Massachusetts Spring 2014 Survey Results: FINAL Report

January 2015

Prepared for:

The Electric and Gas Program Administrators of Massachusetts

Part of the Residential Evaluation Program Area

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CADMUS

Prepared by:
Alyssa Na'im
Lisa Wilson-Wright
Scott Walker
Michael Strom
NMR Group, Inc.

Bryan Ward
Doug Bruchs
Jane Colby
Cadmus

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Executive Summary

The research presented in this report includes the results of a multi-mode residential lighting consumer survey (hereafter the Spring 2014 survey) performed by the Residential Evaluation Team (the Team) between March 6, 2014 and May 5, 2014. The report provides comparisons with three similar previous lighting consumer surveys (hereafter Winter 2011, Summer 2012, and Winter 2012) where appropriate. In addition, results from the comparison area surveys in Georgia and Kansas are included to provide a parallel between consumers' lighting awareness and bulb use in Massachusetts and two other areas with little or no residential lighting program activity. Collectively, the time series of survey results and the comparison with findings in other regions allow the Massachusetts Program Administrators (PAs) and the Energy Efficiency Advisory Council Consultants (EEAC Consultants) the opportunity to understand impacts associated with the implementation of the Energy Independence and Security Act of 2007 (EISA) and the introduction into the market of omnidirectional light-emitting diodes (LEDs) designed to replace incandescent bulbs in Massachusetts's residential lighting market.

The Cadmus Group serves as the primary contractor of the Team, while NMR Group led this study with data collection support from Tetra Tech.

Background and Methodology

The goal of the consumer survey was to track key indicators of the market for compact fluorescent lamps (CFLs), LEDs, and halogens (particularly those meant to replace incandescent bulbs) as well as the impacts of EISA on the residential lighting market. Many of these indicators provide the information that will ultimately contribute to revisions of program savings estimates while others contribute to a broader assessment of the market as EISA implementation moves forward. Topics addressed in the recent consumer surveys included the following, some of which allowed for the continued monitoring of the market from earlier evaluations:

- Awareness of and familiarity with CFLs, LEDs, and halogens (that replace A-line incandescent bulbs)
- Awareness of and anticipated reactions to EISA
- Current use of CFLs and LEDs as well as satisfaction with these bulbs
- Changes in CFL satisfaction and possible reasons for these changes
- Familiarity with lighting terminology such as lumens and color temperature
- Recent light bulb purchases, particularly of 60-Watt incandescents (Spring 2014 only) to identify potential stockpiling
- Recollection of signage or displays in lighting aisles when purchasing bulbs
- Household demographics

Experimental Design

As with the efforts in 2011 and 2012, the Team sent potential respondents an advance letter explaining the study, asking them to agree to participate, and providing phone numbers to call for more information. However, the Spring 2014 effort implemented two notable changes in the recruitment strategy.

First, we offered approximately one-half of the potential respondents the opportunity to answer either through a web-based survey or via the telephone. The letter provided each household offered this opportunity with a web address where the respondent entered a unique ID and completed the survey. If the household did not answer the web version of the survey, Tetra Tech called them one week after sending the advance letter to complete the survey via the telephone. The remaining potential respondents only had the opportunity to answer by telephone. Of the web/phone sample, 41% who agreed to take the survey did so over the web, and the remaining 59% completed the survey via telephone; overall, this means that about one-quarter (22%) of the total survey respondents completed the survey over the web.[1]

The second recruitment change involved sending a random portion of potential respondents (38%) a pre-paid five dollar ($5) incentive to complete the survey. The purpose of this experimental manipulation was to assess the impact of incentives on response rates in an effort to achieve more representative samples of respondents in a cost-effective manner.

Table 1 summarizes the sample design and response rates for the various recruitment groups. Offering a pre-paid incentive nearly doubled response rates (29% vs. 14%), but response rates did not vary between web/phone households or phone-only households (about 15% for each recruitment group). An examination of selected survey items did reveal some statistically significant differences among the four survey recruitment groups.[2] However, for the most part, the differences observed across recruitment groups occurred between the phone and phone/web subsamples with further analysis demonstrating these differences were most closely tied to whether the respondent answered via the web or telephone.

[1] For the purposes of this report, we draw a distinction between the four **recruitment groups** (whether the households did or did not receive an incentive and were or were not offered the opportunity to answer by web) and two **completion groups** (whether the respondent answered via the web or telephone)

[2] The Team tested for significant differences among survey recruitment and completion groups for a selection of questions. See Appendix E: Detailed Tables for Survey Recruitment and Completion Groups for detailed results.

Table 1: Survey Recruitment Mode and Response Rates

Recruitment Group	Number sampled	Number complete	Response Rate
Phone only, incentive	760	198	26%
Phone only	1,701	235	14%
Web/phone, incentive	1,039	322	31%
Web/phone	1,200	185	15%
Total	**4,700**	**940**	**20%**
Incentive Group	***1,799***	***520***	***29%***
Non Incentive Group	***2,901***	***420***	***14%***

In addition, based on the actual rates of completion for the web/phone recruitment groups with and without an incentive, Tetra Tech estimates that achieving a total of 600 completions without an incentive would have cost $47,200 (or $79 per completed survey) for interviewer time and sending advance letters, whereas reaching the full 600 completions with the group receiving the incentive would have cost $27,244 (or $45 per completed survey) for interviewing time, incentives, and sending the advance letters (Table 2). The main driver of costs is the staff hours needed to complete interviewing—interviewer-success rates were far higher with the incentive than without the incentive, which far exceeds the additional amounts needed for the pre-paid incentives.

Table 2: Cost for Web/Phone with and Without Pre-paid Incentives – Estimates for 600 Completions

Recruitment Group	Interviewing Hours	Cost			
		Interviewing	Letter, Incentives	Total	Per Complete
Web/phone	1,600	$43,200	$4,000	$47,200	$78.67
Web/phone, incentive	564	$15,228	$12,016	$27,244	$45.41

Similar to the Winter 2012 survey, the Spring 2014 survey sought to recruit an equal number of single-family and multi-family homes for an on-site saturation study. This represented a change from earlier surveys in which the evaluators had not set quotas for type of home. Therefore, the initial sample for the Spring 2014 survey targeted 50% multi-family homes, contributing to differences in the housing and demographic characteristics of the Winter 2012 and Spring 2014 samples compared to earlier samples. However, by using the same weighting scheme as in previous years, based on education and home ownership, the Team minimized the impact of this sampling strategy on the results shown here.

The final sample size was 940 households—slightly less than the original goal of 950 respondents. The overall response rate was 20%, and the sampling error was just under 3%. Response rates for all PAs were at least 18%, and sampling errors ranged from 4% (for National Grid) to 19% (for Unitil). Thirteen respondents answered the survey in Spanish.

Comparison Area Survey

In order to establish a baseline for the Massachusetts Consumer Survey and On-site Study, the evaluation team fielded an abbreviated telephone-only version of the Consumer Survey to households in Georgia (n=526) and Kansas (n=556) to recruit participants for the on-site saturation studies in each state. The abbreviated survey primarily served to recruit households for the On-site Saturation Study, so the telephone asked only about bulb and EISA awareness, familiarity, and self-reported use, as well as collecting respondent housing and demographic information.

Summary of Findings

This section presents a summary of key findings from the Spring 2014 telephone survey, comparing these to results of previous lighting telephone surveys or across subgroups of 2014 respondents where appropriate. Note that the report mainly presents results rounded to the nearest whole number; therefore, at times, the results reflect some degree of rounding error.

Awareness of Energy-Saving Light Bulbs

The survey assessed respondents' awareness of and familiarity with CFLs and other energy-saving bulb types. Awareness of CFL bulbs has been high over the past several years (Figure 1) but has not shown an overall increase over time. Nearly nine out of ten of the Spring 2014 respondents (88%) indicated that they were aware of CFLs before responding to the survey, the same proportion as that seen in Winter 2012.[3] Results by survey completion group indicate that web respondents reported a greater awareness of CFLs than phone respondents (98% versus 85% respectively), and this higher level of awareness *preceded* web respondents being shown a picture of a CFL to confirm awareness.

[3] In the body of the report, we indicate where delivery mode (phone vs. web) may have contributed to changes in bulb awareness and familiarity.

Figure 1: Awareness of CFLs – 2009 to Spring 2014

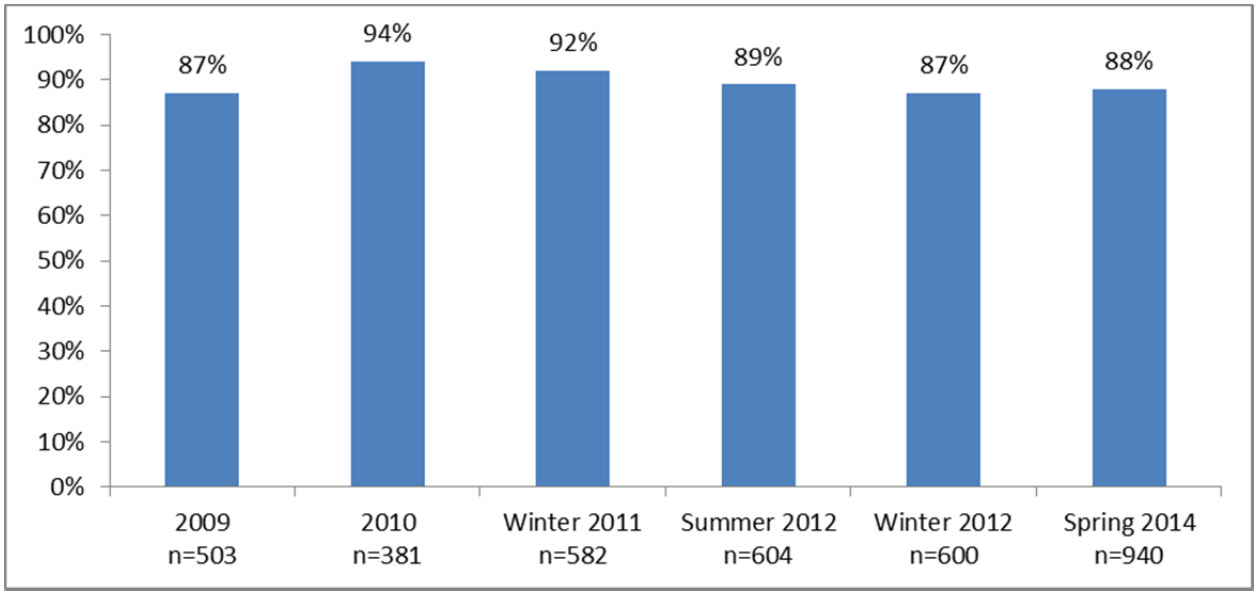
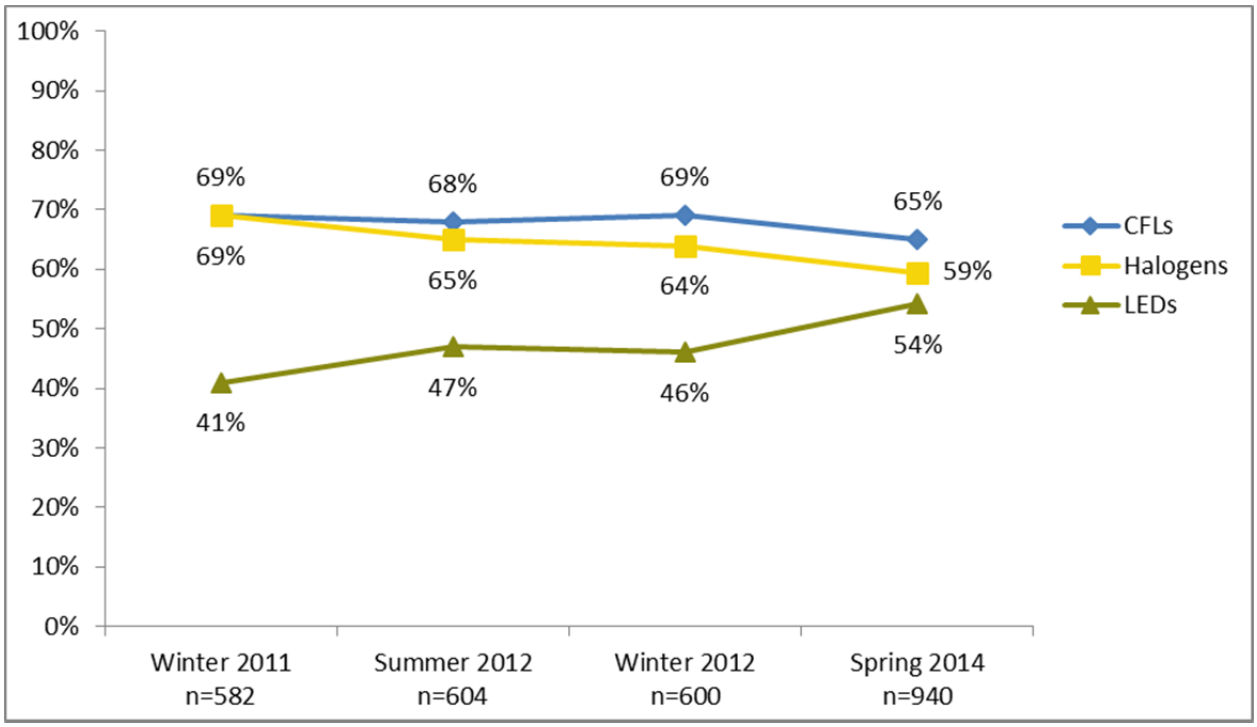


Figure 2 shows changes in consumers' overall familiarity with CFLs, halogens, and LEDs across the four survey waves. Since Winter 2011, the overall percentage of respondents who reported that they are somewhat or very familiar with CFLs and halogens has decreased, whereas familiarity with LEDs has increased. Familiarity with CFLs decreased slightly from 69% for the Winter 2012 survey to 65% for the Spring 2014 survey; across these same waves, familiarity with halogens also dropped from 64% to 59%. In contrast, familiarity with LEDs increased from 46% to 54%. The team has been unable to identify any clear reason for these declines, but a couple of possible—yet untested—explanations for lower levels of familiarity include 1) the greater range of bulb options available to consumers leads to relative adjustments in their self-reported familiarity levels; 2) as they learn more about different bulb types, consumers may reassess how familiar they believe they are with them, and 3) similar appearances among bulbs, particularly halogens and incandescents.

Figure 2: Familiarity with Energy-Saving Bulb Types 2011 – 2014



Base: All respondents. Spring 2014-Halogens is significantly different from Winter 2011 and Summer 2012 at the 90% confidence level.

Spring 2014-LEDs is significantly different from Winter 2011, Summer 2012, and Winter 2012 at the 90% confidence level.

Examining bulb familiarity for Spring 2014 by the survey completion mode (phone vs. web) shows that web survey respondents indicated statistically higher overall familiarity for CFLs and LEDs. For CFLs, 77% of web respondents compared to 62% of phone respondents indicated that they were somewhat or very familiar with this bulb. For LEDs, the difference is even greater. Seventy-one percent of web respondents compared to 50% of phone respondents stated that they were somewhat or very familiar with this bulb. Although this difference could possibly be explained by the fact that web respondents were shown a picture of the bulb on the web survey, *awareness* was also higher among web respondents *prior* to their being shown a picture of the bulb. We cannot rule out that the same is true for familiarity for CFL and LEDs. In contrast, the proportion of web and phone respondents that were somewhat or very familiar with halogens was very similar (61% versus 59%). Of course, given the very similar look between halogens and incandescents, this finding is not very surprising, as people may have saw the word “halogen” but believed they were looking at a picture of an “incandescent,” thereby confusing them. This is a limitation of the picture being used to confirm halogen familiarity. Therefore, the team continues to have limited *tested* explanations for the familiarity results in Spring 2014 in relation to the findings over time.

As a further assessment of energy-saving bulb awareness and familiarity, the Team asked respondents who were somewhat or very familiar with both CFLs and halogens which bulb type used less energy to produce light. The majority of Spring 2014 respondents (66%) correctly noted that CFLs use less energy than halogens. However, responses differed according to the number of CFLs that respondents had reported using (Table 3).[4] High CFL users were more likely than low CFL users to identify CFLs as using less energy (75% versus 56% respectively), and significantly less likely than low CFL users to say that they did not know which bulb uses less energy (8% versus 16%). Thus, level of CFL use seems to be positively related to knowledge about their efficiency relative to other bulbs, at least in the case of CFLs versus halogens.

Table 3: Respondents' Judgments about Relative Energy Use by Level of CFL Use

Which bulb uses less energy	Overall	Households with 5 or more CFLS installed (High CFL Users)	Households with 0 to 4 CFLs installed (Low CFLs Users)
Sample size	*435*	*218*	*182*
CFLs use less energy	66%	75%	56%*
Halogens use less energy	11%	10%	12%
They use about the same	11%	7%	15%*
Don't know/refused	12%	8%	16%*

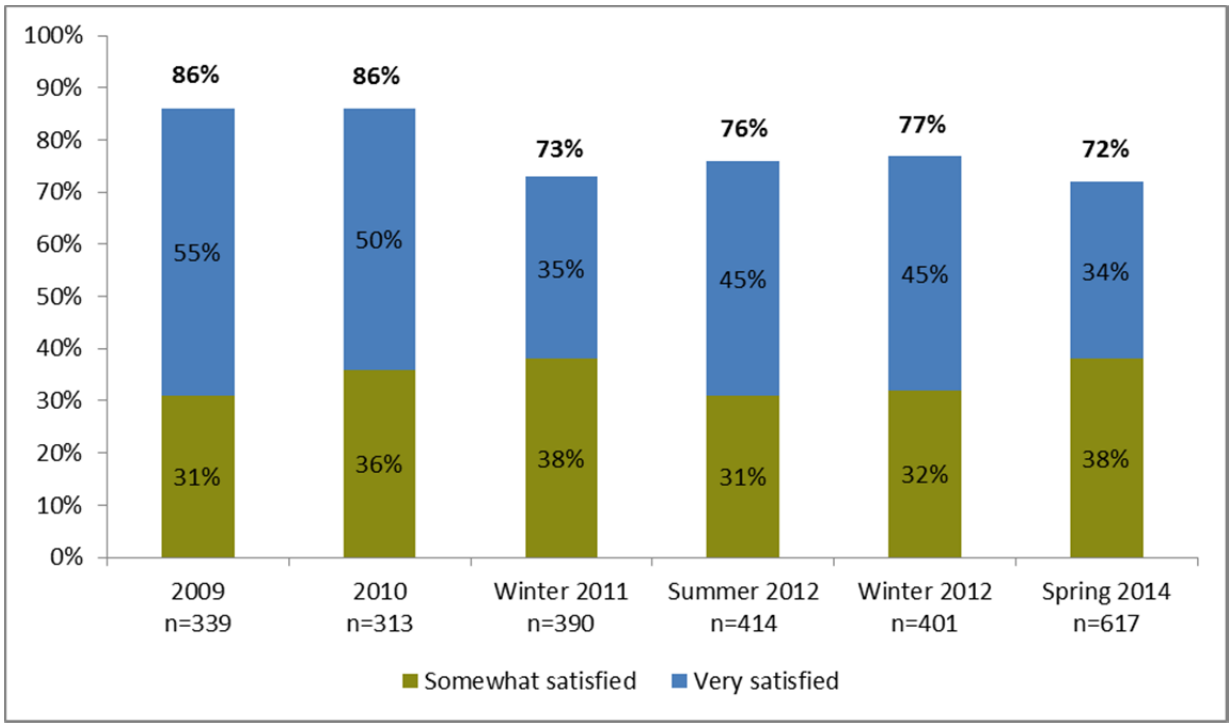
Base: Respondents who were somewhat or very familiar with both CFL and halogen bulbs.
*Significantly different from High CFLs Users at the 90% confidence level.

