(My Home Energy Report)
91d. A program that provides an ongoing comparison of your energy use with that of people who live in similar homes*

Not at all interested
( ) 1
…
( ) 10
( ) DK/NS
very interested

(Personalized Energy Report)
91e. A program that provides personalized energy analysis and ways to save energy and money by filling out a few questions about your home either online or by mail.*

Not at all interested
( ) 1
…
( ) 10
( ) DK/NS
very interested

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. On a scale from 1-10, with 1 indicating that you would be very uninterested, and 10 indicating that you would be very interested agree, please rate your interest in the following services.*

	1	2	3	4	5	6	7	8	9	10	DK/NS
92a. **Help in finding weatherization contractors to make your home more efficient**											
92b. **Help in finding energy efficient equipment and appliances**											
92c. **Rebates for energy efficient home improvements**											
92d. **Inspection services of work performed by contractors**											
92e. **Financing for energy efficient home improvements**											
92f. **Home energy audits or inspections of your home with specific recommendations for improvements**											
92g. **Social Networking sites such as Facebook and Twitter to read about or discuss energy efficient**											

solutions with energy experts.											

93. What other services could Duke Energy provide to help improve home energy efficiency?*

Finally, we have some general demographic questions...

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

( ) Single-family home, detached construction
( ) Single family home, factory manufactured/modular
( ) Single family, mobile home
( ) Row House
( ) Two or Three family attached residence-traditional structure
( ) Apartment (4 + families)---traditional structure
( ) Condominium---traditional structure
( ) Other: _____
( ) Refused
( ) DK/NS

d2. What year was your residence built?*

( ) 1959 and before
( ) 1960-1979
( ) 1980-1989
( ) 1990-1997
( ) 1998-2000
( ) 2001-2007
( ) 2008-present
( ) DK/NS

d3. How many rooms are in your home (excluding bathrooms, but including finished basements)?*

( ) 1-3
( ) 4
( ) 5
( ) 6
( ) 7
( ) 8
( ) 9
( ) 10 or more
( ) DK/NS

d4. Which of the following best describes your home's heating system?*

Check all that apply

[ ] None
[ ] Central forced air furnace
[ ] Electric Baseboard

[ ] Heat Pump
[ ] Geothermal Heat Pump
[ ] Other

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?*

(Mark all that apply)

[ ] None, do not cool the home
[ ] Heat pump for cooling
[ ] Central air conditioning
[ ] Through the wall or window air conditioning unit
[ ] Geothermal Heat pump
[ ] Other *(please specify?)*
[ ] DK/NS

d9. How many window-unit or "through the wall" air conditioner(s) do you use?*

( ) None
( ) 1
( ) 2
( ) 3
( ) 4

( ) 5
( ) 6
( ) 7
( ) 8 or more
( ) DK/NS

d10. What is the fuel used in your cooling system?*

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other
[ ] None
[ ] DK/NS

d11. How old is your cooling system?*

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) 19 years or older
( ) DK/NS
( ) Do not have

d12. What is the fuel used by your water heater?*

(Mark all that apply)

[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other
[ ] No water heater
[ ] DK/NS

d13. How old is your water heater?*

( ) 0-4 years
( ) 5-9 years
( ) 10-14 years
( ) 15-19 years
( ) More than 19 years
( ) DK/NS

d14. What type of fuel do you use for indoor cooking on the stovetop or range?

(Mark all that apply)

[ ] Electricity
[ ] Natural Gas

[ ] Oil
[ ] Propane
[ ] Other
[ ] No stovetop or range
[ ] DK/NS

d15. What type of fuel do you use for indoor cooking in the oven?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other
[ ] No oven
[ ] DK/NS

d16. What type of fuel do you use for clothes drying?*
(Mark all that apply)
[ ] Electricity
[ ] Natural Gas
[ ] Oil
[ ] Propane
[ ] Other
[ ] No clothes dryer
[ ] DK/NS

d17. About how many square feet of living space are in your home?*
(Do not include garages or other unheated areas)
Note: A 10-foot by 12 foot room is 120 square feet
( ) Less than 500
( ) 500 to 999
( ) 1000 to 1499
( ) 1500 to 1999
( ) 2000 to 2499
( ) 2500 to 2999
( ) 3000 to 3499
( ) 3500 to 3999
( ) 4000 or more
( ) DK/NS

d18. Do you own or rent your home?*
( ) Own
( ) Rent

d19. How many levels are in your home (not including your basement)?*
( ) One

( ) Two
( ) Three

d20. Does your home have a heated or unheated basement?*
( ) Heated
( ) Unheated
( ) No basement

d21. Does your home have an attic?*
( ) Yes
( ) No

d22. Are your central air/heat ducts located in the attic?*
( ) Yes
( ) No
( ) N/A

d23. Does your house have cold drafts in the winter?*
( ) Yes
( ) No

d24. Does your house have sweaty windows in the winter?*
( ) Yes
( ) No

d25. Do you notice uneven temperatures between the rooms in your home?*
( ) Yes
( ) No

d26. Does your heating system keep your home comfortable in winter?*
( ) Yes
( ) No

d27. Does your cooling system keep your home comfortable in summer?*
( ) Yes
( ) No

d28. Do you have a programmable thermostat?*
( ) Yes
( ) No

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**

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
( ) 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

We've reached the end of the survey. As I mentioned earlier, we would like to send you $20 for your time and feedback today. Should we send the $20 to *{address on file}*, or would a different address be better?*

Either way, enter entire address here
Name: _____
Address: _____
City: _____
State: _____
Zip: _____

You should receive your $20 check in about 4-6 weeks. It will come in an envelope from our company: TecMarket Works.

Thanks again for your time today!

(politely end call)

Survey ID*

_____

Do you have any comments that you would like to pass on to your supervisor about this survey?

Thank You!
Thank you for taking our survey. Your response is very important to us.

