

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

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

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



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

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

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

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

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



### CFL Installations

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

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

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

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

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



**Table 34. Customer Confirmation of CFL Installations**

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

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

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

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

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



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

**Table 36. Customer Plans for Uninstalled Program CFLs**

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

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

**Table 37. Installation of Program CFLs by Room**

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

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

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



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

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

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

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

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



**Table 39. Installation of Program CFLs: Hours of Use**

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

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

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

**Hours of usage increased (N=6)**

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

**Hours of usage decreased (N=13)**

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

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



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

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

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

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

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

**Table 41. Removing Installed Program CFLs**

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

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

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



- Bulbs broken by accident (N=1)

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

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

### **CFLs and LEDs Installed Before Participating in the Program**

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

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



**Table 42. Preinstalled CFLs (N=76)**

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

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

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

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

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

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



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

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

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

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

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

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

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

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



**Table 44. Preinstalled LEDs (N=76)**

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

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

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

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

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



**Replacing Program CFLs and Spare Light Bulbs In Storage**

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

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

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

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

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

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

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

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



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

**Table 48. Replacing Program CFLs (N=33)**

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

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

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

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



**Table 49. Purchase Intent: Next Ten Bulbs Purchased**

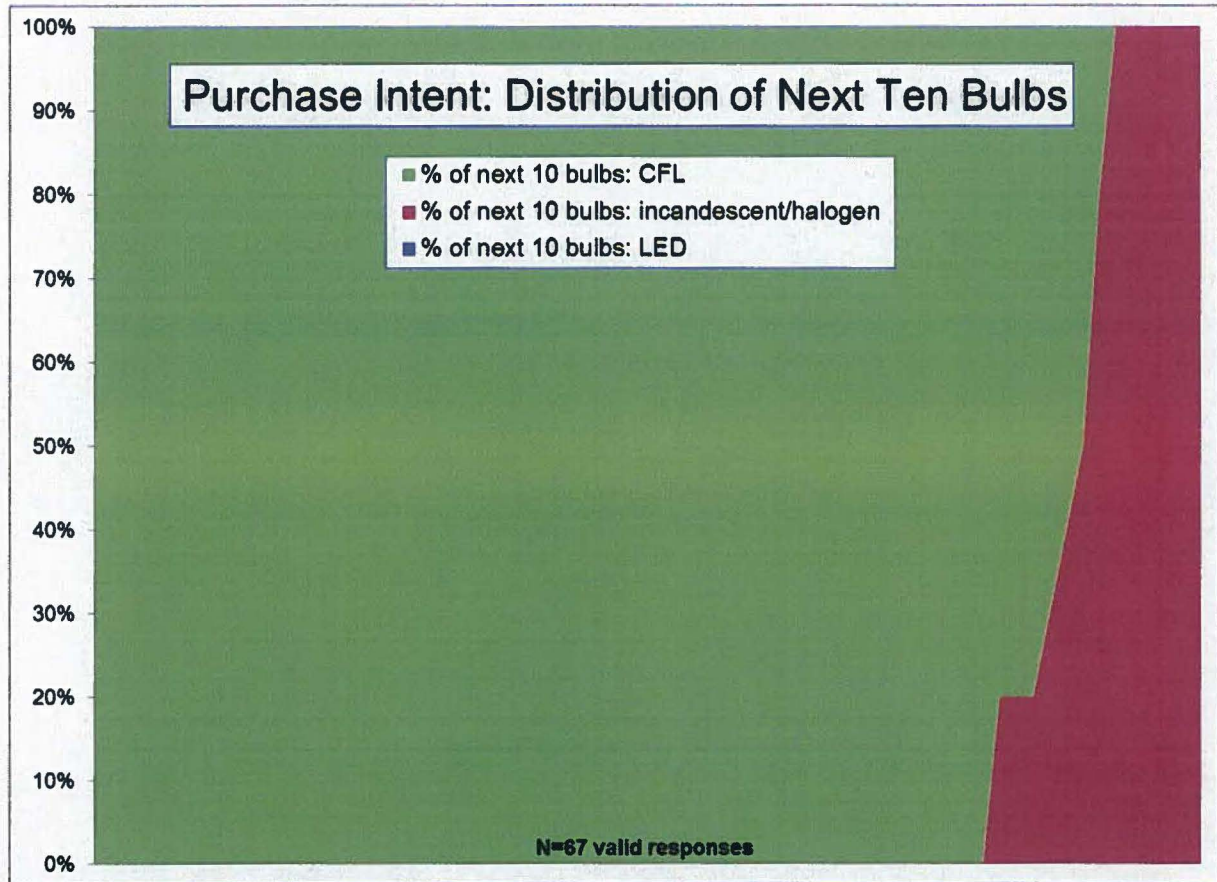
Of the Next Ten Light Bulbs You Purchase, How Many Will Be...?	All Surveyed Participants with Confirmed Program CFLs Installed Who Answered This Question (Valid N=67)
% of surveyed customers who intend to buy at least one incandescent and/or halogen bulb	19.4%
% of surveyed customers who intend to buy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

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

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

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





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

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

**Low-Flow Showerhead Installations**

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

**Table 50. Measure Installation: Low-Flow Showerheads**

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



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

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

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

**Table 51. Removing Program-Provided Low-Flow Showerheads**

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

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

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

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

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



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

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

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

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

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

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