-	new many			J	-
			St	ate	Total
			North Carolina	South Carolina	
	_	Count	9	10	19
	.Ì	% within State	29.0%	20.4%	23.8%
		Count	10	24	34
	2	% within State	32.3%	49.0%	42.5%
	2	Count	6	9	15
	3	% within State	19.4%	18.4%	18.8%
How many people live in this	4	Count	5	1	6
home?	4	% within State	16.1%	2.0%	7.5%
	F	Count	0	4	4
	5	% within State	0.0%	8.2%	5.0%
	6	Count	1	0	1
		% within State	3.2%	0.0%	1.3%
	Prefer not to	Count	0	1	1
	answer	% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
10(0)		% within State	100.0%	100.0%	100.0%

How many peop	ole live in t	this home?	* State
---------------	---------------	------------	---------

#### How many of them are teenagers? \* State

			Sta	ite	Total
			North Carolina	South Carolina	
	-	Count	25	45	70
	0	% within State	80.6%	91.8%	87.5%
		Count	4	3	7
How many of them are	1	% within State	12.9%	6.1%	8.8%
teenagers?	_	Count	2	0	2
	2	% within State	6.5%	0.0%	2.5%
	Prefer not to	Count	0	1	1
	answer	% within State	0.0%	2.0%	1.3%
<b>T</b> ( )		Count	31	49	80
IOTAI		% within State	100.0%	100.0%	100.0%

now many persons are usually nome on a weekday alternoon?" State					
			Stat	te	Total
			North Carolina	South Carolina	
	-	Count	3	3	6
	0	% within State	9.7%	6.1%	7.5%
	4	Count	14	23	37
	I	% within State	45.2%	46.9%	46.3%
	2	Count	6	16	22
How many persons are usually home on a weekday afternoon?	2	% within State	19.4%	32.7%	27.5%
	3	Count	2	4	6
		% within State	6.5%	8.2%	7.5%
	1	Count	5	0	5
	4	% within State	16.1%	0.0%	6.3%
	F	Count	1	2	3
	5	% within State	3.2%	4.1%	3.8%
	Prefer not to	Count	0	1	1
	answer	% within State	0.0%	2.0%	1.3%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

How many persons a	re usually home of	n a weekday afternoon?	* State

#### Are you planning on making any large purchases to improve energy efficiency in the next 3 years? \*

State					
			Sta	ate	Total
			North Carolina	South Carolina	
	Vaa	Count	2	12	14
Are you planning on making	res	% within State	6.5%	24.5%	17.5%
any large purchases to	No	Count	25	28	53
improve energy efficiency in	NO	% within State	80.6%	57.1%	66.3%
the next 3 years?		Count	4	9	13
DK/NS	DK/NS	% within State	12.9%	18.4%	16.3%
Total		Count	31	49	80
ισιαι		% within State	100.0%	100.0%	100.0%

	Total	
Carolina	TOTAL	

			St	ate	Total
			North Carolina	South Carolina	
	-	Count	8	5	13
	18-34	% within State	25.8%	10.2%	16.3%
	05.40	Count	4	12	16
	35-49	% within State	12.9%	24.5%	20.0%
		Count	5	9	14
What is your age group?	50-59	% within State	16.1%	18.4%	17.5%
	00.04	Count	5	6	11
	60-64	% within State	16.1%	12.2%	13.8%
	65-74	Count	4	8	12
		% within State	12.9%	16.3%	15.0%
	0 74	Count	4	7	11
	Over 74	% within State	12.9%	14.3%	13.8%
	Prefer not	Count	1	2	3
	to answer	% within State	3.2%	4.1%	3.8%
Total		Count	31	49	80
Τυται		% within State	100.0%	100.0%	100.0%

What is your age group . Otate	9

	Flease mulcale y			blale	
			Sta	State	
			North Carolina	South Carolina	
		Count	11	15	26
Under \$15,00	Under \$15,000	% within State	35.5%	30.6%	32.5%
	¢45 000 ¢00 000	Count	9	6	15
	\$15,000-\$29,999	% within State	29.0%	12.2%	18.8%
	¢20,000,¢40,000	Count	1	6	7
	\$30,000-\$49,999	% within State	3.2%	12.2%	8.8%
Please indicate your \$50,000-\$74 annual household income \$75,000-\$10 Over \$100,0	\$50,000-\$74,999	Count	3	2	5
		% within State	9.7%	4.1%	6.3%
	¢75 000 \$100 000	Count	1	1	2
	\$75,000-\$100,000	% 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	Count	6	15	21
	Answer	% within State	19.4%	30.6%	26.3%
		Count	0	3	3
	DR/NS	% within State	0.0%	6.1%	3.8%
Total		Count	31	49	80
		% within State	100.0%	100.0%	100.0%

Please indicate your annual household income * Sta
--

# **Appendix I: Auditor Training Guide**



# **Appendix J: Flyer at Kick-off Event**





Enroll now and you

could be our lucky

winner!\*

DUKE

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!

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.

@2014 Duke Energy Corporation 140426 3/14

#### **Residential Neighborhood Program**

DUKE ENERGY.

> Duke Energy Docket No. E-7 Sub 1073



All Duke Energy residential customers within the shaded area are eligible to participate.



November 14, 2014

# 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).

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

#### Table 115. EISA Schedule

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.

	100-watt 75-watt			tt		60-wa	tt	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

285

#### Table 116. Baselines by Year and Wattage

**Jar 04 2015** 

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<sup>45</sup>. 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<sup>46</sup>. 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.

Mar 04 2015

 <sup>&</sup>lt;sup>45</sup> Indiana Statewide Core Program Evaluation Team. "Indiana 2012 EISA Bulb Availability Study." June 20, 2013.
 Pg. 3.

<sup>&</sup>lt;sup>46</sup> Cadmus Group. "Summary of EISA2007 Lighting Survey Results for DP&L Q1, Q2, &Q3 2013." Memorandum. October 11, 2013. Pg. 2.

# 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

#### 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

#### Submitted by

Nick Hall, Johna Roth, David Ladd, and Brian Evans

TecMarket Works 165 West Netherwood Road Oregon WI 53575 (608) 835-8855



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### TABLE OF CONTENTS

EXECUTIVE SUMMARY	6
Key Findings and Recommendations	6
Significant Process Evaluation Findings	6
Significant Impact Evaluation Findings	6
PROCESS EVALUATION RECOMMENDATIONS	7
From the Management Section	7
From the Participant Surveys	7
From the Non-Participant Surveys	9
INTRODUCTION AND PURPOSE OF STUDY	10
SUMMARY OVERVIEW	10
Summary of the Evaluation	10
DESCRIPTION OF PROGRAM	12
Program Eligibility	12
PROGRAM PARTICIPATION	12
METHODOLOGY	13
OVERVIEW OF THE EVALUATION APPROACH	13
Study Methodology	13
Data collection methods, sample sizes, and sampling methodology	14
Number of completes and sample disposition for each data collection effort	14
Expected and achieved precision	15
MANAGEMENT INTERVIEWS	17
PROGRAM HISTORY AND DEVELOPMENT	17
PROGRAM GOALS AND PERFORMANCE	17
PROGRAM PRODUCTS AND INCENTIVE LEVELS	19
OPERATIONAL ROLES	21
PROGRAM MARKETING	21
CUSTOMER AUTHENTICATION	23
Login Process	24
DUKE ENERGY SAVINGS STORE WEBSITE	26
Website Navigation	26
Website Search Function	28
Customer Education and Shopping Assistance	29
Product Display and Pricing	32
Shopping Cart and Purchase Process	40
INVENTORY MANAGEMENT	43
Shipping and Delivery	43
CALL CENTER	44
QUALITY ASSURANCE	46
DATA TRACKING AND REPORTING	47
MANAGEMENT COORDINATION AND COMMUNICATION	48
PLANNED IMPROVEMENTS AND DESIRED PROGRAM CHANGES	48
EVALUATION AND RECOMMENDATIONS	49
KEY FINDINGS	49

Mar 04 2015

2

EVALUATION	50
Recommendations	52
PARTICIPANT SURVEYS	55
AWARENESS AND PARTICIPATION IN THE PROGRAM	55
Factors Motivating Participation	56
Savings Store Website Information and Tools	59
Number of Visits to the Savings Store and Number of Purchases	61
Ordering and Shipping Light Bulbs from the Savings Store	65
Defective Bulbs and Return Policies	67
Customer Support	67
Recommending the Program	68
PARTICIPANT SATISFACTION	69
Customers' Favorite and Least Favorite Things About the Savings Store	70
Satisfaction with Light Bulbs Purchased from the Savings Store	74
Satisfaction with Duke Energy	78
Predicting Overall Program Satisfaction	78
FACTORS THAT INFLUENCE LIGHT BULB PURCHASES	82
Effects of Pricing, Packaging and Incentive Limits on Purchase Decisions	83
Intention to Purchase Light Bulbs if the Savings Store had not Been Available	87
Intention to Shop for Light Bulbs at the Savings Store in the Future	88
PROGRAM BULB INSTALLATIONS	92
Disposition of Savings Store Light Bulbs	94
Program Bulbs Stored for Future Use	96
Program Bulbs Disposed Of	99
Light Bulb Installations by Room	101
Previously Installed Light Bulbs	106
Intention to Install Efficient Lighting in the Absence of the Program and in the Future.	108
CFLs and LEDs Installed Before Participating in the Program	112
Incandescent and Halogen Light Bulbs Installed in Participant Households	115
Specialty Bulbs in Participant Households	117
Future Light Bulb Purchase Intentions	119
Additional CFLs and LEDs Purchased Since Shopping at the Savings Store	121
Additional Actions to Save Energy in the Home	126
Participation and Interest in Other Duke Energy Programs	128
PROGRAM IMPROVEMENTS AND ADDITIONAL OFFERINGS	131
Key Findings	137
Recommendations	140
NON-PARTICIPANT SURVEYS	142
Overview	142
Visitor Feedback	143
Customer Awareness	143
Methods of Access	144
Logging In	146
Website Visitation	147
Website Navigation	150
Product Descriptions	152

