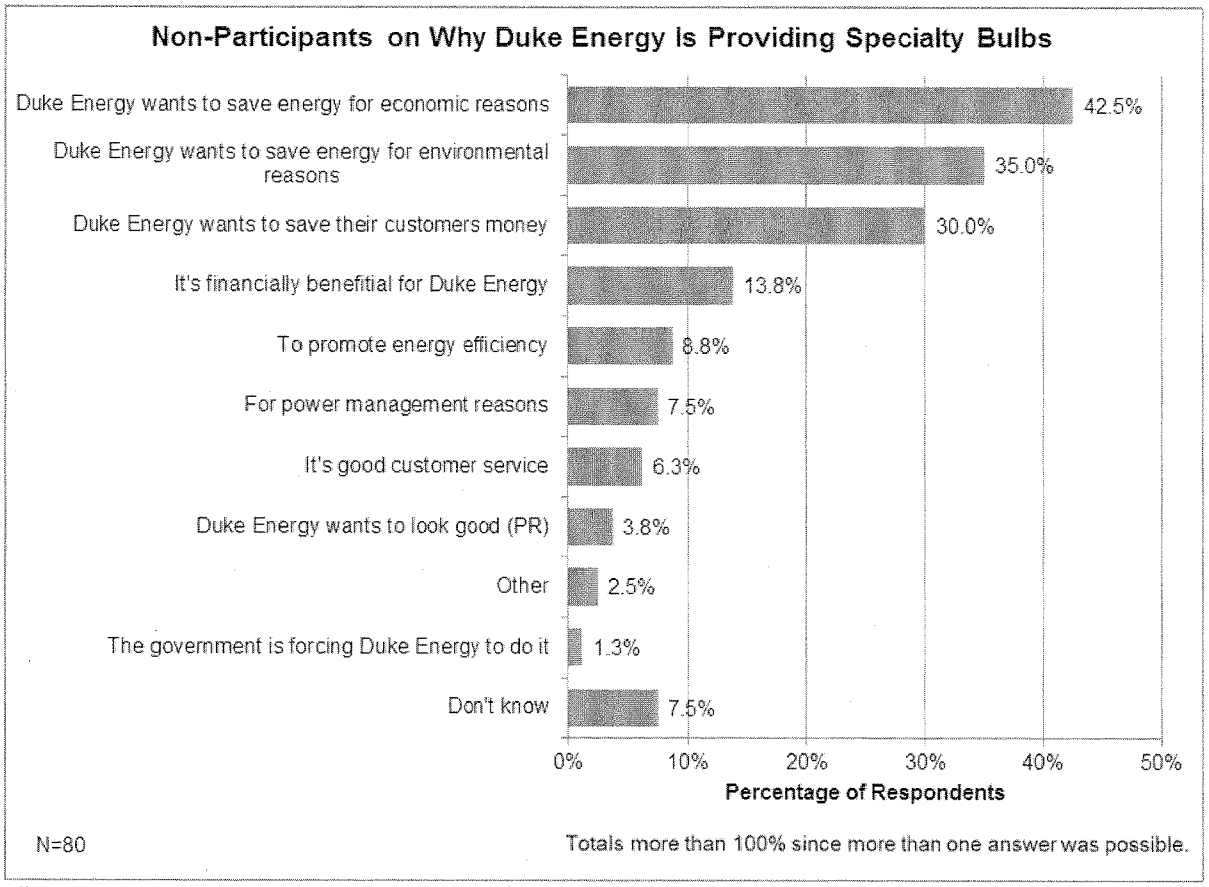

Figure 29. Why Duke Energy Is Providing Specialty Bulbs

Two respondents gave unique replies and were listed in the "Other" category. These are quoted below.

- *Duke Energy wants to keep up with the mainstream box stores and market their "brand"*
- *Maybe people are not purchasing them because they don't have computers.*

Word of Mouth Referrals

When non-participants were asked if they had told anyone about the Duke Energy Savings Store, 35.0% indicated that they had done so. These 28 respondents reported telling a total of 257 others about the Store. This averages 9.2 mentions per person (Table 98) despite the fact that no one made a purchase at the Store. Family members were by far the most common referral group with 19 people reporting they told a total of 118 family members about the program. All respondents indicated that they used word of mouth as their preferred method of communication. One person also used Facebook, while another reported showing her computer screen to all her co-workers so they could see the Savings Store for themselves.

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Table 98. Word of Mouth Referrals for the Savings Store

	Friends	Family	Co-workers	Neighbors	Others	Total
# Responses	11	19	5	4	1	40
# People Told	53	118	13	43	30	257
Range	1 to 20	1 to 50	1 to 5	1 to 35	1	1 to 50
Average	4.8	6.6	2.6	10.8	30	9.2

Columns add up to more than 28 responses because respondents could refer the program to more than one category of people.

Years of Previous Experience with Energy Efficient Bulbs

CFL use is high among non-participants with 88.8% of respondents reporting that they had CFLs installed in their homes prior to learning about the Savings Store. Among the 71 respondents who had CFLs installed, the number of installed bulbs ranged from 1 to 150 per household for a combined total of 1093 CFLs. The mean number of previously installed CFLs is 15.4 and the mode is 15, while the median is twelve CFLs per household with CFLs installed. Moreover, nearly two thirds of respondents have been using CFLs for at least two years (64.8%), compared to just 5.6% with less than one year of experience (Figure 30).

The percentage of non-participants who had LEDs installed prior to learning about the Store was less than that of CFLs with just 26.3% of respondents answering affirmatively. These 21 LED users reported having a total of 148 LEDs currently installed. The number of currently installed bulbs ranges from zero[35] to 30 per household. The mean number of installed LEDs is 7.0, while the mode is two and the median is five LEDs per household with LEDs installed. Years of LED experience are also slightly lower than for CFLs, with 57.1% of LED users having at least two years of experience with LEDs and 19.0% percent reporting less than a year of experience with LEDs.

[35] One customer had an LED installed before learning about the program, but has since removed it (i.e., they did have LEDs installed *before the program*, but none are *currently* installed).

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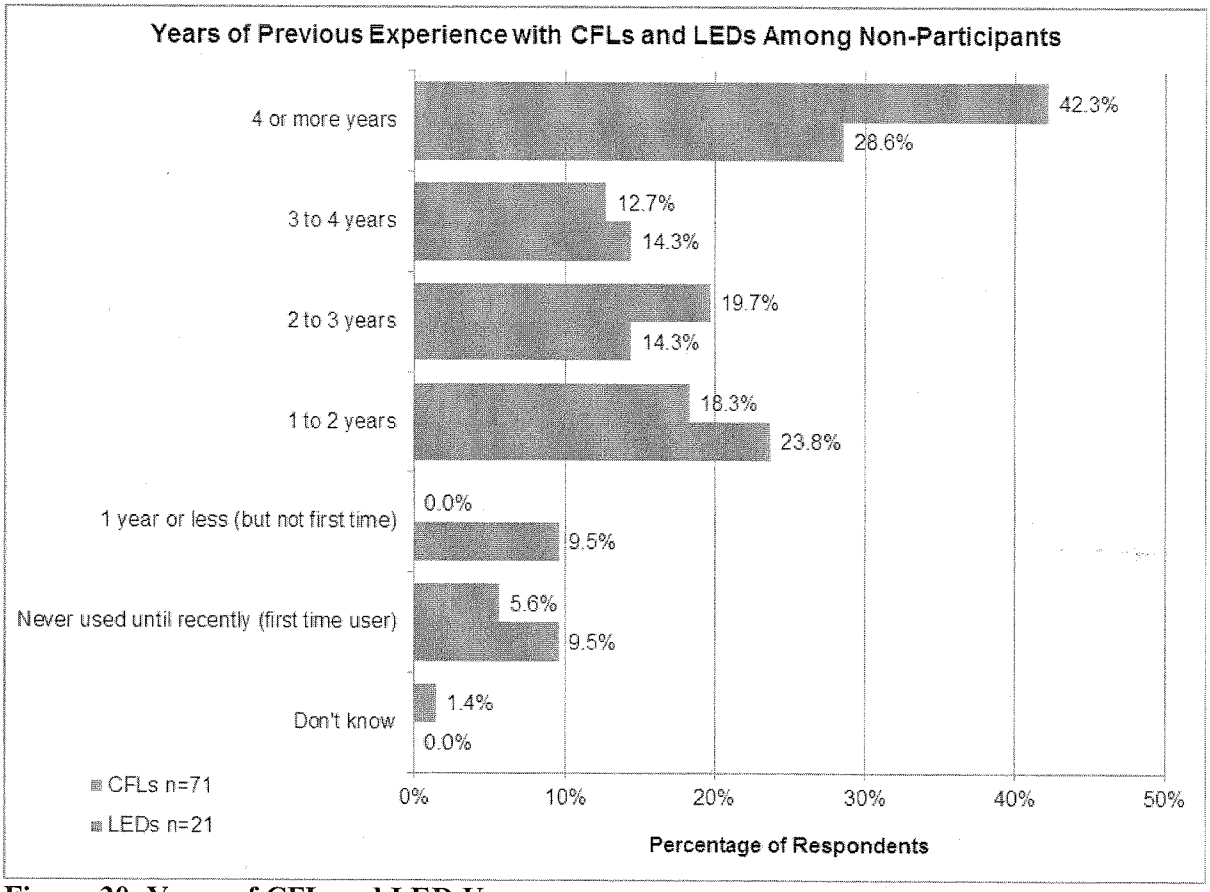

Figure 30. Years of CFL and LED Use

Specialty Bulbs in Non-Participant Households

Surveyed non-participants were asked a series of questions to determine how many specialty bulbs are currently in use in their homes, and what kind of bulbs are in those sockets.[36] This can be used to determine opportunities to install further efficient bulbs in these households. Table 99 shows how many non-participants have bulbs of each type in their homes, and the numbers of bulbs in non-participant households.

The most common type of specialty bulbs is outdoor reflectors, present in 65.0% (52 out of 80) of surveyed non-participant households. However, candelabras and globes have the largest number of installed bulbs with each accounting for about 21% of specialty bulbs installed in participant households (289 globes and 290 candelabras out of 1374.5 specialty bulbs installed). The least common category of specialty bulbs in non-participant households are CFL and LED capsule bulbs, accounting for only 4.3% (59 out of 1374.5) of specialty bulbs installed, and only being present in 15.0% (12 out of 80) non-participant households. The average number of specialty bulbs installed per household by type ranges from 2.3 for three-way bulbs to 7.4 for

[36] See the footnote on Table 63 in the *Specialty Bulbs in Participant Households* section of this report for caveats on the equivalent program participant analysis which also apply here.

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candelabras and 8.2 for "other" specialty bulbs[37] (including only the households that have a given type of bulb installed).

Table 99. Specialty Bulbs Installed in Non-Participant Households

	Non-participant count (N=80)	Non-Participants (percent)	Total bulb count (N=1374.5[38])	Bulbs (percent)	Bulbs per household with this type of bulb
Dimmable spiral	30	37.5%	183	13.3%	6.1
Three-way spiral	33	41.3%	76	5.5%	2.3
Indoor reflector (recessed)	23	28.8%	142.5	10.4%	6.2
Outdoor reflector (recessed outdoor)	52	65.0%	204	14.8%	3.9
Globe	41	51.3%	289	21.0%	7.0
Candelabra	39	48.8%	290	21.1%	7.4
CFL or LED capsule (A Line)	12	15.0%	59	4.3%	4.9
Other specialty bulbs	16	20.0%	131	9.5%	8.2

Non-participant percentages total to more than 100% because respondents can have multiple types of specialty bulbs.

Table 100 shows how many specialty bulbs of each type installed in non-participant households are CFLs and LEDs. The specialty bulb types where participants have the fewest number of efficient bulbs installed are globe bulbs (16.3% or 47 out of 289 bulbs) and candelabra bulbs (29.7 % or 86 out of 290), which are also the specialty types with the largest numbers of bulbs installed in these homes. The only bulb type for which these customers have already converted a majority of sockets to efficient bulbs are indoor reflectors (52.6% or 75 out of 142.5 bulbs). LEDs have the largest penetration in the categories of "other" specialty bulbs (24.4% or 32 out of 131), efficient capsules (15.3% or 9 out of 59) and dimmable bulbs (12.0% or 22 out of 183), and account for fewer than 10.0% of bulbs currently installed in the other types of specialty sockets. Figure 31 below the table presents the percentage of bulbs installed by type.

[37] The "other" specialty lighting installed in non-participant households includes fluorescent tubes, bug lights, night lights and appliance lights. One non-participant reported that they have 75 "50 watt halogen" bulbs, which accounts for the majority of the 131 "other" specialty bulbs installed (this customer did not specify why they have that many halogen bulbs or where they are installed).

[38] Fractional numbers of bulbs are due to interpolating values given as ranges ("6 or 7 bulbs" is reported as 6.5 bulbs, etc.)

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Table 100. Energy-Efficient Specialty Bulbs in Non-Participant Households (N=1374.5 bulbs)

	Total bulb count	CFLs (bulb count)	LEDs (bulb count)	Percentage of bulbs that are efficient
Dimmable spiral	*183*	*41*	22	*34.4%*
Three-way spiral	76	28	0	36.8%
Indoor reflector (recessed)	142.5	65	10	52.6%
Outdoor reflector (recessed outdoor)	204	52	17	33.8%
Globe	289	38	9	16.3%
Candelabra	290	64	22	29.7%
CFL or LED capsule (A Line)	59	50	9	100.0%[39]
Other specialty bulbs	131	12	32	33.6%

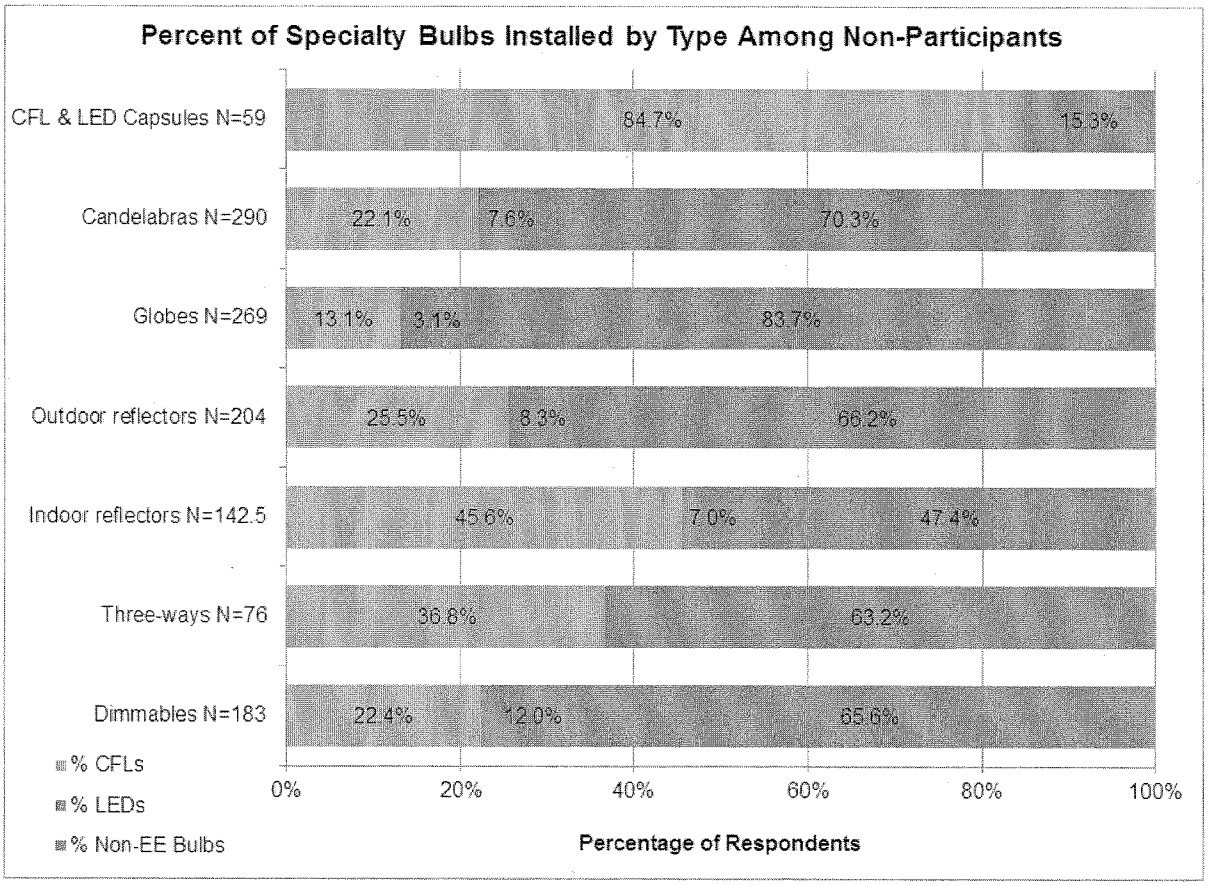

Figure 31. Percentage of Bulbs Installed by Type

[39] For the purposes of this analysis, capsule-style bulbs are only considered "specialty" bulbs when they are CFLs or LEDs (thus the percentage of "efficient capsule specialty bulbs" is 100% by definition). An "incandescent capsule bulb" is the standard shape for that lighting technology, whereas a standard CFL is a spiral-shaped bulb. LEDs do not have a standard shape (LED technology does not require a particular bulb shape and there is not yet one predominant consumer standard for LED bulb shapes).

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Customers were also asked if they had any spare incandescent bulbs in storage to replace specialty bulbs that burn out. As seen in Table 101, half of the specialty incandescent bulbs these customers have in storage are either globes (31.6% or 78 out of 247 spare incandescent bulbs) or candelabras (23.9% or 59 out of 247). This reinforces the finding from Table 64 that these are also the categories of bulbs that have the lowest percentage of efficient bulbs installed in non-participant homes. Candelabras are also the category of incandescent specialty bulb these customers are most likely to have in storage (18.8% or 15 out of 80 respondents). Participants are least likely to have spare incandescent indoor reflectors in storage (5.0% or 4 out of 80), and these bulbs only account for 3.0% (7.5 out of 247) of incandescent specialty bulbs in storage in these homes. The largest numbers of spare bulbs in storage are globe bulbs (6.0 per household in storage), dimmable bulbs (4.7 bulbs) and candelabras (3.9 bulbs).

Table 101. Incandescent Bulbs in Storage for Future Use in Specialty Sockets

	Have incandescents in storage count (N=80)	Have incandescents in storage (percent)	Total spare incandescent bulbs (N=247)	Spare incandescent bulbs (percent)	Bulbs per household with this type of bulb
Dimmable spiral	8	10.0%	37.5	15.2%	4.7
Three-way spiral	12	15.0%	28	11.3%	2.3
Indoor reflector (recessed)	4	5.0%	7.5	3.0%	1.9
Outdoor reflector (recessed outdoor)	13	16.3%	33	13.4%	2.5
Globe	13	16.3%	78	31.6%	6.0
Candelabra	15	18.8%	59	23.9%	3.9
Other specialty bulbs	3	3.8%	4	1.6%	1.3

Percentages may total to more or less than 100% because respondents can have multiple types of bulbs in storage or none in storage.

Additional Bulb Purchases by Non-Participants

Since learning about the Duke Energy Savings Store, 27.8% (22 out 79 respondents) indicated that they made efficient light bulb purchases from a local retailer or an online merchant other than the Savings Store. Local big box retailers dominate the locations where they made these purchases. A full list of locations and their comparable popularity is shown in Table 102.

Table 102. Additional Bulb Purchases by Retailer

Purchase Location	Count	Percent of 22 Respondents
Lowe's	8	36.4%
Walmart	4	18.2%
Home Depot	4	18.2%
Sam's Club	2	9.1%
Ace Hardware	1	4.5%
K-mart	1	4.5%
Amazon	1	4.5%
eBay	1	4.5%
Gus' (local hardware store)	1	4.5%
Don't recall	1	4.5%

Percentages total to more than 100% because multiple responses were accepted.

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When queried about how many and which types of bulbs they purchased at these retailers, spiral CFLs were by far the most common type accounting for two-thirds (66.7%) of additional efficient light bulbs purchases. Respondents bought an average of 8.0 efficient bulbs apiece, of which they installed an average of 5.9 bulbs, keeping an average of 2.1 in storage for later use. Specific types of bulbs purchased are shown in Table 103, while the number and types of bulbs installed and kept in storage are shown in Table 104 and Table 105.

Table 103. Number of Additional Bulbs Purchased by Non-Participants

Bulbs*	# Responses	# Purchased	% Purchased	Average Size Purchase
CFL - Standard spiral	13	117	66.7%	9.0
CFL - Capsule (A Line)	2	15	8.5%	7.5
LED - Candelabra	1	10	5.7%	10.0
LED - Other type of LED bulb	1	10	5.7%	10.0
CFL - Globe	3	9	4.8%	2.8
LED - Indoor reflector (recessed LED)	1	6	3.4%	6.0
CFL - Candelabra	1	4	2.3%	4.0
LED - Standard or capsule (A Line LED)	1	3	1.7%	3.0
CFL - Outdoor reflector (recessed outdoor)	1	2	1.1%	2.0
Totals	**22**	**175.5**	**100.0%**	**8.0**

Responses by row total to more than 22 because respondents could buy more than one type of light bulb.

Table 104. Number of Additional Bulbs Installed by Non-Participants

Bulbs*	# Installed	% Installed	Average # Installed
CFL - Standard spiral	77	59.7%	5.9
CFL - Capsule (A Line)	15	11.6%	7.5
LED - Candelabra	5	3.9%	5.0
LED - Other type of LED bulb	10	7.8%	10.0
CFL - Globe	7	5.4%	2.3
LED - Indoor reflector (recessed LED)	6	4.7%	6.0
CFL - Candelabra	4	3.1%	4.0
LED - Standard or capsule (A Line LED)	3	2.3%	3.0
CFL - Outdoor Reflector (recessed outdoor)	2	1.6%	2.0
Totals	**129**	**100.0%**	**5.9**

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Table 105. Number of Bulbs Kept in Storage by Non-Participants

Bulbs*	# In Storage	% In Storage	Average # In Storage
CFL - Standard spiral	40	86.0%	3.1
CFL - Capsule (A Line)	0	0.0%	0.0
LED - Candelabra	5	10.8%	5.0
LED - Other type of LED bulb	0	0.0%	0.0
CFL - Globe	2	3.2%	0.5
LED - Indoor reflector (recessed LED)	0	0.0%	0.0
CFL - Candelabra	0	0.0%	0.0
LED - Standard or capsule (A Line LED)	0	0.0%	0.0
CFL - Outdoor Reflector (recessed outdoor)	0	0.0%	0.0
Totals	**46.5**	**100.0%**	**2.1**

The survey also asked the non-participants who bought bulbs outside of the program to explain why they had made their purchases somewhere other than the Savings Store. The most common reason provided was that the Savings Store didn't carry the desired bulbs, although the convenience of in-store shopping and lower prices were also frequent mentions. Table 106 shows the range of reasons given.

Table 106. Non-Participant Reasons for Buying Bulbs Elsewhere

Response	Count	Percent of 22 Respondents
Store didn't have desired bulbs	6	27.3%
Prices too high compared to elsewhere	5	22.7%
Convenience: Bought bulbs because was already at a store that sold them	4	18.2%
Didn't want to wait for shipping	4	18.2%
Unaware/didn't think to do so	2	9.1%
Didn't want to pay for shipping	2	9.1%
Couldn't find what looking for	1	4.5%
Don't shop online	1	4.5%

Percentages total to more than 100% because multiple responses were accepted.

- *The Saving Store didn't have them. (N=3)*
- *I didn't purchase these bulbs at the Store because they were unavailable.*
- *They either weren't offered, or I grabbed them because I needed them, and I saw on the package that these bulbs were made to resist vibrations from ceiling fans.*
- *The bulbs were cheaper at Amazon.*
- *I didn't purchase these bulbs through the Savings Store because the savings didn't justify the hassle.*
- *The Saving Store didn't have them and they would have cost more than I'm willing to spend on them.*
- *The price was high and they had to be shipped.*

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- *I didn't think that the Saving Store's prices were all that low and they were on sale at Walmart when I bought them.*
- *I didn't purchase the bulbs through the Savings Store because I was out shopping at a local retailer, so it wasn't convenient at that time.*
- *It was an impulse buy. I was there getting some stuff because I'm fixing up the house and the bulbs were on sale. (N=2)*
- *I already had plenty purchased from Sam's when they were on sale.*
- *I was in a rush to get light bulbs.*
- *I needed them immediately because my kitchen lights all went out.*
- *I didn't know Duke Energy had an actual store.*
- *It really did not come to my attention to do so.*
- *I couldn't find them on the website.*
- *I didn't want to pay the shipping cost and I would have had to wait for delivery.*
- *I did not want to pay for shipping.*
- *I just haven't had a chance to look at the website and I don't shop much online.*

When asked to rate the Savings Store's influence on their decision to buy energy efficient bulbs at another location, non-participants gave mixed replies. Overall they gave responses averaging 4.8 on a ten-point scale, but their scores tended toward the lower and upper bounds of the scale rather than the middle. For instance, more than one fifth of respondents (22.7% or 5 out of 22) rated the Store's influence at 9 or 10 out of 10, while more than one third of respondents (36.4% or 8 out 22) rated the Store's influence at 1. The full range of ratings is shown in Table 107.

Table 107. Store Influence on Non-Participant Purchases Elsewhere (Mean 4.8)

Rating	Frequency	Percent N=22	Valid Percent N=19
10	4	18.2%	21.1%
9	1	4.5%	5.3%
8	2	9.1%	10.5%
7	1	4.5%	5.3%
6	0	0.0%	0.0%
5	1	4.5%	5.3%
4	0	0.0%	0.0%
3	2	9.1%	10.5%
2	0	0.0%	0.0%
1	8	36.4%	42.1%
Don't know	3	13.6%	

When asked why they rated the Savings Store's influence on their additional bulb purchases as they did, survey respondents gave the following reasons to explain their scores.

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Table 108. Store Influence Explained

Rating	Reasons
10	*The website explained everything to me.*
10	*It reinforced the importance of using the bulbs for energy and cost savings.*
10	*I purchased the bulbs elsewhere because I didn't find them at the Saving Store website.*
10	*I purchased the bulbs elsewhere because they were cheaper than the ones sold at the Saving Store*
9	*I purchased the bulbs elsewhere because I didn't find them at the Saving Store website.*
8	*I was highly impressed that the Savings Store exists.*
8	*The price was high and they had to be shipped.*
7	*The Saving Store did not have the LEDs I was looking for. So I had to purchase them elsewhere.*
5	*I didn't like the prices at the Savings Store so I wanted to get them somewhere else. But the Saving Store didn't really encourage me to switch to CFLs because I didn't really look too much at the information that was provided.*
3	*I needed light bulbs immediately and purchased them elsewhere in a store.*
3	*I purchased bulbs elsewhere because I had totally forgotten about the Savings Store.*
1	*It really did not come to my attention to do so.*
1	*I just haven't had a chance to look at the website, and I don't shop much online.*
1	*The Saving Store did not influence me because I haven't been on the website. I just know that CFLs are more efficient and that they can save money and electricity.*
1	*I didn't know Duke Energy had an actual store.*
1	*It had no influence. I needed the bulbs because my kitchen was dark.*
1	*It had no bearing. I bought bulbs because I needed them.*
1	*I wasn't thinking about the Duke store at all*
1	*I was already using CFLs before visiting the Saving Store.*
DK/NS	*The Saving Store didn't have them so I had to buy them on e-Bay for much less than I would have been able to buy them at the website anyways*

Future Light Bulb Purchase Intentions

Surveyed non-participants were asked how many of the next ten light bulbs they purchase will be standard incandescent (or halogen), CFL and LED bulbs. As seen in Table 109, nearly nine out of 10 participants surveyed report that they intend to buy CFLs (85.7% or 66 out of 77) and about a third intend to purchase LEDs (32.5% or 25 out of 77), while only one in four say that they intend to buy any standard incandescent or halogen bulbs (26.0% or 20 out of 77).

The majority of bulbs these customers intend to purchase in the future will be CFLs (69.1% or 527 out of 763 bulbs), though about one bulb in six will be an LED (16.0% or 122 out of 763) which is slightly higher than the percentage of standard incandescent or halogen bulbs (14.9% or 114 out of 763).

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Table 109. Purchase Intent: Next Ten Bulbs Purchased

Of the Next Ten Light Bulbs You Purchase, How Many Will Be...?	All Surveyed Non-Participants Who Answered This Question (Valid N=77)
% of surveyed customers who intend to buy at least one incandescent and/or halogen bulb	26.0%
% of surveyed customers who intend to buy at least one CFL bulb	85.7%
% of surveyed customers who intend to buy at least one LED bulb	32.5%
	All Bulbs To Be Purchased (N=763)[40]
Percentage of next ten bulbs that will be incandescent and/or halogen bulbs	14.9%
Percentage of next ten bulbs that will be CFL bulbs	69.1%
Percentage of next ten bulbs that will be LED bulbs	16.0%

Percentages in the first three rows total to more than 100% because respondents could give multiple responses. Percentages in the bottom three rows are mutually exclusive and add up to 100%.

Figure 19 presents the distribution of future bulb purchases in the form of an area chart as a visual aid: the Y-axis shows the distribution of bulbs intended to be purchased, and the X-axis shows all 77 valid responses sorted by the distribution of bulb types. A plurality of 34 out of 77 customers surveyed (44.2%) say they intend to purchase exclusively CFLs for their next ten bulbs (the center green area which extends from the top to the bottom of the chart).

The chart also shows significant intentions to purchase LEDs (the blue area on the right of the chart), including 6.5% (5 out of 77) of customers who intend to purchase LEDs exclusively the next time they need light bulbs (where the blue area extends from the top to the bottom of the chart).

Intentions to purchase incandescent and halogen bulbs among these customers is limited (red areas of the chart): only 6.5% (5 out of 77) intend to purchase exclusively incandescent and halogen bulbs (the area where the red extends from the top to the bottom of the chart), with only another seven customers (9.1% of 77) intending to purchase even half incandescent and halogen bulbs out of the next ten bulbs purchased. There are also a handful of customers who still intend to purchase the old standard bulbs in addition to both LEDs and CFLs (the "red spikes on the blue stairs" on the right side of the chart).

[40] All 80 respondents were asked the question about the next ten bulbs they intend to purchase. Three respondents said they "don't know" what any of their next ten bulbs purchased will be, and across the other 77 respondents there were another seven "other types" of bulbs which do not fit any of the major bulb categories. When calculating the percentage of incandescent/halogen, CFL and LED bulbs purchased, "don't know" and "other" bulbs are not included in the analysis. Thus the base number of intended bulb purchases is 763 bulbs (10 bulbs times 80 respondents minus 37 "don't know" and "other" bulbs).

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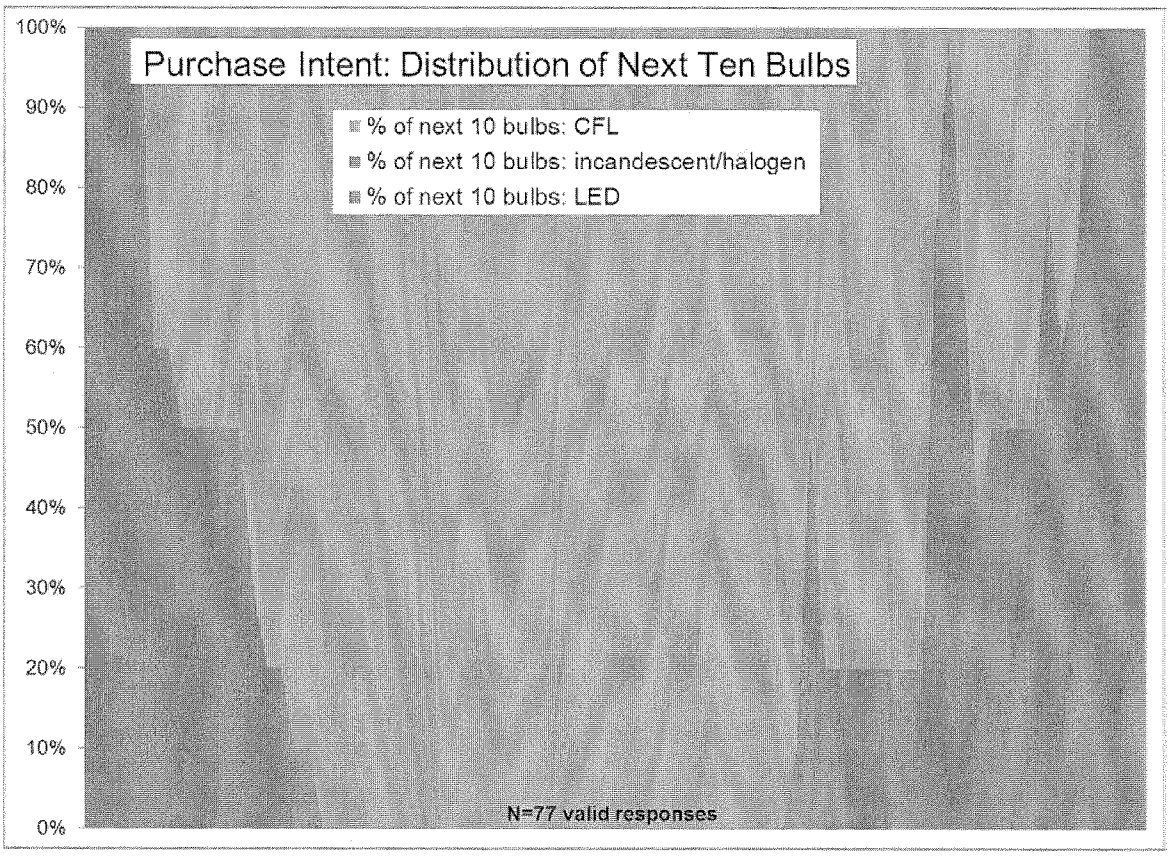

Figure 32. Area Chart of Intentions for Next Ten Bulbs Purchased (N=77)
Three non-participants (3.8% of 80 surveyed) "don't know" what kind of bulbs they will buy in the future, and are not included in this chart.

Additional Energy Saving Actions Taken by Non-Participants

Despite not purchasing any energy efficient bulbs from the Duke Energy Savings Store, 36.3% of non-participants (29 of 80 respondents) affirmed that they had taken at least one additional energy-saving action since visiting the Store or seeing marketing messages encouraging them to visit. The most common actions were turning off lights when not needed and adjusting HVAC settings to save energy. Other responses are shown in Table 110.

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Table 110. Additional Energy Saving Actions Taken by Non-Participants

Action	Count	Percent of 29 Respondents	Percent of 80 Non-Participants
Turn off lights/use fewer lights	7	24.1%	8.8%
Adjust HVAC settings to save energy	6	20.7%	7.5%
Installed more efficient windows	4	13.8%	5.0%
Unplug when not in use	3	10.3%	3.8%
Installed weather sealing	3	10.3%	3.8%
Installed/replaced new heat pump	2	6.9%	2.5%
Installed insulation	2	6.9%	2.5%
Change curtains to save energy	2	6.9%	2.5%
Installed curtains to save energy	2	6.9%	2.5%
Use more efficient light bulbs	1	3.4%	1.3%
Upgraded HVAC	1	3.4%	1.3%
Installed new HVAC	1	3.4%	1.3%
Put plastic on windows in winter	1	3.4%	1.3%
Keep doors and windows closed	1	3.4%	1.3%
Replaced door	1	3.4%	1.3%
Install gas water heater	1	3.4%	1.3%
Turn down water heater	1	3.4%	1.3%
Wrapped hot water pipes	1	3.4%	1.3%
Use low flow toilets	1	3.4%	1.3%
Reduced/eliminated extra washing machine loads	1	3.4%	1.3%
Reduced/eliminated clothes dryer	1	3.4%	1.3%
Upgraded dryer	1	3.4%	1.3%
Did Home Energy House Call and now making changes	1	3.4%	1.3%
Signed up for Power Manager Program.	1	3.4%	1.3%
Use My Home Energy Report	1	3.4%	1.3%

Totals more than 100% because multiple responses were possible

Key Findings

- TecMarket Works surveyed 80 Duke Energy customers considered to be informed non-participants in the program. Of these, 67 (83.8%) were from North Carolina and 13 (16.3%) were from South Carolina.
  - See section titled *Non-Participant Surveys* on page 142.

- Among these 80 non-participants, 38.8% received marketing materials but did not visit the Store, and 61.3% actually visited the Duke Energy Savings Store but did not make a purchase. These website visitors averaged 2.3 visits apiece.
  - See section titled *Non-Participant Surveys* on page 142.

- Among all non-participants, satisfaction with Duke Energy averaged 8.0 on a 10 point scale. More than half (53.1%) said they felt more positively toward the utility after learning about the Savings Store.
  - See section titled *Satisfaction with Duke Energy* on page 173 and *Non-Visitor Attitudes toward Duke Energy* on page 171.

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- Among those people who actually visited the Savings Store, satisfaction with the website overall averaged 8.4 on a 10 point scale, while satisfaction with Store's prices averaged 7.9. Despite not making a purchase, they rated ease of website navigation at an average of 9.3 and the helpfulness of bulb descriptions at 8.8.
  - See section titled *Overview* on page 142.

- When asked why they visited the Savings Store without making a purchase, 81.3% of non-participants said they came out of curiosity and 64.6% said they were checking prices. Multiple answers were possible.
  - See section titled *Customer Awareness* on page 143.

- Because non-participants did not make a purchase from the Savings Store, the survey asked if they preferred to purchase specialty bulbs via another method. More than half (58.3%) of respondents said no, compared to 37.5% who said yes, and 4.2% who were unsure. Shopping in local retails stores was the leading alternative.
  - See section titled *Alternative Methods of Buying Specialty Bulbs* on page 163.

- CFL use was high among non-participants. Some 88.8% had CFLs installed in their homes prior to learning about the Savings Store, and 64.8% had been using CFLs for two or more years. LED use was somewhat lower at only 26.3% of non-participants, but among these people 57.1% had been using them for two or more years.
  - See section titled *Years of Previous Experience with Energy Efficient Bulbs* on page 177.

- Despite not yet making a purchase from the Savings Store, more than one quarter (26.3%) of non-participants said they confidently planned to buy specialty bulbs from the Savings Store in the future, and an additional 35.0% said they would probably do so.
  - See section titled *Non-Participant Bulb Buying Intentions* on page 164.

- More than one third (36.3%) of non-participants affirmed that they had taken at least one additional energy-saving action since visiting the Savings Store or seeing marketing messages encouraging them to visit. The most common actions were turning off lights when not needed and adjusting HVAC settings.
  - See section titled *Additional Energy Saving Actions Taken by Non-Participants* on page 187.

- A near majority of non-participants (47.5%) suggested increased advertising as the best way to get more people like themselves to visit the Savings Store. Non-participants also provided "fresh" ideas for attracting more customers, including offering extra incentives for first time buyers, emphasizing the connections between Home Energy House Call and MyHER and the Savings Store, sending a mail order catalog, and using more radio and TV advertising.
  - See the section titled *Non-Visitor Suggestions to Increase Store Visitation* on page 170.

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Recommendations

- **Consider increasing the frequency of advertising to induce great participation by non-participants.** Given that 88.8% of non-participants are experienced CFL users and that 61.3% of non-participants were too busy or didn't need bulbs at the time they received marketing materials from the program, it is likely that increasing the frequency of advertising will induce non-participants to visit and make purchases from the Savings Store.
- **Where feasible, use strategic target marketing to focus extra discounts on those customers believed to be still be using incandescents and halogens.** Given that nearly two thirds (64.6%) of non-participants self-identified as price conscious shoppers, lower pricing would likely encourage more of them to make purchases from the Store. Deeper discounting should not be necessary for non-participant freeriders who already know they want specialty bulbs and are merely looking for the lowest price which may be available at a local retailer.
- **Consider adding alternative forms of payment such as PayPal and debit cards.** The website currently accepts payments via credit cards, check, or money order.

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Participant and Non-Participant Survey Comparisons

This section compares survey results between the program participants (customers who purchased Savings Store bulbs) and non-participants (customers who did not purchase specialty bulbs at the Savings Store). Non-participants are further subdivided into two groups: non-participant visitors (those who visited the Savings Store) and non-participant non-visitors (those who received program marketing materials but did not visit the Savings Store).

Satisfaction Ratings

When satisfaction ratings are compared between participants and visiting non-participants, the two groups are closely satisfied with the various elements found on the Savings Store website. Somewhat greater differences arise in their satisfaction with Duke Energy, the Savings Store overall, and Store pricing (Figure 33). Perhaps not surprisingly, the largest difference in mean satisfaction is for the Store's prices; participants rate their satisfaction at an average of 9.0 on a ten-point scale, while visiting non-participants give a mean score of 7.9. This difference is statistically significant at $p<.01$ using Student's t-test. The spread is a bit smaller when it comes to satisfaction with the Store overall, for which participants return a mean score of 9.2 while visiting non-participants average 8.4. This difference is also significant at $p<.05$.The distinction between satisfaction scores for Duke Energy is insignificant with mean ratings of 8.3 from participants and 7.0 from non-participants. Sample sizes varied slightly for each question and are shown in Table 111.

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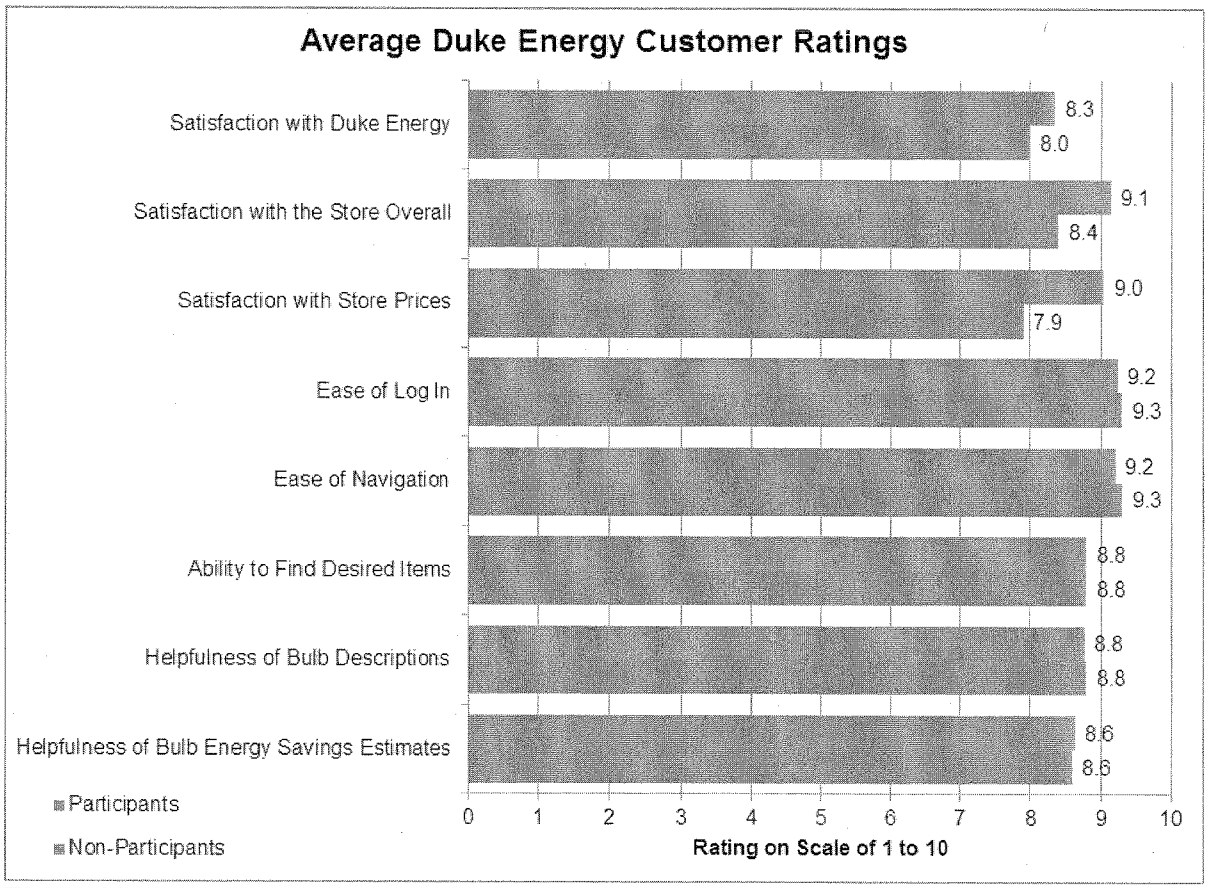

Figure 33. Comparison of Satisfaction and Agreement Ratings

Table 111. Comparison of 1-10 Ratings between Participants and Non-Participants

Measure	Participants		Nonparticipants	
	Mean Rating	N Size	Mean Rating	N Size
Satisfaction with Duke Energy	8.3	135	8.0	80
Satisfaction with the Savings Store Overall	***9.1***	135	***8.4***	47
Satisfaction with Store Prices	***9.0***	133	***7.9***	45
Ease of Log In	9.2	132	9.3	48
Ease of Navigation	9.2	130	9.3	47
Ability to Find Desired Items	8.8	134	8.8	46
Helpfulness of Bulb Descriptions	8.8	131	8.8	45
Helpfulness of Bulb Energy Savings Estimates	8.6	99	8.6	44

Bold italics in the table denote statistically significant differences between groups at p<.05 or better using Student's t-test.

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Customer Awareness Methods

Duke Energy uses a variety of methods to promote the Specialty Bulb Program. Customers can receive multiple marketing messages, and occasionally they receive more than one at the same time. The survey was designed to determine which methods were recalled by customers. Mailings from Duke Energy are the most common source of awareness for program participants (57.4% or 78 out of 136) and also for both of the non-participant groups (49.0% or 24 out of 49 visitors and 71.0% or 22 out of 31 non-visitors). Website messaging was the next most frequently recalled source of awareness for all three groups, ranging from 19.4% (non-participant non-visitors) to 42.9% (non-participant visitors). Non-participant visitors are more likely than the other groups to recall website messaging, while non-visitor non-participants are more likely to recall mailings and "other ways" of finding out about the program. This would seem to indicate that the website messages are more likely to get customers to log on to the Savings Store site, though not necessarily more likely to prompt them to buy bulbs there. However, this may be more related to Internet usage patterns than to shopping for light bulbs (the visitor group of non-participants is self-selected by the fact that these customers chose to go to the website, so the non-participant visitors may just be more likely to do things online than the non-participant non-visitors).

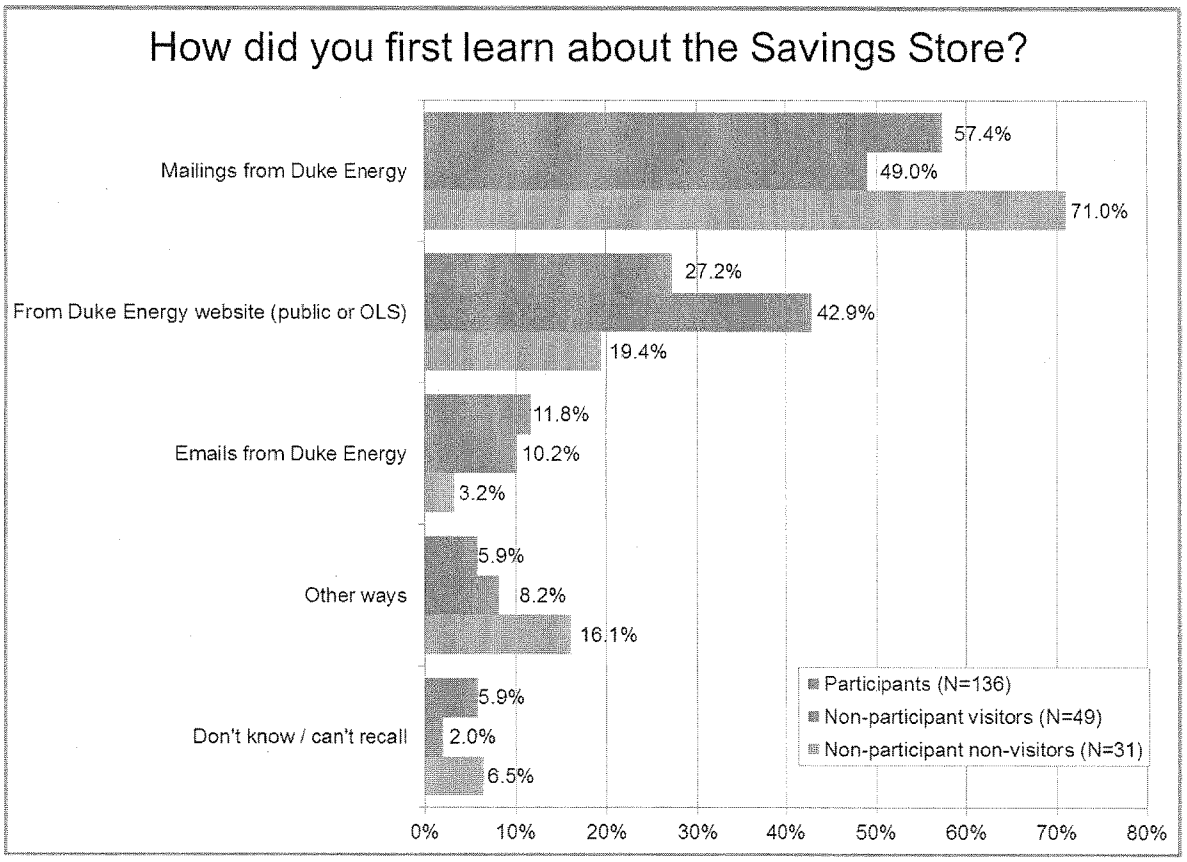

Figure 34. How Customers First Learned About the Savings Store
Note that totals add to more than 100% since multiple answers were possible.

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Years of CFL and LED Use by Participants and Non-Participants

Both program participants and non-participants reported considerable previous experience with energy efficient lighting, which is to be expected given that Duke Energy specifically markets the Savings Store to customers who are more experienced in this regard. Program participants had an average of 13.1 efficient light bulbs (CFLs and LEDs) installed in their homes before purchasing Savings Store bulbs, compared to 15.1 efficient bulbs in non-participant visitor homes and 11.7 efficient bulbs in non-participant non-visitor homes; these differences in the total number of bulbs installed are not statistically significant. The median number of efficient bulbs installed is 12 for non-participant visitors and 10 for both of the other groups. The distribution of efficient light bulbs installed in participant households (before the program) and non-participant households is shown in Figure 35.

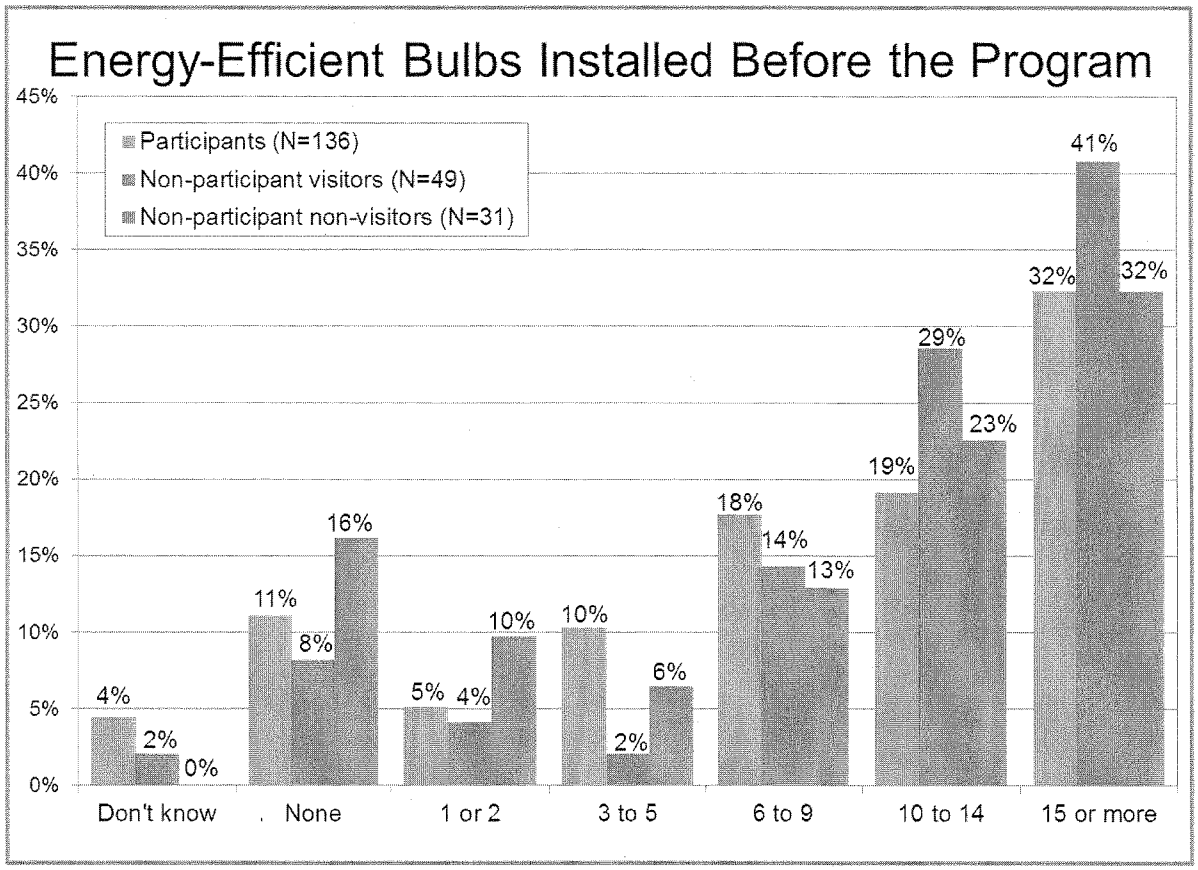

Figure 35. Numbers of Energy-Efficient Light Bulbs in the Household

While virtually all surveyed participants are using CFLs (only 0.7% or 1 out of 136 has no CFLs installed after participation in the program; this participant prefers LEDs), there are still 8.2% of non-participant visitors (4 out of 49) and 16.1% of non-visiting non-participants (5 out of 31) who have never used CFLs. More program participants (44.1%) and non-participant visitors (42.9%) have been using CFLs for four years or longer compared to non-visitors (29.0%) as seen in Figure 36.

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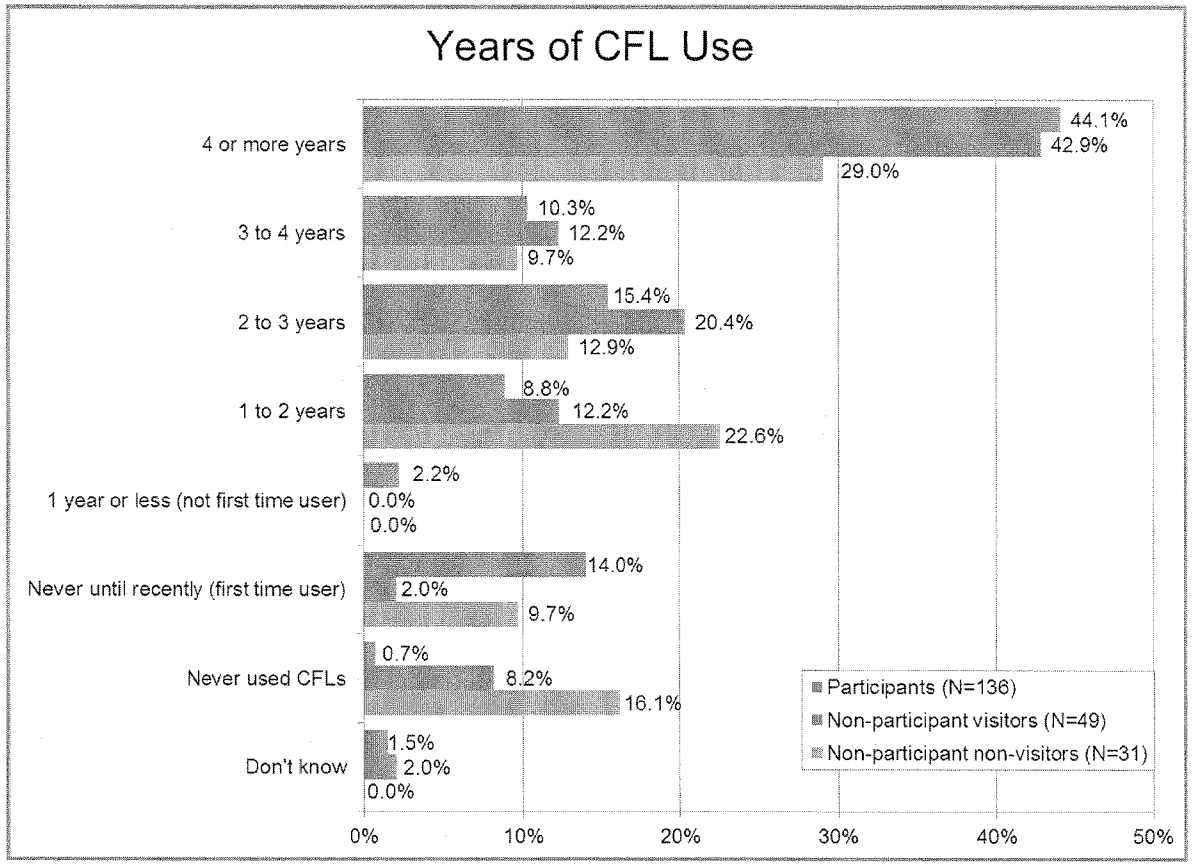

Figure 36. Years of CFL Use Comparison

Currently, far fewer customers are using LEDs than CFLs, with minorities of participants (33.8% or 46 out of 136), non-participant visitors (28.6% or 14 out of 49) and non-participant non-visitors (22.6% or 7 out of 31) having used LEDs before (differences between groups are not significant). However, program participants are much more likely to have started using LEDs in the past year (22.1% or 30 out of 136) compared to the non-participant groups (6.1% or 3 out of 49 visitors and 3.2% or 1 out of 31 non-visitors); this difference may be, in part, due to the effect of participating in the Specialty Bulbs program which distributes LEDs to customers (Figure 37).