CFL Satisfaction

The majority of individuals who use CFLs reported that they were satisfied with the bulbs, with seven out of ten respondents indicating that they are somewhat or very satisfied with the CFLs in their homes. While satisfaction remains fairly high, this is the lowest level compared to previous years. Further examination reveals that the Spring 2014 respondents had relatively higher percentages of somewhat satisfied ratings and much lower very satisfied ones. Despite their higher rates of CFL use, web respondents voiced lower levels of satisfaction with the bulb than phone respondents did (64% vs. 74%, respectively). Possible explanations for the decrease in satisfaction—for which the web vs. phone results each provide at least some evidence—may relate to the reactions of earlier adopters versus later adopters (who might perceive that they are being "forced" to use the bulbs due to EISA), lack of satisfaction with CFLs for specific applications, or relative changes in satisfaction as consumers have more experience using LEDs.

[4] Respondents who reported currently using five or more CFLs in their homes are defined as "High CFL Users" while those who report currently using four or fewer CFLs, including those not aware of CFLs, are defined as "Low CFL Users." The analysis from the Winter 2012 Consumer Survey defined these respective groups as CFL "Experts" and "Novices"

Figure 3: Level of Satisfaction with CFLs, 2009-2014



Base: Respondents who use CFLs.
Spring 2014 (overall satisfaction) is significantly different from 2009, 2010, Summer 2012, and Winter 2012 at the 90% confidence level.

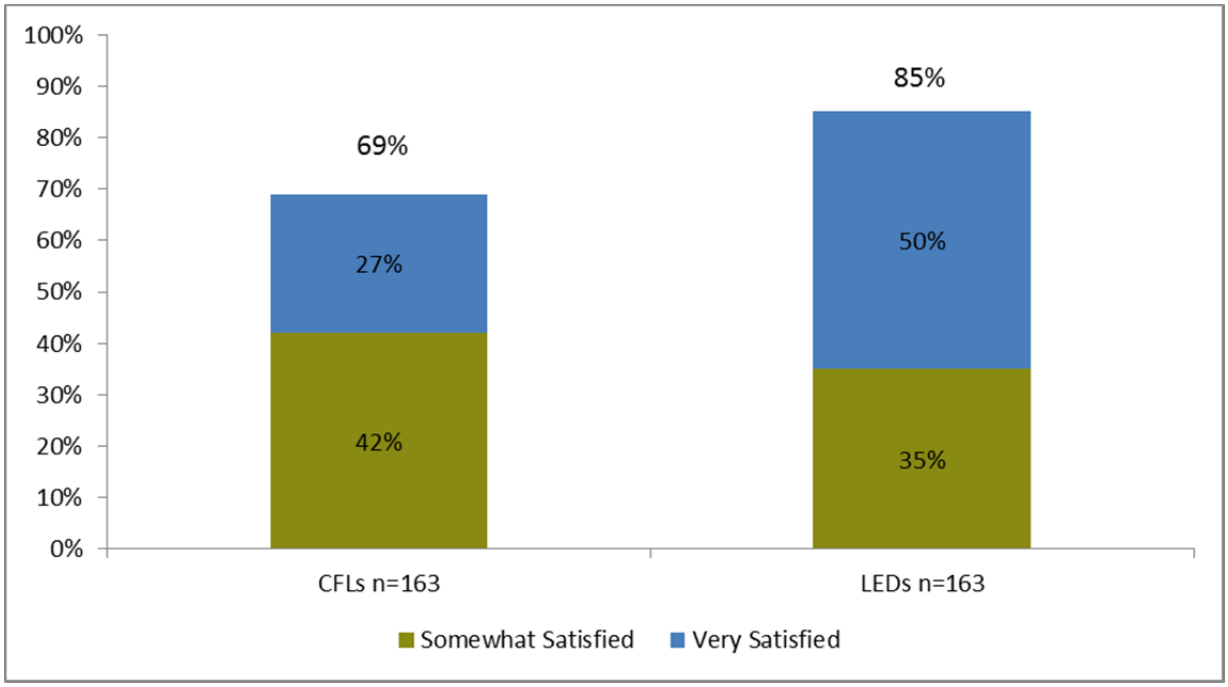
To understand consumers' opinions about CFL lighting, we asked them what they like and dislike about these bulbs. The top reasons for liking CFLs include saving energy and the long bulb life/durability. The main dislikes for CFLs reveal specific issues with the bulbs' characteristics and quality such as brightness, being slow to turn on, unattractive shape, and mercury content/ disposal issues.

LED Satisfaction

Satisfaction with LED bulbs was higher than satisfaction with CFLs, with four out of five LED users saying they were somewhat or very satisfied with LEDs (84%). As with CFLs, despite higher use, web respondents voiced lower levels of satisfaction with LEDs than did phone respondents (70% vs 88, respectively).When LED users were asked what they like about these bulbs, respondents were most likely to say that the bulbs save energy, produce the desired level of brightness, have a long bulb life, and produce an appealing color or appearance of light. When asked what they do not like about LEDs, a sizable proportion mentioned the upfront cost (27%).

Among users of both CFLs and LEDs, satisfaction with LEDs relative to CFLs was even more prominent. Eighty-five percent of these respondents were satisfied with LEDs, whereas only 69% were satisfied with CFLs (Figure 4).

Figure 4: Satisfaction with CFLs and LEDs among Users of Both Bulb Types



Base: Respondents who reported using both CFL and LED bulbs.
*Overall satisfaction with LEDs is significantly different from overall satisfaction with CFLs.

Recent Lighting Purchases

The survey asked about the recent purchases of various types of light bulbs. A majority of respondents who had purchased light bulbs in the past three months purchased incandescent (or "regular") light bulbs (56%). Respondents familiar with other bulb types were asked if they had purchased the respective bulb types in the last three months. These respondents most commonly bought CFLs or LEDs that fit into regular light sockets. More than one-third of respondents who indicated that they had bought light bulbs in the past three months and were aware of CFLs had purchased CFLs that fit into regular sockets. Nearly one-quarter of respondents who had bought a light bulb in the past three months and were familiar with LEDs bought LEDs that fit into regular sockets. Note that the Spring 2014 survey asked this question in a different manner than in the Winter 2011 through Winter 2012 surveys (the change reflected a desire to reduce survey length), so we cannot compare results across time.

In response to a question asking where they most frequently purchase bulbs, respondents reported buying them at home improvement stores such as Home Depot, at mass merchandise and discount department stores such as Wal-Mart and Target, and at grocery stores.

Only 12% of respondents both purchased light bulbs recently and recalled seeing any signage or displays when doing so. They recalled seeing displays that compared bulbs, light appearance, and energy use or savings as well as information that explained various lighting terminology. Only 7% of those recalling

displays mentioned any energy-efficient or "utility" (as the respondents termed it) program signage (not MassSAVE) and 2% specifically mentioned MassSAVE.

Key Lighting Concepts

The survey included questions to assess respondents' knowledge of two key lighting concepts—lumens and color appearance. Slightly more than one-half of Spring 2014 respondents had seen or heard of "lumens" and 70% had seen or heard of "warm white" and "cool white." These percentages are similar to those seen in each of the three waves since Winter 2011. In the Spring 2014 survey, respondents who had seen or heard of the terms "lumens," "warm white," and "cool white" were asked to define them.

- The majority of respondents familiar with "lumens" (66% of those asked or 37% of all 940 respondents) correctly understood that the term refers to light output or brightness.
- Compared with "lumens," the terms "warm white" and "cool white" were less well understood by respondents who had heard the terms. About one-third of those asked (23% of all 940 respondents) correctly defined the terms as having to do with color appearance, whereas about one-half said that it referred to the brightness, or the softness/harshness, of the light.

Awareness of and Reactions to EISA

The Team asked respondents a series of questions about their awareness of EISA. In addition to assessing their awareness of the law, these questions were intended to gauge respondents' usage of 60-Watt incandescents and their likelihood of continuing to do so as long as they are available. More than one-half (52%) of Spring 2014 respondents noted that they had heard about the EISA legislation; this is a significant increase from Winter 2012 (44%) and from previous survey waves. The survey results indicate that the majority of consumers are not stockpiling 60-watt incandescent bulbs during its phase-out, although one out of three individuals indicated that they were likely to do so and 15% reported actual stockpiling behavior. When given information about the bulb wattages and asked hypothetically which they would choose to buy after 60-Watt incandescents are no longer available, respondents who currently use incandescent bulbs were most likely to say that they would purchase CFLs.

Comparison Area Findings

The key findings from the Comparison Area consumer survey are summarized below. The main body of the report explores these findings in more detail.[5,6]

[5] To align the data with the demographic characteristics of the respective areas, the team applied a weighting scheme to reflect the conditions in those areas. In a couple of key instances where results serve as a proxy for Massachusetts, the data are weighted to be consistent with demographic characteristics of Massachusetts, as noted in the discussion.

[6] Since respondents in Georgia and Kansas completed the survey by telephone and were not offered an incentive to do so, the team used data from Massachusetts' phone-only, non-incentive sample when comparing results with these areas.

- CFL awareness and overall familiarity were significantly higher in Kansas compared to Georgia and Massachusetts. Eighty-seven percent of respondents in Kansas compared to 79% in Massachusetts and 77% in Georgia reported that they were aware of CFLs. Looking at CFL familiarity, 61% of respondents in both Massachusetts and Kansas compared to 57% in Georgia reported being somewhat or very familiar with these bulbs.
- Familiarity with LEDs and halogens was fairly comparable across the three regions. Roughly one-half of respondents in all three areas reported being familiar with LEDs and about 60% indicated that they are familiar with halogens.
- Awareness of EISA was highest in Kansas. Fifty-nine percent of respondents in Kansas reported that they were aware of this law compared to 48% in Massachusetts and 47% in Georgia.

Conclusions, Recommendations, and Considerations

The conclusions, recommendations, and considerations suggested by the survey results are presented below; the main body of the report expands on these conclusions. Note that the Team may rethink these conclusions and related recommendations and considerations when the results of the on-site saturation survey and comparison area research become available.

Conclusion 1: The Spring 2014 survey findings indicate that satisfaction with LEDs was higher than that of CFLs; particularly among users of both CFLs and LEDs, satisfaction with LEDs relative to CFLs was even more prominent. In addition, although a majority of CFL users remains satisfied with CFLs, the indicator continues the downward trend observed since 2011.

> *Recommendation 1*: Future surveys should explore the reasons behind satisfaction with—and preferences for—LEDs versus CFLs among those who use both types of bulbs to understand why CFL satisfaction has declined. This analysis may also inform potential future trends in LED satisfaction, particularly if the results point to factors related to the timing and rate of adoption as one of the factors driving satisfaction.

Conclusion 2: With the 2014 survey, we observed a significant increase over previous waves in the proportion of households reporting familiarity with screw-in LEDs. While it is quite likely that PA efforts to raise awareness about LEDs and provide incentives on them has played an important role in increased LED adoption, future studies would be needed to confirm this attribution.

> *Consideration 2*: The PAs should consider commissioning a study to assess the connection between program activity (such as marketing and incentives) and increased awareness and adoption of LEDs. The forthcoming net-to-gross study will likely provide some insight into this issue, but more pointed studies focused on LEDs may still be needed to understand the attribution and guide future program efforts to continue increasing use of this bulb type.

Conclusion 3: This survey differed from previous ones by offering some respondents the opportunity to answer via a web-based instrument and sending some respondents a pre-paid $5 incentive. The team identified two critical findings from this effort. First, the pre-paid $5 incentive *doubled* the response

rate. Second, households that actually completed the survey via the web differed from those that completed by phone demographically (more likely to own homes, have higher education, and, among those that reported their income, to have higher incomes) and in terms of their awareness, use, and satisfaction with energy-efficient lighting. Web respondents did view pictures of CFLs, LEDs, and halogen bulbs, likely affecting their responses, but the visual cue cannot account for all the differences we observed.

Recommendation 3a: The team recommends that future replications of this survey also offer a pre-paid incentive that would be sent with the advance letter alerting possible respondents to the study.

Recommendation 3b: The team is not able to explain fully why web respondents differed from phone respondents, yet we believe that offering of a web-based response platform adheres to social trends. Therefore, the team recommends that the next iteration of this survey again offer a web/phone response option along with a phone-only response option. If the length of the survey allows, the evaluators should also add questions to explore the characteristics of web and phone respondents vis-à-vis technology, lighting, and environmental opinions. Finally, if the programming of the survey allows, the strongest study design would show only a portion of the web respondents a picture of various bulb types.

Introduction

This report presents the findings of research conducted to understand the market for energy-efficient light bulbs in Massachusetts. As a member of the Residential Evaluation Team led by Cadmus, NMR Group, Inc. (NMR) served as the lead subcontractor for this research effort, working with Tetra Tech, Inc. (hereafter the Team). Cadmus performed quality control for the reporting effort. The research presented here includes the results of a telephone survey (hereafter the Spring 2014 survey), performed March 6, 2014 through May 5, 2014. Comparisons with similar surveys (hereafter 2009, 2010, Winter 2011, Summer 2012, and Winter 2012) are provided where appropriate.

The Winter 2011 survey sought to establish a baseline at the onset of the changes in lighting standards resulting from the Energy Independence and Security Act of 2007 (EISA), while subsequent surveys have explored possible changes in the lighting market since the initial implementation of EISA. As the different survey fielding periods correspond with various bulb phase-outs, we have assessed respondents' opinions and behaviors with an eye toward the pertinent changes. The introduction, increased availability of, and declining price of light emitting diodes (LEDs) also serves as critical issues in this time series of market assessment studies.

Background

The Team fielded the consumer surveys with households in Massachusetts that were electric customers of one of the Program Administrators. The goal of the surveys was to track key indicators of the market for compact fluorescent lamps (CFLs), LEDs, and halogens as well as the impacts of EISA. Many of these indicators provide the information that—together with data from the on-site saturation study delivered under separate cover[7]—will help to revise program savings estimates while others contribute to a broader assessment of the market as EISA implementation moves forward. We also compared the results from the current survey to previous waves of similar surveys. Topics addressed in the consumer surveys included the following, some of which have been tracked in earlier evaluations (*e.g.* awareness of CFLs):

- Awareness of and familiarity with CFLs, LEDs, and halogens meant to replace A-line incandescent bulbs
- Awareness of and anticipated reactions to EISA
- Current use of CFLs and LEDs as well as satisfaction with these bulbs
- Changes in CFL satisfaction and possible reasons for these changes
- Familiarity with lighting terminology such as lumens and color temperature

[7] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

- Recent light bulb purchases, particularly of 60-Watt incandescents (Spring 2014 only) to identify potential stockpiling
- Recollection of signage or displays in lighting aisles when purchasing bulbs
- Household demographics

Methodology

Massachusetts Consumer Survey

Similar to the Winter 2012 survey, the current survey sought to recruit an equal number of single-family and multi-family homes for an on-site saturation study. This represented a change from earlier surveys in which the evaluators had not set quotas for type of home, which appears to have contributed to differences in the demographic and housing characteristics of respondents over time, as explained later. Therefore, the initial sample for the Spring 2014 survey drew 50% of the sample from multi-family homes. As with the efforts in 2011 and 2012, the Team sent potential respondents an advance letter explaining the study, asking them to agree to participate in it, and providing phone numbers to call for more information.

There were two notable changes in the methodology for the Spring 2014 survey. First, we offered roughly one-half of the potential respondents the opportunity to answer either through a web-based survey or via telephone (web/phone sample). The advance letter provided each household with a link to a website where the respondent was required to enter a unique ID. If the household did not complete the web version of the survey, they received a call from Tetra Tech one week later to complete the survey via the telephone. The remaining potential respondents only had the opportunity to answer by telephone. Of the web/phone sample, 41% who agreed to take the survey chose to do so over the web, and the remaining 59% completed the survey via telephone or had not decided on a response method when called for the telephone survey. Out of the entire sample of respondents, about one-quarter (22%) completed the survey over the web.

The second recruitment change for the Spring 2014 survey involved sending a random portion of potential respondents (38%) a pre-paid five dollar ($5) incentive to complete the survey. The purpose of this experimental manipulation was to assess the impact of pre-paid incentives on response rates in an effort to achieve more representative samples of respondents.[8]

[8] The results of earlier studies that point to the effectiveness of pre-paid cash incentives underlie the reason for conducting the incentives experiment in the Massachusetts Lighting Consumer Survey. See Bailey, J.T., P.J. Lavrakas, and M.A. Bennet. 2007. "Cash, Credit, or Check: A Test of Monetary Alternatives to Cash Incentives." Paper delivered at the 62nd Annual Conference of the American Association for Public Opinion, Anaheim California. See also, Rathbun, P., P. Krecker, and L. Schauer. "Show me the Money: Cost-effectiveness of Prepaid Incentives in Web Surveys." *Strategies: Newsletter of the Association of Energy Service Professionals.* (AESP resource library is not available as they restructure their website; article available upon request.)

Offering a pre-paid incentive appears to have increased response rates (29% vs. 14%), but the recruitment method did not seem to have an effect (about 15% for each recruitment group) (Table 4). An examination of key lighting market indicators (such as familiarity and use, among others) revealed some statistically significant differences across the four survey recruitment groups.[9] For the most part, the differences observed across recruitment groups occurred between the phone and phone/web subsamples. Further analysis indicated that these differences were largely due to the mode by which respondents completed the survey (i.e., by web or by phone), as described in more detail in the body of this report.

Table 4: Survey Recruitment Mode and Response Rates

Survey Group	Number sampled	Number complete	Response Rate
Phone only, incentive	760	198	26%
Phone only	1,701	235	14%
Web/phone, incentive	1,039	322	31%
Web/phone	1,200	185	15%
Total	**4,700**	**940**	**20%**
Incentive Group	***1,799***	***520***	***29%***
Non Incentive Group	***2,901***	***420***	***14%***

In addition, based on the actual rates of completion for the web/phone recruitment groups with and without an incentive, Tetra Tech estimates that achieving a total of 600 completions without an incentive would have cost $47,200 (or $79 per completed survey), whereas reaching the full 600 completions with the group receiving the incentive would have cost $27,244 (or $45 per completed survey) (Table 5).[10] Interviewer-success rates were far higher with the incentive than without the incentive, making the non-incentive strategy more expensive in the end. Extra costs for the non-incentive group are driven mostly by repeated attempts to secure and complete the survey with respondents. These additional costs cover staff and related resources needed to release more sample and conduct more attempts per sample point, increasing the costs above those of sending the pre-paid incentive to all potential respondents.

[9] The Team tested for significant differences among survey recruitment groups for a selection of questions. See Appendix E: Detailed Tables for Survey Recruitment and Completion Groups for complete results.

[10] These amounts include direct costs only, namely interviewer time and the costs of mailings and incentives. Costs for protocol development, programming, training, etc., are in addition to these but also fairly consistent between web-phone and telephone only designs.