**Table of Contents** 

Store Pricing.       155         Shopping Cat and Purchase Process.       157         Shipping and Delivery       157         Influence of Store on Decision Not to Make a Purchase.       158         SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE.       159         What Non-Participants Liked Most       161         What Non-Participants Liked Least.       161         Non-Participants Bugested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases.       164         Suggestions to Increase Future Store Purchases.       166         NoN-VISITOR FEEDBACK       168         Reasons for Not Visiting the Savings Store.       169         Non-Visitor Suggestions for Store Discounts.       171         Non-Visitor Suggestions for Store Discounts.       171         Non-Visitor Suggestions for Store Discounts.       173         Why Duke Energy       173         Satisfaction with Duke Energy       173         Sutisfaction with Duke Energy       173         Word of Mouth Referrals.       176         Years of Previous Exp	Energy Savings Estimates	154
Shopping Cart and Purchase Process       157         Shipping and Delivery       157         Influence of Store on Decision Not to Make a Purchase       158         SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE       159         What Non-Participants Liked Most       161         Won-Participants Liked Least       161         Non-Participants Liked Least       161         Non-Participants Buyted Items for Sale at Store       162         Suggested Website Additions and Improvements       163         Non-Participants Buyten Itemstows       163         Influence of Savings Store on Future Purchases.       164         Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       173         Satisfaction with Duke Energy       173         Satisfaction with Duke Energy       175         Word Mouth Referals       176 <t< td=""><td>Store Pricing</td><td> 155</td></t<>	Store Pricing	155
Shipping and Delivery       157         Influence of Store on Decision Not to Make a Purchase       158         SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE       159         What Non-Participants Liked Most       161         What Non-Participants Liked Least       161         Non-Participants Bugested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases.       164         Suggestions to Increase Future Store Purchases.       167         Non-Vistror FEEDBACK       168         Reasons for Not Visiting the Savings Store.       169         Non-Visitor Suggestions for Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory.       171         Non-Visitor Suggestions for Store Inventory.       171         Non-Visitor Suggestions for Store Discounts.       173         Satisfaction with Duke Energy       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs.       175         Word of Mouth Referrals.       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Pa	Shopping Cart and Purchase Process	157
Influence of Store on Decision Not to Make a Purchase       158         SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE       159         What Non-Participants Liked Most       161         What Non-Participants Liked Least       161         Non-Participant Suggested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       167         Non-VISITOR FEEDBACK       168         Reasons for Not Visiting the Savings Store       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178	Shipping and Delivery	157
SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE       159         What Non-Participants Liked Most       161         Waht Non-Participants Liked Least       161         Non-Participants Liked Least       161         Non-Participants Liked Least       162         Suggested Website Additions and Improvements       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       164         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Suggestions for Store Discounts       173         Satisfaction with Duke Energy       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulb bur Non-Participant Households       178         Additional Bulb Purchase	Influence of Store on Decision Not to Make a Purchase	158
What Non-Participants Liked Least       161         What Non-Participants Sted Cast       161         Non-Participant Suggested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         Non-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Puture Purchases       164         Suggestions to Increase Future Store Purchases       164         Suggestions to Increase Future Store Purchases       166         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Inventory       173         Satisfaction with Duke Energy       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       176         Years of Previous Experience with Energy Efficient Bulbs       177         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       178         Additio	SATISFACTION WITH AND IMPRESSIONS OF THE SAVINGS STORE	159
What Non-Participants Liked Least.       161         Non-Participant Suggested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Storee.       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory.       171         Non-Visitor Suggestions for Store Discounts.       171         Non-Visitor Suggestions for Store Inventory.       171         Non-Visitor Suggestions for Store Inventory.       173         Wohy Duke Energy       173         Satisfaction with Duke Energy       173         Sufficient Bulbs.       176         Years of Previous Experience with Energy Efficient Bulbs.       177         Specialty Bulbs in Non-Participant Households.       178         Additional Bulb Purchase Intentions       185         Additional Bulb Purchase Intentions	What Non-Participants Liked Most	161
Non-Participant Suggested Items for Sale at Store       162         Suggested Website Additions and Improvements       163         NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       166         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Attitudes toward Duke Energy       171         Non-Visitor Attitudes toward Duke Energy       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Years of Previous System Commons       188         Additional Bulb Purchase Intentions       185         Additional Bulb Purchase Intentions       187         Key FINDINGS       191         Satisfaction Ratings       191         Customer Awareness Methods       193	What Non-Participants Liked Least	161
Suggested Website Additions and Improvements       163         NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       164         Initial Awareness of Store among Non-Visitors       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Suggestions for Store Discounts       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchase by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       187         KEY FINDINGS       188         R	Non-Participant Suggested Items for Sale at Store	162
NON-PARTICIPANT BULB BUYING INTENTIONS       163         Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       173         Satisfaction with Duke Energy       173         Satisfaction with Duke Energy       173         Word of Mouth Referrals       176         Word of Mouth Referrals       176         Word of Mouth Referrals       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchase Intentions       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       187         Key FINDINGS       191         Satisfaction Ratings       191         Quastore Awareness Methods <td>Suggested Website Additions and Improvements</td> <td> 163</td>	Suggested Website Additions and Improvements	163
Alternative Methods of Buying Specialty Bulbs       163         Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK.       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       177         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Ratings       191         Satisfaction Ratings       191         Satisfaction Ratings       191         Satisfaction Ratings       191         Customer Aware	NON-PARTICIPANT BULB BUYING INTENTIONS	163
Influence of Savings Store on Future Purchases       164         Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         Non-Visitor Attitudes toward Duke Energy       173         Satisfaction with Duke Energy       173         Suisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Bulb Purchases by Non-Participants       187         Key FINDINGS       190         PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS       191         Satisfaction Ratings       191     <	Alternative Methods of Buying Specialty Bulbs	163
Suggestions to Increase Future Store Purchases       167         NON-VISITOR FEEDBACK       168         Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       181         Recommendation Ratings       191         Sustisfaction Ratings       191         Sustisfaction Ratings       194         Specialty Bulbs in Participant and Non-Participant Households       194         Specialty Bulbs in Participant and Non-Participant Hous	Influence of Savings Store on Future Purchases	164
NON-VISITOR FEEDBACK.168Initial Awareness of Store among Non-Visitors168Reasons for Not Visiting the Savings Store169Non-Visitor Suggestions to Increase Store Visitation170Non-Visitor Suggestions for Store Inventory171Non-Visitor Suggestions for Store Discounts171Non-Visitor Attitudes toward Duke Energy171COMBINED NON-PARTICIPANT FEEDBACK173Satisfaction with Duke Energy173Why Duke Energy Is Providing Specialty Bulbs175Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchase Intentions181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants181RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Sutisfaction Ratings191Sutisfaction Ratings200Store Influence on Future CFL and LED Purchase Intentions203RECOMMENDATIONS203RECOMMENDATIONS203RECOMMENDATIONS203RECOMMENDATIONS203RECOMMENDATIONS204Sheeialty Bulbs in Participant Light Bulb Purchase Intentions204Stericipant and Non-Participant Eleptores203RECOMMENDATIONS203RECOMMENDATIONS203NET TO GROSS ANLYSIS205SPILLOVER<	Suggestions to Increase Future Store Purchases	167
Initial Awareness of Store among Non-Visitors       168         Reasons for Not Visiting the Savings Store       169         Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       188         RECOMMENDATIONS       190         PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS       191         Satisfaction Ratings       191         Substore Awareness Methods       193         Years of CFL and LED Use by Participants and Non-Participants       194         Specialty Bulbs in Participant Light Bulb Purchase Intentions       200         Store Influen	Non-Visitor Feedback	168
Reasons for Not Visiting the Savings Store169Non-Visitor Suggestions to Increase Store Visitation170Non-Visitor Suggestions for Store Inventory171Non-Visitor Suggestions for Store Discounts171Non-Visitor Attitudes toward Duke Energy171COMBINED NON-PARTICIPANT FEEDBACK173Satisfaction with Duke Energy173Why Duke Energy Is Providing Specialty Bulbs175Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants180RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Customer Awareness Methods193Years of CFL and LED Use by Participant and Non-Participants194Specialty Bulbs in Participant Light Bulb Purchases201Other Comparisons203RECOMMENDATIONS203RECOMMENDATIONS203RECOMMENDATIONS203Net TO GROSS RATIC CALCULATION212IMPACT ANALYSIS213	Initial Awareness of Store among Non-Visitors	168
Non-Visitor Suggestions to Increase Store Visitation       170         Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       187         KEY FINDINGS       190         PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS       191         Customer Awareness Methods       193         Years of CFL and LED Use by Participants and Non-Participants       194         Specialty Bulbs in Participant Light Bulb Purchases       201         Other Comparisons       203         RECOMMENDATIONS       203         Recommendation constructions       203         Recommer Awareness Methods       203	Reasons for Not Visiting the Savings Store	169
Non-Visitor Suggestions for Store Inventory       171         Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       187         KEY FINDINGS       190         PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS       191         Satisfaction Ratings       191         Customer Awareness Methods       193         Years of CFL and LED Use by Participants and Non-Participants       194         Specialty Bulbs in Participant Light Bulb Purchase Intentions       200         Store Influence on Future CFL and LED Purchases       201         Other Comparisons       203         RECOMMENDATIONS       203         RECOMMENDATIONS       203         Recende	Non-Visitor Suggestions to Increase Store Visitation	170
Non-Visitor Suggestions for Store Discounts       171         Non-Visitor Attitudes toward Duke Energy       171         COMBINED NON-PARTICIPANT FEEDBACK       173         Satisfaction with Duke Energy       173         Why Duke Energy Is Providing Specialty Bulbs       175         Word of Mouth Referrals       176         Years of Previous Experience with Energy Efficient Bulbs       177         Specialty Bulbs in Non-Participant Households       178         Additional Bulb Purchases by Non-Participants       181         Future Light Bulb Purchase Intentions       185         Additional Energy Saving Actions Taken by Non-Participants       187         KEY FINDINGS       188         RECOMMENDATIONS       191         Satisfaction Ratings       191         Customer Awareness Methods       193         Years of CFL and LED Use by Participants and Non-Participants       194         Specialty Bulbs in Participant Light Bulb Purchase Intentions       200         Store Influence on Future CFL and LED Purchases       201         Other Comparisons       203         RECOMMENDATIONS       203         RECOMMENDATIONS       203         Specialty Bulbs in Participant and Non-Participant Households       196         Participant and Non-Part	Non-Visitor Suggestions for Store Inventory	171
Non-Visitor Attitudes toward Duke Energy171COMBINED NON-PARTICIPANT FEEDBACK173Satisfaction with Duke Energy173Why Duke Energy Is Providing Specialty Bulbs175Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participant Households196Participant and Non-Participant Households196Participant and Non-Participant Households196Participant and Non-Participant Euleph Bulb Purchase200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS205FREERIDERSHIP205SpellLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Non-Visitor Suggestions for Store Discounts	171
COMBINED NON-PARTICIPANT FEEDBACK173Satisfaction with Duke Energy173Why Duke Energy Is Providing Specialty Bulbs.175Word of Mouth Referrals.176Years of Previous Experience with Energy Efficient Bulbs.177Specialty Bulbs in Non-Participant Households.178Additional Bulb Purchases by Non-Participants.181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant Light Bulb Purchase Intentions203RECOMMENDATIONS203Net Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Non-Visitor Attitudes toward Duke Energy	171
Satisfaction with Duke Energy173Why Duke Energy Is Providing Specialty Bulbs175Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant Light Bulb Purchases200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	COMBINED NON-PARTICIPANT FEEDBACK	173
Why Duke Energy Is Providing Specialty Bulbs175Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant Light Bulb Purchases200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Satisfaction with Duke Energy	173
Word of Mouth Referrals176Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Why Duke Energy Is Providing Specialty Bulbs	175
Years of Previous Experience with Energy Efficient Bulbs177Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Word of Mouth Referrals	176
Specialty Bulbs in Non-Participant Households178Additional Bulb Purchases by Non-Participants181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Years of Previous Experience with Energy Efficient Bulbs	177
Additional Bulb Purchases by Non-Participants.181Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Specialty Bulbs in Non-Participant Households	178
Future Light Bulb Purchase Intentions185Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190 <b>PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS</b> 191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203 <b>RECOMMENDATIONS</b> 203 <b>NET TO GROSS ANALYSIS</b> 205FREERIDERSHIP205SPILLOVER209NET to GROSS RATIO CALCULATION212 <b>IMPACT ANALYSIS</b> 213	Additional Bulb Purchases by Non-Participants	181
Additional Energy Saving Actions Taken by Non-Participants187KEY FINDINGS188RECOMMENDATIONS190PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Future Light Bulb Purchase Intentions	185
KEY FINDINGS188RECOMMENDATIONS190 <b>PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS</b> 191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Additional Energy Saving Actions Taken by Non-Participants	187
RECOMMENDATIONS190 <b>PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS</b> 191Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203 <b>NET TO GROSS ANALYSIS</b> 205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212 <b>IMPACT ANALYSIS</b> 213	Key Findings	188
PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS	Recommendations	190
Satisfaction Ratings191Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	PARTICIPANT AND NON-PARTICIPANT SURVEY COMPARISONS	191
Customer Awareness Methods193Years of CFL and LED Use by Participants and Non-Participants194Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Satisfaction Ratings	191
Years of CFL and LED Use by Participants and Non-Participants	Customer Awareness Methods	193
Specialty Bulbs in Participant and Non-Participant Households196Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Years of CFL and LED Use by Participants and Non-Participants	194
Participant and Non-Participant Light Bulb Purchase Intentions200Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203 <b>NET TO GROSS ANALYSIS205</b> FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212 <b>IMPACT ANALYSIS213</b>	Specialty Bulbs in Participant and Non-Participant Households	196
Store Influence on Future CFL and LED Purchases201Other Comparisons203RECOMMENDATIONS203 <b>NET TO GROSS ANALYSIS205</b> FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212 <b>IMPACT ANALYSIS213</b>	Participant and Non-Participant Light Bulb Purchase Intentions	200
Other Comparisons203RECOMMENDATIONS203 <b>NET TO GROSS ANALYSIS205</b> FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212 <b>IMPACT ANALYSIS213</b>	Store Influence on Future CFL and LED Purchases	201
RECOMMENDATIONS203NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Other Comparisons	203
NET TO GROSS ANALYSIS205FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	Recommendations	203
FREERIDERSHIP205SPILLOVER209NET TO GROSS RATIO CALCULATION212IMPACT ANALYSIS213	NET TO GROSS ANALYSIS	205
Spillover       209         Net to Gross Ratio Calculation       212         IMPACT ANALYSIS       213	Freeridership	205
NET TO GROSS RATIO CALCULATION	SPILLOVER	209
IMPACT ANALYSIS	NET TO GROSS RATIO CALCULATION	212
	IMPACT ANALYSIS	213