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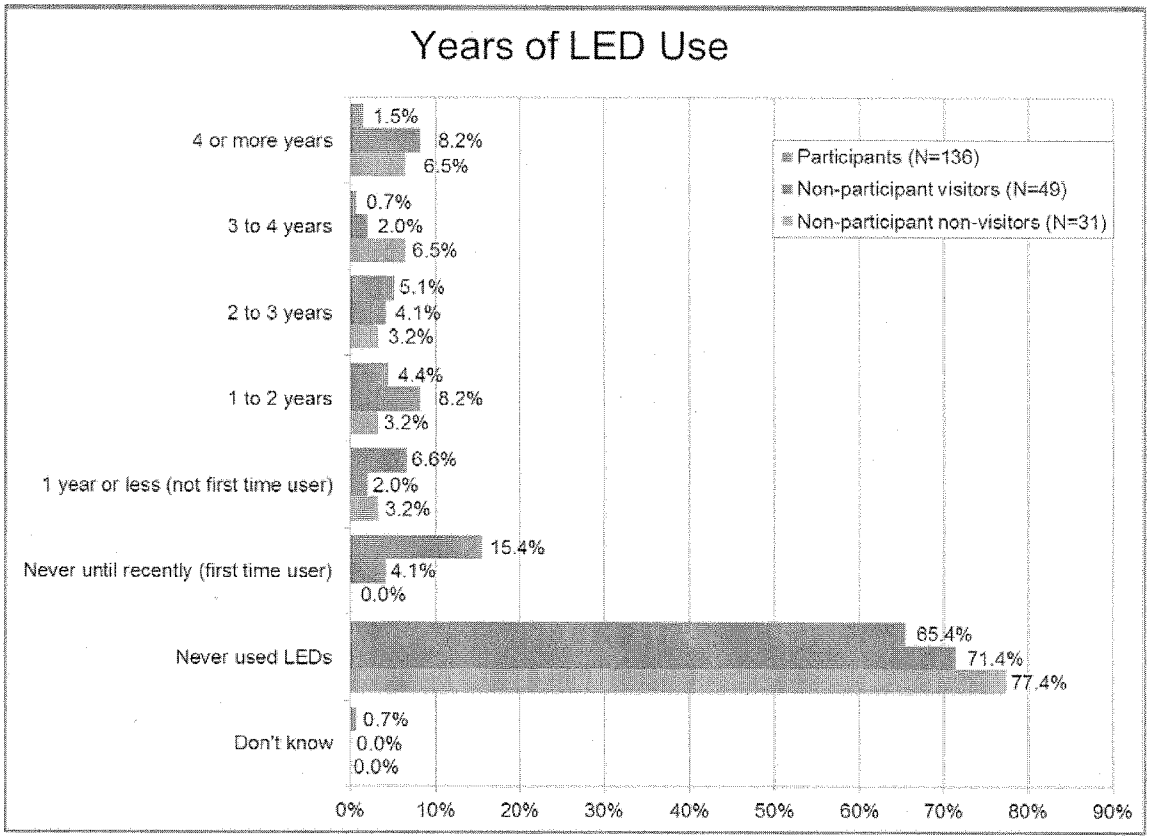

Figure 37. Years of LED Use Comparison

Specialty Bulbs in Participant and Non-Participant Households

Program participants are significantly more likely to have specialty bulbs installed in their homes than non-participants. This indicates that the need for light bulbs is a key driver of Savings Store sales, not just in situational terms (a customer's bulbs have burned out and they need to replace them right away) but in structural terms (a customer doesn't need to buy candelabra bulbs unless they have a fixture that uses candelabra bulbs).

Table 112 compares the specialty bulbs installed in participant and non-participant households. The only specialty bulb types that are equally likely to be found in both groups' homes are globe bulbs (51.5% of participants and 51.3% of non-participants) and outdoor reflectors (75.0% of participants and 65.0% of non-participants). Participant households are about 50% more likely than non-participants to have dimmable bulbs (52.2% versus 37.5%), three-way bulbs (60.3% versus 41.3%), indoor reflectors (47.1% versus 28.8%), candelabra bulbs (64.0% versus 48.8%) and "other" (miscellaneous) specialty bulbs (31.6% versus 20.0%).

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Table 112. Specialty Bulbs Installed in Participant and Non-Participant Households

	Participants (N=136)		Non-Participants (N=80)	
	Percent of households	Bulbs per household with this type of bulb	Percent of households	Bulbs per household with this type of bulb
Dimmable spiral	***52.2%***	8.0	***37.5%***	6.1
Three-way spiral	***60.3%***	3.0	***41.3%***	2.3
Indoor reflector (recessed)	***47.1%***	8.5	***28.8%***	6.2
Outdoor reflector (outdoor recessed)	75.0%	4.3	65.0%	3.9
Globe	51.5%	7.7	51.3%	7.0
Candelabra	***64.0%***	8.7	***48.8%***	7.4
CFL or LED capsule (A Line)	***46.3%***	7.2	***15.0%***	4.9
Other specialty bulbs	***31.6%***	5.8	***20.0%***	8.2

Bold italics in the table denote statistically significant differences between groups at p<.05 or better using Student's t-test. Percentages total to more than 100% because respondents can have multiple types of specialty bulbs.

Participant households that have specialty bulbs also have larger numbers of every type of bulb installed (with the exception of "other" miscellaneous specialty bulbs[41]); again, the largest difference is the number of efficient capsule bulbs (7.2 per household with these bulbs versus 4.9 for the much smaller percentage of non-participants who have this kind of bulb installed).

As shown in Figure 38 below, the largest difference between groups is that participant households are three times as likely to have CFL or LED capsules installed (46.3%) as non-participant households (just 15.0%). This large difference indicates that the participant group has a greater interest in these bulbs compared to non-participants. However, the large difference is also partly an artifact of the effect of the program since, by definition, participants purchased efficient bulbs from the Savings Store but none of the non-participants did. It is also partly attributable to the unique "specialty bulb" status of efficient capsule bulbs. Because incandescent capsules are considered to be "standard" bulbs, energy efficient capsules are unique among specialty bulbs in that they can be used to replace "standard" bulbs as well as other specialty capsule bulbs.

[41] One non-participant reported that they have 75 halogen bulbs that they categorized as "other" specialty bulbs; if this outlier is not included, the remaining 15 non-participants with "other" specialty bulbs installed only have an average of 3.7 of these miscellaneous specialty bulbs installed per household.

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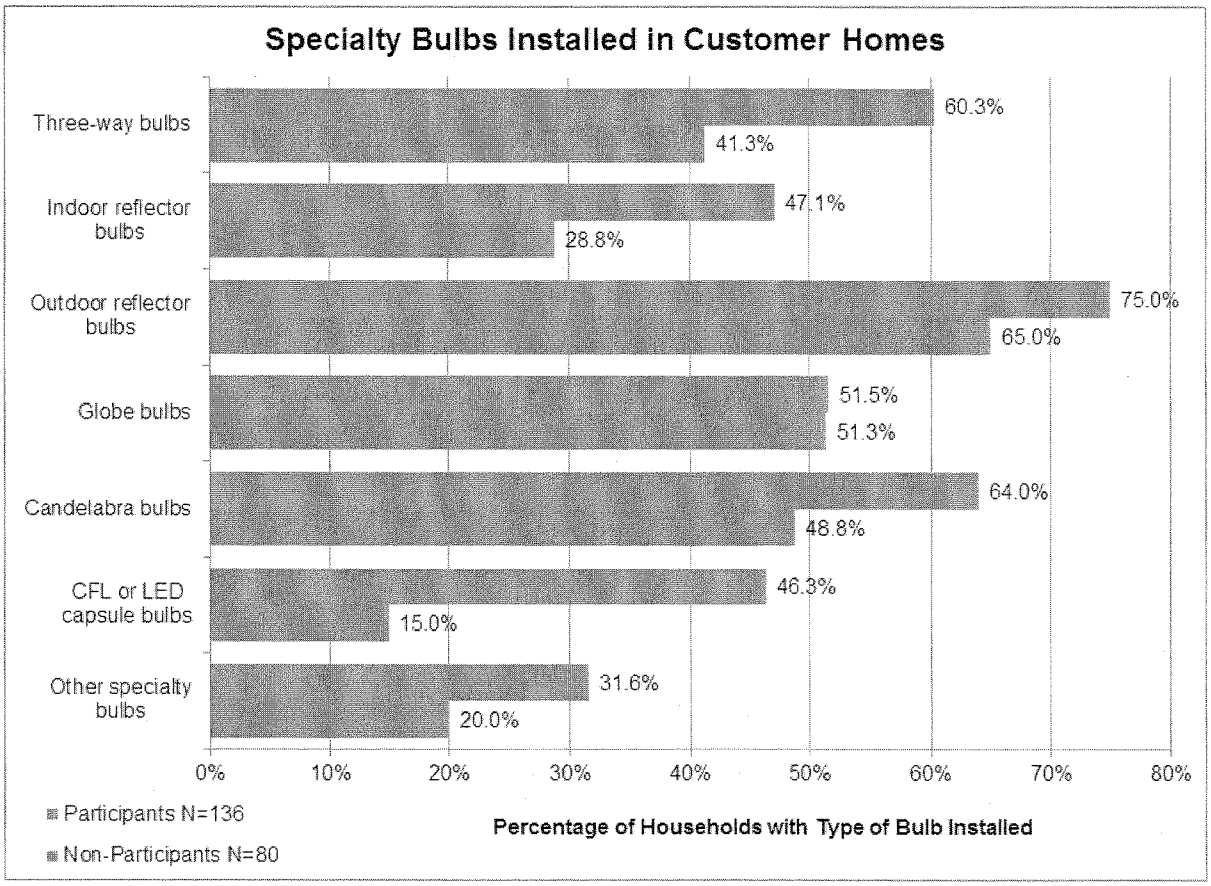

Figure 38. Percent and Type of Bulbs Installed

Table 113 shows that surveyed program participants have a much higher percentage of efficient bulbs in their specialty sockets compared to non-participants (which is to be expected since participants have purchased efficient specialty bulbs through the program while non-participants have not). The largest discrepancies are for globe bulbs (64.7% of participants' sockets are efficient versus 16.3% of non-participants) and three-way bulbs (69.9% of participants' sockets are efficient versus 36.8% of non-participants). However, participants and non-participants have approximately equal percentages of efficient bulbs in candelabra sockets (36.9% versus 29.7%) and "other" miscellaneous sockets (27.3% versus 33.6%). Bold italics denote statistically significant differences between groups at $p<.05$ or better using Student's t-test.

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Table 113. Energy-Efficient Specialty Bulbs in Participant and Non-Participant Households

	Participants (N=136)		Non-Participants (N=80)	
	Total bulb count	Percent that are EE bulbs	Total bulb count	Percent that are EE bulbs
Dimmable spiral	*569*	**47.5%**	*183*	**34.4%**
Three-way spiral	249	***69.9%***	76	***36.8%***
Indoor reflector (recessed)	543	***67.4%***	142.5	***52.6%***
Outdoor reflector (recessed outdoor)	438	***47.7%***	204	***33.8%***
Globe	541	***64.7%***	289	***16.3%***
Candelabra	757	36.9%	290	29.7%
CFL or LED capsule (A Line)	454	*100.0%*	59	*100.0%*
Other specialty bulbs	249	27.3%	131	33.6%

Percentages total to more than 100% because respondents can have multiple types of specialty bulbs.

Incandescent specialty bulbs in storage in participant and non-participant households are shown in Table 114 and Figure 39. Interestingly, there are no significant differences between groups in terms of the percentage of households that have each type of incandescent specialty bulb in storage. However, considering that participants are more likely to have more sockets for specialty bulbs (see Table 112) this lack of a difference may be an indicator that participants have less interest in using incandescent bulbs in the future relative to non-participants (who are just as likely to have these bulbs in storage even though they have fewer sockets for them). Furthermore, it also affirms that the Specialty Bulbs program is putting efficient bulbs in the hands of customers who will take good advantage of them. In spite of having just removed old (often incandescent) bulbs to replace them with program bulbs, program participants are not any more likely to have these bulbs in storage than non-participants. This indicates that participants are tossing out many of their old inefficient bulbs instead of storing them for future use.

Table 114. Incandescent Bulbs in Storage for Future Use in Specialty Sockets

	Participants (N=136)		Non-Participants (N=80)	
	Have incandescents in storage (percent)	Bulbs per household with this type of bulb	Have incandescents in storage (percent)	Bulbs per household with this type of bulb
Dimmable spiral	14.7%	5.3	10.0%	4.7
Three-way spiral	16.9%	1.8	15.0%	2.3
Indoor reflector (recessed)	9.6%	5.3	5.0%	1.9
Outdoor reflector (recessed outdoor)	11.8%	3.4	16.3%	2.5
Globe	15.4%	3.5	16.3%	6.0
Candelabra	22.8%	5.1	18.8%	3.9
Other specialty bulbs	5.1%	3.1	3.8%	1.3

Percentages may total to more or less than 100% because respondents can have multiple types of bulbs in storage or none in storage.

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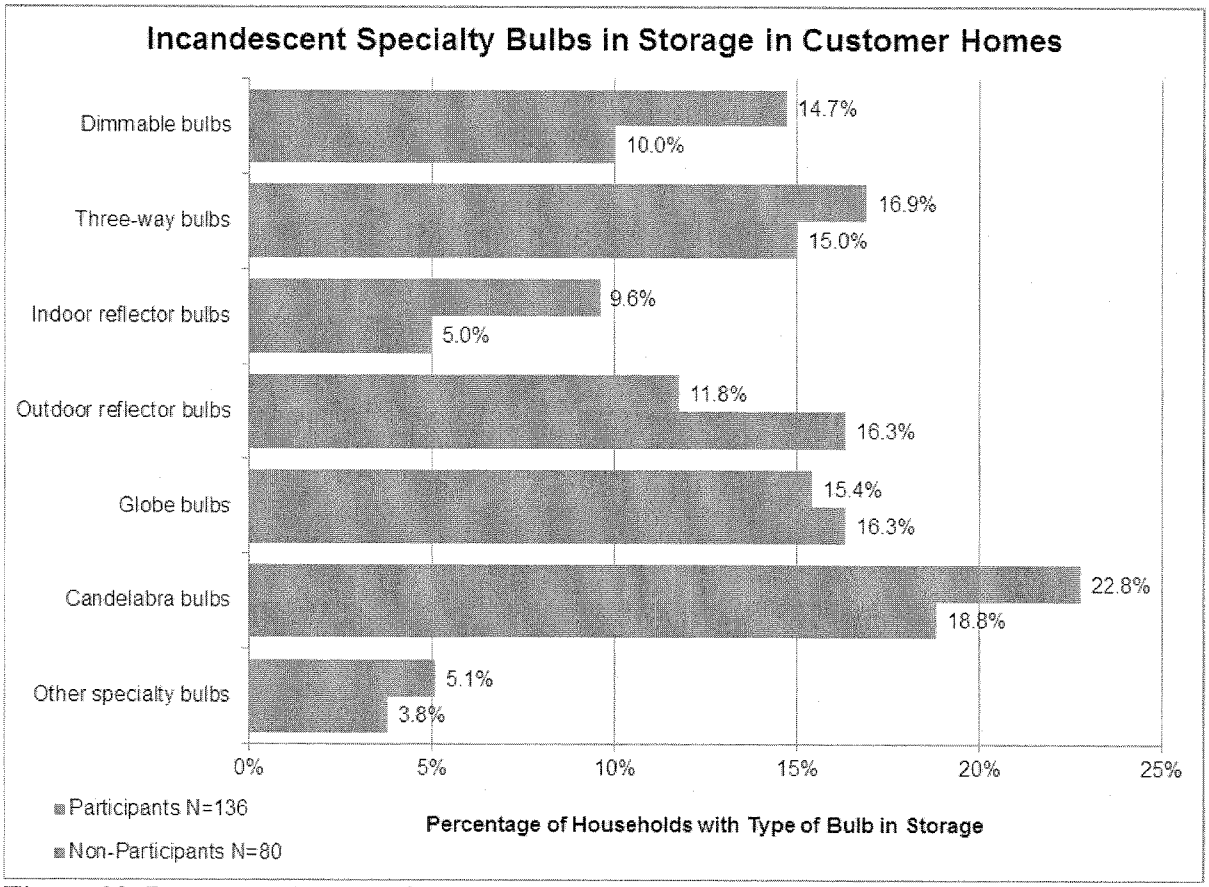

Figure 39. Percent and Type of Incandescent Specialty Bulbs in Storage

Participant and Non-Participant Light Bulb Purchase Intentions

Table 115 shows that future light bulb purchase intentions are remarkably similar between program participants and non-participants. Among both groups, incandescent and halogen bulbs are the least popular category of bulbs; only 17.2% of participants plan to buy any incandescent bulbs compared to 26.0% of non-participants (though this difference is statistically significant at $p<.10$ using Student's t-test). Similar percentages of both groups plan to purchase CFLs (86% to 89%) and LEDs (33% to 38%); these differences are not statistically significant.

The proportion of incandescent bulbs to be purchased tells a similar tale: incandescent bulbs are the least popular for both groups, making up only 6.1% of participants' future bulb purchases and 14.9% of non-participants (this difference is significant at $p<.05$ using Student's t-test). Again, the percentages of CFLs (69% to 74%) and LEDs (16% to 20%) are very similar between groups and the differences are not significant.

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Table 115. Purchase Intent for Next Ten Bulbs among Participants and Non-Participants

Of the Next Ten Light Bulbs You Purchase, How Many Will Be...?	Participants Who Answered This Question (Valid N=128)	Non-Participants Who Answered This Question (Valid N=77)
% who intend to buy at least one incandescent and/or halogen bulb	17.2%	26.0%
% who intend to buy at least one CFL bulb	89.1%	85.7%
% who intend to buy at least one LED bulb	37.5%	32.5%
	All Bulbs To Be Purchased (N=1278)	**All Bulbs To Be Purchased** (N=763)
% of next ten bulbs that will be incandescent and/or halogen bulbs	6.1%	14.9%
% of next ten bulbs that will be CFL bulbs	73.9%	69.1%
% of next ten bulbs that will be LED bulbs	20.0%	16.0%

Percentages in the first three rows total to more than 100% because respondents could give multiple responses. Percentages in the bottom three rows are mutually exclusive and add up to 100%.

Though there are statistically significant differences between participants and non-participants in terms of their intentions regarding incandescent bulb purchases, on the whole these two groups are far more similar than they are different in that both show a very strong inclination towards using efficient lighting. The high interest in CFLs and LEDs among non-participants indicates that Duke Energy is doing a very good job of targeting the households that have already adopted the new light bulb technologies and whom are the ideal customers for the Savings Store. However, it may also indicate that participation in this program is not transforming participants' behavior regarding efficient lighting, to the extent that targeted customers (participants and non-participants alike) have already adopted this behavior before participating in the program. Indeed, adopting the use of CFLs and LEDs is probably a prerequisite for most Savings Store customers.

Store Influence on Future CFL and LED Purchases

A majority of participants and non-participants who visited the Store website indicate that the Store had a positive influence on the likelihood that they would buy and use CFLs in the future. However the Store had a somewhat lesser influence on the likelihood that both groups would buy and use LEDs in the future. Specifically, 61.8% of participants said buying from the Store made them more likely to buy and use CFLs in the future, compared to 58.3% of non-participant visitors who said that their experiences at the Savings Store site made them more likely to do so. Slightly more non-participant visitors (35.4%) said they were more like to buy and use LEDs than participants (28.7%), though this difference is not statistically significant.

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Table 116. Intention to Purchase CFLs and LEDs as a Result of Store Visits

Likelihood of future purchases as a result of Store visits	CFLs				LEDs			
	Participants (Valid N=136)		Non-Participant Visitors (Valid N=48)		Participants (Valid N=136)		Non-Participant Visitors (Valid N=48)	
	Count	Valid %	Count	Valid %	Count	Valid %	Count	Valid %
More likely	84	61.8%	28	58.3%	39	28.7%	17	35.4%
Neither more or less likely	48	35.3%	20	41.7%	89	65.4%	27	56.3%
Less likely	4	2.9%	0	0.0%	8	5.9%	0	0.0%
Don't know	0	0.0%	0	0.0%	0	0.0%	4	9.1%

When asked about their future intentions to purchase light bulbs directly from the Duke Energy Savings Store, participants were significantly more likely than non-participants to do so. In a clear example of how past behavior predicts future behavior, in total nearly two-thirds of participants (64.0% or 87 out of 136) indicated that the Savings Store would be one of the first places that they go to buy bulbs (39.0% or 53 out of 136) or that they would definitely shop at the Store again (25.0% or 34 out of 136). Among non-participants, only about one in four (26.3% or 21 out of 80) expressed equivalent levels of purchase interest, a difference which is statistically significant at $p<.05$ using Student's t-test. However in spite of having significantly lower interest in shopping at the Savings Store in the future relative to program participants, there are still 23.8% (19 out of 80) of non-participants who say that the Savings Store will be "one of the first places they go" the next time they need to shop for light bulbs.

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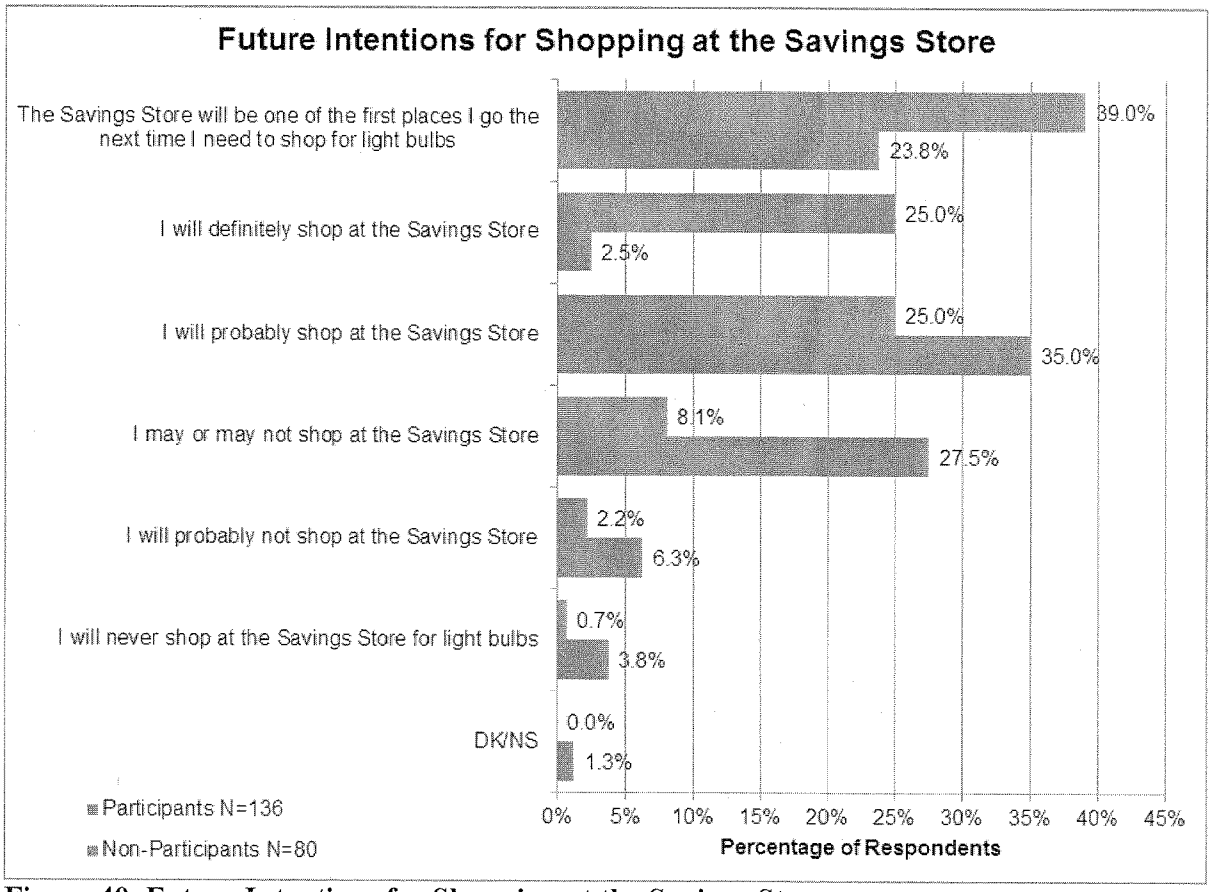

Figure 40. Future Intentions for Shopping at the Savings Store

Other Comparisons

Both groups, participants and visiting non-participants, visited the Savings Store an average of 2.3 times apiece.

When it came to recommending the program to others, participants were almost twice as likely as non-participants to do so, with 61.0% (83 out of 136) of participants saying they had recommended the Savings Store to others, compared to 35.0% (28 out of 80) of non-participants who said they had done so. However, non-participants who did recommend the program spoke with a greater number of individuals on average (mean 9.2 mentions per respondent) compared to participants who recommended the program (mean 5.2 mentions per respondent).Word of mouth was the most common method of communication for both groups.

Recommendations

1. Although both groups of customers expressed a strong interest in efficient lighting, non-participants appear to be more sensitive to the purchase price of specialty bulbs, and are therefore more likely to be driven by a situational need for new bulbs (the old inefficient one burns out). For this reason, non-participants will likely require a greater amount of follow up advertising both to prompt them to make purchases before the old bulbs burn

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out and to keep the Savings Store top of mind for when the old bulbs do need to be replaced.

2. Given the program's marketing premise that users of "standard" CFLs are more likely to purchase and install specialty CFLs and LEDs, it is not surprising that high percentages of participants and non-participants have four or more years of experience using CFLs. However, while this strategy is likely to continue to generate new customers, it may also be advantageous to shift a portion of the program's marketing effort toward more recent adopters of CFLs.

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Net to Gross Analysis

Freeridership

Freeridership for this program is computed based on survey participants' responses to questions about the installation of program bulbs. An average freeridership score is calculated for each type of incented program bulb, and the final program-level freeridership is then calculated by weighting the average freeridership for each bulb type by the total number of incented program bulbs distributed in North and South Carolina during the evaluation period (from program launch through December 31, 2013). Simplified versions[42] of the three participant survey questions used to calculate freeridership are listed below; this series of questions is asked once for each type of program specialty bulb a respondent has installed (if the customer installed a type of bulb in more than one location, the survey asks these questions about the installation with the largest number of program bulbs).

A. What kind of bulbs were previously in the lamps or fixtures in your [*room where program bulb installed*] where you installed the [*specialty program bulb type*] bulbs from the Savings Store?

( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

B. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?

( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No" in question B, then ask C.

C. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?

( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (would have left sockets empty)

[42] The survey contains uniquely-worded versions of these questions for each category of specialty bulb. Most of these questions also include response options for dimmable versus non-dimmable bulbs, which are not shown here since dimmability is not a factor in computing freeridership. The original survey questions can be found in *Appendix C: Participant Survey Instrument.*

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( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

Table 117 shows how survey responses are converted into a pair of logical statements that are used to assign freeridership scores. The two logical statements are: "the participant had efficient bulbs in these sockets before the program" and "the participant would have installed efficient bulbs in these sockets without the program." Responses to both of these statements are coded either "yes", "no" or "don't know".

Table 117. Key to Converting Survey Responses to Logical Statements

Survey questions	Survey responses[43]	Participant had efficient bulbs in these sockets before the program	Participant would have installed efficient bulbs in these sockets without the program
A. What kind of bulbs were previously in the lamps or fixtures in your [*room where program bulb installed*] where you installed the [*specialty program bulb type*] bulbs from the Savings Store?	CFL, LED	**Yes**	-
	Incandescent, Halogen	**No**	-
	No bulbs in sockets[44], Don't know, Not specified	**Don't know**	-
B. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?	Yes	-	**Yes** if efficient before program **No** if not efficient before program **Don't know** if unknown before program
	No	-	*Use response from question C*
	Maybe		**Maybe**
	Don't know, Not Specified	-	**Don't know**
C. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?	CFL, LED	-	**Yes**
	Incandescent, Halogen	-	**No**
	No bulbs in sockets, Don't know, Not specified	-	**Don't know**

43 Some participants gave "other" open-ended responses to these questions; these responses are coded whenever possible (for example "an efficient bulb but I'm not sure which type" to question A or B clearly indicates "yes" to the statements about using efficient bulbs). When "other" responses cannot be used to determine a "yes" or "no", then these responses are coded "don't know".

44 For the purposes of calculating freeridership, "no bulbs in sockets" is considered a "don't know" response in terms of the type of bulb (efficient or not) that was installed before the program or that would be installed without the program. There are no savings from installing program bulbs in empty sockets (electricity usage actually increases), however this lack of savings is accounted for when computing kWh savings per bulb (rather than in the freeridership calculations).

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Table 118 shows how freeridership scores are assigned based on the responses to the two logical statements about using efficient bulbs before the program and in the absence of the program (response combinations not shown in this table are assigned freeridership of zero). A majority of surveyed specialty bulb installations (56.0% or 140 out of 250) are not considered to involve any freeridership, while 40.8% (102 out of 250) of installations received freeridership scores ranging from 50% to 100%. There were eight installations (3.2% of 250 surveyed) which could not be scored due to survey participants giving responses categorized as "don't know" for both of the logical statements about efficient bulbs in these sockets.

Table 118. Freeridership Scores for Specialty Bulb Installations

Participant had efficient bulbs in these sockets before the program	Participant would have installed efficient bulbs in these sockets without the program	Freeridership %	Count of survey responses (N=250 specialty bulb installations)
yes	yes	100%	33
yes	maybe	50%	4
don't know	yes	50%	2
no	yes	50%	63
don't know	don't know	*Withheld from calculations*	8
All other combinations of responses		0%	140

Table 40 shows the result of freeridership calculations by specialty bulb type. Overall program freeridership is the average of all freeridership values weighted by the representation of the corresponding bulb type among all incented installations surveyed. Bulb type level freeridership estimates are presented for informational purposes only and should not be used in any calculations. Out of 1,876 incented program bulbs confirmed shipped to surveyed participants, customers were asked freeridership questions about 807 installed incented program bulbs (only 1,132 incented program bulbs are confirmed installed, while 594 incented program bulbs are stored for future use, 87 were disposed of[45], and the outcome for the remaining 63 incented bulbs could not be determined). In aggregate, about one surveyed bulb in four is categorized as a freerider bulb (27.1% or 218.5 out of 807 total surveyed incented bulbs), though the freeridership rate by specialty bulb type varies greatly from a low of 14.3% (21 out of 147 bulbs) for candelabra bulbs up to 46.6% (74.5 out of 160 bulbs) for capsule bulbs.

[45] The "disposed" bulbs category includes program bulbs that participants gave away to people in other households. Some of these bulbs may be installed in other Duke Energy households where they are providing energy savings, however this cannot be confirmed or quantified since recipients of "second-hand" program bulbs were not surveyed (i.e., we do not have any data about the installation of these bulbs, including whether or not they are installed in Duke Energy territory).

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Table 119. Survey Participant Incented Freerider Bulbs by Specialty Bulb Type

Bulb Group	Bulbs Ordered	Bulbs Installed	Number of "freerider bulbs"	Average freerider score by bulb type
Capsule (A Line) (n=50)	407	160	74.5	46.6%
Three-way spiral (n=42)	190	70	17.5	25.0%
Candelabra (n=35)	335	147	21.0	14.3%
Indoor reflectors (recessed) (n=37)	362	135	35.0	25.9%
Globe (n=34)	293	146	30.0	20.5%
Outdoor reflector (recessed outdoor) (n=30)	174	90	17.0	18.9%
Dimmable spiral (n=22)	115	59	23.5	39.8%
Total specialty bulbs[46] (N=250 installations)	1876	807	218.5	27.1%

The previous table shows an overall freeridership rate of 27.1%; however that figure is based on the distribution of bulbs among surveyed participants. To calculate the program-level freeridership rate, freeridership scores for each bulb type must be weighted according to the distribution of bulb types by the program. Table 120 shows how program-level freeridership is calculated by weighting the survey-generated freerider rates for each bulb type by the percentage of each bulb type distributed by the program as a whole. The final program-level freeridership is thus calculated as 27.2%, which is very similar to the 27.1% figure based on un-weighted survey results (this indicates that there is not much sample bias in the survey group compared to the population).

[46] In Table 40, the eight installations which could not be assigned freeridership scores (which were withheld from the freeridership calculations by bulb type) are assigned freeridership scores equal to the mean freeridership levels for their bulb types. Thus all 250 surveyed installations are included in this table. This has no effect on the freeridership rates by bulb type shown in this table, nor upon the final program-level calculations in Table 120.

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Table 120. Weighted Overall Program Freeridership

Bulb Group	Freerider score by bulb type	Program records incented bulbs ordered in Carolinas 2013	Program records percent of bulbs sold	Contribution to program freeridership (FR score X bulbs sold)
Capsules (A Line)	46.6%	24,735	21.1%	0.09839
Three-way spiral	25.0%	7,468	6.4%	0.01595
Candelabra	14.3%	18,512	15.8%	0.02259
Indoor reflector (recessed)	25.9%	27,647	23.6%	0.06123
Globe	20.5%	24,412	20.9%	0.04285
Outdoor reflector (recessed outdoor)	18.9%	9,937	8.5%	0.01603
Dimmable spiral	39.8%	4,346	3.7%	0.01479
Total specialty bulbs	*(27.1% survey-weighted average)*	117,057	100.0%	0.2718 *(27.2% program-weighted average)*

Spillover

There are two sources contributing spillover savings for the Specialty Bulbs Program: standard spiral CFLs purchased from the Savings Store and purchases of additional high efficiency lighting measures from locations other than the Savings Store, but influenced, at least in part, by a participant's experience with the program.

If a survey participant purchased and installed one or more standard spiral CFLs from the Savings Store, they are asked questions about the wattage of the bulb that was replaced as well as the hours of use for that particular socket. The extent to which each respondent is a freerider with respect to standard spirals is accounted for using the diffusion of adoption curve for efficient bulbs shown in Figure 41. The resulting percentage is deducted from that participant's spillover contribution.

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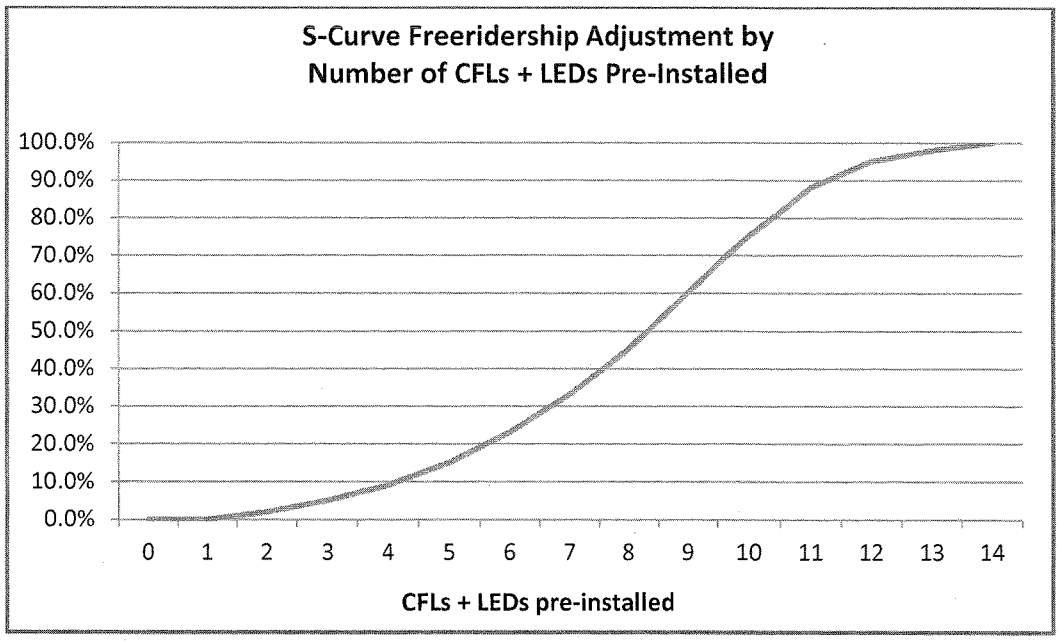

Figure 41. Diffusion of adoption curve for determining freeridership

There were four survey respondents that purchased and installed standard spiral CFLs from the Savings Store and answered the spillover question battery. Their spillover contributions were calculated using their self-reported baseline wattage and hours of use and are shown in Table 121. Together, these four participants contributed 573 kWh toward program spillover.

Table 121. Spillover contribution from non-incented standard spiral CFLs purchased through the Savings Store

Customer	Non-Incented Standard Spirals Installed	kWh	Existing EE Bulbs (Prior to Program Participation)	Freeridership	Spillover kWh
Customer 1	7	279	6	23%	215
Customer 2	4	87	3	5%	83
Customer 3	5	165	2	2%	162
Customer 4	2	113	0	0%	113
Total	**18**	**645**	**11**		**573**

Surveyed participants were asked how many energy efficient bulbs, if any, they had purchased elsewhere since purchasing bulbs from the Savings Store. Participants who indicated they had purchased additional energy efficient bulbs were asked how many of them they had installed. Participants were also asked to rate the influence of the program on their decision to purchase these bulbs using a 1-to-10 scale, with one signifying no program influence and ten meaning that the program was very influential. Each customer's influence rating was converted to an influence factor for the purposes of calculating spillover. The conversion method, along with a breakdown of customer ratings, can be seen in Table 122 and Table 123.

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Table 122. Spillover contribution from non-incented standard spiral CFLs purchased outside of the Savings Store

Customer	Non-Incented Standard Spirals Installed	kWh	Influence	Influence Factor	Existing EE Bulbs	Freeridership	Spillover kWh
Customer 1	5	456	10	1.0	8	45%	251
Customer 2	6	254	10	1.0	10	75%	63
Customer 3	12	547	9	0.9	0	0%	492
Customer 4	6	254	8	0.8	8	45%	112
Customer 5	3	176	3	0.2	15	100%	0
Total	**32**	**1686**			**41**		**918**

There were 12 survey respondents that reported making additional program-influenced purchases of efficient lighting outside of the Savings Store program. Spillover savings was calculated for each of these 12 respondents individually. For specialty bulb types that are also offered through the Store, spillover bulbs are assigned savings as assessed in the *Impact Analysis* section. For standard spiral CFLs and specialty bulb types not offered through the Store, algorithms from the Draft Ohio TRM were used with deemed parameters for operating hours (2.85 hours/day) and the delta watts multiplier (EE watts * 3.25).

Spillover savings for standard spiral CFLs purchased outside of the Savings Store are attributed freeridership in the same way as those purchased from the Store. This percentage is deducted from spillover savings in addition to any deduction resulting from any influence rating less than ten out of ten. There were five such customers, shown in Table 122, contributing 469 kWh toward program spillover.

Table 123. Spillover contribution from non-incented specialty bulbs purchased outside of the Savings Store

Technology	Non-Incented Specialty Bulbs Installed	kWh	Influence	Influence Factor	Spillover kWh
CFL - Capsule (A Line)	1	30	10	1.0	30
LED - Candelabra (A Line)	8	337	10	1.0	337
LED - Outdoor Reflector (recessed outdoor)	2	254	10	1.0	254
LED - Capsule (A Line LED)	12	435	10	1.0	435
LED - Short Neck LED	4	133	8	0.8	106
LED - Tube Light	5	344	8	0.8	275
LED -Capsule (A Line LED)	6	227	7	0.7	159
Total	**38**	**1,761**			**1,597**

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Spillover savings contributions for the seven customers that attributed program influence to their purchase of specialty bulbs outside of the Savings Store are shown in Table 123. No freeridership deduction is made for specialty bulbs. These seven customers contribute 1,597 kWh toward program spillover.

Table 124. Total program spillover

Technology	Non-Incented Specialty Bulbs Installed	Spillover kWh
Savings Store Spiral CFLs	18	573
Non-Savings Store Spiral CFLs	32	918
Specialty Bulbs	38	1,597
Total	**88**	**3,088**

Table 124 sums the spillover contributions from all spillover bulbs. In total, the program motivated survey respondents to purchase an additional 88 energy efficient light bulbs of varying types. Total spillover savings for the program is 3,088 kWh. Total gross savings from survey respondents is 72,182 kWh (3.85 kWh/bulb * 1,876 bulbs). Comparing spillover kWh with the total kWh savings from all bulbs purchased by all survey participants yields a spillover percentage of 4.3% (3,088/72,182).

Net to Gross Ratio Calculation

The net to gross ratio is calculated as follows:

NTGR = (1-freeridership)*(1+spillover)
= (1 - 0.272) * (1 + 0.043)
= 0.759

Total Discounting to be Applied = 1 - NTGR
= 1- 0.759
= 0.241
= 24.1%

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Impact Analysis

This section presents the impact evaluation for Duke Energy's Residential Specialty Bulb Program as it was administered in the Carolina System. The findings presented here were calculated using a combination of survey data from program participants and lighting logger data with algorithms from the Draft Ohio TRM. Calculations were performed in an Excel spreadsheet using exact mathematical values. As a result, some tables may contain round-off errors.

Table 125 shows the savings per bulb purchased adjusted downward for the ISR of 69.8% and incorporating the daylength adjustment applied to the hours of use (both explained in the *Methodology* section below), as well as the freeridership and spillover percentages computed from participants' survey responses. A breakdown of the mixture of CFL and LED bulb types and wattages that were purchased can be seen in the *Program Tracking Data* section. Estimated energy savings was calculated using the weighted mean specialty bulb wattage and hours of use by room type.

Table 125. Adjusted Impact: kWh and Coincident kW per Bulb Purchased

Metric	Result
Number of bulbs purchased	1,876
In service rate	69.8%
Gross kW per bulb	0.0042
Gross kWh per bulb	38.5
Freeridership rate	27.2%
Spillover rate	4.3%
Total discounting to be applied to gross values	24.1%
Net kW per bulb	0.0032
Net kWh per bulb	29.2
Measure life	7 years

Methodology

Primary data collected from survey participants was used to determine the number of bulb installations and mean wattage of bulbs removed seen in Table 137. A lighting logger study was used to determine the average daily hours of use as well as power fractions for the dimmable and 3-way bulb types, all of which can be found in the *Lighting Logger Data* section. From the bulb installation data, the in service rate (ISR) was calculated using the approach detailed in the *In Service Rate (ISR) Calculation* section. This data was combined as per *Appendix K: Impact Algorithms* to calculate gross savings per bulb. A net to gross question battery included in the participant survey was used to estimate program freeridership and spillover to determine the total discounting to be applied to gross savings, shown in the *Net to Gross Analysis* section.

Program Tracking Data

Table 126 shows bulb purchasing data by bulb type and wattage for all bulbs purchased by all program participants from April 26, 2013 through December 31, 2013. This data is used to calculate weights that are used to determine weighted average values throughout the impact analysis section of this report.

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Table 126. Program bulb purchases by type and wattage

Bulb Type	Bulb Group	Wattage	Quantity
CFL Reflector (recessed)	Indoor Reflector	12	7,397
CFL Reflector (recessed)	Indoor Reflector	14	15,813
CFL Reflector(recessed)	Indoor Reflector	23	2,184
CFL Reflector/Outdoor (recessed outdoor)	Outdoor Reflector	23	9,965
CFL Reflector/Dimmable (recessed dimmable)	Indoor Reflector	15	1,753
LED Reflector (recessed LED)	Indoor Reflector	10	28
LED Reflector (recessed LED)	Indoor Reflector	9.5	27
LED Reflector (recessed LED)	Indoor Reflector	13	524
CFL Globe	Globe	9	5,888
CFL Globe	Globe	14	18,560
CFL Candelabra	Candelabra	5	256
CFL Candelabra	Candelabra	7	6,821
CFL Candelabra	Candelabra	9	11,540
CFL Three-Way	Three-way	12-22-33	7,470
CFL Dimmable	Dimmable spiral	23	4,348
CFL A Line	Capsule	14	14,852
CFL A Line	Capsule	18	3,486
LED A Line LED	Capsule	11	6,417
Total			**117,329**[47]

Table 125 shows the average wattage for each bulb group based on the overall purchasing data. These values were used in conjunction with the participant survey data to determine the weighted average wattage of program bulbs installed in each room type. The average wattages for dimming and three-way bulbs have been adjusted downward to account for their respective power fractions as explained in the *Lighting Logger Data* section.

[47] The official total number of program bulbs sold in the Carolina System during 2013 is 117,057. However, the data provided to TecMarket Works by Duke Energy which showed the distribution of program bulbs by wattage totals to 117,329. Since these bulb totals differ by only 0.2%, the potential effect on wattage average watts by bulb type calculations from this discrepancy amounts to a rounding error; the maximum potential difference in average watts based on the different bulb totals is only 0.02 watts (for candelabras). Three-way, dimmable spiral and outdoor reflector bulb wattages are not affected by this discrepancy, since there was only one wattage available for each of these bulb types during the evaluation period.

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Table 127. Average wattage by bulb group for all purchased bulbs

Bulb Group	Average Wattage
Indoor reflector (recessed)	14.02
Outdoor reflector (recessed outdoor)	23.00
Globe	12.80
Candelabra	8.21
Three-way spiral	20.26
Dimmable spiral	18.33
Capsule (A Line)	13.79

Survey Data

Participants were asked how many bulbs purchased through Duke Energy's Savings Store were currently installed in light fixtures. Additional, more specific information was collected for as many bulb types as possible, including the location, the type and wattage of the bulb that it replaced, and the mean hours per day that it is in use for comparison to the logger study. The compilation of this data is presented in Table 128. Survey participants were also asked to quantify the increased or decreased in lighting usage, if any, since installing program bulbs. The survey participants reported a small increase in operating hours after installing the program bulbs. This data is presented for informational purposes only. The post-installation operating hours taken from the lighting logger study were considered to be more reliable than the self-reported data, and were used to estimate impacts.

Table 128. Participant survey bulb data by room type

Room Type	Number of Installations	Mean Wattage of Bulb Removed	Mean Daily Hours of Use (New)	Mean Daily Hours of Use (Old)
Bathroom	180	40.6	2.44	2.44
Dining room	108	25.8	4.90	4.62
Hall	29	29.2	2.73	2.16
Kitchen	158	47.5	6.32	6.33
Living/family room	153	54.2	4.94	4.68
Master bedroom	65	52.0	3.69	3.69
Other bedroom	21	40.6	2.03	2.28
Outside	89	89.2	4.08	3.81
Other	78	52.6	4.54	4.54
MEAN/TOTAL	**881**	**47.7**	**4.31**	**4.20**

There were a total of 914 installations surveyed. Omitting the "Don't know/Not sure" responses as well as non-incented standard spiral bulbs that contribute to spillover but not gross savings leaves the 881 valid installations seen in Table 128 and Table 129, which shows a compilation of the same data by bulb group rather than by room type.

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Table 129. Participant survey bulb data by bulb group

Bulb Group	Number of Installations	Mean Wattage of Bulb Removed	Mean Daily Hours of Use (New)	Mean Daily Hours of Use (Old)
Indoor reflector (recessed)	141	60.0	4.59	4.42
Outdoor reflector (recessed outdoor)	86	104.1	3.80	3.52
Globe	153	42.6	2.94	2.94
Candelabra	171	32.4	4.12	4.08
Three-way spiral	82	64.9	5.46	5.60
Dimmable spiral	55	31.7	3.66	3.29
Capsule (A Line)	193	34.7	5.32	5.13
MEAN/TOTAL	**881**	**447.7**	**4.31**	**4.20**

Figure 42 graphically shows the prevalence of program bulb installations in each room type in ascending order. Bathroom, Living/family room, and kitchen, in that order, are the three most popular room types for bulb replacements; together they make up 56% of all bulb installations.

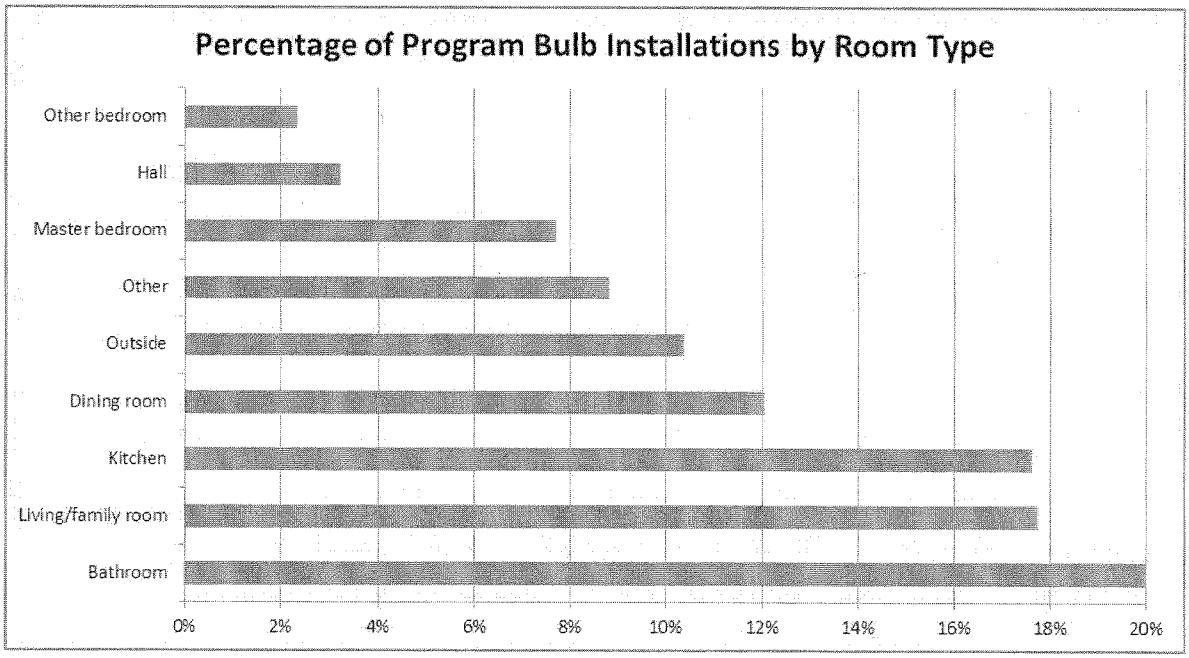

Figure 42. Percent of Specialty Bulb Installations by Room Type

In Service Rate (ISR) Calculation

A total of 1,876 incented bulbs were purchased by survey participants. Respondents reported that 1,138 of them are currently installed in light fixtures, a first year ISR of 60.7%. To determine the final ISR, participant survey data concerning the total number of specialty bulb filled sockets per household was analyzed in order to determine the fraction of program bulbs that were initially put into storage that could conceivably come out of storage and replace an incandescent or halogen bulb, thus generating energy savings. This was done at the bulb group level.

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Table 130. Available savings generating specialty sockets for ISR

Bulb Group	Total Specialty Sockets Available	Specialty Sockets with Inc./Hal.	Percent Inc./Hal. (IR%)
Indoor reflector (recessed)	10.15	2.33	23%
Outdoor reflector (recessed outdoor)	5.00	1.53	31%
Globe	6.82	0.95	14%
Candelabra	9.13	3.93	43%
Three-way spiral	3.58	0.56	16%
Dimmable spiral	5.71	1.50	26%
Capsule (A Line)	24.93	6.30	25%

Table 130 shows the average percent of specialty lamp sockets per household that are currently filled with incandescent or halogen bulbs. These sockets are assumed to have the potential to generate savings when efficient program bulbs are taken out of storage and installed. These percentages are used directly to augment the first year ISR using an adaptation of the Draft Ohio TRM ISR formula for standard spiral CFLs as follows, using indoor reflectors ("IR") as an example:

ISR = IR first year ISR + (IR% * remainder) = **56.9% + (23% * 40.1%) = 66.1%**

Where "IR%" is equal to the percent of savings generating indoor reflector sockets from Table 130 and the remainder is the percentage of bulbs that are not installed in the first year (100% - 56.9% = 43.1%) less 3% for the 97% lifetime ISR[48]. The "indoor reflector first year ISR" and the first year ISRs for all bulb groups are shown in Table 131. The final program ISR value has been weighted by bulb representation in the total participant population seen in Table 126.

Table 131. ISR by bulb group

Bulb Group	First Year ISR	Final Adjusted ISR
Indoor reflector (recessed)	56.9%	66.1%
Outdoor reflector (recessed outdoor)	56.9%	69.2%
Globe	64.8%	69.3%
Candelabra	59.4%	75.6%
Three-way spiral	61.1%	66.7%
Dimmable spiral	67.0%	74.9%
Capsule (A Line)	61.7%	70.6%
Overall	**60.7%**	**69.8%**

[48] As established in the Nexus Market Research, RLW Analytics, and GDS Associates study, dated January 20th, 2009: "New England Residential Lighting Markdown Impact Evaluation".

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The final, overall program ISR is thus 69.8%. This augmentation is intended to capture the anticipated burnout of any remaining incandescent or halogen specialty bulbs presently installed in participant households and their subsequent replacement with a more efficient program bulb taken out of storage. Incandescent and halogen specialty bulbs have a much shorter EUL than CFL or LED varieties. Given the discrepancy in EUL between efficient and inefficient lighting, incandescent and halogen bulbs will burn out faster, and it is more likely that they are replaced sooner, while the customer still has program bulbs in storage. It is therefore assumed that all light sockets currently containing inefficient specialty bulbs will contain program bulbs in the near future.

Lighting Logger Data

In conjunction with the phone surveys, a lighting logger study was performed with a subset of phone survey participants. The purpose of this logger study was to determine how participants are using specialty bulbs and how they are distributed (i.e., what room or fixture the bulbs are installed in), as well as to determine the actual hours of use, the coincidence factor, and power fractions for the dimmable and three-way bulbs.

A total of 122 lighting loggers were installed in the homes of 50 survey participants. Of these, 114 were retrieved with usable data. Table 132 shows the average daily hours of use for each room type and for both weekdays and weekends/holidays separately as well as weighted together assuming 116.3 weekends and holidays per year (31.9% of days). The values in the "MEAN/TOTAL" row have been weighted by bulb installations per room type from the participant survey, shown in Table 128, rather than the logger installations shown here. This is because the logger study was performed with a subset of the larger, more robust survey sample that better reflects actual bulb distribution.

Table 132. Logger hours of use by room and day type

Room Type	Number of Installations	Weekday Hours of Use	Weekend Hours of Use	Overall Hours of Use	Relative Precision
Bathroom	15	1.49	1.53	1.50	+/- 34.3%
Dining room	7	3.15	3.63	3.30	+/- 70.4%
Hall	3	0.16	0.35	0.22	+/- 105.2%
Kitchen	26	4.79	4.20	4.61	+/- 35.6%
Living/family room	18	6.39	5.79	6.20	+/- 42.4%
Master bedroom	6	3.44	2.92	3.28	+/- 46.1%
Other bedroom	3	0.90	0.36	0.73	+/- 126.7%
Outside	18	4.63	4.55	4.60	+/- 48.3%
Other	18	3.38	2.95	3.25	+/- 45.4%
MEAN/TOTAL	**114**	**3.71**	**3.47**	**3.63**	**+/- 19.3%**

Our sample design targeted a relative precision of +/- 10% at 90% confidence based on previous studies of CFL hours of use in residential buildings. The specialty bulbs showed more variation in the hours of use than basic CFLs, resulting in a lower achieved precision.

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Table 133. Logger hours of use by bulb and day type

Bulb Group	Number of Installations	Weekday Hours of Use	Weekend Hours of Use	Overall Hours of Use	Relative Precision
Indoor reflector (recessed)	24	2.35	2.61	2.43	+/- 39%
Outdoor reflector (recessed outdoor)	16	4.01	4.03	4.02	+/- 60%
Globe	15	2.15	2.31	2.20	+/- 39%
Candelabra	17	4.01	4.18	4.06	+/- 55%
Three-way spiral	12	9.10	8.04	8.76	+/- 42%
Dimmable spiral	2	1.94	2.63	2.16	+/- 52%
Capsule (A Line)	28	4.22	2.93	3.81	+/- 30%

The hours of use values in Table 132 and Table 133 are in their unadjusted form, which is the raw output of the lighting loggers before the daylength adjustment has been applied to them. This application is shown and explained in the *Daylength Adjustment* section.