Table 5: Cost for Web/Phone with and Without Pre-paid Incentives – Estimates for 600 Completions

Recruitment Group	Interviewing Hours	Cost			
		Interviewing	Letter, Incentives	Total	Per Complete
Web/phone	1,600	$43,200	$4,000	$47,200	$78.67
Web/phone, incentive	564	$15,228	$12,016	$27,244	$45.41

To implement the surveys, we first obtained a list of randomly selected customers of each of the five PAs and drew our sample from this list according to the "desired sample" column in Table 6.[11] When calling potential respondents, we made a minimum of eight attempts over different times of the day, days of the week, and weeks of the month in an effort to increase the response rate and achieve as representative a sample as possible. To further increase response rates and population coverage, we fielded the survey in Spanish as well as in English. At 940 completed surveys, we fell a little shy of our goal of 950 respondents. Still, this level represents a 2.7% percent sampling error for the entire sample at the 90% confidence level, assuming a 50% break in responses. The sampling errors for individual PAs ranged from a low of 3.9% for National Grid and NSTAR to 18.9% for Unitil, due to its small population size.[12] The overall response rate was 21% and no less than approximately 18% for each PA. Thirteen respondents completed surveys in Spanish.[13]

Table 6: Consumer Survey Sample

Program Administrator	Households Served	Desired Sample	Final Sample	Sampling Error	Response Rate
Cape Light Compact	201,991	67	50	11.7%	22.5%
National Grid	1,117,912	456	441	3.9%	18.4%
NSTAR	954,917	332	348	4.4%	22.3%
Unitil	40,087	19	20	18.9%	29.9%
WMECO	187,140	76	81	9.2%	27.6%
Overall	**2,502,047**	**950**	**940**	**2.7%**	**20.7%**

Table 7 presents the weighting scheme used in Spring 2014. When compared to Massachusetts as a whole, the consumer survey sample contained a greater proportion of households with people who had

[11] NSTAR and WMECO were sampled separately although both are now a part of Northeast Utilities. This decision reflected the desire to make certain we sample Western Massachusetts similarly to previous surveys to preserve comparability. However, future surveys could sample Northeast Utilities as a whole if the PAs and EEAC consultants desire.

[12] The overall error is the most important one to consider, given that the predominant markdown method was a statewide approach offered to all consumers, not just those of specific PA service territories.

[13] The response rate reported here follows the American Association for Public Opinion Research (AAPOR) approach to adjust the sample for ineligible and incomplete respondents when calculating the response rate (AAPOR RR1).

some education beyond the high school diploma. Although the new sampling procedure described above led to a larger number of renters in Spring 2014 than in previous survey waves (see Appendix G: Weighting Schemes from Previous Survey Waves), the Spring 2014 sample still had a higher proportion of home owners than exists in the population of Massachusetts households.[14] In response, the Team again weighted the consumer survey by education and home ownership status so that the reported results would better reflect the characteristics of all households in the state. This weighting scheme is also comparable to those used in previous survey waves.

Table 7: Population, Sample Sizes, and Weights

	Households	Sample Size	Weight
State Total	*2,524,0289*	*940*[*]	
Owner-occupied housing units			
Less than high school graduate	91,246	5	6.80
High school graduate	346,056	76	1.70
Some college or Associate's degree	393,286	133	1.10
Bachelor's degree or higher	472,453	362	0.76
Renter-occupied housing units			
Less than high school graduate	153,452	19	3.01
High school graduate	254,892	63	1.51
Some college or Associate's degree	252,845	76	1.24
Bachelor's degree or higher	289,798	173	0.62

[*] Thirty-three respondents refused to answer either the home ownership or the education question, or both. They were assigned a weight of one.

It is important to understand the difference between survey "recruitment groups" and "completion groups." As noted above, respondents were assigned to one of four **recruitment groups** based on the presence or absence of pre-paid incentives and the *invitation* to respond via the web. Those who chose to respond either completed the survey via the web or via telephone, which comprise the survey **completion groups**. Although we found some differences in key results by recruitment groups, these differences are mostly factors of the method by which respondents completed the survey (web or telephone). As a result, in the instances where there are significant differences by completion group, those findings are presented in the appropriate results sections.

For many of the survey questions, the Team tested differences among groups defined by several variables, including survey recruitment method, survey completion method, level of CFL use, and year of survey wave, for statistical significance. These findings, among others, are presented below.

[14] Underrepresentation of renters and respondents with lower levels of educational attainment is common in telephone surveys. For example, see Galesic, M., R. Tourangeau, M.P. Couper (2006) "Complementing Random-Digit-Dial Telephone Surveys with Other Approaches to Collecting Sensitive Data." *American Journal of Preventive Medicine*. Volume 35, Number 5.

Comparison Area Survey

In addition to the results from the Massachusetts Consumer Survey, findings from the Comparison Area On-site Recruitment Surveys are also included in this report. In order to establish a baseline for the MA On-site Saturation Study, the PAs, EEAC Consultants, and evaluation team collectively decided to perform site visits in Georgia and Eastern Kansas (usually referred to as Kansas for simplicity's sake). These two areas were chosen as comparisons for Massachusetts for a number of reasons including:

- Lack of a strong history of incentive-based, upstream residential lighting programs;
- Inclusion of both areas in the Commercial and Industrial (C&I) LED Market Assessment Study;
- Existence of prior estimates of socket saturation for each area (2008 for Georgia, 2008 and 2010 for Kansas);
- Demographic comparability to Massachusetts, at least among the small and limited subset of areas without strong incentive-based lighting programs at this time.

The team fielded an abbreviated version of the Consumer Survey to households in Georgia and Kansas to recruit participants for the on-site saturation studies in each state. The Comparison Area Survey included questions about lighting awareness, bulb use, and general awareness of EISA. Table 8 below shows the targeted and completed survey responses for both Georgia and Kansas. Note that the completed amounts differ from the targeted totals due to difficulties in recruiting participants for the comparison area on-site study (that is, we kept calling to help recruitment for the on-site visits).

Table 8: Comparison Area Survey Sample and Response Rates

Comparison Area	Number sampled	Target	Number complete	Response Rate
Georgia	10,400	450	526	7%
Kansas	8,074	550	556	9%
Total	**18,474**	**1,000**	**1,082**	**8%**

The team used random digit dial (RDD) sampling from the entire state of Georgia and from the counties in Eastern Kansas with sampling proportional to the population of that part of Kansas. The RDD sample included both traditional landline and cellular telephone numbers (Table 9). Because the comparison area samples relied on RDD, the team was not able to provide advance letters or pre-paid incentives to potential respondents. This, together with the lack of name recognition and personal connection between the potential respondents and the PAs, likely underlies the low response rates compared to Massachusetts (8% vs. 20%, respectively).

Table 9: Comparison Area Cellular and Landline Samples

	GA	KS
Sample size	*526*	*556*
Cellular	19%	17%
Landline	80%	83%
Don't know/Refused	<1%	<1%

The team employed various weighting schemes to these comparison areas (see Appendix K: Comparison Area Weighting Schemes). To align the data with the demographic characteristics of the respective areas, the team applied a weighting scheme to reflect the conditions in those areas. In a couple of key instances where results serve as a proxy for Massachusetts, the data are weighted to be consistent with demographic characteristics of Massachusetts, and we note this in the discussion. In addition, since respondents in Georgia and Kansas completed the survey by telephone and were not offered an incentive to do so, the team used data from Massachusetts' phone-only, non-incentive sample when comparing results with these areas. The findings from this separate effort are integrated with relevant findings from the Massachusetts survey. Where appropriate, the Team has made direct comparisons on specific survey items. Appendix J: Detailed Tables for Comparison Area presents as full review of demographic data for the comparison areas.

Awareness of Energy-Saving Light Bulbs and EISA[15]

The Spring 2014 survey assessed respondents' awareness of and familiarity with CFLs, and other energy-saving bulb types. These questions supplied necessary context for understanding respondents' knowledge of various lighting technologies and allowed us to target questions about particular bulb types to those respondents most able to provide informed opinions on them. When possible, we compared the responses to questions on awareness and familiarity with similar ones from the 2009 to Winter 2012 Massachusetts consumer surveys. We also asked respondents whether they were aware of the EISA light bulb efficiency provisions. In those cases, we exclude the 2009 and 2010 results as questions about EISA awareness asked in earlier years used substantially different wording, limiting their comparability to the recent waves.

One notable difference with the Spring 2014 survey is that respondents answering via the web survey were shown a picture of the bulb types when asking about awareness of CFL, halogen, and LED bulbs. The question about awareness of CFL bulbs included confirmation of whether the respondent was indeed aware of this bulb type.[16] The questions regarding halogen and LED bulbs simply included a picture of the bulb, but did not include follow up confirmation questions.

CFL Awareness, Bulb Familiarity, and Level of Use

Awareness of CFL bulbs has been high over the past several years in Massachusetts, but has not shown an overall increase over time (Figure 5).[17] Nearly nine out of ten of the Spring 2014 respondents (88%) indicated that they were aware of CFLs before responding to the survey, the same proportion as was seen in Winter 2012. This represents a significant decrease in awareness from 2010 (94%) and Winter 2011 (92%), but is still within historical rates of self-reported awareness measured from 2009 onward.[18]

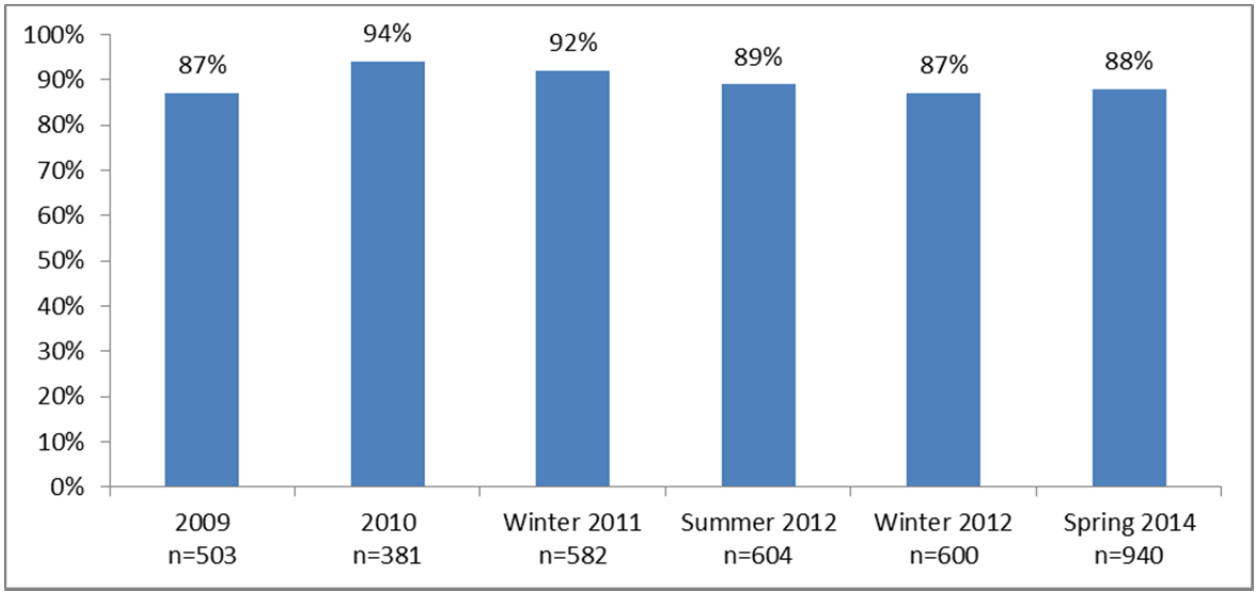
[15] Note that the report mainly presents results rounded to the nearest whole number; therefore, at times, the results reflect some degree of rounding error.

[16] See Consumer Survey Questionnaire, S2, S2A, S4, and S5.

[17] As noted, the web-based version of the survey included an additional confirmation of CFL awareness after showing respondents a picture of a CFL bulb. Just one individual changed his/her response 'yes' (aware) to 'no' (unaware), which is reflected in the results presented here.

[18] We've included table and figure notes indicating when values are statistically different at the 90% confidence level. As seen in Figure 5, Spring 2014 is significantly different from 2010 and Winter 2011.

Figure 5: Awareness of CFLs – 2009 to Spring 2014



Base: All respondents.
Spring 2014 (overall awareness) is significantly different from 2010 and Winter 2011 at the 90% confidence level.

Disaggregating survey results based on survey completion group—telephone versus web—shows that web respondents reported higher levels of awareness CFLs (Table 10). Ninety-eight percent of web respondents compared to eighty-five percent of telephone responses reported that they were aware of CFLs. Importantly, the higher levels of awareness among the web respondents *cannot* be explained by their being shown a picture of a CFL. As the survey questionnaire (Appendix H) demonstrates, similar to telephone respondents, web respondents answered two questions about awareness (unaided and aided) before being shown the picture of a CFL to verify awareness. *Only one respondent changed their response regarding awareness after being shown the picture.* Therefore, web respondents voice a higher level of awareness with CFLs that is not due to the visual aid provided only in the web survey.

Table 10: Awareness of CFLs by Survey Completion Group

	Overall	Completion Group	
		Phone	Web
Sample size	*940*	*731*	*209*
Yes	88%	85%	98% *

Base: All respondents.
* Significantly different from telephone respondents at the 90% confidence level.

For consistency, the results for Massachusetts, when presented throughout this report as a comparison to Georgia and Kansas, only include responses from individuals who completed the survey by telephone and did not include an incentive (the phone-only, no incentive recruitment group). This is slightly lower than the results from the entire telephone sample (which included those with and without an incentive) as well as the overall sample, which is inflated by the web survey respondents who reported relatively higher levels of awareness of CFLs. Results from the comparison area survey reveal similar levels of awareness of CFLs among respondents in Kansas (87%) and Massachusetts (79%). CFL awareness among Georgia respondents was significantly lower than Kansas (Table 11).

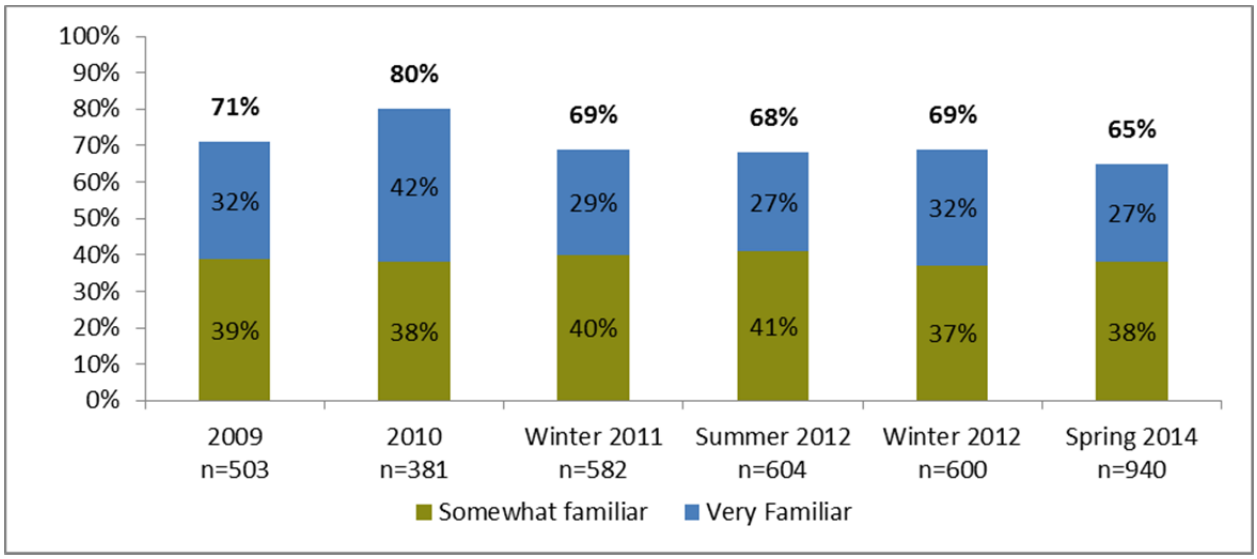
Table 11: Awareness of CFLs by Region

Before this call today, had you ever heard of Compact fluorescent light bulbs or CFLs?	MA	GA	KS
Sample size	*235*	*526*	*556*
Yes	79%	77%	87%*

Base: For GA and KS, the base includes all respondents. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.
* Significantly different from MA and GA at the 90% confidence level.

In addition to asking respondents about their awareness of CFLs, we asked them how familiar they were with these bulbs. In Massachusetts, sixty-five percent of all respondents in Spring 2014 indicated that they were somewhat or very familiar with CFLs (Figure 6). This percentage is a slight decline from the Winter 2012 and Summer 2012 surveys (69% and 68%, respectively).

Figure 6: Familiarity with CFLs, 2009 – 2014



Base: All respondents.

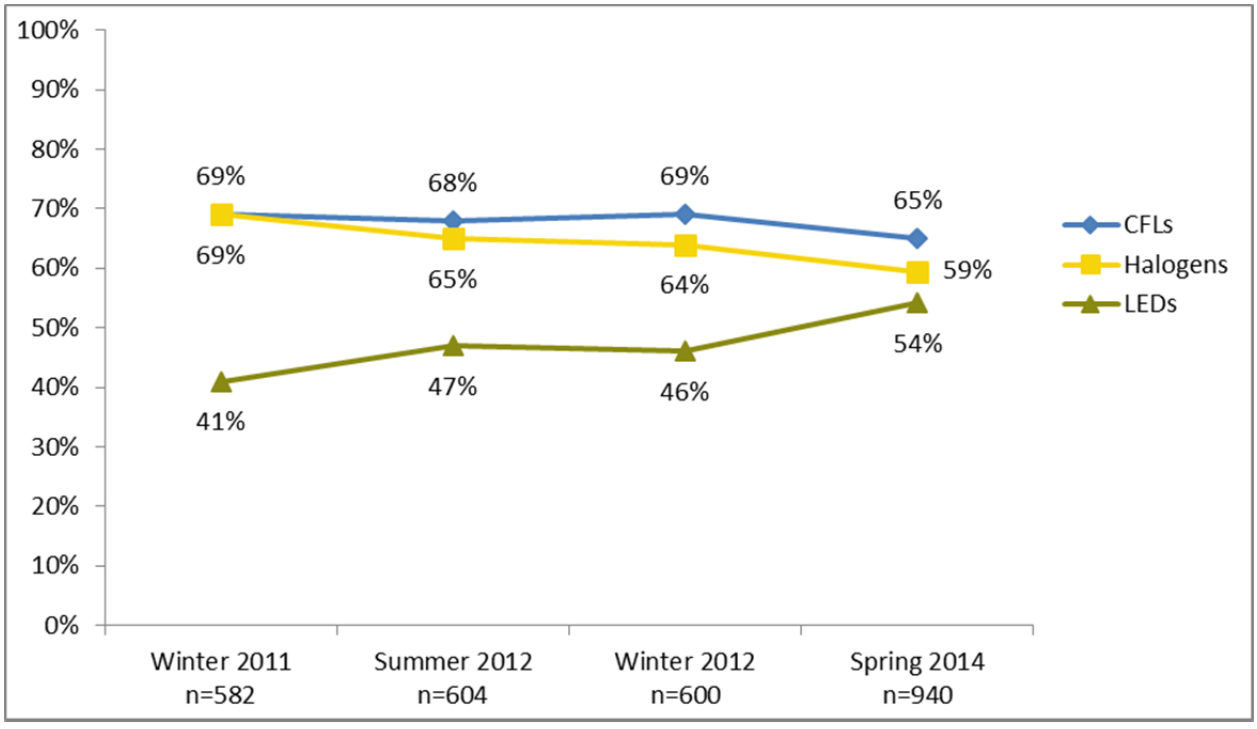
All four waves of the consumer survey assessed familiarity with CFLs, halogens, and LEDs. Over this period, the overall percentage of respondents who reported that they are somewhat or very familiar

with LEDs has increased from 41% to 54%. Since Winter 2011, there has been an overall decrease in respondents indicating that they are somewhat or very familiar with both CFLs and halogens. For CFLs, there has been a small decrease in overall familiarity from 69% in Winter 2011 to 65% in Spring 2014. The drop in overall familiarity with halogens has been even greater—from 69% in Winter 2011 to 59% in Spring 2014—and statistically significant. The team has not identified any clear reason for these declines (this is not explained by the web completion group because they had higher levels of familiarity as shown below), but some possible—yet untested—explanations could include the following:

- With the expansion in the types of bulbs in the market, consumers may be making relative adjustments to their self-reported familiarity for individual bulb types;
- Similarly, as consumers learn more about individual bulb types, they may reassess how familiar they are with the bulb; and
- Similarly, respondents may now recognize that a diversity of halogen bulb types (torchiere, reflector/floods, A-line) exist and are more comfortable admitting lower levels of familiarity with the A-line style. Another possible explanation in the lower levels of familiarity with halogens may be due to consumers' inability to distinguish halogen bulbs from incandescents easily.