METHODOLOGY	213
PROGRAM TRACKING DATA	213
SURVEY DATA	215
IN SERVICE RATE (ISR) CALCULATION	216
LIGHTING LOGGER DATA	218
Daylength Adjustment	220
SELF-REPORT VS. LOGGER RESULTS	221
IMPACT ESTIMATES	222
EFFECTIVE USEFUL LIFE	224
TOTAL PROGRAM SAVINGS EXTRAPOLATION	225
APPENDIX A: MANAGEMENT INTERVIEW INSTRUMENT	226
APPENDIX B: VENDOR INTERVIEW INSTRUMENT	230
APPENDIX C: PARTICIPANT SURVEY INSTRUMENT	233
APPENDIX D: NON-PARTICIPANT SURVEY INSTRUMENT	318
APPENDIX E: MARKETING EXAMPLES	344
APPENDIX F: WEBSITE SCREEN IMAGES	350
APPENDIX G: HOUSEHOLD CHARACTERISTICS AND DEMOGRAPHICS	367
PROGRAM PARTICIPANT AND NON-PARTICIPANT MARKET SEGMENT COMPARISON	367
PARTICIPANT SURVEY HOUSEHOLDS	369
NON-PARTICIPANT SURVEY HOUSEHOLDS	390
APPENDIX H: SUGGESTIONS FOR IMPROVING THE PROGRAM	410
APPENDIX I: EXPLANATIONS OF INFLUENCE RATINGS	422
APPENDIX J: NON-PARTICIPANT FEEDBACK	441
APPENDIX K: IMPACT ALGORITHMS	454
Specialty Bulbs	454
Prototypical Building Model Description	455
References	457
APPENDIX L: DSMORE TABLE	458

# **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<sup>1</sup>, 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.

<sup>&</sup>lt;sup>1</sup> 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.

- 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

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.

### 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.

# 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.

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

 Table 1. Evaluation Date Ranges

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

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

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).

# **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.

	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				

#### Table 2. Program Participation

Mar 04 2015

# Methodology

### **Overview of the Evaluation Approach**

This evaluation had four components: management interviews, participant surveys, nonparticipant 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

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.

Mar 04 2015

#### **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.

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%							

#### **Table 3 Summary of Data Collection Efforts**

#### 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.

#### Methodology

#### 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<sup>2</sup> 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.

<sup>&</sup>lt;sup>2</sup> Social desirability bias occurs when a respondent gives a false answer due to perceived social pressure to "do the right thing."

# **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).

	Number of Bulb Purchases of All Types											
Month in 2013		1	NC				SC					
	Goal	Actuals*	Variance	% Goal	Goal	Actual	Variance	% Goal				
Мау	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 4. 2013 Program Goals vs. Actual Performance

#### Table 5. Number of 2013 Bulb Purchases by Type

	Number of 2013 Incented Bulb Purchases*										
Bulb Type	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

18

Mar 04 2015

Ham Exhibit E

**Management Interviews** 

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.

Month 2013	Number of Unique Customers		Total #	# Bulbs	# Bulbs/	Avg. Order/	Avg Bulb/		
	NC	NC SC System		Orders	Ordered	Order	Day	Customer	
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	

#### **Table 6. Monthly Order Tracking**

### **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.

Product List			EFI Store	Duke Energy	Customer	Customer	
Bulb Type	Category	Watt	Base Item Cost	Incentive Amount	Final Purchase Price	Maximum Purchase Limit	
	Indoor Reflector	12	\$3.00	\$2.52	\$0.48	15	
CFL		14	\$3.35	\$2.52	\$0.83		
Reflector (Recessed)		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)		9.5	\$36.25	\$7.00	\$29.25		
	Reflector	13	\$27.95	\$7.00	\$20.95	15	
		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	12	
CFL Candelabra	Candelabra	5	\$4.50	\$2.11	\$2.39		
		7	\$3.95	\$2.11	\$1.84	12	
		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		
CEL Spiral	Standard Spiral	13	\$1.80	\$0.00	\$1.80	N/A	
OFL Spiral		20	\$1.85	\$0.00	\$1.85	N/A	

#### Table 7. 2013 Products and Incentive Levels

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

**Jar 04 2015** 

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

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

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 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 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 <u>http://www.duke-energy.com/residential-savings-store/</u> 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.

Check E	ligibility for Free & Discounted E	nergy P	roducts
1 Sele © @	ct one of the following methods to verify your account:  Phone Number Account Number Account Number Adigits of the account holder's Federal Tax ID or Social rify Number *		
		Cancel	Submit 🕨

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.

**Management Interviews** 

Our records indicate you have ordered your free CFLS. Thank you for participating in our energy efficiency programs.						
ltem/Qty		Reason/Status Acc			ount	Mailing Address
6 CFLs Requested		Requested Date: 04-27-2013 Shipped Date: 04-30-2013 FEDEX® Tracking				22ND AVE NE
6 CFLs Requested		Requested Date: 04-27-2013 Shipped Date: 04-30-2013 FEDEX® Tracking			🗭 22ND AVE NE 😭	
3 CFLs Requested		Requested Date: 04-27-2013 Shipped Date: 04-30-2013 FEDEX® Tracking				22ND AVE NE CONTRACTOR
You are eligible to shop for discounted light bulbs and other products.						
Account	Reason/Status	Туре	Physical Address	State	Zip	
	Eligible	Residential	22ND AVE NE	NC	28601	Shop Now

#### 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.

DUKE ENERGY.	Savings Store energy-saving discourts for Date Compy readential customers				
Welcome to Duke Energy's vendor. To proceed	Savings Store. This online sto to the online store, review ar	re is provided by Energy Federation Inc, EFI, Duke Energy's third-party fulfilment id agree to the terms and conditions below and click the "Submit" button.			
First Name:	-	Terms and Conditions			
Last Name: Account Number:	sc	<ol> <li>Products must be installed at the premise address associated with the account number purchasing the products.</li> </ol>			
State: Premise Address:		2. Products cannot be resold under any circumstances.			
Premise Address: Account Address:	SPARTANBURG, SC, 29302	<ol> <li>Duke Energy reserves the right to revise incentive levels and/or equipment eligibility at any time.</li> </ol>			
Account Address:	SPARTANBURG, SC, 29302	<ol> <li>Duke Energy and the third-party order fulfilment vendor have signed a confidentiality agreement to protect customer's personal information.</li> </ol>			
Note: A different shipping address can be entered during the checkout process.		5. I agree to indemnify, hold hamless and release Duke Energy and its affiliates from any actions or claims in regards to the installation, operation and disposal of equipment (and related materials) covered herein including liability from incidental or consequential damages.			
		6. Duke energy does not expressly or implicitly warrant the performance of installed purchased products and is not liable for any damage caused by the installation of these products or for any damage caused by the malfunction of the installed purchased products.			
		glagree to the terms and conditions.			
		Submit			

**Figure 4. Customer Profile Page** 

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.
Management Interviews



**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.

Mar 04 2015

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.