Appendix D: Sample Marketing Materials

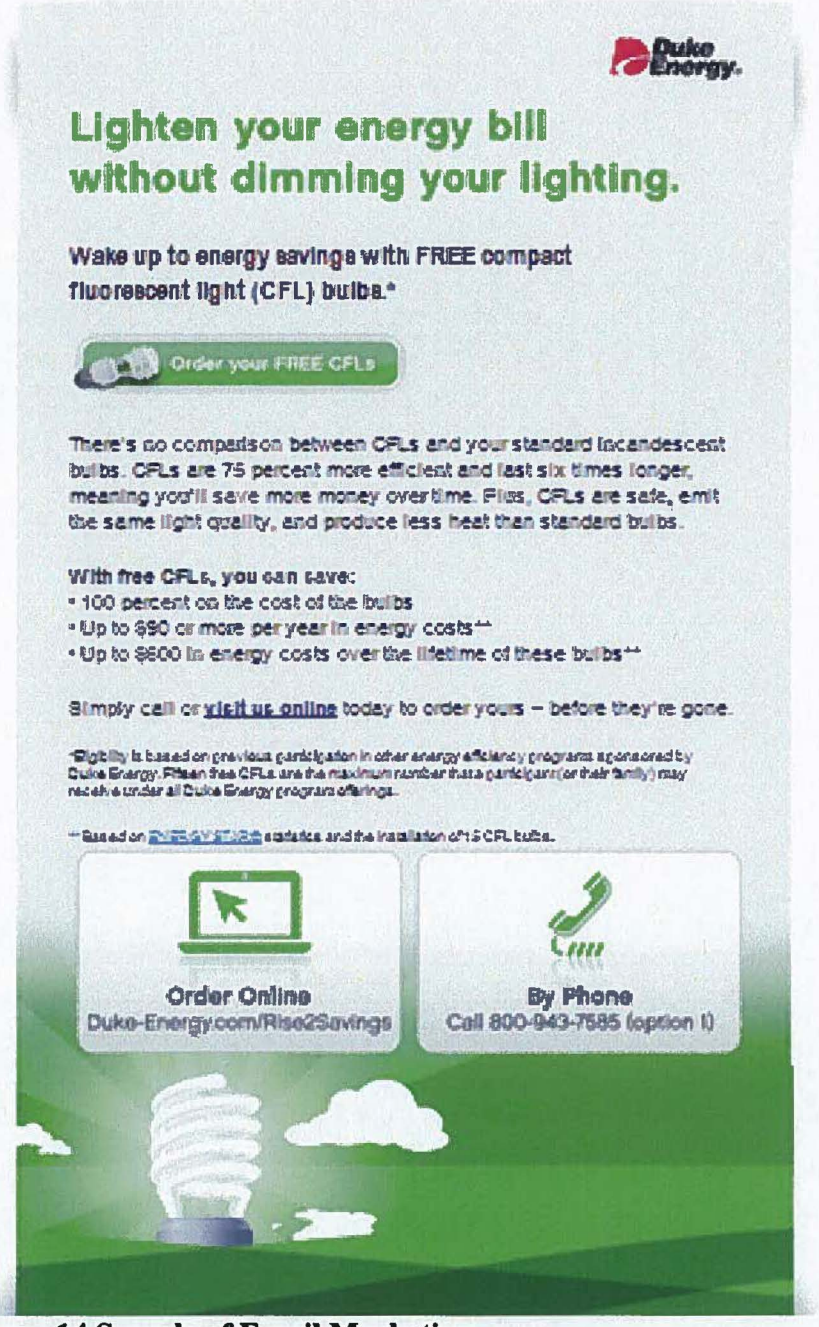


Figure 14 Sample of Email Marketing

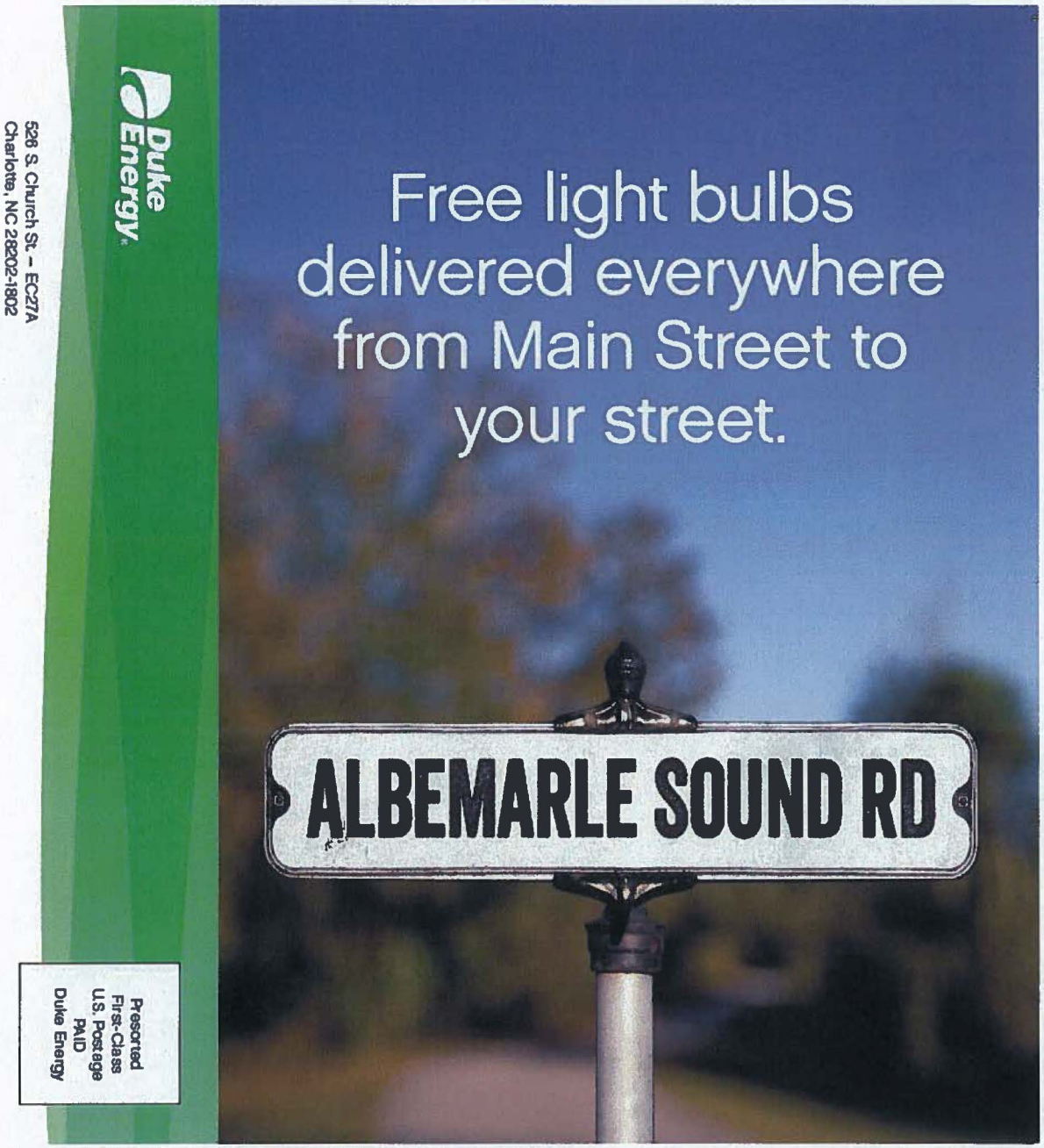
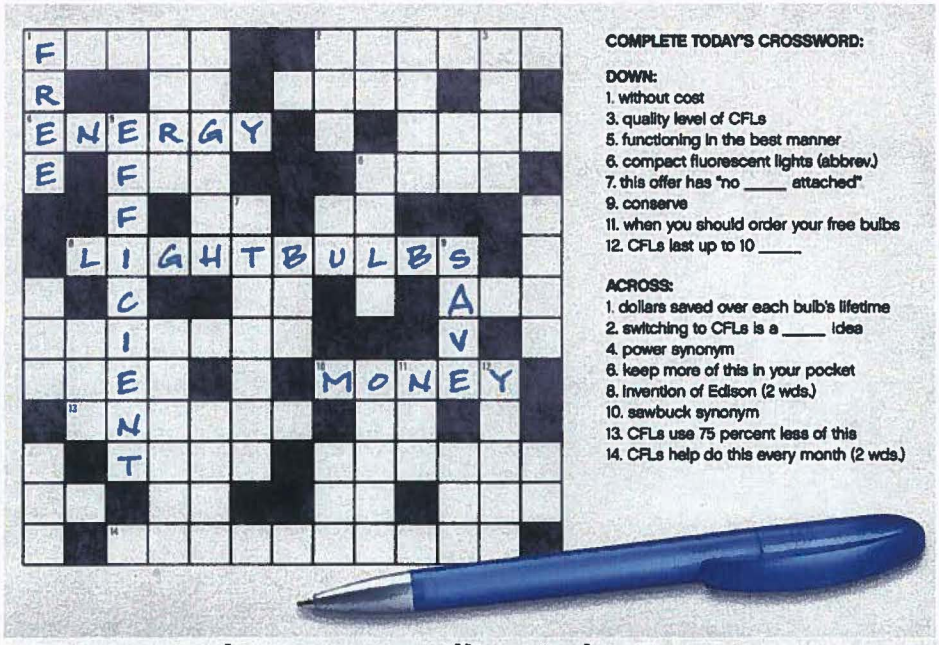


Figure 15 Mailer Targeted at Rural Customers

Figure 16 Mailer Targeted at Child-Centered Families



Discover what over a million Duke Energy customers have already figured out.