Figure 7 shows changes in overall familiarity with these bulb types across the four survey waves.[19]

Figure 7: Familiarity with Energy-Saving Bulb Types 2011 – 2014



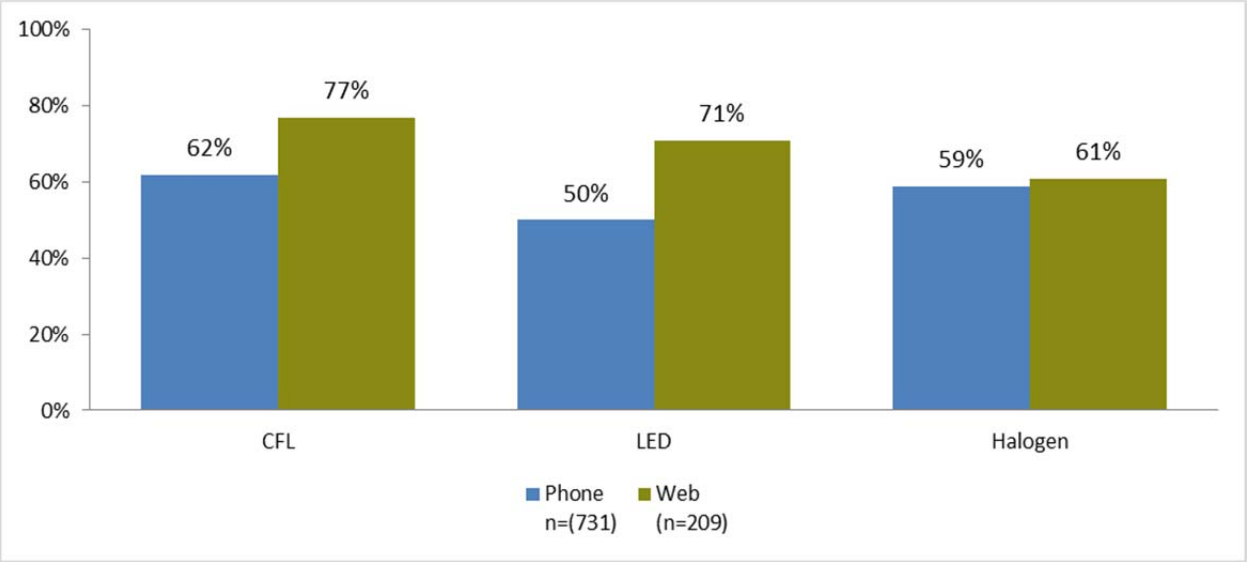
Base: All respondents.

[19] For additional responses and percentages, see Table A-2.

Spring 2014-Halogens is significantly different from Winter 2011 and Summer 2012 at the 90% confidence level
Spring 2014-LEDs is significantly different from Winter 2011, Summer 2012, and Winter 2012 at the 90% confidence level.

Examining bulb familiarity for Spring 2014 by the survey completion mode (phone vs. web) shows that web survey respondents indicated statistically higher overall familiarity for CFLs and LEDs. For CFLs, 77% of web respondents compared to 62% of phone respondents indicated that they were somewhat or very familiar with this bulb. For LEDs, the difference is much greater. Seventy-one percent of web respondents compared to 50% of phone respondents stated that they were somewhat or very familiar with this bulb. This very stark difference is possibly associated with the respondent being shown a picture of a CFL bulb on the web survey before being asked about CFL familiarity. However, the fact that web respondents already voiced higher awareness of CFL *before* being shown the picture raises doubts about this explanation. In contrast to CFLs and LEDs, the proportion of web and phone respondents that were somewhat or very familiar with halogens was very similar (61% versus 59%). This may be due to the similar appearance of halogens and incandescents—respondents got confused by the fact that they saw a picture of a "typical bulb" that was being called a halogen—yet the finding still leaves us without a clear explanation for the factors that drove "familiarity" in Spring 2014.

Figure 8: Familiarity with Energy-Saving Bulb Type by Survey Completion Group



Base: All respondents.
Web respondents' answers regarding CFLs and LEDs are significantly different from telephone respondents at the 90% confidence level.

The Team also investigated how familiarity with energy efficient bulb types might differ by the number of CFLs that consumers reported using in their homes.[20] Not surprisingly, the households with more CFLs

[20] Respondents with five or more CFLs currently installed in their homes are defined as "high CFL users" while those with four or less, including zero CFLs installed and those not aware of CFLs, are defined as "low CFL

(high CFL users) displayed significantly higher levels of familiarity with CFLs, LEDs, and halogens than those with fewer CFLs (low CFL users) (Table 12). This suggests that those who have adopted CFLs for many of their lighting needs are also more acquainted with other types of energy efficient lighting. It is worth noting that, as in previous waves, an examination of demographic differences between high and low CFL users (see Appendix F: Massachusetts Consumer Survey Demographics) reveals that high CFL users tended to live in larger, single family homes. These homes tend to have a greater number of sockets, which offers more opportunity for occupants to install bulbs than in homes with fewer sockets. Households who use more CFLs are also more likely to own their homes than low CFL users (who show higher levels of renting/leasing).

Table 12: Familiarity with Energy-Savings Bulb Type by Level of CFL Use

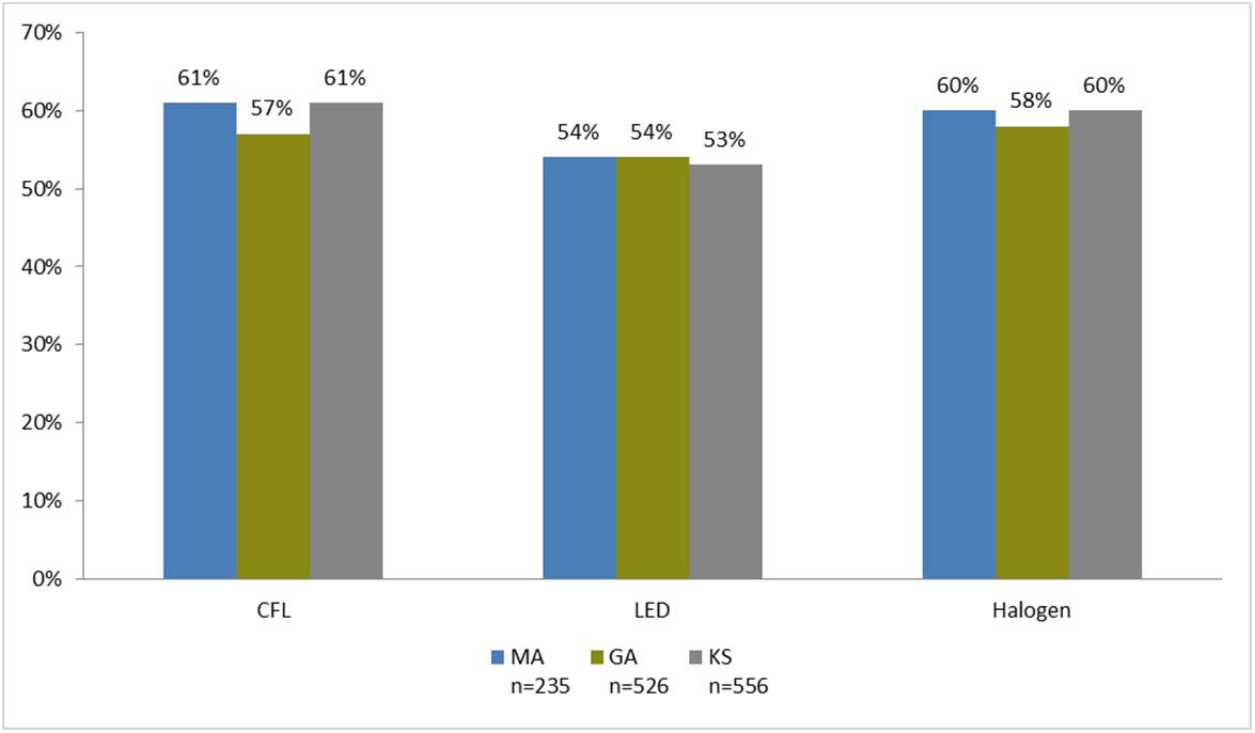
Bulb Type	Overall	High CFL Users	Low CFL Users
Sample size	*940*	*392*	*548*
CFLs	65%	92%	48%*
LED	54%	63%	49%*
Halogen	59%	64%	56%*

Base: All respondents.
*Significantly different from High CFL Users at the 90% confidence level.

Exploring bulb familiarity in the different areas that were surveyed reveals that respondents in Massachusetts and Kansas had the highest proportion of familiarity with CFLs. Sixty-one percent of the phone-only, non-incentive respondents in Massachusetts reported being somewhat or very familiar with CFLs. This was the same proportion as was reported in Kansas and slightly higher than the 57% reported in Georgia (see Figure 9). These overall results for Massachusetts and Kansas are significantly higher than was reported in Georgia. Familiarity with LEDs was comparable in all three areas; the same is true for familiarity with halogens, although greater proportions of respondents indicated being more familiar with halogens than with LEDs.

users." The analysis from the Winter 2012 Consumer Survey previously defined these respective groups as "Expert" and "Novice."

Figure 9: Familiarity with Energy-Savings Bulb Type by Region



Base: For GA and KS, the base includes all respondents. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.
CFL familiarity in KS was higher than GA at the 90% confidence level.

As a further assessment of energy-saving bulb awareness and familiarity, respondents who were somewhat or very familiar with both CFLs and halogens were asked which bulb type used less energy to produce light. The majority of Spring 2014 respondents (66%), correctly noted that CFLs use less energy than halogens (Table 13), indicating, as did the similar results in previous surveys, that for most respondents their knowledge of energy-saving bulb types goes beyond simple awareness of the bulbs' existence. Still, it is worth noting that one out of three respondents were incorrect in their judgments regarding relative energy use of CFLs and halogens or simply stated that they did not know.

When looking at high CFL users versus low CFL users, there appeared to be an association between level of CFL use and knowledge about the relative energy use of CFLs versus halogens. As shown in Table 13, compared to the overall sample (66%), high CFL users were more likely than low CFL users to identify CFLs as using less energy (75% versus 56% respectively). In addition, high CFL users were significantly less likely than low CFL users to indicate not knowing which bulb uses less energy (8% versus 16%). These results suggest that respondents using more CFLs are more knowledgeable about the relative energy use of CFLs versus halogens.

Table 13: Respondents' Judgments about Relative Energy Use by Level of CFL Use

Which bulb uses less energy	Overall	High CFL Users	Low CFL Users
Sample size	*435*	*193*	*242*
CFLs use less energy	66%	75%	56%*
Halogens use less energy	11%	10%	12%
They use about the same	11%	7%	15%*
Don't know/refused	12%	8%	16%*

Base: Respondents who were somewhat or very familiar with both CFL and halogen bulbs.
*Significantly different from High CFL Users at the 90% confidence level.

Respondents' answers regarding relative energy use were consistent across the three regions. In Massachusetts and in the two comparison areas, the majority of respondents correctly selected the option that CFLs use less energy than halogens (Table 14). Respondents in Massachusetts had the highest proportion of correct responses (67%), followed by 63% in Georgia and 60% in Kansas.

Table 14: Respondents' Judgments about Relative Energy Use by Region

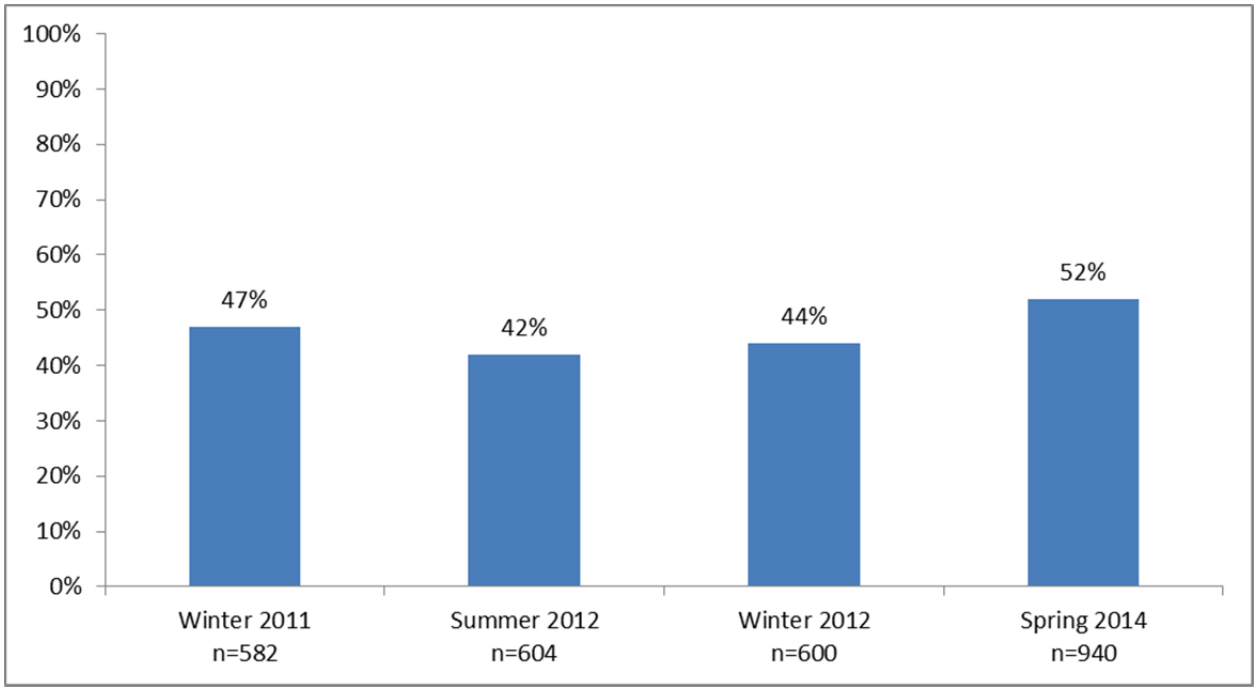
Which bulb uses less energy?	MA	GA	KS
Sample size	*105*	*197*	*233*
CFLs use less energy	67%	63%	60%
Halogens use less energy	13%	13%	12%
They use about the same	11%	14%	13%
Don't know/refused	9%	10%	15%

Base: Respondents who were somewhat or very familiar with both CFLs and halogens bulbs. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.

Awareness of EISA

The Team asked respondents a series of questions about their awareness of EISA. In addition to assessing their awareness of the law, these questions were intended to gauge their usage of bulbs phased out by the law and consumers' likelihood of continuing to do so as long as they are available. Fifty-two percent of Spring 2014 respondents noted that they had heard about the EISA legislation; this is a significant increase from Winter 2012 and previous survey waves (Figure 10). While the Spring 2014 results for awareness of EISA are higher than in prior survey waves, it is still worth noting that a considerable proportion of consumers are still unaware of this legislation well into the third year of its phase-in.

Figure 10: Awareness of EISA Law, 2011-2014



Base: All respondents.
Spring 2014 is significantly different from all other years at the 90% confidence level.

EISA awareness differed significantly by self-reported CFL use but it is not clear which preceded the other—that is, whether greater use of CFLs leads to greater awareness of EISA or if being more in tune with this law leads to greater use. Compared to the 52% of respondents who had heard about EISA legislation overall, awareness was 64% among high CFL users and 44% among low CFL users (Table 15). As with knowledge of relative energy use, the results suggest that higher levels of CFL use were also associated with being more informed about changes in the lighting market.[21] Similarly, web respondents also exhibited greater awareness of EISA, which is in keeping with their higher levels of awareness of LEDs and CFLs, suggesting that, like high CFL users, they are more in tune with the changes in the lighting market.

Table 15: Awareness of EISA Law by Level of CFL Use

Have heard about EISA law	Sample Size	Percentage
Yes	940	52%
High CFL Users	392	64%
Low CFL Users	548	44%*
Phone Respondents	731	49%
Web Respondents	209	64%*

Respondents in Georgia and Kansas were also asked if they were aware of EISA. Consumers in Kansas were most likely to report being aware of the law. Nearly sixty percent of respondents in Kansas stated that they had heard of EISA, compared to 48% in Massachusetts and 47% in Georgia (Table 16).

Table 16: Awareness of EISA Law by Region

Have heard about EISA law	MA	GA	KS
Sample size	*235*	*526*	*556*
Yes	48%	47%	59%*

Base: All respondents. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.
* Significantly different from MA and GA at the 90% confidence level.

[21] Results also indicate that CFL familiarity and EISA awareness are strongly correlated, which is consistent with the high correlation of CFL use and EISA awareness since high CFL users reported higher levels of familiarity with this bulb.

Use of Various Lighting Technologies

The consumer survey asked respondents about their past and current uses of various lighting technologies. Asking these questions in each survey wave served three purposes. First, in the Winter 2011 survey they established the types of bulbs customers self-reported using just prior to the start of the EISA implementation period; this allowed a comparison to those self-reported in use after the legislation had gone into effect (the two 2012 samples and the current Spring 2014 sample). Second, they provided insight into why customers choose to use or not to use certain types of lighting products as well as how they used the products they did have installed, and if these indicators had changed over the course of the first year of EISA implementation. Finally, the questions helped determine which respondents had the knowledge and experience necessary to answer more in-depth questions about bulb purchase habits.

Incandescent Bulb Use

Due to the phased aspect of EISA, the Team has been using the successive waves of the consumer survey to track customer use and purchase of incandescent bulbs that would be subject to the current EISA regulations. Nearly three out of four respondents (73%) indicated that they use incandescents, of any wattage, in their homes.[22] Consumers' self-reported use of incandescents was substantially lower than was confirmed through the 2014 on-site study, which revealed that 97% of homes had at least one incandescent installed. The on-site report does not compare the self-reported *number* installed with the actual number installed, as the Consumer Survey asked about bulb use by groups rather than a point estimate. However, the on-site report does look at self-reported and actual penetration and bulb use (grouped) for the respondents who participated in the on-site study.[23]

Table 17: Incandescent Bulbs Installed in Home

Any incandescent bulbs installed in home?	Overall
Sample size	*940*
Yes	73%
No	21%
Don't know/refused	6%

Base: All respondents.

[22] While previous waves also asked about incandescent bulb use, they did so in a different manner, making direct comparisons over time inappropriate. The team changed the questions in order to reduce the survey length and limit respondent burden.

[23] So as not to be redundant in reporting, the Team does not repeat the results here but directs the reader to the on-site study for more details. Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

Respondents who did not use any incandescents were asked why this was so. As Table 18 shows, the most common reasons respondents cited for not using incandescents bulbs tended to center around energy use and energy efficiency. In particular, respondents noted a conscious choice to use CFLs (named specifically) or more efficient lighting (named generally) (28%), that incandescent bulbs use too much energy (25%), that the respondent was switching over to energy efficient bulbs (18%), or to save on energy costs (11%). In short, 85% of the responses given related to energy costs or energy efficiency.[24] The other common response was that incandescents did not last as long (12%). Future tracking will have to clarify if this response is the result of EISA, of education about and availability of efficient lighting, or of the varying ways in which households use different wattage bulbs.