The participants' loadshape is shown in Figure 43. As the shape demonstrates, lighting usage is at its peak around 7-8PM. The coincident load from 3-4PM, Duke Energy's peak time, is 14.8%.

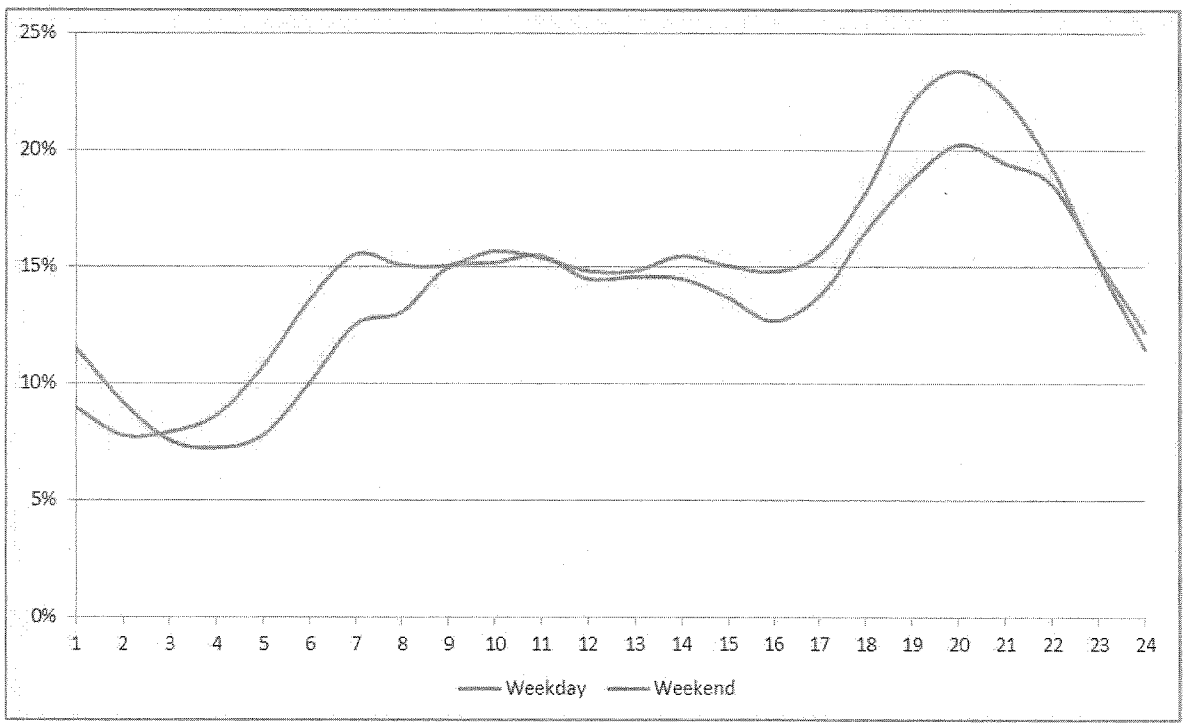

Figure 43. Weekend and Weekday Loadshapes

This load shape incorporates power fractions applied to the dimmable and three-way bulbs. These power fractions are simply the average fraction of maximum output a bulb operates at while turned on. In order to estimate these factors, solar cells were attached to lighting loggers installed on dimmable bulbs to measure light intensity and watt meters were installed on three-

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way bulbs to measure power output. Dimmable bulbs were found to average 79.7% of maximum power while turned on and three-way bulbs averaged 61.4%.

Table 134. Dimmable and 3-way power factors

Dimmable Bulb Power Fraction	3-Way Bulb Power Fraction
79.7%	61.4%

Daylength Adjustment

The frequency and length of time customers use their bulbs is affected by daylength. As days become longer and shorter throughout the year, the length of time a bulb needs to be used increases and decreases in rooms where natural lighting is used to offset bulb use. Depending on which time of the year lighting usage is measured, the amount of use recorded by the lighting loggers may over- or under-predict a customer's overall usage for the year. The amount of daylight during any given season is a factor of the position of the sun which determines the sunrise and sunset time and the number of hours of daylight. The increase and decrease in hours of daylight experienced throughout the year can be expressed as a sine function, and the average over- or under-prediction in hours of use as a result of increased or decreased daylight can be calculated using the following equation[49]:

Equation 1: $\text{Hours/day} = \text{hours/day average} * [1 + \text{Max deviation} * \sin(\theta d)]$

This approach was used by the Cadmus Group to analyze seasonal light logger data in a large residential CFL study in California. To calculate the impact of daylight on daily use, a regression analysis was used to estimate the average hours per day and maximum deviation variables in Equation 1 from observed light logger data. The right side of the function represents a progression through the year where the right hand term goes to zero on the spring and fall equinox, and is a maximum value at the winter solstice and a minimum value at the summer solstice.

Equation 2: $\theta d = 2\pi * (284 + n) / 365$

Where n = Julian date (1 = Jan 1; 365 = Dec 31)

The Cadmus regression model predicted the annual average hours of use and the maximum deviation. The ratio of the maximum deviation to the annual average represents the maximum percent difference in the daily hours of use relative to the annual average. Equation 2 above can be used to predict the percent over- or under-estimation of lighting hours on any particular day of the year. This is the daylength adjustment factor. The predicted maximum deviation from the annual average hours of use from the Cadmus study is on the order of ±16%.

[49] The Cadmus Group. "Upstream Lighting Program Evaluation Report. Prepared for CPUC". November 16th, 2009. Pg. 16.

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To calculate the daylength adjustment factor for this study, Equation 2 was evaluated at the median date of the logging period (June 5, 2014):

$$\theta d = 2\pi * (284 + n) / 365 = \mathbf{2\pi * (284 + 156) / 365 = 7.57}$$

Equation 1 is evaluated using the average hours per day determined through the lighting loggers to determine the daylength-adjusted actual average hours of use per day:

$$\text{Hours/day} = \text{hours/day average} * [1 + \text{Max deviation} * \sin(\theta d)]$$
$$\mathbf{= 3.63 * [1 + 16\% * \sin(7.57)] = 4.19}$$

This corresponds to a 15.4% upward adjustment to hours of use. Daylength-adjusted hours of use by room type can be seen in Table 135.

Table 135. Daylength-Adjusted Hours of Use by Room Type

Room Type	Weekday Hours of Use	Weekend Hours of Use	Overall Hours of Use
Bathroom	1.72	1.77	1.74
Dining room	3.63	4.19	3.81
Hall	0.19	0.40	0.26
Kitchen	5.53	4.85	5.31
Living/family room	7.38	6.68	7.16
Master bedroom	3.97	3.37	3.78
Other bedroom	1.03	0.42	0.84
Outside	5.34	5.25	5.31
Other	3.90	3.40	3.75
MEAN	**4.28**	**4.01**	**4.19**

Self-Report vs. Logger Results

Previous logger studies have shown that self-reported hours of use are typically estimated higher than the actual hours of use determined through a logger study monitoring a sample of the same fixtures. Table 136 shows a side by side comparison of the logger study results and the participant phone survey data collected for this evaluation. This data is presented for informational purposes only and is not used for the calculation of impacts.

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Table 136. Self-report vs. actual hours of use

Room Type	Phone Survey Hours of Use	Logger Hours of Use	Onsite Survey Hours of Use
Bathroom	2.44	1.50	2.62
Dining room	4.90	3.30	4.31
Hall	2.73	0.22	1.67
Kitchen	6.32	4.61	5.04
Living/family room	4.94	6.20	5.89
Master bedroom	3.69	3.28	4.83
Other bedroom	2.03	0.73	1.10
Outside	4.08	4.60	2.86
Other	4.54	3.25	4.48
MEAN	**4.31**	**3.63**	**4.11**

For the Specialty Bulbs Program, participants overestimated their lighting usage by about 16% through the phone survey [(4.31-3.63)/4.31 = 16%]. When asked onsite, lighting usage was overestimated by about 12 % [(4.11-3.63)/4.11 = 12%].

Impact Estimates

Energy savings is calculated at the room type level and then weighted to represent the overall participant population. The values presented here at the room type level are not significant. Levels of precision for average daily hours of use at the room and bulb type level can be seen in Table 132 and Table 133 respectively.

Table 137. Engineering algorithm inputs by room type

Room Type	Daylength Adjusted Hours of Use	Average Replaced Wattage	Average Installed Wattage
Bathroom	1.74	40.6	12.7
Dining room	3.81	25.8	12.1
Hall	0.26	29.2	11.4
Kitchen	5.31	47.5	12.9
Living/family room	7.16	54.2	15.7
Master bedroom	3.78	52.0	15.0
Other bedroom	0.84	40.6	14.2
Outside	5.31	89.2	22.1
Other	3.75	52.6	14.4
MEAN	**4.19**	**48.8**	**14.4**

Table 137 shows the average daily hours of use and delta watts to be used in the calculation of gross savings as per *Appendix K: Impact Algorithms*. The ISR of 69.8% was calculated as a weighted average for all bulb types and is applied to all room types equally. Room types are weighted using the values from Table 128 to calculate the weighted average savings for each bulb purchased from the Savings Store.

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Table 138. Gross and net energy and demand savings per bulb purchased.

Room Type	Gross Annual kWh	Gross Coincident kW	Net Annual kWh	Net Coincident kW
Bathroom	11.9	0.0034	9.0	0.0026
Dining room	12.8	0.0017	9.7	0.0013
Hall	1.1	0.0022	0.9	0.0016
Kitchen	45.1	0.0042	34.3	0.0032
Living/family room	67.5	0.0046	51.3	0.0035
Master bedroom	34.4	0.0045	26.1	0.0034
Other bedroom	5.4	0.0032	4.1	0.0024
Outside	87.5	0.0081	66.4	0.0062
Other	35.1	0.0046	26.7	0.0035
MEAN	**38.5**	**0.0042**	**29.2**	**0.0032**

To determine energy impacts by bulb group, a realization rate was applied to the ex-ante savings estimates shown in Table 139. Comparing the weighted average ex-ante savings from this table to the evaluated savings from Table 138 yields a realization rate of 91.2% (38.5 / 42.2) for kWh and a realization rate of 113.5% (0.0042 / 0.0037) for coincident kW.

Table 139. Ex-Ante Savings by Bulb Type and Wattage

Bulb Type	Bulb Group	Wattage	Quantity	Ex-Ante kWh	Ex-Ante kW
CFL Reflector (recessed)	Indoor Reflector	12	7,397	44.5	0.0042
CFL Reflector (recessed)	Indoor Reflector	14	15,813	42.8	0.0041
CFL Reflector (recessed)	Indoor Reflector	23	2,184	35.3	0.0034
CFL Reflector/Outdoor (recessed outdoor)	Outdoor Reflector	23	9,965	110.0	0.0054
CFL Reflector/Dimmable (recessed dimmable)	Indoor Reflector	15	1,753	42.0	0.0040
LED Reflector (recessed LED)	Indoor Reflector	10	28	73.9	0.0054
LED Reflector (recessed LED)	Indoor Reflector	9.5	27	74.5	0.0054
LED Reflector (recessed LED)	Indoor Reflector	13	524	70.6	0.0052
CFL Globe	Globe	9	5,888	26.9	0.0033
CFL Globe	Globe	14	18,560	23.7	0.0029
CFL Candelabra	Candelabra	5	256	23.1	0.0022
CFL Candelabra	Candelabra	7	6,821	21.4	0.0020
CFL Candelabra	Candelabra	9	11,540	19.7	0.0019
CFL Three-Way	Three-way	12-22-33	7,470	58.2	0.0055
CFL Dimmable	Dimmable spiral	23	4,348	64.7	0.0062
CFL A Line	Capsule	14	14,852	38.6	0.0037
CFL A Line	Capsule	18	3,486	35.3	0.0034
LED A Line LED	Capsule	11	6,417	41.2	0.0039
Total/mean			**117,329**[50]	**42.2**	**0.0037**

[50] The official total number of program bulbs sold in the Carolina System during 2013 is 117,057. However, the data provided to TecMarket Works by Duke Energy which showed the distribution of program bulbs by wattage totals to 117,329. Since these bulb totals differ by only 0.2%, the potential effect on wattage average watts by bulb type calculations from this discrepancy amounts to a rounding error; the maximum potential difference in average watts

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Table 140 presents the impacts by bulb group after the application of the realization rate.

Table 140. Gross and net energy and demand savings per bulb group

Bulb Group	Ex-Ante Annual kWh per bulb	Ex-Ante Coincident kW per bulb	Gross Annual kWh per bulb	Gross Coincident kW per bulb	Net Annual kWh per bulb	Net Coincident kW per bulb
CFL Indoor Reflector (Recessed)	43.2	0.0041	39.5	0.0046	30.0	0.0035
CFL Dimmable Reflector (Recessed Dimmable)	42.0	0.0040	38.3	0.0045	29.1	0.0034
CFL Outdoor Reflector (Recessed Outdoor)	110.0	0.0054	100.4	0.0061	76.2	0.0047
LED Reflector (Recessed LED)	73.9	0.0054	67.4	0.0061	51.2	0.0047
CFL Globe	24.5	0.0030	22.3	0.0034	17.0	0.0026
CFL Candelabra	20.4	0.0019	18.6	0.0022	14.1	0.0017
CFL Three-Way Spiral	58.2	0.0055	53.1	0.0062	40.3	0.0047
CFL Dimmable Spiral	64.7	0.0062	59.0	0.0070	44.8	0.0053
CFL Capsule (A Line)	38.0	0.0036	34.6	0.0041	26.3	0.0031
LED Capsule (A Line LED)	41.2	0.0039	37.6	0.0044	28.5	0.0034

Effective Useful Life

Bulb type effective useful lives are taken from the Franklin Energy Services residential lighting work papers. These values were found to be reasonable by the TecMarket Team. The overall program EUL is a weighted average based on the bulb distribution shown in Table 126. Program EUL is estimated to be seven years.

based on the different bulb totals is only 0.02 watts (for candelabras). Three-way, dimmable spiral and outdoor reflector bulb wattages are not affected by this discrepancy, since there was only one wattage available for each of these bulb types during the evaluation period.

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Table 141. Bulb EUL by group with weighted average program EUL

Bulb Group	Weight	Effective Useful Life
CFL Indoor Reflector (Recessed)	22.11%	8
CFL Dimmable Reflector (Recessed Dimmable)	1.49%	8
CFL Outdoor Reflector (Recessed Outdoor)	8.49%	5
LED Reflector (Recessed LED)	0.02%	12
CFL Globe	20.84%	6
CFL Candelabra	15.87%	7
CFL Three Way Spiral	6.37%	7
CFL Dimmable Spiral	3.71%	7
CFL Capsule (A Line)	15.63%	9
LED Capsule (A Line LED)	5.47%	12
Overall		**7**

Total Program Savings Extrapolation

Between program inception on April 26, 2013 and December 31, 2013, the Duke Energy Savings Store served 8,060 unique customers from the Carolina System who purchased a total of 117,057 specialty light bulbs. The overall gross savings numbers in Table 142 are arrived at by multiplying the total number of bulbs purchased and shipped in state by the mean gross energy savings per bulb purchased found in the bottom row of Table 138.

During checkout, customers are able to enter separate service and shipping addresses. While the vast majority of customers have the same service and delivery address, some small percentage of bulbs were shipped to states other than North or South Carolina. As per the program tracking data laid out in the *Shipping and Delivery* portion of the process evaluation section on page 43, best estimates of bulbs shipped out of state put the number at 1.2% (1,454/118,192), including all bulbs sold through the Savings Store in the Carolinas in 2013. Accordingly, this percentage has been deducted from the total number of bulbs purchased for the purpose of extrapolating total program gross savings shown in Table 142.

Table 142. Total program gross savings extrapolation

Participation Count	Total Bulbs	Bulbs in State	Gross kWh	Gross kW
8,060	117,057	115,921	4,462,959	487

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Appendix A: Management Interview Instrument

Name: _____

Title: _____

We are conducting this interview to obtain your opinions about and experiences with Duke Energy's Specialty Bulb program. We'll talk about the program and its objectives, your thoughts on improving the program, and the technologies the program covers. The purpose of this study is to capture the program's current operations as well as to help identify areas where the program might be improved. Your responses will feed into a report that will be shared with Duke Energy and the state regulatory agency. We will not identify you by name, however, you may provide some information or opinions that could be attributed to you by virtue of your position and role in this program. If there is sensitive information that you wish to share, please warn me and we can discuss how best to include that information in the report. Do you have any questions for me before we begin?

Program Background and Objectives

Please describe your role and scope of responsibility in detail.

How long have you been involved with this program? Has your role in this program changed during that time? (If so, how?)

Describe the evolution of the program. Why was the program created, and how has the program changed since it was it first started?

What are the customer eligibility requirements?

How many bulbs are customers allowed and of what type? Why that number?

What are you doing to keep freeridership low for this program?

What are the program's goals? That is, what goals and metrics are you tasked with achieving (such as bulbs distributed, numbers of new customers, numbers of returning customers, website visits, etc.)? What is the current performance towards these targets?

What are the current program's objectives? That is, aside from the numerical goals what is the program trying to accomplish (save energy, improve satisfaction, protect environment, etc)? In your opinion, which objectives do you think are being met or will be met? Have the objectives changed over time. If yes, how do you think they have changed??

Are there any program objectives that are not being addressed or that you think should have more attention focused on them? If yes, which ones? How should these objectives be addressed? What should be changed? How will these changes improve the program?

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Program Implementation

Is there any other person or group within Duke Energy that you work with on the implementation of this program? Who is that and what role do they serve?

Which third parties or vendors do you work with to implement this program? Please describe their roles in the implementation of the program.

Can you please walk me through the program's implementation, starting with how the program is marketed and how you target your customers, through how the customer participates and finishing with how savings are verified?

Marketing

Roughly how many customers are eligible for this program and how are you targeting them?

What kinds of marketing, outreach and customer contact approaches do you use to make your customers aware of the program and its options?

Please describe the various marketing channels that you are using, including when and why you've selected to use them.

How did your experience marketing this program in other service territories inform your strategy for North and South Carolina?

How do you track the effectiveness of your various marketing efforts?

How is the customer education component of the program going? What are you educating customers about? How are these efforts going? How do you know?

Store Access

By what methods can customers access the store to purchase bulbs? How are the order platforms working?

How do you determine if customers are eligible? How does the system actually work? How is it used?

Fulfillment

What is the volume of bulb orders? What is the typical order size?

How does EFI receive and process orders?

What timeframe are customers told it will take to receive their orders? What is the actual delivery time on average?

What percent of customers are using the online CFL shipping tracking system?

Quality Assurance

Please describe your quality assurance measures for each step in the process, including tracking participants, bulbs numbers, ordering, shipping, bulb quality, and other program data. What issues have been uncovered and how have they been addressed.

What is the warranty policy on the bulbs distributed by this program? How do customers go about getting replacements?

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How effective is the current program? *(Clarify standard for "effective")* How does it compare to other programs? What do you think should be changed, and why?

Vendors

Do you use any vendors or contractors to help implement the program? What responsibilities do they have? Are there any areas in which think they can improve their services?

Please characterize your working relationship.

Please describe the reporting process that you use to track and manage vendor activities.

Do you think methods for coordination should be changed in any way? If so, how and why?

Improvements

Are you currently considering any changes to the program's design or implementation? If so, what are the changes? What is the process for deciding whether or not to make these changes?

Do you have suggestions for improvements to the program that would increase participation rates, or is Duke Energy happy with the current level of participation?

Do you have suggestions for increasing energy impacts per participant, given the same participation rates, or is Duke Energy happy with the current per participant impact?

Overall, what would you say about the program is working really well?

Is there anything in this program you could highlight as a best practice that other utilities might like to adopt?

What areas need the most improvement, if any? (If not mentioned before) What would you suggest can be done to improve things?

If you could change any part of the program what would you change and why?

Market Assessment and Barriers

Describe the use of any advisors, technical groups or organizations that have in the past or are currently helping you think through the program's approach or methods. How often do you use them? What do you use them for?

What information, research or assessments are you using to identify barriers and to develop more effective approaches/mechanisms for achieving program goals?

Can you cite any market, operational or technical barriers that impede a more efficient program operation? Please describe.

How are you adjusting the program as the market becomes more saturated with CFLs?

Wrap Up

Are there any other issues or topics we haven't discussed that you feel should be included in this report?

Do you have any supporting materials about the program that you could share with me? For example, communication plan, program objectives, advertisement copy

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Do you have any further questions for me about this study or anything else?

Whom else do you recommend that we interview?

Thank you!

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Appendix B: Vendor Interview Instrument

Name: _____

Title: _____

We are conducting this interview to obtain your opinions about and experiences with Duke Energy's Specialty Bulb program. We'll talk about the program and its objectives, your thoughts on improving the program, and the technologies the program covers. The purpose of this study is to capture the program's current operations as well as to help identify areas where the program might be improved. Your responses will feed into a report that will be shared with Duke Energy and the state regulatory agency. We will not identify you by name. However, you may provide some information or opinions that could be attributed to you by virtue of your position and role in this program. If there is sensitive information that you wish to share, please warn me and we can discuss how best to include that information in the report. Do you have any questions for me before we begin?

Program Background and Objectives

1. We will talk about the Store in more detail throughout the interview. For the moment can you please summarize what this program does in just a few sentences?
2. Please describe your role and scope of responsibility in detail.
3. How long have you been involved with this program? Has your role in this program changed during that time? (If so, how?)
4. Describe the development of the program. Why was the program created, and how has the program changed since it was it first started?
5. What were some of the challenges you faced as you prepared to launch? How did you address them?
6. What challenges and changes have you faced since program launch? How did you address them?
7. What are the customer eligibility requirements?
8. What are the program's goals? That is, what goals and metrics are you tasked with achieving (such as bulbs distributed, numbers of new users, website visits, etc.)? What is the current performance towards these targets?
9. What are the current program's objectives? That is, aside from the numerical goals what is the program trying to accomplish (educate customers, improve satisfaction, etc.)? In your opinion, which objectives do you think are being met or will be met? Have the objectives changed over time. If yes, how do you think they have changed??
10. Are there any program objectives that are not being addressed or that you think should have more attention focused on them? If yes, which ones? How should these objectives be addressed? What should be changed? How will these changes improve the program?

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Program Implementation

11. Can you please walk me through your company's role in the program's execution?
12. Do you have any role in marketing or otherwise driving traffic to your store?
13. How does your company receive and process orders?
14. What is typical volume of bulb orders? What is the typical order size?
15. What timeframe are customers told it will take to receive their orders? What is the actual delivery time on average?
16. What percent of NC and SC participants are using the online CFL shipping tracking system?

Quality Assurance and Data Handling

17. Please describe how this program handles the transfer of data between Duke Energy and EFI.
18. Please describe your data security measures.
19. Please describe your quality assurance measures for each step in the process. What issues have been uncovered and how have they been addressed.
20. What is the warranty policy on the bulbs distributed by this program? How do customers go about getting replacements? How do you decide if you need the merchandise returned? Please share with me the volume of warranty replacements.

Duke Energy

21. Please characterize your working relationship with Duke Energy.
22. Please describe the reporting process that you use to track and manage vendor activities.
23. Do you think methods for coordination should be changed in any way? If so, how and why?

Improvements

24. How do you track and measure the effectiveness of the Store? How effective is the current program? (Clarify standard for "effective") How does it compare to other programs? What do you think should be changed, and why?
25. Overall, what would you say about the program is working really well?
26. Is there anything in this program you could highlight as a best practice?
27. What area needs the most improvement, if any? (If not mentioned before) What would you suggest can be done to improve this?
28. Are you currently considering any changes to the program? If so, what are the changes? What is the process for deciding whether or not to make these changes?
29. Can you cite any market, operational or technical barriers that impede a more efficient program operation? Please describe.
30. How are you adjusting the Store as the market becomes more saturated with energy efficient bulbs?

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Wrap Up

31. Are there any other issues or topics we haven't discussed that you feel should be included in this report?
32. Do you have any further questions for me about this study or anything else?
33. Whom else do you recommend that we interview?
34. Thank you!

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Appendix C: Participant Survey Instrument

Specialty Bulbs - Participant

INTRODUCTION

Use four attempts at different times of the day and different days before dropping from contact list. Call times are from 1000 a.m. to 800 p.m. EPT Monday through Saturday. No calls on Sunday. (Sample size N = 80 per state)
Note Only read words in bold type. Italics are instructions.

Surveyor Name _____

Survey ID _____

Total Number of Bulbs Ordered _____

State

( ) North Carolina
( ) South Carolina
( ) Kentucky
( ) Ohio

for answering machine 1st through penultimate attempts
Hello, my name is _____ . I am calling from TecMarket Works to conduct a customer survey on behalf of Duke Energy. I'm sorry I missed you. I'll try again another time.

for answering machine - Final Attempt
Hello, my name is _____ . I am calling from TecMarket Works to conduct a customer survey on behalf of Duke Energy. This is my last attempt at reaching you, my apologies for any inconvenience.

if person answers
Hello, my name is _____. I am calling from TecMarket Works to conduct a customer survey on behalf of Duke Energy. May I speak with _____ please?
If person talking, proceed. If person is called to the phone reintroduce.
If not home, ask when would be a good time to call and schedule the call-back

We are conducting this survey to obtain your opinions about the Duke Energy Savings Store, the website where you purchased discounted specialty CFL and LED light bulbs. We are not selling anything. Your responses to our survey questions will be combined with other responses and be used to help make improvements to the online store to better serve others. If you qualify for the survey, we will send you a $30 check for your time. The survey will take about 45 minutes. May we begin?

Note If this is not a good time, ask if there is a better time to schedule a callback

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1a. Do you recall visiting the online Duke Energy Savings Store to purchase light bulbs?

( ) Yes
( ) No
( ) DK/NS

1b. The Savings Store is offered through the Duke Energy website so you can order energy-efficient CFL and LED specialty light bulbs for your home, such as 3-way bulbs, dimmable bulbs, outdoor flood lights, and so on.
Do you recall visiting the Duke Energy Savings store to purchase light bulbs?

( ) Yes
( ) No
( ) DK/NS

If No or DK/NS terminate interview and go to next participant.
Sorry, you do not qualify to take this survey, because you are not aware of the program.

BULBS PURCHASED

2. Based on Duke Energy's ordering records you purchased [*Total Number of Bulbs Ordered***] specialty light bulbs during 2013 and had them shipped to your home. Is this correct?**

( ) Yes
( ) No
( ) DK/NS

Read if "yes" in Q2
I am going to go over the types of light bulbs that the ordering records indicate you purchased; please let me know if anything does not seem correct. The records show that you purchased [*NUMBER***] of [***BULB TYPE***], is that right?**

Read if "no" or "DK/NS" in Q2
Then let's go over the light bulb ordering records for your account; please let me know if anything does not seem correct. The records show that you or someone in your home purchased [*NUMBER***] of [***BULB TYPE***], does that sound right?**

2a.
Read numbers of bulbs from call sheet to customer to confirm (or correct) types and numbers of bulbs. Record the number of bulbs of each type; enter 0 (zero) if the customer did not order a bulb type. Read bulb type descriptions if customer is unclear on the bulb type.

DESCRIPTION IF NEEDED **Indoor reflector bulbs provide directional light and are commonly used in track lighting and recessed fixtures such as down lights and recessed cans.**

Indoor reflector bulbs – non-dimmable CFL _____

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Indoor reflector bulbs – dimmable CFL _____
Indoor reflector bulbs – dimmable LED _____

IR Total
(do not read) enter total number of Indoor reflector bulbs (total of three categories above)
_____

DESCRIPTION IF NEEDED **Outdoor reflector bulbs provide directional light and are commonly installed outdoors to light entrances to the home, yards and driveways.**
Outdoor reflector bulbs _____

DESCRIPTION IF NEEDED **These sphere-shaped bulbs are frequently used in open fixtures in which bulbs are visible, such as bathroom vanity strips and hanging ceiling pendants. Globes provide dispersed light and are suitable for general and decorative lighting.**
Globe bulbs _____

DESCRIPTION IF NEEDED **These bulbs are commonly used in decorative fixtures, such as wall sconces and ceiling fans, in which bulbs are exposed. With small bases and sleek shapes — offered in flame tip or torpedo styles — these bulbs are ideal for tight-fitting fixtures.**
Candelabra bulbs _____

DESCRIPTION IF NEEDED **Spiral-shaped bulbs — sometimes called twisty or curly — are the most common and popular CFLs. These light bulbs will deliver three distinct levels of light when used in a fixture with a 3-way switch.**
3-way spiral bulbs (CFL) _____

DESCRIPTION IF NEEDED **Spiral-shaped bulbs — sometimes called twisty or curly — are the most common and popular CFLs. Dimmable compact fluorescents are designed to dim well with mechanical slide and rotary dimmer controls.**
Dimmable spiral bulbs _____

DESCRIPTION IF NEEDED **Capsule bulbs, also known as "A" lamps, most closely resemble traditional incandescent bulbs although capsules are slightly larger in size. These encapsulated style light bulbs fit in standard sockets and are especially suitable for use in open fixtures in which the bulb will be visible.**
CFL Capsule bulbs _____
LED Capsule bulbs _____

(do not read) enter total number of Capsule bulbs (total of two categories above) _____

DESCRIPTION IF NEEDED **Spiral CFLs are compact fluorescent light bulbs that have a "twisty" shape like a soft-serve ice cream cone. These are general-purpose bulbs that fit in most standard light sockets, and are the most common type of CFL.**
Standard Spiral CFL bulbs _____

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3. How did you first learn about the Duke Energy Savings Store?
Check all that apply

[ ] Advertisement with my bill
[ ] I got a letter/brochure in the mail
[ ] Email from Duke Energy / Duke Energy employee
[ ] Paperless billing email
[ ] Saw message while accessing my account online
[ ] Saw a message on Duke Energy's public website (not the online account system part)
[ ] From another website
ask **3b. Which one?** _____
[ ] TV, radio, newspaper, news reports, advertising (traditional media)
3c. Specify source _____
[ ] CAP agency / Low income program
ask **3e. Which organization?** _____
[ ] Social media
3d. Specify source _____
[ ] From friend/family/neighbor/co-worker *(ask if through email, if so, select item below)*
[ ] Email from family/friend/neighbor/co-worker
[ ] I contacted Duke Energy for information or help
3f. Specify method of contact (phone, email, employee, etc.) _____
[ ] Some other way,
3g. specify _____
[ ] DK/NS

4. What was the main reason that you decided to purchase light bulbs from the Duke Energy Savings Store?
(do not read list, check one response)

( ) To save energy
( ) To save money on utility bills
( ) To save money on light bulb purchases
( ) I needed light bulbs
( ) To try specialty CFLs
( ) To try specialty LEDs
( ) To help the environment / "green" reasons
( ) Offer made it easy to get bulbs (convenient)
( ) The bulbs last longer than standard bulbs
( ) Friends/neighbors/family encouraged me
( ) Because it was from Duke Energy
( ) Past experience with another energy efficiency program
4b. Specify program and sponsor. _____
( ) Other *4c. (please specify)* _____
( ) DK/NS

5. Were there any other reasons that you decided to purchase light bulbs from the Duke Energy Savings Store?
(check all that apply)

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[ ] No other reasons
[ ] To save energy
[ ] To save money on utility bills
[ ] To save money on light bulb purchases
[ ] I needed light bulbs
[ ] To try specialty CFLs
[ ] To try specialty LEDs
[ ] To help the environment / "green" reasons
[ ] Offer made it easy to get bulbs (convenient)
[ ] The bulbs last longer than standard bulbs
[ ] Friends/neighbors/family encouraged me
[ ] Because it was from Duke Energy
[ ] Past experience with another energy efficiency program
5b. Specify program and sponsor _____
[ ] Other *5c. (please specify)* _____
[ ] DK/NS

6. The Duke Energy Savings Store is only available online. What method did you use to get to the Store?
(Check all that apply)
[ ] Via a link in my online services account ("My Account" at Duke Energy site)
[ ] Via a link on the Duke Energy public website
[ ] Used a web browser favorite/bookmark
[ ] Entered URL directly into browser
[ ] Used an online link via email, social media, etc.
[ ] Other *6b. (please specify)* _____
[ ] DK/NS

7a. How many times did you visit the Duke Energy Savings Store before you made your first purchase?
( ) Made purchase during first visit to Savings Store
( ) Made purchase during second visit
( ) Made purchase during third visit
( ) Made purchase after three or more visits
Record number of visits before purchasing _____
( ) DK/NS

7b. What is the total number of times you have visited the Savings Store including times you went to the site without making a purchase?
( ) *Record number* _____
( ) DK/NS

7c. In total, how many times have you purchased light bulbs from the Duke Energy Savings Store?
7c number should not be higher than the number in 7b response
( ) *Record number* _____

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( ) DK/NS

8.
check one (do not ask)
( ) 7b is greater than 7c Visited store more times than made purchases
( ) 7b the same as 7c Did not visit store more times than made purchases
( ) NA or DK/NS

9. You visited the Savings Store site without making a purchase on at least one occasion. Why did you visit the store without making a purchase?
Check all that apply first, THEN ask the follow up questions
[ ] Just looking to see what was there (curiosity)
[ ] Just checking Duke's prices
[ ] Making price comparisons with other retailers **9b. Which ones?** _____
[ ] Could not decide on which bulbs to buy **9c. Why not?** _____
[ ] Did not have credit card information available
[ ] Had unanswered questions, **9d. What did you want to know?** _____
[ ] Wanted more information from somewhere besides the online store **9e. Where?** _____
[ ] Was not ready to make a purchase **9f. Why not?** _____
[ ] Could not complete the transaction due to technical issues
9g. What happened? _____
[ ] Wanted to see physical products instead of images online
[ ] Other reasons *9h. Specify* _____
[ ] DK/NS

10. On a scale of 1-to-10, where 1 is very difficult and 10 is very easy, how easy was it to log onto the website?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
10b. How could this be improved? _____

11. On the same 1-to-10 scale, how easy was it to navigate around the website?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
11b. 10b. How could this be improved? _____

12. On the same 1-to-10 scale, how easy was it to find the items you were looking for?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
12b. 10b. How could this be improved? _____

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13. On a scale of 1-to-10, where 1 is not at all helpful and 10 is very helpful, how helpful were the bulb descriptions?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
13b. 10b. How could this be improved? _____

14. On the same 1-to-10 scale, how helpful were the energy savings estimates provided for each light bulb?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
14b. 10b. How could this be improved? _____

14c. On a scale of 1-to-10, where 1 is not at all influential and 10 is very influential, how influential was the information provided at the Savings Store website in your decision to purchase bulbs from the Store?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

For any score
14d. Why did you give that score? _____

15a. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with price of light bulbs sold at the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less
15b. Why did you give that score? _____

16. When you think of your most recent purchase, do you recall if Duke Energy was offering a reduced price for the bulbs ?
( ) Yes
( ) No
( ) DK/NS

17a. On a scale of 1-to-10, where 1 is not at all influential and 10 is very influential, how influential was the reduced pricing in your decision to purchase bulbs from the Savings Store?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

For any score
17b. Why did you give that score? _____

17c. Did the pricing on the website cause you to buy
(read the responses in Bold)
( ) More light bulbs than you might have otherwise,

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( ) Fewer light bulbs than you might have otherwise,
( ) Or have no influence on the amount of bulbs you purchased?
( ) Other (volunteered response) *17d. record* _____
( ) DK/NS *(do not read)*

17d. Did the availability of low priced multi-packs, such as two-, three-, or six-packs of bulbs, cause you to buy
Read the responses in Bold
( ) **More light bulbs than you might have otherwise**
( ) Fewer light bulbs than you might have otherwise,
( ) Or have no influence on the amount of bulbs you purchased?
( ) Other *(volunteered response) record* q17g. _____
( ) DK/NS *(do not read)*

If "More light bulbs than you might have otherwise" ask
17e. How many more bulbs did you purchase than you would have otherwise?

_____

If "Fewer light bulbs than you might have otherwise" ask
17f. How many fewer bulbs did you purchase than you would have otherwise?

_____

Now let's talk about factors besides pricing.

On a scale of 1-to-10, with 1 being not at all important and 10 being very important, please rate the importance of each of the following characteristics when choosing a light bulb for your home

	1	2	3	4	5	6	7	8	9	10	DK/NS
18a. Ability to dim the lighting level	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18b. Speed of which the bulb comes up to full lighting level	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18c. Purchase price of the bulb	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18d. Availability of the bulb at stores and websites where you normally shop	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18e. Selection of wattage and light output levels available	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18f. Cost savings on your utility bill	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18g. Energy savings	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18h. Environmental or "green" concerns	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
18i. Attractiveness or appearance of the bulb											

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( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

18j. Recommendations from family and friends

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

18k. Recommendations from the utility company

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

18l. Availability of utility programs or services that offer the bulbs to you directly

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

18m. Ease of bulb disposal

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

On a scale of 1-to-10, with 1 indicating that the factor was not at all influential, and 10 indicating that the factor was very influential, please rate the level of influence of the following factors on your decision to buy specialty bulbs through the Duke Energy Savings Store.

1 2 3 4 5 6 7 8 9 10 DK/NS

19a. Advertising when I accessed "My Account" in the Online Services section of Duke Energy's website

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19b. Advertising on Duke Energy's public website

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19c. Advertising via mailings received from Duke Energy

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19d. Recommendation of friends or family by word of mouth, including email and social media

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19e. Recommendation of someone you don't know personally or a group that you follow online at a site such as Facebook or Twitter

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19f. The brands of light bulbs offered in the Savings Store

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19g. The selection of types of bulbs for different purposes available at the Savings Store

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19h. The selection of different wattages of bulbs available at the Savings Store

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19i. The convenience of online ordering

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19j. The convenience of home delivery

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19k. The reduced price of the light bulbs at the Savings Store

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19l. Your desire to save energy

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

19m. Your desire to save on utility costs

( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

PURCHASING AND SHIPPING

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Now let's go back to your actual bulb buying experience.

20. On a scale of 1-to-10, where 1 is very difficult and 10 is very easy, how easy was it to use the shopping cart?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
20b. 10b. How could this be improved? _____

21. On the same 1-to-10 scale, how easy was it to complete your purchase?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
21b. 10b. How could this be improved? _____

22. Would you have preferred another method for buying these light bulbs other than ordering them online from the Savings Store?
( ) Yes *ask* **22a. Which method?** _____
( ) No
( ) DK/NS

23. How did you pay for your purchases?
[ ] Credit card
[ ] Check or money order
[ ] DK/NS or Prefer Not to Answer

Ask if check/money order
23a. How long was the interval between the date you mailed your payment and the date your order arrived? _____

24. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the delivery time for your specialty bulbs.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
24b. 10b. How could this be improved? _____

25. What shipping method did you choose?
(Check all that apply)
[ ] United States Post Office
[ ] UPS (United Parcel Service)
[ ] DK/NS
[ ] Other _____

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26. Were you aware of the order tracking features that allowed you to check the progress of your order?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask

26b. Did you use the order-tracking feature?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask

26c. How did you access the order tracking feature?

(Check all that apply)

[ ] via "My Account"
[ ] via the Duke Energy Savings Store package tracking link
[ ] by calling the phone number to check on post office delivery
[ ] via the UPS website tracking feature
[ ] Other *26d. specify* _____
[ ] DK/NS

26e. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the order-tracking feature.

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,

26f. 10b. How could this be improved? _____

27a. Did any bulbs arrive damaged or defective?

( ) Yes
( ) No
( ) DK/NS

27b. Have any bulbs become defective since you installed them?

( ) Yes
( ) No
( ) DK/NS

28a. Have you returned any of the bulbs that you ordered from the Savings Store, for any reason?

( ) Yes
( ) No
( ) DK/NS

28b. Which bulbs did you return, and how many? _____

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Record type and quantity (such as "6 indoor reflector CFLs")

28c. Did you try installing these bulbs in your home before you returned them?
( ) Yes
( ) No
( ) DK/NS

28d. What kind of light bulbs are currently installed in the sockets where you tried the Savings Store bulbs which were returned?
( ) Standard Incandescent
( ) Halogen
( ) CFL
( ) LED
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____

28e. Why did you return these bulbs? _____

28f. Did you receive replacement bulbs from the Savings Store for the ones you returned, or did you receive a credit or a refund?
( ) Replacement bulbs
( ) Credit
( ) Refund
( ) Other *(including multiple outcomes) record details* _____
( ) This transaction is currently in process (no replacement, credit or refund yet)
( ) DK/NS

28g. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Savings Store's returns practices.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
28h. 10b. How could this be improved? _____

29a. On a scale of 1-to-10, where 1 is not at all influential and 10 is very influential, how influential was the convenience of shopping for light bulbs online in your decision to purchase bulbs from the Savings Store?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

For any score,
29b. Why did you give that score? _____

ONLINE AND LIVE HELP FEATURES

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Now I'd like to talk with you about some of the Store's features designed to help you to make decisions and purchases.

30. The website provides a number of resources designed to provide additional information, including written explanations and videos about bulb types and uses, brightness, and bulb recycling and safety. Do you recall any of these informational resources?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask
30b. Was there any specific information that stands out in your mind as being particularly useful or important to you?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask
30c. What was it? _____

30d. On a scale of 1-to-10, where 1 is not at all helpful and 10 is very helpful, how helpful were the informational resources at the website?

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
30e. 10b. How could this be improved? _____

31. The Duke Energy Savings Store features an Energy Savings Calculator that you can use to calculate the amount of money you'll save on bulb purchases and on your Duke Energy bill. It also shows how much CO2 you'll offset by using more energy efficient bulbs. Do you recall the Energy Savings Calculator?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask
31b. Did you view the Energy Savings Calculator?

( ) Yes
( ) No
( ) DK/NS

If "Yes" ask
31c. Did you know the Energy Savings Calculator on the Duke Energy Savings Store is interactive and that it allows you to adjust the number of bulbs and see the associated savings for your household?

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( ) Yes
( ) No
( ) DK/NS

31d. On a scale of 1-to-10, where 1 is not at all helpful and 10 is very helpful, how helpful was the Energy Savings Calculator?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
31e. 10b. How could this be improved? _____

32. Duke Energy has a support telephone number for assistance with the Savings Store website. Did you call the phone number at any point?
( ) Yes
( ) No
( ) Not aware of the phone number
( ) DK/NS

If "Yes" ask
32b. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with phone support provided for the Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
32c. 10b. How could this be improved? _____
33. The website also has a Contact Us feature that can be used to email questions to the Store's support team. Did you use the Contact Us feature?
( ) Yes
( ) No
( ) Not aware of the Contact Us feature
( ) DK/NS

If "Yes" ask
33b. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Contact Us feature provided for the Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
33c. 10b. How could this be improved? _____

Next I'd like to talk about the light bulbs that you ordered from the Duke Energy Savings Store…

IRA=INDOOR REFLECTOR BULBS (CFL, CFL DIMMING AND LED)

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IR-1. Our records show that you ordered [*total number of IR bulbs*] indoor reflector bulbs. How many of these indoor reflector bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?

DESCRIPTION IF NEEDED **Reflector bulbs provide directional light and are commonly used in track lighting and recessed fixtures such as down lights and recessed cans.**

( ) None
( ) One or more *record number* _____
( ) DK/NS

IR-2. And how many of these indoor reflector bulbs are currently stored for future use?

( ) None
( ) One or more *record number* _____
( ) DK/NS

If "one or more" in IR-2, ask

IR-2a. Do you plan on eventually installing and using these indoor reflector bulbs?

( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to IR-2a

IR-2b. Why not? _____

If "Maybe" or "DK/NS" to IR-2a

IR-2c. Why are you not sure you will use them all? _____

If "Yes" to IR-2a, ask

IR-2d. How long do you think it will be before you will have installed all indoor reflector bulbs that you ordered from the Savings Store?

( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

IR-3a. Have you gotten rid of any of the indoor reflector bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?

( ) Yes
( ) No
( ) DK/NS

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If "yes" to IR-3, ask IR-3b-d

IR-3b. How many of the indoor reflector bulbs that you ordered from the Savings Store have you gotten rid of? _____

IR-3c. Why did you get rid of the bulb(s)? _____

IR-3d. How did you get rid of the bulb(s)? _____

If IR-1 is "one or more", continue with IR-4a.
If IR-1 is "none" or "DK/NS" skip ahead to next bulb section now

IR-4a. In how many different rooms in your home did you install these Savings Store indoor reflector bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in IR-4a,

IR-4b. In which room were the indoor reflector bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

If "two or more" in IR-4a, ask IR-4c and 4d,

IR-4c. Which room in your home has the <u>largest number</u> of Savings Store indoor reflector bulbs installed?

(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom

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( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

IR-4d. How many of the indoor reflector bulbs are installed in this room? _____

IR-5a. Are all of the indoor reflector bulbs in your [*room where IR installed*] controlled by the same on-off switch?
if needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**
( ) Yes
( ) No
( ) DK/NS

If "No" to IR-5a, ask
IR-5b. How many different sets of indoor reflector bulbs are there in your [*room where IR installed*] that turn on and off together? _____

If "yes" in IR-5a, ask.
IR-6a. Are these indoor reflectors dimmable bulbs installed on a dimmer switch?
( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "No" or "DK/NS" in IR-5a, ask
IR-6b. Are any of these indoor reflectors dimmable bulbs on a dimmer switch?
( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim", ask
IR-6c. How many of these indoor reflector bulbs are dimmable bulbs installed on dimmer switches?

_____

IR-7a. What kind of bulbs were previously in the lamps or fixtures in your [*room where IR installed*] where you installed the indoor reflector bulbs from the Savings Store?
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch

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( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO IR-8a

IR-7b. How many watts were the old bulbs that were removed?
( ) *Record response if known* _____
( ) DK/NS

IR-7c. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

IR-8a. On average, approximately how many hours per day are you using the lamps or fixtures in your [*room where IR installed*] where you installed the indoor reflector bulbs from the Savings Store?
( ) *Record response if known* _____
( ) DK/NS

IR-8b. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
IR-8c. How many hours per day more? _____

If Decreased ask
IR-8d. How many hours per day less? _____

IR-9a. When you installed these indoor reflector bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?
( ) Yes
( ) No
( ) DK/NS

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If "Yes", ask
IR-9b. Besides the bulbs, what else did you do to change this light fixture? _____

IR-10a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask IR-10b.

IR-10b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

IR-11a. If one of the indoor reflector bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED indoor reflector, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL
( ) dimmable LED
( ) non-dimmable LED
( ) A type of bulb that is not an indoor reflector
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other *(including combination of bulb types – record details)* _____

If "A type of bulb that is not an indoor reflector" ask
IR-11b. What type of bulb would you install? _____
(record style AND type – such as "3-way incandescent" or "dimmable LED")

If "It depends on which socket burns out (or other factors)" ask

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IR-11c. Why do you say that? _____

IR-12. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the indoor reflector bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
IR-12b. Why were you less than satisfied with these bulbs?
_____

OUTDOOR REFLECTOR BULBS

OR-1. Our records show that you ordered [*total number of OR bulbs*] **outdoor reflector bulbs. How many of these outdoor reflector bulbs that were ordered from the Savings Store are currently installed in fixtures on or in your home?**
DESCRIPTION IF NEEDED **Reflector bulbs provide directional light. These high-wattage bulbs are intended for outdoor use.**
( ) None
( ) One or more *record number* _____
( ) DK/NS

OR-2. And how many of these outdoor reflector bulbs are currently stored for future use?
( ) None
( ) One or more *record number* _____
( ) DK/NS

If "one or more" in OR-2, ask
OR-2a. Do you plan on eventually installing and using these outdoor reflector bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to OR-2a
OR-2b. Why not? _____

If "Maybe" or "DK/NS" to OR-2a
OR-2c. Why are you not sure you will use them all? _____

If "Yes" to OR-2a, ask
OR-2d. How long do you think it will be before you will have installed all of the outdoor reflector bulbs that you ordered from the Savings Store?
( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)

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( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

OR-3a. Have you gotten rid of any of the outdoor reflector bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?
( ) Yes
( ) No
( ) DK/NS

If "yes" to OR-3, ask OR-3b-d
OR-3b. How many of the outdoor reflector bulbs that you ordered from the Savings Store have you gotten rid of? _____

OR-3c. Why did you get rid of the bulb(s)? _____

OR-3d. How did you get rid of the bulb(s)? _____

If OR-1 is "one or more", continue with OR-4a.
If OR-1 is "none" or "DK/NS" skip ahead to next bulb section now

OR-4a. In how many different places around your home did you install these Savings Store outdoor reflector bulbs?
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in OR-4a, ask OR-4b THEN SKIP AHEAD TO OR-5a

OR-4b. Where were these outdoor reflector bulbs installed?
if the bulbs are installed anywhere outdoors, just check "outdoors/exterior" (no further detail needed); if they were installed indoors, record which room.
( ) Outdoors/Exterior
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom

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( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Other *(specify)* _____

If "two or more" in OR-4a, continue asking all questions starting with OR-4c

OR-4c. Where in your home are the greatest number of these outdoor reflector bulbs installed?
(NOTE if they have equal numbers of bulbs in different places, then ask customer to pick any one to answer bulb questions about) if the bulbs are installed anywhere outdoors, just check "outdoors/exterior" (no further detail needed); if they were installed indoors, record which room.

( ) Outdoors/Exterior
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Other *(specify)* _____

OR-4d. How many of the outdoor reflector bulbs are installed in this location?

_____

If "outside/exterior" is checked for OR-4b or OR-4c, ask OR5a-c then skip ahead to OR-6a.
If anything <u>except</u> "outside/exterior" is checked for OR-4b or OR-4c, ask 5d-f then skip ahead to OR-6a.

OR-5a. Are all of the outdoor reflector bulbs that you installed outdoors controlled by the same on-off switches?
If needed **That is, do all of the bulbs installed outside of your home turn on and off together, or are there different switches that control different bulbs?**

( ) Yes
( ) No
( ) DK/NS

If "No" to OR-5a, ask
OR-5b. How many different sets of outdoor reflector bulbs do you have that turn on and off together? _____

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OR-5c. What kind of bulbs were previously in the fixture where you installed the outdoor reflector bulbs from the Savings Store?
for each bulb type, ask whether they were dimmable not.

( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO OR-6c

OR-5d. Are all of the outdoor reflector bulbs in your [*room*] controlled by the same on-off switch?
If needed **that is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**

( ) Yes
( ) No
( ) DK/NS

If "No", ask
OR-5e. How many different sets of outdoor reflector bulbs are there in your [*room*] that turn on and off together? _____

OR-5f. Now thinking about the bulbs on the switch that turns the largest number of outdoor reflector bulbs in your *[room]* on and off What kind of bulbs were previously in these sockets before you installed the outdoor reflector bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they were dimmable bulbs or not.

( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO OR-6c

OR-6a. How many watts were the old bulbs that were removed?

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( ) *Record response if known* _____
( ) DK/NS

OR-6b. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

OR-6c. On average, approximately how many hours per day are you using this fixture with the outdoor reflector bulbs from the Savings Store?
( ) *Record response if known* _____
( ) DK/NS

OR-6d. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
OR-6e. How many hours per day more? _____

If Decreased ask
OR-6f. How many hours per day less? _____

OR-7a. When you installed these outdoor reflector bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?
( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
OR-7b. Besides the bulbs, what else did you do to change this light fixture? _____

OR-8a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps***] bulbs in this light fixture?**
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask OR-8b.

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OR-8b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.

( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

OR-9a. If one of the outdoor reflector bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED outdoor reflector, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.

( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL
( ) dimmable LED
( ) non-dimmable LED
( ) A type of bulb that is not an outdoor reflector
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other *(including combination of bulb types – record details)* _____

If "A type of bulb that is not an indoor reflector" ask
OR-9b. What type of bulb would you install? _____
(record style AND type – such as "3-way incandescent" or "dimmable LED")

If "It depends on which socket burns out (or other factors)" ask
OR-9c. Why do you say that? _____

OR-10. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the outdoor reflector bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
OR-10b. Why were you less than satisfied with these bulbs? _____

GLOBE BULBS (CFL)

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GL-1. Our records show that you ordered [*total number of globe bulbs*] globe bulbs. How many of these globe bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?
DESCRIPTION IF NEEDED **Globe bulbs are sphere-shaped bulbs are frequently used in open fixtures in which bulbs are visible, such as bathroom vanity strips and hanging ceiling pendants. Globes provide dispersed light and are suitable for general and decorative lighting.**

( ) None
( ) One or more *record number* _____
( ) DK/NS

GL-2. And how many of these globe bulbs are currently stored for future use?

( ) None
( ) One or more *record number* _____
( ) DK/NS

If "one or more" in GL-2, ask
GL-2a. Do you plan on eventually installing and using these globe bulbs?

( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to GL-2a
GL-2b. Why not? _____

If "Maybe" or "DK/NS" to GL-2a
GL-2c. Why are you not sure you will use them all? _____

If "Yes" to GL-2a, ask
GL-2d. How long do you think it will be before you will have installed all globe bulbs that you ordered from the Savings Store?

( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

GL-3a. Have you gotten rid of any of the globe bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?

( ) Yes
( ) No

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( ) DK/NS

If "yes" to GL-3, ask GL-3b-d

GL-3b. How many of the globe bulbs that you ordered from the Savings Store have you gotten rid of? _____

GL-3c. Why did you get rid of the bulb(s)? _____

GL-3d. How did you get rid of the bulb(s)? _____

If GL-1 is "one or more", continue with GL-4a.
If GL-1 is "none" or "DK/NS" skip ahead to next bulb section now

GL-4a. In how many different rooms in your home did you install these Savings Store globe bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in GL-4a,

GL-4b. In which room were the globe bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

If "two or more" in GL-4a, continue asking all questions starting with GL-4c

GL-4c. Which room in your home has the <u>largest number</u> of Savings Store globe bulbs installed?

(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room

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( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

GL-4d. How many of the globe bulbs are installed in this room? _____

GL-5a. Are all of the globe bulbs in your *[room]* **controlled by the same on-off switch?** *If needed* **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**
( ) Yes
( ) No
( ) DK/NS

If "No" to GL-5a, ask
GL-5b. How many different on-off switches are controlling globe bulbs in your *[room]* **?**
_____

If "yes" in GL-5a, ask.
GL-6a. Are these globe bulbs installed on a dimmer switch?
( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "No" or "DK/NS" in GL-5a, ask
GL-6b. Are any of these globe bulbs on a dimmer switch?
( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim", ask
GL-6c. How many of these globe bulbs are installed on dimmer switches? _____

GL-7a. What kind of bulbs were previously in the lamps or fixtures in your *[room]* **where you installed the globe bulbs from the Savings Store?**
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch

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( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO GL-8a

GL-7b. How many watts were the old bulbs that were removed?
( ) *Record response if known* _____
( ) DK/NS

GL-7c. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____
( ) DK/NS

GL-8a. On average, approximately how many hours per day are you using the lamps or fixtures in your *[room]* where you installed the globe bulbs from the Savings Store?
( ) *Record response if known* _____
( ) DK/NS

GL-8b. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
GL-8c. How many hours per day more? _____

If Decreased ask
GL-8d. How many hours per day less? _____

GL-9a. When you installed these globe bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?
( ) Yes
( ) No
( ) DK/NS

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If "Yes", ask
GL-9b. Besides the bulbs, what else did you do to change this light fixture? _____

GL-10a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask GL-10b.