Energy-saving light bulbs are better than incandescent bulbs. And you can get some for FREE

Duke Energy wants to help you save money and energy. Not just today, but for years to come. That's why we're giving away free energy-saving light bulbs to our customers. They're just as effective as incandescent bulbs, but cost about 75 percent less to power. Plus, they can last up to six times longer—saving you time and money buying and replacing bulbs.

Compact fluorescent light (CFL) bulbs:

- **Can save up to $40 in energy costs** over the lifetime of each bulb.
- **Give off warm, inviting, high-quality light**—and don't flicker or hum.
- **Fit into most of the same fixtures as incandescent bulbs,** so they can be used in many places around your house.
- **Are completely free** when you take advantage of this offer*.

But don't take our word for it—try them for yourself. After all, what have you got to lose? It won't cost you a thing and we'll even deliver them right to your door for free. Just select one of the ordering options to the right and we'll ship as many as 15 FREE light bulbs to the address where your energy bill is delivered.

*Eligibility is based on previous participation in other Duke Energy energy efficiency programs. Fifteen free CFLs are the maximum number a participant (or their family) may receive under all Duke Energy program offerings.

To request your free bulbs:

CALL 800.943.7585 (select option 1)

or Visit: duke-energy.com/FreeBulbOffer

Have your account number ready:

CROSSWORD ANSWER KEY:
DOWN: 3. HIGH, 6. CFLS, 7. STRINGS, 11. NOW, 12. YEARS
ACROSS: 1. FORTY, 2. BRIGHT, 8. CASH, 13. ENERGY, 14. LOWER BILLS

Figure 17 Crossword Puzzle Ad Targeted at Seniors

BUY NONE GET SOME FREE

Want to save big now and save even bigger later? Great! Because Duke Energy is giving away FREE energy-efficient light bulbs to customers*—no strings attached. Heck, we'll even deliver them for **FREE!**

So, how do you take advantage of this steal of a deal? It's easy.

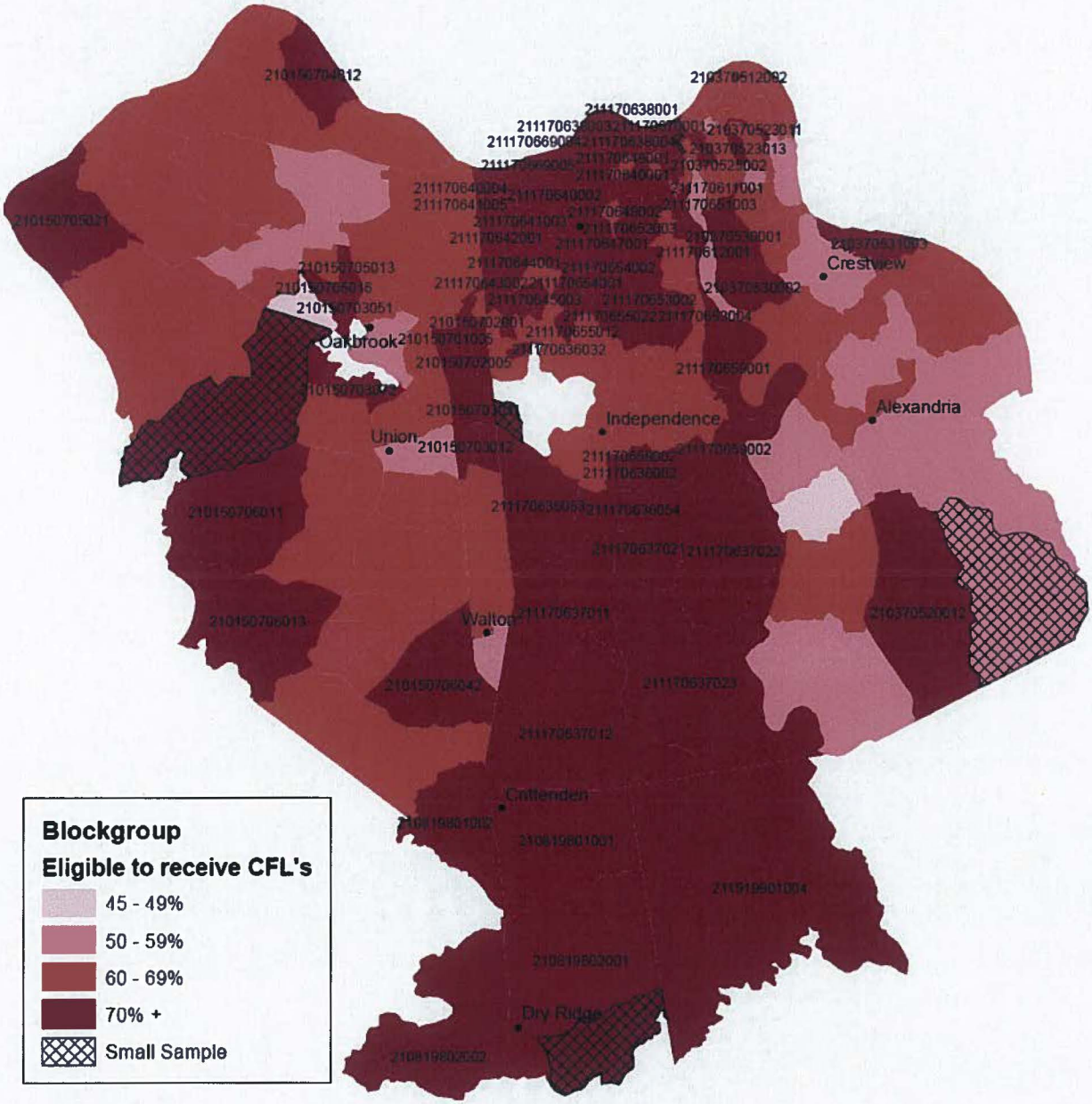
Call **800.943.7585 (select option 1)** or visit us online at **www.duke-energy.com/CFLcoupon**

Duke Energy.

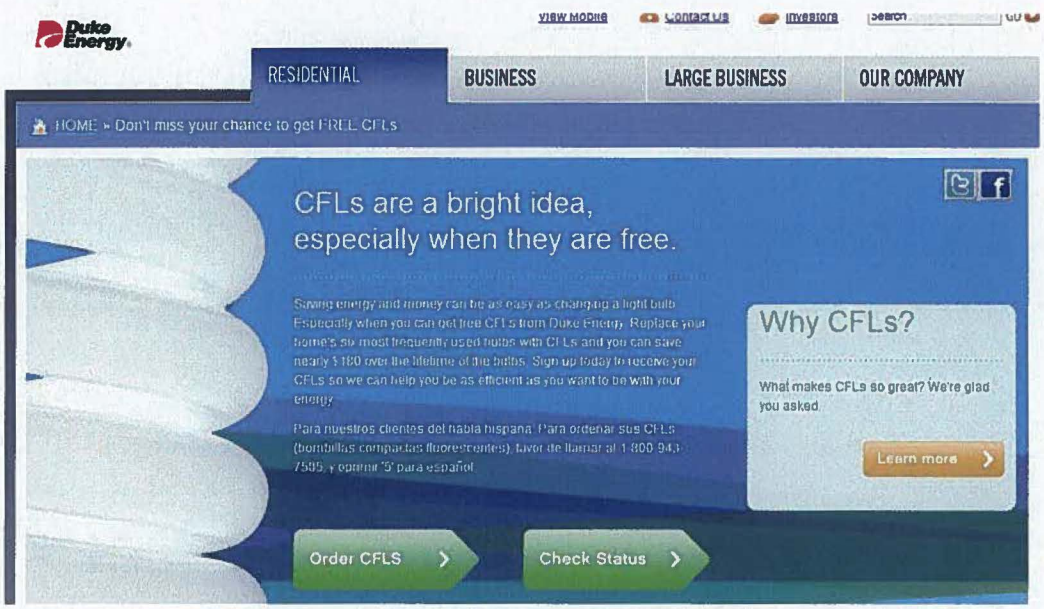
*Eligibility is based on previous participation in other Duke Energy energy efficiency programs.