Table 18: Reasons Incandescent Bulbs Not Installed in Home (Most Common Responses)

Reasons (Multiple Response)	Overall
Sample size	*184*
I use CFLs/halogens/efficient lighting	28%
Incandescents use too much energy	25%
Switching over to energy efficient bulbs	18%
Incandescents don't last as long	12%
To save on energy costs	11%

Base: Respondents who do not currently use incandescent bulbs in their homes.

CFL Bulb Use and Satisfaction

The survey also explored historic and current self-reported CFL use, comparing the results to those from 2009 onward.[25] In the current survey, 62% of respondents reported that they have had CFLs installed in their homes at some point, which is roughly the same as was indicated in the previous three survey waves, but significantly lower than 2010 and 2009 (Figure 11). Note that, as suggested in earlier reports, it appears that the 2010 sample was an outlier in terms of self-reported CFL use.

The consumer survey also asked respondents whether they currently use any CFLs in their home. In the current sample, 57% self-reported having CFLs currently installed, which is fairly comparable with results from Winter 2012, Summer 2012, and Winter 2011. The on-site study revealed higher levels of CFL use; Ninety-six percent of households had at least one CFL.[26]

[24] For additional responses and percentages, see Table B-.

[25] The analysis assumes that all respondents not aware of or very familiar with CFLs (and similarly for LEDs below) do not use them. If they are not aware of a product, we cannot ask them detailed questions about its use. However, the Team understands that some of these households in fact use CFLs and LEDs and explore the issue in the on-site saturation study.

[26] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

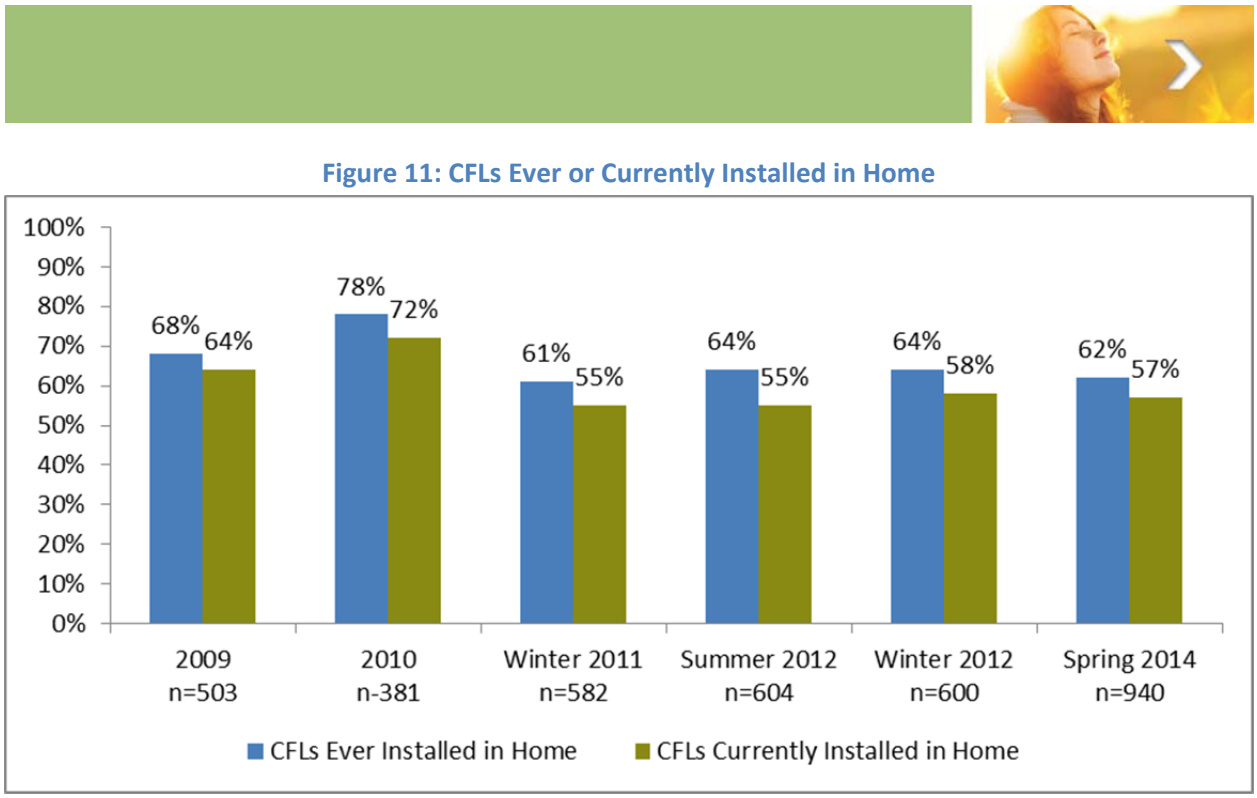


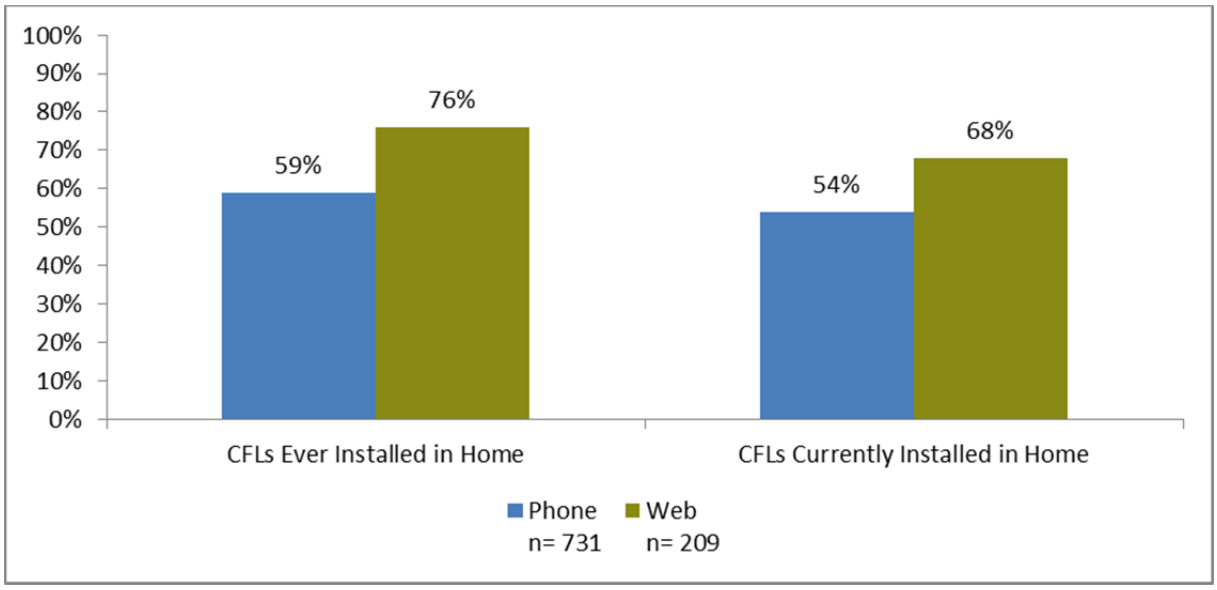
Figure 11: CFLs Ever or Currently Installed in Home

Base: All respondents.

Spring 2014 is significantly different from 2009 and 2010 at the 90% confidence level.

Examining CFL use by survey completion group reveals that web respondents were significantly more likely to report ever or currently using CFLs (Figure 12). Sixty-eight percent of web respondents indicated that they currently use CFLs, and 76% reported that they ever used CFLs. In comparison, a smaller proportion of telephone respondents stated that they currently (54%) or ever (59%) used these bulbs.[27]

Figure 12: CFL Use by Survey Completion Group



Base: All respondents.
Web respondents are significantly different from phone respondents at the 90% confidence level.

Among the phone-only, no incentive sample for the Massachusetts consumer survey, 54%reported currently using CFLs in Massachusetts is roughly the same proportion of consumers in Georgia (56%) and lower than in Kansas (60%).[28] The comparison area survey results also show that, of the three areas, respondents in Massachusetts and Kansas were significantly more likely to have cited greater numbers of CFLs installed in their homes than individuals in Georgia (see Figure **13**). Forty-nine percent of respondents in Massachusetts and 43% in Kansas compared to 35% in Georgia indicated that they have ten or more CFLs installed in their homes.[29] The on-site saturation study has also identified high use of CFLs in Kansas (88% CFL penetration), as documented and discussed in detail in that report.[30]

[27] For the full range of responses and percentages, see Table E-5 and Table E-6.

[28] The proportion of the phone-only, no incentive sample who reported using CFLs was 54% compared to 57% of the overall sample as reported above.

[29] Unlike other comparison area data, which were weighted to adjust for local demographic areas, specific data for CFLs use (reported here) and LED use (presented later) were weighted to make Georgia and Kansas to be consistent with the demographic characteristics of Massachusetts.

[30] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

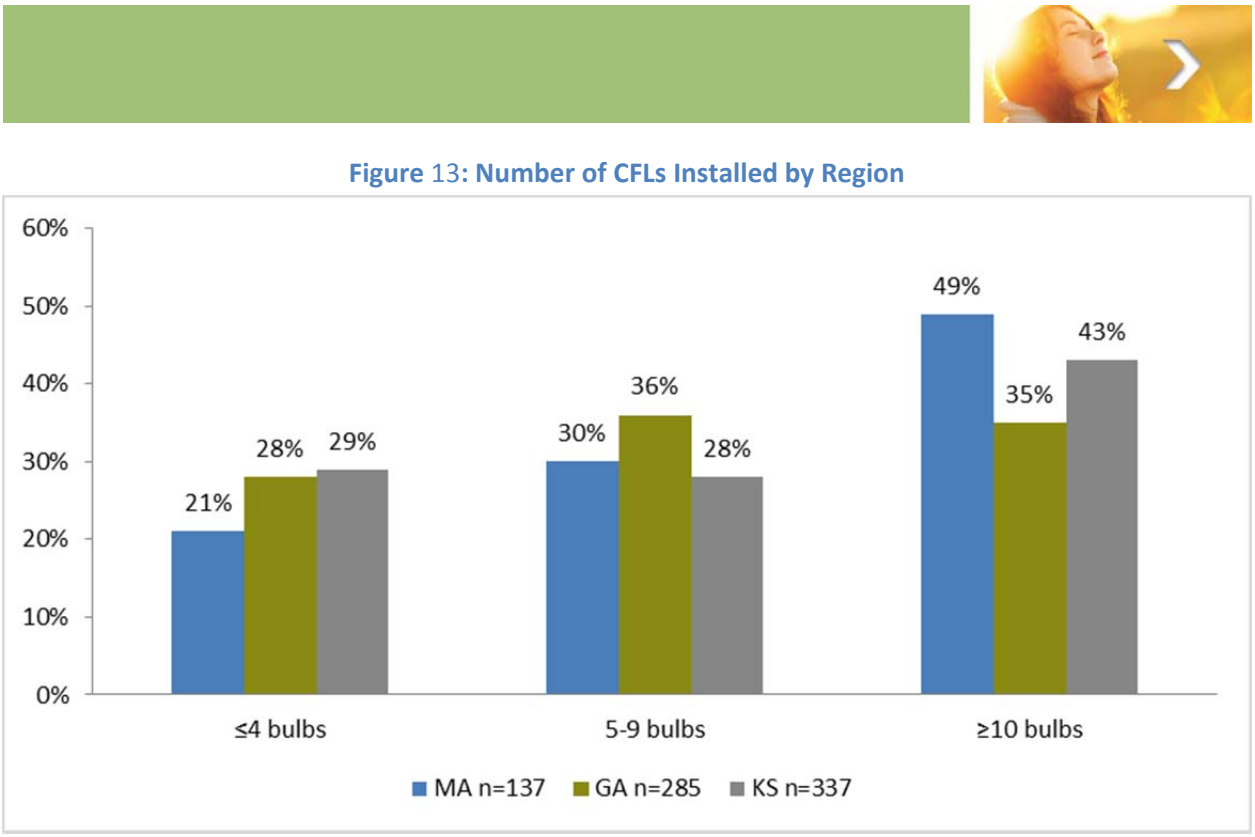


Figure 13: Number of CFLs Installed by Region

Base: Respondents who said that they have CFLs installed. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.
The percentage of respondents reporting ≥ 10 CFL bulbs in MA and KS is significantly different from GA at the 90% confidence level.
The percentage of respondents reporting 5-9 bulbs in GA is significantly different from KS at the 90% confidence level.
The percentage of respondents reporting ≤4 CFL bulbs in MA is significantly different from KS at the 90% confidence level.

Through the survey, the Team explored additional information from respondents in Massachusetts about households using CFLs, including why certain households stopped using CFLs, whether any bulbs have burned out over the past year, and the type of bulb used to replace the burned out CFLs. The purpose of this information was to help understand if CFLs replacing other CFLs helps to explain why CFL socket saturation has not been increasing at expected rates and how often consumers are replacing CFLs with LEDs. Forty-two percent of respondents stated that a CFL had burned out in the past year. Three out of four of these respondents, indicated that they replaced that CFL with another CFL lending credence to the argument that CFLs have now aged to the point that many are burning out and that consumers are largely replacing them with other CFLs. This would help to explain the slow increase in saturation despite continued strong sales of program-supported CFLs and LEDs. In addition, eleven percent replaced the burned out CFL with an LED (Table 19). The on-site saturation study panel visits explore this issue in more detail, basing the analysis on a comparison of actual bulbs of all types installed

in 2013 and those installed in the same homes in 2014, confirming relatively high rates of CFL to CFL and CFL to LED replacements.[31]

Table 19: Type of Bulb Used to Replace Burned out CFL

Bulb Type	Overall
Sample size	*270*
Another CFL	75%
An LED	11%
An incandescent bulb	9%
A halogen bulb	1%
Did not replace it/removed the lamp	3%
Other	1%
Don't know	1%

Base: Respondents who had CFLs burned out over the past year.

The very few respondents who used to use CFLs but no longer do were asked to explain why. Among the 45 respondents (5% of all respondents or 8% of those who have ever used CFLs), the most common reasons include disliking the bulb's quality/type (23%), the bulb not being bright enough (19%), the respondent upgrading to LEDs/other efficient lighting choices (18%), and mercury/disposal issues (13%).[32]

Overall, the majority of individuals who use CFLs reported that they are satisfied with these bulbs. Nearly three out of four respondents indicated that they are somewhat or very satisfied with the CFLs in their homes. While satisfaction remains fairly high, Figure 14 shows that this is the lowest level compared to previous surveys (72%), but still within the ballpark of recent observations. Examining somewhat and very satisfied separately reveals that the Spring 2014 respondents had relatively higher percentages of somewhat satisfied ratings and much lower very satisfied ones; while the difference in somewhat satisfied ratings from Winter 2012 to Spring 2014 is not statistically significant, the comparison for very satisfied ratings is. The survey results do not provide any definitive evidence for the reasons underlying the recent decrease in satisfaction—nor the earlier decrease between 2010 and 2011. However, a number of hypotheses exist including, but certainly not limited to, the following:

- Earlier adopters liked CFLs but as consumer usage increased beyond early adopters a greater proportion of consumers found reasons to be dissatisfied with the products, particularly among those who might perceive that they are being "forced" to use CFLs because of EISA. This possible trend reflects the likelihood that early adopters had different motivations for buying CFLs when

[31] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

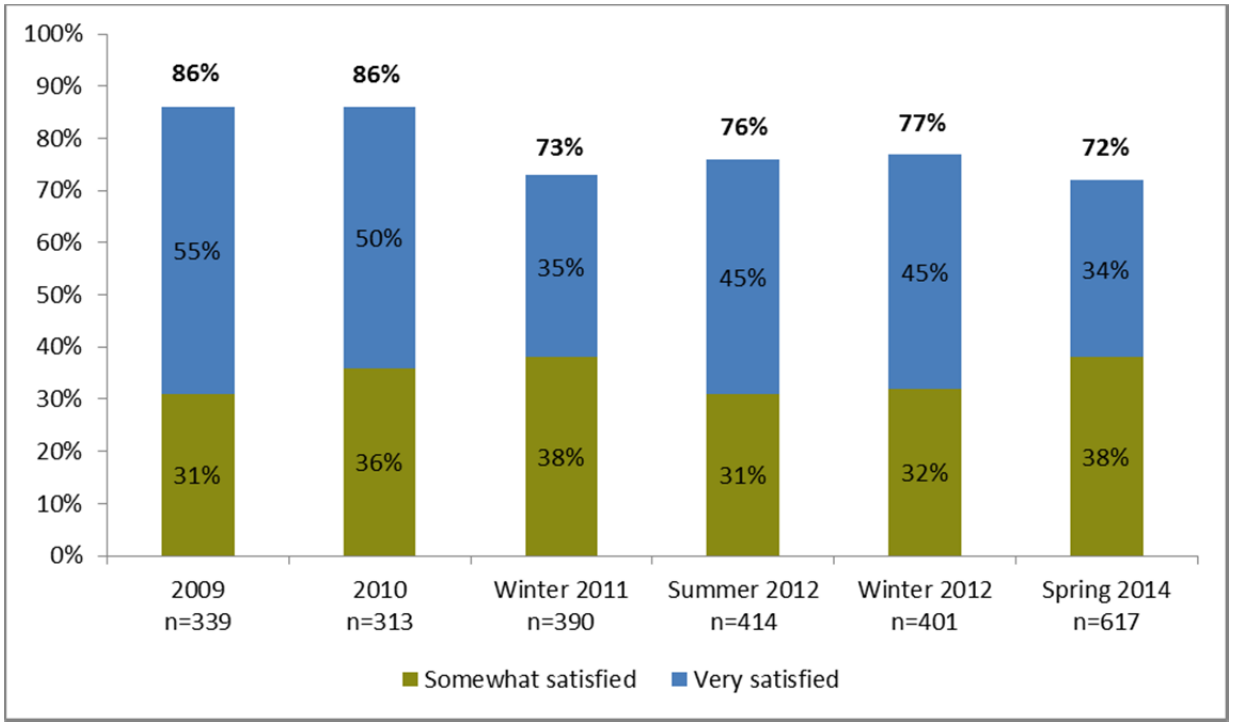
[32] For additional responses and percentages, see Table B-6.

they first came out, and the products met their expectations for fulfilling these motivations, hence higher levels of satisfaction.

- As CFL users installed the bulbs into a greater variety of sockets, they were not satisfied with the bulb's performance in certain applications.
- LEDs improve upon some of the common complaints about CFLs (e.g., slow to brighten, dimmability, mercury content); as consumers learn more about LEDs their *relative* satisfaction with CFLs may have decreased.

Future surveys could attempt to explore these issues, probing more deeply into the reasons that underlie satisfaction rating for CFLs and LEDs.

Figure 14: Level of Satisfaction with CFLs, 2009-2014



Base: Respondents who use CFLs.
Spring 2014 (overall satisfaction) is significantly different from 2009, 2010, Summer 2012, and Winter 2012 at the 90% confidence level.

Considering levels of CFL satisfaction by number of CFLs installed in respondents' homes sheds further light on this indicator. Not surprisingly, those who are more satisfied with CFLs have more CFLs and those less satisfied with them have fewer. Respondents using more CFLs indicated that they were quite satisfied with the bulbs, with 81% being either "very satisfied" or "somewhat satisfied." A significantly smaller percent (57%)—yet still a majority—of low CFL users indicated that they were satisfied (Table 20). Similarly, while levels of "very dissatisfied" and "somewhat dissatisfied" of all CFL users were at 18%, only 12% of high CFL users fell in this category, as opposed to 30% of low CFL users, another

significant difference. Taken as a whole, the differences in satisfaction between high versus low CFL users are observed at both ends of the scale.