GL-10b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

GL-11a. If one of the globe bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED globe, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL
( ) dimmable LED
( ) non-dimmable LED
( ) A type of bulb that is not a globe
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other *(including combination of bulb types – record details)* _____

If "A type of bulb that is not a globe" ask
GL-11b. What type of bulb would you install? _____
(record style AND type – such as "3-way incandescent" or "dimmable LED")

If "It depends on which socket burns out (or other factors)" ask
GL-11c. Why do you say that? _____

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GL-12. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the globe bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
GL-12b. Why were you less than satisfied with these bulbs? _____

CANDELABRA BULBS (CFL)

CN-1. Our records show that you ordered [*total number of candelabra bulbs***] candelabra bulbs. How many of these candelabra bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?**
DESCRIPTION IF NEEDED **Candelabra bulbs are commonly used in decorative fixtures, such as wall sconces and ceiling fans, in which bulbs are exposed. With small bases and sleek shapes — offered in flame tip or torpedo styles — these bulbs are ideal for tight-fitting fixtures.**
( ) None
( ) One or more *record number* _____
( ) DK/NS

CN-2. And how many of these candelabra bulbs are currently stored for future use?
( ) None
( ) One or more *record number* _____
( ) DK/NS

If "one or more" in CN-2, ask
CN-2a. Do you plan on eventually installing and using these candelabra bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to CN-2a
CN-2b. Why not? _____

If "Maybe" or "DK/NS" to CN-2a
CN-2c. Why are you not sure you will use them all? _____

If "Yes" to CN-2a, ask
CN-2d. How long do you think it will be before you will have installed all candelabra bulbs that you ordered from the Savings Store?
( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)

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( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

CN-3a. Have you gotten rid of any of the candelabra bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?
( ) Yes
( ) No
( ) DK/NS

If "yes" to CN-3, ask CN-3b-d
CN-3b. How many of the candelabra bulbs that you ordered from the Savings Store have you gotten rid of? _____

CN-3c. Why did you get rid of the bulb(s)? _____

CN-3d. How did you get rid of the bulb(s)? _____

If CN-1 is "one or more", continue with CN-4a.
If CN-1 is "none" or "DK/NS" skip ahead to next bulb section now

CN-4a. In how many different rooms in your home did you install these Savings Store candelabra bulbs?
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in CN-4a,
CN-4b. In which room were the candelabra bulbs installed?
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage

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( ) Outdoors/Exterior
( ) Other *(specify)* _____

If "two or more" in CN-4a, continue asking all questions starting with CN-4c

CN-4c. Which room in your home has the largest number of Savings Store candelabra bulbs installed?
(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)
( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

CN-4d. How many of the candelabra bulbs are installed in this room? _____

CN-5a. Are all of the candelabra bulbs in your *[room]* controlled by the same on-off switch?
If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**
( ) Yes
( ) No
( ) DK/NS

If "No" to CN-5a, ask
CN-5b. How many different on-off switches are controlling candelabra bulbs in your *[room]* ?

_____

If "yes" in CN-5a, ask
CN-6a. Are these candelabra bulbs installed on a dimmer switch?
( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "No" or "DK/NS" in CN-5a, ask
CN-6b. Are any of these candelabra bulbs on a dimmer switch?
( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)

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( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim", ask
CN-6c. How many of these candelabra bulbs are installed on dimmer switches?

_____

CN-7a. What kind of bulbs were previously in the lamps or fixtures in your *[room]* where you installed the candelabra bulbs from the Savings Store?
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO CN-8a

CN-7b. How many watts were the old bulbs that were removed?
( ) *Record response if known* _____
( ) DK/NS

CN-7c. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

CN-8a. On average, approximately how many hours per day are you using the lamps or fixtures in your *[room]* where you installed the candelabra bulbs from the Savings Store?
( ) *Record response if known* _____
( ) DK/NS

CN-8b. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased
( ) Stayed the same

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If Increased ask
CN-8c. How many hours per day more? _____

If Decreased ask
CN-8d. How many hours per day less? _____

CN-9a. When you installed these candelabra bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?
( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
CN-9b. Besides the bulbs, what else did you do to change this light fixture? _____

CN-10a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask CN-10b.

CN-10b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

CN-11a. If one of the candelabra bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED candelabra bulb, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL

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( ) dimmable LED
( ) non-dimmable LED
( ) A type of bulb that is not a candelabra
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other _____

If "A type of bulb that is not an candelabra" ask
CN-11b. What type of bulb would you install? _____
(record style AND type – such as "3-way incandescent" or "dimmable LED")

If "It depends on which socket burns out (or other factors)" ask
CN-11c. Why do you say that? _____

CN-12. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the candelabra bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
CN-12b. Why were you less than satisfied with these bulbs? _____

DIMMABLE SPIRAL BULBS

DS-1. Our records show that you ordered [*total number of DS bulbs*] dimmable spiral bulbs. How many of these dimmable spiral bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?
DESCRIPTION IF NEEDED **Spiral-shaped bulbs — sometimes called twisty or curly — are the most common and popular CFLs. Dimmable compact fluorescents are designed to dim well with mechanical slide and rotary dimmer controls.**
( ) None
( ) One or more *record number* _____
( ) DK/NS

DS-2. And how many of these dimmable spiral bulbs are currently stored for future use?
( ) None
( ) One or more *record number* _____
( ) DK/NS

If "one or more" in DS-2, ask
DS-2a. Do you plan on eventually installing and using these dimmable spiral bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

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If "no" to DS-2a
DS-2b. Why not? _____

If "Maybe" or "DK/NS" to DS-2a
DS-2c. Why are you not sure you will use them all? _____

If "Yes" to DS-2a, ask
DS-2d. How long do you think it will be before you will have installed all dimmable spiral bulbs that you ordered from the Savings Store?

( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

DS-3a. Have you gotten rid of any of the dimmable spiral bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?

( ) Yes
( ) No
( ) DK/NS

If "yes" to DS-3, ask DS-3b-d
DS-3b. How many of the dimmable spiral bulbs that you ordered from the Savings Store have you gotten rid of? _____

DS-3c. Why did you get rid of the bulb(s)? _____

DS-3d. How did you get rid of the bulb(s)? _____

If DS-1 is "one or more", continue with DS-4a.
If DS-1 is "none" or "DK/NS" skip ahead to next bulb section now

DS-4a. In how many different rooms in your home did you install these Savings Store dimmable spiral bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

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If "one" in DS-4a,

DS-4b. In which room were the dimmable spiral bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

If "two or more" in DS-4a, continue asking all questions starting with DS-4c

DS-4c. Which room in your home has the largest number of Savings Store dimmable spiral bulbs installed?

(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

DS-4d. How many of the dimmable spiral bulbs are installed in this room? _____

DS-5a. Are all of the dimmable spiral bulbs in your *[room]* controlled by the same on-off switch?

If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**

( ) Yes
( ) No
( ) DK/NS

If "No" to DS-5a, ask

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DS-5b. How many different on-off switches are controlling dimmable spiral bulbs in your *[room]* **?**

_____

If "yes" in DS-5a, ask

DS-6a. Are these dimmable spiral bulbs installed on a dimmer switch?

( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "No" or "DK/NS" in DS-5a, ask

DS-6b. Are any of these dimmable spiral bulbs on dimmer switches?

( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim", ask

DS-6c. How many of these dimmable spiral bulbs are installed on dimmer switches?

_____

DS-7a. What kind of bulbs were previously in the lamps or fixtures in your *[room]* **where you installed the dimmable spiral bulbs from the Savings Store?**

for each bulb type, ask whether they were dimmable not.

( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO DS-8a

DS-7b. How many watts were the old bulbs that were removed?

( ) *Record response if known* _____
( ) DK/NS

DS-7c. What happened to the old bulbs that were removed?

( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use

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( ) Other _____

DS-8a. On average, approximately how many hours per day are you using the lamps or fixtures in your *[room]* where you installed the dimmable spiral bulbs from the Savings Store?

( ) *Record response if known* _____
( ) DK/NS

DS-8b. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?

( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
DS-8c. How many hours per day more?_____

If Decreased ask
DS-8d. How many hours per day less? _____

DS-9a. When you installed these dimmable spiral bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?

( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
DS-9b. Besides the bulbs, what else did you do to change this light fixture? _____

DS-10a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?

( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask DS-10b.

DS-10b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?

if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.

( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs

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( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

DS-11a. If one of the dimmable spiral bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED dimmable bulb, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL
( ) dimmable LED
( ) non-dimmable LED
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other *(including combination of bulb types – record details)* _____

If "It depends on which socket burns out (or other factors)" ask
DS-11b. Why do you say that? _____

DS-12. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the dimmable spiral bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
DS-12b. Why were you less than satisfied with these bulbs? _____

3-WAY SPIRAL BULBS

3W-1. Our records show that you ordered [*total number of 3-way spiral bulbs***] 3-way spiral bulbs. How many of these 3-way spiral bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?**
DESCRIPTION IF NEEDED **Spiral-shaped bulbs — sometimes called twisty or curly — are the most common and popular CFLs. These light bulbs will deliver three distinct levels of light when used in a fixture with a 3-way switch.**
( ) None
( ) One or more *record number* _____
( ) DK/NS

3W-2. And how many of these 3-way spiral bulbs are currently stored for future use?
( ) None

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( ) One or more *record number* _____
( ) DK/NS

If "one or more" in 3W-2, ask
3W-2a. Do you plan on eventually installing and using these 3-way spiral bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to 3W-2a
3W-2b. Why not? _____

If "Maybe" or "DK/NS" to 3W-2a
3W-2c. Why are you not sure you will use them all? _____

If "Yes" to 3W-2a, ask
3W-2d. How long do you think it will be before you will have installed all 3-way spiral bulbs that you ordered from the Savings Store?
( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

3W-3a. Have you gotten rid of any of the 3-way spiral bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?
( ) Yes
( ) No
( ) DK/NS

If "yes" to 3W-3, ask 3W-3b-d
3W-3b. How many of the 3-way spiral bulbs that you ordered from the Savings Store have you gotten rid of? _____

3W-3c. Why did you get rid of the bulb(s)? _____

3W-3d. How did you get rid of the bulb(s)? _____

If 3W-1 is "one or more", continue with 3W-4a.
If 3W-1 is "none" or "DK/NS" skip ahead to next bulb section now

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3W-4a. In how many different rooms in your home did you install these Savings Store 3-way spiral bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in 3W-4a,

3W-4b. In which room were the 3-way spiral bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

If "two or more" in 3W-4a, continue asking all questions starting with 3W-4c

3W-4c. Which room in your home has the largest number of Savings Store 3-way spiral bulbs installed?

(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other *(specify)* _____

3W-4d. How many of the 3-way spiral bulbs are installed in this room? _____

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3W-5a. What kind of bulbs were previously in the lamps or fixtures in your *[room]* where you installed the 3-way spiral bulbs from the Savings Store?

( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (empty sockets)
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO 3W-6a

3W-5b. Were the old bulbs that were removed also 3-way bulbs?

( ) Removed bulbs were 3-way bulbs
( ) Removed bulbs were NOT 3-way bulbs
( ) Other *(including combination of bulb types – record details)* _____
( ) DK/NS

3W-5c. How many watts were the old bulbs that were removed?
if the old bulbs were 3-way bulbs, only record the highest wattage (for a "50-100-150" incandescent 3-way bulb, just enter "150")

( ) *Record response if known* _____
( ) DK/NS

3W-5d. What happened to the old bulbs that were removed?

( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

3W-6a. On average, approximately how many hours per day are you using the lamps or fixtures in your *[room]* where you installed the 3-way spiral bulbs from the Savings Store?

( ) *Record response if known* _____
( ) DK/NS

3W-6b. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?

( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
3W-6c. How many hours per day more? _____

If Decreased ask

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3W-6d. How many hours per day less? _____

3w-6e. When you installed these 3-way spiral bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?

( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
3W-6f. Besides the bulbs, what else did you do to change this light fixture? _____

FOR 3W-7a, b & c try to get responses that add up to 100%, but if they are off that is OK. It is also acceptable to record open-ended responses if they cannot give percentages (i.e., "most of the time", "almost never", etc.)

3W-7a. Three-way bulbs have high, medium and low settings which give off different amounts of light. Please tell me when this light is turned on, approximately what percentage of the time is it turned to the highest setting? _____

3W-7b. And what percentage of the time when it is being used is this 3-way bulb turned to the lowest setting?

_____

3W-7c. What percentage of the time is it turned to the middle setting?

_____

3W-7d. Has the amount of time you use this light at the high, medium and low settings changed since you installed the bulbs you bought from the Savings Store?

( ) Yes
( ) No
( ) DK/NS or NA

FOR 3W-7e, f & g try to get responses that add up to 100%, but if they are off that is OK. It is also acceptable to record open-ended responses if they cannot give percentages (i.e., "most of the time", "almost never", etc.)

3W-7e. Before you installed the bulbs from the Savings Store, what percentage of the time was this light turned to the highest setting? _____

3W-7f. Before you installed the bulbs from the Savings Store, what percentage of the time was this light turned to the lowest setting? _____

3W-7g. Before you installed the bulbs from the Savings Store, what percentage of the time was this light turned to the middle setting? _____

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3W-8a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?

( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask 3W-8b.

3W-8b. What type of bulb would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?

( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (would have left sockets empty)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

3W-8c. If you had not purchased bulbs from the Savings Store, would the bulb you would have installed in this light fixture also been a 3-way bulb?

( ) Yes
( ) No
( ) DK/NS

3W-9a. If one of the 3-way bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED 3-way, or with some other type of bulb?

( ) Standard Incandescent 3-way
( ) Halogen 3-way
( ) CFL 3-way
( ) LED 3-way
( ) A type of bulb that is not a 3-way
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other (including combination of bulb types – record details) _____

If "A type of bulb that is not a 3-way" ask
3W-9b. What type of bulb would you install, and why? _____

If "It depends on which socket burns out (or other factors)" ask
3W-9c. Why do you say that? _____

3W-10. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the 3-way spiral bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

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If 7 or less,
3W-10b. Why were you less than satisfied with these bulbs? _____

CAPSULE BULBS

CP-1. Our records show that you ordered [*total number of capsule bulbs*] capsule bulbs. How many of these capsule bulbs that were ordered from the Savings Store are currently installed in fixtures in your home?
DESCRIPTION IF NEEDED **Capsule bulbs, also known as "A" lamps, most closely resemble traditional incandescent bulbs although capsules are slightly larger in size. These encapsulated style light bulbs fit in standard sockets and are especially suitable for use in open fixtures in which the bulb will be visible.**
( ) None
( ) One or more record number _____
( ) DK/NS

CP-2. And how many of these capsule bulbs are currently stored for future use?
( ) None
( ) One or more record number _____
( ) DK/NS

If "one or more" in CP-2, ask
CP-2a. Do you plan on eventually installing and using these capsule bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to CP-2a
CP-2b. Why not? _____

If "Maybe" or "DK/NS" to CP-2a
CP-2c. Why are you not sure you will use them all? _____

If "Yes" to CP-2a, ask
CP-2d. How long do you think it will be before you will have installed all of the capsule bulbs you ordered from the Savings Store?
( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

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CP-3a. Have you gotten rid of any of the capsule bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?

( ) Yes
( ) No
( ) DK/NS

If "yes" to CP-3, ask CP-3b-d

CP-3b. How many of the capsule bulbs that you ordered from the Savings Store have you gotten rid of? _____

CP-3c. Why did you get rid of the bulb(s)? _____

CP-3d. How did you get rid of the bulb(s)? _____

If CP-1 is "one or more", continue with CP-4a.
If CP-1 is "none" or "DK/NS" skip ahead to next bulb section now

CP-4a. In how many different rooms in your home did you install these Savings Store capsule bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in CP-4a,

CP-4b. In which room were the capsule bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

If "two or more" in CP-4a, continue asking all questions starting with CP-4c

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CP-4c. Which room in your home has the largest number of Savings Store capsule bulbs installed?
(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

CP-4d. How many of the capsule bulbs are installed in this room? _____

CP-5a. Are all of the capsule bulbs in your *[room]* controlled by the same on-off switch? If needed That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?

( ) Yes
( ) No
( ) DK/NS

If "No" to CP-5a, ask
CP-5b. How many different on-off switches are controlling capsule bulbs in your *[room]*?

_____

If "yes" in CP-5a, ask
CP-6a. Are these capsule bulbs installed on a dimmer switch?

( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "No" or "DK/NS" in CP-5a, ask
CP-6b. Are any of these capsule bulbs on dimmer switches?

( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim", ask
CP-6c. How many of these capsule bulbs are installed on dimmer switches? _____

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CP-7a. What kind of bulbs were previously in the lamps or fixtures in your *[room]* where you installed the capsule bulbs from the Savings Store?
for each bulb type, ask whether they were dimmable not.

( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO CP-8a

CP-7b. How many watts were the old bulbs that were removed?

( ) Record response if known _____
( ) DK/NS

CP-7c. What happened to the old bulbs that were removed?

( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

CP-8a. On average, approximately how many hours per day are you using the lamps or fixtures in your *[room]*where you installed the capsule bulbs from the Savings Store?

( ) Record response if known _____
( ) DK/NS

CP-8b. When you installed these capsule bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?

( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
CP-8c. Besides the bulbs, what else did you do to change this light fixture? _____

CP-9. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?

( ) Increased

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( ) Decreased
( ) Stayed the same

If Increased ask
CP-9c. How many hours per day more? _____

If Decreased ask
CP-9d. How many hours per day less? _____

CP-10a. If you had not known about the light bulbs available at the Savings Store, would you have continued to install [*bulbs previously in the lamps*] bulbs in this light fixture?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "Maybe" or "No", ask CP-10b.

CP-10b. What type of bulbs would you have installed in this light fixture if you had not purchased bulbs from the Savings Store?
if they answer "CFL" or "LED" ask whether they would get dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (would have left sockets empty)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

CP-11a. If one of the capsule bulbs that you purchased from the Savings Store burns out, will you replace it with an incandescent, CFL, or LED capsule bulb, or with some other type of bulb?
if they answer "CFL" or "LED" ask whether they would purchase dimmable bulbs or not.
( ) Standard Incandescent
( ) Halogen
( ) dimmable CFL
( ) non-dimmable CFL
( ) dimmable LED
( ) non-dimmable LED
( ) A type of bulb that is not a capsule
( ) It depends on which socket burns out (or other factors)
( ) DK/NS
( ) Other (including combination of bulb types – record details) _____

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If "A type of bulb that is not a capsule" ask
CP-11b. What type of bulb would you install? _____

If "It depends on which socket burns out (or other factors)" ask
CP-11c. Why do you say that? _____

CP-12. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with the capsule bulbs from the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
CP-12b. Why were you less than satisfied with these bulbs? _____

STANDARD SPIRAL CFL BULBS

SS-1. Our records show that you ordered [*total number of standard spiral bulbs***] standard spiral CFL bulbs. How many of these spiral CFLs that were ordered from the Savings Store are currently installed in fixtures in your home?**
DESCRIPTION IF NEEDED **Spiral CFLs are compact fluorescent light bulbs that have a "twisty" shape like a soft-serve ice cream cone. These are general-purpose bulbs that fit in most standard light sockets, and are the most common type of CFL.**
( ) None
( ) One or more record number _____
( ) DK/NS

SS-2. And how many of these standard spiral CFL bulbs are currently stored for future use?
( ) None
( ) One or more record number _____
( ) DK/NS

If "one or more" in SS-2, ask
SS-2a. Do you plan on eventually installing and using these standard spiral CFL bulbs?
( ) Yes
( ) No
( ) Maybe
( ) DK/NS

If "no" to SS-2a
SS-2b. Why not? _____

If "Maybe" or "DK/NS" to SS-2a
SS-2c. Why are you not sure you will use them all? _____

If "Yes" to SS-2a, ask

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SS-2d. How long do you think it will be before you will have installed all of the standard spiral CFL bulbs you ordered from the Savings Store?

( ) 1 year or less
( ) 13 to 24 months (2 years)
( ) 25 to 36 months (3 years)
( ) 37 to 48 months (4 years)
( ) 49 to 60 months (5 years)
( ) More than 5 years
( ) Never
( ) DK/NS

SS-3a. Have you gotten rid of any of the standard spiral CFL bulbs that you ordered from the Savings Store – because they burned out or were defective, because you gave them to somebody else, or for any other reasons?

( ) Yes
( ) No
( ) DK/NS

If "yes" to SS-3, ask SS-3b-d

SS-3b. How many of the standard spiral CFL bulbs that you ordered from the Savings Store have you gotten rid of? _____

SS-3c. Why did you get rid of the bulb(s)? _____

SS-3d. How did you get rid of the bulb(s)? _____

If SS-1 is "one or more", continue with SS-4a.
If SS-1 is "none" or "DK/NS" skip ahead to next section now

SS-4a. In how many different rooms in your home did you install these Savings Store standard spiral CFL bulbs?

( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6 or more
( ) DK/NS

If "one" in SS-4a,

SS-4b. In which room were the standard spiral CFL bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom

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( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

If "two or more" in SS-4a, continue asking all questions starting with SS-4c

SS-4c. Which room in your home has the largest number of Savings Store standard spiral CFL bulbs installed?
(NOTE if they have equal numbers of bulbs per room, then ask customer to pick any one room to answer bulb questions about)

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

SS-4d. How many of the standard spiral CFL bulbs are installed in this room?

_____

SS-5a. Are all of the standard spiral CFL bulbs in your *[room]* controlled by the same on-off switch?
If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**

( ) Yes
( ) No
( ) DK/NS

If "No" to SS-5a, ask
SS-5b. How many different on-off switches are controlling standard spiral CFL bulbs in your *[room]* ? _____

SS-6a. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the standard spiral CFL bulbs from the Savings Store?
for each bulb type, ask whether they were dimmable not.

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( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO SS-7a

SS-6b. How many watts were the old bulbs that were removed?
( ) Record response if known _____
( ) DK/NS

SS-6c. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

SS-7a. On average, approximately how many hours per day are you using the lamps or fixtures in your [*room*] where you installed the standard spiral CFL bulbs from the Savings Store?
( ) Record response if known _____
( ) DK/NS

SS-8a. When you installed these standard spiral CFL bulbs that you bought from the Savings Store, did you make any other changes to the fixtures those bulbs were installed in, such as installing a different switch or a lamp with a different number of bulb sockets?
( ) Yes
( ) No
( ) DK/NS

If "Yes", ask
SS-8b. Besides the bulbs, what else did you do to change this light fixture?

_____

SS-9. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased

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( ) Stayed the same

If Increased ask
SS-9c. How many hours per day more? _____

If Decreased ask
SS-9d. How many hours per day less? _____

ADDITIONAL BULB QUESTIONS

If they have answered questions about THREE OR MORE bulbs types (sections IR, OR, GL, CN, DS, 3W and CP), skip ahead and continue survey from 40 now (do not ask any AB series questions).
If they have answered questions about ONE bulb type, skip ahead to AB2 and AB3 series and then continue from 40.
If they have answered questions about TWO bulb types, ask AB1 series and then skip ahead to Q40.

INTERVIEWER ONLY
How many types of bulb have you asked them about?
( ) 1
( ) 2
( ) 3 or more

AB2-0. check the bulb type they ordered from Q2 (do not ask)
( ) Indoor reflector bulbs – non-dimmable CFL
( ) Indoor reflector bulbs – dimmable CFL
( ) Indoor reflector bulbs – dimmable LED
( ) Outdoor reflector bulbs (CFL)
( ) Candelabra bulbs (CFL)
( ) Globe bulbs (CFL)
( ) Dimmable spiral bulbs (CFL)
( ) 3-way spiral bulbs (CFL)
( ) Capsule bulbs (CFL)
( ) Capsule bulbs (LED)
( ) Standard spiral CFL

ONE ADDITIONAL BULB

AB1-1a. I have asked you about two different places where you installed bulbs that you bought from the Savings Store. Are there any other rooms or places in your home where you have installed light bulbs that you purchased from the Savings Store?

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( ) Yes
( ) No
( ) DK/NS

If Yes, continue with 1b

AB1-1b. In which room were these bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

AB1-1c. What type of Savings Store bulbs were installed in this room?

these should be another of a type of bulb that has already been discussed and was checked in Q2.

( ) Indoor reflector bulbs – non-dimmable CFL
( ) Indoor reflector bulbs – dimmable CFL
( ) Indoor reflector bulbs – dimmable LED
( ) Outdoor reflector bulbs (CFL)
( ) Candelabra bulbs (CFL)
( ) Globe bulbs (CFL)
( ) Dimmable spiral bulbs (CFL)
( ) 3-way spiral bulbs (CFL)
( ) Capsule bulbs (CFL)
( ) Capsule bulbs (LED)
( ) Standard Spiral CFL

AB1-2a. How many [*bulb from AB1-1c*] are installed in the [*room*]? _____

If asking questions about 3-way bulbs (from AB1-1c), then SKIP AHEAD to AB1-3b NOW (do not ask AB1-2b through AB1-3a for 3-way bulbs)

AB1-2b. Are all of the [*bulb from AB1-1c*] in your [*room*] controlled by the same on-off switch?

If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**

( ) Yes

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( ) No
( ) DK/NS

if No, ask
AB1-2c. How many different on-off switches are controlling[*bulb from AB1-1c*] in your [*room*]? _____

If "yes" in AB1-2b, ask
AB1-2d. Are these [*bulb from AB1-1c*] dimmable bulbs installed on a dimmer switch?
( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "no" or "DK/NS" in AB1-2b, ask
AB1-2e. Are any of these [*bulb from AB1-1c*] dimmable bulbs on dimmer switches?
( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim (dimmable bulbs AND on a dimmer switch)", ask
AB1-2f. How many of these [*bulb from AB1-1c*] are dimmable bulbs installed on dimmer switches?

_____

AB1-3a. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the [*bulb from AB1-1c*] from the Savings Store?
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB1-4

ask AB1-3b and AB1-3c for 3-way bulbs

AB1-3b. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the 3-way spiral bulbs from the Savings Store?
( ) Standard Incandescent

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( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (empty sockets)
( ) Other (*including combination of bulb types – record details*) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB1-4

AB1-3c. Were the old bulbs that were removed also 3-way bulbs?
( ) Removed bulbs were 3-way bulbs
( ) Removed bulbs were NOT 3-way bulbs
( ) Other (*including combination of bulb types – record details*) _____
( ) DK/NS

AB1-3d. How many watts were the old bulbs that were removed?
( ) Record response if known _____
( ) DK/NS

AB1-3e. What happened to the old bulbs that were removed?
( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

AB1-4. On average, approximately how many hours per day do you use the lamps or fixtures in your [*room*] where you installed the [*bulb from AB1-1c*] from the Savings Store?
( ) Record response if known _____
( ) DK/NS

AB1-5. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?
( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
AB1-5b. How many hours per day more? _____

If Decreased ask
AB1-5c. How many hours per day less? _____

TWO ADDITIONAL BULBS

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AB2-1a. I have asked you about one place where you installed [*bulb*] that you bought from the Savings Store. Are there any other rooms or places in your home where you have installed [*bulb*] that you purchased from the Savings Store?

( ) Yes
( ) No
( ) DK/NS

AB2-1b. In which room were these bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage
( ) Outdoors/Exterior
( ) Other (specify) _____

AB2-2a. How many [*bulb*] are installed in this room? _____

If asking questions about 3-way bulbs (from AB2-0), then SKIP AHEAD to AB2-3b NOW (do not ask AB2-2b through AB2-3a for 3-way bulbs)

AB2-2b. Are all of the [*bulb*] in your [*room*] controlled by the same on-off switch?
If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**

( ) Yes
( ) No
( ) DK/NS

If No, ask
AB2-2c. How many different on-off switches are controlling [*bulb*] in your [*room*] ?

_____

If "yes" in AB2-2b, ask
AB2-2d. Are these [*bulb*] dimmable bulbs installed on a dimmer switch?

( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "no" or "DK/NS" in AB2-2b, ask
AB2-2e. Are any of these [*bulb*] dimmable bulbs on dimmer switches?

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( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim (dimmable bulbs AND on a dimmer switch)", ask
AB2-2f. How many of these [*bulb*] are dimmable bulbs installed on dimmer switches?

_____

AB2-3a. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the [*bulb*] from the Savings Store?
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs
( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB2-4

If asking questions about any type of bulb other than 3-way bulbs (from AB2-0), then SKIP AHEAD to AB2-3d NOW (only ask AB2-3b and AB2-3c for 3-way bulbs)

AB2-3b. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the 3-way spiral bulbs from the Savings Store?
( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB2-4

AB2-3c. Were the old bulbs that were removed also 3-way bulbs?
( ) Removed bulbs were 3-way bulbs
( ) Removed bulbs were NOT 3-way bulbs
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

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AB2-3d. How many watts were the old bulbs that were removed?

( ) Record response if known _____
( ) DK/NS

AB2-3e. What happened to the old bulbs that were removed?

( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

AB2-4. On average, approximately how many hours per day do you use the lamps or fixtures in your [*room*] where you installed the [*bulb*] from the Savings Store?

( ) Record response if known _____
( ) DK/NS

AB2-5. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?

( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
AB2-5a. How many hours per day more? _____

If Decreased ask
AB2-5a. How many hours per day less? _____

AB3-1a. Now I have asked you about two place where you installed *[bulb]* that you bought from the Savings Store. Are there any other rooms or places in your home where you have installed [*bulb*] that you purchased from the Savings Store?

( ) Yes
( ) No
( ) DK/NS

AB3-1b. In which room were these bulbs installed?

( ) Living/family room
( ) Dining room
( ) Kitchen
( ) Master bedroom
( ) Other bedroom
( ) Bathroom
( ) Hall
( ) Closet
( ) Basement
( ) Garage

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( ) Outdoors/Exterior
( ) Other (specify) _____

AB3-2a. How many *[bulb]* are installed in this room? _____

If asking questions about 3-way bulbs (from AB2-0), then SKIP AHEAD to AB3-3b NOW (do not ask AB3-2b through AB3-3a for 3-way bulbs)

AB3-2b. Are all of the *[bulb]* in your [*room*] controlled by the same on-off switch?
If needed **That is, do all of the bulbs in this room turn on and off together, or are there different switches that control different bulbs?**
( ) Yes
( ) No
( ) DK/NS

If No, ask
AB3-2c. How many different on-off switches are controlling *[bulb]* in your [*room*]?

_____

If "yes" ask
AB3-2d. Are these *[bulb]* dimmable bulbs installed on a dimmer switch?
( ) Bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) Bulbs do not dim (Not dimmable bulbs and/or not on a dimmer switch)
( ) DK/NS

If "no" or "DK/NS" in AB3-2b, ask
AB3-2e. Are any of these [*bulb*] dimmable bulbs on dimmer switches?
( ) Some bulbs do dim (dimmable bulbs AND on a dimmer switch)
( ) None dim (none are dimmable bulbs and/or none are on dimmer switches)
( ) DK/NS

If "Some bulbs do dim (dimmable bulbs AND on a dimmer switch)", ask
AB3-2f. How many of these [*bulb*] are dimmable bulbs installed on dimmer switches?

_____

AB3-3a. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the [*bulb*] from the Savings Store?
for each bulb type, ask whether they were dimmable not.
( ) Standard Incandescent on a dimmer switch
( ) Standard Incandescent not on a dimmer switch
( ) Halogen on a dimmer switch
( ) Halogen not on a dimmer switch
( ) dimmable CFLs
( ) non-dimmable CFLs
( ) dimmable LEDs

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( ) non-dimmable LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB3-4

If asking questions about any type of bulb other than 3-way bulbs (from AB2-0), then SKIP AHEAD to AB3-3d NOW (only ask AB3-3b and AB3-3c for 3-way bulbs)

AB3-3b. What kind of bulbs were previously in the lamps or fixtures in your [*room*] where you installed the 3-way spiral bulbs from the Savings Store?

( ) Standard Incandescent
( ) Halogen
( ) CFLs
( ) LEDs
( ) No bulbs (empty sockets)
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

If "No bulbs (empty sockets)", SKIP AHEAD TO AB3-4

AB3-3c. Were the old bulbs that were removed also 3-way bulbs?

( ) Removed bulbs were 3-way bulbs
( ) Removed bulbs were NOT 3-way bulbs
( ) Other (including combination of bulb types – record details) _____
( ) DK/NS

AB3-3d. How many watts were the old bulbs that were removed?

( ) Record response if known _____
( ) DK/NS

AB3-3e. What happened to the old bulbs that were removed?

( ) Recycled
( ) Thrown away
( ) Given away
( ) Stored for future use
( ) Other _____

AB3-4. On average, approximately how many hours per day do you use the lamps or fixtures in your [*room*] where you installed the [*bulb*] from the Savings Store?

( ) Record response if known _____
( ) DK/NS

AB3-5. Did the hours of use for these lights increase, decrease or stay the same since the old bulbs were replaced?

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( ) Increased
( ) Decreased
( ) Stayed the same

If Increased ask
AB3-5a. How many hours per day more? _____

If Decreased ask
AB3-5a. How many hours per day less? _____

GENERAL BULB QUESTIONS

40. Currently, there are a number of types of light bulbs available for purchase in the market, like CFL bulbs, Halogen bulbs, standard incandescent bulbs, and LED bulbs, among others. Thinking about the next ten light bulbs you will purchase at the Duke Savings Store or anywhere else…
READ DESCRIPTIONS OF THE TYPES OF BULB IF RESPONDENTS SEEM UNCLEAR ON ANYTHING ABOUT THEM

Approximately how many will be any type of...
TOTAL FOR ALL Q40 SHOULD EQUAL 10
if total A-E does not equal 10 , enter remaining value in DK/NS
_____**40a. standard incandescent light bulbs**
if needed **Incandescent bulbs are the most common type of light bulb. It features a screw-base and is known for providing bright, warm light instantly.**
_____**40b. Halogen light bulbs**
If needed **Halogen light bulbs are similar to incandescent bulbs, but are known to be more energy efficient than standard incandescent bulbs and tend to be used in indoor and outdoor flood lighting, indoor recessed or tracked lighting, and in floor and desk lamps.**
_____**40c. CFL light bulbs**
If needed **CFLs, also known as compact fluorescent light bulbs, are energy saving light bulbs that have a "twisty" shape like a soft-serve ice cream cone**
_____**40d. LED light bulbs**
If needed **LEDs, also known as "light-emitting diodes", are a type of lighting that uses multiple tiny bulbs, or diodes, that are wired together on one lamp**
_____**40e. "other" bulb types**
_____40f. DK/NS

If 40e > 0, Specify
40g. What kind of "other" bulbs? _____

41a. Did you have any CFLs installed in your home before purchasing bulbs from the Savings Store?
( ) Yes Ask 41b. **How many?** _____
( ) No

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( ) DK/NS

42. How many years have you been using CFLs?
( ) Never used until recently (first time user)
( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other (specify) _____
( ) DK/NS

43a. Before you purchased bulbs from the Savings Store, did you have any LED light bulbs installed in your home?
( ) Yes *Ask* 43b. **How many?** _____
( ) No
( ) DK/NS

44. How many years have you been using LEDs?
( ) Have never used LED light bulbs at all
( ) Never used until recently (first time user)
( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other (specify) _____
( ) DK/NS

45a. What is your best estimate of the total number of light bulbs currently installed in your home that are incandescent or halogen bulbs? _____

45b. How many of these incandescent or halogen bulbs are standard capsule bulbs? By standard capsule bulbs, I mean the most common type of light bulb shape. _____
FURTHER DESCRIPTION IF NEEDED **Capsule bulbs, also known as "A" lamps, are the most common shape for traditional incandescent bulbs. These encapsulated style light bulbs fit in standard sockets and are especially suitable for use in open fixtures in which the bulb will be visible.**

45c. How many of these incandescent or halogen standard capsule bulbs are installed in sockets that are typically used for more than 2 hours a day? _____

46. Next I am going to read a list of different types of specialty light bulb and ask how many of each you have in your home. By specialty light bulbs, I mean bulbs that are not the standard capsule shape, and bulbs that have special features.

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46a. How many dimmable bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47a. How many dimmable bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

46b. How many 3-way bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47b. How many 3-way bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

46c. How many indoor reflector bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47c. How many Indoor reflector bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

46d. How many outdoor reflector bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47d. How many outdoor reflector bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____

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DK/NS _____

46e. How many globe bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47e. How many globe bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

46f. How many candelabra bulbs do you have in your home?

( ) None
( ) One or more *record number* _____
( ) DK/NS

47f. How many candelabra bulbs are...

CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

46g. Do you have any CFL or LED capsule bulbs in your home? These are CFL and LED bulbs that are encapsulated to look like standard incandescent light bulbs.

( ) None
( ) One or more *record number* _____
( ) DK/NS

47g. How many capsule bulbs are...

CFL _____
LED _____
DK/NS _____

46h. Do you have any Other type of specialty bulbs in your home?

Record type of "other" bulb in Comment box.

( ) None
( ) One or more *record number* _____
( ) DK/NS
Comment: _____

47h. How many Other bulbs are...

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CFL _____
LED _____
Halogen _____
Incandescent _____
DK/NS _____

49. Next, for each of these types of specialty bulbs, how many incandescent or halogen bulbs do you currently have in storage to replace bulbs that burn out?

Dimmable _____
3-way _____
Indoor reflector _____
Outdoor reflector _____
Globe _____
Candelabra _____
Other (*Specify type and number*) _____

Read all bold faced responses to Q50 first, and then ask follow-up questions Q50a-c as needed.

50. If the Savings Store had not been available, would you have

( ) Purchased the same amount of energy-efficient specialty light bulbs at the same time
( ) Purchased fewer energy-efficient specialty light bulbs at the same time,
( ) Purchased energy-efficient specialty light bulbs at a later time,
( ) Or not purchased energy-efficient specialty light bulbs.
( ) DK/NS

If "Purchased fewer energy-efficient specialty light bulbs at the same time", ask

50a. How many fewer? _____

If "Purchased energy-efficient specialty light bulbs at a later time" ask

50b. How many would you have purchased? _____
50c. How much later? _____

Only ask q51 if they have one more bulbs in storage at any of the following questions IR-2, OR-2, CN-2, GL-2, DM-2, 3W-2 or CP-2.
If they did not store any "Savings Store" bulbs, then skip question q51.

51. Thinking of the specialty bulbs that you purchased from the Savings Store that you have stored for later use, what are the reasons that you have not installed all of these bulbs?

(Select all that apply)

[ ] Do not have any Savings Store bulbs in storage / all installed or disposed
[ ] I am waiting for my other standard bulbs to burn out
[ ] I already have new specialty bulbs installed everywhere they will fit
[ ] The other lamps or light fixtures in my home don't work with the new specialty bulbs
[ ] The new specialty bulbs are too dim for the other locations where I could install them
[ ] The new specialty bulbs are too bright for the other locations where I could install them

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[ ] The new specialty bulbs take too long to get to full brightness
[ ] I don't like the way the new specialty bulbs look in some of my fixtures
[ ] The new specialty bulbs do not work on a dimmer switch
[ ] Other *specify* _____
[ ] DK/NS

52a. Were you aware that there are limits on the number of each type of bulb that you can order from the Savings Store at the final discounted price?
( ) Yes
( ) No
( ) DK/NS

If Yes, ask
52b. Did the limit on discounted bulbs keep you from ordering all the bulbs you wanted?
( ) Yes
( ) No
( ) DK/NS

52c. What kind of bulbs would you have ordered more of if they were available at the final discounted price?
(Select all that apply)
[ ] Indoor reflector bulbs – non-dimmable CFL
[ ] Indoor reflector bulbs – dimmable CFL
[ ] Indoor reflector bulbs – dimmable LED
[ ] Outdoor reflector bulbs (CFL)
[ ] Candelabra bulbs (CFL)
[ ] Globe bulbs (CFL)
[ ] Dimmable spiral bulbs (CFL)
[ ] 3-way spiral bulbs (CFL)
[ ] Capsule bulbs (CFL)
[ ] Capsule bulbs (LED)
[ ] DK/NS

52d. Did you know that you can buy more bulbs than the discounted-price limit allows if you go to another section of the Store that sells the same bulbs at a slightly higher price?
( ) Yes
( ) No
( ) DK/NS

SATISFACTION AND IMPROVEMENTS

53. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Duke Energy Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

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If 7 or less,
53b. How could this be improved? _____

Ask Q53c for Ohio customers ONLY
53c. If you were rating your overall satisfaction with the Savings Store, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

( ) Very Satisfied
( ) Somewhat Satisfied
( ) Neither Satisfied nor Dissatisfied
( ) Somewhat Dissatisfied
( ) Very Dissatisfied
( ) Refused
( ) DK/NS

Ask Q53d for Ohio customers ONLY (ask ALL Ohio customers to explain ratings)
53d. Why do you give it that rating? _____

54a. What do you like most about the Duke Energy Savings Store? _____

54b. What do you like least about the Duke Energy Savings Store?

( ) Record response _____
( ) Nothing / don't know / not specified

55. Next I am going to read you a series of statements. Please tell me which statement best describes your future intentions for shopping for light bulbs at the Duke Energy Savings Store.
(read list)

( ) I will never shop at the Savings Store for light bulbs again,
( ) I will probably not shop at the Savings Store again,
( ) I may or may not shop at the Savings Store again,
( ) I will probably shop at the Savings Store again,
( ) I will definitely shop at the Savings Store again, or
( ) The Savings Store will be one of the first places I go the next time I need to shop for light bulbs
( ) DK/NS

56. Are there any other bulbs or energy efficiency items you'd like to be able to order at the Savings Store?

( ) Record response _____
( ) Nothing / don't know / not specified

57. Are there any additional features you would like to see on the Savings Store website?

( ) Record response _____
( ) Nothing / don't know / not specified

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58. How else might the Savings Store be improved?

( ) Record response _____
( ) Nothing / don't know / not specified

59. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Duke Energy.

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,

59b. 10b. How could this be improved? _____

60a. Have you told anyone about the Duke Energy Savings Store?

( ) Yes
( ) No
( ) DK/NS

If Yes, ask 60b and 60c

60b. Who did you tell?

(record number of all that apply)

Friends (**How many?**) _____
Family (**How many?**) _____
Neighbors (**How many?**) _____
Co-workers (**How many?**) _____
Other (**How many?**) _____

60c. How did you tell them?

(Check all that apply)

[ ] Word of mouth
[ ] Email
[ ] Facebook
[ ] Twitter
[ ] Web site forum
[ ] Other _____

61a. Did your experience ordering energy-efficient specialty bulbs from the Savings Store make it more or less likely that you would purchase and install CFLs in the future?

( ) More likely
( ) Less likely
( ) Neither more or less likely

If More likely, ask

61b. Why are you more likely to use CFLs in the future? _____

If Less likely, ask

61c. Why are you less likely to use CFLs in the future? _____

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61d. Did your experience ordering energy-efficient specialty bulbs from the Savings Store make it more or less likely that you would purchase and install LEDs in the future?

( ) More likely
( ) Less likely
( ) Neither more or less likely

If More likely, ask
61e. Why are you more likely to use LEDs in the future? _____

If Less likely, ask
61f. Why are you less likely to use LEDs in the future? _____

62a. On a scale of 1-to-10, where 1 is not likely and 10 is very likely, how likely are you to make purchases directly from the Duke Energy Savings Store in the future?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

62b. What do you think could be done to get more people such as yourself to buy light bulbs from the Savings Store? _____

63a. Since buying light bulbs from the Duke Energy Savings Store have you bought any CFLs or LEDs from a local retailer, an online merchant, or from anyplace other than the Savings Store?

( ) Yes
( ) No
( ) DK/NS

63b. Please tell me what types of CFL and LED bulbs you purchased, and how many of each type.
If respondent says "CFL" or "LED", probe for details to get the specific type of bulb (read responses from table if necessary).
Record responses for Q63b, c & d in the table below for each bulb types purchased (leave row blank if a type was not purchased).
Note that a "regular" LED bulb is a Capsule, and a "regular" CFL is a Standard Spiral.
63b. How many bulbs did you purchase?
63c. How many of these bulbs are currently installed in your home?
63d. What is the wattage of these bulbs?
(RECORD OPEN END - may be more than one wattage)

	63b	*63c*	*63d*
Standard spiral CFLs	_____	_____	_____
Capsule CFLs	_____	_____	_____
Indoor Reflector CFLs	_____	_____	_____
Outdoor Reflector CFLs	_____	_____	_____
Globe CFLs	_____	_____	_____
Candelabra CFLs	_____	_____	_____
Dimmable CFLs	_____	_____	_____
Three-way CFLs	_____	_____	_____

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Standard or capsule LED_____ _____ _____
Indoor reflector LED _____ _____ _____
Outdoor reflector LED _____ _____ _____
Globe LED _____ _____ _____
Candelabra LED _____ _____ _____
Three-way LED _____ _____ _____
Other type of CFL *bulb specify type and number* _____ _____
_____
Other type of LED *bulb specify type and number* _____ _____
_____

63e. Where did you purchase these bulbs? (record names of stores and websites)
_____

63f. Are any of these CFLs or LEDs bulbs of a type that you could have purchased from the Duke Energy Savings Store, but didn't?
( ) Yes
( ) No
( ) DK/NS

If Yes, ask
63g. Why didn't you purchase these bulbs from the Duke Energy Store? _____

63h. On a scale of 1-to-10, with 1 meaning that the Savings Store had no influence, and 10 meaning that the Store was very influential, please rate the influence of the Savings Store on your decision to purchase additional CFLs or LEDs elsewhere.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

For any score ask
63i. Why did you give that score? _____

64. Have you taken any additional steps to save energy in your home since ordering light bulbs from the Duke Energy Savings Store?
( ) Yes
( ) No
( ) DK/NS

64a-d. What actions have you taken to save energy?
After each response, ask **Anything else***?*
A. _____
B. _____
C. _____
D. _____

65. Why do you think that Duke Energy is providing discounted specialty bulbs to their customers?

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Do not read response options, check all that apply.

[ ] Duke Energy wants to save their customers money
[ ] Duke Energy wants to save energy for environmental reasons
[ ] Duke Energy wants to save energy for economic reasons
[ ] Duke Energy wants to look good (PR)
[ ] The government is forcing Duke Energy to do it
[ ] Other (specify) _____
[ ] None of the above
[ ] DK/NS

66. Are you currently a participant in any of the following Duke Energy programs?
Read text in bold and check all that apply.
Descriptions below if needed.

[ ] Free Energy Efficient CFLs
[ ] Power Manager
[ ] Residential Smart Saver
[ ] Home Energy House Call
[ ] My Home Energy Report
[ ] Appliance Recycling
[ ] Online Services
[ ] None of the above
[ ] DK/NS

Free Energy Efficient CFLs
A program that provides Duke Energy customers with up to 15 free CFLs to be shipped directly to their homes.
Power Manager
A program that provides bill credits in exchange for allowing Duke Energy to temporarily cycle your air conditioning unit during periods of high use
Residential Smart Saver
A program that provides rebates for energy efficient improvements to your house such as energy efficient heating and cooling units
Home Energy House Call
A program in which an assessor comes to your house, suggests energy efficiency improvements, and Duke Energy provides certain low-cost improvement materials for free
My Home Energy Report
A program that provides an ongoing comparison of your energy use with that of people who live in similar homes
Appliance Recycling
A program that picks up old refrigerators and freezers from your home and recycles them in an environmentally-friendly way, while also paying you a small incentive

For all programs not checked in Q66, ask question 67

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67. On a scale of 1-to-10, with 1 being not at all interested and 10 very interested, please rate your interest in participating the following Duke Energy programs

(Free Energy Efficient CFLs)
67a. The program that provides Duke Energy customers with up to 15 free CFLs shipped directly to their homes.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

(Power Manager)
67b. The program that provides bill credits in exchange for allowing Duke Energy to temporarily cycle your air conditioning unit during periods of high use
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

(Residential Smart Saver)
67c. The program that provides rebates for energy efficient improvements to your house such as energy efficient heating and cooling units.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

(Home Energy House Call)
67d. The program in which an assessor comes to your house, suggests energy efficiency improvements, and Duke Energy provides certain low-cost improvement materials for free.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

(My Home Energy Report)
67e. The program that provides an ongoing comparison of your energy use with that of people who live in similar homes
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

(Appliance Recycling)
67f. The program that pays you a small incentive to come to your home to pick up old refrigerators and freezers that still work, so they can be recycled in an environmentally-friendly way.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

Duke Energy is interested in providing further services that might be of interest to customers. I am going to read a list of possible services that Duke Energy may consider offering. Please rate your interest in the following services on a scale of 1-to-10, with 1 indicating that you would not be interested, and 10 indicating that you would be very interested.

	1	2	3	4	5	6	7	8	9	10	DK/NS
68a. Help in finding weatherization contractors to make your home more efficient	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
68b. Help in finding energy efficient equipment and appliances	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
68c. Rebates for energy efficient home improvements	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

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68d. Inspection services of work performed by contractors () () () () () () () () () () () () ()

68e. Financing for energy efficient home improvements () () () () () () () () () () () ()

68f. Home energy audits or inspections of your home with specific recommendations for improvements

() () () () () () () () () () ()

68g. Social Networking sites such as Facebook and Twitter to read about or discuss energy efficient solutions with energy experts. () () () () () () () () () () ()

69. What other services could Duke Energy provide to help improve home energy efficiency?

( ) Record response _____
( ) Nothing / don't know / not specified

DEMOGRAPHICS

The last set of questions deal with household characteristics. These questions are optional and you do not need to give any information that you are uncomfortable with, but please keep in mind that any and all information you provide will remain confidential.

d1. In what type of building do you live?

( ) Single-family home, detached construction
( ) Single family home, factory manufactured/modular
( ) Single family, mobile home
( ) Row House
( ) Two or Three family attached residence-traditional structure
( ) Apartment (4 + families)---traditional structure
( ) Condominium---traditional structure
( ) Other _____
( ) Refused
( ) DK/NS

d2. What year was your residence built?

( ) 1959 and before
( ) 1960-1979
( ) 1980-1989
( ) 1990-1997
( ) 1998-2000
( ) 2001-2007
( ) 2008-present
( ) DK/NS

d2b. How long have you lived in your current home?

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( ) duration in years and months _____
( ) DK/NS

d3. How many rooms are in your home (excluding bathrooms, but including finished basements)?

( ) 1-3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10 or more
( ) DK/NS

d4. Which of the following best describes your home's heating system?
(Check all that apply)

[ ] None
[ ] Central forced air furnace
[ ] Electric Baseboard
[ ] Heat Pump
[ ] Geothermal Heat Pump
[ ] Other _____
[ ] DK/NS

d5. How old is your heating system?

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d6. What is the primary fuel used in your heating system?

( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other _____
( ) DK/NS

d7. What is the secondary fuel used in your primary heating system, if any?

( ) Electricity
( ) Natural Gas
( ) Oil

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( ) Propane
( ) Other _____
( ) None
( ) DK/NS

d8. Do you use one or more of the following to cool your home?
(Check all that apply)
[ ] None, do not cool the home
[ ] Heat pump for cooling
[ ] Central air conditioning
[ ] Through the wall or window air conditioning unit
[ ] Geothermal Heat pump
[ ] Other _____
[ ] DK/NS

d9. How many window-unit or "through the wall" air conditioner(s) do you use?
( ) None
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) DK/NS

d10. What is the fuel used in your cooling system?
(Check all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] None
[ ] DK/NS

d11. How old is your cooling system?
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

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d12. What is the fuel used by your water heater?
(Check all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No water heater
[ ] DK/NS

d13. How old is your water heater?

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) More than 19 years
( ) DK/NS

d14. What type of fuel do you use for indoor cooking on the stovetop or range?
(Check all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No stovetop or range
[ ] DK/NS

d15. What type of fuel do you use for indoor cooking in the oven?
(Check all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No oven
[ ] DK/NS

d16. What type of fuel do you use for clothes drying?
(Check all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No clothes dryer

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[ ] DK/NS

d17. About how many square feet of living space are in your home?
(Do not include garages or other unheated areas)
Note A 10-foot by 12 foot room is 120 square feet

( ) Less than 500
( ) 500 to 999
( ) 1000 to 1499
( ) 1500 to 1999
( ) 2000 to 2499
( ) 2500 to 2999
( ) 3000 to 3499
( ) 3500 to 3999
( ) 4000 or more
( ) DK/NS

d18. Do you own or rent your home?

( ) Own
( ) Rent

d19. How many levels are in your home (not including your basement)?

( ) One
( ) Two
( ) Three

d20. Does your home have a heated or unheated basement?

( ) Heated
( ) Unheated
( ) No basement

d21. Does your home have an attic?

( ) Yes
( ) No

d22. Are your central air/heat ducts located in the attic?

( ) Yes
( ) No
( ) NA
( ) DK/NS

d23. Does your house have cold drafts in the winter?

( ) Yes
( ) No
( ) DK/NS

d24. Does your house have sweaty windows in the winter?

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( ) Yes
( ) No
( ) DK/NS

d25. Do you notice uneven temperatures between the rooms in your home?
( ) Yes
( ) No
( ) DK/NS

d26. Does your heating system keep your home comfortable in winter?
( ) Yes
( ) No
( ) DK/NS

d27. Does your cooling system keep your home comfortable in summer?
( ) Yes
( ) No
( ) DK/NS

d28. Do you have a programmable thermostat?
( ) Yes
( ) No
( ) DK/NS

d28b. How many thermostats are there in your home?
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4 or more
( ) DK/NS

d29. What temperature is your thermostat set to on a typical summer weekday afternoon?
( ) Less than 69 degrees
( ) 69-72 degrees
( ) 73-78 degrees
( ) Higher than 78 degrees
( ) Off
( ) DK/NS

d30. What temperature is your thermostat set to on a typical winter weekday afternoon?
( ) Less than 67 degrees
( ) 67-70 degrees
( ) 71-73 degrees
( ) 74-77 degrees
( ) 78 degrees or higher

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( ) Off
( ) DK/NS

d31. Do you have a swimming pool, hot-tub or spa?
( ) Yes
( ) No

Read all answers until they reply
d32. Would a two-degree increase in the summer afternoon temperature in your home affect your comfort.
( ) Not at all
( ) Slightly
( ) Moderately, or
( ) Greatly
( ) DK/NS

d33. How many people live in this home?
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d34. How many of them are teenagers age 13-19?
If they ask why Explain that teenagers are generally associated with higher energy use.
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d35. How many persons are usually home on a weekday afternoon?
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4

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( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d36. Are you planning on making any large purchases to improve energy efficiency in the next 3 years?
( ) Yes
( ) No
( ) DK/NS

The following questions are for classification purposes only and will not be used for any other purpose than to help Duke Energy continue to improve service.

d37. What is your age group?
Read all.
( ) 18-34
( ) 35-49
( ) 50-59
( ) 60-64
( ) 65-74
( ) Over 74
( ) Prefer not to answer

d38. Please indicate your annual household income.
Read all.
( ) Under $15,000
( ) $15,000-$29,999
( ) $30,000-$49,999
( ) $50,000-$74,999
( ) $75,000-$100,000
( ) Over $100,000
( ) Prefer Not to Answer
( ) DK/NS

We've reached the end of the survey. As I mentioned earlier, we would like to send you $30 for your time and feedback today. Should we send it to {address on calling sheet}, or would a different address be better?

Confirm Name & complete address from calling sheet. If needed, record any changes to Name or Address on calling sheet in "Changed Address" column.

If customer has installed any program bulbs, read logger invitation.

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If customer did not install any program bulbs, thank and terminate.
In addition, we are looking for residential customers to participate in a research study in which a Duke Energy representative will visit homes for 20 to 30 minutes and place small lighting monitors on 4 or 5 light fixtures, which would remain in place for 2 to 3 weeks. The monitors are smaller than a bar of soap and measure how often lights are turned on and off during the week. This light-monitoring study will be starting in the next month or so, and if your home is selected for the study you will receive $50 for participating.

Are you interested in participating?
( ) Yes
( ) No

If yes, "Interested in participating"
Thank you, a Duke representative may contact you within a few weeks to discuss the study in more detail and set up the two appointments to install and remove the light loggers, if you are eligible and available.

Confirm phone number for Logger contact, and enter here

_____

Thank you for taking our survey. Your response is very important to us.

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Appendix D: Non-Participant Survey Instrument

INTRODUCTION

Use four attempts at different times of the day and different days before dropping from contact list. Call times are from 1000 a.m. to 800 p.m. EPT Monday through Saturday. No calls on Sunday. (Sample size N = 80 per state)
Note Only read words in bold type. Italics are instructions.

Surveyor Name

_____

Survey ID

_____

State
( ) Kentucky
( ) Ohio
( ) North Carolina
( ) South Carolina

1. Do you recall seeing or hearing anything about Duke Energy's online Savings Store?
( ) Yes
( ) No
( ) DK/NS

2. Duke Energy has a website with an online store that offers its customers discounted pricing for specialty CFL and LED light bulbs. Were you aware of this online store's existence before now?
[Interviewer: if needed, read descriptions of the types of bulb if respondents seem unclear on anything about them]
IF NEEDED: **CFLs, also known as compact fluorescent light bulbs, are energy saving light bulbs that have a "twisty" shape like a soft-serve ice cream cone.**
IF NEEDED: **LEDs, also known as "light-emitting diodes", are a type of lighting that uses multiple tiny bulbs, or diodes, that are wired together on one lamp.**
( ) Yes
( ) No
( ) DK/NS

3. Did anyone in your household buy light bulbs from the Duke Energy Savings Store?
(Check all that apply)
( ) Yes
( ) No
( ) DK/NS

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3a. Who in your household bought light bulbs from the Duke Energy Savings Store?