SEARCH	Advanced Search		Darch
Advanced Search BRANDS Please Select 🗸	Search Criteria		
ITEMS Candelabra Capsules			Search In Item Descriptions
Globes Reflectors	Search Help [?]		🕑 SEARCH
Additional Items	Categories:	All Categories	
FAQs Shipping & Returns Privacy Notice	Manufacturers:	All Manufacturers 👻	
Package Tracking	Price From: Price To:		
TESTED DAILY 15-JUL	Date From: Date To:	mm/dd/yyyy mm/dd/yyyy	

Figure 6. Website Search Function

#### **Bulb Type Search Issues**

- "Spiral" showed five results, including four three-way spirals (incented and nonincented), 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.

- "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."

#### **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 a laso 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.



Figure 7. Savings Calculator

According to the "About this feature" link on the calculator, its programming uses inputs and assumptions from the <u>2010 U.S. Lighting Market Characterization report</u> released by the U.S. Department of Energy; ENERGY STAR reports on lifetime <u>savings in electricity costs</u> of CFLs and savings in <u>pounds of carbon dioxide</u> per average CFL bulb; as well as the <u>Environmental</u> <u>Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator</u>.

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 preprogrammed 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.

MaxLite R40 FloodMax	TCP BR30 Reflector	TCP R20 Reflector
Watts: 23	Watts: 14	Watts: 14
Lumens: 1100	Lumens: 645	Lumens: 495
Life: 10,000 hours	Life: 8,000 hours	Life: 8,000 hours
PRICE BREAKDOWN	PRICE BREAKDOWN	PRICE BREAKDOWN
Retail: \$8.30	Retail: \$6.00	Retail: \$6.00
Savings Store: \$6.75	Savings Store: \$3.35	Savings Store: \$3.00
Duke Incentive: \$2.52	Duke Incentive: \$2.52	Duke Incentive: \$2.52
You Pay: \$4.23	You Pay: \$0.83	You Pay: \$0.48
<del>\$6.75</del>	\$3.35	<del>\$3.00</del>
\$4.23	\$0.83	\$0.48

#### 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

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.

**Jar 04 2015** 

Management Interviews

TCP BR30 Reflector Watts: 14 Lumens: 645 Life: 8,000 hours	TCP BR30 Reflector Watts: 14 Lumens: 645 Life: 8,000 hours
	Incandescent Equivalent: 50 Watts
PRICE BREAKDOWN	
Retail: \$6.00	PRICE BREAKDOWN
Savings Store: \$3,35	Retail: \$6.00
Duke Incentive: \$2,52	Savings Store: \$3,35
You Pay: \$0.83	Duke Incentive: \$2,52
	You Pay: \$0.83
<del>\$3.35</del>	You Save \$5.17 off retail
\$0.83	1 add to cart more info
Original	Suggested changes are shown here in red

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.

This TCP 23 watt is a suitable repla 20%, and UL app at a preset positi standards, shutti conditions.	Dimmable SpringLa acement for a 100 roved for enclosed on to avoid low-en ng the bulb off aut	amp® is designed for watt incandescent lig I fixtures. Intelligent o Id flicker. End-of-life c comatically if it senses	general u ht bulb. Th circuit desig ircuit desig any lamp	ise around the h his lamp is dimma gn automatically gn meets EURO I starting issues	ome. This bulb able down to turns bulb off EC and UL or end of life			
Program Pricing	Estimated Savings	Product Specifications	Installatio	n Instructions				
Retail: \$8.30 Savings Store: \$6.75 Duke Incentive: \$4.40 You Pay: \$2.35								
Displaying 1 to 2 (of 2 pro	ducts)				Result Pages: 1			
PART #+		ITEM NAME	PRICE	AVAILABLE				
R1100.7701	U	TCP 23 watt Dimmable SpringLamp 1-Pack (incented)	<del>\$6.75</del> \$2.35	6826	1 add to cart			

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.

#### **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.

	-
Bulb 1	Bulb 2
<ul> <li>Dimensions: Width 2.4 inches (61 mm), Length 4.4 inches (112 mm)</li> <li>Light Output: 700 lumens</li> <li>Color Temperature: 2,700 degrees Kelvin</li> <li>Color Rendering: 84 CRI</li> <li>Rated Lifetime: 8,000 hours</li> <li>Minimum Start Temperature: -20 degrees Fahrenheit</li> <li>Maximum Operating Temperature: 160 degrees Fahrenheit</li> <li>Power Specifications: 120 volts AC, 60 Hz, 0.21A, 14w</li> <li>Base Type: E26</li> <li>Manufacturer Warranty: 1 Year</li> </ul>	<ul> <li>Light Output: 1,100 lumens (60 to 75 watt incandescent equivalent)</li> <li>Electrical Specifications: 120 volts, 60 Hz, 18 watts</li> <li>Dimensions: 2.6 inch diameter, 5.1 inch length</li> <li>Color Temperature: 2,700 degrees Kelvin</li> <li>Rated Life: 8,000 hours</li> <li>Certifications: UL</li> <li>Manufacturer Warranty: Two Year</li> </ul>

#### Table 8. Non-Standard Product Specifications

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. 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.<sup>3</sup> 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

```
alert \&pf\_rd\_r=1XK8CAY99M4TXE02YDH5 \&pf\_rd\_t=201 \&pf\_rd\_p=1740479022 \&pf\_rd\_i=B002NH5TTA
```

Mar 04 2015

<sup>&</sup>lt;sup>3</sup>http://www.amazon.com/gp/feature.html/ref=amb\_link\_356841462\_1?ie=UTF8&docId=1002234061&pf\_rd\_m=A TVPDKIKX0DER&pf\_rd\_s=product-

Lumens 101 video or a bar chart similar to that on <u>Amazon.com</u>.<sup>4</sup> 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

```
alert&pf_rd_r=1XK8CAY99M4TXE02YDH5&pf_rd_t=201&pf_rd_p=1740479022&pf_rd_i=B002NH5TTA
```

Mar 04 2015

<sup>&</sup>lt;sup>4</sup>http://www.amazon.com/gp/feature.html/ref=amb\_link\_356841462\_1?ie=UTF8&docId=1002234061&pf\_rd\_m=A TVPDKIKX0DER&pf\_rd\_s=product-

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.

amova	Qty.	Part #	Item(s)	Total
	1	R1100.9271	MaxLite 18w MiniBulb A21 1-Pack (incented)	\$3.01
	3	R1100.0173	TCP 7w LED GU10 MR16 (incented) (Available: May-22-14)	\$26.85
1	2	1100.784_2	TCP 14w G25 Globe 2-Pack	\$11.90
iy iten	n marke ted. If ye	d '(Available: "C ou choose to le:	Date")' is presently unavailable, but is expected to be available a ave this item in your cart, you will be notified if there are further	Sub-Total: \$41.76 again by the delays or

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.

#### Saved Carts 3-20-2014 LOAD CART DELETE CART Testing 1 LOAD CART DELETE CART New Saved Cart: Testing 2 Save

#### 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

potential customer equity problem, this may also lead to lower customer satisfaction when customers discover their error.

SEARCH	Itoms mosting the	coarch c	ritoria			
spiral C	Ttems meeting the	search c	riteria			
Advanced Search	Displaying 1 to 5 (of 5 products)					Result Pages: 1
BRANDS	Part #+		Item Name	Unit Price	Available	
Please Select 👻			Rein Humo	onerried	Artiliabio	
ITEMS	1100 129	1	TCP 13w Eco\$ave	£1 05	165076	1
Candelabra Capsules	1100.128		SpringLight 1ES13	91.00	163376	add to cart
Globes Reflectors Spirals Additional Items	1100.333	Û	Earthmate 33w 3-Way ES3362AN	\$7.45	7882	1 add to cart
SUPPORT	6 <del>7</del>	-	5-11-12-22			1
FAQs Shipping & Returns	1100.333_2	W	3-Way 2-Pack	\$14.75	5029	(add to cart )
Contact Us Package Tracking	R1100.333	Ŷ	Earthmate 33w 3-Way 1-Pack (incented)	<del>\$7.45</del> \$3.78	10031	1 add to cart
WMcAfee SECURE			93 - 33			
TESTED DAILY 15-JUL	R1100.333_2	Ŷ	Earthmate 33w 3-Way 2-Pack (incented)	<del>\$14.75</del> \$7.41	5003	1 ( add to cart )
	Displaying 1 to 5 (of 5 products)					Result Pages: 1

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)

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

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<sup>5</sup>) 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

<sup>&</sup>lt;sup>5</sup> 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.

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.

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

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

• 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

- 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.

49

- 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.

- 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.

- 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 <a href="http://www.duke-energy.com/residential-savings-store">http://www.duke-energy.com/residential-savings-store</a> 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.

- 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 <u>Energy Star website<sup>6</sup></u> 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 <u>Amazon.com</u>.<sup>7</sup> 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

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<sup>&</sup>lt;sup>6</sup> http://www.energystar.gov/index.cfm?c=cfls.pr\_cfls\_color

 $http://www.amazon.com/gp/feature.html/ref=amb_link_356841462_1?ie=UTF8\&docId=1002234061\&pf_rd_m=ATVPDKIKX0DER\&pf_rd_s=product-interval and the second seco$ 

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.

## **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.

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).



**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.*

#### 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.

, 	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%

Table 10. Recalling Useful and Important Information from the Savings Store Site(N=136)

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.

- 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.

Table 12. Accessing the Savings Store Websi	e (N=136)
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	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.<sup>8</sup>
- 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.<sup>9</sup>
- I submitted my Savings Store order via mail.<sup>10</sup>

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.

	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.<sup>11</sup> On average, surveyed participants visited the Savings

Mar 04 2015

<sup>&</sup>lt;sup>8</sup> 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.

<sup>&</sup>lt;sup>9</sup> 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.

<sup>&</sup>lt;sup>10</sup> 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.
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.

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%

 Table 14. Reasons for Visiting the Savings Store without Making a Purchase (N=77)

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

<sup>&</sup>lt;sup>11</sup> 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).

Participant Surveys

- 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.

Mar 04 2015

- 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.*<sup>12</sup>

### 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).

	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%

Tabla 15	Mathada a	f Doving f	for Sovings	Store Durchases	(N-136)
Table 13.	Methods 0	i i aying i	or Savings	Store r ur chases	(11-130)

Responses to preferred methods for purchasing bulbs total to more than 100% because respondents could suggest multiple alternate methods.

<sup>&</sup>lt;sup>12</sup> 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.

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).

	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%

Table 16.	Shipping and	Tracking	Orders from	the Savings	Store (N=136)
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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.

Mar 04 2015

Ham Exhibit E

**Participant Surveys** 

## 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).

	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%

Table 18. Damaged and Defective Bulbs and Returning Bulbs (N=136)

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).

Tabla 10	Contacting	Customer	Support	(N-18)
Table 19.	Contacting	Customer	Support	(11 - 10)

	Carolina System	Carolina System
	(count)	(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)
1 ubic 20.	meenous or rennig	, others about the	Su mgs Store	(11-00)

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.