Table 20: Satisfaction with Standard CFLs by Level of CFL Use

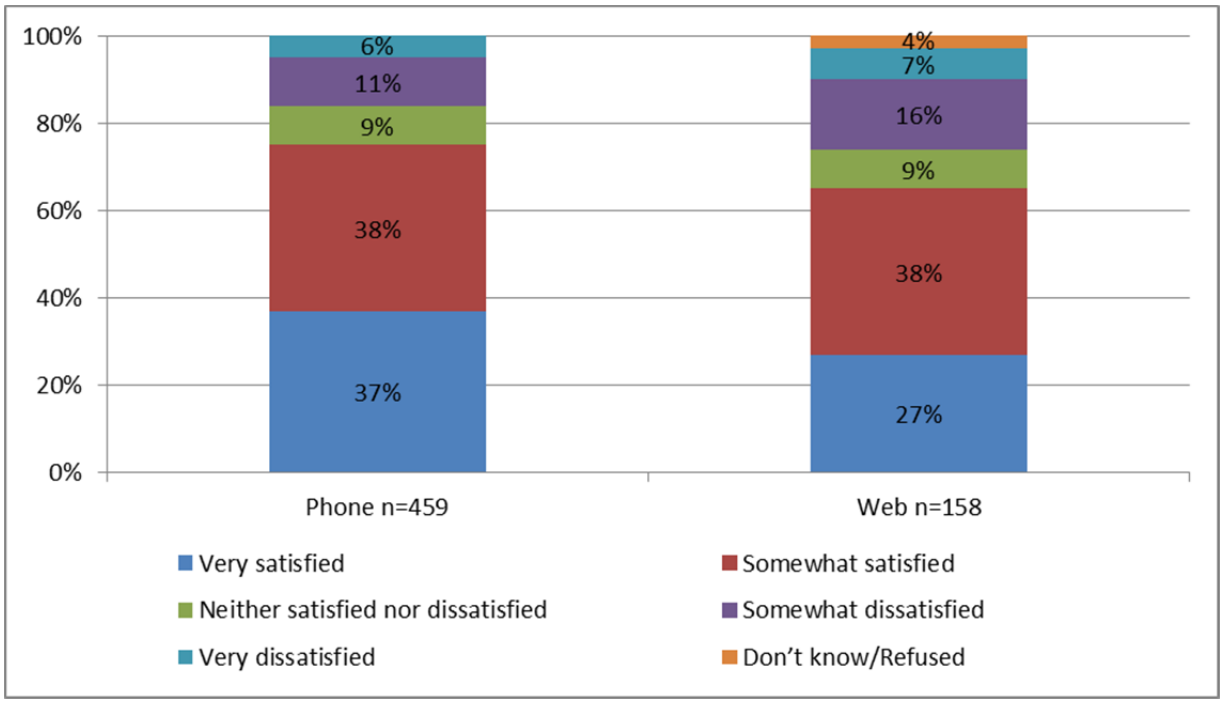
Level of satisfaction	Overall	High CFL Users	Low CFL Users
Sample size	*617*	*392*	*225*
Very satisfied	34%	39%	26%*
Somewhat satisfied	38%	42%	31%*
Neither satisfied nor dissatisfied	9%	7%	11%
Somewhat dissatisfied	12%	9%	18%*
Very dissatisfied	6%	3%	12%*
Don't know/Refused	<1%	0%	2%*

Base: Respondents who said they had ever used a CFL on the interior or exterior of home.
*Significantly different from High CFL User at the 90% confidence level.

While not as strongly different as high and low CFL users, web and phone respondents also demonstrated differences in CFL satisfaction, with web respondents being less likely than phone respondents to indicate that they were "very satisfied" with CFLs (27% vs. 37%, respectively) and equally likely to say they were "somewhat satisfied" with CFLs (38% for each)(Figure 15). Given the knowledge that web respondents appear to be more savvy on lighting issues,[33] this finding is consistent with the hypotheses presented above for possible decreases in CFL satisfaction.

[33] As evidenced by previous results on energy-efficient bulb awareness, familiarity, and use as well as awareness of EISA.

Figure 15: Satisfaction with CFLs by Completion Group



Base: Respondents using CFLs.
"Very satisfied" web respondents are significantly different from phone respondents at the 90% confidence level.

To understand consumers' preferences when it comes to CFL lighting, we asked respondents what they like about these bulbs. The top responses include saving energy (40%) and the long bulb life/durability (33%). Although just 11% of all respondents stated that they did not like anything about CFLs, low CFL users were more than three times as likely as high CFL users to offer this response (21% vs. 6% respectively). (Table 21).[34]

Table 21: What Respondents Like about CFLs (Most Common Responses)

What do you like about compact fluorescent light bulbs?	Overall	High CFL Users	Low CFL Users
Sample size (n)	*616***	*392*	*224*
Save energy	40%	48%	26%*
Long bulb life/durable	33%	36%	29%*
Desired level of brightness	15%	13%	17%
Save money on bills	13%	17%	8%*
Color and/or appearance of light	9%	10%	7%
Do not like anything about them	11%	6%	20%*

Base: Respondents who use CFLs.
*Significantly different from High CFL User at the 90% confidence level.
**Excludes one web respondent with an unusable response.

[34] For additional responses and percentages, see Table B-7.

Turning to what respondents who use CFLs did not like about these bulbs primarily reveals specific issues with the bulbs' characteristics and quality, such as slow to turn on (29%), unattractive shape or does not fit (15%), not bright enough (12%), and mercury content/disposal issues (12%).[35] Importantly—and similar to the Winter 2012 survey (not shown)—the "dislikes" about CFLs showed very little variation between high CFL users and low CFL users. In fact, roughly one in four respondents stated that they *do not dislike* anything about CFLs; unexpectedly, this proportion was *comparable across all households despite the number of CFLs installed*. The only significant difference between the two groups of users was that low CFL users disliked the shape of the bulbs or their fit in fixtures more than did high CFL users. It should be noted that while there are many characteristics of CFLs that respondents do not like, respondents who use CFLs—particularly those who use more of them—are able to overlook these characteristics in order to save energy.[36] Future research might explore in greater depth the population of consumers who use CFLs to shed light on why some are willing to overlook their dislike of some of the characteristics and use CFLs in large numbers while for others the perceived drawbacks remain a barrier to greater use. Such information could help program education and marketing efforts.

Table 22: What Respondents Do Not Like about CFLs (Most Common Responses)

Is there anything that you do NOT like about compact fluorescent light bulbs?	Overall	High CFL Users	Low CFL Users
Sample size	*616***	*392*	*224*
Slow to turn on	29%	31%	26%
Do not dislike anything about them	26%	25%	27%
Shape unattractive or doesn't fit	15%	13%	19%*
Not bright enough	12%	12%	11%
Mercury/disposal issues	12%	12%	11%
Poor light color	10%	11%	8%

Base: Respondents who use CFLs.
*Significantly different from High CFL User at the 90% confidence level.
**Excludes one web respondent with an unusable response.

LED Bulb Use and Satisfaction

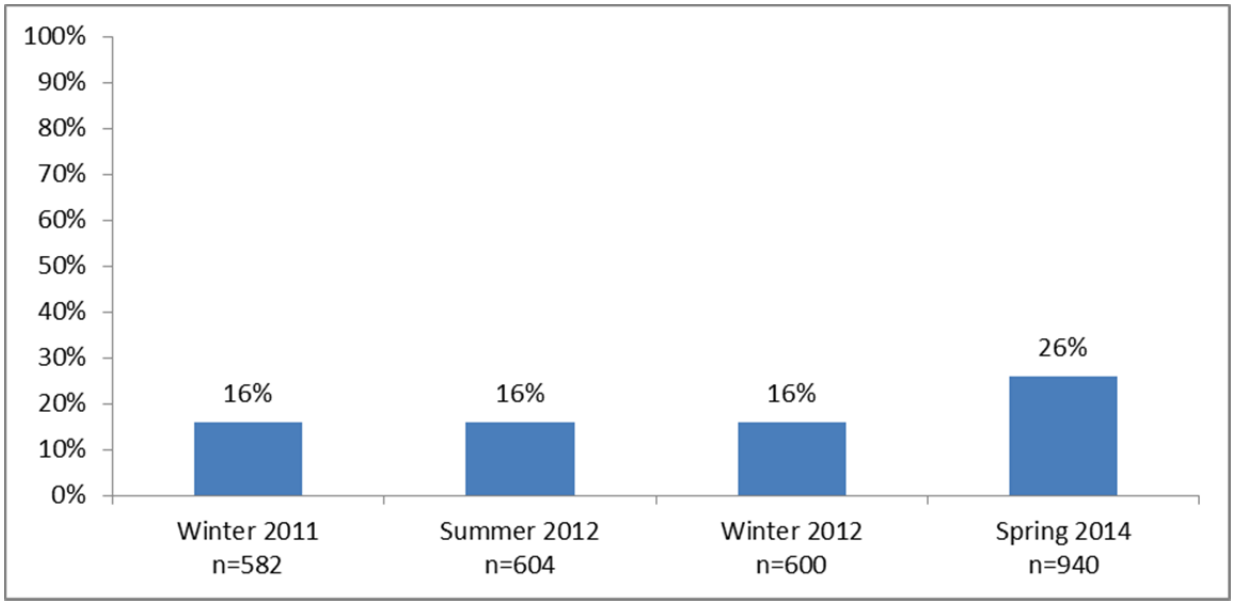
The Winter 2011 survey established baseline self-reported use of the types of screw-in LEDs meant to replace incandescent bulbs. Rates of screw-in LED bulb installation remained level at 16% of homes between Winter 2011 and Winter 2012 (Figure 16). The Spring 2014 survey revealed that 26% of homes used LED bulbs, which is statistically higher than prior waves. The self-reported nature of the consumer survey often draws the accuracy of these estimates of use into question. While the details are reported under separate cover, the 2014 on-site study confirms a similarly large increase in LED penetration, with

[35] Among the top responses, there are three categories (not bright enough, poor light color, and poor light output/quality) that are similar, but garnered enough unique responses to be kept as separate categories.

[36] For additional responses and percentages, see Table B-8.

the percentage of households using at least one medium-screw-base LED doubling from 11% in 2013 to 22% in 2014.[37]

Figure 16: LED Screw-In Bulbs Installed in Home



Base: All respondents.
Spring 2014 is significantly different from all prior years at the 90% confidence level.

Looking at LED use by level of CFL use and survey completion group shows significant differences between telephone and web respondents but not between high and low CFL users (Table 23). One-third of web respondents (33%) compared to one-fourth of telephone respondents (25%) reported that they currently have at least one LED bulb installed in their homes. The Team believes it important to explain that, while web respondents exhibited higher self-reported use of both CFLs and LEDs, their self-reported use of incandescent bulbs did not differ (75% vs. 72% respectively). Therefore, the web respondents seem more predisposed than phone respondents to using energy-efficient lighting.

[37] Note that medium screw-base bulbs include A-line as well as certain types of flood and reflector bulbs, particularly those designed for recessed fixtures. Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

Table 23: LED Use by Level of CFL Use and Survey Completion Group

	Sample Size	Percent
Yes	940	26%
High CFL Users	392	27%
Low CFL Users	548	26%
Phone Respondents	791	25%
Web Respondents	209	33%*

Base: All respondents.
* Significantly different from phone respondents at the 90% confidence level.

The results from the Comparison Area Survey shows that respondents in both Georgia and Kansas were significantly more likely to self-report having LEDs installed in their homes—a finding contradicted by the verification performed during the on-site visits. Thirty-six percent of respondents in Georgia and thirty-two percent in Kansas compared to 25% in Massachusetts stated that they have LED bulbs installed (Table 24). The on-site study showed, however, that among the three areas, LED penetration was actually highest in Massachusetts (23%) followed by Kansas (18%), and that households in Georgia had the lowest LED use (10%).[38] It is worth noting that self-reported use and actual use were most similar in Massachusetts, which may reflect the efforts of the PAs to make these bulbs available to consumers and provide education about them.

Table 24: LED Screw-In Bulbs Installed in Home by Region

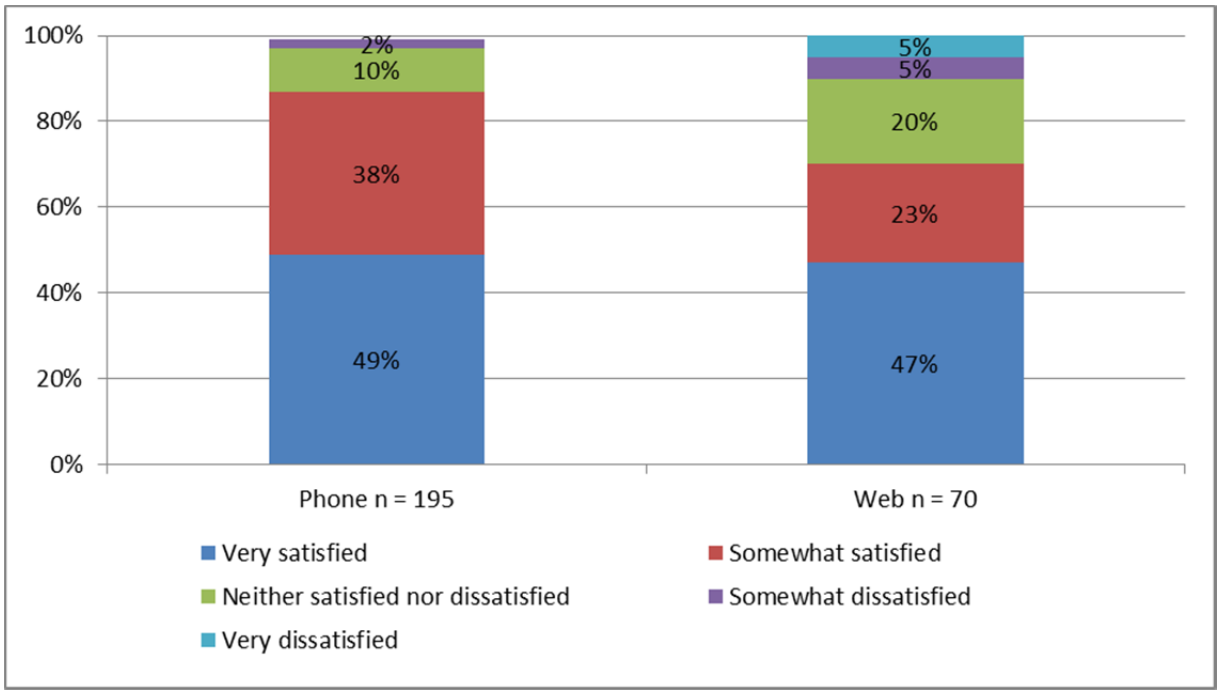
Any LED bulbs currently installed?	MA	GA	KS
Sample size	*235*	*401*	*407*
Yes	*25%*	36%*	32%*

Base: All respondents. For MA, the sample only includes respondents who completed the survey by telephone and were not offered an incentive.
*Significantly different from MA at the 90% confidence level.

Overall, the majority of those who use LED bulbs are satisfied with them. Eight out of ten respondents (84%) said that they were somewhat or very satisfied with LEDs (Figure 17). Web and phone respondents exhibited interesting contrasts in satisfaction. While just under one-half of the respondents in both groups said they were "very satisfied" with LEDs, the two groups diverged in terms of whether they said they were "somewhat satisfied" or "neither satisfied or dissatisfied," suggesting that at least some web respondents have not made up their minds about LEDs yet. There were no notable differences in LED satisfaction between low CFL users and high CFL users.

[38] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

Figure 17: Satisfaction with LEDs by Completion Group

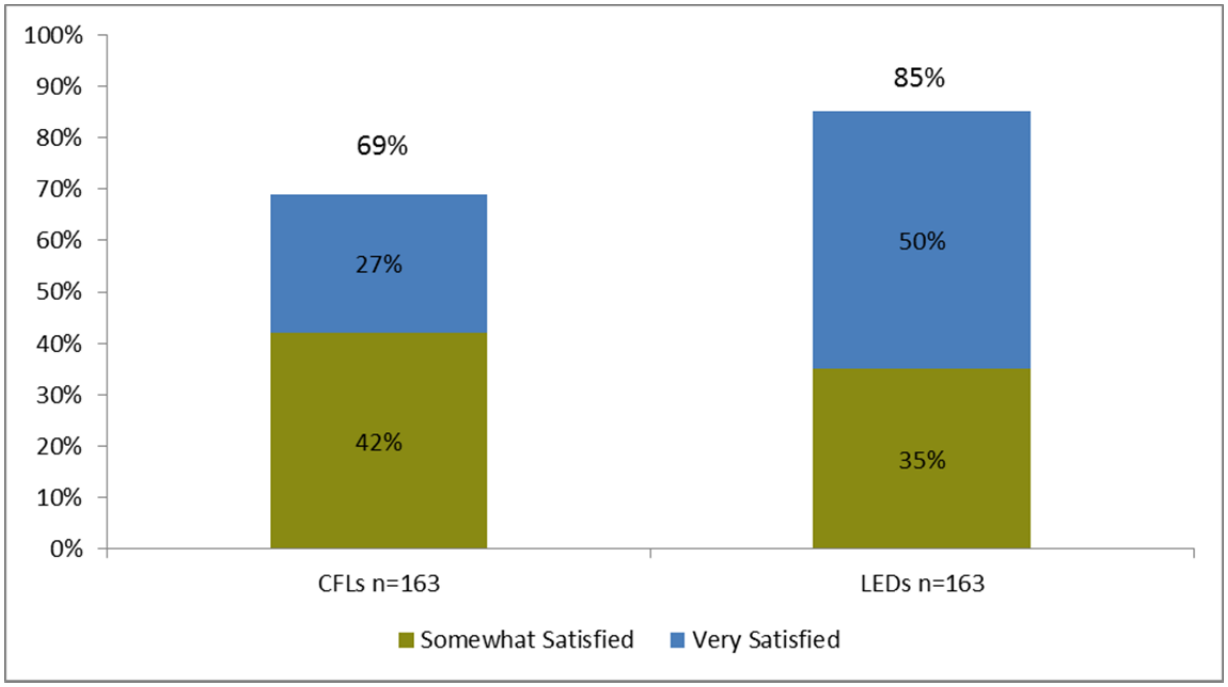


Base: Respondents using LEDs.

"Some satisfied" and "neither satisfied nor dissatisfied" web respondents are significantly different from phone respondents at the 90% confidence level. No phone respondents said they were "very dissatisfied" with LEDs.

When we examine respondents' satisfaction ratings among those who use both CFLs and LEDs, we see even more evidence that consumers prefer LED bulbs. As Figure 18 shows, overall satisfaction with LEDs is 85% compared to 69% for CFLs. Although the team cannot draw the conclusion definitively, it may be that the perceived decrease in CFL satisfaction (see Figure 14) could in part reflect a relative comparison to LEDs. That is, such respondents may have been satisfied with CFLs until they started using LEDs and decided they were the superior technology; in turn, respondents became less satisfied with CFLs. As mentioned earlier, the decrease in CFL satisfaction could also have other roots, such as later adopters being less satisfied or households disliking CFLs for specific applications as they expand the types of sockets in which they install the products. Likewise, it could also be that LED satisfaction is high precisely because early adopters are using them and doing so in a limited number of applications. Again, future research should explore these issues in more details.