_____

4. We are interested in learning what people think about the Savings Store. This includes people who did not purchase anything from the Store. Did you go online to visit the Duke Energy Savings Store?
( ) Yes (I visited the Savings Store)
( ) Somebody else in the household visited the store
( ) Nobody in this household visited the store
( ) DK/NS

5a. Were you successful in your attempt to log on to the Savings Store website?
( ) Yes
( ) No
( ) DK/NS

5b. Why were you not successful in your attempt to access the Duke Energy Savings Store?
[ ] Didn't know Duke account number
[ ] Didn't know the social security number PIN to log on
[ ] Didn't have the social security number on file with Duke in order to log on
[ ] Became confused during the log on process *5d. Explain*

_____
[ ] Technical difficulties using the website *5e. Explain*

_____
[ ] Didn't have access to the internet
[ ] Didn't know how to use a web browser
[ ] Some other reason *5f. Explain* _____
[ ] DK/NS

If Didn't know Duke account number
5c. Did you know you can use your primary phone number?
( ) Yes
( ) No
( ) DK/NS

5g. What do you think would have helped to make your attempt more successful?
Probe for details and record response

_____
_____
_____
_____

6a. How did you first learn about the Duke Energy Savings Store?
Check all that apply
[ ] Advertisement with my bill
[ ] I got a letter/brochure in the mail

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[ ] Email from Duke Energy / Duke Energy employee
[ ] Paperless billing email
[ ] Saw message while accessing my account online
[ ] Saw a message on Duke Energy's public website (not the online account system part)
[ ] From another website *ask* **6b. Which one?**

_____

[ ] TV, radio, newspaper, news reports, advertising (traditional media) *3c. Specify source*

_____

[ ] CAP agency / Low income program *ask* **6e. Which organization?**

_____

[ ] Social media *6d. Specify source* _____
[ ] From friend/family/neighbor/co-worker *(ask if through email, if so, select item below)*
[ ] Email from family/friend/neighbor/co-worker
[ ] I contacted Duke Energy for information or help
6f. Specify method of contact (phone, email, employee, etc.)

_____

[ ] Some other way, *6g. specify* _____
[ ] DK/NS

7a. The Duke Energy Savings Store is only available online. What method did you use to get to the Store?
[ ] Via a link in my online services account ("My Account" at Duke Energy site)
[ ] Via a link on the Duke Energy public website
[ ] Used a web browser favorite/bookmark
[ ] Entered URL directly into browser
[ ] Used an online link via email, social media, etc.
[ ] Other *(please specify)* 7b. _____

WEBSITE VISITATION

8. What is the total number of times you have visited the Savings Store?
( ) Record number _____
( ) DK/NS

9a. What was the main reason that you visited the store without making a purchase?
Check just one answer, THEN ask the follow up question if there is one.
( ) Just looking to see what was there (curiosity)
( ) Didn't need any energy efficient light bulbs at that time
( ) Just checking Duke's prices
( ) Making price comparisons with other retailers **9b. Which ones?**

_____

( ) The prices were not motivating enough **9c. What prices/discounts would have motivated you?** _____
( ) Could not find what I wanted/needed
( ) Store didn't offer the bulbs I wanted/needed **9d. What did you want?**

_____

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( ) Could not decide on which bulbs to buy **9e. Why not?**

_____

( ) Had questions that the website didn't answer **9f. What did you want to know?**

_____

( ) Wanted more information from somewhere besides the online store **9g. Where?**

_____

( ) Was not ready to make a purchase **9h. Why not?**

_____

( ) Wanted to see physical products instead of images online
( ) Didn't want to buy light bulbs online
( ) Didn't want to buy light bulbs via mail order
( ) Warranty questions or concerns
( ) Didn't want to buy from Duke Energy
( ) Mercury concerns
( ) Took too many clicks to make a purchase
( ) Did not have credit card information available
( ) Purchase/payment process was too difficult
( ) Could not complete the transaction due to technical issues **9i. What happened?**

_____

( ) Other reasons *Specify 9j.* _____
( ) DK/NS

10a. Were there any other reasons that you visited the store without making a purchase?
Check all answers first, THEN ask the follow up questions.
[ ] Just looking to see what was there (curiosity)
[ ] Didn't need any energy efficient light bulbs at that time
[ ] Just checking Duke's prices
[ ] Making price comparisons with other retailers **10b. Which ones?**

_____

[ ] The prices were not motivating enough **10c. What prices/discounts would have motivated you?** _____
[ ] Could not find what I wanted/needed
[ ] Store didn't offer the bulbs I wanted/needed **10d. What did you want?**

_____

[ ] Could not decide on which bulbs to buy **10e. Why not?**

_____

[ ] Had questions that the website didn't answer **10f. What did you want to know?**

_____

[ ] Wanted more information from somewhere besides the online store **10g. Where?**

_____

[ ] Was not ready to make a purchase **10h. Why not?**

_____

[ ] Wanted to see physical products instead of images online
[ ] Didn't want to buy light bulbs online
[ ] Didn't want to buy light bulbs via mail order
[ ] Warranty questions or concerns

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[ ] Didn't want to buy from Duke Energy
[ ] Mercury concerns
[ ] Took too many clicks to make a purchase
[ ] Did not have credit card information available
[ ] Purchase/payment process was too difficult
[ ] Could not complete the transaction due to technical issues **10i. What happened?**

_____

[ ] Other reasons *Specify 10j.* _____
[ ] DK/NS

WEBSITE NAVIGATION

11a. On a scale of 1-to-10, where 1 is very difficult and 10 is very easy, how easy was it to log onto the website?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
11b. How could this be improved?

_____

12a. On the same 1 to 10 scale, how easy was it to navigate around the website?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
12b. How could this be improved?

_____

13a. On the same 1 to 10 scale, how easy was it to find the items you were looking for?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) NA

If 7 or less,
13b. How could this be improved?

_____

13c. Did your ability to find the items you were looking for have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 13c,
13d. Why do you say that?

_____

14a. On a scale of 1 to 10, where 1 is not at all helpful and 10 is very helpful, how helpful were the bulb descriptions?

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( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) NA

If 7 or less,
14b. How could this be improved?

_____

15a. On the same 1 to 10 scale, how helpful were the energy savings estimates provided for each light bulb?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS ( ) NA

If 7 or less,
15b. How could this be improved?

_____

15c. Did the descriptions provided on the website have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 15c,
15d. Why do you say that?

_____

16a. Did the ENERGY savings estimates provided on the website have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 16a,
16b. Why do you say that?

_____

16c. Did the FINANCIAL savings estimates provided on the website have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 16c,
16d. Why do you say that?

_____

PRICING

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17. When you think of your most recent visit to the Store, do you recall if Duke Energy was offering a reduced price for the bulbs?
( ) Yes
( ) No
( ) DK/NS

18a. On a scale of 1-to-10, with 1 being very dissatisfied and 10 being very satisfied, please rate your satisfaction with price of light bulbs sold at the Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
18b. Why did you give that score?

_____

19a. Did the pricing of bulbs on the website have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 19a,
19b. Why do you say that?

_____

SHOPPING CART

20. Did you place any items in the shopping cart?
( ) Yes
( ) No
( ) DK/NS

21a. On a scale of 1 to 10 where 1 is not at all easy and 10 is very easy, how easy was it to use the shopping cart?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
21b. How could this be improved?

_____

22a. Did the functionality of the shopping cart have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

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If "yes" in 22a,
22b. Why do you say that?

_____

23. Did you start the checkout process?
( ) Yes
( ) No
( ) DK/NS

24a. On a scale of 1 to 10 where 1 is not at all easy and 10 is very easy, how easy was the checkout process?
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
24b. How could this be improved?

_____

25a. Did the checkout and payment elements have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 25a,
25b. Why do you say that?

_____

26. If you had decided to buy something, what method would you have used to pay for your purchases?
( ) Credit card
( ) Check or money order
( ) Would have preferred some other method *26a. specify*

_____
( ) Prefer not to answer
( ) DK/NS

27a. Did you notice the shipping methods and delivery times?
( ) Yes
( ) No
( ) DK/NS

27b. What did you notice?

_____

28a. Did the shipping methods have any influence on your decision NOT to buy bulbs from the Savings Store?

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( ) Yes
( ) No
( ) DK/NS

If "yes" in 28a,
28b. Why do you say that?

_____

29a. Did the delivery times have any influence on your decision NOT to buy bulbs from the Savings Store?
( ) Yes
( ) No
( ) DK/NS

If "yes" in 29a,
29b. Why do you say that?

_____

SATISFACTION AND IMPROVEMENTS

30a. Would you have preferred another method for buying energy efficient specialty light bulbs other than ordering them online from the Savings Store?
( ) Yes **30b. Which method?** _____
( ) No
( ) DK/NS

31a. On a 1-to-10 scale with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Duke Energy Savings Store.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,
31b. How could this be improved?

_____

Ask 31c for Ohio customers ONLY
31c. If you were rating your overall satisfaction with the Savings Store, would you say you were Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?
( ) Very Satisfied
( ) Somewhat Satisfied
( ) Neither Satisfied nor Dissatisfied
( ) Somewhat Dissatisfied
( ) Very Dissatisfied
( ) Refused
( ) DK/NS

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Ask 31d for Ohio customers ONLY (ask ALL Ohio customers to explain ratings)
31d. Why do you give it that rating?

_____

32a. What do you like most about the Duke Energy Savings Store?

_____
_____
_____
_____

32b. What do you like least about the Duke Energy Savings Store?

_____
_____
_____
_____

33. Are there any other bulbs or energy efficiency items you'd like to be able to order at the Savings Store?

_____
_____
_____
_____

34. Are there any additional features you would like to see on the Savings Store website?

_____
_____
_____
_____

35. How else might the Savings Store be improved?

_____
_____
_____
_____

CUSTOMERS WHO DID NOT VISIT THE SAVINGS STORE

N1a. How did you first learn about or hear about Duke Energy's Savings Store?
(Check all that apply)
[ ] Saw message while accessing My Account online
[ ] Saw a message on Duke Energy's public website (not the online account system part)
[ ] From another website **N1b. Which one?**

_____
[ ] I got a letter/brochure in the mail
[ ] Advertisement with my bill
[ ] Email from Duke Energy / Duke Energy employee

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[ ] Paperless billing email
[ ] TV, radio, newspaper, news reports, advertising (traditional media) *N1c. Specify source*

_____

[ ] Social media *N1d. Specify source*

_____

[ ] From friend/family/neighbor/co-worker (ask if through email, if so, select item below)
[ ] Email from family/friend/neighbor/co-worker
[ ] I contacted Duke Energy for information or help *N1e. Specify method of contact (phone, email, employee, etc.)* _____
[ ] Some other way *(specify) N1f.* _____
[ ] DK/NS

N2a. What was the main reason that you decided not to visit the Duke Energy Savings Store?
Check just one answer, THEN ask the follow up question if there is one.
( ) Tried but could not log in
( ) I was too busy at the time
( ) Didn't need any energy efficient light bulbs at that time
( ) Not interested in purchasing energy efficient light bulbs at all
( ) The prices shown on the promotional materials were not motivating enough **N2b. What prices/discounts would have motivated you?**

_____

( ) Didn't think the Store would have what I need **N2c. Why not?**

_____

( ) Didn't want to shop online
( ) Didn't want to buy light bulbs via mail order
( ) Didn't want to buy anything from Duke Energy
( ) Didn't have a credit card
( ) Didn't have access to the internet
( ) Didn't know how to use a web browser
( ) Wanted more information **N2d. What did you want to know?**

_____

( ) Mercury or disposal concerns
( ) Resent the My Account Online System pop-up as an ad or intrusion
( ) Other *N2e. Record details* _____
( ) DK/NS

N3a. Were there any other reasons that you decided not to visit the Duke Energy Savings Store?
Check all answers first, THEN ask the follow up questions
[ ] No other reasons
[ ] Tried but could not log in
[ ] I was too busy at the time
[ ] Didn't need any energy efficient light bulbs at that time
[ ] Not interested in purchasing energy efficient light bulbs at all

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[ ] The prices were not motivating enough **N3b. What prices/discounts would have motivated you?** _____
[ ] Didn't think the Store would have what I need **N3c. Why not?**

_____
[ ] Didn't want to shop online
[ ] Didn't want to buy light bulbs via mail order
[ ] Didn't want to buy anything from Duke Energy
[ ] Didn't have a credit card
[ ] Didn't have access to the internet
[ ] Didn't know how to use a web browser
[ ] Wanted more information **N3d. What did you want to know?**

_____
[ ] Mercury or disposal concerns
[ ] Resent the OLS pop-up as an ad or intrusion
[ ] Other *N3e. Record details* _____
[ ] DK/NS

N4. We are interested in learning what we might do in order to encourage people like you to visit the Duke Energy online Savings Store. Are there things that could be better explained to encourage you to visit the store and make a purchase?

_____
_____
_____
_____

N5. Are there items that Duke Energy could offer that would make more people such as yourself want to visit the Savings Store and make a purchase?

_____
_____
_____
_____

N6. Are there prices or discounts that the Savings Store could offer that would make more people such as yourself want to visit the Store and make a purchase?

_____
_____
_____
_____

N7. Is there anything else that you think could be done to get more people such as yourself to buy light bulbs from the Savings Store?

_____
_____
_____
_____

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N8a. As a result of what you know about the Duke Energy Savings Store, would you say your attitude toward Duke Energy is more positive, more negative, or about the same?
(If more positive/negative, ask if "much more" positive/negative' or "somewhat more" positive/negative.)
( ) Much more positive
( ) Somewhat more positive
( ) About the same
( ) Somewhat more negative
( ) Much more negative
( ) DK/NS

If "more positive" or "more negative" in N8a, then ask N8b
N8b. Why do you say that?

_____
_____
_____
_____

MORE SATISFACTION AND IMPROVEMENTS

36a. Have you told anyone about the Duke Energy Savings Store?
( ) Yes
( ) No
( ) DK/NS

36b. Who did you tell?
Friends **How many?** _____
Family **How many?** _____
Co-workers **How many?** _____
Neighbors **How many?** _____
Other **How many?** _____

36c. How did you tell them?
(check all that apply)
[ ] Word of mouth
[ ] Email
[ ] Facebook
[ ] Twitter
[ ] Web site forum
[ ] Other _____

37a. On a 1-to-10 scale with 1 being very dissatisfied and 10 being very satisfied, please rate your overall satisfaction with Duke Energy.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

If 7 or less,

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37b. How could this be improved?

_____

38. Why do you think that Duke Energy is providing discounted specialty bulbs to their customers

Do not read response options, check all that apply.

[ ] Duke Energy wants to save their customers money
[ ] Duke Energy wants to save energy for environmental reasons
[ ] Duke Energy wants to save energy for economic reasons
[ ] Duke Energy wants to look good (PR)
[ ] The government is forcing Duke Energy to do it
[ ] Other *(specify)* _____
[ ] None of the above
[ ] DK/NS

PREVIOUS EXPERIENCE WITH CFLs AND LEDs

39a. Did you have any CFLs installed in your home before you learned about the Savings Store?

IF NEEDED: **CFLs, also known as compact fluorescent light bulbs, are energy saving light bulbs that have a "twisty" shape like a soft-serve ice cream cone.**

( ) Yes **39b. How many?** _____
( ) No
( ) DK/NS

40. How many years have you been using CFLs?

( ) Never used until recently (first time user)
( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other *(specify)* _____
( ) DK/NS

41a. Did you have any LEDs installed in your home before you learned about the Savings Store?

IF NEEDED: **LEDs, also known as "light-emitting diodes", are a type of lighting that uses multiple tiny bulbs, or diodes, that are wired together on one lamp.**

( ) Yes **41b. How many?** _____
( ) No
( ) DK/NS

42. How many years have you been using LEDs?

( ) Have never used LED light bulbs at all
( ) Never used until recently (first time user)

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( ) 1 year or less (but not first time)
( ) 1 to 2 years
( ) 2 to 3 years
( ) 3 to 4 years
( ) 4 or more years
( ) Other *specify* _____
( ) DK/NS

Regarding Specialty Bulbs installed in the home

Ask q43 for all bulb types.
Then ask q44 and q45 only for installed bulbs from q43

43. Please list the number of bulbs currently installed in your home that are specialty bulbs such as...
44. For each of these specialty bulbs installed, how many are CFLs?
45. For each of these specialty bulbs installed, how many are LEDs?

Dimmable bulbs _____

Three-way bulbs _____

Indoor reflector bulbs _____

Outdoor reflector (flood) bulbs

Globe (vanity) bulbs *(round)* _____

Candelabra bulbs _____

Capsule bulbs *(encapsulated CFLs that look like standard light bulbs instead of spirals) (are pear-shaped)* _____

Other *(specify type and number)*

46. Next, for each of these types of specialty bulbs, how many incandescent or halogen bulbs do you currently have in storage to replace bulbs that burn out?

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IF NEEDED: **Incandescent bulbs are the most common type of light bulb. It features a screw-base and is known for providing bright, warm light instantly**
F NEEDED: **Halogen light bulbs are similar to incandescent bulbs, but are known to be more energy efficient than standard incandescent bulbs and tend to be used in indoor and outdoor flood lighting, indoor recessed or tracked lighting, and in floor and desk lamps.**
Dimmable bulbs _____
Three-way bulbs _____
Indoor reflector bulbs _____
Outdoor reflector (flood) bulbs _____
Globe (vanity) bulbs _____
Candelabra bulbs _____
Capsule bulbs *(encapsulated CFLs that look like standard light bulbs instead of spirals)*
_____
Other (specify) _____

CFL and LED PURCHASES

47a. Did your experience visiting the Savings Store make it more or less likely that you would purchase and install CFLs in the future?
( ) More likely
( ) Less likely
( ) Neither more or less likely

if "More likely", ask
47b. Why are you more likely to use CFLs in the future?
_____

if "Less likely", ask
47c. Why are you less likely to use CFLs in the future?
_____

48a. Did your experience visiting the Savings Store make it more or less likely that you would purchase and install LEDs in the future?
( ) More likely
( ) Less likely
( ) Neither more or less likely

if "More likely", ask
48b. Why are you more likely to use LEDs in the future?
_____

if "Less likely", ask
48c. Why are you less likely to use LEDs in the future?
_____

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49a. Next I am going to read you a series of statements. Please tell me which statement best describes your future intentions for shopping for light bulbs at the Duke Energy Savings Store.
Read all in Bold
( ) I will never shop at the Savings Store for light bulbs,
( ) I will probably not shop at the Savings Store,
( ) I may or may not shop at the Savings Store,
( ) I will probably shop at the Savings Store,
( ) I will definitely shop at the Savings Store, or
( ) The Savings Store will be one of the first places I go the next time I need to shop for light bulbs
( ) DK/NS

For any response to 49a other than "DK/NS", ask
49b. Why do you say that?

_____

50. What do you think could be done to get more people such as yourself to buy light bulbs from the Savings Store?

_____
_____
_____
_____

51. Currently, there are a number of types of light bulbs available for purchase in the market, like CFL bulbs, Halogen bulbs, standard incandescent bulbs, and LED bulbs, among others. Thinking about the next ten light bulbs you will purchase at the Duke Energy Savings Store or anywhere else…
Interviewer: read descriptions of the types of bulb if respondents seem unclear on anything about them.
Total for all 51 should equal, and cannot exceed, 10
Approximately how many will be any type of standard incandescent light bulbs? _____
Approximately how many will be any type of Halogen light bulbs? _____
Approximately how many will be any type of CFL light bulbs? _____
Approximately how many will be any type of LED light bulbs? _____
Approximately how many will be "other" bulb types? _____
Don't know/Refused) _____

52a. Since learning about the Duke Energy Savings Store have you bought any CFLs or LEDs from a local retailer, an online merchant, or from anyplace other than the Savings Store?
( ) Yes **52b. Where?** _____
( ) No
( ) DK/NS

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Please tell me what types of CFL and LED bulbs you purchased, and how many of each type.
Record responses for 53 in the table below for each bulb types purchased (leave row blank if a type was not purchased).
RECORD NUMBER OF BULBS FOR 53 FIRST, THEN ASK 54 when number purchased is greater than zero

If respondent says "CFL" or "LED", probe for details to get the specific type of bulb (read responses from table if necessary).
Note that a "regular" LED bulb is a Capsule, and a "regular" CFL is a Standard Spiral.

53. How many bulbs did you purchase?
54. How many of these bulbs are currently installed?

Standard spiral CFLs _____

Capsule CFLs _____

Indoor Reflector CFLs _____

Outdoor Reflector CFLs _____

Globe CFLs _____

Candelabra CFLs _____

Dimmable CFLs _____

Three-way CFLs _____

Standard or capsule LED _____

Indoor reflector LED _____

Outdoor reflector LED _____

Globe LED _____

Candelabra LED _____

Three-way LED _____

Other type of CFL bulb *specify type and number*

_____

_____

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Other type of LED bulb *specify type and number*

_____
_____

55. Why didn't you purchase these bulbs from the Duke Energy Savings Store?

_____

56a. Using a 1 to 10 scale, with 1 meaning that the Savings Store had no influence, and 10 meaning that the Store was very influential, please rate the influence of the Savings Store on your decision to purchase additional CFLs or LEDs elsewhere.
( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10 ( ) DK/NS

For any score, ask
56b. Why did you give that score?

_____

57. Have you taken any additional steps to save energy in your home since visiting the Duke Energy Savings Store?
( ) Yes
( ) No
( ) DK/NS

58a-d. What actions have you taken to save energy?
After each response, ask
Anything else?
If no, SKIP TO DEMOGRAPHICS.
Response a _____
Response b _____
Response c _____
Response d _____

DEMOGRAPHICS

d1. In what type of building do you live?
( ) Single-family home, detached construction
( ) Single family home, factory manufactured/modular
( ) Single family, mobile home
( ) Row House
( ) Two or Three family attached residence-traditional structure
( ) Apartment (4 + families)---traditional structure
( ) Condominium---traditional structure
( ) Other _____
( ) Refused
( ) DK/NS

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d2b. How long have you lived in your current home?
( ) *Record Years and Months* _____
( ) DK/NS

d2. What year was your residence built?
( ) 1959 and before
( ) 1960-1979
( ) 1980-1989
( ) 1990-1997
( ) 1998-2000
( ) 2001-2007
( ) 2008-present
( ) DK/NS

d3. How many rooms are in your home (excluding bathrooms, but including finished basements)?
( ) 1-3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10 or more
( ) DK/NS

d4. Which of the following best describes your home's heating system?
(Mark all that apply)
[ ] None
[ ] Central forced air furnace
[ ] Electric Baseboard
[ ] Heat Pump
[ ] Geothermal Heat Pump
[ ] Other _____

d5. How old is your heating system?
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have
( ) Other _____

d6. What is the primary fuel used in your heating system?

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( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other _____
( ) DK/NS

d7. What is the secondary fuel used in your primary heating system, if any?
( ) Electricity
( ) Natural Gas
( ) Oil
( ) Propane
( ) Other _____
( ) None
( ) DK/NS

d8. Do you use one or more of the following to cool your home?
(Mark all that apply)
[ ] None, do not cool the home
[ ] Heat pump for cooling
[ ] Central air conditioning
[ ] Through the wall or window air conditioning unit
[ ] Geothermal Heat pump
[ ] Other _____
[ ] DK/NS

d9. How many window-unit or "through the wall" air conditioner(s) do you use?
( ) None
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) DK/NS

d10. What is the fuel used in your cooling system?
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] None

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[ ] DK/NS

d11. How old is your cooling system?
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d12. What is the fuel used by your water heater?
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No water heater
[ ] DK/NS

d13. How old is your water heater?
( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) More than 19 years
( ) DK/NS

d14. What type of fuel do you use for indoor cooking on the stovetop or range?
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No stovetop or range
[ ] DK/NS

d15. What type of fuel do you use for indoor cooking in the oven?
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____

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[ ] No oven
[ ] DK/NS

d16. What type of fuel do you use for clothes drying?
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other _____
[ ] No clothes dryer
[ ] DK/NS

d17. About how many square feet of living space are in your home?
(Do not include garages or other unheated areas)
Note: A 10-foot by 12 foot room is 120 square feet
( ) Less than 500
( ) 500 to 999
( ) 1000 to 1499
( ) 1500 to 1999
( ) 2000 to 2499
( ) 2500 to 2999
( ) 3000 to 3499
( ) 3500 to 3999
( ) 4000 or more
( ) DK/NS

d18. Do you own or rent your home?
( ) Own
( ) Rent

d19. How many levels are in your home (not including your basement)?
( ) One
( ) Two
( ) Three

d20. Does your home have a heated or unheated basement?
( ) Heated
( ) Unheated
( ) No basement

d21. Does your home have an attic?
( ) Yes
( ) No

d22. Are your central air/heat ducts located in the attic?

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( ) Yes
( ) No
( ) N/A

d23. Does your house have cold drafts in the winter?
( ) Yes
( ) No
( ) DK/NS

d24. Does your house have sweaty windows in the winter?
( ) Yes
( ) No
( ) DK/NS

d25. Do you notice uneven temperatures between the rooms in your home?
( ) Yes
( ) No
( ) DK/NS

d26. Does your heating system keep your home comfortable in winter?
( ) Yes
( ) No
( ) DK/NS

d27. Does your cooling system keep your home comfortable in summer?
( ) Yes
( ) No
( ) DK/NS

d28. Do you have a programmable thermostat?
( ) Yes
( ) No
( ) DK/NS

d28b. How many thermostats are there in your home?
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4 or more
( ) DK/NS

d29. What temperature is your thermostat set to on a typical summer weekday afternoon?
( ) Less than 69 degrees
( ) 69-72 degrees
( ) 73-78 degrees

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( ) Higher than 78 degrees
( ) Off
( ) DK/NS

d30. What temperature is your thermostat set to on a typical winter weekday afternoon?
( ) Less than 67 degrees
( ) 67-70 degrees
( ) 71-73 degrees
( ) 74-77 degrees
( ) 78 degrees or higher
( ) Off
( ) DK/NS

d31. Do you have a swimming pool, hot-tub or spa?
( ) Yes
( ) No

d32. Would a two-degree increase in the summer afternoon temperature in your home affect your comfort.
Read all answers until they reply
( ) **Not at all**
( ) **Slightly**
( ) **Moderately, or**
( ) **Greatly**
( ) DK/NS

d33. How many people live in this home?
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d34. How many of them are teenagers?
(age 13-19)
If they ask why: Explain that teenagers are generally associated with higher energy use.
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5

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( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d35. How many persons are usually home on a weekday afternoon?
( ) 0
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) Prefer not to answer

d36. Are you planning on making any large purchases to improve energy efficiency in the next 3 years?
( ) Yes
( ) No
( ) DK/NS

d37. What is your age group?
Read all in Bold.
( ) **18-34**
( ) **35-49**
( ) **50-59**
( ) **60-64**
( ) **65-74**
( ) **Over 74**
( ) Prefer not to answer

d38. Please indicate your annual household income.
Read all in Bold.
( ) **Under $15,000**
( ) **$15,000-$29,999**
( ) **$30,000-$49,999**
( ) **$50,000-$74,999**
( ) **$75,000-$100,000**
( ) **Over $100,000**
( ) Prefer Not to Answer
( ) DK/NS

Thank You!

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Appendix E: Marketing Examples

DUKE ENERGY®

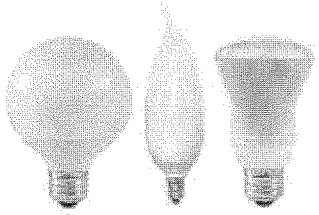
400 S. Tryon St.
ST2483-17 | Charlotte, NC 28202

<first name> <last name>
< Customer Address >
<Customer City State Zip >

Dear <first name> <last name>,

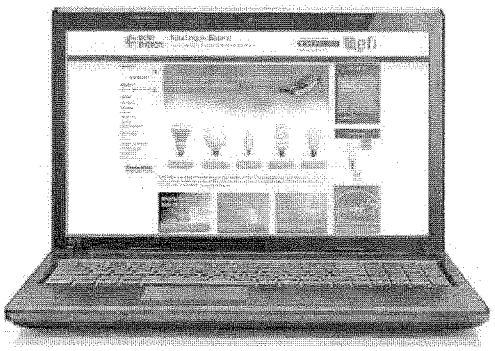
Time. Money. Energy. Who wants to waste things like that? Now Duke Energy offers a way to help you save all three!

Bright ideas to save energy and money: You already know that Compact Fluorescent Light (CFL) bulbs can last up to 10 times longer than "old school" incandescent bulbs ... and consume less than one quarter of the electricity. But did you know that Duke Energy offers more than 15 varieties of CFL and Light Emitting Diode (LED) bulbs at discounts of up to 92% off?



Save time: Oh, forget about driving to a store and waiting in line to pay. Shopping online from a trusted source, with home delivery, is quick and convenient.

Just visit www.Duke-Energy.com/GreatDeals, log-in to visit the store, get some application advice using the "shopping assistant", then make your selection and check out. Your bulbs will be delivered to *your door.* We call this the **Duke Energy Savings Store** – you'll call it a *good use of your time, money and energy.*



Don't make us ask what you're waiting for – see what's waiting for you! For easy online access, *here is your account number:*

<Account number >

...or use your home phone number to log-on.

Check out the enclosed flyer and the online store for yourself.

Lari Granger
Product Manager

Figure 44. Direct Mail Letter Example

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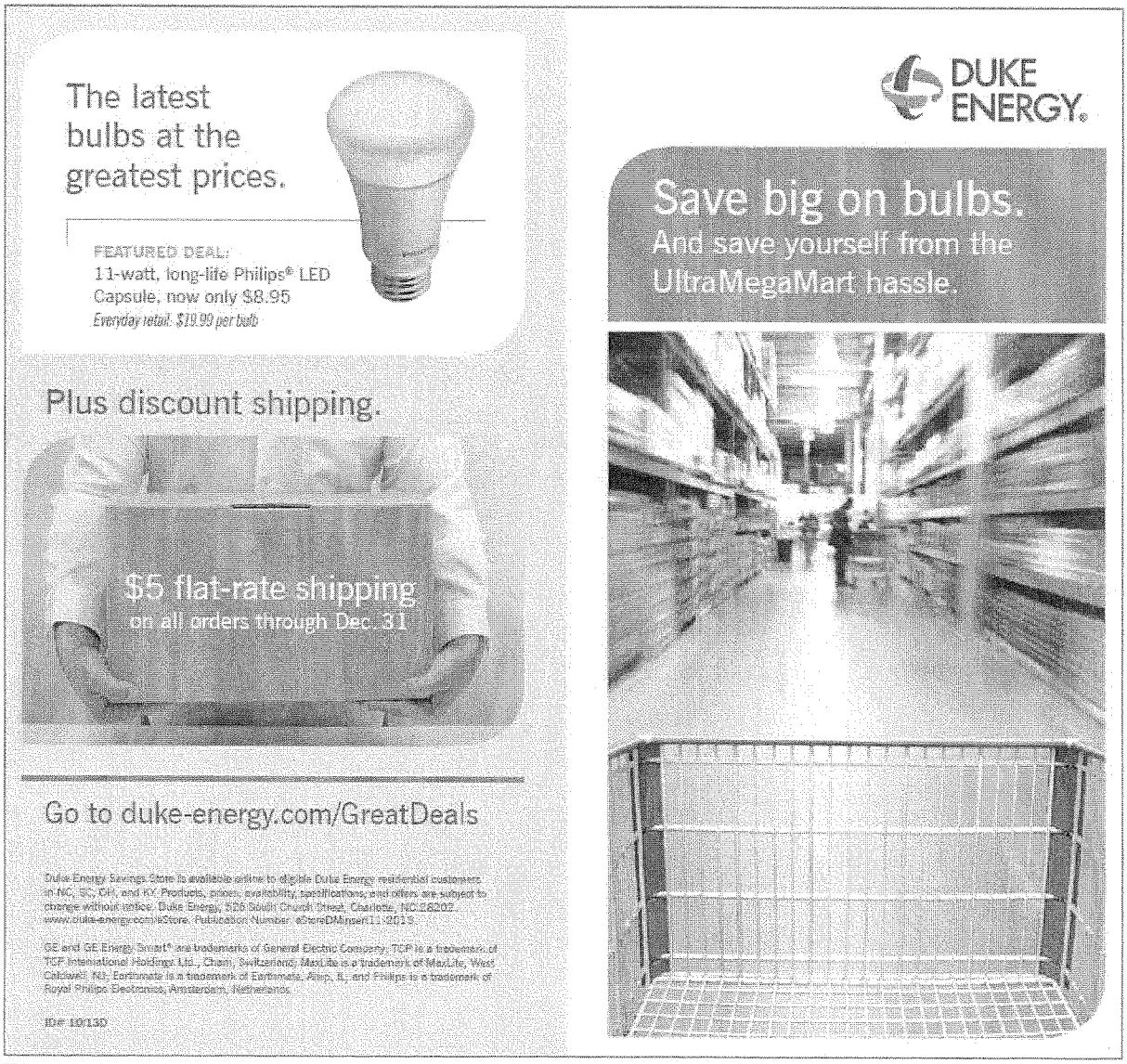

Figure 45. Insert Example (Front)

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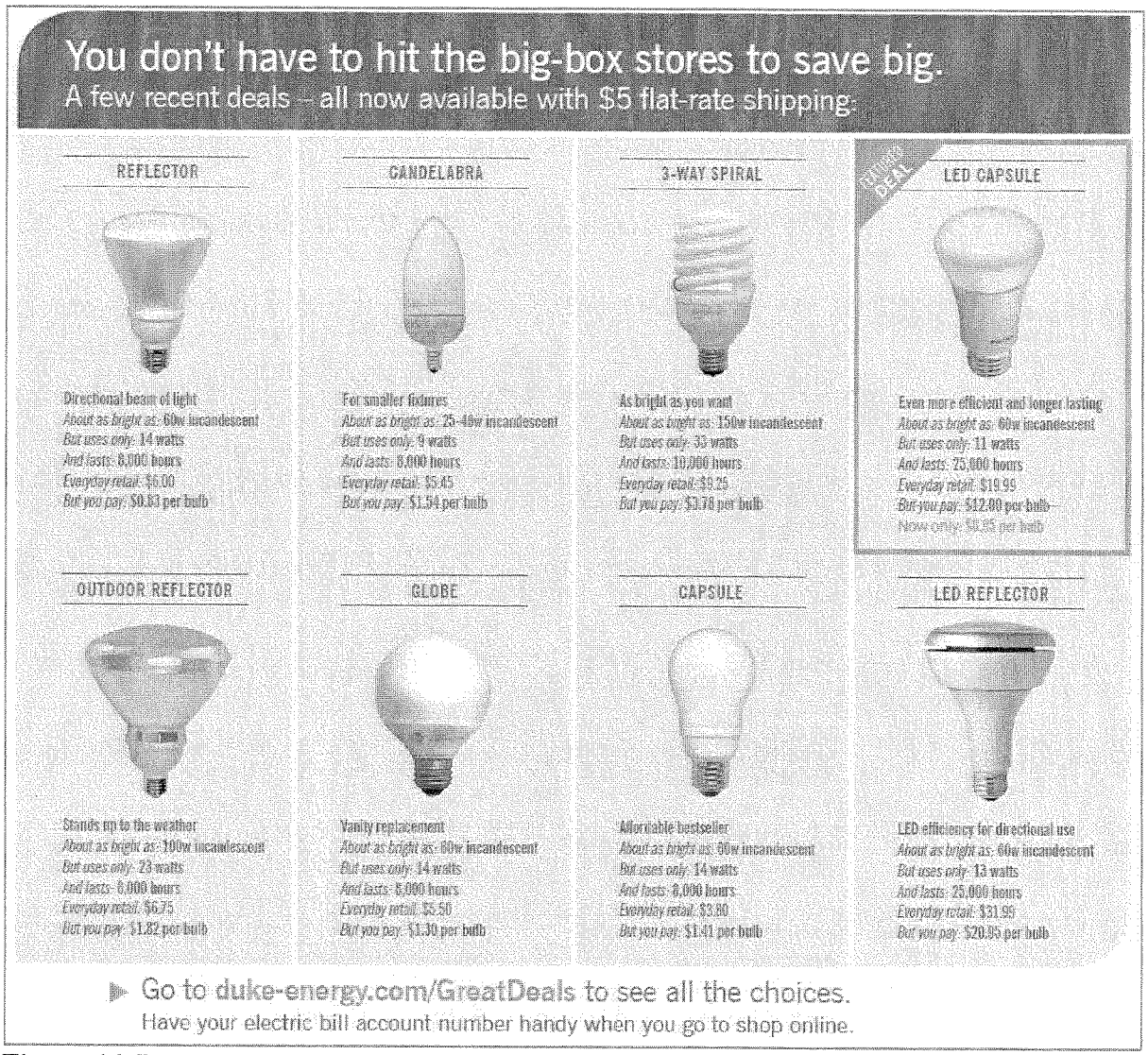

Figure 46. Insert Example (Back)

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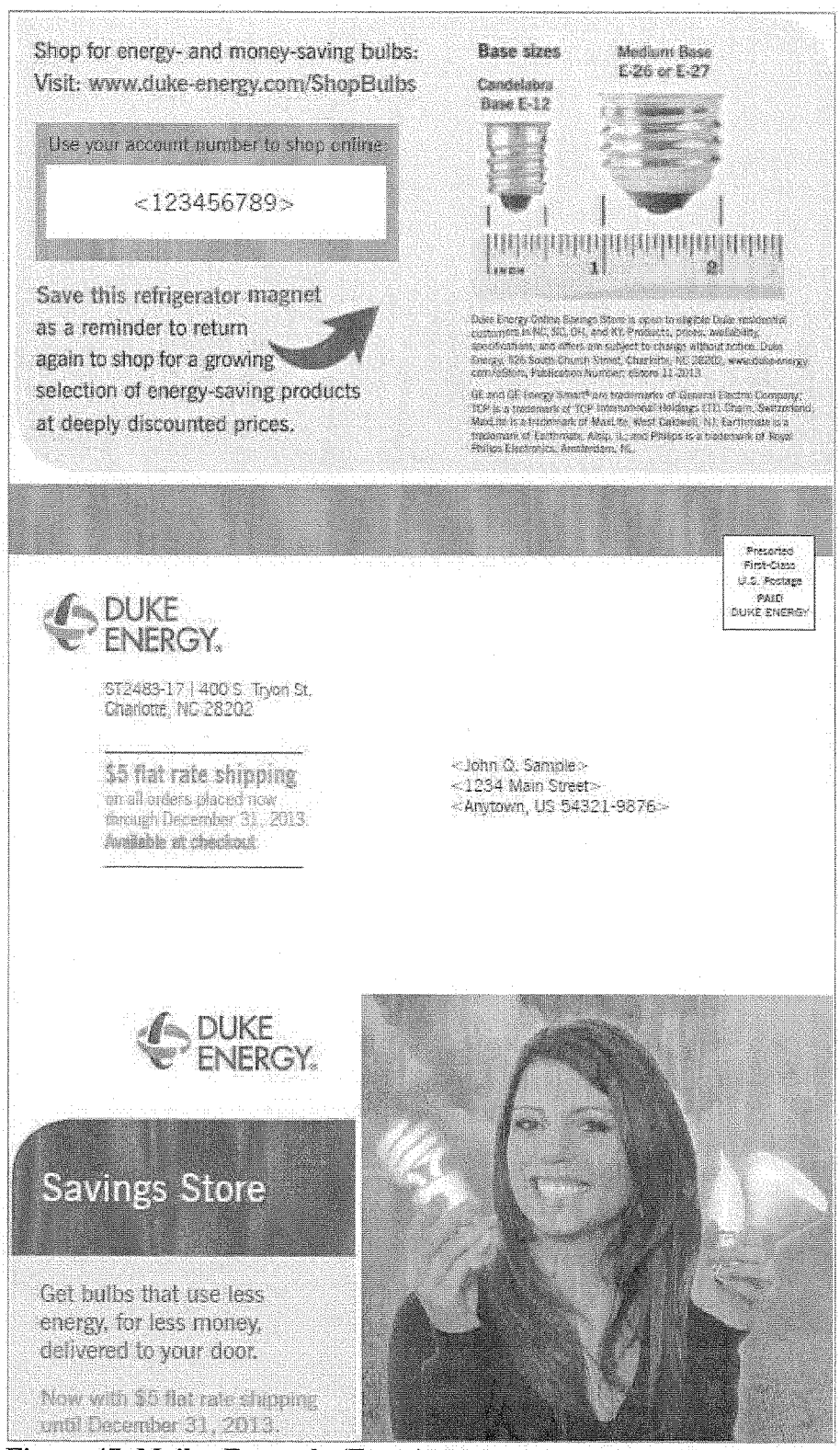

Figure 47. Mailer Example (Front)

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Figure 48. Mailer Example (Back)

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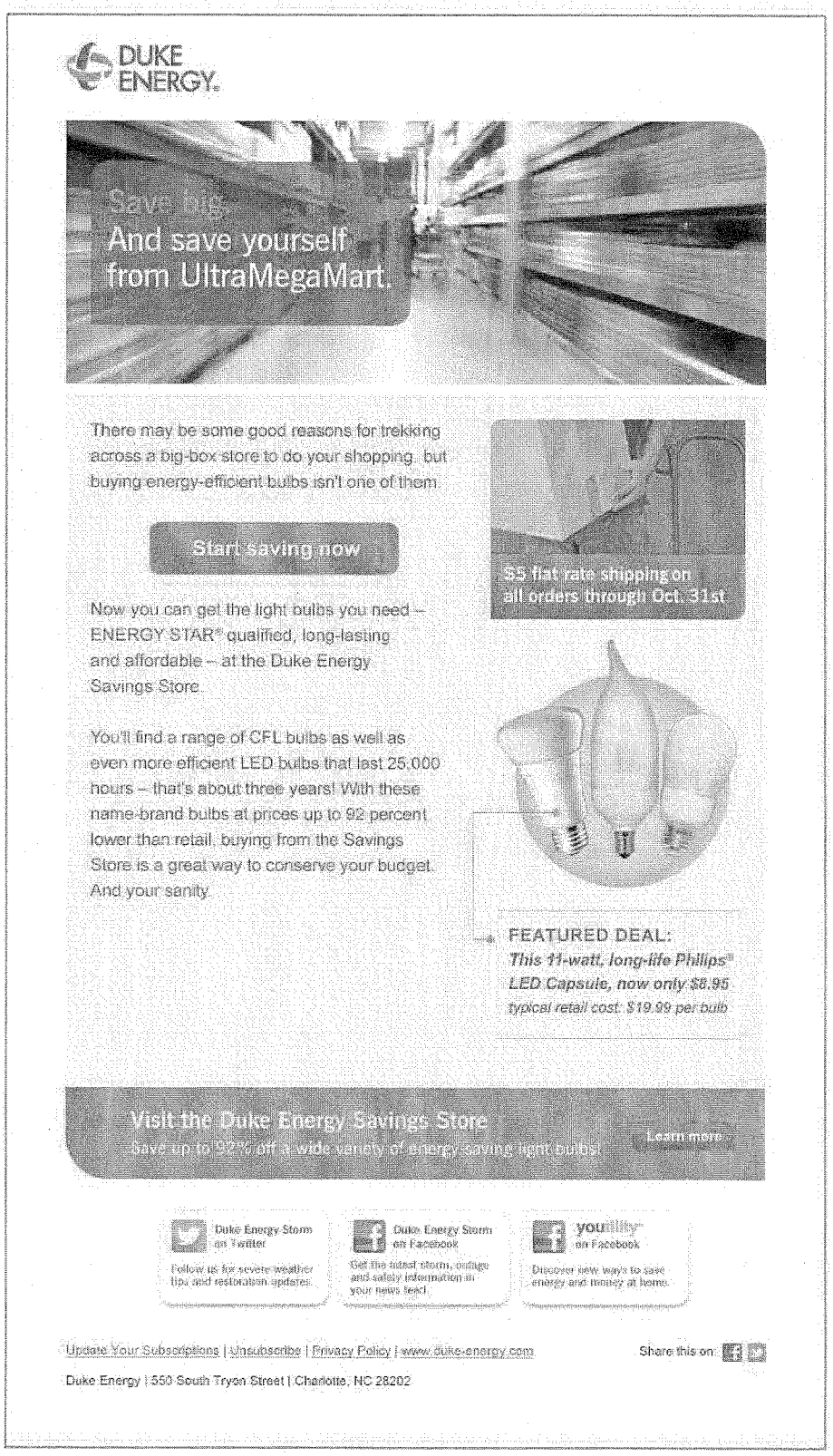

Figure 49. HTML Email Example

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Appendix F: Website Screen Images

Because the Duke Energy Savings Store is only accessible to verified Duke Energy customers the following images are shown to provide a sampling of some of the website's features. Additional images are shown throughout the *Duke Energy Savings Store Website* portion of the Management Interviews section of this evaluation.

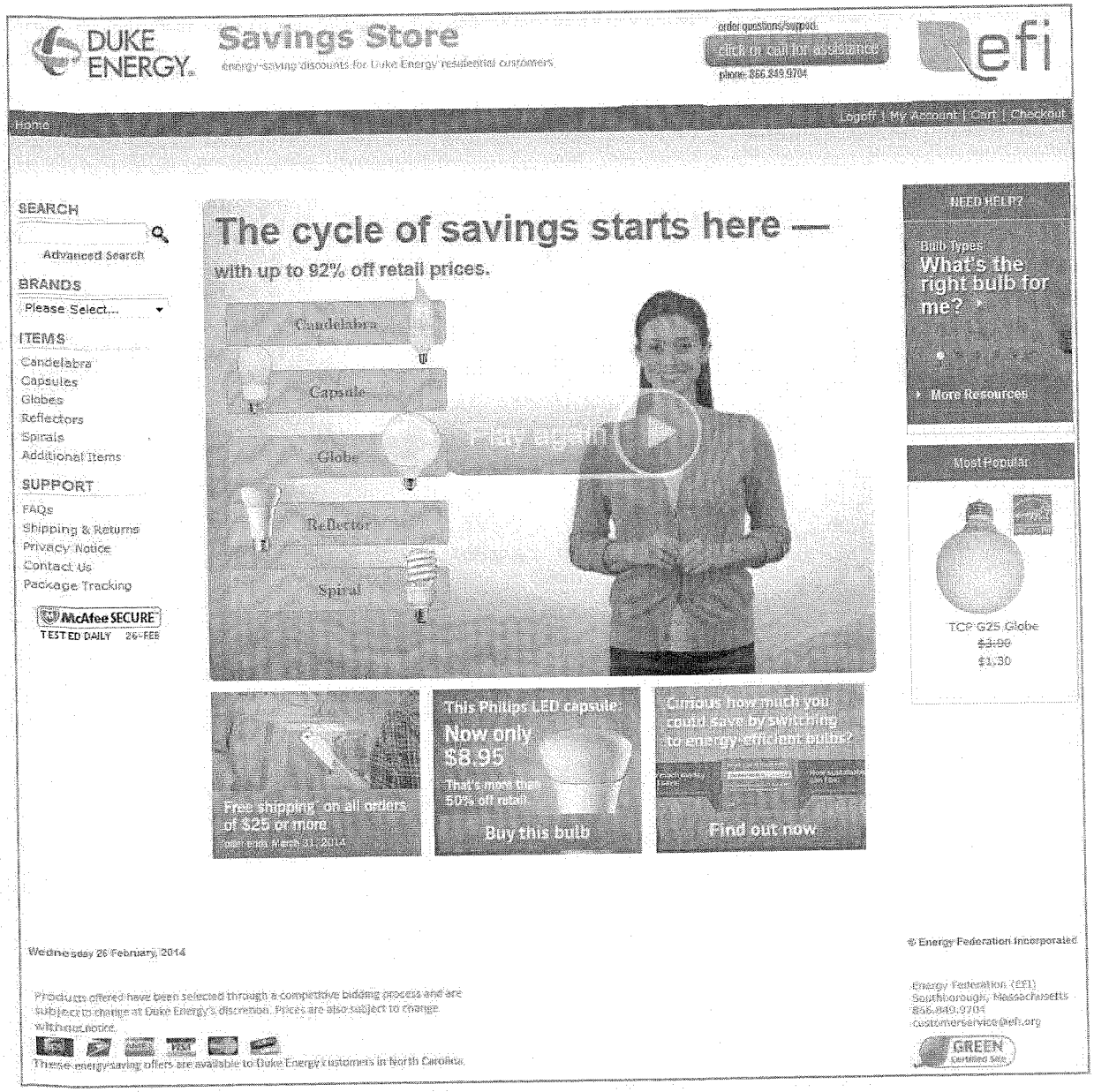

Figure 50. Savings Store Home Page

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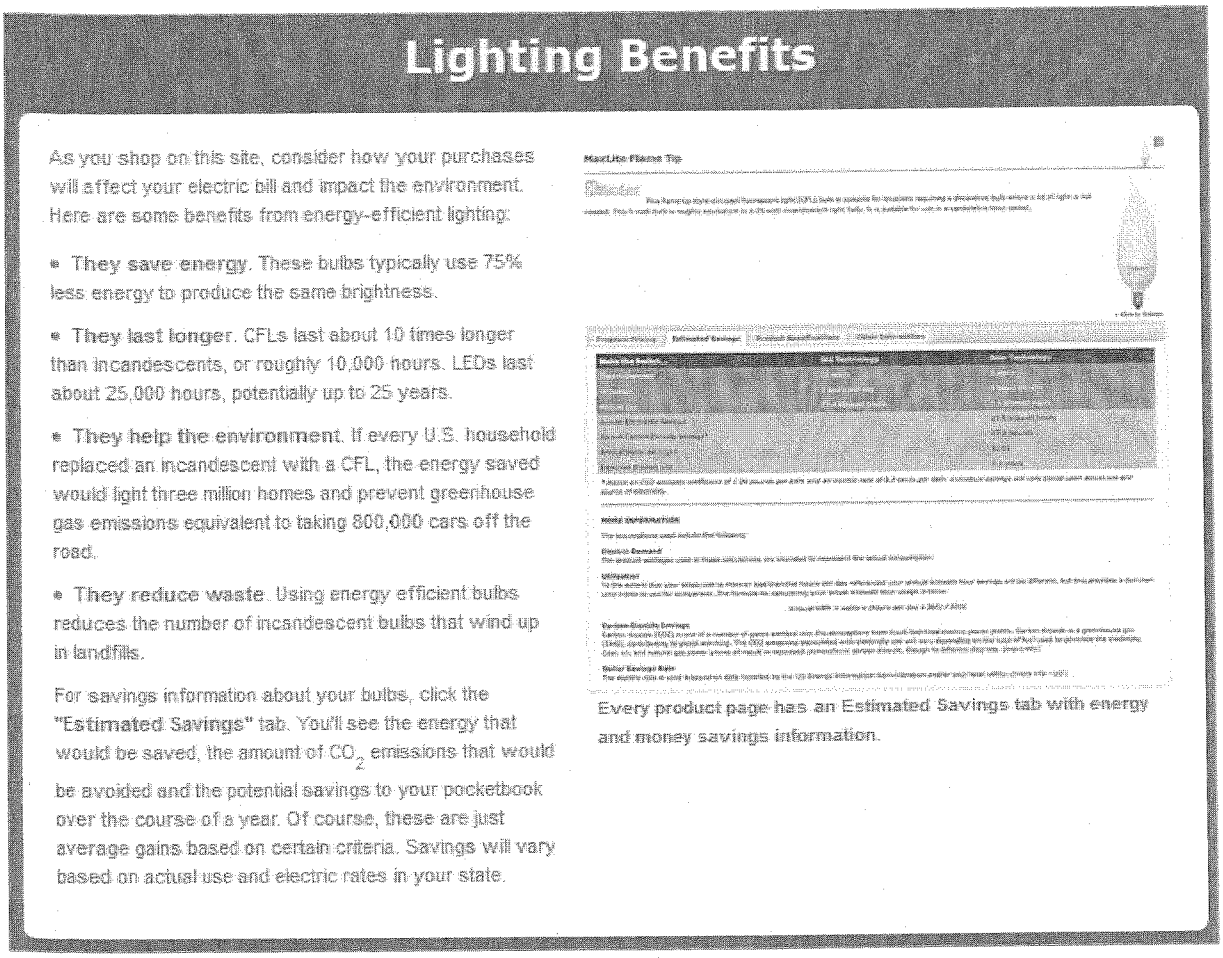

Figure 51. Lighting Benefits Explanation

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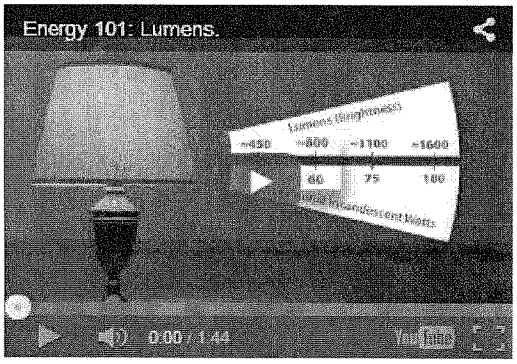
About Brightness

When switching to energy-efficient bulbs, you should know the difference between watts and lumens, which measure two completely different things. Lumens are a unit of brightness. The more the lumens, the brighter the light. Consumers have typically referred to watts to gauge brightness, but watts actually measure the energy used. The chart below shows the wattage of commonly used Incandescent bulbs and the equivalent wattage generated by energy-efficient CFLs and LEDs, which use 75 percent less energy.
Video source: U.S. Department of Energy



Incandescent Bulb (Watts)	Brightness (Lumens)	ENERGY STAR® (Watts)
25	250	4 to 9
40	450	9 to 13
60	800	13 to 15
75	1,100	18 to 25
100	1,600	23 to 30
125	2,000	22 to 40
150	2,600	40 to 45

Figure 52. Brightness Explanation

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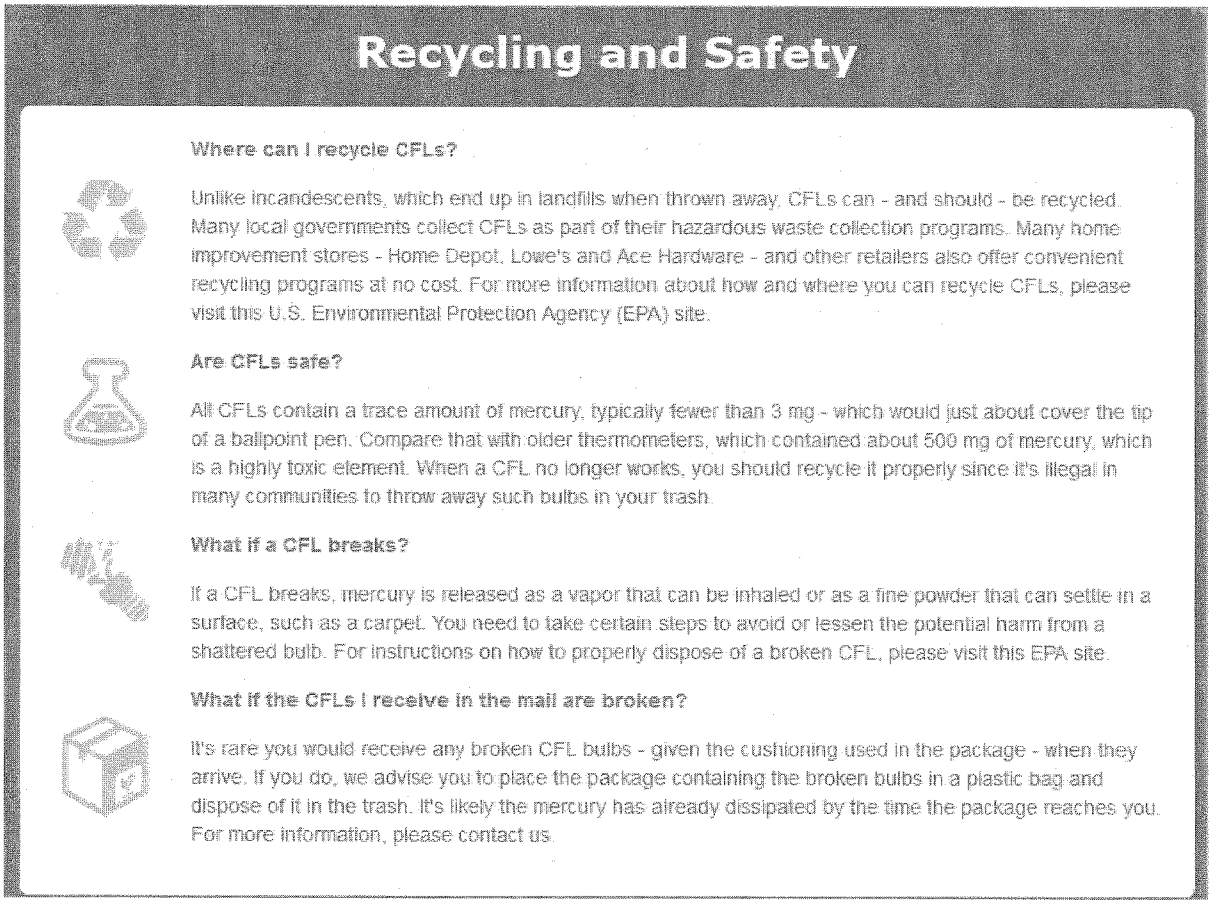

Figure 53. Recycling and Safety Explanation

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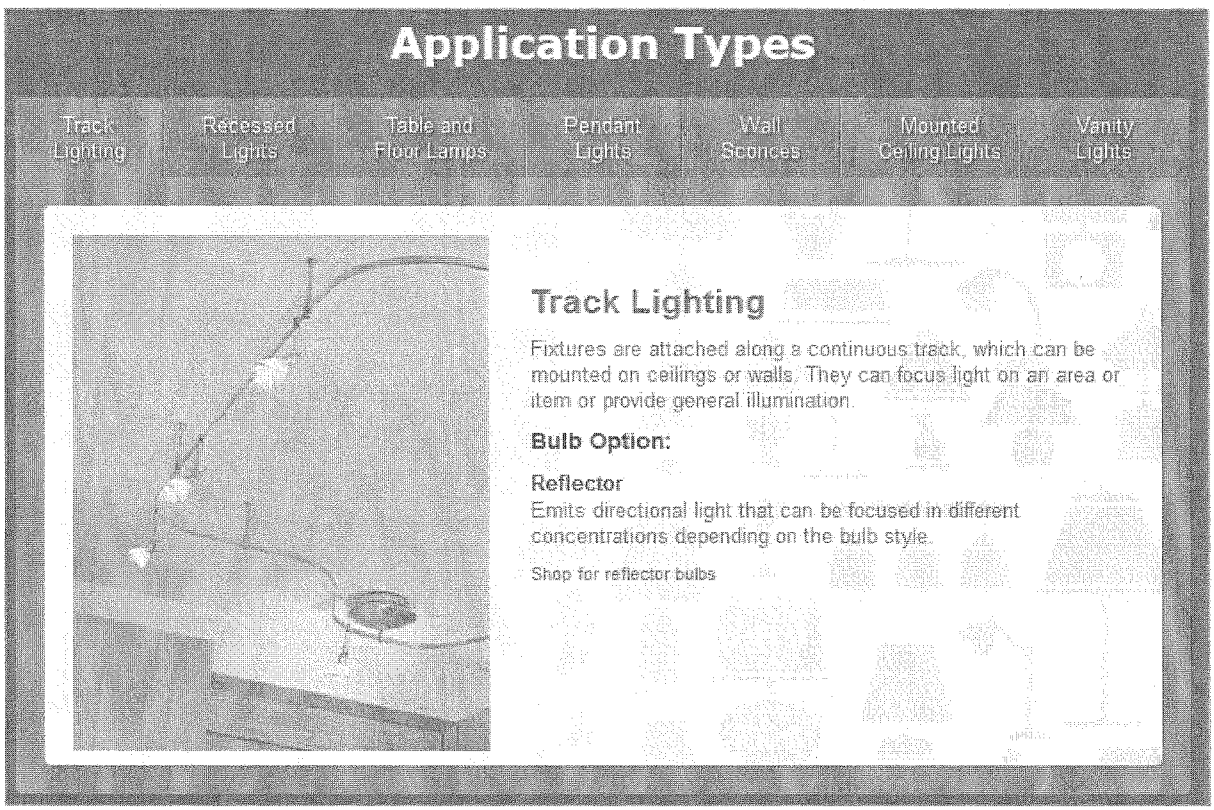

Figure 54. Application Types Explanation

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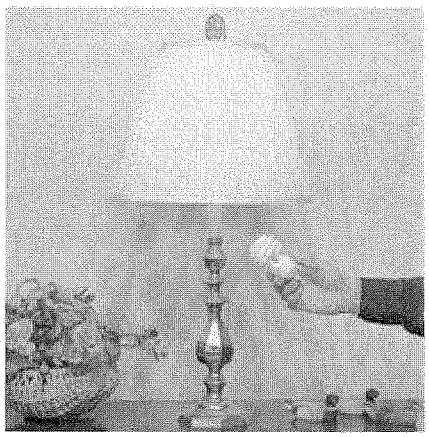
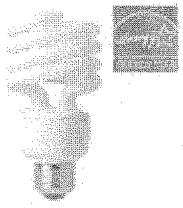
Dimmable Spirals



Dimmable compact fluorescents tend to dim well with mechanical slide and rotary controls, but less so with electronic dimming controls, programmable controls, and remote controls. These special bulbs should not be screwed into "hot" sockets; so be sure to turn off power to the socket before installation of the bulb. Finally, dimmable fluorescents will generally not light when the dimming control is at less than full power. Turn the control to full power, turn on the switch, and then dim the fluorescent to the desired level.