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 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.

	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%

## Table 21. Mean Satisfaction Ratings for the Savings Store and Aspects of the Specialty Bulbs Program (N=136)

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).

2. Customers Favorite rinngs about the Savings Store (N=150)			
	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%	

Table 22.	<b>Customers</b> '	Favorite	Things	about the	Savings	Store	(N=136)
	Customers	I a voi ite		about the			(1,-100)

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.

**Participant Surveys** 

Saving	s Store (N=	=136)
	Carolina System (count)	Carolina System (percent)
	72	52.9%
ased	13	9.6%
	10	7.4%

· · · · · · · · · · · · · · · · · · ·	Table 23.	Customers'	Least Favorite	Things about	the Savings	Store (N=136)
---------------------------------------	-----------	------------	----------------	--------------	-------------	---------------

	(count)	(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.

Mar 04 2015

Mar 04 2015

**Participant Surveys** 

- *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.

Mar 04 2015

**Participant Surveys** 

• 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.

Participant Surveys

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%

#### Table 24. Mean Satisfaction Ratings for Light Bulbs Purchased from the Savings Store

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.

Mar 04 2015

#### 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 threeway 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.

Ham Exhibit E

**Participant Surveys** 

#### 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.

## 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 nonfunctional 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).

	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	

 Table 25. Correlations with Overall Program Satisfaction

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).

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

#### Table 26. Stepwise Regression to Predict Overall Program Satisfaction (N=86<sup>13</sup>)

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.

<sup>&</sup>lt;sup>13</sup> 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.

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

#### Table 27. "Complete" Regression to Predict Overall Program Satisfaction (N=86)

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

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).

	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%

Table 28. Importance Ratings for Factors When Choosing Light Bulbs (N=136)

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

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.<sup>14</sup> 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.

<sup>&</sup>lt;sup>14</sup> 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.

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).

	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%

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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.

#### 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 3	1.	Incentive	Limits	and	Light	Bulb	Purchases	(N=136)	
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	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%
<i>Did the limit on bulbs keep you from ordering all the bulbs you wanted?</i>	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	Base: N= 68 customers who were aware of limits	
section of the Store that sells the same bulbs at a slightly higher price?		
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.

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%

#### Table 32. Purchases Limited by Incentive Limits by Bulb Type (N=26)

*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).

**Participant Surveys** 

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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 3	4. Intention to Buy Light Bulbs in the Absence of the P	rogr	am (N	V=136	)
		-			

<i>If the Savings Store had not been available, would you have ?</i>	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

Mar 04 2015

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.

	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%

#### Table 35. Future Intention to Shop for Light Bulbs at the Savings Store (N=136)

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 <u>CFLs</u> 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 <u>LEDs</u> 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),

Mar 04 2015

**Participant Surveys** 

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.

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.

## **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.<sup>15</sup> 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.

<sup>&</sup>lt;sup>15</sup> 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).

**Participant Surveys** 

Mar 04 2015

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 39. Types of Light Bulbs Purchased from the Savings Store by Program Participants

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). Overall, 6.8% of survey participant bulbs ordered are LEDs compared to 6.0% of all Carolinas customer orders in 2013.

75 \*

109

165 \*

99

114

20.9%

8.5%

3.7%

94.0%

6.0%

CFL - Globe

CFL - Outdoor reflector

(recessed outdoor) CFL - Dimmable spiral

Total for CFLs

Total for LEDs

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				

Table 40.	Survey	Participant	Bulbs (	)rdered (	Compared	to Progran	1 Records
	Durvey	I al ticipant	Duibble	l'uci cu v	Compared	to i rogram	I Itecol us

\* Asterisks denote a statistically significant difference at p<.05 or better using Student's t-test.

15.6%

9.3%

6.1%

93.2%

6.8%

24,412

9,937

4,346

110.065

6,992

## **Disposition of Savings Store Light Bulbs**

293

174

115

1749

127

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<sup>16</sup> (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.<sup>17</sup>

94

Mar 04 2015

<sup>&</sup>lt;sup>16</sup> 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).

<sup>&</sup>lt;sup>17</sup> 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).

**Participant Surveys** 

le 41. Disposition of Savings Store Light Builds: Build 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			

#### Tabl

#### 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

95

Mar 04 2015

Ham Exhibit E

**Participant Surveys** 

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 nondimmable 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.

ur trespunt of defing Dubb	1	1	1	1	
	Bulbs	Bulbs	Bulbs in	Bulbs	Don't
	purchased	installed	storage	disposed	know
	per	per	per	per	bulbs per
	customer	customer	customer	customer	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

Table 43.	Disposition of Savings Store Light Bulbs: Average Number of Bulbs per
Participai	nt Ordering Bulbs

## **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.

Participant	Surveys

Ham Exhibit E

Table 44. R	Reasons for 1	Not Installing	Stored Light	t Bulbs from t	he Savings S	tore (N=136)
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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

estimated to be consumed the slowest, with stored bulbs being used an average of every 10.1 months.  $^{18}$ 

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

Table 45.	Intent to <b>I</b>	Ise Stored	Bulbs among	Customers with	Program	<b>Bulbs in Storage</b>
1 abic 43.	munt to c	sc biorcu	Duibs among	customers with	I Togram	Duibs in Storage

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)

<sup>&</sup>lt;sup>18</sup> 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.
Mar 04 2015

- 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).

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

Table 46	Stored Bulbs and the	Effect of Reduced Pricin	a and Multi-Packaging	(N-136)
1 abie 40.	Stored Duibs and the	Effect of Reduced Fricht	g and Multi-Fackaging	(11=130)

# 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.

Mar 04 2015

### 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.

• 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

reflectors (1.4 locations<sup>19</sup>), candelabras (1.5 rooms) and globes (1.6 rooms) are installed in the fewest number of places.

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

### Table 47. Number of Rooms Where Program Bulbs are Installed

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<sup>20</sup>).

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

<sup>&</sup>lt;sup>19</sup> 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).

<sup>&</sup>lt;sup>20</sup> 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).

Ham Exhibit E

**Participant Surveys** 

locations throughout the home (no more than 17.1% or 12 out of 70 capsule bulbs were installed in any one type of room).

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

Table 48.	Rooms in f	the Home	Where	Program	<b>Bulbs</b> are	Installed
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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."

Mar 04 2015

#### **Participant Surveys**

### **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).

	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%

### Table 49. Bulbs Installed per Room and Dimmable Bulbs per Room

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).

104

ner 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%					

### Table 50. Otl

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.* ٠

### **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.

# 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).

	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 51. Types of Previously Installed Bulbs Replaced by Program Bulbs

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).

	Total bulbs installed	Program bulbs replaced other bulbs	No bulbs previously in sockets	Bulbs for which participants reported wattage	Average wattage of replaced bulbs <sup>21</sup>
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

Table 52	Wattage of Draviouals	Installed Dulks D	anload by Dragnom Dull	ha
$\mathbf{I}$ able $52$ .	- wallage of r reviousiv	/ IIIstaneu duids Ke	еріасец ру гтоугані рин	JN I
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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).

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<sup>&</sup>lt;sup>21</sup> 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.

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%

Table 53. Disposal of Previously Installed Bulbs

# 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).

**Participant Surveys** 

Rows total to 100%. Base: 250 installations by bulb type <sup>22</sup>	Incendes- cent	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 54. Type of Bulbs That Would Have Been Installed in the Absence of the Program by Room

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).

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<sup>&</sup>lt;sup>22</sup> 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).

**Participant Surveys** 

Rows total to 100%. Base: 250 installations by bulb type	Incendes- cent	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%

Table 55. Type of Bulbs That Would Have Been Installed in the Absence of the Programby Specialty Bulb Type

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	Incendes- cent	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%)

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.	<b>Type of Bulbs</b>	That Will Be Installed	When Savings	Store Bulbs Burn	Out by
Specialty	<b>Bulb Type</b>		_		-

Rows total to 100%. Base: 250 installations by bulb type	Incendes- cent	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

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.

112

# CFLs and LEDs Installed Before Participating in the Program

Base: 293 installations by bulb type with valid responses	Average hours of use per bulb (current)	Average hour 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

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



Ham Exhibit E

**Participant Surveys** 

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	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%
	N=116 cus	tomers with
How long have you been using CFLs?	CFLs b	efore the
	pro	gram
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 60. Preinstalled CFLs (N=136)

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.

113

	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%
	N=31 custo	omers with
How long have you been using LEDs?	LEDs be	efore the
	prog	ram
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.



**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<sup>23</sup>) 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

 $<sup>^{23}</sup>$  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).

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-St	yle Incandescent ar	nd Halogen Bulbs	in the Home (N=136)
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	Carolina System	Carolina System
	(count)	(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	134	44.5
Average per household (base N=134 valid responses)	1	0.0
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	0	00
bulbs installed	0	00
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	1 /	9.5
bulbs installed which are used more than two hours per day	14	.9.0
Average per household (base N=134 valid responses)	1.1	

# **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).

	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

Table 63. Specialty Bulbs Installed in Participant Households<sup>24</sup>

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

<sup>&</sup>lt;sup>24</sup> 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.

Table 04. Energy-Enclent and Standard Specialty Builds in Larticipant 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 <sup>25</sup>	249	66	2	69	27.3%	27.7%	

### specialty sockets.

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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).

<sup>&</sup>lt;sup>25</sup> 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).

	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

### Table 65. Incandescent Bulbs in Storage for Future Use in Specialty Sockets

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.<sup>26</sup>

<sup>&</sup>lt;sup>26</sup> 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.

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) <sup>27</sup>
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%

### Table 66. Purchase Intent: Next Ten Bulbs Purchased

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.).

<sup>&</sup>lt;sup>27</sup> 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).

**Participant Surveys** 

**Aar 04 2015** 



**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<sup>28</sup> LEDs account for 16.0% (26 out of 163) of additional bulbs purchased, while

<sup>&</sup>lt;sup>28</sup> 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).

specialty LEDs are more common, accounting for 25.8% (42 out of 163) of additional bulbs purchased.

	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%

Table 67. Efficient Bulbs Purchase	d since Participating in the Program
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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).

	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%

### Table 68. Installation of Additional Bulbs Purchased since Participating in the Program

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.

Aar 04 2015

### 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 cust could have their bulbs Store bu	omers who purchased at Savings It 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.]

Mar 04 2015

- *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.

### <u>Customers who gave "10 out of 10" (highest possible) ratings for the influence of the</u> <u>Savings Store on additional bulb purchases (N=6)</u>

- *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 sixpack 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.

Mar 04 2015

• 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.

### <u>Customers who gave "7, 8 or 9 out of 10" ratings for the influence of the Savings Store on</u> 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.