Figure 18: Satisfaction with CFLs and LEDs among Users of Both Bulb Types



Recent Purchases of Various Types of Light Bulbs

In light of the phase-out of incandescent bulbs due to EISA, the 2014 survey asked respondents about their recent purchases of various types of light bulbs. More than one-third of these respondents (36%) recalled purchasing some type of light bulb in the past three months.[39,40] As shown in Table 25, a majority of respondents who had purchased light bulbs in the past three months purchased incandescent (or "regular") light bulbs (56%). In addition, of those who had bought bulbs in the last three months and were aware of CFLs, more than one-third (36%) had purchased CFLs that fit into regular sockets; roughly one-quarter of respondents who reported purchasing bulbs and being aware of LEDs (24%) bought LEDs that fit into regular sockets.[41]

Table 25: Type of Bulb Purchased in the Past Three Months (Most Common Responses)

Type of Bulb (Multiple Response, Prompted)	Overall	Subset
Sample size	*940*	*353*
Incandescent or "regular" light bulbs	20%	56%
CFLs that screw into regular light sockets	14%	36%
LEDs that screw into regular light sockets	9%	26%
Halogen bulbs that screw into regular light sockets	5%	15%
Pin-based fluorescent tubes that can only be used in fluorescent light fixtures	4%	12%
Pin-based CFLs that can only be used in special light fixtures	2%	5%
Pin-based LEDs that can only be used in special light fixtures	1%	4%

Base: Respondents who said they had purchased any light bulbs in the past three months and who were aware of each type of bulb.

In general, respondents reported that they most frequently purchased light bulbs at home improvement stores like Home Depot (38%), mass merchandise and discount department stores like Target or Walmart (20%), or grocery stores (14%). The other locations that respondents identified as where they most frequently purchase light bulbs are shown in Table 26. Note that the team predominantly asked this question for purposes related to the Residential Customer Profile study, so we did not ask respondents to differentiate where they purchased individual types of bulbs. However, examining the answers to this question with the responses regarding the type of bulbs bought in the past three months, reveals that respondents who bought efficient bulbs were slightly more likely than those who bought non-efficient bulbs to have shopped at home improvement (48% versus 38%) and mass merchandise or discount stores (20% versus 16%). Individuals who said that they bought non-efficient

[39] Due to the desire to shorten survey length and reduce respondent fatigue, the Spring 2014 survey adjusted the series of questions about recent lighting purchases. Therefore, the results presented here are not directly comparable to those from the previous three survey waves.

[40] For additional responses and percentages, see Table B-11.

[41] For additional responses and percentages, see Table B-12.

bulbs were more likely than those buying efficient ones to have bought bulbs from a grocery store/supermarket (16% versus 7%).

Table 26: Locations where Light Bulbs Most Often Purchased (Most Common Responses)

Type of Store	Respondents who Purchased Efficient Bulbs in the Past Three Months*	Respondents who Purchased Non-Efficient Bulbs in the Past Three Months**	All Respondents***
Sample size	*201*	*205*	*940*
Home improvement stores	48%	38%	38%
Mass merchandise or discount department store	17%	17%	20%
Grocery store/supermarket	7%	16%	14%
Hardware Store	12%	11%	10%
Drugstore	4%	5%	5%
Bargain store (e.g., Building 19, Dollar Store, Family Dollar)	4%	5%	5%
Warehouse store (e.g., BJ's, Costco, Sam's Club)	6%	3%	4%
Online	1%	2%	1%
Other	3%	3%	3%
Don't know/refused	1%	1%	<1

* Base: Respondents who had purchased CFLs, LEDs, or fluorescent bulbs in the past three months.
** Base: Respondents who had purchased incandescents or halogens in the past three months.
*** Base: All respondents, including those who did not purchase any bulbs in the past three months.

Key Lighting Concepts

The gradual phase-out of most incandescent bulbs will likely change the way that consumers shop for light bulbs. Instead of searching for 100-Watt, 75-Watt, or 60-Watt bulbs and their equivalents, consumers will instead be presented with labels and educational materials that reference lumens, color temperature, annual operating costs, and bulb life. The survey included multiple questions to gauge consumers' knowledge of key lighting concepts and what aspects of bulbs they currently consider when buying light bulbs.

Information Considered when Buying Light Bulbs

We asked consumers two questions about the type of information that they currently look for on bulb packaging when buying light bulbs. The first question was open-ended, allowing the respondent to name any information that came to mind, and the second asked whether they looked for each of a set of specific characteristics. For example, if a respondent had not mentioned "price" for the unprompted question, they were later asked if the price of the bulb is something that they look for on the bulb package. In Table 27 we report the percentage of the entire sample who gave each response unprompted, the percentage of the entire sample who gave each response only when prompted, and the overall percentage of the sample who gave each response either prompted or unprompted.[42]

The price of the bulb, its wattage, and its watt equivalence were the features most commonly looked for on bulb packaging, with 70% or more respondents reporting looking for each.[43] Thus, consumers still rely on wattage information to indicate the brightness of the bulb, using the wattage equivalence of incandescent bulbs—and not lumens—as their guide for purchasing energy-efficient bulbs. As only about one out of every four consumers (26%) specifically reported looking for lumens on bulb packaging, the PAs and their retail partners should continue their efforts at explaining the *term* "lumens." Further, the finding that less than one-half of consumers (41% total, 1% unprompted) reported looking for the lighting facts/energy facts label underscores the necessity of educational campaigns and point-of-sale information emphasizing the existence and importance of this label in helping consumers decide which bulbs to buy.

Respondents also indicated that aesthetic concerns (particularly the bulb shape and the color appearance of the light) were important features, with nearly 60% giving each response. Whereas the bulb shape can be perceived directly, color appearance needs to be described using terms such as "color temperature," "warm white" and "cool white." Yet only 2% of respondents reported looking for "color

[42] For additional responses and percentages, see Table C-.

[43] The question explicitly asked consumers about information on the package, but it is certainly true that the price if often listed only on the shelf and not the bulb packaging. Future survey efforts may want to think about the purpose of this question and consider whether a change in wording may be in order depending on what that purpose is.

temperature," indicating that in addition to "lumens," these terms should be emphasized in educational efforts.[44]

It is evident that energy efficiency is important to consumers; the majority of consumers reported looking for watt equivalency, bulb life, and/or the ENERGY STAR Label. This is an encouraging sign that energy-efficient bulbs are likely to play an increasingly important role in the lighting market.

Table 27: Information Looked for on Bulb Packaging (Most Common Responses)

Information on packaging (Multiple Response)	Unprompted Responses	Prompted Responses	Prompted and Unprompted Responses
Sample Size	*940*	*940*	*940*
Price	29%	49%	78%
Wattage	51%	23%	74%
Watt Equivalent	16%	55%	71%
Shape of bulb	3%	56%	59%
Bulb Life	13%	45%	58%
Color appearance of light	9%	47%	56%
ENERGY STAR Label	3%	50%	53%
Lighting facts/Energy facts label	1%	40%	41%
Dimming capabilities	1%	27%	28%
Lumens	7%	19%	26%
Color temperature	N/A	2	2%

Base: All respondents.

In an effort to understand what program-supported marketing and educational materials consumers notice when shopping for bulbs, we also asked respondents who had bought bulbs in the past three months whether they had seen in the store any signs, displays, or marketing material about lighting, and if so, what information they recalled being relayed. As shown in Table 28, respondents who were asked what information they had seen (comprising 12% of the entire sample) most frequently reported seeing displays of different light bulb types (31%), specifically comparing the light appearance (17%) and the energy use or bill savings (17%) of the bulbs. Only one out of ten of these respondents (9%) mentioned seeing explanations of lighting terms such as lumens, wattage, and color temperature.[45] Eight percent of respondents mentioned signs that noted the bulbs were a part of a "utility" or "energy-efficiency" program, while 2% mentioned MassSAVE in particular. In short, even though they usually do not remember the brand "MassSAVE," consumers do appear to be noticing displays that guide their lighting choices; many of these displays likely have a direct or indirect connection to the PAs' programs. Note that when calculated to represent all recent bulb purchasers, the percentages that noticed some form of

[44] The next section, Consumers' Understanding of Lumens and Color Temperature, explores consumers' understanding of these lighting terms in greater depth.

[45] For additional responses and percentages, see Table C-2.

signage or educational does not exceed 10%; this translates into fewer than 3% of the overall sample (n=940) noticing marketing or educational materials in the lighting aisle. While this is very low in proportion to the entire sample, it is consistent with respondents' answers regarding what they look for when shopping for light bulbs. Because consumers were most likely to report looking for the bulbs' price, wattage, or wattage equivalent, they likely were not keeping an eye out for marketing and education materials as was acknowledged in their responses to this question.

Table 28: Information Seen in Signs, Displays, or Marketing Material (Most Common Responses)

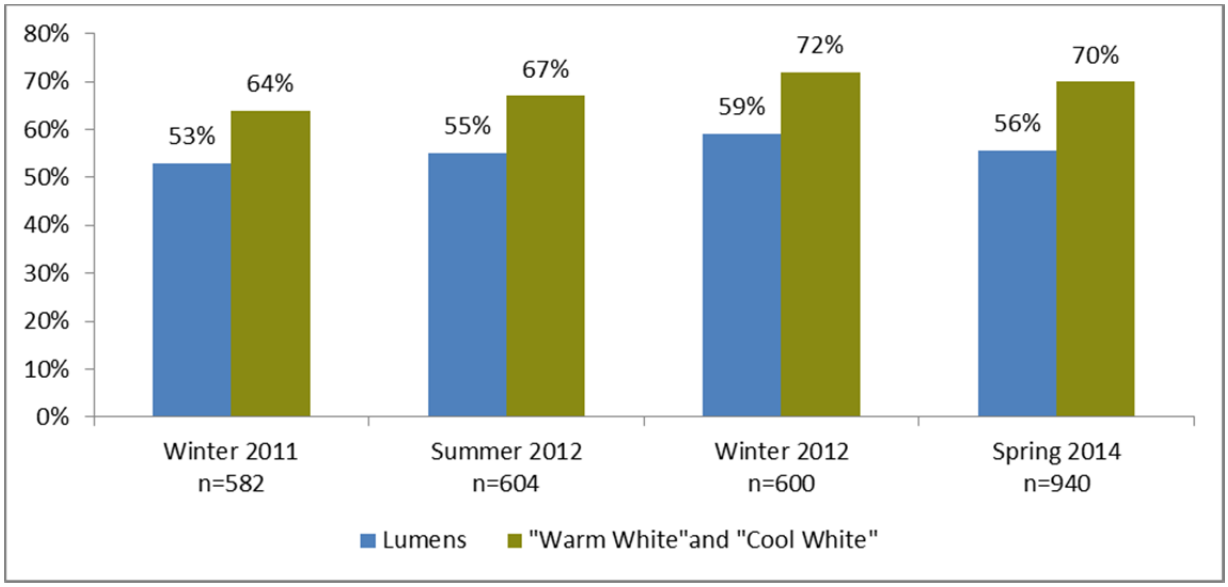
Information Recalled (Multiple Response)	Percent of Respondents who Saw Marketing Materials*	Percent of Respondents who Purchased Bulbs in Past Three Months**
Sample Size	*113*	*341*
Display different types of light bulbs	31%	9%
Compared light appearance between different bulb types	17%	5%
Compared energy use or savings of different light bulbs	17%	5%
Explained lighting terms like lumens, wattage, bulb color, Kelvin, color rendition, color temperature	6%	2%
Told me the bulb was part of a utility or energy-efficiency program (other than MassSAVE)	8%	2%
Told me the bulb was part of a MassSAVE Program	2%	1%

*Base: Respondents who purchased light bulbs in the past three months and recalled seeing marketing material for light bulbs.
**Base: Respondents who purchased light bulbs in the past three months

Consumers' Understanding of Lumens and Color Temperature

The survey included questions to assess respondents' knowledge of two key lighting concepts—lumens and color appearance. Slightly more than one-half of Spring 2014 respondents had seen or heard of "lumens" and 70% had seen or heard of "warm white" and "cool white" (both terms in relation to lighting). These percentages are similar to those seen in each of the three waves since Winter 2011 (Figure 19), suggesting that the success of educational campaigns geared at increasing consumer awareness of lighting terms in the past few years has been limited.

Figure 19: Whether Respondents Had Seen or Heard the Term "Lumens," "Warm White" and "Cool White" – 2011-2014



Base: All respondents.

We further explored consumers' awareness of lighting terms by examining whether it was associated with the level of CFL use. Comparing high CFL users to low CFL users reveals that high CFL users had more knowledge of lighting terms than did low CFL users. Nearly three-quarters of high CFL users (72%), but less than one-half of low CFL users (46%), had heard of "lumens;" additionally, more than eight out of ten high CFL users had heard of "warm white" and "cool white" (81%) versus six out of ten low CFL users (61%) who had heard of these terms (Table 29). The differences in awareness of both "lumens" and "warm/cool white" were statistically significant.

Several possible explanations exist for the association between CFL use and knowledge of lighting terms. First, general lighting knowledge might lead consumers to choose CFL bulbs, perhaps because they understand that they save energy and last longer compared to incandescents. Second, other underlying characteristics, such as a general focus on energy efficiency or a concern for the environment, could motivate consumers both to learn about lighting and to choose CFLs.[46] A third possibility is that experience with purchasing and using CFLs somehow influences consumers' lighting knowledge; for example, the packaging on CFL bulbs might better inform consumers about lighting terms than that on incandescent bulbs, or initial dissatisfaction with CFLs' light output and color quality might motivate CFL users to learn about lighting terms in order to optimize their lighting choices.

46 Differences in general educational attainment might be one of these general characteristics; as shown in Table F-11, higher levels of education were seen among high CFL users.

Table 29: Whether Respondents Had Seen or Heard the Term "Lumens," "Warm White" and "Cool White" by Level of CFL Use

Response	Lumens			"Warm White" and "Cool White"		
	Overall	High CFL Users	Low CFL Users	Overall	High CFL Users	Low CFL Users
Sample size	*940*	*392*	*548*	*940*	*392*	*548*
Yes	56%	72%	46%*	70%	81%	61%*

Base: All respondents.
*Significantly different from High CFL Users at the 90% confidence level.

We then asked those respondents who had seen or heard of the terms "lumens," "warm white," and "cool white" to define them. Table 30 shows that the majority of respondents familiar with the term lumens (66% of those asked or 37% of all 940 respondents) correctly understood that the term refers to light output or brightness. It is encouraging that only very few respondents (3%) confused lumens with watts, which might suggest a nascent understanding that bulbs that emit a given light output do not necessarily use the same amount of energy.[47]

Table 30: Understanding of the Term "Lumens" (Most Common Responses)

Respondents' understanding of "lumens" (Multiple Response)	Overall
Sample size	*574*
Light output or brightness/Amount of light	66%
The same as watts	3%
Don't know	14%

Base: Respondents who said they had seen or heard the term "lumens."

Compared with the "lumens," the terms "warm white" and "cool white" were less well understood by respondents who had heard the terms. About one-third of those asked (23% of all 940 respondents) correctly defined the terms as having to do with color appearance, whereas about one-half said that it referred to the brightness, or the softness/harshness, of the light (Table 31). Although some people might find different hues of white to be softer or harsher than others, this distinction is not quite what the terms actually mean. Consumers' tenuous understanding of color temperature presents an opportunity for educational campaigns to focus on promoting a better understanding of this concept.[48]

[47] For additional responses and percentages, see Table C-3.
[48] For additional responses and percentages, see Table C-4.

Table 31: Understanding of the Terms "Warm White" and "Cool White" (Most Common Responses)

Respondents' understanding of "warm white" and "cool white" – as in the color white (Multiple Response)	Total
Sample size	*642*
Brightness/Soft vs. harsh light	48%
Color appearance	35%
Relates to your eyes/how your eyes perceive the light	9%
Heat of the bulb	8%
Don't know	5%

Base: Respondents who said they had seen or heard the terms "warm white" and "cool white."

Potential Reactions to EISA

The survey included a series of questions to ascertain the likely bulb choices of respondents who currently use any incandescent bulbs after 60-Watt incandescent bulbs are no longer available. As previously mentioned, the four-wave survey effort assessed respondent behavior as the various phases of EISA were employed. This means that respondents to the various surveys waves received questions about different wattage bulbs, based on which phase-out was currently underway. For example, instead of the response option of a 23-Watt or 18-Watt CFL meant to replace a 100-Watt or a 75-Watt incandescent, Spring 2014 respondents were given the option of a 13-Watt CFL meant to replace a 60-Watt incandescent. In other words, the bulb *types* in the question have not changed over the different waves, only the respective wattages of the incandescent bulb to replace and the wattages of the replacement options. It is important to keep in mind that these findings are based on self-reported reactions to hypothetical situations described in a survey. Actual purchase behavior when faced with choices at the point-of-purchase could be different from those reported here.

Bulb Choice under EISA

Among respondents who reported using incandescent bulbs in Spring 2014, the most popular option to replace a 60-Watt incandescent was a 13-Watt CFL bulb, with about one in four of these respondents giving this response (Table 32). An LED bulb, a higher wattage incandescent, and a lower wattage incandescent were less frequently chosen, with about 15% choosing each.

Comparing the current results with those of the previous wave (Winter 2012) reveals that the 2014 respondents were more likely to choose an LED bulb (16% vs. 10%) or a higher wattage incandescent bulb (15% vs. 11%), and less likely to choose a CFL (26% vs. 35%) or a lower wattage incandescent. They were also more likely to say they did not know what they would choose (20% vs. 14%).

These results are difficult to interpret, in part because respondents in the two waves were asked about different wattages of bulbs, and the 75-Watt incandescent bulb is not nearly as common as the 60-Watt incandescent bulb, the most commonly used type in the United States. Therefore, it is not surprising that 2014 respondents—at least who would prefer to stick with incandescents—would be less likely to choose a lower wattage incandescent; after all, incandescent bulbs lower than 40 watts (also subject to EISA) are not bright enough for most uses in the home. Along the same lines, it makes sense that they would want to choose a higher watt incandescent. However, as the question did not clarify that only 150-Watt incandescents were currently available under EISA, it seems likely that at least some respondents who chose a "higher watt incandescent" were under the false impression that 75-Watt and 100-Watt incandescents were still options.[49] It is not clear what these respondents would choose if they were aware that these bulbs were no longer available; perhaps some of them would choose the more efficient CFLs or LEDs instead of the high energy-consuming 150-Watt incandescents. Further, it is

[49] The team could not find a straightforward, non-leading way to explain this situation to respondents.

encouraging that LEDs seem to be considered a viable option to an increasing proportion of consumers over time.

Table 32: Bulb Choice under EISA

Bulb type	Winter 2011 (100W)	Summer 2012 (100W)	Winter 2012 (75W)**	Spring 2014 (60W)
Sample size	*582*	*604*	*600*	*749*
A lower wattage incandescent bulb	34%	41%*	23%	14%***
A 23/18/13-Watt screw-in CFL bulb meant to replace a 100/75/60-Watt incandescent bulb	30%	27%	35%	26%***
A 72/53/43-Watt screw-in halogen bulb meant to replace a 100/75/60-Watt incandescent bulb	13%	11%	9%	8%
A 9-13-Watt screw-in LED bulb meant to replace a 100/75/60 Watt incandescent bulb	10%	10%	10%	16%****
A Higher Watt incandescent bulb	4%	4%	11%	15%***
Don't know/refused	9%	8%	14%	20%***

Base: Respondents who currently use incandescent light bulbs.
Note: Interview error accounts for nine respondents (1%).
* Significantly different from Winter 2011 at the 90% confidence level.
** Statistical comparisons not run between different bulb types.
*** Significantly different from Winter 2012 at the 90% confidence level. Note that web respondents were significantly more likely to select "don't know" because they lacked the prompting of an interviewer to encourage a response. This may be the cause of the increase in such responses for Spring 2014.