Purchase Limit for this Category: 6 incented CFL dimmable spirals.



TCP Dimmable SpringLamp

Watts: 23
Lumens: 1,500
Life: 12,000 hours

PRICE BREAKDOWN
Retail: $8.30
Savings Store: $6.75
Duke Incentive: $4.40
You Pay: $2.35

~~$6.75~~
$2.35

Figure 55. Bulb Category Description Page

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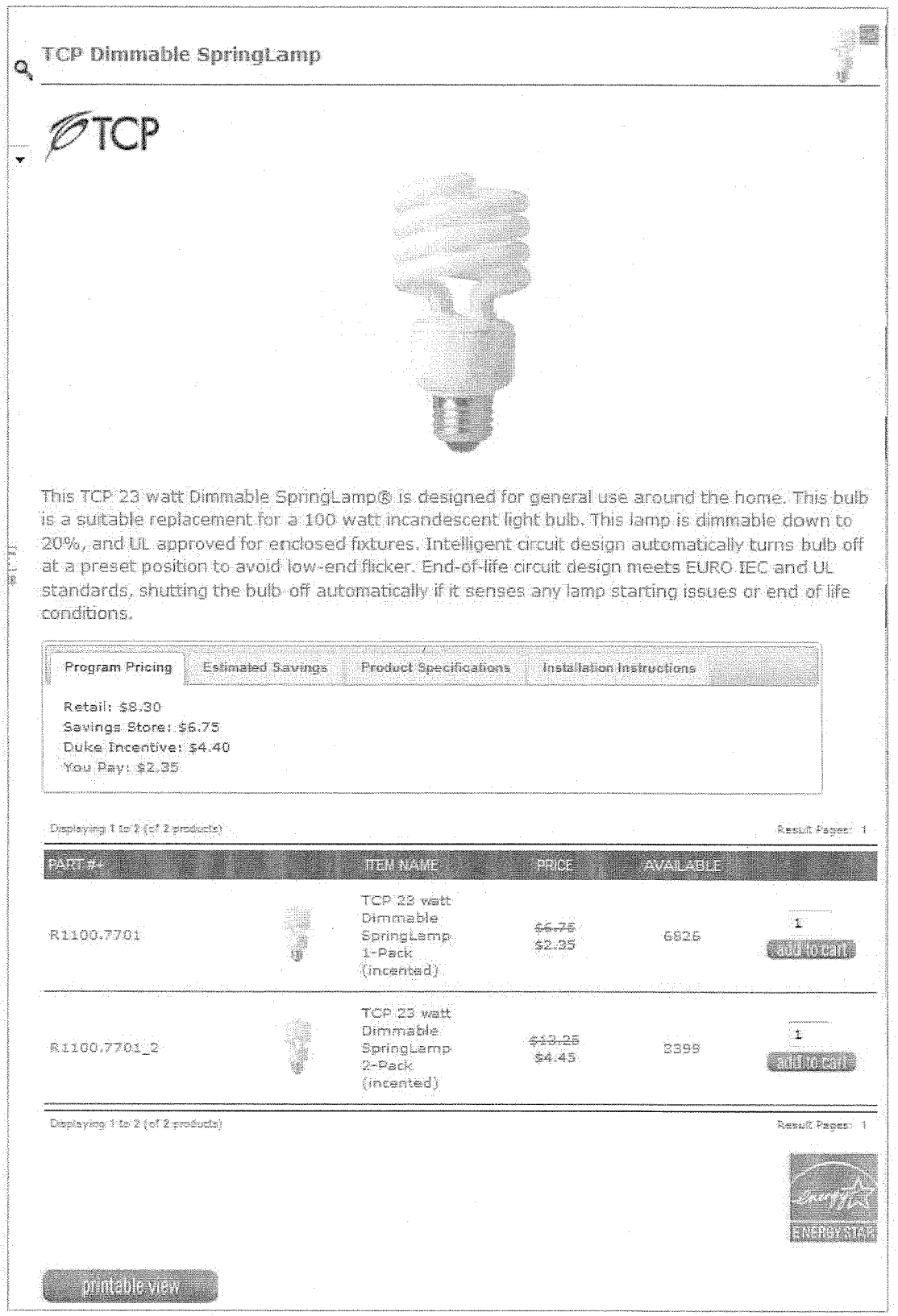

Figure 56. Bulb Description Page - Pricing

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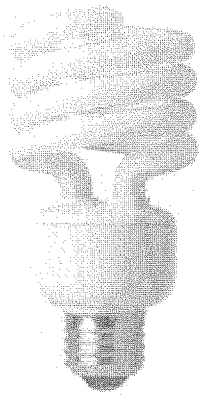
TCP Dimmable SpringLamp

TCP



This TCP 23 watt Dimmable SpringLamp® is designed for general use around the home. This bulb is a suitable replacement for a 100 watt incandescent light bulb. This lamp is dimmable down to 20%, and UL approved for enclosed fixtures. Intelligent circuit design automatically turns bulb off at a preset position to avoid low-end flicker. End-of-life circuit design meets EURO IEC and UL standards, shutting the bulb off automatically if it senses any lamp starting issues or end of life conditions.

Program Pricing | Estimated Savings | Product Specifications | Installation Instructions

Make the Switch...	Old Technology	New Technology
Electric Demand	100 watts	23 watts
Utilization	3 hours per day	3 hours per day
Annual Use	109.5 kilowatt hours	25.1 kilowatt hours
Annual Electricity Savings		84.4 kilowatt hours
Annual Carbon Dioxide Savings*		104.6 pounds
Annual Dollar Savings*		$7.51
Expected Product Life		9.1 years

** Based on CO2 emission coefficient of 1.24 pounds per kWh and an electric rate of 8.9 cents per kWh. Individual savings will vary based upon actual use and source of electricity.*

Figure 57. Bulb Description Page - Savings (part 1)

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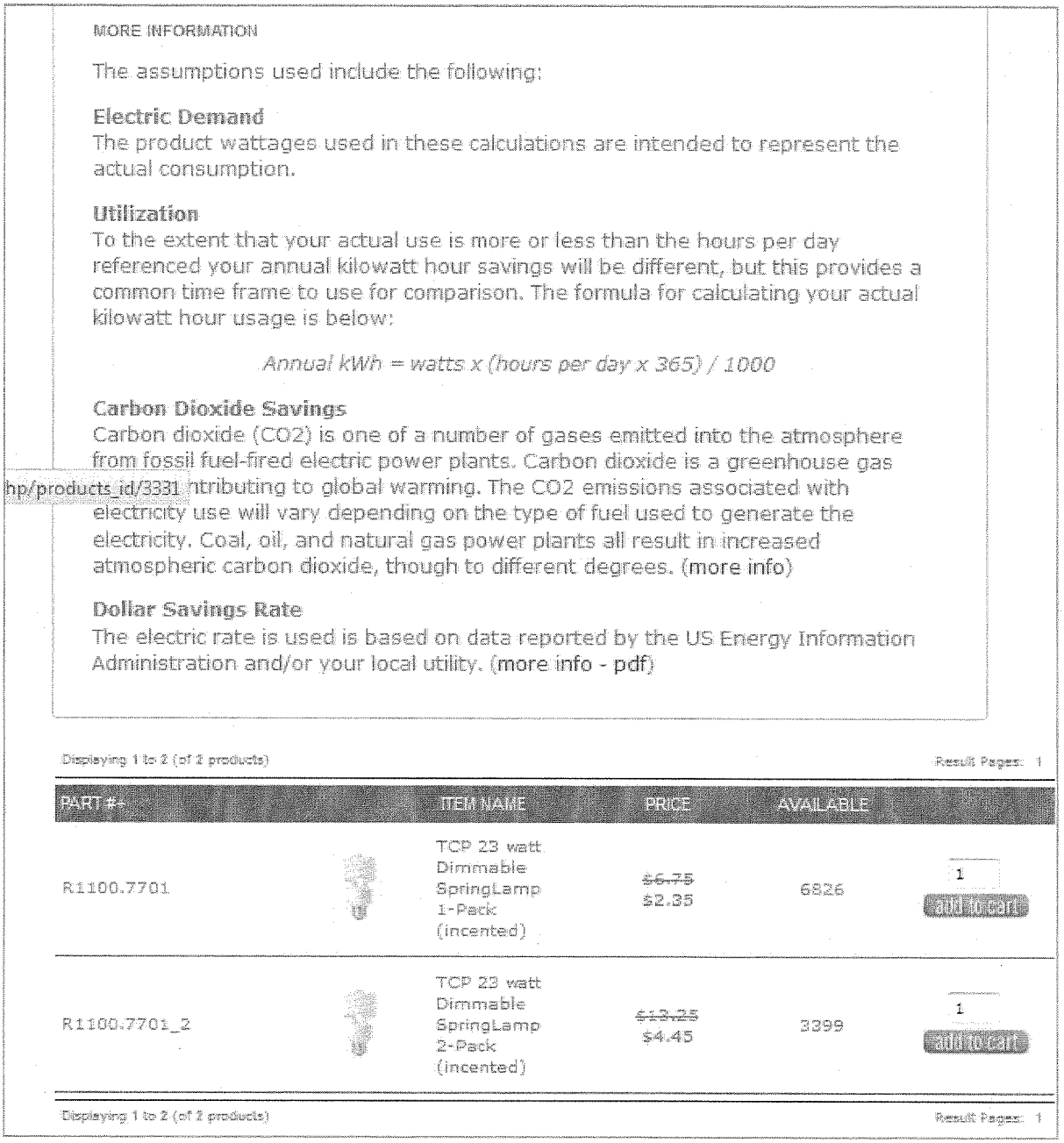

Figure 58. Bulb Description Page - Savings (part 2)

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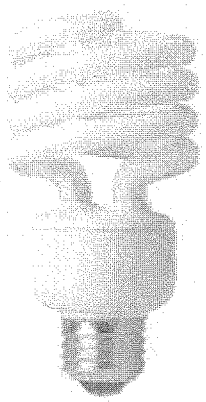
TCP Dimmable SpringLamp



This TCP 23 watt Dimmable SpringLamp® is designed for general use around the home. This bulb is a suitable replacement for a 100 watt incandescent light bulb. This lamp is dimmable down to 20%, and UL approved for enclosed fixtures. Intelligent circuit design automatically turns bulb off at a preset position to avoid low-end flicker. End-of-life circuit design meets EURO IEC and UL standards, shutting the bulb off automatically if it senses any lamp starting issues or end of life conditions.

Program Pricing | Estimated Savings | Product Specifications | Installation Instructions

- Input Power: 120 volts AC
- Power Consumption: 23 watts
- Light Output: 1,500 lumens
- Efficacy: 65.2 lm/w
- Length: 4.9 inches
- Diameter: 2.4 inches
- Rated Life: 12,000 hours
- Color Temperature: 2,700 degrees Kelvin
- Color Rendering: 82 CRI
- Maximum Operating Temperature: 140 degrees F
- Dimmable: Yes
- Manufacturer Residential Warranty: Limited 24 Month
- Base Type: E26 medium screw base
- UL listed: Yes
- RoHS Compliant: Yes
- Origin: China

Note: This lamp should not be used outdoors where it would be exposed to the elements. Use only with photocells, motion detectors, and electronic timers that are suitable for use with compact fluorescent light bulbs. This lamp contains mercury. Please recycle at the end of its life.

Displaying 1 to 2 (of 2 products) Result Pages: 1

Figure 59. Bulb Description Page - Specifications

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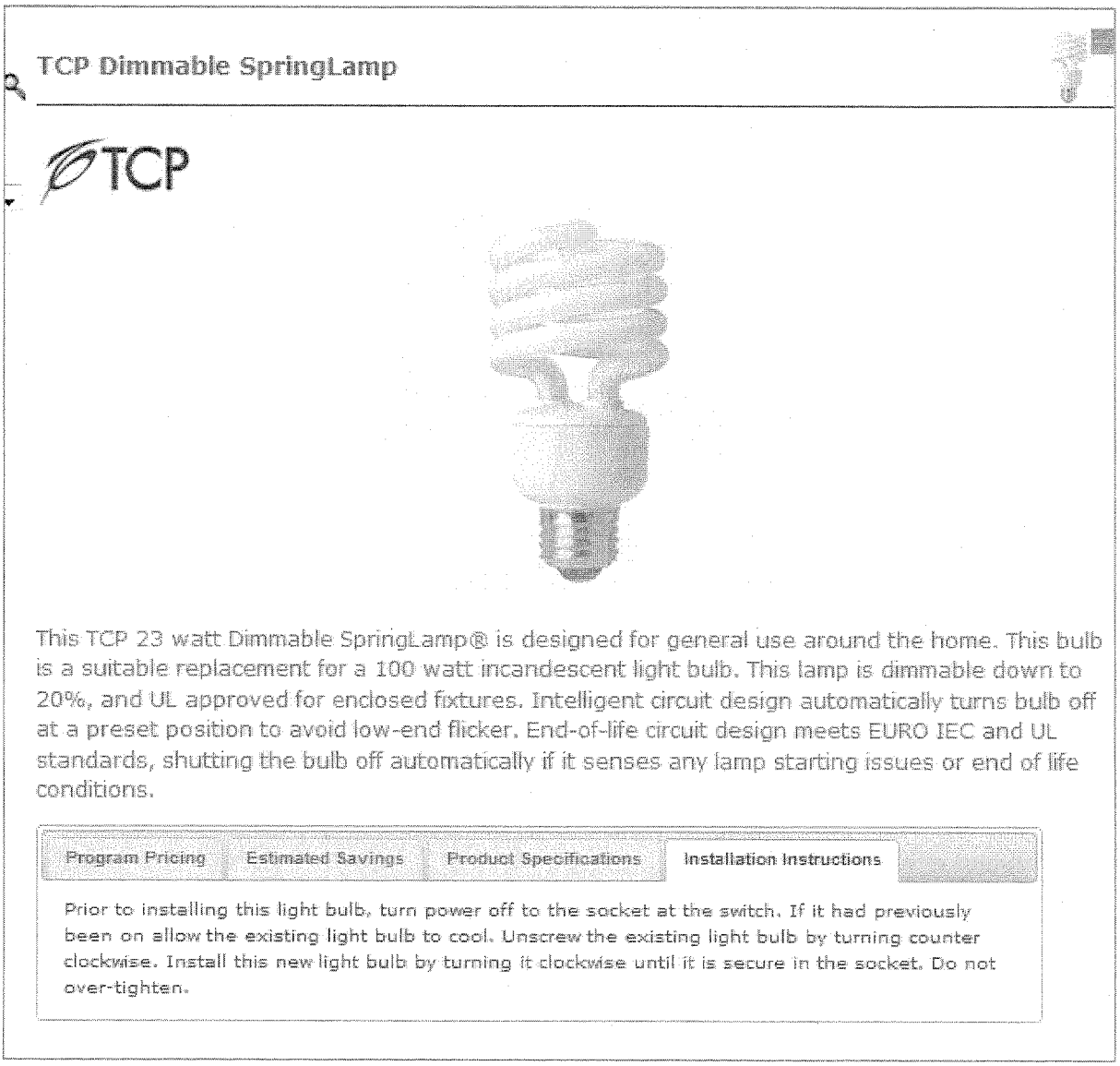

Figure 60. Bulb Description Page - Installation

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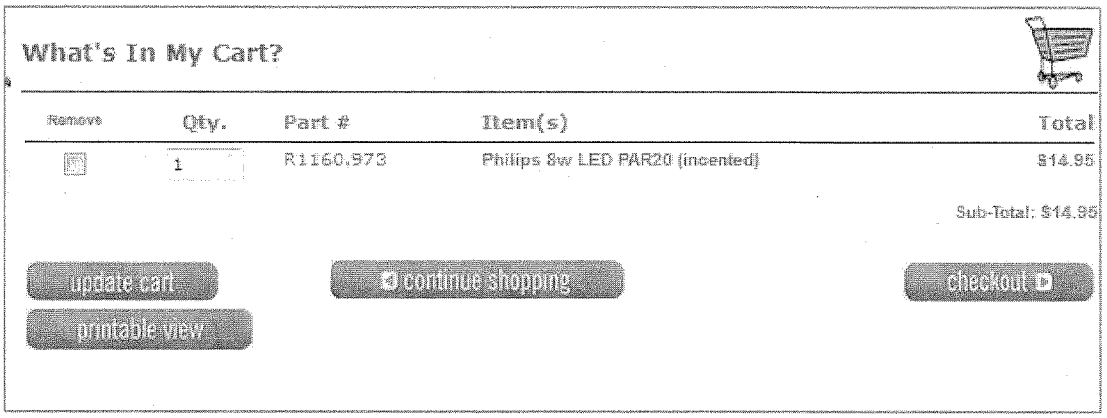

Figure 61. Shopping Cart Screen 1

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Figure 62. Shopping Cart Screen 2

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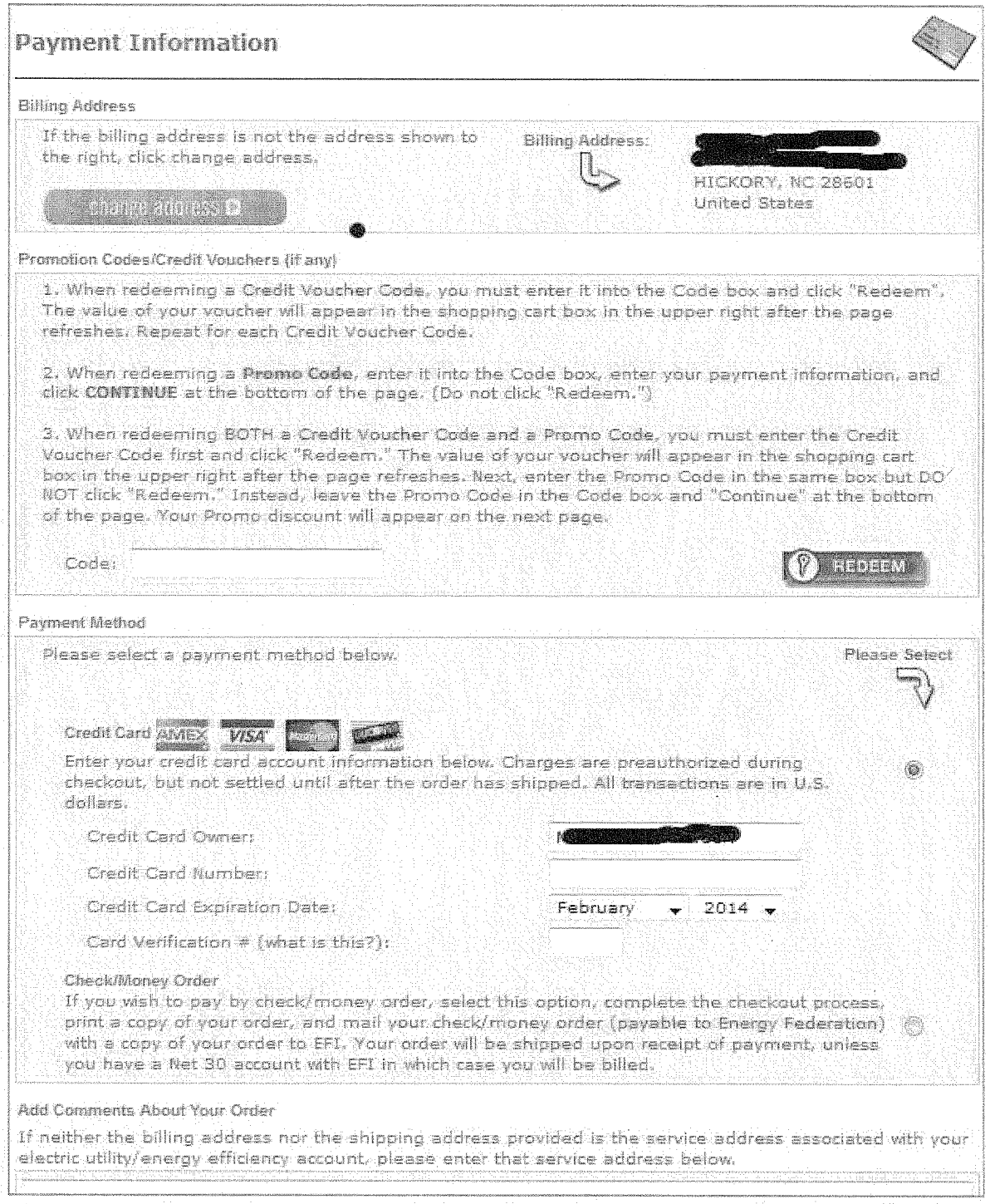

Figure 63. Shopping Cart Screen 3 (part 1)

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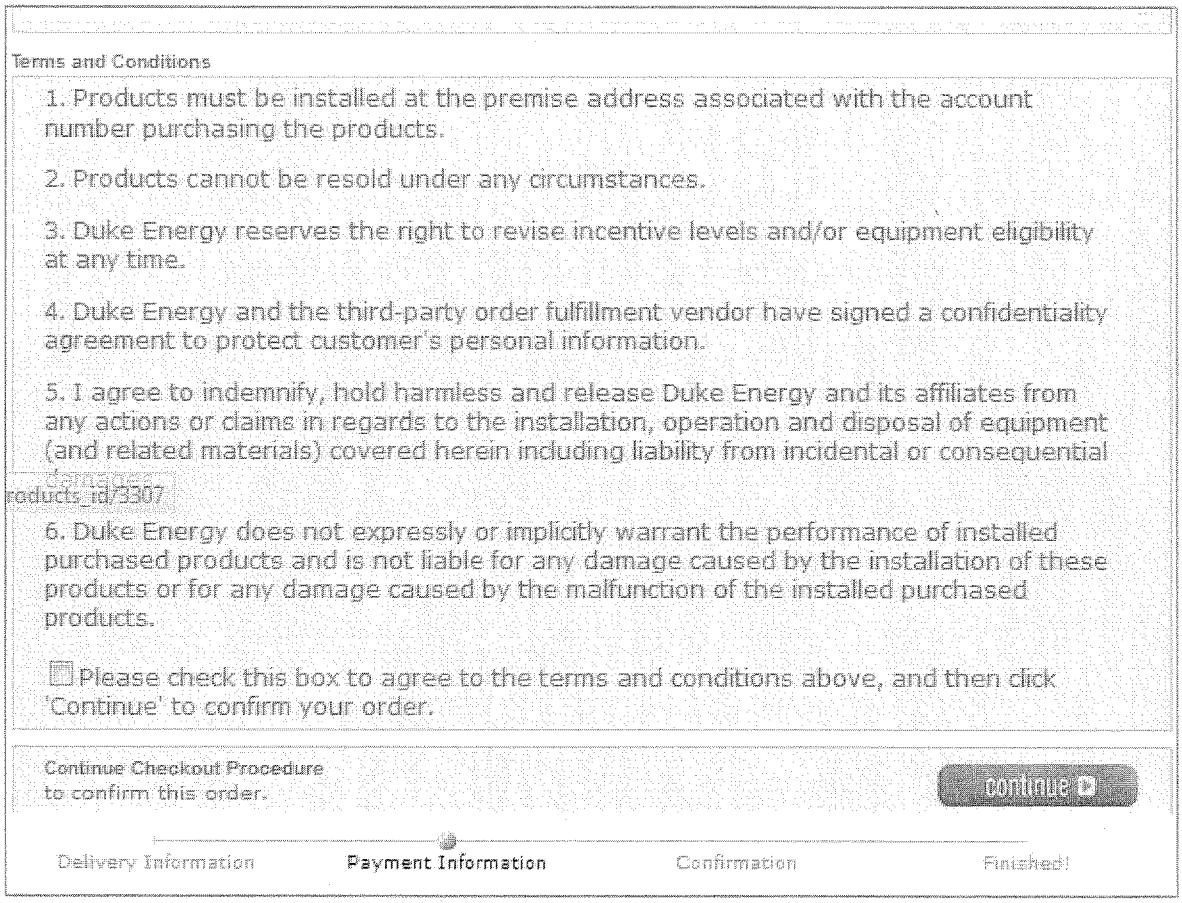

Figure 64. Shopping Cart Screen 3 (part 2)

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Order Review

Please review order. If correct click the 'Confirm Order' button at the bottom of the page to submit order for processing.

Delivery Address (Edit)
[redacted]
HICKORY, NC 28601
United States
Shipping Method (Edit)
United States Postal Service (FIRST CLASS) $4.12

Items (Edit)
1 x TCP 9w Candelabra-Base Torpedo 1-Pack (incented) $1.54

Billing Information (all transactions are in U.S. Dollars)

Billing Address (Edit)
[redacted]
HICKORY, NC 28601
United States
Payment Method (Edit)
Check/Money Order

Sub-Total:	$1.54
United States Postal Service (FIRST CLASS):	$4.12
Sales Tax*:	$0.00
Total:	$5.66

*If sales tax has not been added to this order you may be required to file a sales or use tax return directly. You are advised to consult with the Department of Revenue in your state to determine your sales or use tax obligations.

Payment Information

Make Payable To: Energy Federation

Send To:
Energy Federation (EFI)
Program: Duke Energy (NC residential)
1 Willow Street, Suite 2
Southborough, MA 01772-1026

Your order will not ship until we receive payment.

IF YOU ENTERED A PROMOTION OR CREDIT VOUCHER CODE ON THE PAYMENT SCREEN, PLEASE CONFIRM THE APPROPRIATE DISCOUNT WAS APPLIED BEFORE PROCEEDING.

Confirm order

Delivery Information | Payment Information | Confirmation | Finished!

Figure 65. Shopping Cart Screen 4

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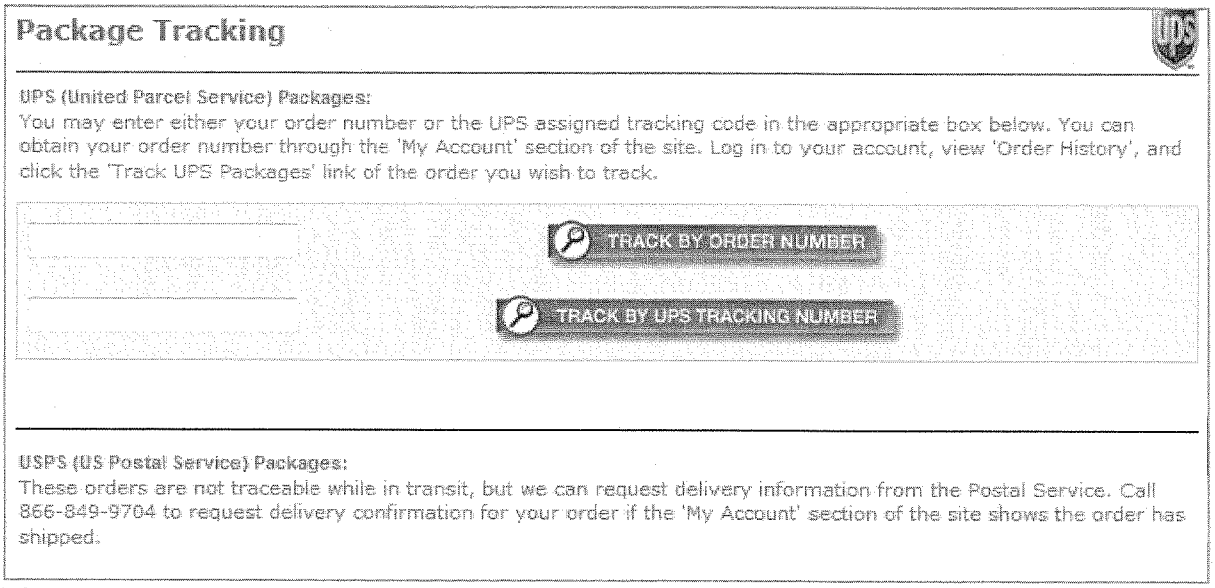

Figure 66. Package Tracking

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Appendix G: Household Characteristics and Demographics

Program Participant and Non-Participant Market Segment Comparison

Duke Energy provided PRIZM segmentation codes for program participants and non-participants. Table 143 shows the distributions of PRIZM income, social and lifestyle segments among the pool of Carolinas participants and non-participants.[51] This table also shows index scores that compare the relative distributions of participants to non-participants (an index score of 100 indicates an identical distribution of participants and non-participants; index scores less than 100 indicate less representation among the participant group relative to the non-participant group, and scores greater than 100 indicate more representation among the participant group[52]).

The participant group skews toward relatively higher income groups (20.6% versus 15.8% of non-participants, index of 131) and to a lesser extent towards suburbanites (26.0% versus 23.1% of non-participants, index of 112). Participants are less likely than non-participants to be in the lowest income segments (21.3% versus 27.7% of non-participants, index of 77) and living in "Second City" neighborhoods (12.7% versus 15.5% of non-participants, index of 82; note that no households in the Carolina System are categorized as "Urban" Social Groups according to the PRIZM system[53]). These differences are all statistically significant at $p<.05$ or better using Student's t-test.

In terms of age groups (Lifestyle segments), the participants skew slightly towards the "Mature Years" group (predominantly "empty nesters" and household heads over 55 years old; 42.0% versus 39.5% of non-participants, index 106) and away from the "Younger Years" group (predominantly singles and childless couples under age 45; 28.5% versus 31.1% of non-participants, index 91). These differences are also statistically significant at $p<.05$ or better using Student's t-test.

The proportion of these groups in the middle income and "Town and Rural" segments (each of which accounts for more than half of Carolinas customers) are very similar, as are the

[51] The income distribution shown in the table is based on the Social Group segmentation; as such it is a relative measure (it shows high or low income relative to other households in the same Social Group segment, not absolute high or low income compared to all households). A key to PRIZM segmentation can be found at http://www.srds.com/frontMatter/ips/lifestyle/reports/prizm.html

[52] PRIZM market segmentation reports often include a similarly-scaled "Index" score, however PRIZM scores are computed so that 100 represents a segment or subgroup being equal to the average distribution across all American households. The index scores presented in this appendix compare program participants in the Carolina System to non-participants in the Carolina System.

[53] PRIZM segmentation defines "urban" households as those in neighborhoods with a population density at or higher than the 85th percentile of all American households (there are no neighborhoods this densely populated in the Carolinas). The "second city" segment includes households with population densities between the 40th and 85th percentile which are also population centers (including the central areas of relatively "smaller" cities such as Charlotte). The "suburban" segment has population densities ranging from the 40th to 90th percentile but these neighborhoods are not population centers (they are adjacent to more densely-populated areas). Households in the "town and rural" segment live in neighborhoods with a population density in the 40th percentile or lower.

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proportions in the "Family Life" Lifestyle segment (predominantly middle-aged households with children); indexes for these segments range from 100 to 103. The index score of 103 for the middle income segment does represent a statistically significant difference between groups at $p<.05$ using Student's t-test (this relatively small difference is significant due to large sample sizes), however the index scores of 100 and 101 do not represent significant differences ($p>.10$ using Student's t-test).

Table 143. PRIZM Market Segmentation for Participants and Non-Participants

Base: all Carolinas customers in uncleaned data files with valid PRIZM codes	**Participant data file (N=8,125)**	**Non-Participant data file (N=75,562)**	**Participant Index** (participant divided by non-participant; 100=same proportion)
Income segments:			
Highest income	20.6%	15.8%	131 *
Middle income	58.1%	56.5%	103 *
Lowest income	21.3%	27.7%	77 *
Social Group segments:			
Second City	12.7%	15.5%	82 *
Suburban	26.0%	23.1%	112 *
Town and Rural	61.3%	61.3%	100
Lifestyle segments:			
Younger Years	28.5%	31.1%	91 *
Family Life	29.6%	29.4%	101
Mature Years	42.0%	39.5%	106 *

** Asterisks indicate a significant difference between groups at p<.05 or better using Student's t-test.*

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Participant Survey Households

One hundred and thirty-six program participants in the Carolina System were surveyed for this evaluation (106 in North Carolina and 30 in South Carolina). This appendix presents household and demographic data collected during the participant survey.

In what type of building do you live? * State

			State		Total
			North Carolina	South Carolina	
In what type of building do you live?	Single-family home, detached construction	Count	96	28	124
		% within State	90.6%	93.3%	91.2%
	Single family home, factory manufactured/modular	Count	4	1	5
		% within State	3.8%	3.3%	3.7%
	Single family, mobile home	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	Apartment (4 + families)---traditional structure	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	Condominium---traditional structure	Count	4	0	4
		% within State	3.8%	0.0%	2.9%
	Other: "*single family home converted so that upstairs and downstairs are separate units*"	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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What year was your residence built? * State

			State		Total
			North Carolina	South Carolina	
What year was your residence built?	1959 and before	Count	18	5	23
		% within State	17.0%	16.7%	16.9%
	1960-1979	Count	28	10	38
		% within State	26.4%	33.3%	27.9%
	1980-1989	Count	20	5	25
		% within State	18.9%	16.7%	18.4%
	1990-1997	Count	8	3	11
		% within State	7.5%	10.0%	8.1%
	1998-2000	Count	11	0	11
		% within State	10.4%	0.0%	8.1%
	2001-2007	Count	11	2	13
		% within State	10.4%	6.7%	9.6%
	2008-present	Count	9	3	12
		% within State	8.5%	10.0%	8.8%
	DK/NS	Count	1	2	3
		% within State	0.9%	6.7%	2.2%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

How long have you lived in your current home? * State

		State		Total
		North Carolina (valid N=106)	South Carolina (valid N=30)	
	Average years	19.40	14.87	18.40
	Median years	15.00	9.00	15.00
	Maximum	66 years	50 years	66 years
	Minimum	7 months	6 months	6 months
	Percent living in current home for 5 years or less	25.5%	36.7%	27.9%

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How many rooms are in your home (excluding bathrooms, but including finished basements)? * State

			State		Total
			North Carolina	South Carolina	
How many rooms are in your home (excluding bathrooms, but including finished basements)?	4	Count	5	3	8
		% within State	4.7%	10.0%	5.9%
	5	Count	17	3	20
		% within State	16.0%	10.0%	14.7%
	6	Count	18	4	22
		% within State	17.0%	13.3%	16.2%
	7	Count	18	8	26
		% within State	17.0%	26.7%	19.1%
	8	Count	15	8	23
		% within State	14.2%	26.7%	16.9%
	9	Count	12	1	13
		% within State	11.3%	3.3%	9.6%
	10 or more	Count	21	3	24
		% within State	19.8%	10.0%	17.6%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Which of the following best describes your home's heating system?	North Carolina N=106		South Carolina N=30		Total N=136	
None	0	0.0%	0	0.0%	0	0.0%
Central forced air furnace	64	60.4%	19	63.3%	83	61.0%
Electric Baseboard	2	1.9%	0	0.0%	2	1.5%
Heat Pump	47	44.3%	10	33.3%	57	41.9%
Geothermal Heat Pump	2	1.9%	0	0.0%	2	1.5%
Gas pack / gas log fireplace	1	0.9%	1	3.3%	2	1.5%
Other: listed below	6	5.7%	1	3.3%	7	5.1%
Don't know	1	0.9%	0	0.0%	1	0.7%

May total to more than 100% because respondents could give multiple responses.

Seven surveyed participants mentioned "other" types of heating system; these are listed below.

- *Electric space heaters* (NC)
- *Hybrid heat pump furnace* (NC)
- *Propane-powered heater* (NC)
- *Space heaters and solar pump wood stove* (NC)
- *Ultra-red space heater* (NC)
- *Wood stove with fan distribution* (NC)
- *Fireplace heaters and space heaters* (SC)

How old is your heating system? * State

			State		Total
			North Carolina	South Carolina	
How old is your heating system?	0-4 years	Count	31	9	40
		% within State	29.2%	30.0%	29.4%
	5-9 years	Count	33	11	44
		% within State	31.1%	36.7%	32.4%
	10-14 years	Count	13	3	16
		% within State	12.3%	10.0%	11.8%
	15-19 years	Count	12	1	13
		% within State	11.3%	3.3%	9.6%
	19 years or older	Count	10	3	13
		% within State	9.4%	10.0%	9.6%
	DK/NS	Count	7	3	10
		% within State	6.6%	10.0%	7.4%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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What is the primary fuel used in your heating system? * State

			State		Total
			North Carolina	South Carolina	
What is the primary fuel used in your heating system?	Electricity	Count	50	12	62
		% within State	47.2%	40.0%	45.6%
	Natural Gas	Count	49	16	65
		% within State	46.2%	53.3%	47.8%
	Oil	Count	3	0	3
		% within State	2.8%	0.0%	2.2%
	Propane	Count	2	1	3
		% within State	1.9%	3.3%	2.2%
	Wood	Count	1	0	2
		% within State	0.9%	0.0%	1.5%
	DK/NS	Count	1	1	1
		% within State	0.9%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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What is the secondary fuel used in your primary heating system, if any? * State

			State		Total
			North Carolina	South Carolina	
What is the secondary fuel used in your primary heating system, if any?	Electricity	Count	26	9	35
		% within State	24.5%	30.0%	25.7%
	Natural Gas	Count	5	0	5
		% within State	4.7%	0.0%	3.7%
	Propane	Count	1	1	2
		% within State	0.9%	3.3%	1.5%
	Other	Count	9	0	9
		% within State	8.5%	0.0%	6.6%
	None	Count	65	19	84
		% within State	61.3%	63.3%	61.8%
	DK/NS	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Nine North Carolina participant survey respondents mentioned "other" secondary fuel sources; these are listed below.

- Fuel oil and propane gas pack
- Gas logs
- Propane gas fireplace
- Solar and wood
- Space heaters
- Two gas log fireplaces
- Wood stove and gas log fireplace
- Wood stove and propane
- Water

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Do you use one or more of the following to cool your home?	North Carolina N=106		South Carolina N=30		Total N=136	
None, do not cool the home	0	0.0%	0	0.0%	0	0.0%
Heat pump for cooling	46	43.4%	10	33.3%	56	41.2%
Central air conditioning	62	58.5%	19	63.3%	81	59.6%
Through the wall or window air conditioning unit	5	4.7%	2	6.7%	7	5.1%
Geothermal Heat pump	2	1.9%	0	0.0%	2	1.5%
Don't know	1	0.9%	0	0.0%	1	0.7%

May total to more than 100% because respondents could give multiple responses.

How many window-unit or through the wall air conditioner(s) do you use? * State

			State		Total
			North Carolina	South Carolina	
d9 How many window-unit or through the wall air conditioner(s) do you use?	1	Count	6	1	7
		% within State	5.7%	3.3%	5.1%
	2	Count	1	2	3
		% within State	0.9%	6.7%	2.2%
	3	Count	2	0	2
		% within State	1.9%	0.0%	1.5%
	None	Count	97	27	124
		% within State	91.5%	90.0%	91.2%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

What is the fuel used in your cooling system?	North Carolina N=106		South Carolina N=30		Total N=136	
Electricity	104	98.1%	30	100.0%	134	98.5%
Natural Gas	2	1.9%	0	0.0%	2	1.5%
None (no cooling system)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

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How old is your cooling system? * State

			State		Total
			North Carolina	South Carolina	
How old is your cooling system?	0-4 years	Count	33	9	42
		% within State	31.1%	30.0%	30.9%
	5-9 years	Count	34	11	45
		% within State	32.1%	36.7%	33.1%
	10-14 years	Count	12	3	15
		% within State	11.3%	10.0%	11.0%
	15-19 years	Count	10	1	11
		% within State	9.4%	3.3%	8.1%
	19 years or older	Count	9	3	12
		% within State	8.5%	10.0%	8.8%
	DK/NS	Count	8	3	11
		% within State	7.5%	10.0%	8.1%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

What is the fuel used by your water heater?	North Carolina N=106		South Carolina N=30		Total N=136	
Electricity	60	56.6%	16	53.3%	76	55.9%
Natural Gas	44	41.5%	11	36.7%	55	40.4%
Solar pre-heated	1	0.9%	1	3.3%	2	1.5%
No water heater	0	0.0%	0	0.0%	0	0.0%
DK/NS	3	2.8%	2	6.7%	5	3.7%

May total to more than 100% because respondents could give multiple responses.

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How old is your water heater? * State

			State		Total
			North Carolina	South Carolina	
How old is your water heater?	0-4 years	Count	31	10	41
		% within State	29.2%	33.3%	30.1%
	5-9 years	Count	36	12	48
		% within State	34.0%	40.0%	35.3%
	10-14 years	Count	16	2	18
		% within State	15.1%	6.7%	13.2%
	15-19 years	Count	10	1	11
		% within State	9.4%	3.3%	8.1%
	More than 19 years	Count	4	2	6
		% within State	3.8%	6.7%	4.4%
	DK/NS	Count	9	3	12
		% within State	8.5%	10.0%	8.8%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

What type of fuel do you use for indoor cooking on the stovetop or range?	North Carolina N=106		South Carolina N=30		Total N=136	
Electricity	89	84.0%	24	80.0%	113	83.1%
Natural Gas	17	16.0%	6	20.0%	23	16.9%
Propane	1	0.9%	0	0.0%	1	0.7%
None (no stove)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

What type of fuel do you use for indoor cooking in the oven?	North Carolina N=106		South Carolina N=30		Total N=136	
Electricity	95	89.6%	27	90.0%	122	89.7%
Natural Gas	10	9.4%	5	16.7%	15	11.0%
Propane	1	0.9%	0	0.0%	1	0.7%
None (no oven)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

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What type of fuel do you use for clothes drying?	North Carolina N=106		South Carolina N=30		Total N=136	
Electricity	93	87.7%	28	93.3%	121	89.0%
Natural Gas	13	12.3%	3	10.0%	16	11.8%
None (no dryer)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

About how many square feet of living space are in your home? * State

			State		Total
			North Carolina	South Carolina	
About how many square feet of living space are in your home?	500 to 999	Count	2	1	3
		% within State	1.9%	3.3%	2.2%
	1000 to 1499	Count	17	5	22
		% within State	16.0%	16.7%	16.2%
	1500 to 1999	Count	30	9	39
		% within State	28.3%	30.0%	28.7%
	2000 to 2499	Count	16	8	24
		% within State	15.1%	26.7%	17.6%
	2500 to 2999	Count	8	3	11
		% within State	7.5%	10.0%	8.1%
	3000 to 3499	Count	10	1	11
		% within State	9.4%	3.3%	8.1%
	3500 to 3999	Count	4	1	5
		% within State	3.8%	3.3%	3.7%
	4000 or more	Count	8	0	8
		% within State	7.5%	0.0%	5.9%
	DK/NS	Count	11	2	13
		% within State	10.4%	6.7%	9.6%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Do you own or rent your home? * State

			State		Total
			North Carolina	South Carolina	
Do you own or rent your home?	Own	Count	105	29	134
		% within State	99.1%	96.7%	98.5%
	Rent	Count	1	1	2
		% within State	0.9%	3.3%	1.5%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

How many levels are in your home (not including your basement)? * State

			State		Total
			North Carolina	South Carolina	
How many levels are in your home (not including your basement)?	One	Count	55	18	73
		% within State	51.9%	60.0%	53.7%
	Two	Count	41	11	52
		% within State	38.7%	36.7%	38.2%
	Three	Count	10	1	11
		% within State	9.4%	3.3%	8.1%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Does your home have a heated or unheated basement? * State

			State		Total
			North Carolina	South Carolina	
Does your home have a heated or unheated basement?	Heated	Count	20	4	24
		% within State	18.9%	13.3%	17.6%
	Unheated	Count	13	1	14
		% within State	12.3%	3.3%	10.3%
	No basement	Count	73	25	98
		% within State	68.9%	83.3%	72.1%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Does your home have an attic? * State

			State		Total
			North Carolina	South Carolina	
Does your home have an attic?	Yes	Count	85	24	109
		% within State	80.2%	80.0%	80.1%
	No	Count	21	6	27
		% within State	19.8%	20.0%	19.9%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Are your central air/heat ducts located in the attic? * State

			State		Total
			North Carolina	South Carolina	
Are your central air/heat ducts located in the attic?	Yes	Count	32	7	39
		% within State	30.2%	23.3%	28.7%
	No	Count	50	16	66
		% within State	47.2%	53.3%	48.5%
	N/A	Count	22	6	28
		% within State	20.8%	20.0%	20.6%
	DK/NS	Count	2	1	3
		% within State	1.9%	3.3%	2.2%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Does your house have cold drafts in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have cold drafts in the winter?	Yes	Count	15	6	21
		% within State	14.2%	20.0%	15.4%
	No	Count	90	24	114
		% within State	84.9%	80.0%	83.8%
	DK/NS	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Does your house have sweaty windows in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have sweaty windows in the winter?	Yes	Count	14	5	19
		% within State	13.2%	16.7%	14.0%
	No	Count	92	24	116
		% within State	86.8%	80.0%	85.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Do you notice uneven temperatures between the rooms in your home? * State

			State		Total
			North Carolina	South Carolina	
Do you notice uneven temperatures between the rooms in your home?	Yes	Count	44	10	54
		% within State	41.5%	33.3%	39.7%
	No	Count	62	19	81
		% within State	58.5%	63.3%	59.6%
	DK/NS	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Does your heating system keep your home comfortable in winter? * State

			State		Total
			North Carolina	South Carolina	
Does your heating system keep your home comfortable in winter?	Yes	Count	103	29	132
		% within State	97.2%	96.7%	97.1%
	No	Count	3	1	4
		% within State	2.8%	3.3%	2.9%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Does your cooling system keep your home comfortable in summer? * State

			State		Total
			North Carolina	South Carolina	
Does your cooling system keep your home comfortable in summer?	Yes	Count	97	28	125
		% within State	91.5%	93.3%	91.9%
	No	Count	8	1	9
		% within State	7.5%	3.3%	6.6%
	DK/NS	Count	1	1	2
		% within State	0.9%	3.3%	1.5%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Do you have a programmable thermostat? * State

			State		Total
			North Carolina	South Carolina	
Do you have a programmable thermostat?	Yes	Count	63	14	77
		% within State	59.4%	46.7%	56.6%
	No	Count	42	16	58
		% within State	39.6%	53.3%	42.6%
	DK/NS	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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How many thermostats are there in your home? * State

			State		Total
			North Carolina	South Carolina	
How many thermostats are there in your home?	0	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
	1	Count	74	22	96
		% within State	69.8%	73.3%	70.6%
	2	Count	24	6	30
		% within State	22.6%	20.0%	22.1%
	3	Count	8	0	8
		% within State	7.5%	0.0%	5.9%
	DK/NS	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

What temperature is your thermostat set to on a typical summer weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical summer weekday afternoon?	Less than 69 degrees	Count	3	2	5
		% within State	2.8%	6.7%	3.7%
	69-72 degrees	Count	40	5	45
		% within State	37.7%	16.7%	33.1%
	73-78 degrees	Count	55	21	76
		% within State	51.9%	70.0%	55.9%
	Higher than 78 degrees	Count	4	1	5
		% within State	3.8%	3.3%	3.7%
	Off	Count	3	1	4
		% within State	2.8%	3.3%	2.9%
	DK/NS	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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What temperature is your thermostat set to on a typical winter weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical winter weekday afternoon?	Less than 67 degrees	Count	15	2	17
		% within State	14.2%	6.7%	12.5%
	67-70 degrees	Count	51	19	70
		% within State	48.1%	63.3%	51.5%
	71-73 degrees	Count	24	7	31
		% within State	22.6%	23.3%	22.8%
	74-77 degrees	Count	13	2	15
		% within State	12.3%	6.7%	11.0%
	78 degrees or higher	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	Off	Count	2	0	2
		% within State	1.9%	0.0%	1.5%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Do you have a swimming pool, hot-tub or spa? * State

			State		Total
			North Carolina	South Carolina	
Do you have a swimming pool, hot-tub or spa?	Yes	Count	7	2	9
		% within State	6.6%	6.7%	6.6%
	No	Count	99	28	127
		% within State	93.4%	93.3%	93.4%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Would a two-degree increase in the summer afternoon temperature in your home affect your comfort * State

			State		Total
			North Carolina	South Carolina	
Would a two-degree increase in the summer afternoon temperature in your home affect your comfort	Not at all	Count	28	6	34
		% within State	26.4%	20.0%	25.0%
	Slightly	Count	33	10	43
		% within State	31.1%	33.3%	31.6%
	Moderately, or	Count	28	8	36
		% within State	26.4%	26.7%	26.5%
	Greatly	Count	15	5	20
		% within State	14.2%	16.7%	14.7%
	DK/NS	Count	2	1	3
		% within State	1.9%	3.3%	2.2%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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How many people live in this home? * State

			State		Total
			North Carolina	South Carolina	
How many people live in this home?	1	Count	24	5	29
		% within State	22.6%	16.7%	21.3%
	2	Count	52	14	66
		% within State	49.1%	46.7%	48.5%
	3	Count	13	3	16
		% within State	12.3%	10.0%	11.8%
	4	Count	14	7	21
		% within State	13.2%	23.3%	15.4%
	5	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	6	Count	0	1	1
		% within State	0.0%	3.3%	0.7%
	8 or more	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	Prefer not to answer	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

How many of them are teenagers age 13-19? * State

			State		Total
			North Carolina	South Carolina	
How many of them are teenagers age 13-19?	0	Count	95	25	120
		% within State	89.6%	83.3%	88.2%
	1	Count	7	2	9
		% within State	6.6%	6.7%	6.6%
	2	Count	4	3	7
		% within State	3.8%	10.0%	5.1%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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How many persons are usually home on a weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
How many persons are usually home on a weekday afternoon?	0	Count	4	2	6
		% within State	3.8%	6.7%	4.4%
	1	Count	50	11	61
		% within State	47.2%	36.7%	44.9%
	2	Count	41	11	52
		% within State	38.7%	36.7%	38.2%
	3	Count	5	2	7
		% within State	4.7%	6.7%	5.1%
	4	Count	2	4	6
		% within State	1.9%	13.3%	4.4%
	5	Count	2	0	2
		% within State	1.9%	0.0%	1.5%
	7	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
	Prefer not to answer	Count	1	0	1
		% within State	0.9%	0.0%	0.7%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

Are you planning on making any large purchases to improve energy efficiency in the next 3 years? * State

			State		Total
			North Carolina	South Carolina	
Are you planning on making any large purchases to improve energy efficiency in the next 3 years?	Yes	Count	29	6	35
		% within State	27.4%	20.0%	25.7%
	No	Count	71	17	88
		% within State	67.0%	56.7%	64.7%
	DK/NS	Count	6	7	13
		% within State	5.7%	23.3%	9.6%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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What is your age group? * State

			State		Total
			North Carolina	South Carolina	
What is your age group?	18-34	Count	8	3	11
		% within State	7.5%	10.0%	8.1%
	35-49	Count	10	6	16
		% within State	9.4%	20.0%	11.8%
	50-59	Count	23	4	27
		% within State	21.7%	13.3%	19.9%
	60-64	Count	13	4	17
		% within State	12.3%	13.3%	12.5%
	65-74	Count	34	9	43
		% within State	32.1%	30.0%	31.6%
	Over 74	Count	12	4	16
		% within State	11.3%	13.3%	11.8%
	Prefer not to answer	Count	6	0	6
		% within State	5.7%	0.0%	4.4%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Please indicate your annual household income * State

			State		Total
			North Carolina	South Carolina	
Please indicate your annual household income	Under $15,000	Count	2	0	2
		% within State	1.9%	0.0%	1.5%
	$15,000-$29,999	Count	5	3	8
		% within State	4.7%	10.0%	5.9%
	$30,000-$49,999	Count	21	4	25
		% within State	19.8%	13.3%	18.4%
	$50,000-$74,999	Count	15	3	18
		% within State	14.2%	10.0%	13.2%
	$75,000-$100,000	Count	15	5	20
		% within State	14.2%	16.7%	14.7%
	Over $100,000	Count	16	4	20
		% within State	15.1%	13.3%	14.7%
	Prefer Not to Answer	Count	30	11	41
		% within State	28.3%	36.7%	30.1%
	DK/NS	Count	2	0	2
		% within State	1.9%	0.0%	1.5%
Total		Count	106	30	136
		% within State	100.0%	100.0%	100.0%

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Non-Participant Survey Households

Eighty customers in the Carolina System who did not participate in the Specialty Bulbs program were surveyed for this evaluation (67 in North Carolina and 13 in South Carolina). This appendix presents household and demographic data collected during the non-participant survey.