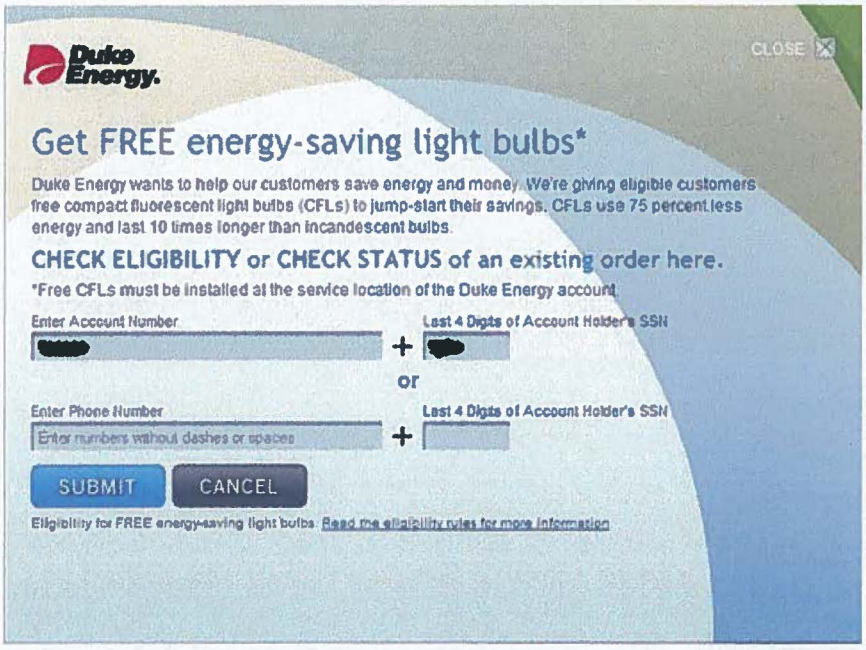
Figure 18 General Audience Newspaper Ad

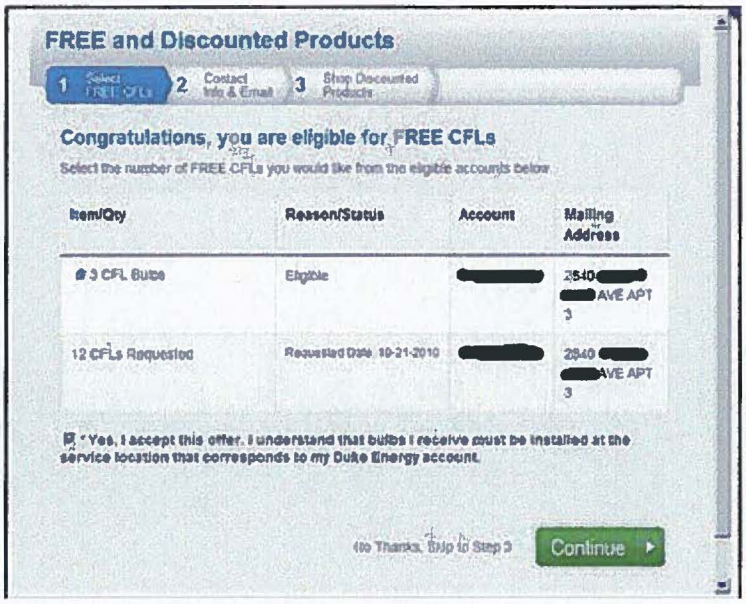
Appendix E: Sample Marketing Heat Map

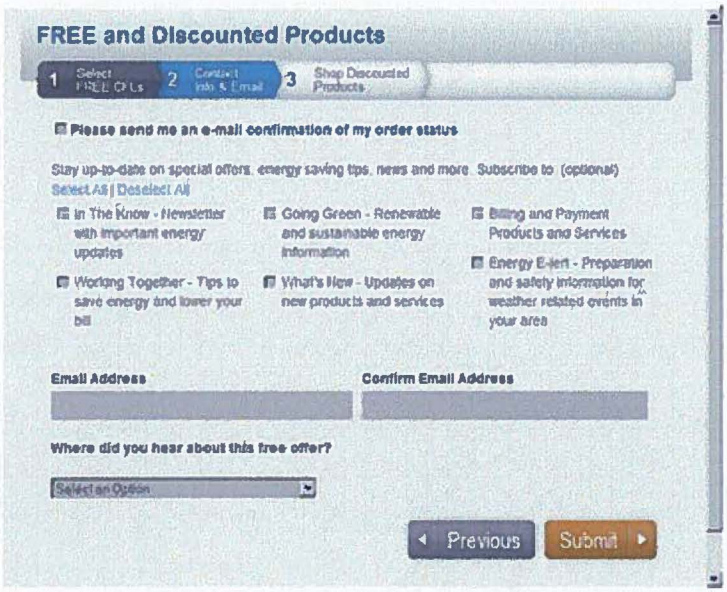


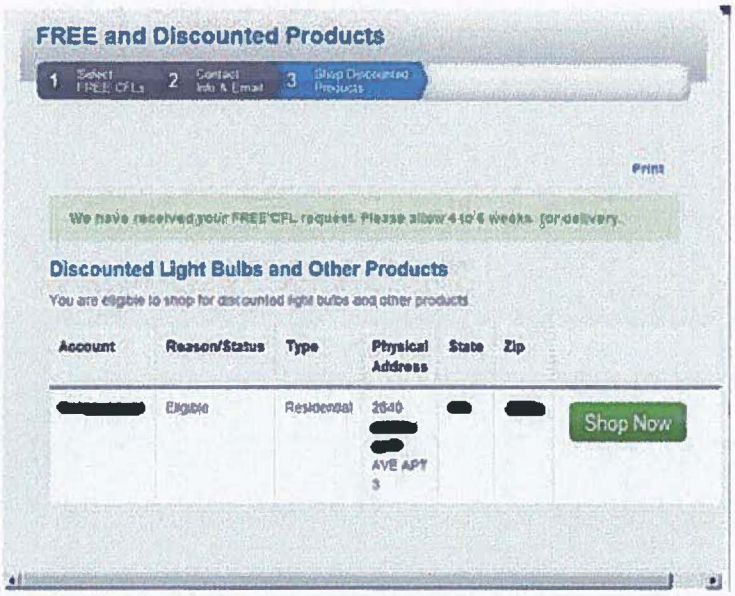
Appendix F: Screenshots of Online Ordering Process

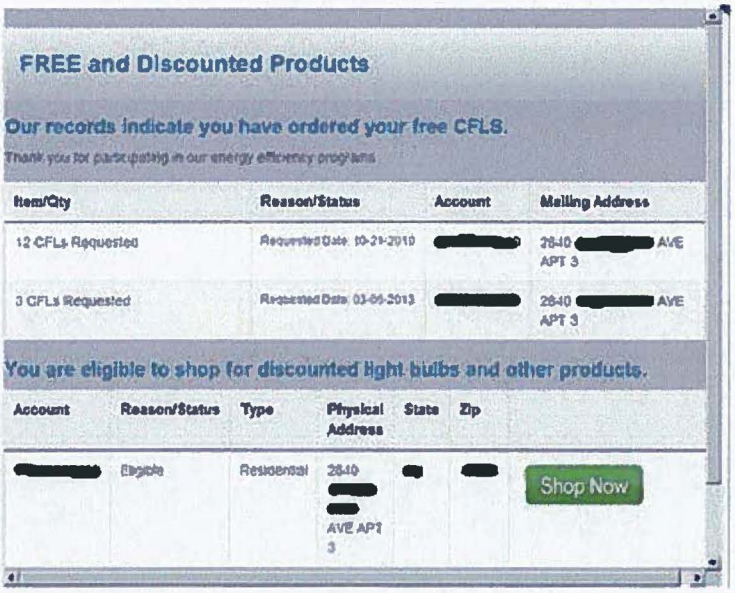





FREE and Discounted Products
1 Select FREE CFLs
2 Contact Info & Email
3 Shop Discounted Products
Congratulations, you are eligible for FREE CFLs
Select the number of FREE CFLs you would like from the eligible accounts below
Item/Qty
Reason/Status
Account
Mailing Address
3 CFL Bulbs
Eligible
12 CFLs Requested
Requested Date: 10-21-2010
* Yes, I accept this offer. I understand that bulbs I receive must be installed at the service location that corresponds to my Duke Energy account.
No Thanks, Skip to Step 3
Continue