### <u>Customers who gave "2, 3, 4, 5 or 6 out of 10" ratings for the influence of the Savings Store</u> 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.

### <u>Customers who gave "1 out of 10" (lowest possible) ratings for the influence of the Savings</u> <u>Store on additional bulb purchases (N=8)</u>

- *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).

8	8
Carolina System (count)	Carolina System (percent)
82	60.3%
54	39.7%
13	9.6%
10	7.4%
10	7.4%
10	7.4%
9	6.6%
6	4.4%
6	4.4%
6	4.4%
5	3.7%
3	2.2%
2	1.5%
2	1.5%
2	1.5%
17	12.5%
	Carolina System (count) 82 54 13 10 10 10 10 9 6 6 6 6 6 6 6 5 3 3 2 2 2 2 2 17

### Table 70. Additional Actions to Save Energy since Participating in the Program (N=136)

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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**Participant Surveys** 

### 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).

	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%

 Table 71. Participation in Other Duke Energy Programs (N=136)

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)
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	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

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).

	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

Table 73.	Interest in	Potential	Further	Services	from	Duke	Energy	(N=136)
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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.

- 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.

# **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	<sup>•</sup> Additional Bulbs	or Items to Offer	at the Savings S	tore (N=136)
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	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.

- 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.

Mar 04 2015

- 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.

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 "what 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.
- 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 solarpowered 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.

- 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.

# **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.

- 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 fullyincented 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* 0 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

Ham Exhibit E

**Participant Surveys** 

• 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 multipacks 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

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 prices 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.

# **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

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

Aar 04 2015

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

the combined total for those gaining access via the public website to 40.8%<sup>29</sup> 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. 1ar 04 2015

<sup>&</sup>lt;sup>29</sup> None of the respondents in the combined tally gave both answers.

**Non-Participant Surveys** 

Arrival Method According to	# Responses	Arrival Method According to Web Traffic Data		
Survey Response	-	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

#### Table 76. Comparison of Recall and Web Traffic Data

### 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 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.

Mar 04 2015

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%	

#### Table 77. Ease of Log In Process (Mean 9.3)

### 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).



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.



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.

1ar 04 2015

"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<sup>30</sup>

## 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.

<sup>&</sup>lt;sup>30</sup> Note: While this represents an accurate customer response, the website URL was not an active web retailer at the time of this evaluation.

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%	

 Table 78. Ease of Website Navigation (Mean 9.3)

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.

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%	

 Table 79. Ability to Find Desired Items (Mean 8.8)

Mar 04 2015

**Non-Participant Surveys** 

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.

 Table 80. Ability to Find Desired Items: Reasons for Scores of Less than 7

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.

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%	

 Table 81. Helpfulness of Bulb Descriptions (Mean 8.8)

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 Impro	ved
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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
5	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. <sup>31</sup>

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.

<sup>&</sup>lt;sup>31</sup> 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.

## **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.

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%	

 Table 83. Helpfulness of Energy Savings Estimates (Mean 8.6)

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.

Ham Exhibit E

**Non-Participant Surveys** 

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. <sup>32</sup>
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

#### Table 84. Why Energy Savings Estimates Were Less Than Helpful

### **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.

<sup>&</sup>lt;sup>32</sup> 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."

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 85. Non-Participant Satisfaction with Pricing (Mean 7.9)

#### 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
0	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.
G	The bulbs were more expensive than what Home Depot and Lowe's were offering via
0	coupons.
6	It's been a while since I was there; there might have been one bulb that was priced a little
0	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.

- 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

option,<sup>33</sup> 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

<sup>&</sup>lt;sup>33</sup> 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.

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.

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%

 Table 87. Influence on Decision Not to Buy From Store

## 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).

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%	

 Table 88. Non-Participant Satisfaction with Store (Mean 8.4)

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
	buggestions a	) mer case	Saustaction	with the	bavings biore

Suggestion Summery Count Dereast of 11 December				
Suggestion Summary	Count	Fercent of TT 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	<b>Non-Participants</b>	Were Less	Satisfied	with th	e Energy	<b>Savings Store</b>
--	-----------	-----	-------------------------	-----------	-----------	---------	----------	----------------------

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.

# 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*.

0				
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%		

Table 91. What Is Liked Most About the Savings Store

## 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*.

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 <sup>34</sup>	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%

#### Table 92 What Is Liked Least About the Savings Store

### 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.

Mar 04 2015

<sup>&</sup>lt;sup>34</sup> Note: This direct customer quote is inaccurate. Individual bulbs can be purchased from the Store.

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%

#### Table 93. Non-Participant Suggestions for New Items

### **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

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.*

Non-Participant Surveys

- 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.

- 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

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.* 

n-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%		

#### Table 94. N

## 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 nonparticipants 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 nonparticipants 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.



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.



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
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.



Figure 28. Non-Visitor Attitudes toward Duke Energy

Ham Exhibit E
Non-Participant Surveys

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	<i>My attitude is somewhat more positive because, well, how excited should I possibly be about light bulbs?</i>				
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.				

 Table 95. Non-Visitor Attitudes Explained

## **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).

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%	

#### Table 96. Non-Participant Satisfaction with Duke Energy (Mean 8.0)

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.

T_L_ 07	W/L NIc-	Doutioin out	<b>W</b> ana 1	Loga Cottaffod	: 4 h 4 h a	Dulla Engra
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1 ubic //	· · · II · · · · ·	i i ai ticipanto		Lebb Daublieu	WITH THE	Dune Liner Sy

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

Mar 04 2015

	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
1	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.
	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
6	Fineral website when I do to the "show screen of usade." I always det an error alert. I've
	tried multiple browsers and removing cookies like I was advised to do, but it hasn't made a
	difference.
	Their whole power rates; everything; they're the only power company around. They jack
5	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.
	My overall satisfaction, as it relates to the community as a whole and the coal ash spill, is
2	Iow. 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 peep eventthing along to the consumers.
	Tom them. The Duke CEO expects to pass everything along to the consumers.
Z	Duke needs to tell the truth, clean up coal ash spill, and not force their customers pay for it.
2	in the middle of political backing. Duke Energy should not use their money, which comes
2	from their customers, to fund the Democratic Convention, or any sort of political affiliates
	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
1	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.
	Duke Energy could be more compassionate towards their customers. I experienced two
1	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
	Inprove their customer service.
	offer lower rates to households where someone is disabled or for seniors. Also, I don't like
1	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.



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.

Average

4.8

9.2

**Non-Participant Surveys** 

30

Columns add up to more than 28 responses because respondents could refer the program to more than one category of people.

2.6

10.8

### Years of Previous Experience with Energy Efficient Bulbs

6.6

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<sup>35</sup> 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.

<sup>&</sup>lt;sup>35</sup> 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).

**Non-Participant Surveys** 



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.<sup>36</sup> 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

<sup>&</sup>lt;sup>36</sup> 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.

candelabras and 8.2 for "other" specialty bulbs<sup>37</sup> (including only the households that have a given type of bulb installed).

	Non- participant count (N=80)	Non- Participants (percent)	Total bulb count (N=1374.5 <sup>38</sup> )	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

#### Table 99. Specialty Bulbs Installed in Non-Participant Households

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.

<sup>&</sup>lt;sup>37</sup> 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).

<sup>&</sup>lt;sup>38</sup> Fractional numbers of bulbs are due to interpolating values given as ranges ("6 or 7 bulbs" is reported as 6.5 bulbs, etc.)

# 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% <sup>39</sup>
Other specialty bulbs	131	12	32	33.6%



Figure 31. Percentage of Bulbs Installed by Type

<sup>&</sup>lt;sup>39</sup> 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).

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 nonparticipant 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

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).

	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

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Lanc	TOTO	mucunucscer	it Duibs ii	i Divi age	ior i uture		pecially	Dockets

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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**Non-Participant Surveys** 

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.

Tuble 105. I fullible of Multional Dubbs I archaised by 110h I ar depants							
Bulbs*	_ #	#	%	Average Size			
	Responses	Purchased	Purchased	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	1	6	3.4%	60			
LED)	'	U	0.470	0.0			
CFL - Candelabra	1	4	2.3%	4.0			
LED - Standard or capsule (A Line	1	3	1 7%	3.0			
LED)	1	5	1.7 /0	5.0			
CFL - Outdoor reflector (recessed	1	2	1 10/	2.0			
outdoor)	I	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

	· · ·	_	
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

#### Table 105. Number of Bulbs Kept in Storage by Non-Participants

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-l	Partici	nant k	Reasons	for l	Ruving	Bulbs	Elsewhere
ant	100.	11011-1	and	рані г	<b>ACASUIIS</b>	101 1	Duying	Duins	Listwittert

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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**Non-Participant Surveys** 

- 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.

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%	

Table	107. Stor	re Influence or	Non-Partici	nant Purchases	Elsewhere	(Mean 4.8)
Labic	107. 510	i c minucii ce or	a non-i ai uci	pant i urchases	Listwittert	( <b>WICall 4.0</b> )

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.

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

#### Table 108. Store Influence Explained

### 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).

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) <sup>40</sup>
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%

#### Table 109. Purchase Intent: Next Ten Bulbs Purchased

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).

Aar 04 2015

<sup>&</sup>lt;sup>40</sup> 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).



#### 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.

**Mar 04 2015** 

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%

#### Table 110. Additional Energy Saving Actions Taken by Non-Participants

Totals more than 100% because multiple responses were possible

### **Key Findings**

- TecMarket Works surveyed 80 Duke Energy customers considered to be informed nonparticipants 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.

- 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.

# 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.

# 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: nonparticipant 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.

191

**Duke Energy** 



Figure 33. Comparison of Satisfaction and Agreement Ratings

Table 111 Com	narison of 1.10	Ratings hetween	Particinants an	d Non-Particinants
Table 111. Com	parison or 1-10	Raings between	i ai ucipanto ai	iu non-i ai ucipants

	Partic	ipants	Nonparticipants	
Measure	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.

### **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 nonparticipants 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 nonvisitors).



**Figure 34. How Customers First Learned About the Savings Store** *Note that totals add to more than 100% since multiple answers were possible.* 

Mar 04 2015

### 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.

Survey Comparisons



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 nonvisitors (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).



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%).

Survey Comparisons

	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	

#### Table 112. Specialty Bulbs Installed in Participant and Non-Participant Households

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<sup>41</sup>); 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.

Mar 04 2015

<sup>&</sup>lt;sup>41</sup> 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.

**Survey Comparisons** 



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.

	Participa	nts (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%	

Table 113. Energy-Efficient Specialty Bulbs in Participant and Non-ParticipantHouseholds

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.

<u> </u>						
	Participan	ts (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		

Table 114. Incandescent Bulbs in Storage for Future Use in Specialty Sockets

Percentages may total to more or less than 100% because respondents can have multiple types of bulbs in storage or none in storage.