In what type of building do you live? * State

			State		Total
			North Carolina	South Carolina	
In what type of building do you live?	Single-family home, detached construction	Count	47	9	56
		% within State	70.1%	69.2%	70.0%
	Single family home, factory manufactured/modular	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	Single family, mobile home	Count	3	0	3
		% within State	4.5%	0.0%	3.8%
	Row House	Count	2	1	3
		% within State	3.0%	7.7%	3.8%
	Two or Three family attached residence-traditional structure	Count	3	2	5
		% within State	4.5%	15.4%	6.3%
	Apartment (4 + families)---traditional structure	Count	2	0	2
		% within State	3.0%	0.0%	2.5%
	Condominium---traditional structure	Count	5	1	6
		% within State	7.5%	7.7%	7.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What year was your residence built? * State Crosstabulation

			State		Total
			North Carolina	South Carolina	
What year was your residence built?	1959 and before	Count	13	4	17
		% within State	19.4%	30.8%	21.3%
	1960-1979	Count	17	2	19
		% within State	25.4%	15.4%	23.8%
	1980-1989	Count	12	4	16
		% within State	17.9%	30.8%	20.0%
	1990-1997	Count	7	0	7
		% within State	10.4%	0.0%	8.8%
	1998-2000	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
	2001-2007	Count	6	1	7
		% within State	9.0%	7.7%	8.8%
	2008-present	Count	5	1	6
		% within State	7.5%	7.7%	7.5%
	DK/NS	Count	4	0	4
		% within State	6.0%	0.0%	5.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

How long have you lived in your current home? * State

		State		Total
		North Carolina (valid N=67)	South Carolina (valid N=13)	
	Average years	15.53	10.09	14.65
	Median years	14.00	7.00	13.00
	Maximum	44 years	25 years	44 years
	Minimum	1 week	1 year	1 week
	Percent living in current home for 5 years or less	38.8%	46.2%	40.0%

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How many rooms are in your home (excluding bathrooms, but including finished basements)? * State

			State		Total
			North Carolina	South Carolina	
How many rooms are in your home (excluding bathrooms, but including finished basements)?	1-3	Count	3	0	3
		% within State	4.5%	0.0%	3.8%
	4	Count	6	2	8
		% within State	9.0%	15.4%	10.0%
	5	Count	14	2	16
		% within State	20.9%	15.4%	20.0%
	6	Count	14	4	18
		% within State	20.9%	30.8%	22.5%
	7	Count	13	1	14
		% within State	19.4%	7.7%	17.5%
	10 or more	Count	9	3	12
		% within State	13.4%	23.1%	15.0%
	DK/NS	Count	8	1	9
		% within State	11.9%	7.7%	11.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Which of the following best describes your home's heating system?	North Carolina N=67		South Carolina N=13		Total N=80	
None	0	0.0%	0	0.0%	0	0.0%
Central forced air furnace	30	44.8%	9	69.2%	39	48.8%
Electric Baseboard	3	4.5%	0	0.0%	3	3.8%
Heat Pump	31	46.3%	3	23.1%	34	42.5%
Geothermal Heat Pump	0	0.0%	0	0.0%	0	0.0%
Gas pack / gas log fireplace	0	0.0%	1	7.7%	1	1.3%
Other: listed below	5	7.5%	0	0.0%	5	6.3%
Don't know	2	3.0%	0	0.0%	2	2.5%

May total to more than 100% because respondents could give multiple responses.

Five surveyed non-participants in North Carolina mentioned "other" types of heating system; these are listed below.

- *Three portable electric heaters*
- *Four space heaters*
- *Ceiling radiant heat*
- *Hot water system*
- *MPI Monitor 441* (forced air kerosene heater)

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How old is your heating system? * State

			State		Total
			North Carolina	South Carolina	
How old is your heating system?	0-4 years	Count	26	4	30
		% within State	38.8%	30.8%	37.5%
	5-9 years	Count	13	1	14
		% within State	19.4%	7.7%	17.5%
	10-14 years	Count	10	3	13
		% within State	14.9%	23.1%	16.3%
	15-19 years	Count	3	0	3
		% within State	4.5%	0.0%	3.8%
	19 years or older	Count	8	2	10
		% within State	11.9%	15.4%	12.5%
	DK/NS	Count	7	3	10
		% within State	10.4%	23.1%	12.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What is the primary fuel used in your heating system? * State

			State		Total
			North Carolina	South Carolina	
What is the primary fuel used in your heating system?	Electricity	Count	42	2	44
		% within State	62.7%	15.4%	55.0%
	Natural Gas	Count	18	9	27
		% within State	26.9%	69.2%	33.8%
	Oil	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	Propane	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	Other: *gas fireplace*	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
	Other: *kerosene*	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	DK/NS	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What is the secondary fuel used in your primary heating system, if any? * State

			State		Total
			North Carolina	South Carolina	
What is the secondary fuel used in your primary heating system, if any?	Electricity	Count	10	2	12
		% within State	14.9%	15.4%	15.0%
	Natural Gas	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	Other: *kerosene*	Count	2	0	2
		% within State	3.0%	0.0%	2.5%
	Other: *wood stove*	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	Other: *wood stove and gas logs*	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	None	Count	48	9	57
		% within State	71.6%	69.2%	71.3%
	DK/NS	Count	4	2	6
		% within State	6.0%	15.4%	7.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Do you use one or more of the following to cool your home?	North Carolina N=67		South Carolina N=13		Total N=80	
None, do not cool the home	0	0.0%	0	0.0%	0	0.0%
Heat pump for cooling	29	43.3%	3	23.1%	32	40.0%
Central air conditioning	30	44.8%	8	61.5%	38	47.5%
Through the wall or window air conditioning unit	8	11.9%	1	7.7%	9	11.3%
Geothermal Heat pump	0	0.0%	0	0.0%	0	0.0%
Other: listed below	1	1.5%	1	7.7%	2	2.5%
Don't know	1	1.5%	0	0.0%	1	1.3%

May total to more than 100% because respondents could give multiple responses.

Two surveyed non-participants mentioned "other" types of cooling system; these are listed below.

- *Ceiling fans* (NC)
- *Gas pack* (SC)

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How many window-unit or through the wall air conditioner(s) do you use? * State

			State		Total
			North Carolina	South Carolina	
How many window-unit or through the wall air conditioner(s) do you use?	1	Count	4	4	8
		% within State	6.0%	30.8%	10.0%
	2	Count	6	0	6
		% within State	9.0%	0.0%	7.5%
	10210	Count	57	9	66
		% within State	85.1%	69.2%	82.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

What is the fuel used in your cooling system?	North Carolina N=67		South Carolina N=13		Total N=80	
Electricity	65	97.0%	13	100.0%	78	97.5%
Natural Gas	0	0.0%	0	0.0%	0	0.0%
None (no cooling system)	0	0.0%	0	0.0%	0	0.0%
DK/NS	2	3.0%	0	0.0%	2	2.5%

May total to more than 100% because respondents could give multiple responses.

How old is your cooling system? * State

			State		Total
			North Carolina	South Carolina	
How old is your cooling system?	0-4 years	Count	32	3	35
		% within State	47.8%	23.1%	43.8%
	5-9 years	Count	14	2	16
		% within State	20.9%	15.4%	20.0%
	10-14 years	Count	8	3	11
		% within State	11.9%	23.1%	13.8%
	15-19 years	Count	3	0	3
		% within State	4.5%	0.0%	3.8%
	19 years or older	Count	3	2	5
		% within State	4.5%	15.4%	6.3%
	DK/NS	Count	7	3	10
		% within State	10.4%	23.1%	12.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What is the fuel used by your water heater?	North Carolina N=67		South Carolina N=13		Total N=80	
Electricity	54	80.6%	3	23.1%	57	71.3%
Natural Gas	12	17.9%	8	61.5%	20	25.0%
Propane	1	1.5%	1	7.7%	2	2.5%
No water heater	0	0.0%	0	0.0%	0	0.0%
DK/NS	1	1.5%	1	7.7%	2	2.5%

May total to more than 100% because respondents could give multiple responses.

How old is your water heater? * State

			State		Total
			North Carolina	South Carolina	
How old is your water heater?	0-4 years	Count	20	6	26
		% within State	29.9%	46.2%	32.5%
	5-9 years	Count	17	2	19
		% within State	25.4%	15.4%	23.8%
	10-14 years	Count	7	2	9
		% within State	10.4%	15.4%	11.3%
	15-19 years	Count	2	1	3
		% within State	3.0%	7.7%	3.8%
	More than 19 years	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	DK/NS	Count	16	2	18
		% within State	23.9%	15.4%	22.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

What type of fuel do you use for indoor cooking on the stovetop or range?	North Carolina N=67		South Carolina N=13		Total N=80	
Electricity	61	91.0%	12	92.3%	73	91.3%
Natural Gas	6	9.0%	1	7.7%	7	8.8%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no stove)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

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What type of fuel do you use for indoor cooking in the oven?	North Carolina N=67		South Carolina N=13		Total N=80	
Electricity	63	94.0%	13	100.0%	76	95.0%
Natural Gas	4	6.0%	0	0.0%	4	5.0%
Propane	0	0.0%	0	0.0%	0	0.0%
None (no oven)	0	0.0%	0	0.0%	0	0.0%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

What type of fuel do you use for clothes drying?	North Carolina N=67		South Carolina N=13		Total N=80	
Electricity	63	94.0%	12	92.3%	75	93.8%
Natural Gas	1	1.5%	1	7.7%	2	2.5%
Propane	1	1.5%	0	0.0%	1	1.3%
None (no dryer)	2	3.0%	0	0.0%	2	2.5%
DK/NS	0	0.0%	0	0.0%	0	0.0%

May total to more than 100% because respondents could give multiple responses.

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About how many square feet of living space are in your home? * State

			State		Total
			North Carolina	South Carolina	
About how many square feet of living space are in your home?	500 to 999	Count	6	2	8
		% within State	9.0%	15.4%	10.0%
	1000 to 1499	Count	18	5	23
		% within State	26.9%	38.5%	28.8%
	1500 to 1999	Count	18	2	20
		% within State	26.9%	15.4%	25.0%
	2000 to 2499	Count	10	1	11
		% within State	14.9%	7.7%	13.8%
	2500 to 2999	Count	2	0	2
		% within State	3.0%	0.0%	2.5%
	3000 to 3499	Count	2	0	2
		% within State	3.0%	0.0%	2.5%
	3500 to 3999	Count	2	2	4
		% within State	3.0%	15.4%	5.0%
	4000 or more	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	DK/NS	Count	8	1	9
		% within State	11.9%	7.7%	11.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Do you own or rent your home? * State

			State		Total
			North Carolina	South Carolina	
Do you own or rent your home?	Own	Count	54	10	64
		% within State	80.6%	76.9%	80.0%
	Rent	Count	13	3	16
		% within State	19.4%	23.1%	20.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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How many levels are in your home (not including your basement)? * State

			State		Total
			North Carolina	South Carolina	
How many levels are in your home (not including your basement)?	One	Count	44	9	53
		% within State	65.7%	69.2%	66.3%
	Two	Count	18	4	22
		% within State	26.9%	30.8%	27.5%
	Three	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your home have a heated or unheated basement? * State

			State		Total
			North Carolina	South Carolina	
Does your home have a heated or unheated basement?	Heated	Count	13	1	14
		% within State	19.4%	7.7%	17.5%
	Unheated	Count	4	2	6
		% within State	6.0%	15.4%	7.5%
	No basement	Count	50	10	60
		% within State	74.6%	76.9%	75.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your home have an attic? * State

			State		Total
			North Carolina	South Carolina	
Does your home have an attic?	Yes	Count	48	12	60
		% within State	71.6%	92.3%	75.0%
	No	Count	19	1	20
		% within State	28.4%	7.7%	25.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Are your central air/heat ducts located in the attic? * State

			State		Total
			North Carolina	South Carolina	
Are your central air/heat ducts located in the attic?	Yes	Count	18	1	19
		% within State	26.9%	7.7%	23.8%
	No	Count	32	11	43
		% within State	47.8%	84.6%	53.8%
	N/A	Count	17	1	18
		% within State	25.4%	7.7%	22.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your house have cold drafts in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have cold drafts in the winter?	Yes	Count	21	2	23
		% within State	31.3%	15.4%	28.8%
	No	Count	44	9	53
		% within State	65.7%	69.2%	66.3%
	DK/NS	Count	2	2	4
		% within State	3.0%	15.4%	5.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your house have sweaty windows in the winter? * State

			State		Total
			North Carolina	South Carolina	
Does your house have sweaty windows in the winter?	Yes	Count	11	2	13
		% within State	16.4%	15.4%	16.3%
	No	Count	53	10	63
		% within State	79.1%	76.9%	78.8%
	DK/NS	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Do you notice uneven temperatures between the rooms in your home? * State

			State		Total
			North Carolina	South Carolina	
Do you notice uneven temperatures between the rooms in your home?	Yes	Count	26	8	34
		% within State	38.8%	61.5%	42.5%
	No	Count	40	5	45
		% within State	59.7%	38.5%	56.3%
	DK/NS	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your heating system keep your home comfortable in winter? * State

			State		Total
			North Carolina	South Carolina	
Does your heating system keep your home comfortable in winter?	Yes	Count	58	12	70
		% within State	86.6%	92.3%	87.5%
	No	Count	6	0	6
		% within State	9.0%	0.0%	7.5%
	DK/NS	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Does your cooling system keep your home comfortable in summer? * State

			State		Total
			North Carolina	South Carolina	
Does your cooling system keep your home comfortable in summer?	Yes	Count	61	13	74
		% within State	91.0%	100.0%	92.5%
	No	Count	6	0	6
		% within State	9.0%	0.0%	7.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Do you have a programmable thermostat? * State

			State		Total
			North Carolina	South Carolina	
Do you have a programmable thermostat?	Yes	Count	42	9	51
		% within State	62.7%	69.2%	63.8%
	No	Count	24	4	28
		% within State	35.8%	30.8%	35.0%
	DK/NS	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

How many thermostats are there in your home? * State

			State		Total
			North Carolina	South Carolina	
How many thermostats are there in your home?	0	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	1	Count	50	11	61
		% within State	74.6%	84.6%	76.3%
	2	Count	6	2	8
		% within State	9.0%	15.4%	10.0%
	3	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	4 or more	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What temperature is your thermostat set to on a typical summer weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical summer weekday afternoon?	Less than 69 degrees	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
	69-72 degrees	Count	22	5	27
		% within State	32.8%	38.5%	33.8%
	73-78 degrees	Count	34	5	39
		% within State	50.7%	38.5%	48.8%
	Higher than 78 degrees	Count	2	1	3
		% within State	3.0%	7.7%	3.8%
	Off	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
	DK/NS	Count	3	0	3
		% within State	4.5%	0.0%	3.8%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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What temperature is your thermostat set to on a typical winter weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
What temperature is your thermostat set to on a typical winter weekday afternoon?	Less than 67 degrees	Count	5	1	6
		% within State	7.5%	7.7%	7.5%
	67-70 degrees	Count	33	4	37
		% within State	49.3%	30.8%	46.3%
	71-73 degrees	Count	10	3	13
		% within State	14.9%	23.1%	16.3%
	74-77 degrees	Count	11	2	13
		% within State	16.4%	15.4%	16.3%
	78 degrees or higher	Count	2	1	3
		% within State	3.0%	7.7%	3.8%
	Off	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
	DK/NS	Count	6	1	7
		% within State	9.0%	7.7%	8.8%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

Do you have a swimming pool, hot-tub or spa? * State

			State		Total
			North Carolina	South Carolina	
Do you have a swimming pool, hot-tub or spa?	Yes	Count	3	1	4
		% within State	4.5%	7.7%	5.0%
	No	Count	64	12	76
		% within State	95.5%	92.3%	95.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Would a two-degree increase in the summer afternoon temperature in your home affect your comfort * State

			State		Total
			North Carolina	South Carolina	
Would a two-degree increase in the summer afternoon temperature in your home affect your comfort	Not at all	Count	15	4	19
		% within State	22.4%	30.8%	23.8%
	Slightly	Count	19	5	24
		% within State	28.4%	38.5%	30.0%
	Moderately	Count	24	3	27
		% within State	35.8%	23.1%	33.8%
	Greatly	Count	8	0	8
		% within State	11.9%	0.0%	10.0%
	DK/NS	Count	1	1	2
		% within State	1.5%	7.7%	2.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

How many people live in this home? * State

			State		Total
			North Carolina	South Carolina	
How many people live in this home?	1	Count	17	3	20
		% within State	25.4%	23.1%	25.0%
	2	Count	29	6	35
		% within State	43.3%	46.2%	43.8%
	3	Count	14	2	16
		% within State	20.9%	15.4%	20.0%
	4	Count	5	1	6
		% within State	7.5%	7.7%	7.5%
	5	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	6	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
	8 or more	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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How many of them are teenagers? * State

			State		Total
			North Carolina	South Carolina	
How many of them are teenagers?	0	Count	62	11	73
		% within State	92.5%	84.6%	91.3%
	1	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	2	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
	5	Count	0	1	1
		% within State	0.0%	7.7%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

How many persons are usually home on a weekday afternoon? * State

			State		Total
			North Carolina	South Carolina	
How many persons are usually home on a weekday afternoon?	0	Count	8	4	12
		% within State	11.9%	30.8%	15.0%
	1	Count	24	4	28
		% within State	35.8%	30.8%	35.0%
	2	Count	25	3	28
		% within State	37.3%	23.1%	35.0%
	3	Count	6	1	7
		% within State	9.0%	7.7%	8.8%
	4	Count	2	1	3
		% within State	3.0%	7.7%	3.8%
	5	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
	Prefer not to answer	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Are you planning on making any large purchases to improve energy efficiency in the next 3 years? * State

			State		Total
			North Carolina	South Carolina	
Are you planning on making any large purchases to improve energy efficiency in the next 3 years?	Yes	Count	19	4	23
		% within State	28.4%	30.8%	28.8%
	No	Count	41	6	47
		% within State	61.2%	46.2%	58.8%
	DK/NS	Count	7	3	10
		% within State	10.4%	23.1%	12.5%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

What is your age group? * State

			State		Total
			North Carolina	South Carolina	
What is your age group?	18-34	Count	13	3	16
		% within State	19.4%	23.1%	20.0%
	35-49	Count	10	2	12
		% within State	14.9%	15.4%	15.0%
	50-59	Count	16	3	19
		% within State	23.9%	23.1%	23.8%
	60-64	Count	11	2	13
		% within State	16.4%	15.4%	16.3%
	65-74	Count	11	2	13
		% within State	16.4%	15.4%	16.3%
	Over 74	Count	5	1	6
		% within State	7.5%	7.7%	7.5%
	Prefer not to answer	Count	1	0	1
		% within State	1.5%	0.0%	1.3%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Please indicate your annual household income * State

			State		Total
			North Carolina	South Carolina	
Please indicate your annual household income	Under $15,000	Count	5	0	5
		% within State	7.5%	0.0%	6.3%
	$15,000-$29,999	Count	12	2	14
		% within State	17.9%	15.4%	17.5%
	$30,000-$49,999	Count	9	2	11
		% within State	13.4%	15.4%	13.8%
	$50,000-$74,999	Count	8	3	11
		% within State	11.9%	23.1%	13.8%
	$75,000-$100,000	Count	4	3	7
		% within State	6.0%	23.1%	8.8%
	Over $100,000	Count	7	2	9
		% within State	10.4%	15.4%	11.3%
	Prefer Not to Answer	Count	18	1	19
		% within State	26.9%	7.7%	23.8%
	DK/NS	Count	4	0	4
		% within State	6.0%	0.0%	5.0%
Total		Count	67	13	80
		% within State	100.0%	100.0%	100.0%

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Appendix H: Suggestions for Improving the Program

Program participants were asked to rate the program overall, and various particular aspects of the program, on a ten-point scale where "10" is best; the mean ratings are shown below in Table 144.

Table 144. Mean Satisfaction Ratings for the Savings Store and Aspects of the Specialty Bulbs Program (N=136)

	Average Rating	Valid N (not including don't know)	Percentage of ratings at "7 out of 10" or lower
Satisfaction with the Savings Store overall	9.15	135	9.6%
Satisfaction with store return practices	10.00	4	0.0%
Satisfaction with "Contact Us" feature provided for store	10.00	1	0.0%
Satisfaction with phone support provided for store	9.45	11	0.0%
Ease of using the shopping cart function at the website	9.35	128	3.1%
Ease of completing purchase online	9.32	133	6.8%
Satisfaction with delivery time for bulb order	9.26	133	9.0%
Ease of logging on to website	9.23	132	4.5%
Ease of navigating website	9.20	130	6.9%
Satisfaction with price of bulbs	9.04	133	13.5%
Ease of finding the items you were looking for	8.79	134	14.2%
Helpfulness of bulb descriptions	8.76	131	16.8%
Helpfulness of energy savings estimate per bulb	8.64	99	18.2%
Satisfaction with order tracking feature	8.61	18	16.7%
Helpfulness of informational resources at web site	7.86	43	32.6%
Helpfulness of the energy savings calculator	7.42	24	33.3%

Customers who gave ratings of "7" or lower on a ten-point scale were asked the reason for their relatively low ratings. These responses are listed below for all of the ratings shown in the table above.

Satisfaction with the Savings Store overall (N=13)

- *I had also ordered a six-pack of spiral CFLs that were not delivered. I called to check the status, and even though my order was processed and my credit card was debited, the order did not come. So I called to request a refund and have heard nothing for the past year.*
- *In terms of shipping, my bulbs were not packaged very well. I received them and seven out of the twenty-one I ordered were broken and I had to throw them out. Improve the packaging.*
- *I got something totally different than I thought I was getting. I thought I was getting a six-pack of each, but I ended up with one bulb each. It seemed very misleading to me. I just ordered the wrong bulbs at the wrong price. Make it more clear as to what you're*

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actually purchasing, confirmation as to what exactly you're buying, the number of bulbs and whether it's a multipack.

- *The Savings Store could provide a clear itemized description of a customer's order before it's finalized.*
- *I needed more information about the brightness of the bulbs as I was unaware that there are three types of light quality for the CFLs. Since doing this survey I realize that there was more information available that I did not take advantage of.*
- *They could have told me that there was a longer wait time on attaining full brightness. I don't want to be in the bathroom waiting on it to get bright.*
- *The shipping was expensive and I couldn't compare two different bulbs to each other. Also, I would prefer to pay for the bulbs through Paypal or have them billed to my account.*
- *The Savings Store should have better pricing than I could get at a regular home improvement store.*
- *The Savings Store should have a more intuitive website, higher limits on the discounted price, and better explanation videos.*
- *The Savings Store could offer appliance bulbs for ranges and refrigerators.*
- *The Savings Store should have better navigation and more availability of bulb types.*
- *I'm not dissatisfied. The pamphlet gave details and explanations of the capabilities of the bulbs. The Store made it easy to purchase these bulbs, and know what you were purchasing.*
- *I had problems while shopping at the site, but it's probably just me; I'm not too great with computers or doing things online.*

Ease of using the shopping cart function at the website (N=4)

- *It's not an issue really. Yes, there's a limit to the number of bulbs you can purchase. There's no feedback that you've reached your limit and that there's an increased price. Because the price in the shopping cart is giving you the discounted price, it would be easy for people to spend too much without knowing. Run a filter of sorts, or send a message, that you've reached your limit and that this will increase your cost. It's too easy to spend too much.*
- *My biggest problem was getting into the account. The website kept saying 'you already have received your free light bulbs,' even though I was trying to buy. Getting into the site was a pain.*
- *I vaguely remember having some sort of problem while shopping and placing my order. I can't remember what specifically the problem was. The problem might just have been me though, I don't usually buy anything online and I'm not 'a natural' with the online shopping experience.*
- *I don't know.*

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Ease of completing purchase online (N=9)

- *The site kept saying I had received 15 free bulbs, but I wanted to buy specialized bulbs. It kept interrupting as I was trying to buy, and that made the process more confusing.*
- *It wasn't hard to complete my purchase but something made me pause. I think it was that I had to pay with my credit/debit card. I would have preferred using Paypal or having Duke bill my account. I also disliked that the shipping charges were so high.*
- *It wouldn't take my wife's credit card, but it took mine fine.*
- *The purchase itself was easy enough, but one of the bulbs I ordered wasn't available so Duke sent me an alternate type of bulb.*
- *I found the log-on process to be difficult.*
- *The site isn't quite as well thought-out as it should be. Run a filter of sorts, or send a message, that you've reached your limit and that this will increase your cost. It's too easy to spend too much.*
- *I vaguely remember having some sort of problem while shopping and placing my order. I can't remember what specifically the problem was. The problem might just have been me though, I don't usually buy anything online and I'm not 'a natural' with the online shopping experience.*
- *I don't know.* (N=2)

Satisfaction with delivery time for bulb order (N=12)

- *Duke could verify that the bulbs they offer are in stock. I experienced a slight delay when one of the bulbs I ordered was unavailable and they had to send me a comparable replacement.*
- *When we call to order, bulbs should be send out immediately and the cost should be added to our utility bill.*
- *I shop on Amazon a lot and I'm used to two-day delivery.*
- *The delivery was slow. It took three weeks.*
- *I was expecting it to be a bit faster, like three or four business days. I think the actual time for processing and delivery was two weeks.*
- *It took almost two weeks, so getting them out faster might help.*
- *It took about a week and a half for the two I received; I think it could have been better.*
- *I would have liked to get them in three or four days rather than a week.*
- *I would like faster delivery.*
- *The bulbs could have come sooner.*
- *I don't know.* (N=2)

Ease of login on to website (N=6)

- *I couldn't navigate to it at first because I assumed it was part of the Duke Power site. It took me a while before I found the link. It was my fault in part; I lost the mailing insert that gave the web page.*

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- *I had a problem with the link from home page. It's been too long for me to remember the exact problem, but I remember having a problem.*
- *I didn't think that the various modules, or pages, that you had to bring up were very intuitive.*
- *There are a lot of different hoops during sign-in; it should have quicker access.*
- *I guess the logging on was rather routine, that's why I give it a "5".*
- *I don't know.*

Ease of navigating website (N=9)

- *I remember it being awkward and hard to navigate.*
- *I was unable to compare one bulb to another easily. It took several clicks to get the details about the bulbs making it difficult to compare them.*
- *Navigating the website requires overly precise clicks. I would prefer being able to click anywhere on a picture to bring up the description of that item.*
- *I didn't think that the various modules, or pages, that you had to bring up were very intuitive.*
- *The website could update its inventory so that customers don't waste time attempting to purchase bulbs that are out of stock.*
- *I was on the phone with customer support to help me navigate around the site because I am not that good at working on the computer.*
- *I remember having problems while shopping on the site and placing my order. I don't specifically remember what problem I had because it was quite some time ago. I did contact the customer service phone line eventually, after I finally found the phone number to call, which was not an easy number to call.*
- *I was just looking and comparing.*
- *I don't know.*

Satisfaction with the price of bulbs (N=18)

- *I found the prices at the Savings Store were not competitive with Lowe's or other big box stores. Often, I found I could get the bulbs at cheaper prices elsewhere.*
- *When Lowe's runs sales on light bulbs they are sometimes cheaper.*
- *Compared to retailer prices, some of the bulbs are cheaper and some were more expensive at the Savings Store.*
- *The prices did not seem to be lower than what I could find in other stores.*
- *The price was still pretty high. I got some free ones from Duke, but I think I could have gotten the ones that I bought for cheaper at Walmart.*
- *The price of the light bulbs matched those that I could find at Walmart.*
- *The prices were the same as I had gotten other places.*
- *They weren't free, and they were just a tad bit more expensive than the ones in the store. But ordering online means that I didn't have to use gas to go to the store.*

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- *I went to stores; I looked at WalMart and Lowe's for their prices. I found that Duke's price was slightly lower, but I thought it would have been even lower still because of what Duke is trying to do with energy efficiency. If they want customers to save money and use these bulbs, then they need to have a reasonable price.*
- *They were reasonably fair or reasonably expensive, depending on how you look at it. I didn't comparison shop, but my grandson said they were priced equal to or less than the stores.*
- *I think that all fluorescent bulbs are more expensive. I'm not used to the price of them yet.*
- *I think they're all overpriced, but the prices are better with Duke than other places.*
- *I would prefer that the bulbs were less expensive.*
- *They were kind of expensive.*
- *I really didn't know what to compare them to. I just took it to be a reasonable price.*
- *I got something totally different than I thought I was getting. I thought I was getting a six-pack of each, but I ended up with one bulb each. It seemed very misleading to me. I just ordered the wrong bulbs at the wrong price.*
- *I don't really remember the price.*
- *I don't know.*

Ease of finding the items I was looking for (N=19)

- *I was looking for lower-wattage dimmable bulbs that were equivalent to the 60W incandescent bulbs I have on a dimmer switch. I found Duke offered 23W bulbs which are 100W equivalents, but not 13W or 18W dimmable CFLs. The 23W dimmable CFLs are too large for my fixtures.*
- *I was looking for smaller bulbs; ones that were thinner and shorter, but with a standard base and 13W. These are for fan lights. I had trouble finding those.*
- *I was looking for the brightest bulb possible that could go in a 60W socket. I needed help finding a bulb that fit those parameters as I was having a hard time finding that online alone.*
- *Provide a description of the fixture that the bulbs would fit into.*
- *The Savings Store could provide more specifications about the size and threading of the bulbs.*
- *I was trying to determine how they compared, and I didn't know how they compared in size and illuminating standpoint.*
- *I was unable to compare one bulb to another easily. It took several clicks to get the details about the bulbs making it difficult to compare them.*
- *It would help if there were better descriptions of the bulbs.*
- *Duke could provide a more concise list of bulbs based on availability.*
- *It took longer than it should have for me to find the LEDs. I shop online often.*
- *It was only difficult because you had to make an account to actually purchase the bulbs, and I found logging on was difficult at the Savings Store site.*

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- *It took a while to find what I needed.*
- *It's probably average. You have to hunt around.*
- *They could use more detail on specifications. I don't know if it showed the wattage or not; if they did, I don't recall. The more information you could provide, the easier it is and the better it is. Six out of ten times I shop online, I end up calling the telephone number to get help completing my purchase or to get clarification. I look for a phone number. I don't order online unless I have someone to call. I'm not tech savvy.*
- *I was on the phone with customer support to help me navigate around the site because I am not that good at working on the computer.*
- *I did not visit the online Savings Store personally. The Savings Store brochure needs to be less complicated and show customers what they're getting.*
- *I don't know.* (N=3)

Helpfulness of bulb descriptions (N=22)

- *Duke could provide wattage and light output level equivalency comparisons of incandescent bulb versus CFLs. Customers are more familiar with the numbers associated with standard incandescent bulbs.*
- *I needed more information about the different types of light quality available for the CFLs. I was also unable to find information on the different types of specialty bulbs that the Saving Store was selling.*
- *I think there needs to be better descriptions for the LEDs and give examples of where they should be used in the house and what sort of lighting situations they work the best, like if they are better used as a spotlight or a reading lamp light and so on.*
- *More information about indoor versus outdoor use. The bulbs that were delivered were 5-10 Watts shy of what they were advertised at on the website.*
- *They could probably provide a little bit better visual description of how they look. I found that the descriptions were too general, not specific enough. The bulbs that I received in the mail did not look the same as what was described on the website.*
- *I wasn't understanding the descriptions. When I tried to pull up the picture of the bulbs, I was confused and ended up ordering a different bulb than I wanted. I think I can still use these bulbs; I still need to find the bulbs for the ceiling fans.*
- *I was unable to compare one bulb to another easily. It took several clicks to get the details about the bulbs making it difficult to compare them.*
- *I wasn't sure how to compare to the regular light bulbs I had.*
- *I would like a little more description of the bulb, such as how they would be used.*
- *It gives you the wattage and everything but it doesn't tell you the physical size of the bulb itself. The bulbs I purchase barely fit into my fans. It does not say what it will fit into.*
- *Provide a description of the fixture that the bulbs would fit into.*
- *The Savings Store could provide more specifications about the size and threading of the bulbs.*

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- *It would have helped to know about the slow warm-up time required for the candelabra bulbs. My bulbs had a very slow warm-up period. I think it would be useful if the website had some sort scale or way to measure the amount of time a bulb takes to attain a full brightness capacity.*
- *The Savings Store could provide more information about the elemental dangers of some bulbs and about proper disposal methods.*
- *It would be helpful if you could do something for people who vision impaired.*
- *The descriptions were a little confusing.*
- *Duke could provide more informative bulb descriptions.*
- *The bulb descriptions need better wording.*
- *I got something totally different than I thought I was getting. I thought I was getting a six-pack of each, but I ended up with one bulb. It seemed very misleading to me. I have to really look at this sucker to know what I'm getting.*
- *It was reasonably descriptive.*
- *We already knew what we wanted.*
- *I don't know.*

Helpfulness of energy savings estimates per bulb (N=18)

- *The savings estimates didn't much matter to me, especially because we don't have a choice in getting incandescent bulbs anymore to even compare the savings; we are basically forced to use CFLs.*
- *I didn't pay that much attention to the energy estimates, so I'm neutral on that experience. I was already sold on CFLs.*
- *I would like to see a comparison of energy savings between a standard incandescent, a CFL, and an LED.*
- *Duke could include more information with the energy savings estimates.*
- *The energy savings estimates need to be customizable based on usage in order to provide a more accurate estimate.*
- *Duke could improve the energy savings estimates by simply telling me how much money I'll save annually.*
- *The energy savings wasn't very impressive. I think it was given in monthly savings; if it had been given in annual savings, that would have been more impressive. The calculator could have been better.*
- *They could be more specific, like provide the energy savings expected on a years' time-frame, or maybe the savings expected each month. These savings estimates would be more realistic than the 'lifetime savings'.*
- *They were helpful. I don't think they transferred into dollar savings, but I can feel ecologically sound.*

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- *The bulb descriptions were nice but I'm fairly educated about different types of bulbs and didn't really need the information. As far as those energy savings estimates go, no one can really know how much energy they are actually saving with CFLs.*
- *It wasn't that it needed improvement, I had already realized the energy savings of CFLs, so those savings estimates were not helpful to me. It's not a matter improving those savings estimates provided, it's that I don't care for them, or don't really need them because I am already aware.*
- *I already had that knowledge.*
- *I didn't really use this feature because I was more concerned about the bulb prices.*
- *I wasn't looking at energy saving as the most important thing, I was looking for particular bulbs and making sure where they would fit or if I would be able to use them in the light fixtures that I wanted them for.*
- *I noticed this feature but didn't use to help pick out bulbs for my home.*
- *I didn't look at the energy saving estimates at all.*
- *Those estimates of energy savings have no impact on me.*
- *I don't recall enough about that feature.*

Satisfaction with order tracking feature (N=3)

- *It took a long time for them even to show up in the system. I shop online a lot and I can usually see information about my order within 12-24 hours. It took much longer than what I'm accustomed to.*
- *There were too many steps for me to do to track my order. I got annoyed and just hoped that the bulbs would be delivered.*
- *In addition to the order-tracking link, Duke could provide the name of the delivery company.*[54]

Helpfulness of informational resources at website (N=14)

- *We didn't realize how big of a deal recycling bulbs was before that.*
- *It could go either way, so I'm going to give it a middle of the road rating, partly because the bulb descriptions were lacking information. They got real technical and need better descriptions that identify bases and sockets; I had to research that.*
- *I was confused by the descriptions.*
- *It's hard to know what you're getting. The videos very short and rudimentary. The production value was in the toilet. It's a utilitarian website, very basic.*
- *The descriptions for the bulbs were important; I just hate watching videos, though.*
- *I didn't use this feature, other than the bulb descriptions.*

[54] This is a valid comment that refers to the fact that the Store offers three shipping methods including the U.S. Post Office, UPS, and "any carrier," which is the cheapest of the three choices. The carrier is not specified since the system selects the least expensive method, which is often but not always FedEx Post which uses a combination of FedEx and the U.S. Post Office.

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- *I had no need for these resources. I knew what light bulbs I wanted to order.*
- *It wasn't something I looked at in particular.*
- *I don't know.* (N=6)

Helpfulness of energy savings calculator tool (N=8)

- *The Energy Savings Calculator could be made more customizable and user-friendly, especially for senior citizens. I did not feel the Calculator accurately represented our energy usage.*
- *The Energy Savings Calculator could be more accurate. How are the savings estimates derived? My energy usage is different than what was calculated. Home energy audits could provide more accurate energy-use estimates.*
- *The calculator asks for too much information and nothing in there is realistic.*
- *I just think that giving a more basic price comparison, such as comparing the cost of operating six incandescent bulbs versus six of the newer type. Present this as a pre-calculated example.*
- *If it told me how many watts I was going to use, that's all that's really important to me. If you're reasonably educated, you can tell from the specifications.*
- *I had already done my research before viewing the Calculator.*
- *I don't know.* (N=2)

Overall Satisfaction with Duke Energy

Satisfaction with Duke Energy is generally high among these program participants, with a mean rating of 8.34 on a ten-point scale where "10" means "very satisfied." Thirty-three participants (24.3% of 136) rated their satisfaction with Duke Energy at "7" or less on a ten-point scale and were asked how this situation could be improved; these responses are listed below. The most common responses have to do with concerns about high energy rates and the recent Dan River coal ash spill (especially for North Carolina customers), and these two issues are often linked.

North Carolina customers (N=27)

- *I was annoyed when I read "thank you for your business" on the bottom of my bill because Duke Energy is a monopoly. Someone from Duke Energy dug up my yard to repair the cable in February or March of this year and they threw some grass seed over the area. The grass didn't grow and they never came back to fix my lumpy, muddy yard.*
- *We were going to have trees cut on our property and I called Duke and scheduled when to have the power lines dropped. The people from Duke were four hours later than the appointment. Our contractor managed to work around the lines, which caused delays for him and potentially could have endangered the power lines, my family, or the contractor, and it would have been at my expense and responsibility. I was and still am unsatisfied about that experience and lack of customer service on Duke Energy's part.*
- *We just had a major ice storm and we are all very dissatisfied with length of time it took to get back up. We're all feeling pretty low about it, as it's messed up the environment and is very political. It's really hurt our community.*

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- *Clean up the coal ash spill and do a better job avoiding situations like that in the future.*
- *Duke could clean up the coal ash mess.*
- *Duke could be more proactive cleaning up the recent coal ash river pollution fiasco, regardless of the cost.*
- *I am not happy about them passing on the cost of their coal ash clean up. Duke's management made the mistake; their stockholders should pay for this not the customers. Otherwise, Duke's service is good. Good response time to a fallen line after a storm. No complaints about their rates.*
- *I've had Duke Energy for a long time and their service has always been great but they have a long history of environmental negligence. They were recently got caught dumping ash and I heard on the radio that Duke implied that it would be inconvenient and expensive to clean it up so they shouldn't have to clean it up and they are looking for another rate hike so they can pay for the clean-up. Duke Energy made more than $2.5 billion last year so they should be able to pay the millions of dollars needed for the clean-up.*
- *The carelessness or neglect that caused the coal ash spill in the Dan River. Duke Energy is always requesting rate increases and now with the spill they're going to need a hefty rate increase so they can keep making billions of dollars for the stock holders.*
- *It's the cost of energy from Duke. Duke had a big environmental problem, and the customer is the one that's going to end up paying the bill. The Energy Commission said that coal ash cleanup will cost $25 billion, and somebody's going to pay for it. The other problem Duke has is that since the customers all went to using CFLs, the energy use per customer is down. So for the utility to stay profitable the rates were allowed to go up. This means that over the longer term, you don't get the cost savings you think you should get. You might think the bulbs will save you energy, and they might, but the average customer won't see a cost savings.*
- *Rates could be lower. Switching more towards solar power would be great because it's more sustainable than coal and then there wouldn't be as much risk for a coal ash spill occurring.*
- *They raise prices too quickly. I'd also like to see them clean up their act with the coal ash spills in the rivers.*
- *I'm very unhappy about the coal ash in the Dan River, especially when I'm likely to be one of the people paying to clean it up. They should not have kept it in a storage pond next to the Dan River in the first place.*
- *I am not happy with Duke because of the ash spill and the possibility that I will have to clean it up. It's time for the company to take ownership and pay for it themselves. For example, if I damaged your utility box on my house, I would have to pay for the damage; it's my responsibility. The customers should not have to pay. I understand it on the business side but not on the morality side. Also, I have a best friend who had her furnace regulator break. The system kept running, even though the temperature didn't rise. Duke knew about the problem but said nothing. If you cared about customers, why wouldn't you offer to help them, especially when her bill was $1,200 versus her usual $169 rate. When she called to explain the circumstance, Duke would not adjust her bill. That's not good customer service. I feel Duke should have at least offered her some discount. She*

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had to get loan to pay it off. Now we're hearing we'll be paying an extra $20 per month; that's like kicking us all over again. Be nicer to customers when you know that something is wrong.

- *I'm fine with service but I'm not happy with how Duke Energy management has been making decisions. I don't like how they have been dealing with the coal ash situation. Duke Energy gave the Democratic National Committee a loan for $10 million so they would have the convention in Charlotte but DNC couldn't pay it back so Duke just wrote it off.*
- *I had a problem last year with the power bill and I can't figure it out. The Feb 2013 bill skyrocketed. It was about three times as high as usual. I called Duke Energy to see why but they didn't know either. I still can't figure out what caused it, but I'm relieved that I haven't had that problem again. If my bill had stayed that high I would not be able to make the monthly payments.*
- *I think they ask for rate increases too often. Also, last year our bill had a major jump, and we didn't know what was happening until after we had spent $1,200 on electric over three months. It turned out we had a well pump running nonstop because of a leak. For a long time we had no idea of where the extra energy use was coming from. I think someone at Duke should have noticed this and called to ask us why; perhaps even help us to trouble shoot the problem. It was obvious that something was going on, but nobody seemed to care.*
- *I'm using less wattage with my lighting since I've switched to CFLs but my power bill is just as expensive. Duke Energy needs to work on keeping the cost of power down, it seems like it is constantly increasing even though we are making efforts to be more energy efficient. I want to see savings, not breaking even.*
- *Duke could verify that the amount of electricity they charge for matches the actual usage.*
- *The rates keep going up, but I haven't had any problems with service.*
- *The energy price seems a little high already, and they're asking for an increase of 12%.*
- *The rates keep going up and we can barely afford to pay the winter bills and pay for other necessities.*
- *Rates are too high / lower the rates* (N=3)
- *I don't know.* (N=2)

South Carolina customers (N=6)

- *A lot of it is customer support issues over the phone, the people working in Duke's customer service are typically rude and they don't ever seem to want to be helpful. I suggest Duke Energy puts some concentration on improving the quality of their customer service over the phone.*
- *I don't like the automated calls when my bill is late. I get about four calls in a row. I feel like I am being chased down.*
- *Duke's commitment to the community is questionable. Overall, Duke is a for-profit company and they looking out for themselves. But, they need to look out for their consumer economically, rather than continuing to raise their rates and look out for themselves. Environmentally, they want to control the solar energy thing. Duke and the*

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natural gas people want to control what's free and that's not a very friendly way to do things. The energy company is the only company that can sell the sun back to the homeowner. That's bogus. They want to control solar and don't want to let anybody else in. They do good things, but they're not doing good things with the solar energy issues.

- *Energy costs are too high in general, and I also had a problem with my power bill itself. Up until four months ago, my bill was about $125 per month. Then it grew to $200, then $300, and finally over $400. I'm on a tight budget and didn't see any reason why it went up so much. I called to get an explanation from Duke, and they just said, "oh, it's colder than last year." That's a crock. I've been taking temperatures and calculating the mean average for the last three years. There's only a 2.5 degree difference for this year compared with previous years. That doesn't account for the big change in my bill and no one can logically explain why my bill went that high. What's more, last year I had two other people living here and using energy that weren't here this past winter. We've done energy-saving steps like turning the night temperature down to 67. We had the hot water tank and wiring checked. I know the Duke method is to ask for a 16% rate increase and settle for 7%. While Duke corporate executives and even middle managers get nice earnings, we're struggling.*
- *Stop asking customers for rate hikes.*
- *Duke could limit the number and amount of their rate increases.*

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Appendix I: Explanations of Influence Ratings

Survey respondents were asked to explain the influence ratings they gave for the reduced price of bulbs, the information provided at the Savings Store website and the convenience of online ordering on their decision to purchase bulbs from the Savings Store. These comments are categorized and listed below.

Influence of Savings Store reduced pricing: rating "10 out of 10"

- *The lower price was the main reason I ordered from the website. I wanted the CFLs for my home and when I saw the website when I was paying my bill online I decided to have a look at the website. It was easy to use and I found what I was looking for my home right away. It was such a good price that I ordered them right away.*
- *The pricing got me to buy right away. I didn't have to think it over long. I knew that I was going to save money on my power bill by using the CFLs and LEDs and the lower prices got me to buy them.*
- *Would not have bought the same amount if they were at the full price. It allowed me to change out a whole room at once.*
- *I would not have purchased so many light bulbs if not for the reduced pricing.*
- *I needed a lot of bulbs, so since they were on a reduced price I was able to get as many bulbs as I needed.*
- *I wanted the CFLs for the chandelier because we keep it on all day but I couldn't afford to get CFLs at the store. The CFL bulbs are expensive and if you need five like I did they are too expensive.*
- *I wanted to try some of the specialty CFLs without having to pay a lot for them and the reduced pricing made that possible.*
- *I wanted to get cheaper specialty CFLs so I could try them out before I commit to using them everywhere in the house.*
- *We recently moved into the house and the previous owners had all incandescent bulbs installed. Since we moved in I have been switching the old bulbs out for CFLs and being able to shop for discounted CFLs helped us save money on our purchase.*
- *I wanted inexpensive bulbs as I start switching over to CFLs in the house.*
- *We wanted discounted bulbs. I could have gotten them anywhere really but it was the Saving Store's lower prices that got me ordering the CFLs offered. I did not order the LEDs because they aren't comparable to the prices I can get elsewhere.*
- *It was the main reason why I bought bulbs from the Savings Store. I'd already been to Lowe's and other retail stores, so I knew what sorts of bulbs I wanted and what the current pricing was in stores. The main reason I bought the bulbs from Duke was mostly because of the reduced price they offered.*
- *They were much cheaper than anything I'd priced. I'd been to WalMart and Costco.*
- *Reduced pricing was my primary influence. I compared the Savings Store's pricing to both Lowe's and Home Depot.*
- *The Savings Store had the best prices compared to Home Depot and Lowe's.*

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- *I wanted to try out LEDs and wanted to find them at the lowest possible price so I wouldn't feel like I was wasting money if I didn't like them. I had been comparing prices at local stores like Lowe's and Home Depot, but the ones offered from the website were the lowest price I could find.*
- *I went to the Home Depot and, as I recall, they were $10 or $15 apiece and, if I recall, Duke was $3 or $4 a piece. I think Duke Energy's prices were very good.*
- *Those bulbs were way more expensive at Lowe's and Home Depot, almost twice as much. It was like $40 for one bulb at Lowe's.*
- *The price for them online was less expensive than at Home Depot or Lowe's.*
- *The reduced pricing was the main reason I chose the Savings Store; otherwise I would have bought the bulbs at Home Depot.*
- *The price offered at the Savings Store was much cheaper than Lowe's or Home Depot, which is why I bought the bulbs from the Duke site.*
- *That was mostly the main reason I made the purchase for the globe bulbs, the price was right. I wanted globe CFLs and I was aware that these were priced the lowest than any I had seen anywhere else, like at Lowe's or Walmart.*
- *It was cheaper than at Lowe's or anywhere else that I looked.*
- *I wanted cheaper lights. The CFLs at the Savings Store were cheaper than at Lowe's.*
- *The price is better than at Lowe's.*
- *The price on Duke's site was cheaper, I compared to Lowe's priced for these bulbs and Duke's were cheaper so that's why I bought them from the Duke site.*
- *The discounted pricing, which was substantially lower than what other stores were offering, was very influential.*
- *Because I was looking for bulbs and I wanted the cheapest bulbs, and this site had the cheapest bulbs.*
- *The price of an item is usually what will bring me to buy something or not. These bulbs that I wanted were offered at a much better price than I could find at local retailers, so I chose the Savings Store.*
- *The reduced pricing was very influential. I would have purchased the bulbs from somewhere else if I could have found a better deal.*
- *The reduced pricing was very influential because I couldn't find a better deal elsewhere.*
- *If I had bought those same type of CFL outdoor reflector lights from the store, they would have been much more pricey. The Savings Store had them at a better price than I could find elsewhere.*
- *I wanted to save money on the specialty CFLs. They are cost prohibitive at the store even though I wanted them for my home.*
- *The CFLs were less expensive than at a retail store.*
- *The price was reasonable compared to what they were selling it for at the store.*
- *I knew what they cost retail, and that they were less at the website.*
- *They were considerably less expensive than in a store.*

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- *The prices at the home stores here are so much more than the Savings Store price; it was a great deal.*
- *I wanted to save money on the LED bulbs and they were cheaper at the Saving Store than anywhere else.*
- *It's reduced a good 50% from retail; three-way bulbs are normally around $15 to $18 apiece and yours about $6. It's almost a no-brainer.*
- *I remember the Energy Store price being 70% less than I would have paid in the stores*
- *The Savings Store price is discounted about 80% from the normal market price.*
- *I needed six bulbs. If I had paid retail, they would have cost me five to ten times what I paid for the same bulbs from Duke.*
- *The price at the Saving Store is considerably less than in stores so they're more affordable.*
- *These bulbs were offered much cheaper than buying them at a store.*
- *I compared prices.*
- *That was whole point, I bought the bulbs because they were offered at such a great, low price.*
- *It's just a good product at good price.*
- *I wanted inexpensive CFLs bulbs for my home. This was the main reason I choose to purchase bulbs from the Savings Store.*
- *I wanted inexpensive bulbs.*
- *The bulbs were the cheapest around.*
- *They were cheap.*
- *The prices were really good.*
- *The price was great!*
- *The prices were great!*
- *The price was amazing!!*
- *Any time the price is lower, that's a good thing.*
- *They were the cheapest I could find and I'm always looking for ways to save money.*
- *When you are on a limited income, you look for the best deal for the money.*
- *I was looking to save money on my light bulb purchases and I know that soon enough we won't be able to buy incandescent bulbs anymore.*
- *Money talks, and price wins. The reduced pricing was the main reason why I bought bulbs from the Savings Store.*
- *The discounted pricing was probably the deciding factor.*
- *Low price was definitely the deal maker.*
- *The lower prices was the deciding factor is getting us to purchase the CFLs from the Saving Store.*
- *The reduced pricing was very influential in my overall decision-making process.*

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- *They showed the price and then the reduced price was shown. Since I needed six or eight of them, it did influence me.*
- *Reduced bulb pricing and projected energy savings were the biggest influences.*
- *The reduced pricing and bulb availability were influential, along with the simplicity of the transaction and the benefit of not having to incur any travel costs of my own.*
- *The reduced pricing, along with cost savings, energy efficiency, and bulb longevity were all very influential.*
- *The price and need was the reason I bought them.*
- *I try to save money where I can. I found some of the bulbs I needed at a discounted price at this Savings Store, so I bought them.*
- *I was looking for inexpensive bulbs that were still a good quality bulb.*
- *The discounted prices was the main reason I purchased bulbs from the Saving Store.*
- *It was a good price. It would be the only reason to purchase it from the Savings Store.*
- *This was the main reason that I ordered bulbs from the Saving Store.*
- *The reduced pricing was very influential because I am frugal.*
- *The reduced price helped me save money both for getting the CFLs in the first place and eventually saving some energy and money on my electric bill once the bulbs were installed.*
- *I wanted competitive prices for the bulbs. It wasn't the cheapest but it was easier to order online than drive around looking for the bulbs in stores.*
- *I was considering it anyway and it was an easy way to do it without having to start running around town.*
- *The LEDs are reasonably priced but the shipping costs made them just as expensive as other stores that offer the same products at a higher cost that have no shipping cost.*
- *I kind of knew how much they should have been in the first place from what I've seen retailers offer. The savings was barely comparable when you add the cost of shipping. Once I saw that they had either reduced or offered the shipping costs for free (I can't remember which), that's when I decided to buy bulbs from the Savings Store.*
- *In past, I haven't bought this sort of bulb because they did not seem as durable as what they claimed. These bulbs were also so much more expensive, so from an economic and ecological basis, they were not as promised. The lower prices with Duke at least take care of the economics.*
- *I bought the bulbs, so it must have influenced me.*

Influence of Savings Store reduced pricing: rating "8 or 9 out of 10"

- *I wanted cheaper light bulbs than offered in stores. I probably would not have tried out the LEDs at the store price.*
- *The discount on the webpage made trying the specialty CFLs the best choice because it was affordable. I'm on a fixed income so coming up with the money to buy CFLs is harder because they are so expensive. Hopefully these bulbs will save enough money over time so I can afford to use only CFLs.*

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- *They had pretty decent savings. We went to some electric stores, and Home Depot and Lowe's, and to Ace Hardware; Ace was particularly expensive. So I would say Duke's price was very influential.*
- *I was influenced by the reduced pricing after comparing it to Home Depot and Lowe's.*
- *The prices were better than at Home Depot.*
- *I had already done price comparisons with other retailers like Lowe's and I found that the Duke Savings Store prices were about 60% less than what the retailers were going for.*
- *The Savings Store's pricing seemed akin to that of Lowe's and Home Depot's.*
- *I wanted to buy the CFLs for less than at stores.*
- *The prices of the bulbs seem lower than at most stores.*
- *Their price was about the same or less than in stores, according to my grandson.*
- *They were slightly cheaper and were just as good as store-bought bulbs; same lumens for less money.*
- *I compared that to some of the retail stores where I usually go and found that the Duke Energy store was more of a price reduction. But, there were not that many brands available. I think all of them come from the same manufacturer.*
- *I had done comparison shopping of these bulbs; all types of these special bulbs are expensive, although I know they last longer. I also know the old bulbs are being phased out; maybe one day the price will come down as the sales go up, and they'll be more economical.*
- *That's probably the main reason why I purchased the bulbs from the Savings Store. They offered a much lower price than I could find elsewhere, I thought they were a good deal.*
- *Even if they weren't reduced, they're still a little bit cheaper; that probably cinched a few of them. I bought more spares.*
- *Price was a major part of the decision.*
- *The reduced pricing was very influential because I like to save money.*
- *I like to save money.*
- *I wanted to save money on CFLs.*
- *I wanted inexpensive light bulbs.*
- *Reduced price is always good.*
- *I thought it was a good price.*
- *The prices were really good.*
- *It sounded like a good price for us.*
- *I was very satisfied with the prices.*
- *I knew I was still going to buy them, and I knew I would have to get more than were offered at the sale price. But it was still a fair price.*
- *Something was misleading on there and I wish I could pinpoint it. I just ordered the wrong bulbs at the wrong price.*

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- *I really just needed the bulbs I needed for their brightness, wattage, and safety. The price didn't make much of a difference to me.*

Influence of Savings Store reduced pricing: rating "6 or 7 out of 10"

- *Because it was influential in me buying them, but I would have looked anyway. The price just made it easier to justify buying 12 at a time instead of a four-pack.*
- *I think the availability of multi-packs was more influential in my decision.*
- *The reduced pricing was fine, but I was mainly interested in bulb longevity.*

Influence of Savings Store reduced pricing: rating "5 or less out of 10"

- *I really didn't notice the reduced pricing.*
- *I don't think that there were reduced prices.*
- *I was not aware Duke offered any 'reduced pricing'.*
- *The price was slightly different than in stores, but not as much as I would have thought.*
- *I really just needed light bulbs and it was convenient at the time. The pricing had no effect on my decision to buy the bulbs from the saving store. If they would have been lower in price I would have purchased more.*
- *Price was not what drove me to the Savings Store. I bought because of the variety of bulbs offered, not the price.*
- *I don't remember.*

Influence of Savings Store reduced pricing: rating "don't know"

- *I think the bulbs were cheaper at Duke, but I can't recall specifics as to how much.*
- *I didn't notice that there were reduced prices.*
- *I don't recall there being a reduced price.*
- *I was not aware that there were discounted prices.*
- *It would have been an influence, if the prices were really reduced.*
- *I really didn't think that the price was reduced. I could have bought new ones at Walmart cheaper.*
- *I don't know if the price was good or not. I did not compare it with any other place.*
- *I didn't compare prices to other stores.*
- *The pricing did not influence me.*
- *I don't know / can't recall* (N=6)

Influence of information at the Savings Store website: rating "10 out of 10"

- *Once I got past the past a socket size issue, they covered everything else. That's the reason I logged off the second time I went to the website. Unless you know exactly what you're looking for, it can be hard to find out if the specs are right, unless you know how to read those descriptions. The descriptions are too technical for the average person. It*

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didn't bother me so much, but I got off and measured all my sockets. Sometimes, the bulbs are the same, but the base is different. Once I figured it out, I'd give it a ten.