FREE and Discounted Products
1 Select FREE CFLs
2 Contact Info & Email
3 Shop Discounted Products
Please send me an e-mail confirmation of my order status
Stay up-to-date on special offers, energy saving tips, news and more. Subscribe to: (optional)
Select All | Deselect All
In The Know - Newsletter with important energy updates
Going Green - Renewable and sustainable energy information
Billing and Payment Products and Services
Working Together - Tips to save energy and lower your bill
What's New - Updates on new products and services
Energy E-lert - Preparation and safety information for weather related events in your area
Email Address
Confirm Email Address
Where did you hear about this free offer?
Select an Option
Previous
Submit


FREE and Discounted Products
1 Select FREE CFLs
2 Contact Info & Email
3 Shop Discounted Products
Print
We have received your FREE CFL request. Please allow 4 to 6 weeks for delivery.
Discounted Light Bulbs and Other Products
You are eligible to shop for discounted light bulbs and other products.
Account
Reason/Status
Type
Physical Address
State
Zip
Eligible
Residential
2640
AVE APT 3
Shop Now


FREE and Discounted Products
Our records indicate you have ordered your free CFLS.
Thank you for participating in our energy efficiency programs.
Item/Qty
Reason/Status
Account
Mailing Address
12 CFLs Requested
Requested Date: 10-21-2010
2640 AVE APT 3
3 CFLs Requested
Requested Date: 03-06-2013
2640 AVE APT 3
You are eligible to shop for discounted light bulbs and other products.
Account
Reason/Status
Type
Physical Address
State
Zip
Eligible
Residential
2640
AVE APT 3
Shop Now

Appendix G: Household Characteristics and Demographics

Note: one of the 81 survey participants whose responses are reported in this evaluation did not complete the entire survey. This respondent is shown as "system missing" in all tables in this appendix.

In what type of building do you live?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single-family home, detached construction	52	64.2	65.0	65.0
	Single family home, factory manufactured/modular	1	1.2	1.3	66.3
	Single family, mobile home	2	2.5	2.5	68.8
	Row House	3	3.7	3.8	72.5
	Two or Three family attached residence-traditional structure	6	7.4	7.5	80.0
	Apartment (4 + families)—traditional structure	8	9.9	10.0	90.0
	Condominium—traditional structure	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What year was your residence built?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1959 and before	27	33.3	33.8	33.8
	1960-1979	17	21.0	21.3	55.0
	1980-1989	9	11.1	11.3	66.3
	1990-1997	6	7.4	7.5	73.8
	1998-2000	3	3.7	3.8	77.5
	2001-2007	6	7.4	7.5	85.0
	2008-present	4	4.9	5.0	90.0
	DK/NS	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

How many rooms are in your home (excluding bathrooms, but including finished basements)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	13	16.0	16.3	16.3
	5	14	17.3	17.5	33.8
	6	12	14.8	15.0	48.8
	7	9	11.1	11.3	60.0
	8	14	17.3	17.5	77.5
	9	6	7.4	7.5	85.0
	1-3	4	4.9	5.0	90.0
	10 or more	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Which of the following best describes your home's heating system?	N=81	
Central forced air furnace	57	70.4%
Heat pump	15	18.5%
Geothermal heat pump	0	0.0%
Radiator / boiler / hot water	3	3.7%
Electric baseboard	1	1.2%
Electric space heater	1	1.2%
Electric fireplace	1	1.2%
None	0	0.0%
Don't know / not specified	5	6.2%
System missing (partial survey)	1	1.2%

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

How old is your heating system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-4 years	19	23.5	23.8	23.8
	5-9 years	19	23.5	23.8	47.5
	10-14 years	12	14.8	15.0	62.5
	15-19 years	5	6.2	6.3	68.8
	19 years or older	6	7.4	7.5	76.3
	DK/NS	19	23.5	23.8	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What is the primary fuel used in your heating system?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electricity	28	34.6	35.0	35.0
	Natural Gas	48	59.3	60.0	95.0
	Oil	2	2.5	2.5	97.5
	Other: wood	1	1.2	1.3	98.8
	DK/NS	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What is the secondary fuel used in your primary heating system, if any?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electricity	4	4.9	5.0	5.0
	Natural Gas	2	2.5	2.5	7.5
	Other: wood fireplace	2	2.5	2.5	10.0
	Other: electric fireplace	1	1.2	1.3	11.3
	None	63	77.8	78.8	90.0
	DK/NS	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Do you use one or more of the following to cool your home?	N=81	
Central air conditioning	58	71.6%
Heat pump for cooling	12	14.8%
Geothermal heat pump	0	0.0%
Through the wall or window air conditioning	10	12.3%
Fans: overhead, ceiling, attic	5	6.2%
Other: *"Cooling tubes underground, and natural cooling via windows opened and closed in the morning and evening"*	1	1.2%
None	0	0.0%
Don't know / not specified	0	0.0%
System missing (partial survey)	1	1.2%

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

How many window-unit or through the wall air conditioner(s) do you use?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	9.9	10.0	10.0

	2	7	8.6	8.8	18.8
	None	64	79.0	80.0	98.8
	8 or more	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What is the fuel used in your cooling system?	N=81	
Electricity	73	90.1%
Natural gas	5	6.2%
Oil	0	0.0%
Propane	0	0.0%
Other: *"natural air cooling with windows"*	1	1.2%
None	0	0.0%
Don't know / not specified	3	3.7%
System missing (partial survey)	1	1.2%

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

How old is your cooling system?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-4 years	24	29.6	30.0	30.0
	5-9 years	20	24.7	25.0	55.0
	10-14 years	12	14.8	15.0	70.0
	15-19 years	5	6.2	6.3	76.3
	19 years or older	4	4.9	5.0	81.3
	DK/NS	15	18.5	18.8	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What is the fuel used by your water heater?	N=81	
Electricity	33	40.7%
Natural gas	40	49.4%
Oil	0	0.0%
Propane	0	0.0%
Solar power	1	1.2%
None	0	0.0%
Don't know / not specified	7	8.6%

System missing (partial survey)	1	1.2%

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

How old is your water heater?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-4 years	19	23.5	23.8	23.8
	5-9 years	26	32.1	32.5	56.3
	10-14 years	13	16.0	16.3	72.5
	15-19 years	3	3.7	3.8	76.3
	DK/NS	19	23.5	23.8	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What type of fuel do you use for indoor cooking on the stovetop or range?	N=81	
Electricity	64	79.0%
Natural gas	15	18.5%
Oil	0	0.0%
Propane	0	0.0%
No stovetop or range	1	1.2%
Don't know / not specified	0	0.0%
System missing (partial survey)	1	1.2%

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

What type of fuel do you use for indoor cooking in the oven?	N=81	
Electricity	66	81.5%
Natural gas	13	16.0%
Oil	0	0.0%
Propane	0	0.0%
No oven	1	1.2%
Don't know / not specified	0	0.0%
System missing (partial survey)	1	1.2%

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

What type of fuel do you use for clothes drying?	N=81	
Electricity	68	84.0%
Natural gas	8	9.9%
Oil	0	0.0%