**Survey Comparisons** 



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.

Of the Next Ten Light Bulbs You

Purchase, How Many Will Be ...?

% who intend to buy at least one CFL bulb

% who intend to buy at least one LED bulb

% who intend to buy at least one

% of next ten bulbs that will be

incandescent and/or halogen bulbs % of next ten bulbs that will be CFL bulbs

% of next ten bulbs that will be LED bulbs

incandescent and/or halogen bulb

**Non-Participants Who** 

**Answered This Question** 

(Valid N=77)

26.0%

85.7%

32.5%

All Bulbs To Be

Purchased

(N=763)

14.9%

69.1%

16.0%

S
20
Z
ar

Participants Who

**Answered This Question** 

(Valid N=128)

17.2%

89.1%

37.5%

All Bulbs To Be

Purchased

(N=1278)

6.1%

73.9%

20.0%

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.

Likeliheed of	CFLs				LEDs			
future purchases as a result of	<b>Participants</b> (Valid N=136)		Non-Participant Visitors (Valid N=48)		<b>Participants</b> (Valid N=136)		Non-Participant Visitors (Valid N=48)	
Store visits	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%

#### Table 116. Intention to Purchase CFLs and LEDs as a Result of Store Visits

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.



**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, nonparticipants 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 Aar 04 2015

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.

# 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<sup>42</sup> 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)

 $<sup>^{42}</sup>$  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*.

() 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".

Survey questions	Survey responses <sup>43</sup>	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	CFL, LED	Yes	-
previously in the lamps or fixtures in your [room where	Incandescent, Halogen	No	-
program bulb installed] where you installed the [specialty program bulb type] bulbs from the Savings Store?	No bulbs in sockets <sup>44</sup> , Don't know, Not specified	Don't know	-
B. If you had not known about the light bulbs available at the Savings	Yes	-	Yes if efficient before program No if not efficient before program Don't know if unknown before program
<b>continued to install</b> [bulbs previously in the lamps] <b>bulbs</b>	No	-	Use response from question C
in this light fixture?	Maybe		Maybe
	Don't know, Not Specified	-	Don't know
C. What type of bulbs would	CFL, LED	-	Yes
you have installed in this light fixture if you had not purchased bulbs from the Savings Store?	Incandescent, Halogen	-	No
	No bulbs in sockets, Don't know, Not specified	-	Don't know

	<b>T</b> ( )		D		
Table 117	Kev to C	onverting Si	irvev Resno	mses to Logic	al Statements
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<sup>43</sup> 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".

<sup>&</sup>lt;sup>44</sup> 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).
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.

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 combinat	tions of responses	0%	140

Table 118. Freeridership Scores	for Specialty Bulb Installations
---------------------------------	----------------------------------

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<sup>45</sup>, 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.

<sup>&</sup>lt;sup>45</sup> 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).

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 <sup>46</sup> (N=250 installations)	1876	807	218.5	27.1%

#### Table 119. Survey Participant Incented Freerider Bulbs by Specialty Bulb Type

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).

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<sup>&</sup>lt;sup>46</sup> 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.

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)

#### Table 120. Weighted Overall Program Freeridership

### 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.



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.

able 121. Spillover contribution from non-incented standard spiral CFLs purchase	d
rough 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.

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

 Table 122. Spillover contribution from non-incented standard spiral CFLs purchased outside of the Savings Store

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

Table 124. Total program spillover

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.

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 =  $(1\text{-freeridership})^*(1\text{+spillover})$ = (1 - 0.272) \* (1 + 0.043)= 0.759

Total Discounting to be Applied = 1 - NTGR

= 1 - 0.759= 0.241= 24.1%

## **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.

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

Table 125.	Adjusted	Impact: kWh	and Coin	cident kW	per Bulb	Purchased
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## 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.

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 <sup>47</sup>

#### Table 126. Program bulb purchases by type and wattage

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.

Mar 04 2015

<sup>&</sup>lt;sup>47</sup> 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.

Ham Exhibit E

**Impact Analysis** 

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

#### Table 127. Average wattage by bulb group for all purchased bulbs

### **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.

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

#### Table 128. Participant survey bulb data by room type

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.

**Impact Analysis** 

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Table 129. Partic	ipant survey bulb	data by bulb group
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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.

Ham Exhibit E

**Impact Analysis** 

anable savings generating specially sockets for 15K					
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. Available savings generating specialty sockets for ISR

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<sup>48</sup>. 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.

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%

Table 131. ISR by bulb group

<sup>&</sup>lt;sup>48</sup> As established in the Nexus Market Research, RLW Analytics, and GDS Associates study, dated January 20<sup>th</sup>, 2009: "New England Residential Lighting Markdown Impact Evaluation".

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.

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%

Table 122	Lagar	h anna a	f	ma a ma a mad	dary true a
<b>1</b> able 152.	Logger	nours e	n use dv	room and	dav type

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.

**Impact Analysis** 

Relative Precision	OFFICI
+/- 39%	
+/- 60%	
+/- 39%	
+/- 55%	- <del>-</del>

Table 133. Logger hou	irs of use by bulb and day type
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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 threeMar 04 20

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way bulbs to measure power output. Dimmable bulbs were found	l to average 79.7% of maximum
power while turned on and three-way bulbs averaged 61.4%.	

Table 134. Dimmable and	l 3-way powe	r factors
-------------------------	--------------	-----------

Dimmable Bulb Power	3-Way Bulb Power
Fraction	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<sup>49</sup>:

**Equation 1**: Hours/day = hours/day average \*  $[1 + Max \text{ deviation } * \sin(\theta d)]$ 

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  $\pm 16\%$ .

220

Mar 04 2015

<sup>&</sup>lt;sup>49</sup> The Cadmus Group. "Upstream Lighting Program Evaluation Report. Prepared for CPUC". November 16<sup>th</sup>, 2009. Pg. 16.

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**Impact Analysis** 

To calculate the daylength adjustment factor for this study, Equation 2 was evaluated at the median date of the logging period (June 5, 2014):

$$\theta d = 2\pi * (284 + n) / 365 = 2\pi * (284 + 156) / 365 = 7.57$$

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:

Hours/day = hours/day average \*  $[1 + Max \text{ deviation } * \sin(\theta d)]$ = 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.

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			

#### Table 135. Daylength-Adjusted Hours of Use by Room Type

### 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.

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

#### Table 136. Self-report vs. actual hours of use

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.

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. Engineering algorithm inputs by room type

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.

**Impact Analysis** 

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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.

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		23	9 965		
(recessed outdoor)	Outdoor Reflector	25	3,300	110.0	0.0054
CFL Reflector/Dimmable		15	1 753		
(recessed dimmable)	Indoor Reflector	10	1,700	42.0	0.0040
LED Reflector (recessed		10	28		
LED)	Indoor Reflector	10	20	73.9	0.0054
LED Reflector (recessed		9.5	27		
LED)	Indoor Reflector	0.0		74.5	0.0054
LED Reflector (recessed		13	524		
LED)	Indoor Reflector			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 <sup>50</sup>	42.2	0.0037

#### Table 139. Ex-Ante Savings by Bulb Type and Wattage

<sup>&</sup>lt;sup>50</sup> 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

Table 140 presents the impacts by bulb group after the application of the realization rate.

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

Table 140. Gross and net energy and demand savings per bulb group

## 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.

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

#### Table 141. Bulb EUL by group with weighted average program EUL

### **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.

Participation Count	Total Bulbs	Bulbs in State	Gross kWh	Gross kW	
8,060	117,057	115,921	4,462,959	487	

#### Table 142. Total program gross savings extrapolation

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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?

Mar 04 2015

#### **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?

Mar 04 2015

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

Thank you!

Mar 04 2015

## **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?

#### **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?

#### 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!

## **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
- () Kentuc () 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

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 energyefficient 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

*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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Appendices

#### 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)

Mar 04 2015

Appendices

[] 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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Appendices

( ) 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?

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? \_\_\_\_\_\_

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? ()3 ()4 ()5 ()6 ()7 ()8 ()9 ()10 ()DK/NS()1() 2For 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/NSIf 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/NS17a. 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? ()4 ()5 ()6 ()7 ()8 ()9 ()10 ()DK/NS ()1()3 ()2 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,

Mar 04 2015

() 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 th	e lightii	ng level							
	()	()	()	()	()	()	()	()	()	()	()
18b.	Speed of	which	the bulb	comes	up to fi	ull light	ing leve	el			
	()	()	()	()	()	()	()	()	()	()	()
18c.	Purchase	price o	f the bu	lb							
	()	()	()	()	()	()	()	()	()	()	()
18d.	Availabil	lity of t	he bulb	at store	s and w	ebsites	where y	ou nori	nally sh	lop	
	()	()	()	()	()	()	()	()	()	()	()
18e.	Selection	of wat	tage and	l light o	utput le	evels av	ailable				
	()	()	()	()	()	()	()	()	()	()	()
18f.	Cost savi	ngs on	your uti	lity bill							
	()	()	()	()	()	()	()	()	()	()	()
18g.	Energy s	avings									
	()	()	()	()	()	()	()	()	()	()	()
18h.	Environn	nental c	or "greei	n" conce	erns						
	()	()	()	()	()	()	()	()	()	()	()
18i.	Attractive	eness or	appear	ance of	the bull	b					