- *Because you can trust Duke Energy. It's always been that way. I know there are people who are upset about rates, but Duke has been a good provider for energy.*
- *I felt like I trust what they, Duke Energy, was saying.*
- *We trust Duke Energy so we knew that all the information they were providing us was accurate. I didn't look at the CFLs much because I knew that I wanted to try out the LEDs, but the information provided about the LEDs made me feel confident that I would like them.*
- *The information provided at the website, particularly the pricing information that I then compared to Home Depot & Lowe's, was very influential in my decision to purchase through the Savings Store.*
- *I had no problems. It's one of the easier websites I've ever used; all of the information I needed to make a decision was provided right there for me.*
- *I had trouble finding the correct bulb for my garage light which is on a sensor. The website and the support person I spoke with made me feel confident that I was getting the correct bulb.*
- *I liked it. The information made me feel better informed so I knew my choices were going to be the right ones.*
- *I just thought it was easy and simple, they gave everything to me that was needed to make an appropriate purchase for what I needed.*
- *It laid everything out very well and it was pretty easy to decide what bulb I wanted. The three-way switch was very important to me.*
- *There were so many different types of bulbs that I had to make sure that I ordered the bulbs that I actually wanted.*
- *I was able go at my pace and to learn more about my purchase. I feel like I'm more educated about light quality and lumens and can pick out light bulbs better than before.*
- *I felt like it was easy enough to order and the information helped me with knowing what to order.*
- *We had already decided, but the information provided on the website was influential too.*
- *They explained the bulbs very clearly, it made it easy for me to make my decisions.*
- *The information helped me make a decision.*
- *Because I needed help picking out which bulbs I wanted.*
- *I didn't have any problems using the website and I liked how easy it was to use and find what I was looking for.*
- *The information provided was good and it helped my decision making.*
- *I was influenced by the price of the item and the practicality of the product.*
- *The information provided let me know that purchasing and using these light bulbs would save me money.*

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- *Because I'd already been to Lowe's and other retail stores, so I knew what sorts of bulbs I wanted and what the current pricing was in stores. The main reason I bought the bulbs from Duke was mostly because of the price they offered.*
- *The information about cost savings and bulb pricing were very influential on my decision.*
- *The price information was very influential for me.*
- *The prices were really good.*
- *I didn't realize Duke Energy sold them and, when I found them at this price, I was excited to purchase them.*
- *The Savings Store was a good process that made it easy to locate hard-to-find items.*
- *It was nice to have the information right there ready to use.*
- *The information was very straightforward and clear. It indicated the savings from using the bulbs and savings on the price of the bulbs.*
- *I read about the benefits and pricing of CFLs. The products were explained thoroughly.*
- *It was good information that was presented in an easy to understand format. It was user-friendly.*
- *I wasn't sure what size I needed as far as the Globe lights go. I was worried that they weren't going to fit. Also, I didn't know that they made CFL three-way bulbs.*
- *It gives you the price range to compare the prices to see what you want. I was looking to save some money and looked through how it described them.*
- *The information told me what I needed to know about the different bulb types and brightnesses.*
- *It was exactly the information I was looking for. It answered my questions fully*
- *Overall, the information on that site was very good and certainly all the CFLs, both for lumen output and wattage reduction, are very good compared to incandescent bulbs. You certainly know what your comparisons are going to be.*
- *All the information given was self-explanatory. They gave really good written and visual descriptions of the bulbs.*
- *Well, I bought the bulbs. So it was influential.*
- *Overall the website was very good and easy to navigate.*
- *The information was accurate and it helped me find exactly what I wanted.*
- *Everything just worked perfect.*
- *Everything was very easy and clear.*
- *It described what I needed.*
- *That's just how I feel. I don't remember at this point why I'm giving it that number.*
- *I don't know.*

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Influence of information at the Savings Store website: rating "8 or 9 out of 10"

- *I just looked at the price and wattage and they were good in comparison to the other places I was looking at for those types of CFL bulbs. I was comparing to what I could find at Lowe's and Walmart.*
- *All the information was good and up to date about the LEDs. Right after I had ordered these bulbs we had someone come to my workplace to give a lecture on LEDs and everything I read about the LEDs on the Saving Store website was brought up.*
- *The descriptions helped out for determining bulb size, and identified the different bases. I was looking for short bulbs to fit some ceiling fixtures.*
- *It gave implication that the brightness would be better and that they would not be as expensive to operate.*
- *Because I found out these bulbs were going to save me more money than I was already saving using the existing spiral energy saving bulbs.*
- *Because for one thing, I did not know for sure if the bulbs that I was going to need were really going to save me as much money on utility costs as they said they would.*
- *I could tell by looking at the dimensions provided on the website whether the bulb would fit, that was the most important aspect and information for me, and it was good.*
- *I like the ratings provided on the site for each bulb.*
- *I already had information on bulbs from other sources, but I made the final decision on where to get bulbs by looking at the website.*
- *I kind of rely on them to give me the help in purchasing the right bulbs.*
- *The information was influential because it inspired me to purchase a lot of light bulbs.*
- *The information about the globe CFLs I was shopping was sufficient for my decision to make the purchase.*
- *I think the information provided played a large part in my decision-making process.*
- *The information and descriptions influenced my decision and made it easier to order the bulbs.*
- *It gave me the information I needed to make a decision.*
- *The information was very helpful in deciding which bulbs to buy.*
- *The information was good enough for me to know that was the specific bulb that I needed.*
- *The information made it so that I knew I was ordering the exact bulbs I needed.*
- *It clearly explained to me what the energy efficiency was and what the different types of bulbs were.*
- *They said you could save money and the information was very useful.*
- *I wanted the LEDs but they were still too expensive.*
- *I picked out the ones that looked nice.*
- *The information was influential, as well as the discounted pricing and convenience.*
- *I looked at the information and found it helpful.*
- *The information was clear, concise, and easy to digest.*

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- *The information was helpful.*
- *The information provided was helpful.*
- *The information provided was great.*
- *The website was good, very easy to order from.*
- *I was looking to get energy efficient bulbs and that's the information that was provided.*
- *It was all good information.*
- *It was a pretty reasonable deal.*
- *It was helpful information but there is always room for improvement.*
- *I had already done my own research prior to visiting the Savings Store.*
- *I knew what I was looking for and ordering online was easy.*
- *The information was influential, though one of the bulb types I received wasn't exactly what I was expecting. The bulb descriptions could have been more clearly defined.*
- *Something was misleading on there and I wish I could pinpoint it. I just ordered the wrong bulbs at the wrong price.*
- *I didn't really use that feature so I kind of guessed.*
- *I was already shopping for specialty bulbs. I was mostly comparing prices, the savings offered was a little bit of an influence. I already knew that I wanted LEDs and that they were a good, energy efficient lighting option, so the information provided did not have a high impact on my decision.*
- *I have a lot of knowledge of light bulbs, so I didn't need a lot of the information that was provided.*
- *I knew what I wanted before I even visited the site.*
- *I can't remember the details.*
- *I don't know.*

Influence of information at the Savings Store website: rating "6 or 7 out of 10"

- *The Savings Store is simple to use which makes it superior to similar sites.*
- *It helped me pick out the bulbs that I needed for the home, but the discounted price is the main reason I purchased bulbs from the Saving Store.*
- *I knew what I was looking for. Once I saw the right picture, that drove my purchase. I just needed to see what it looked like and to know it was high efficiency. I ended up buying the higher lumen output bulb based on the comparisons offered.*
- *I knew a lot of information about the CFL bulbs already; they were not a new thing to me. The dimmable bulbs that were offered weren't exactly what I was looking for, however. I was hoping to find different choices for dimmable bulbs.*
- *I was in a hurry, no time to go to store, so it was easier for me to just order the bulbs online.*
- *I was unable to compare one bulb to another easily. It took several clicks to get the details about the bulbs making it difficult to compare them.*

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- *I needed the bulbs but I needed more information about lumens and what bulbs were safe for fixtures that take three 60W bulbs. I needed more about what fixtures the bulbs are safe for.*
- *I needed more information about the different types of light quality available for the CFLs. I was also unable to find information on the different types of specialty bulbs that the Saving Store was selling.*
- *The information on the bulbs was not the greatest, it took me a while to find the one I needed.*
- *When I looked at the bulbs it said a 5,000 hour usage and I don't have more than 200 hours on these bulbs and one is already burnt out.*
- *I felt the energy savings estimates were inaccurate.*
- *The energy savings wasn't very impressive. I think it was given in monthly savings; if it had been given in annual savings, that would have been more impressive. The calculator could have been better.*
- *Since I had to compare those prices with other prices, when I first saw, I had no idea how it would compare elsewhere.*
- *The information is a little technical, but it's not so difficult.*
- *The information provided at the Savings Store was part of my research. I knew what I wanted.*
- *I already knew that I wanted CFLs for the house but the information was helpful in picking out the bulbs.*
- *I was going to buy them either way, the information was nice though.*
- *I went there wanting to buy bulbs, because that's what the site sells. The information provided did not matter much to me because I was going to buy the bulbs anyhow.*
- *I had already decided about the bulbs that I wanted. I didn't really need the information as much as someone else might.*
- *I was thinking about getting them already, I knew I wanted specialty CFLs, the information really was not influential in my decision to buy these from Duke's website.*
- *I already knew I needed globe bulbs, so the information wasn't important to me.*
- *I already knew what I wanted.*

Influence of information at the Savings Store website: rating "5 or less out of 10"

- *The information, availability, and convenience were influential factors.*
- *I had already made up mind to get CFLs but the information helped me make decisions about which CFLs to try out.*
- *I knew what kind of LEDs I was looking for: A19 and PA LED four-foot tubes. I decided to purchase the A19 LED but there were no PA LEDs.*
- *The information only gave me enough to make a guess on whether it was the right bulb. I didn't find what I wanted.*

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- *I already sort-of knew which bulbs I wanted. The Savings Store website could include information about the color of light that the bulbs emit.*
- *I ordered the bulbs that we needed for the house we just moved into. The former owners had all incandescent bulbs installed and I knew that I wanted to switch to CFLs like we had been using in the past. The discounted bulbs offered at the Saving Store made the switching to all CFLs at the same time more affordable. However, the information provided about the bulbs didn't make a difference to me at all.*
- *It was convenient at a time when I needed light bulbs. I knew enough about the light bulbs so I didn't really use the information provided.*
- *I wanted to start buying CFLs anyways so the information about the bulbs really didn't influence me to shop at the store. It really was the lower prices and the ordering online that influenced me.*
- *We didn't really use the information as we already knew what type of bulbs we wanted. The main reason we chose to order the bulbs from the Saving Store was because of the lower prices.*
- *I knew what I wanted. I counted the number of bulbs that we could use in the house and bought what we needed.*
- *I was looking for bulbs that save energy anyhow, the descriptions didn't affect me, I was going to get them anyhow.*
- *I think energy efficient light bulbs was something I already read about and knew about, I was already educated on the matter, so the information provided on the website did not have much influence on me.*
- *I already made my decision of what bulbs I wanted to buy via the advertisement which was given to me in the mail.*
- *I was neutral about it.*
- *The information did not have much that I didn't already know.*
- *I was already familiar.*
- *I already knew what I wanted to purchase.*
- *I don't think I was influenced at all.*

Influence of information at the Savings Store website: rating "don't know"

- *It was good information and I didn't have any questions or confusion about the bulbs.*
- *I didn't pay any attention to the information; I figured if they said they were energy efficient they would be OK. I received bulbs before for free from Duke and I've converted most of my lights over to energy-efficient bulbs*
- *The information provided at the website did not have any bearing on my purchase. I didn't visit the store personally. I used the Savings Store brochure to figure out which bulbs I wanted and then my girlfriend placed the online order for me.*
- *My grandson did all of the online work. But he was able to find what we needed and didn't say it was difficult.*
- *I don't really remember any of the information.*

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- *I honestly don't remember much about that part of the website.*
- *I don't recall.*

Influence of convenience of shopping online: rating "10 out of 10"

- *I gave it that score because of the help I had verbally with a person from Duke, when she walking me through the purchase and explained the packaging.*
- *I live pretty far out in the county so I order a fair amount of items online and have them delivered to the home. I like to save on gas.*
- *These bulbs are not available locally so it's a whole lot easier to order online than having to drive into town. I live in a rural area.*
- *It's just an easy way to do it. I'm handicapped, so anything I can order and have delivered to me is a blessing.*
- *I don't like having to go anywhere because I'm disabled. Having things delivered directly to my home really helps me out.*
- *I'm wheelchair-bound so I find it more convenient to shop online than in stores most of the time.*
- *I like ordering online. I do most of my shopping online and hope that someday I'll be able to purchase my groceries online and have them delivered. I don't like the hassle of going to stores. You have to drive there, park, and then deal with crowds and lugging bags into the house.*
- *I like not having to go out of the house, to stand there and look for stuff at Home Depot only to find out they don't have it. Then, you have to go to Lowe's only to find the wrong wattage and wrong light. It makes you crazy. It's just easier all the way around.*
- *It was so easy and very convenient to be able to shop at my own pace, from my own home. While shopping for bulbs at home I am able to see what I need for my fixtures by comparing the bulbs with what currently is installed, and I can see how many I need. I also liked that I had access to all the information provided about each type of bulb.*
- *I'm older than dirt, but I've adapted to the digital age very well. I appreciate the opportunity to get the bulbs in a reasonable amount of time at a reasonable price online. I'd rather not fight the crowds at the stores.*
- *I didn't have to drive to the store to get them and I saved gas money. The website was easy to use.*
- *I didn't have to look for the light bulbs at a large store. I don't like walking around the big stores. We live away from most of the stores so I'd have to drive into town.*
- *It was easier than shopping at a store for them. There's so many different brands, types of light bulbs, and wattages that it's easy to be overwhelmed at the store. I was able to sit and relax while I shopped for the specialty CFLs.*
- *I do a lot of ordering online, it saves me time and is much more convenient than trying to shop for something in a retail store.*
- *It was very easy to shop online and the website was easy to use. I do a lot of online shopping because it's easier than sorting through too many options on the store shelves.*

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- *The convenience of shopping online and having the bulbs delivered was uncomplicated. I didn't have to worry about which bulbs to try at the store and it will be easy to reorder the bulbs in the future if we decide to do so.*
- *Because it's easy. I can look at everything to see what's available to suit my needs instead of having to go up and down the aisles.*
- *It was very easy. You can compare the different light bulbs from the comfort of your home instead of in a store aisle full of too many light bulbs. It less confusing online and it's easier to get the information that you need.*
- *We do a lot of online ordering. I hate going to the stores when there are crowds.*
- *Even though I'm female, I do not like to go shopping.*
- *It is so convenient. No driving to get the bulbs I really wanted.*
- *I guess the convenience of shopping for light bulbs online and having them delivered. I didn't have to drive into town to go to the store.*
- *The convenience of shopping online was very influential. Clicking a few buttons is a lot easier than driving to the store.*
- *The convenience of online shopping was very influential because it meant I didn't have to go out.*
- *I like shopping online, it saves me money and time if I don't have to go to a store to buy these sorts of things.*
- *Ease of not having to go out and look around. With so many options for lighting, having a small selection online narrowed it down.*
- *I like shopping online because it is usually easy to do and you can look around on other webpages to compare items and prices.*
- *It was easy, I could look at all of the different types of bulbs, it easy to find what I was looking for. I was able to quickly compare prices between the retailers and amongst the Savings Store site.*
- *I always shop online.*
- *We order online a lot.*
- *I like shopping online.*
- *I like to buy things online. I'd say I do 90% of my shopping online.*
- *I do a lot of shopping online. I like that you don't have to carry a lot of things around. It's just easier.*
- *I like shopping online because it's so easy and effortless to do. I normally shop places that offer free shipping.*
- *I appreciate the convenience of online shopping. Time is a very important commodity.*
- *Time savings. With me, if I can save some time ordering online, then I'll be an online shopper.*
- *I really like the convenience of online shopping and having delivery to straight to my home, it saved me time in the long run.*

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- *Not only was I saving time by shopping online, I also saved money with the reduced price and not having to go out somewhere to get them.*
- *It's just much more convenient to have things delivered to my home. With my work schedule, home delivery is top of the line.*
- *The convenience of online shopping makes the process easy. It saves time and money.*
- *The convenience of shopping online was very influential because it meant I did not have to leave the house.*
- *It was easy because I could order from home.*
- *It was easier to shop for them online from the comforts of my own home.*
- *Because it was easy, it was cheap, and I could shop at any time.*
- *I like the flexibility of being able to shop at 6:00 or 6:30 in the morning.*
- *It was just so very easy: a lot easier than going to the store. That's the way l want to continue to buy my bulbs.*
- *I really like that my order was delivered to my door.*
- *It was easy to do and I like having things delivered.*
- *It was easy to shop for the bulbs online and have them delivered.*
- *Purchasing bulbs online is easy.*
- *It was an easy service to use.*
- *It was pretty easy.*
- *It was easy.*
- *It wasn't difficult at the time.*
- *The convenience, speed, and ease of shopping online were very influential.*
- *It was just the convenience. I like the fact that it wasn't an urgent need, so I could go in there and go through and take whatever I needed.*
- *I like the convenience, period: not having to shop around for much.*
- *The convenience of ordering online and the information educating me provided by the website helped me make decisions about which lights to purchase.*
- *The convenience of online shopping was very influential, as was the promotional flyer that came in the mail.*
- *It was very convenient; it was easy to go through the process and the replacement was expeditious.*
- *It was convenient having the bulbs available online and on one site.*
- *It was convenient.*
- *I didn't have any trouble at all. It was great.*

Influence of convenience of shopping online: rating "8 or 9 out of 10"

- *I know that I can trust Duke Energy. When I did a search for these lights, it took me to several other web sites. But I didn't trust them. You know you're not going to be hoodooed by Duke.*

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- *I needed help with picking out a light bulb, and calling someone who knew about the website helped me pick out the brightest bulb I could find that was safe enough to install in a fixture that takes three 60W incandescents.*
- *It can be convenient to go there, but the Store's web site doesn't work well on a mobile device. I was using a tablet, and it didn't work like it should. I had to navigate using different methods.*
- *I like having the convenience, even though I don't normally go online. I wanted to try it and see how it worked.*
- *Because I was at the site and everything seemed reasonable so I said 'let's do it'. I got enough bulbs to do all the chandelier lights*
- *I think I had a plan to get them all at one place, all at one time. The availability of selection and ease of using the online ordering feature, as well as home delivery helped me make a decision to go through the Savings Store for my bulbs.*
- *I do a lot of shopping online. If the bulbs weren't available online I would not have purchased them when I did.*
- *I would have needed them anyway and, if I found them someplace else at a decent price, I maybe would have bought them there. I'm lazy and I just like the convenience of shopping online.*
- *I just like shopping online, it's better than going to a store and trying to shop at a retailer.*
- *They made it as easy as can be. A lot of times when you go to major chain stores, there's such a selection that it becomes confusing, and hard to find what you need. These stores also rate their lighting in lumens, not in watts. I didn't have anything at the stores to compare lumens to watts.*
- *It was great to have a big selection and not having to drive to the store.*
- *The convenience of online shopping meant I didn't have to drive anywhere. I got the bulbs for a good price.*
- *It's easy to be able to shop at home online. I liked not having to go out to shop for specialty bulbs; simple.*
- *I like shopping online. It was a deciding factor in our decision to purchase the CFLs from the Saving Store.*
- *The convenience of online shopping was very influential because I like being able to sit down, shop, and have the items delivered to my home.*
- *I enjoy the convenience of ordering things like light bulbs from home.*
- *Shopping online is easy to do and you can easily compare prices.*
- *I wanted a way to buy specialty CFLs without going to the store where I possibly would have been overwhelmed by the choices and lack of information.*
- *I like shopping online in general but we also live outside of town and I like to save money on gas.*

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- *To me it was a lot easier to read the research and review it right there, then order the bulbs, rather than go to all the stores and use up the gas. You're just defeating the purpose of saving energy through using these bulbs by running around to get them.*
- *It saved me a trip out to get them. I didn't have to hunt through what the selection was and bring them home.*
- *It was easier than go to the store for the LEDs and it saved me gas money.*
- *It saves me the hassle of going to store when I can compare them at home and have them delivered.*
- *Because it was easier than getting my fat butt in the car and driving to the store to buy bulbs.*
- *The convenience of online shopping meant I didn't have to expend the time, effort, and gas needed to drive to the store.*
- *I do a lot of online shopping through Amazon or Cabella's, so I'm familiar with online shopping. I find online shopping to be better than fighting the crowds in stores, it's easier to shop for specific items and get full descriptions of products online.*
- *I am an online shopper. It's easier to order online. The features of home delivery can be added to that.*
- *I do a lot of shopping online because it's easy and I don't have to go to the store.*
- *It was very influential to be able to order bulbs online and have them shipped directly to my home.*
- *I like shopping online so you can compare prices.*
- *I like shopping online.*
- *I like shopping online so I can look for deals, but I really don't mind going to the store.*
- *It is not that inconvenient to buy CFLs at a retail store, but it was easy to do online too.*
- *Shopping online did save me some time.*
- *My grandson did the ordering. To his generation, time is important, along with convenience and price. All three are equally important. That's why societally, they buy online.*
- *Buying online was very easy.*
- *Ordering them online was easy, fast and convenient.*
- *The convenience of ordering online made the process very easy.*
- *The convenience of shopping online was a key factor in my decision-making process.*
- *It was nice to not have to price-shop at the store, but I think that these bulbs were cheaper at Walmart.*
- *I like the price more than the ease of shopping.*
- *I was more influenced by the price.*
- *I like shopping online but I needed more information about the different types of light quality.*
- *The convenience of shopping online was nice, but the main influence was probably the Savings Store promotional letter I received in the mail.*

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- *Online shopping is very easy and I prefer it.*
- *I usually buy things online.*
- *It's good and I like shopping online, but I'm happy I can still get them at department stores.*
- *It was convenient to order online.*
- *The convenience of shopping online was nice.*
- *It was very easy.*
- *It was easy to get it done and have extras laying around.*
- *I don't know.*

Influence of convenience of shopping online: rating "6 or 7 out of 10"

- *I order online a lot because I'm a disabled veteran.*
- *It was as convenient as any other online purchase I have made.*
- *The convenience of shopping online was influential, though navigating the website required practice.*
- *I really don't care about shopping online. I hate using the internet so I would have been just as happy to purchase these bulbs through a mail order catalog.*
- *It's just as easy for me to pick up light bulbs from Lowe's or Home Depot.*
- *I'd be happy to pick them up at a store.*
- *I usually go to Lowe's, but this price was better.*
- *Shopping online was nice, but the price influenced me more.*
- *The price was more influential than going online.*
- *I really just wanted to take advantage of the reduced prices. I really didn't care about being able to order online.*
- *I really don't like to wait for them to be delivered.*

Influence of convenience of shopping online: rating "5 or less out of 10"

- *It was easier than going to the store.*
- *I really could have gotten them anywhere. I don't mind going to the store. It was really the low prices that got us to order.*
- *The price was more important than being able to order online. My son actually did the ordering of the bulbs for us as we're not computer literate. Without his help we would not have ordered the bulbs.*
- *I don't use computers. My girlfriend helps me occasionally by making online purchases on my behalf. I would have preferred being able to call an 800 number to place the order myself.*
- *I would have preferred ordering by telephone; online is not my preferred method of ordering things that are not available in-store.*

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- *Because I go to the Home Depot and I go to Lowe's regularly; sometimes it is nice to see it plugged in. Otherwise it's a leap of faith because I wasn't sure of color or temperature if it was over 100. I did a lot research to verify whether I even wanted to do the order.*
- *The bulbs I need can be conveniently purchased just about anywhere.*
- *I can buy them online or go to the store to buy them, it does not really matter to me either way.*
- *I don't know.*

Influence of convenience of shopping online: rating "don't know"

- *I do not recall visiting the Savings Store online. I'm not computer savvy. I submitted my Savings Store order via mail. The convenience of being able to place my order from home was nice.*[55]

[55] Although the Savings Store does accept payments by mail, orders must be placed online. Since this customer was identified as a Savings Store customer by program records, a friend or family member of this customer may have performed the online portion of the order process using the customer's account number.

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Appendix J: Non-Participant Feedback

Non-participant respondents were asked to provide feedback regarding many store attributes. While the overall survey findings were discussed in the main body of this evaluation, verbatim quotes can be found below. Comments are categorized and referenced to the relevant sections.

Verbatim Comments on What Non-Participants Most Liked About the Store

The comments below refer to the discussion on page 161.

- *The prices (N=4)*
- *The variety of bulbs is interesting to say the least. I didn't know they made that many bulbs.*
- *I liked the descriptions of everything.*
- *I liked the variety of bulbs and the information the Store provided.*
- *I liked how cheap & reasonable the pricing was.*
- *I liked the variety of bulbs and low pricing.*
- *I liked the possibilities of bulb and energy savings.*
- *I liked the ease of website navigation and the clarity of the information provided.*
- *I liked being able to look at everything available, including the information provided.*
- *The website is easy to use. It was easy to find the items I was looking for.*
- *That I was able to go in and see what I could save on. I rent so I can't change anything in the apartment but someday I'll be in a house that I can install whatever light bulbs I want in.*
- *That I could save money on the LEDs and CFLs.*
- *I like the descriptions, the energy savings, and the look of the bulbs where you could see everything.*
- *The websites ease of use.*
- *The variety of bulbs you could purchase.*
- *The presentation of the different light bulbs was excellent. The website shows great effort and caring for the customer.*
- *The ease of looking at the light bulbs available.*
- *The good descriptions about the bulbs and how long the bulbs last.*
- *Cheaper prices. It's all about saving money so I can spend it somewhere else.*
- *I thought it was easy to navigate around, and that it was well organized; everything was right there. I felt I had all the options I could need for light bulbs.*
- *The variety of bulbs offered.*
- *I liked how it was organized.*
- *They had what I could have used if I was in the market to buy bulbs.*
- *The convenience.*
- *I liked the organization. It was easy to see what was for sale.*
- *The prices were very good.*

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- *I like the convenience of being able to look around anytime.*
- *I think it's convenient to be able to shop from home.*
- *The website is well laid out, visual appealing, and easy to navigate.*
- *The interface was fairly easy to use and I like the fact that my energy company is trying to save me some money.*
- *The website showed a lot options for light bulbs.*
- *The availability and prices.*
- *The variety of bulbs in front of me that I could choose from.*
- *It's easy. I could just go online, set it up, pay for it and that's it.*
- *I like the selection. They have a lot of different specialty bulb types available.*
- *The website brought up everything. You didn't have to jump from screen to screen to find what you want.*
- *The layout was fast and easy.*
- *I like the convenience of being able to order online.*
- *It was easy to navigate.*
- *That it was easy to get to from the Duke website.*
- *The information about the bulbs. Very clear.*
- *Everything was in one place.*

Verbatim Comments on What Non-Participants Least Liked About the Savings Store
The comments below refer to the discussion on page 161.

- *The website does not appear very polished. The function is fine, but the aesthetics are not very good looking. For example, the entire page reloads when you click on different items instead of the center section or the specific section that I'm trying to select. Overall, the site needs to be more dynamic, the design and look of the site should be updated.*
- *Because you had to order them and have them shipped.*
- *Cost of shipping.*
- *I couldn't find what I was looking for. I was looking for outdoor reflector and dimmable LEDs.*
- *I did not have any funds at the time so it would have been good if I could have been billed.*
- *I did not like not being able to find the bulb that I needed.*
- *I didn't like having to go through the extra steps to research in order to buy what I need. I need to know that I'm buying what fits as compared to what I'm replacing, that it's the right size.*
- *I didn't like that I had to go online to do it.*
- *I disliked having to incur any type of shipping costs.*
- *I disliked that the potential savings weren't worth the extra hassle of ordering bulbs through the Store.*

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- *I disliked the comparatively high pricing.*
- *I disliked the limited selection of LED bulbs.*
- *I disliked the shipping costs.*
- *I wasn't really interested in looking at bulbs I hadn't use before, but it was pretty enlightening.*
- *I would have liked more products, from large appliances, to smaller electrical things (including window A/C units and lamps).*
- *It seemed like me like you have to order the multiple packs and you can't just buy one or two bulbs.*
- *Not being able to find what I was looking for. I felt there was a fairly limited selection.*
- *The flat rate for shipping did not seem very reasonable.*
- *The descriptions didn't seem to match the pictures of the items.*
- *The lack of LEDs available.*
- *The lack of product.*
- *The log on process.*
- *The price of the bulbs.*
- *The price.*
- *The prices are too high.*
- *The prices. I buy LEDs on eBay and I can get a 10 pack for $70 and they arrive in 6 weeks.*
- *The Saving Store didn't carry the globe and candelabra CFLs I wanted.*
- *The shipping prices.*
- *We couldn't find the small chandelier bulbs we were looking for.*

Verbatim Suggestions from Non-Participants for New Items for the Savings Store
The comments below refer to the discussion on page 162.

- *Anti-vampire power strips.*
- *Anything dealing with recessed lighting.*
- *Appliances, electrical things (large and small), and LED lights. I would also like financing on larger purchases so that you could pay for your appliances along with the bills.*
- *Candelabra bulbs and globe bulbs.*
- *Daylight CFLs.*
- *Decorative lighting.*
- *I'd be game for other power saving features that can easily be installed in the home, like automatic light switches and automatic dimmers for lights. Basically, small things that the homeowner can install themselves to help improve energy efficiency.*
- *I have a very old lamp with a flicker light that I would like to replace with a CFL flicker light.*

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- *I saw everything that I would need. I thought it was pretty complete. They could venture into fixtures themselves, anything to do with lighting or replacement parts.*
- *I was looking for a higher intensity LED. I needed grow lights for house plants.*
- *I would like to be able to order a discounted NEST programmable thermostat.*
- *I would like to be able to order photographic studio bulbs.*
- *I would like to be able to order timers for lights.*
- *I'd like to see a bigger LED selection, especially LED exterior lights. I'd like to see them offer the same selection of LED lights as they have of CFLs.*
- *Landscape lighting bulbs; CFLs that are quick to come up to full light.*
- *LED spotlights that are much smaller than the indoor reflector lights so they could replace the 50 W halogens we have that are used to light up artwork.*
- *More options for LEDs.*
- *More options of LEDs and LED replacement bulbs for appliances.*
- *Offer light fixtures that would accept the energy savings bulbs. Some of my light fixtures will not work with the new bulbs.*
- *Outdoor reflector, candelabra, and dimmable LEDs.*
- *Replacement appliance light bulbs.*
- *Small chandelier bulbs and the plug in bulbs which snap into place.*
- *Smart power strips.*
- *Smart thermostats.*
- *Surge protectors.*
- *Three prong plug adapters.*
- *Under the cabinet LEDs.*

Verbatim Suggestions from Non-Participants for Website Improvements and Additions
The comments below refer to the discussion on page 163.

- *Lower the shipping fees. (N=3)*
- *A better log on process.*
- *A feature that you could say what fixture you need a bulb for that tells you the best options.*[56]
- *Duke could provide more educational information on the Store website. Also, they could send out promotional emails about the Savings Store.*
- *More information about lumens instead of just the information about the wattage equivalent.*
- *Increased search functionality to find what I was looking for.*
- *I didn't check to see if they have a good search engine. Good search features are very important to me. I want to be able to go directly to what I'm looking for.*

[56] This feature already exists on the Store website.

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- *Make the website prettier, more eye-catching.*
- *It could offer a greater variety of hues.*
- *I would like the Store website to make it as simple & safe as possible to use my credit card for purchases.*
- *The Savings Store could lower its bulb pricing and offer more promotional deals.*
- *Maybe lower the price just a little bit.*
- *Just the price.*
- *Keep the cheap prices and cheap shipping.*
- *Free shipping, like e-Bay and lower prices.*
- *Free shipping.*
- *Have lower shipping costs or free shipping.*
- *If they ship the light bulbs and they get jarred they might not work.*
- *Offer a payment plan.*
- *Financing on large items.*
- *Open the store to non-Duke customers.*

Verbatim Suggestions from Non-Participants to Increase Store Purchases
The comments below refer to the discussion on page 167.

- *A broader range of product and offer greater discounts randomly.*
- *A lot of times I just throw away the pamphlets, but having a good variety available on the computer right in front of you is very good.*
- *Advertise on TV. Continue advertising on the Duke website with a pop-up when the website is first opened. The ad needs to be in a more prevalent place on the page.*
- *Advertise the discounts more and the website itself. I'm not sure that a lot of people know about it.*
- *Better marketing.*
- *By word of mouth I think.*
- *Continue to put the information about the Savings Store in with our bills and also consider doing some TV commercials to let more people know about the website.*
- *Do more advertising, or call people on a Friday night to let them know about the website. Or, if they mailed every customer and gave them a $5 off coupon or free shipping incentive there would probably be more interest to buy.*
- *Duke could include advertising inserts in customer's energy bills.*
- *Duke could send emails to let customers know about the Store. They could also have ads on the Duke Energy website and the ability to click a direct link to the Store.*
- *Duke could use promotional flyers to advertise the Savings Store.*
- *Free shipping and discounts for buying more, like buy five and get the sixth bulb free.*
- *Get more information about the website to your customers and offer free shipping.*

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- *Get more people to look at the Saving Store through advertising and offer free shipping.*
- *Have better pricing than the big box store and free shipping.*
- *Have more advertisements and have testimonials.*
- *Have more advertising.*
- *Have people call with surveys.*
- *I don't know. More information might help. It seems like people don't read the bill inserts.*
- *I don't know; I haven't looked closely enough at the bulbs available. I imagine bundling would help: if you sold them in groups of 12 for a lower price per bulb. But I think you may already do that.*
- *I don't know; keep putting it with the bill? Somehow you need to get the public's attention. I know I look through the mailing inserts, but I don't know that others do.*
- *I heard about the website while paying my bill online and I have told people about being able to get the free CFLs from Duke. I think more advertising would get more people interested. It seems like everyone I told about the website hadn't heard of it and I've been telling everybody.*
- *I think Duke could advertise the Savings Store more.*
- *I think Duke could advertise the Store more broadly, expand the selection of bulbs, and provide customers with a better sense of incandescent bulb wattage equivalents.*
- *I think Duke could do more advertising and send mailers featuring Savings Store promotions.*
- *I think Duke could keep reminding people about the Savings Store. People are forgetful, so it's effective to remind them occasionally.*
- *I think Duke could offer various types of pricing promotions - deals for first time buyers and coupon codes in energy bills.*
- *I think that if you had a note when people logged onto the Saving Store that offered them something special for that day or for a limited time that it would peak people's interest. Like free shipping or a free sixth bulb when you buy five when you enter a code in at the end of the transaction. People like that stuff because it's kind of fun.*
- *I think that the flyer that they send in the mail is a good marketing tool. Direct mail is good. A lot of people like me don't open their bills, they just pay it online. Reminders are nice.*
- *I think there could be more advertising sent via mailers and email. The information provided could include specific energy use and shopping comparisons. The online process at the Savings Store could be simplified.*
- *I think there's enough publicity at this juncture. I think one thing that's needed is more accessibility to high wattage output. I like bright light in certain applications. Promotion of the idea that they're available probably would help.*

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- *I think they should have a little store and their own place to pay the light bill. They could have a counter where you pay your bill and then a little space off to the side where they have the light bulbs for sale.*
- *I think word-of-the-mouth. When they were doing the free light bulbs, I told everyone at work.*
- *I try to go for more local, smaller companies. There's very little they could do to get me to buy from them.*
- *If other retailers stop selling energy efficient bulbs, Duke Energy could close in on the entire market and then more people would have to get their bulbs directly from Duke Energy instead of being able to just go on down to Walmart or wherever and just picking them up at those places.*
- *If they could see more visible content in a flyer or in monthly statements, or have phone calls like this about the program.*
- *I'm not sure. The only reason I haven't purchased bulbs from the Saving Store is because I haven't needed any light bulbs.*
- *Just keep letting people know it's there.*
- *Keep sending out the e-mails reminding people about the website because every time I see the e-mail I go to the website. I couldn't find the candelabra or globe bulbs that I was looking for. I probably would have purchased them from the website had I seen them.*
- *Keep the prices reasonable and cheaper than local competitors. And have some sort of benefits or customer loyalty program.*
- *Let people know about what is being sold there. I didn't really know about the different specialty bulbs that are being sold at the Saving Store.*
- *Let us know when there's a special. Carry candelabras and globe bulbs.*
- *Lower the prices, about half the prices you have to make them comparable to the ones I buy at e-Bay.*
- *Lower the shipping from $25 to $12. Offer free or reduced price shipping.*
- *Make it cheaper than other places and make it free shipping and returns. Do like they did before by making them free to try out. If they're wonderful, I'll buy more. I love to try new things.*
- *Make them more affordable.*
- *Maybe include information in the paper bills. I found out about the website while I was paying my bill online.*
- *Maybe more advertisements? I don't know how many people know about the store.*
- *More advertising.*
- *More advertising on bills. I pay online so I don't know if Duke puts information about the Saving Store in their paper bills.*
- *More advertising and let people know how much they can save by using the CFLs.*

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- *More advertising because I don't read the inserts. Send a separate card in the mail that isn't with the bill and make it colorful. You could also do TV or radio advertisements, but not the internet. After this phone call I will be reading the inserts more because you raised my awareness about what those inserts contain.*
- *More advertising because I really don't know much about the website. Get more information out about the different specialty light bulbs that you carry. I didn't know that you could buy the energy savers for outdoor flood lights or for chandeliers.*
- *More advertising would help. All the people I told about the Saving Store hadn't heard of it.*
- *More advertising. Let more people know about the program. I don't always read the inserts that come with the bills. If my father hadn't have pointed it out to me, I wouldn't have known about the website at all.*
- *More awareness about the website and how much money people can save as a result of using the more efficient bulbs. Offer free or reduced shipping from time to time.*
- *More online advertising. Send larger print for seniors advertising in with our bills.*
- *More varieties of LEDs.*
- *Not sure because I just don't use the internet.*
- *Offer a free shipping policy.*
- *Open it up to non-customers.*
- *People are looking for a bargain and the best [cheapest] buy with easy access, shipping, and receiving.*
- *Provide more inserts in the paper bills they send out.*
- *Raise rates so people are more interested in conserving energy.*
- *Say how much you'd save over time and have comparable prices.*
- *The price of shipping needs to be addressed. The prices are too high.*
- *There is nothing that you can do. I will never use the internet or have a computer in my home.*
- *There's a lot of us that pay online, so make it more prominent on the site.*
- *They could offer deals like buy one get one free sometimes.*
- *They could send out a flyer included with things like restaurant coupons and Dish Network, like once a month in that coupon packet.*
- *They need to advertise more.*

Verbatim Suggestions from Non-Visitors to Increase Visits to the Savings Store
The comments below refer to the discussion on page 170. Note this list appears to total more than 31 respondents because it includes replies from an initial question and a follow up question.

- *Calling and asking would be good, but they really do need a place to purchase the light bulbs.*

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- *Duke could include a link to the Savings Store when customers access their account online.*
- *Duke could offer an incentive for first time buyers.*
- *Duke Energy needs a big store here where people can go to the store and buy things like refrigerators and light bulbs.*
- *Get more information to the customers about the CFLs and how they can save energy and money even though the bulbs are more expensive than the old ones.*
- *I don't know if they have a page on Facebook.*
- *I don't know that I read all the literature. For me to sit and read every brochure is not going to happen. If you want the public to know, make it simple, clear, and big letters. Make it darned easy and simple to understand.*
- *I don't use the internet at all and I don't think that there is anything anyone could say to get me to order something online.*
- *I keep meaning to go online but I am busy and forget.*
- *I love how they doing where they come to check your house; that would lead more people to the site.*
- *I try to go for more local, smaller companies. There's very little they could do to get me to buy from them.*
- *I would like a mail order option instead of going online If you would mail out a sheet or pamphlet like the pamphlet you sent already, but with a list of bulb types and prices. Many people aren't that computer savvy.*
- *If I see more commercials on TV, or on the radio while driving down the road, it might encourage me to get on and buy.*
- *If something came that stuck out more it would grab my attention a little faster.*
- *If the flyers had said there was an online store, or that I'd be saving money at the store, that might catch my attention.*
- *If they had a little store somewhere, that would be much, much better. Not everybody has a computer.*
- *I'm a shopper; I want to look, see, and touch. Something can look good on your TV or laptop, but when you get it, it's cheap. I also don't really buy anything online with my credit card.*
- *In the ads, it's not clear how many bulbs are in a pack.*
- *Is there any kind of an ad on TV that tells people about it? I'm a visual person, and a lot of other people I think are as well.*
- *It'd help if they sent out a catalog so you could apply through the mail.*
- *Make sure sizing is clear because, if you're looking at a thing, you got to make sure you're getting the right bulb. It's really frustrating to have it not fit and have to send it back.*

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- *Maybe I would have paid more attention to it if it was in the bill. I usually look more carefully at the things in the bill. It's just junk mail a lot of the time when it comes separately.*
- *Maybe if I had more information about it.*
- *Maybe someone you could call and order the bulbs from because I just don't have the computer skills necessary to get to the webpage.*
- *Maybe they could include something in your bill, if it was explained better. Maybe they could have a flyer in there that you receive more than just one time, just in case someone misses it one time.*
- *Maybe they could tie it in to how you compare with other people. It's not connected in as well as it could be to the other energy saving information. It's already kind of busy and you already have a lot of information coming at you. Make it more prominent. It'd make you want to investigate. Otherwise things tend to get lost.*
- *More advertising because I really don't know anything about this website. One of my friends mentioned it, but I haven't seen any commercials for it. I would need to know more about the prices for the light bulbs and how they compare with the local stores.*
- *More advertising. I knew about the Saving Store because I pay my bill online but I hadn't heard about it anywhere else.*
- *More advertising.*
- *More information about the program in general, like what types of bulbs you are selling.*
- *My father told me about the Saving Store and showed me the insert that had come with his bill. From what I saw the Saving Store seemed very enticing. The prices seemed good and there's was information on how much using CFLs can save you.*
- *Nothing. I am in a rental apartment right now and I really don't have any control over the lighting except for the lamp that I own. I really don't use it all that often and I'm going to wait until the 3-way florescent bulbs I have burn out before I switch over to CFLs.*
- *Nothing. It all seemed pretty self-explanatory.*
- *Presentation goes a long, long way. On the outside of the envelope, put brilliant idea inside.*
- *Put on there that they're a real energy saver and tell people what they'd save on their light bills.*
- *Stress that these are green measures or that you'll save lots of money with dollar signs.*
- *The only thing that has kept me from looking at the website is that I don't really know how to get there. I can check my e-mails fine, but I have a hard time with the rest of the stuff.*
- *The pamphlet that I received in the mail from Duke showed a variety of different light bulbs. I just need to take the time to go to the site to order some bulbs.*

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- *There needs to be more advertisements with visual images to get into people's heads, like TV commercials. Usually, once people see something they will have a better time at making a connection with something and typically will want something more once they see it.*
- *They need better marketing. I just threw my flyer away after glancing at it.*
- *We don't use credit cards to make payments online. We just get our light bulbs at Walmart or something.*

Verbatim Suggestions from Non-Visitors for Store Inventory
The comments below refer to the discussion on page 171.

- *Come out with a bulb that we can really read by and fits our old lamps.*
- *If it were a better product in quality somehow, as in longevity and greater energy savings, something that would make it unique.*
- *Offer good quality bulbs.*
- *Three-way CFL bulbs. They are nearly impossible to find in stores, although I found some that I have in some lamps. I was able to get CFL floodlights.*
- *Have more LED light bulbs and home security measures like motion detector outside lights.*
- *I believe that the website carries all the different specialty bulbs that I might need in the future.*
- *I just didn't need any CFLs for my rental apartment. I've got them installed in most spots but we're not home very often anyways. When we get a house that we own we will probably need more of the CFLs.*
- *I'd like more items appropriate to someone who lives in an apartment as a renter.*
- *I'd like to see them offer energy efficient window blinds and other stuff you may need in your home to keep it energy efficient. Small things that people can install themselves to attain an energy saving impact.*
- *If it was something I couldn't get any place else, I might consider it.*
- *If they offered things like [electrical] breakers, I would probably get a member of my family to install it. They should offer electrical supplies. If I could locate it online, and I knew it was from Duke Energy, I would trust it was a good product.*
- *I'm not sure what all they sell.*
- *I'm pretty sure that you would carry everything that I could need. I just lack the necessary computer skills.*
- *Maybe appliances. I don't know.*
- *Maybe they could have some type of pictures of what they have. What else does it sell? Do they have an LED bulb for the fridge?*
- *Offer more deals and free shipping, like right before Christmas or something like that.*

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- *For people that are disabled and living on a budget, they could offer a store where they can get help to save energy.*
- *This survey makes me want to go and look at the store now.*

Verbatim Non-Visitor Suggestions for Store Discounts
The comments below refer to the discussion on page 171.

- *Anytime somebody can save money, it'd cause them to want to look at it to see what kind of deal they could get versus somewhere else.*
- *Competitive pricing is significant and free shipping gets a lot of people's attention because so many people have shipping and handling that exceeds the value of the product.*
- *Everybody's looking for a bargain. Make a better offer than the big box store and savings on shipping.*
- *Free shipping is always a plus.*
- *Good prices are always appealing.*
- *Have comparable pricing on the literature.*
- *I don't know, but I do know I'm looking for something less than the regular hardware store.*
- *I don't know. Sometimes you order stuff to be delivered to your home and you think that you got such a good price, but then the shipping costs so much that the discounts don't add up to much savings.*
- *I guess just keep offering people the discounted bulbs. When we own a home we'll need them but we just don't need them in our apartment.*
- *I love offers with buy one, get one, or half off, or maybe even if you buy two of these bulbs, we'll send you a $5 gift card to Walmart.*
- *I really think that if they would just stop increasing the rates for electricity we would not be forced into paying for all of these new products to be more energy efficient.*
- *I suspect that the prices are pretty good compared to buying the bulbs at the stores, but I would hope that you offer free shipping like Amazon.*
- *I think it comes down to pricing. People would be more interested in the Savings Store if they could get a cheaper deal there.*
- *If shipping is too expensive, I probably wouldn't do it.*
- *Just compare the prices. A lot of people around here don't use the LED because they stick to the old stuff. We're in an old mill town where people are older and like to pay their bill by money order and in person.*
- *Make it cheaper than I can get it somewhere else and make it free. I buy an awful lot on the Internet. If shipping is not free, I don't buy it. And, have free returns.*
- *Maybe they could bring the prices down a little.*
- *More coupons.*

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- *Offer specials, like free shipping for Christmas so you can give the gift of saving money or something like that.*
- *Offer them cheaper than I can buy them for at Lowe's, plus give a good guarantee for replacement for free, if needed.*
- *People are always looking for a good deal on pricing. I can't think of any specific suggestions offhand.*
- *The prices looked pretty good so I'm not sure what else you could do. I bought some spiral CFLs at Walmart and the prices seemed comparable.*
- *The Savings Store could offer free bulbs, special discounts, and ways to earn reward points.*
- *They could have something like $5 off; I'm sure that catches people's eyes.*
- *Yes to discounts. I have been buying the bulbs at Sam's in packs of four or five at a lower rate. The price goes down to $3 to $4 a bulb when they are sold in five-packs; the bulbs are normally $6 to $10 each.*
- *Yes, if they offer free shipping more people would be more willing to make a purchase.*

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Appendix K: Impact Algorithms

Specialty Bulbs

General Algorithm

Gross Summer Coincident Demand Savings

$$\Delta kW = ISR \times \left[\frac{Watts_{base} - Watts_{ee}}{1000}\right] \times CF \times (1 + WHF_d)$$

Gross Annual Energy Savings

$$\Delta kWh = ISR \times \left[\frac{(Watts \times HOURS)_{base} - (Watts \times HOURS)_{ee}}{1000}\right] \times 365 \times (1 + WHF_e)$$

where:

ΔkW = gross coincident demand savings
ΔkWh = gross annual energy savings

$Watts_{ee}$ = connected load of energy-efficient unit = 14.5
$Watts_{base}$ = connected (nameplate) load of baseline unit(s) displaced = 47.7
HOURS = Average daily hours of use (based on connected load) = 4.19
CF = coincidence factor = 0.148
WHF_e = HVAC system interaction factor for annual electricity consumption = -0.037
WHF_d = HVAC system interaction factor for demand = 0.168

WHF_e - the HVAC interaction factor for annual energy consumption depends on the HVAC system, heating fuel type, and location. The HVAC interaction factors for annual energy consumption were taken from DOE-2 simulations of the residential prototype building described at the end of this Appendix. The weights were determined through appliance saturation data from the Home Profile Database supplied by Duke Energy.

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Charlotte, NC

Heating Fuel	Heating System	Cooling System	Weight	WHFe	WHFd
Other	Any except Heat Pump	Any except Heat Pump	0.0042	0.069	0.170
		None	0.0004	0	0.000
Any	Heat Pump	Heat Pump	0.2782	-0.1	0.170
Gas Propane Oil	Central Furnace	None	0.0067	0	0.000
		Room/Window	0.5508	0.069	0.170
		Central AC		0.069	0.170
Electricity	Electric baseboard/ central furnace	None	0.0030	-0.43	0.000
		Room/Window	0.1493	-0.31	0.170
		Central AC		-0.31	0.170
None	None	Any	0.0074	0	0.170
Total Weighted Average			1	-0.037	0.168

WHF_d - the HVAC interaction factor for demand depends on the cooling system type. The HVAC interaction factors for summer peak demand were taken from DOE-2 simulations of the residential prototype building described at the end of this Appendix.

Prototypical Building Model Description

The impact analysis for many of the HVAC related measures are based on DOE-2.2 simulations of a set of prototypical residential buildings. The prototypical simulation models were derived from the residential building prototypes used in the California Database for Energy Efficiency Resources (DEER) study (Itron, 2005), with adjustments make for local building practices and climate. The prototype "model" in fact contains 4 separate residential buildings; 2 one-story and 2 two-story buildings. The each version of the 1 story and 2 story buildings are identical except for the orientation, which is shifted by 90 degrees. The selection of these 4 buildings is designed to give a reasonable average response of buildings of different design and orientation to the impact of energy efficiency measures. A sketch of the residential prototype buildings is shown in Figure 67.

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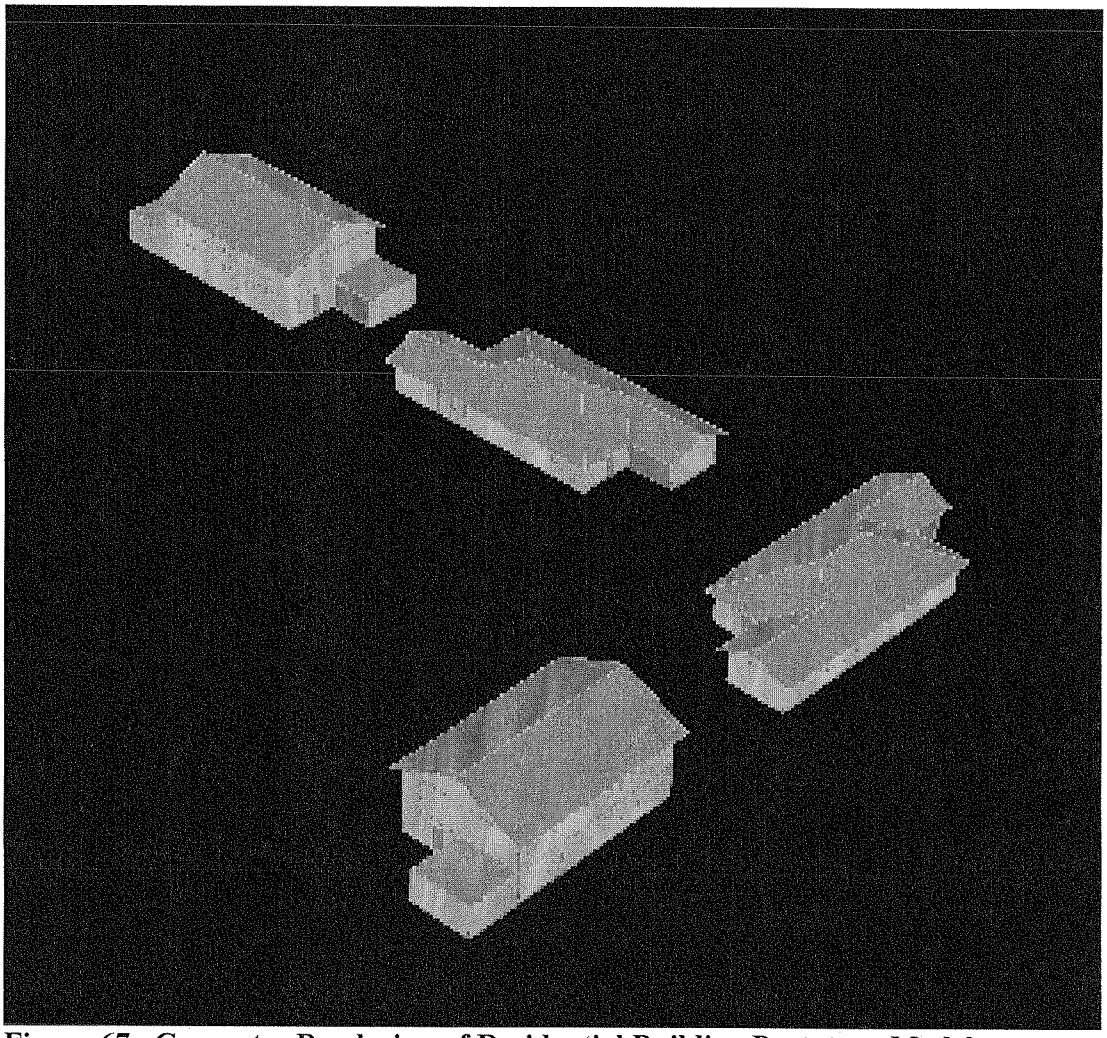

Figure 67. Computer Rendering of Residential Building Prototype Model

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The general characteristics of the residential building prototype model are summarized below:

Residential Building Prototype Description

Characteristic	Value
Conditioned floor area	1 story house: 1465 SF 2 story house: 2930 SF
Wall construction and R-value	Wood frame with siding, R-11
Roof construction and R-value	Wood frame with asphalt shingles, R-19
Glazing type	Single pane clear
Lighting and appliance power density	0.51 W/SF average
HVAC system type	Packaged single zone AC or heat pump
HVAC system size	Based on peak load with 20% oversizing. Average 640 SF/ton
HVAC system efficiency	SEER = 8.5
Thermostat setpoints	Heating: 70°F with setback to 60°F Cooling: 75°F with setup to 80°F
Duct location	Attic (unconditioned space)
Duct surface area	Single story house: 390 SF supply, 72 SF return Two story house: 505 SF supply, 290 SF return
Duct insulation	Uninsulated
Duct leakage	26%; evenly distributed between supply and return
Cooling season	Charlotte – April 17 to October 6
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 3 air changes per hour

References

Itron, 2005. "2004-2005 Database for Energy Efficiency Resources (DEER) Update Study, Final Report," Itron, Inc., J.J. Hirsch and Associates, Synergy Consulting, and Quantum Consulting. December, 2005. Available at http://eega.cpuc.ca.gov/deer

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Appendix L: DSMore Table

Per Measure Impacts Summary for Specialty Bulbs Carolinas Duke Energy Customers

Technology ⇩ / Impacts ⇨	Product code	State	EM&V gross savings (kWh/unit)	EM&V gross kW (coincident peak/unit)	EM&V gross kW (non-coincident peak/unit)	Unit of measure	Combined spillover less freeridership adjustment	EM&V net savings (kWh/unit)	EM&V net kW (coincident peak/unit)	EM&V net kW (non-coincident peak/unit)	EM&V load shape (yes/no)	EUL (whole number)
CFL - Indoor Reflector (Recessed)		NC,SC	39.5	0.0046	0.0314	bulb	24.1%	30.0	0.0035	0.0238	yes	8
CFL - Dimmable Reflector (Recessed Dimmable)		NC,SC	38.3	0.0045	0.0307	bulb	24.1%	29.1	0.0034	0.0233	yes	8
CFL - Outdoor Reflector (Recessed Outdoor)		NC,SC	100.4	0.0061	0.0414	bulb	24.1%	76.2	0.0047	0.0314	yes	5
LED - Reflector (Recessed LED)		NC,SC	67.4	0.0061	0.0414	bulb	24.1%	51.2	0.0047	0.0314	yes	12
CFL - Globe		NC,SC	22.3	0.0034	0.0230	bulb	24.1%	17.0	0.0026	0.0174	yes	6
CFL - Candelabra		NC,SC	18.6	0.0022	0.0149	bulb	24.1%	14.1	0.0017	0.0113	yes	7
CFL - Three Way Spiral		NC,SC	53.1	0.0062	0.0422	bulb	24.1%	40.3	0.0047	0.0320	yes	7
CFL - Dimmable Spiral		NC,SC	59.0	0.0070	0.0476	bulb	24.1%	44.8	0.0053	0.0361	yes	7
CFL - Capsule (A Line)		NC,SC	34.6	0.0041	0.0279	bulb	24.1%	26.3	0.0031	0.0212	yes	9
LED - Capsule (A Line LED)		NC,SC	37.6	0.0044	0.0299	bulb	24.1%	28.5	0.0034	0.0227	yes	12
Program wide		**NC,SC**	**38.5**	**0.0042**	**0.0284**	**bulb**	**24.1%**	**29.2**	**0.0032**	**0.0215**	**yes**	**7**

Notes:
1. Technology names should match the DSMore naming convention.
2. Energy impacts are average per installed unit for each DSMore technology and unit description (measure/ton/sq.ft., etc.)
3. Any analysis using a control group (such as billing analysis with a control group) does not need a freeridership adjustment (it is already in the analysis via the control group adjustment)
4. EM&V load shape: "no" if using standard DSMore load shape for technology units, "yes" if an evaluation-provided load shape should be used for DSMore.