Propane	0	0.0%
Air dry	1	1.2%
No dryer	3	3.7%
Don't know / not specified	2	2.5%
System missing (partial survey)	1	1.2%

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

About how many square feet of living space are in your home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	500 to 999	6	7.4	7.5	7.5
	1000 to 1499	18	22.2	22.5	30.0
	1500 to 1999	9	11.1	11.3	41.3
	2000 to 2499	6	7.4	7.5	48.8
	2500 to 2999	3	3.7	3.8	52.5
	3000 to 3499	3	3.7	3.8	56.3
	3500 to 3999	1	1.2	1.3	57.5
	4000 or more	4	4.9	5.0	62.5
	DK/NS	30	37.0	37.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Do you own or rent your home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own	56	69.1	70.0	70.0
	Rent	24	29.6	30.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

How many levels are in your home (not including your basement)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One	37	45.7	46.3	46.3
	Two	35	43.2	43.8	90.0
	Three	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your home have a heated or unheated basement?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Heated	38	46.9	47.5	47.5
	Unheated	16	19.8	20.0	67.5
	No basement	26	32.1	32.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your home have an attic?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	59.3	60.0	60.0
	No	32	39.5	40.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Are your central air/heat ducts located in the attic?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	16.0	16.3	16.3
	No	36	44.4	45.0	61.3
	N/A	31	38.3	38.8	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your house have cold drafts in the winter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	37.0	37.5	37.5
	No	50	61.7	62.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your house have sweaty windows in the winter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	22.2	22.5	22.5
	No	62	76.5	77.5	100.0
	Total	80	98.8	100.0	

Missing	System	1	1.2		
Total		81	100.0		

Do you notice uneven temperatures between the rooms in your home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	55	67.9	68.8	68.8
	No	25	30.9	31.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your heating system keep your home comfortable in winter?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	75	92.6	93.8	93.8
	No	5	6.2	6.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Does your cooling system keep your home comfortable in summer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	72	88.9	90.0	90.0
	No	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Do you have a programmable thermostat?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	50	61.7	62.5	62.5
	No	30	37.0	37.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What temperature is your thermostat set to on a typical summer weekday afternoon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 69 degrees	7	8.6	8.8	8.8

	69-72 degrees	22	27.2	27.5	36.3
	73-78 degrees	40	49.4	50.0	86.3
	Higher than 78 degrees	5	6.2	6.3	92.5
	Off	5	6.2	6.3	98.8
	DK/NS	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What temperature is your thermostat set to on a typical winter weekday afternoon?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 67 degrees	18	22.2	22.5	22.5
	67-70 degrees	35	43.2	43.8	66.3
	71-73 degrees	14	17.3	17.5	83.8
	74-77 degrees	7	8.6	8.8	92.5
	78 degrees or higher	3	3.7	3.8	96.3
	Off	1	1.2	1.3	97.5
	DK/NS	2	2.5	2.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Do You Have a swimming pool, hot-tub or spa?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	17.3	17.5	17.5
	No	66	81.5	82.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Would a two-degree increase in the summer afternoon temperature in your home affect your comfort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	35	43.2	43.8	43.8
	Slightly	21	25.9	26.3	70.0
	Moderately, or	16	19.8	20.0	90.0
	Greatly	8	9.9	10.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

How many people live in this home?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	22.2	22.5	22.5
	2	29	35.8	36.3	58.8
	3	14	17.3	17.5	76.3
	4	8	9.9	10.0	86.3
	5	8	9.9	10.0	96.3
	6	2	2.5	2.5	98.8
	8 or more	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

How many of them are teenagers?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	65	80.2	81.3	81.3
	1	10	12.3	12.5	93.8
	2	4	4.9	5.0	98.8
	4	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

How many persons are usually home on a weekday afternoon?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	13	16.0	16.3	16.3
	1	20	24.7	25.0	41.3
	2	27	33.3	33.8	75.0
	3	7	8.6	8.8	83.8
	4	5	6.2	6.3	90.0
	5	5	6.2	6.3	96.3
	7	1	1.2	1.3	97.5
	Prefer not to answer	2	2.5	2.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Are you planning on making any large purchases to improve energy efficiency in the next 3 years?				
	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Yes	16	19.8	20.0	20.0
	No	54	66.7	67.5	87.5
	DK/NS	10	12.3	12.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

What is your age group?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-34	23	28.4	28.8	28.8
	35-49	20	24.7	25.0	53.8
	50-59	9	11.1	11.3	65.0
	60-64	6	7.4	7.5	72.5
	65-74	9	11.1	11.3	83.8
	Over 74	8	9.9	10.0	93.8
	Prefer not to answer	5	6.2	6.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Please indicate your annual household income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under $15,000	3	3.7	3.8	3.8
	$15,000-$29,999	12	14.8	15.0	18.8
	$30,000-$49,999	16	19.8	20.0	38.8
	$50,000-$74,999	11	13.6	13.8	52.5
	$75,000-$100,000	9	11.1	11.3	63.8
	Over $100,000	9	11.1	11.3	75.0
	Prefer Not to Answer	20	24.7	25.0	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Appendix H: Impact Algorithms

General Algorithm

Gross Summer Coincident Demand Savings

$$\Delta kW = ISR \times units \times \left[\frac{Watts_{base} - Watts_{ee}}{1000}\right] \times CF \times (1 + HVAC_d)$$

Gross Annual Energy Savings

$$\Delta kWh = ISR \times units \times \left[\frac{(Watts \times HOU)_{base} - (Watts \times HOU)_{ee}}{1000}\right] \times 365 \times (1 + HVAC_c)$$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
units	= number of units installed under the program
$Watts_{ee}$	= connected load of energy-efficient unit = 15.4
$Watts_{base}$	= connected (nameplate) load of baseline unit(s) displaced
HOU	= Mean daily hours of use (based on connected load)
CF	= coincidence factor = 0.11 (From Draft Ohio TRM)
$HVAC_c$	= HVAC system interaction factor for annual electricity consumption = -0.0058
$HVAC_d$	= HVAC system interaction factor for demand = 0.167

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

Covington, KY

Heating Fuel	Heating System	Cooling System	Weight	HVACc	HVACd
Other	Any except Heat Pump	Any except Heat Pump	0.0029	0.079	0.17
		None	0.0002	0	0
Any	Heat Pump	Heat Pump	0.0760	-0.16	0.17
Gas Propane Oil	Central Furnace	None	0.0111	0	0
		Room/Window	0.7571	0.079	0.17
		Central AC		0.079	0.17
Electricity	Electric baseboard/ central furnace	None	0.0046	-0.45	0
		Room/Window	0.1433	-0.36	0.17
		Central AC		-0.36	0.17
N one	None	Any	0.0049	0	0.17
Total Weighted Mean			1	-0.0058	0.167

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

Prototypical Building Model Description

The impact analysis for many of the HVAC related measures are based on DOE-2.2 simulations of a set of prototypical residential buildings. The prototypical simulation models were derived from the residential building prototypes used in the California Database for Energy Efficiency Resources (DEER) study (Itron, 2005), with adjustments make for local building practices and climate. The prototype "model" in fact contains 4 separate residential buildings; 2 one-story and 2 two-story buildings. The each version of the 1 story and 2 story buildings are identical except for the orientation, which is shifted by 90 degrees. The selection of these 4 buildings is designed to give a reasonable mean response of buildings of different design and orientation to the impact of energy efficiency measures. A sketch of the residential prototype buildings is shown in Figure 19.