(	) ()	()	()	()	()	()	()	()	()	()	
18j. Rec	ommendatio	ons from	n famil	y and fr	iends						
(	) ()	()	()	()	()	()	()	()	()	()	
18k. Rec	ommendati	ons fror	n the u	tility co	mpany			~ /			
(	) ()	()	()	()	()	()	()	()	()	()	
181. Ava	ilability of	utility p	rogram	is or ser	vices th	at offer	the bul	bs to vo	u direc	tlv	
(	) ()	()	()	()	()	()	()	()	()	()	
18m Ea	se of bulb d	isnosal	()	()	()	()	()	()	()		
(		()	()	()	()	()	()	()	()	()	
(	) ()	()	()	()	()	()	()	()	()	()	
On a sea	ale of 1-to-1	0 with	1 indi	cating t	hat the	factor	was no	t at all	influer	tial and 10	
indicati	ng that tha	factor s		caung t rv influ	antial a	riaciui nloggo r	was nu oto the	lovol o	f influe	nco of tho	
followin	a factora or		vas ve	ry mnu n to hu	ential, j	piease i slav kul	ale life	uch th		Enorgy Sou	inaa
10110WIII Store	g factors of	n your c	lecisio	n to bu	y specia	ally Dui	DS UIFO	ougn une	e Duke	Energy Sav	mgs
Store.	2	2	4	5	6	7	ø	0	10	DV/NC	
10a Ada	. <u>4</u>	<b>3</b>	<b>4</b>	כ הארי ארי	0	/ in the O	ð mling S	9	10	DK/NS	
19a. Adv	vertising wh	ien I acc	essea	My Ac	count	in the O	nine S	ervices	section	of Duke	
Energy	swebsite				<i>.</i>						
(	) ()	()	()	()	()	()	()	()	()	()	
19b. Adv	vertising on	Duke E	nergy'	s public	website	e					
(	) ()	()	()	()	()	()	()	()	()	()	
19c. Adv	vertising via	ı mailing	gs rece	ived fro	m Duke	e Energy	/				
(	) ()	()	()	()	()	()	()	()	()	()	
19d. Rec	commendati	on of fr	iends c	or family	y by wo	rd of mo	outh, in	cluding	email a	and social me	edia
(	) ()	()	()	()	()	()	()	()	()	()	
19e. Rec	ommendati	on of so	meone	you do	n't knov	v persor	nally or	a group	that yo	ou follow on	ine
at a site	such as Fac	ebook o	r Twitt	er							
(	) ()	()	()	()	()	()	()	()	()	()	
19f. The	brands of l	ight bull	os offe	red in th	ne Savin	ngs Stor	e				
(	) ()	Ŭ ()	()	()	()	Ũ ()	()	()	()	()	
19g. The	selection o	of types of	of bulb	s for dif	fferent r	ourposes	s availa	ble at th	ne Savir	ngs Store	
(	) ()	()	()	()	()	()	()	()	()	()	
19h. The	selection o	of differe	ent wat	tages of	bulbs a	available	e at the	Savings	Store		
(		()	()	()	()	()	()	()	()	()	
10i The	convenienc	e of onl	ine ord	lering	()	()	()	()	()	()	
1)1. The		()			()	()	()	()	()	()	
10i The	) ()	() e of hor	() ne deli	Verv	()	()	()	()	()	()	
19j. The					()	()	()	()	()	()	
101- The	) ()	() Han of th	() Liaht	() hulha a	() t the Se		()	()	()	()	
19K. 116	reduced pr			$\frac{1}{2}$ outos a	it the Sa	lvings 5	lore	()	()	()	
( 101 V		()	()	()	()	()	()	()	()	()	
191. You	r desire to s	save ene	rgy								
(	) ()	()	()	()	()	()	()	()	()	()	
19m. Yo	our desire to	save on	utility	costs							
(	) ()	()	()	()	()	()	()	()	()	()	

PURCHASING AND SHIPPING

Mar 04 2015

Mar 04 2015

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 \_\_\_\_\_
| TecMarket Works   | Appendices         |
|---|--------------------|
| 26. Were you aware of the order tracking features that allowed you to o | 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

Ham Exhibit E

Appendices

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?

() 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 )

**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

Appendices

#### *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

- () 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

- () 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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Appendices

#### 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

Appendices

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)

() 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

- () 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
() 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? \_\_\_\_\_

### **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?

Mar 04 2015

- () 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.

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

( ) 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

() 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)
- ( ) 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

Mar 04 2015

Appendices

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

#### Appendices

#### If "Yes", ask

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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?** 

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.

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)

() 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
- () 5 () 6 or more
- () 0 01 more

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

**Jar 04 2015** 

() 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)

**Jar 04 2015** 

( ) 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

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

() 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

Ham Exhibit E

Appendices

( ) 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.

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

*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

Ham Exhibit E

Appendices

#### 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

### **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

() 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

Appendices

- () 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.

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

Appendices

() 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*  **3W-4a.** In how many different rooms in your home did you install these Savings Store 3way 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?

### **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

Ham Exhibit E

Appendices

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? \_\_\_\_\_

**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
Ham Exhibit E

Appendices

#### 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

**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)

() Kitchen
() Master bedroom
() Other bedroom
() Bathroom
() Hall
() Closet
() Basement
() Garage
() Outdoors/Exterior
() Other (specify) \_\_\_\_\_\_

() Living/family room

() Dining room

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?

Mar 04 2015

# **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

Mar 04 2015

- () 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)

Appendices

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

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

- () 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 onoff 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.* 

Ham Exhibit E

Appendices

() 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

() 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?

- () 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

Ham Exhibit E Appendices

( ) 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

- () 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

TecMarket Works	Appendices
AB2-1a. I have asked you about one place where you installed the Savings Store. Are there any other rooms or places in your	[bulb] that you bought from home where you have
installed [bulb] that you purchased from the Savings Store?	-
() Yes	
( ) No	
() DK/NS	

- () 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?**  Ham Exhibit E

Ham Exhibit E

() 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

Appendices

#### 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

( ) 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

Ham Exhibit E

Appendices

- () 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?

- () 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

Ham Exhibit E Appendices

() 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.

Appendices

46a. How many dimmable bulbs do you have in your home?	
() None	
() One or more <i>record number</i>	
( ) 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 <i>record number</i>	
() DK/NS	
47h How money 2 more built a one	
4/b. How many 5-way builds are	
LED	
Halogen	
Incandescent	
DK/NS	
160. How many indoor rofloctor hulbs do you have in your home?	
() None	
() Notic	
() DE OF MOTE record number	
() DK/NS	
47c How many Indoor reflector bulbs are	
CFL	
Halogen	
Incondescent	
DV/NS	
46d. How many outdoor reflector bulbs do you have in your home?	
() None	
() One or more <i>record number</i>	
() DK/NS	
47d. How many outdoor reflector bulbs are	
CFL	
LED	
Halogen	
Incandescent	

Ham Exhibit E

Appendices

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...

Ham Exhibit E Appendices

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)	
Globe Candelabra Other ( <i>Specify type and number</i> )	

*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

Ham Exhibit E

- [] 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

Appendices

#### 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

Appendices

#### 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

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? \_\_\_\_\_

- () 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 CFI	_s			
Capsule CFLs				
<b>Indoor Reflector CF</b>	Ls			
<b>Outdoor Reflector C</b>	FLs			
Globe CFLs				
Candelabra CFLs				
Dimmable CFLs				 
Three-way CFLs				

Appendices

Standard or capsule LED	 	
Indoor reflector LED	 	
Outdoor reflector LED	 	
Globe LED	 	
Candelabra LED	 	
Three-way LED	 	
<b>Other type of CFL</b> bulb specify type and number	 	
<b>Other type of LED</b> <i>bulb specify type and number</i>	 	

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?

Α.	
B	
С.	
D. ]	

65. Why do you think that Duke Energy is providing discounted specialty bulbs to their customers?

Appendices

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

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.

5 9 2 3 4 6 7 8 10 **DK/NS** 1 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 () () () () ()()()()()()()

			H	am Exhibit E	
TecMarket Works			Α	Appendices	
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 spe	ecific re	ecomm	endatio	ns for	
improvements					
	()	()	()		
68g. Social Networking sites such as Facebook and Twitter to	read a	bout or	r discus	s 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?

Mar 04 2015

() 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

- () 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

Appendices

#### 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

Ham Exhibit E

Appendices

# [] 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 2499
- () 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?

Mar 04 2015

- () 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
- () 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

Ham Exhibit E Appendices

- ()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.

#### 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.

## **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

#### 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

[] 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?

**Aar 04 2015** 

() 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

[] 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.*\_\_\_\_\_\_

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?

Ham Exhibit E

Appendices

()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

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

Ham Exhibit E Appendices

*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?

Ham Exhibit E

Appendices

( ) 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 () 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?

- () Neither Satisfied nor Dissatisfied
- () Somewhat Dissatisfied
- () Very Dissatisfied
- () Refused
- () DK/NS

<sup>()</sup> Very Satisfied

<sup>()</sup> Somewhat Satisfied

TecMarket Works	Appendices
Ask 31d for Ohio customers ONLY (ask ALL Ohio custom <b>31d. Why do you give it that rating?</b>	ners to explain ratings)
32a. What do you like most about the Duke Energy Sa	avings Store?
32b. What do you like least about the Duke Energy Sa	avings Store?
33. Are there any other bulbs or energy efficiency iter Savings Store?	ns you'd like to be able to order at the
34. Are there any additional features you would like t	o see on the Savings Store website?
35. How else might the Savings Store be improved?	
CUSTOMERS WHO DID NOT VISIT THE SAVINGS ST	ORE
N1a. How did you first learn about or hear about Duk (Check all that apply) [] Saw message while accessing My Account online [] Saw a message on Duke Energy's public website (not [] From another website N1b. Which one?	<b>the online account system part</b> )
<ul> <li>[] I got a letter/brochure in the mail</li> <li>[] Advertisement with my bill</li> <li>[] Email from Duke Energy / Duke Energy employee</li> </ul>	

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## N1a. Hov

- [] Saw m
- [] Saw a
- [] From
- [] I got a
- [] Adver
- [] Email gy rgy ei

[] 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*) *Nlf*.

[] 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

[] 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?

	Ham Exhibit E
TecMarket Works	Appendices
N8a. As a result of what you know about the Duke Energy Savings S your attitude toward Duke Energy is more positive, more negative, o (If more positive/negative, ask if "much more" positive/negative' or "som positive/negative.) () Much more positive () Somewhat more positive () About the same () Somewhat more negative () Much more negative () Much more negative	<b>Store, would you say</b> or about the same? <i>newhat more</i> "
<i>If "more positive" or "more negative" in N8a, then ask N8b</i> <b>N8b. Why do you say that?</b>	
MORE SATISFACTION AND IMPROVEMENTS	
<ul> <li>36a. Have you told anyone about the Duke Energy Savings Store?</li> <li>() Yes</li> <li>() No</li> <li>() DK/NS</li> </ul>	

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?

# **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)

() 1 year or less (but not first time)

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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 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	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) (an pear-shaped)	
Candelabra bulbs	
Capsule bulbs (encapsulated CFLs that look like standard light bulbs instead of spirals) (an pear-shaped)	
	re
Other ( <i>specify type and number</i> )	
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?	l
November 19, 2014         332         Duke E           Dockot No. E 7 S	Energy

*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?**  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

## 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 <i>specify type and number</i>		

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	

DEMOGRAPHICS

#### d1. In what type of building do you live?

() Single-family home, detached construction

() Single family home, factory manufactured/modular

Response d

- () 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

Appendices

#### 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
- () 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?

- () 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

## [] 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 2499 () 2500 to 2999
- () 3000 to 3499
- () 3500 to 3499
- () 4000 or more
- () 4000 01 II () 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
- () 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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Appendices

Mar 04 2015

() 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

Ham Exhibit E Appendices

()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 <u>next 3 years</u>?

() 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!

## **Appendix E: Marketing Examples**



Appendices



Figure 45. Insert Example (Front)

November 19, 2014



Figure 46. Insert Example (Back)



Figure 47. Mailer Example (Front)



Figure 48. Mailer Example (Back)