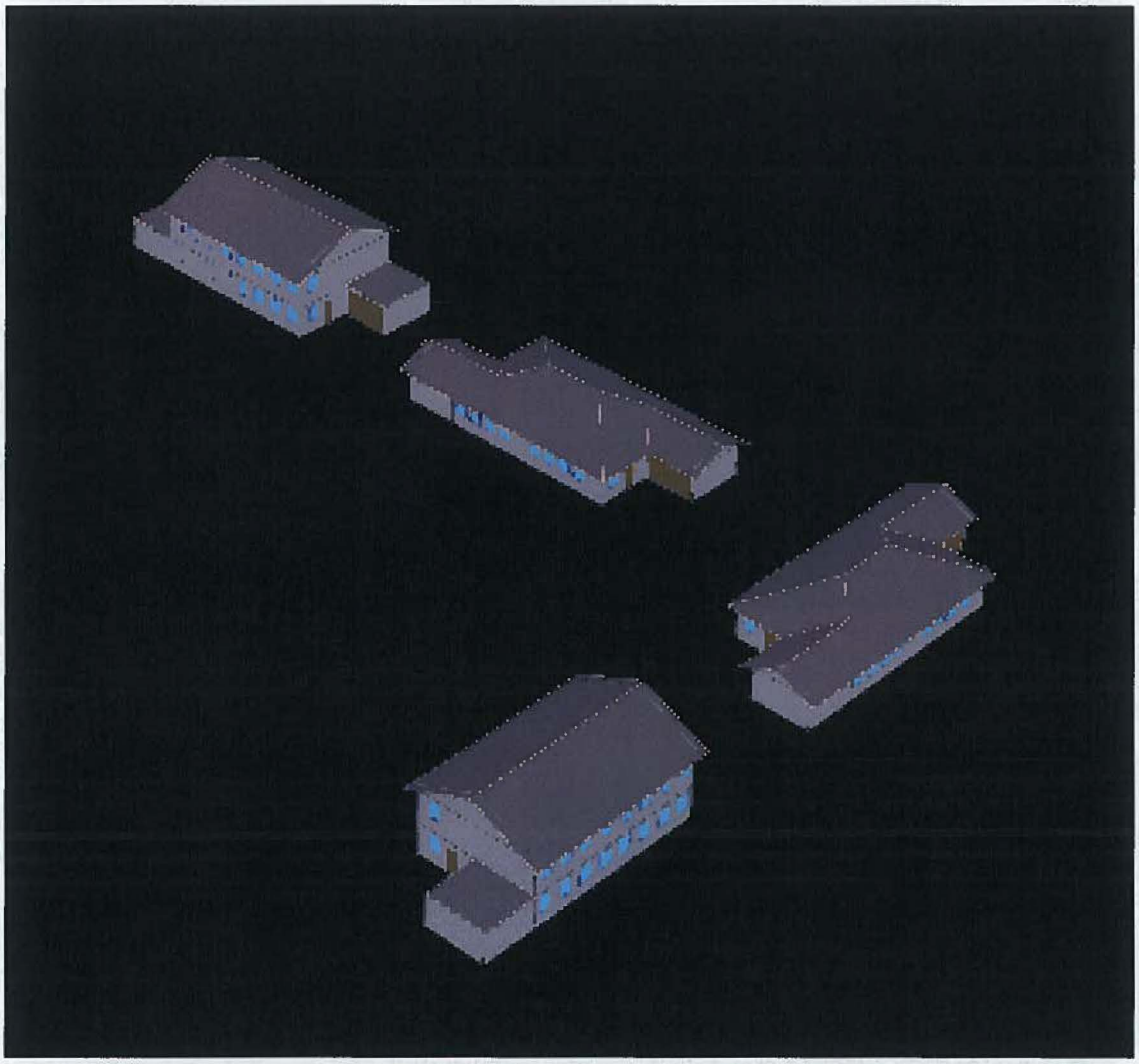


Figure 19. Computer Rendering of Residential Building Prototype Model

The general characteristics of the residential building prototype model are summarized below:

Residential Building Prototype Description

Characteristic	Value
Conditioned floor area	1 story house: 1465 SF 2 story house: 2930 SF
Wall construction and R-value	Wood frame with siding, R-11
Roof construction and R-value	Wood frame with asphalt shingles, R-19
Glazing type	Single pane clear
Lighting and appliance power density	0.51 W/SF mean
HVAC system type	Packaged single zone AC or heat pump
HVAC system size	Based on peak load with 20% oversizing. Mean 640 SF/ton
HVAC system efficiency	SEER = 8.5
Thermostat setpoints	Heating: 70°F with setback to 60°F Cooling: 75°F with setup to 80°F

Characteristic	Value
Duct location	Attic (unconditioned space)
Duct surface area	Single story house: 390 SF supply, 72 SF return Two story house: 505 SF supply, 290 SF return
Duct insulation	Uninsulated
Duct leakage	26%; evenly distributed between supply and return
Cooling season	Covington – April 27th to October 12th
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 3 air changes per hour

References

Itron, 2005. "2004-2005 Database for Energy Efficiency Resources (DEER) Update Study, Final Report," Itron, Inc., J.J. Hirsch and Associates, Synergy Consulting, and Quantum Consulting. December, 2005. Available at http://eega.cpuc.ca.gov/deer

Appendix I: 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 69. As a result, it is necessary to adjust the baseline wattage that a CFL should be evaluated against throughout its effective useful life (EUL).

Table 69. EISA Schedule

Current Bulb Wattage	New EISA Compliant Wattage	Standard Effective Date
100	72	1/1/2012
75	53	1/1/2013
60	43	1/1/2014
40	29	1/1/2014

TecMarket Works has developed a dynamic approach to estimating future CFL baseline wattages wherein each year of a CFL's EUL is prescribed a baseline value based on the most current research on the availability of standard incandescent light bulbs in the marketplace. Much of this research, to this point, has focused on 100-watt bulbs as they were the first to phase out and therefore offer the most robust data. The effect of EISA on the availability of other incandescent bulb wattages as they are phased out is expected to be similar.

Such an approach is necessary because of the difference in EUL between the efficient and baseline technologies in question (one year for an incandescent and five years for a CFL). In the absence of the program, it is assumed that each year a new incandescent bulb would have to be purchased. The average wattage of this purchase decreases each year with the eroding availability of the standard incandescent bulbs due to EISA. Table 70 contains the baseline wattages from which savings are estimated. A graphical representation is shown in Figure 20.

Table 70. Baselines by Year and Wattage

100-watt			75-watt			60-watt			40-watt		
Year	Phase	Baseline	Year	Phase	Baseline	Year	Phase	Baseline	Year	Phase	Baseline
2012	0%	100	2012	0%	75	2012	0%	60	2012	0%	40
2013	50%	86	2013	0%	75	2013	0%	60	2013	0%	40
2014	75%	79	2014	50%	64	2014	0%	60	2014	0%	40
2015	100%	72	2015	75%	58.5	2015	50%	51.5	2015	50%	34.5
2016	100%	72	2016	100%	53	2016	75%	47.25	2016	75%	31.75
2017	100%	72	2017	100%	53	2017	100%	43	2017	100%	29

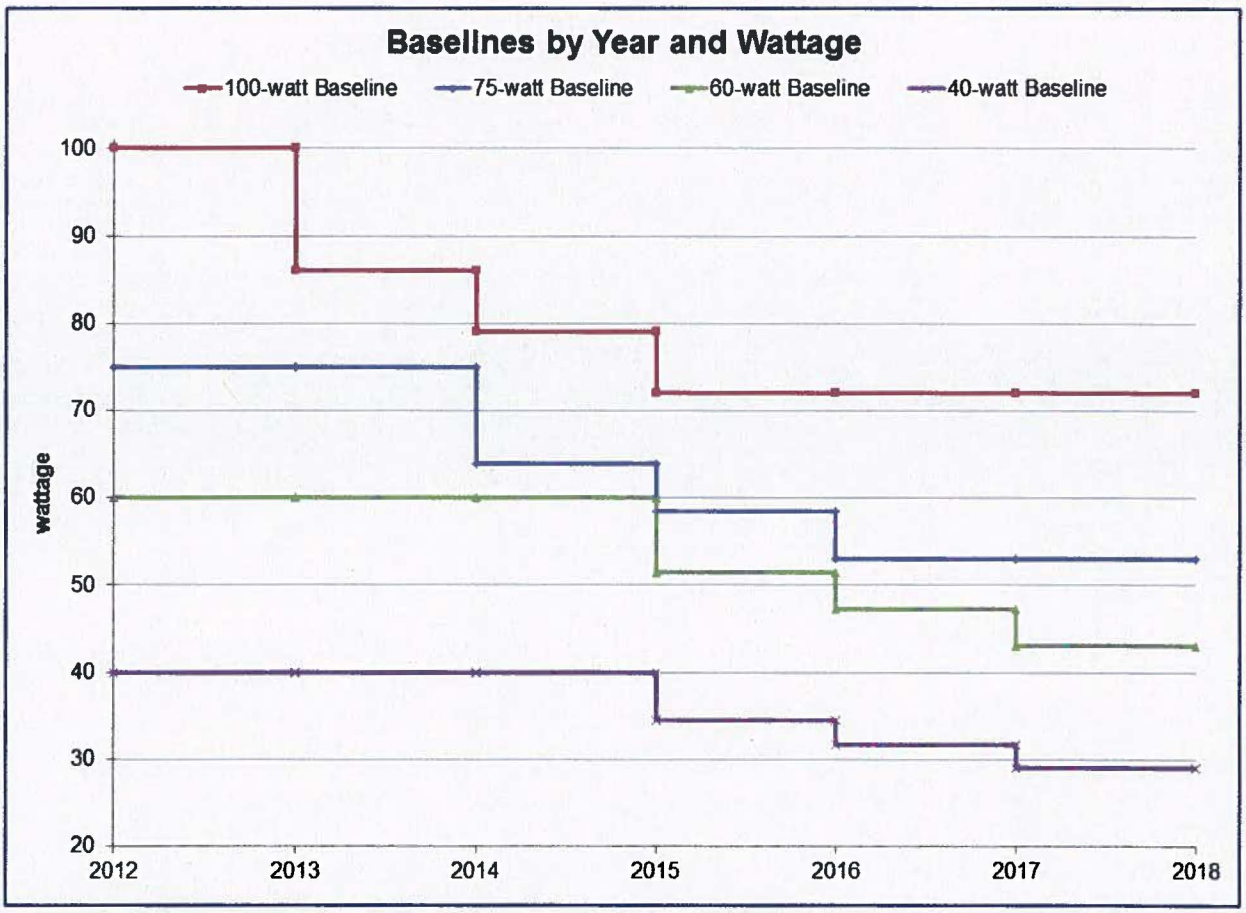


Figure 20. Step Graph of Baselines by Year and Wattage

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[24]. 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.

[24] Indiana Statewide Core Program Evaluation Team. "Indiana 2012 EISA Bulb Availability Study." June 20, 2013. Pg. 3.

A more recent study has found that 100-watt bulbs reached 24% availability seven quarters after the EISA standard took effect[25]. This approach assumes, for year three, that 75% of all retailers no longer have 100-watt bulbs available for purchase. For all years past the third, the baseline wattage is set at EISA's minimally compliant wattage, taken from Table 69.

Impacts can then be calculated using this dynamic baseline approach to estimate kWh savings for CFLs at each year of its EUL separately. Figure 21 offers a graphical representation of the effect of the shifting baseline on CFL impact calculations. Note that these are purely hypothetical examples not based on a specific population and are exclusive of variables accounting for an in-service rate and any HVAC interaction.

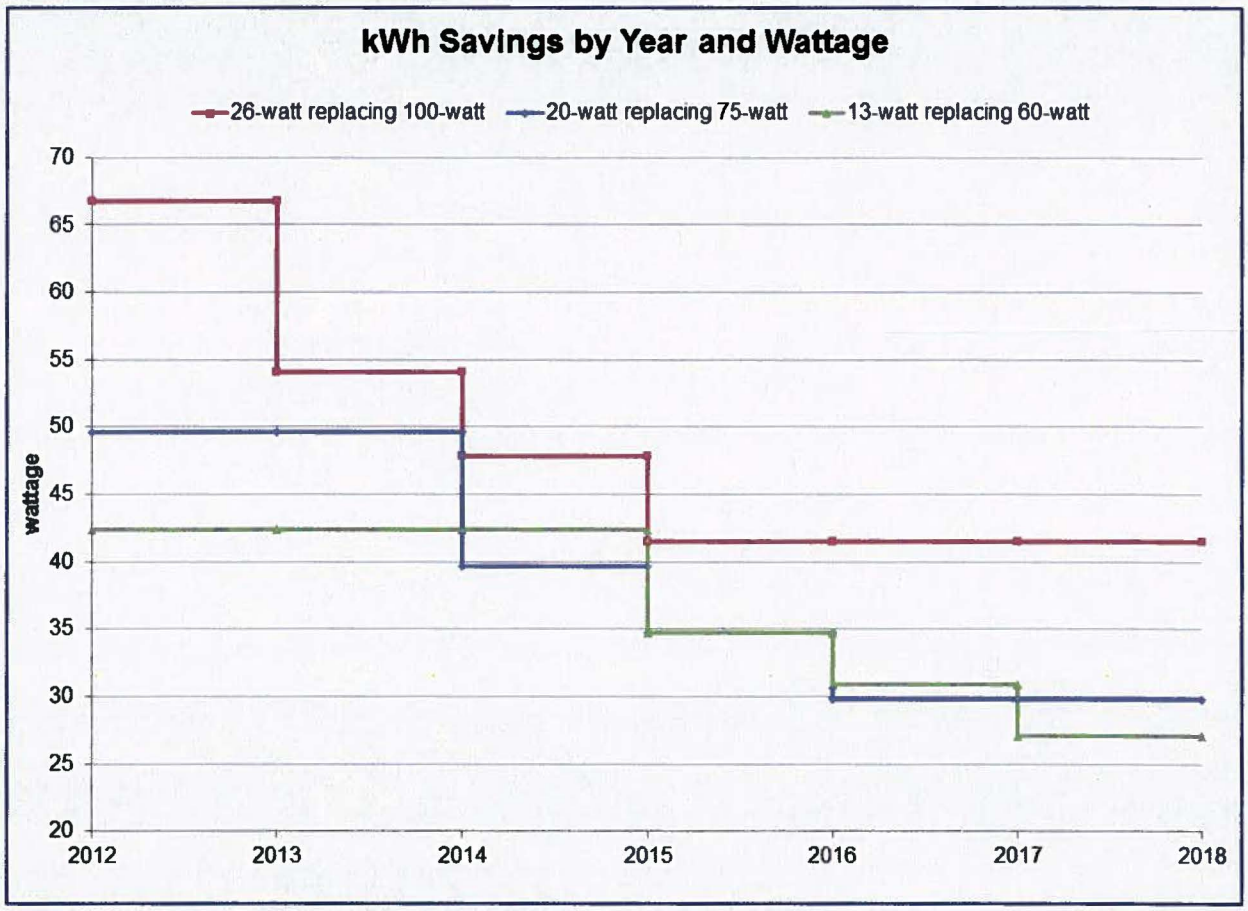


Figure 21. Step Graph of kWh Savings by Year and Wattage

[25] Cadmus Group. "Summary of EISA2007 Lighting Survey Results for DP&L Q1, Q2, &Q3 2013." Memorandum. October 11, 2013. Pg. 2.

Appendix J: 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)
CFLs		Kentucky	25.3	0.0030	0.0273	bulb	22.5%	19.7	0.0023	0.0211	no	5
Program wide		Kentucky	25.3	0.0030	0.0273	bulb	22.5%	19.7	0.0023	0.0211	no	5