We also explored 2014 bulb preferences among high CFL users versus low CFL users (Table 33). Households who are already using multiple CFLs in their homes, but also have one or more incandescent bulbs installed, were more likely than low CFL users to say that they would choose CFLs (49% vs. 14%) or LEDs (21% vs. 13%). The less efficient choices (incandescents and halogens) were chosen more often by low CFL users. These results suggest that consumers who already use CFLs are likely to continue to use them (i.e., they are "sold" on them) as well as to upgrade to the more efficient LEDs. High CFL users, therefore, seem to be committed to energy efficient lighting and are unlikely to go back to less efficient options. The evidence, however, is somewhat mixed for LEDs, as earlier (see Table 33) we reported that low CFL and high CFL users did not differ in their self-report use of LEDs but low CFL users also said they would be less likely to choose an LED to replace an incandescent. The importance of energy efficient lighting thus seems limited for this subgroup.

Table 33: Bulb Choice to Replace 60-Watt Incandescent Bulbs under EISA, by Level of CFL Use

Bulb type	Overall	High CFL Users	Low CFL Users
Sample size	*749*	*286*	*463*
An 13-Watt screw-in CFL bulb meant to replace a 60-Watt incandescent bulb	26%	49%	14%*
A 9-13-Watt screw-in LED bulb meant to replace a 60-Watt incandescent bulb	16%	21%	13%*
A Higher Watt incandescent bulb	15%	8%	19%*
A lower wattage incandescent bulb	14%	6%	18%*
A 43-Watt screw-in halogen bulb meant to replace a 60-Watt incandescent bulb	8%	4%	10%*
Don't know/refused	20%	11%	25%*

Base: Respondents who currently use incandescent light bulbs
Note: Interview error accounts for nine respondents (1%).
*Significantly different from High CFL Users at the 90% confidence level.

We then asked respondents who gave a valid response to the previous question (i.e., did not say "don't know") a follow-up question asking their reasons for choosing the particular bulb they favored. Table 34 shows the reasons mentioned by respondents who chose CFLs or LEDs. The most frequently cited reasons for choosing both of these bulbs involve energy savings and a preference for the particular bulb's light/color temperature/brightness. However, both reasons were more frequently cited among respondents who chose LEDs (energy savings: 54%; light quality: 26%) than for those who chose CFLs (41% and 10% respectively).

Other notable differences between reasons for choosing the two different bulbs include that CFL choosers were more likely to refer to the price of the bulb (19% vs. 1%) and to their availability in stores (10% vs. 1%), whereas LED choosers were more likely to refer to how long the bulbs last (32% vs. 11%).

Table 34: Reasons for Bulb Choice under EISA - CFL and LED (Most Common Responses)

Reasons (Multiple Response)	CFL	LED
Sample size	*210*	*131*
Less energy consumption/Save on electricity costs	41%	54%
Good lighting/Desired brightness level	10%	26%
Less expensive to buy	19%	1%
Already installed/stocked up	11%	4%
Lasts longer/higher quality	11%	32%
They are readily available in stores	10%	1%

Base: Respondents who said they would most likely use relevant bulb type.

Stockpiling of Incandescents

EISA has raised concerns about "stockpiling" or "hoarding" incandescent bulbs, and NMR has been documenting evidence regarding such behaviors in previous research.[50] Given these concerns, the Team continued to track self-reported stockpiling behavior in the Spring 2014 survey.

As in previous waves of the consumer survey, we asked individuals about their likelihood of stockpiling particular bulbs as they were phased-out by EISA. Among those who reported using incandescent bulbs, the majority (63%) said that they were somewhat or very unlikely to buy and save extra 60-Watt incandescent bulbs (Table 35). This proportion is consistent with results from previous waves, which asked about different wattage bulbs as they were being phased-out. We also found that the results were similar (i.e., not statistically different) between subgroups of the sample that were aware and unaware of EISA as well as those who answered via the phone or the web.

Table 35: Likelihood of Buying and Saving Extra 60-Watt Incandescent Bulbs for Use After 2014

Level of likelihood	Overall
Sample size	*749*
Very likely	17%
Somewhat likely	16%
Somewhat unlikely	14%
Very unlikely	49%
Don't know/refused	3%

Base: Respondents who use incandescent light bulbs.

We examined actual self-reported stockpiling of 100-Watt incandescent bulbs after the 2012 phase-out to see if there were any differences between high and low CFL users. As Table 36 shows, there was no difference between these two groups in their self-reported rates of stockpiling. Although high CFL users were significantly more likely to report not stockpiling, this may, in part, be due to the 3% of low CFL users who responded "don't know" to this item on the survey.

[50] NMR. 2013. *Massachusetts Consumer Survey Results 2012.* NMR. 2013. *Results of the Massachusetts On-site Compact Fluorescent Lamp Surveys*. Note that the 2014 on-site results will continue to explore actual stockpiling behavior through counting stored bulbs and noting their type and wattage. Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

Table 36: Actual Stockpiling of 100-Watt Incandescent Bulbs by Level of CFL Use

Response	Overall	High CFL Users	Low CFL Users
Sample size	*742*	*258*	*485*
Yes	15%	14%	15%
No	82%	86%	79%*
Don't know	2%	0%	3%*
Refused	1%	2%	0%*

Base: Respondents that use incandescent light bulbs.
*Significantly different from High CFL Users at the 90% confidence level.

Conclusions, Recommendations, and Considerations

The Spring 2014 consumer survey sheds light on a number of factors affecting the residential lighting market in Massachusetts. A primary influence has been the gradual implementation of EISA and the increased availability and lower price of LEDs. This report examines consumers' perspectives and behavior within this context. The conclusions, recommendations, and considerations suggested from the survey results are presented below. Note that the Team may rethink these conclusions and related recommendations and considerations when the results of the on-site saturation survey and comparison area research become available.

Conclusion 1: The Spring 2014 survey findings indicate that satisfaction with LEDs was higher than that of CFLs; particularly among users of both CFLs and LEDs, satisfaction with LEDs relative to CFLs was even more prominent. In addition, although a majority of consumers who use CFLs remains satisfied with them, satisfaction with CFLs that was reported in the most recent survey wave continues the downward trend observed since 2011.

> *Recommendation 1*: Future surveys should explore the reasons contributing to satisfaction with—and preferences for—LEDs versus CFLs among those who use both types of bulbs to understand why CFL satisfaction has declined. This analysis may also inform potential future trends in LED satisfaction, particularly if the results point to factors related to the timing and rate of adoption as one of the factors driving satisfaction.

Conclusion 2: With the 2014 survey, we observed a significant increase over previous waves in the proportion of households reporting familiarity and use of screw-in LEDs. Through the on-site saturation study, the team was able to verify a rise in LED penetration from 12% in 2013 to 23% in 2014.[51] It is quite likely that PA efforts to raise awareness about LEDs and provide incentives on them has played an important role in increased LED adoption, but more in-depth studies would be needed to confirm this attribution.

> *Consideration 2*: The PAs should consider commissioning a study to assess the connection between program activity (such as marketing and incentives) and increased awareness and adoption of LEDs. The forthcoming net-to-gross study will likely provide some insight into this issue, but more pointed studies focused on LEDs would help to understand key issues of attribution and guide future program efforts to continue increasing use of this bulb type.

Conclusion 3: The recent survey differed from previous ones by offering a proportion of respondents the opportunity to answer via a web-based instrument and sending some respondents a pre-paid $5 incentive. The team identified two critical findings from this effort. First, the pre-paid $5 incentive *doubled* the response rate. Second, households that actually completed the survey via the web differed

[51] Cadmus, NMR, Navigant, and Tetra Tech. 2014. *REVISED Results of the Massachusetts On-site Lighting Inventory*. Delivered to the PAs and EEAC Consultants on December 23.

from those that completed by phone demographically (more likely to own homes, have higher education, and, among those that reported their income, to have higher incomes) and in terms of their awareness, use, and satisfaction with energy-efficient lighting. Web respondents did view pictures of CFLs, LEDs, and halogen bulbs, likely affecting their responses, but the visual cue cannot account for all the differences that we observed.

Recommendation 3a: The team recommends that future replications of this survey also offer a pre-paid incentive with the advance letter that informs possible respondents about the study.

Recommendation 3b: The team is not able to explain fully why web respondents differed from phone respondents, yet we believe that offering of a web-based response platform adheres to social trends. Therefore, the team recommends that the next iteration of this survey again offer a web/phone response option along with a phone-only response option. If the length of the survey allows, the evaluators should add questions to explore the characteristics of web and phone respondents, including items regarding technology use, lighting knowledge, and dispositions towards energy efficiency. Finally, if the programming of the survey allows, the strongest study design would show only a portion of the web respondents a picture of various bulb types.

Appendix A: Detailed Tables for Awareness of Energy-Saving Light Bulbs and EISA

Table A-1: Level of CFL Use

How Many CFLs Installed	All Households
Sample Size	*940*
0 to 4 CFLs installed (low CFL users)	61%
5 or more CFLS installed (high CFL users)	39%

Base: All respondents. Low CFL users includes those not aware or not at all familiar with CFLs as well as those who did not know how many CFLs they used

Table A-2: Familiarity with Energy-Saving Bulb Types 2011 – 2014

Familiarity	CFLs				LEDs				Halogen Bulbs			
	Winter 2011	Summer 2012	Winter 2012	Spring 2014	Winter 2011	Summer 2012	Winter 2012	Spring 2014	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*582*	*604*	*600*	*940*	*582*	*604*	*600*	*940*	*582*	*604*	*600*	*940*
Very familiar	29%	27%	32%$^{\alpha}$	27%$^{\Sigma}$	17%	17%	17%	23%*$^{\alpha\Sigma}$	32%	29%	29%	24%*$^{\alpha}$
Somewhat familiar	40%	41%	37%	38%	24%	30%*	29%*	31%*	37%	36%	35%	36%
Not too familiar	17%	16%	13%*	17%	25%	21%	24%	21%*	12%	17%*	17%*	20%*
Not at all familiar	14%	16%	17%	18%*	34%	31%	30%	25%*$^{\alpha\Sigma}$	19%	18%	19%	20%
Don't know / refused	<1%	<1%	1%	1%	<1%	<1%	<1%	1%*	<1%	-	<1%	<1%$^{\Sigma}$

Base: All respondents. Spring 2014 includes both web and telephone respondents whereas earlier waves only included telephone respondents.

* Significantly different from Winter 2011 at the 90% confidence level.

$^{\alpha}$Significantly different from Summer 2012 at the 90% confidence level.

$^{\Sigma}$Significantly different from Winter 2012 at the 90% confidence level.

Appendix B: Detailed Tables for Uses of Various Lighting Techniques

Table B-1: Reasons Incandescent Bulbs Not Installed in Home

Reasons (Multiple Response)	Overall
Sample size	*184*
I use CFLs/halogens/efficient lighting	28%
Incandescents use too much energy	25%
Switching over to energy efficient bulbs	18%
Incandescents don't last as long	12%
To save on energy costs	11%
Landlord or other person selected/installed bulbs	8%
Unavailable/hard to find	6%
Replaced during energy audit	6%
To protect environment	3%
Dislike appearance/quality of lighting	3%
They are too bright	1%
My socket says to only use a certain watt bulb/fixture	1%
Don't know/refused	11%

Base: Respondents who do not currently use incandescent bulbs in their homes

Table B-2: CFLs Ever Installed in Home

Have Ever Used a CFL	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*503*	*381*	*582*	*604*	*600*	*940*
Yes	68%	78%	61%	64%	64%	62% $^{\Psi \breve{\upsilon}}$
No	12%	11%	20%	19%	16% *	16% $^{\Psi \breve{\upsilon}}$
Don't know/Refused	1%	<1%	6%	1% *	3% $^{*\alpha}$	4% $^{\Psi \breve{\upsilon} *}$
Not aware of / familiar with CFLs	19%	11%	14%	16%	18% *	18% $^{\breve{\upsilon} *}$

Base: All respondents

$^{\Psi}$ Significantly different from 2009 at the 90% confidence level.

$^{\breve{\upsilon}}$ Significantly different from 2010 at the 90% confidence level.

* Significantly different from Winter 2011 at the 90% confidence level.

$^{\alpha}$ Significantly different from Summer 2012 at the 90% confidence level.

Table B-3: CFLs Currently Installed in Home

Currently Have CFLs Installed	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample Size	*503*	*381*	*582*	*604*	*600*	*940*
Yes	64%	72%Ψ	55%ΨʊU	55%ΨʊU	58%ΨʊU	57%
No longer using CFLs*	3%	6%	5%	8%∞	5%Ψα	5%
Don't know / refused	1%	0%	1%	<1%	<1%	<1%
Not aware of / familiar with CFLs / Never Used**	32%	22%	39%	36%	36%ʊ	38%

Base: All respondents.

*Includes respondents who said they never used a CFL or did not know if they ever used a CFL.

Ψ Significantly different from 2009 at the 90% confidence level.

ʊ Significantly different from 2010 at the 90% confidence level.

∞ Significantly different from Winter 2011 at the 90% confidence level.

α Significantly different from Summer 2012 at the 90% confidence level.

Table B-4: Have any CFLs Burned out Over the Past Year

Have any CFLs in your home burned out over the past year?	Overall
Sample size	*617*
Yes	42%
No	54%
Don't know/refused	4%

Base: Respondents who use CFLs.

Table B-5: Number of CFLs Burned out Over the Past Year

How many CFLs burned out over the past year?	Overall
Sample size	*270*
1-2	61%
3-4	29%
5-6	7%
7-8	2%
9-10	<1%

Base: Respondents who had CFLs burn out

Table B-6: Reasons for No Longer Using CFLs

Why no longer have CFLs installed? (Multiple Response)	Overall
Sample size	*45*
Dislike quality/type	23%
Not bright enough	19%
Upgraded to LEDs/other efficient lighting choices	18%
Mercury/disposal issues	13%
Someone else buys/replaces them	9%
Didn't last long enough	9%
Changed home/removed fixture	8%
Price/expense	7%
No reason	7%
The long warm up time	5%
Other	8%
Don't know/Refused	2%

Base: Respondents who have ever used a CFL but do not currently have any installed.

Table B-7: What Respondents Like about CFLs

Reasons (Multiple Response)	Overall	High CFL Users	Low CFL Users
Sample size (n)	*616*	*392*	*224*
Save energy	40%	48%	26%*
Long bulb life/durable	33%	36%	29%*
Desired level of brightness	15%	13%	17%
Save money on bills	13%	17%	8%*
Color and/or appearance of light	9%	10%	7%
Price/cost of bulb	7%	9%	5%*
Good quality	5%	5%	5%
Help environment	4%	4%	4%
Bulb does not get hot	4%	4%	3%
Good variety of shapes, sizes	2%	2%	2%
Comparable to incandescents	2%	3%	1%*
Availability in stores	1%	1%	1%
Do not like anything about them	11%	6%	20%*
Other	3%	3%	2%
Don't know/refuse	4%	4%	4%

Base: Respondents who use CFLs.
*Significantly different from High CFL Users at the 90% confidence level.

Table B-8: What Respondents Do Not Like about CFLs

Reasons (Multiple Response)	Overall	High CFL Users	Low CFL Users
Sample size	*616*	*392*	*224*
Slow to turn on	29%	31%	26%
Do not dislike anything about them	26%	25%	27%
Shape unattractive or doesn't fit	15%	13%	19%*
Not bright enough	12%	12%	11%
Mercury/disposal issues	12%	12%	11%
Poor light color	10%	11%	8%
Expensive upfront cost	8%	7%	9%
Short bulb life	7%	7%	6%
Do not work with dimmable/special features	5%	5%	5%
Flicker	1%	1%	1%
Buzz	1%	0%a	2%a
Do not like government interference	1%	1%	1%
Do not work well in cold weather	1%	1%	1%
Too bright	1%	1%	1%
Don't Know	1%	1%	1%
Poor manufacturing (unspecified)	<1%	0%	1%
Other	5%	4%	7%

Base: Respondents who use CFLs.
*Significantly different from High CFL Users at the 90% confidence level.

Table B-9: What Respondents Like about LED Bulbs

Reasons (Multiple Response)	Overall
Sample size	*264*
Save energy	32%
Desired level of brightness	29%
Long bulb life	27%
Color and/or appearance of light	22%
Good quality	11%
Instant "on"	10%
Save money on bills	9%
Dimmable	5%
Good variety of shapes, sizes	4%
Bulb does not get hot	3%
Ease of use/installation	2%
Comparable to incandescents	3%
Do not like anything about them	3%
Price/cost of bulb	2%
Help environment	1%
Other	4%
Don't know	7%

Base: Respondents who use LED bulbs.

Table B-10: What Respondents Do Not Like about LED Bulbs

Reasons (Multiple Response)	Overall
Sample size	*262*
Do not dislike anything about them	48%
Expensive upfront cost	27%
Shorter bulb life than promised	6%
Not bright enough	5%
Slow to turn on/brighten	5%
Poor light output/quality	4%
Shape/size (unattractive or doesn't fit)	4%
Poor light color	4%
Get too hot	4%
Don't work with dimmable/special features	2%
Too bright	1%
Buzz	1%
Other	2%
Don't know	2%

Base: Respondents who use LED bulbs.

Table B-11: Light Bulb Purchases in the Past Three Months

Purchased a bulb in past three months?	Overall
Sample size	*940*
Yes	36%
No	63%
Don't know/Refused	1%

Base: All respondents.

Table B-12: Type of Bulb Purchased in the Past Three Months

Type of Bulb (Multiple Response, Prompted)	Subset
Sample size	*353*
Incandescent or "regular" light bulbs	56%
CFLs that screw into regular light sockets	39%
LEDs that screw into regular light sockets	26%
Halogen bulbs that screw into regular light sockets	15%
Pin-based fluorescent tubes that can only be used in fluorescent light fixtures	12%
Pin-based CFLs that can only be used in special light fixtures	5%
Pin-based LEDs that can only be used in special light fixtures	4%
Other Bulb Types Mentioned (Unprompted)	
Pin-based Halogens	2%
Flood lights	1%
Strip or under cabinet LED	<1%
Holiday/string lighting	<1%
Night lights	1%
Globe/candelabra/specialty	1%
Other	2%
Don't know/refused	2%

Base: Respondents who said they had purchased any light bulbs in the past three months and were aware of relevant bulb types.

Appendix C: Detailed Tables for Key Lighting Concepts

Table C-1: Information Looked for on Bulb Packaging

Information on packaging (Multiple Response)	Unprompted Responses	Prompted Responses	Prompted and Unprompted Responses
Sample Size	*940*	*940*	*940*
Price	29%	49%	78%
Wattage	51%	23%	74%
Watt Equivalent	16%	55%	71%
Shape of bulb	3%	56%	59%
Bulb Life	13%	45%	58%
Color appearance of light	9%	47%	56%
ENERGY STAR Label	3%	50%	53%
3-way capabilities	2%	45%	47%
Lighting facts/Energy facts label	1%	40%	41%
Dimming capabilities	1%	27%	28%
Lumens	7%	19%	27%
UL (Underwriters Laboratories Label)	<1%	22%	21%
CRI or Color Rendition Index	2%	11%	13%
Energy efficiency/Energy usage	12%	N/A	12%
Brightness	5%	N/A	6%
Type (not incandescent)	4%	N/A	5%
Brand or manufacturer	4%	N/A	4%
Base fits existing fixture	N/A	3%	3%
Size of bulb	N/A	3%	3%
Matches with bulb being replaced	N/A	2%	2%
Color temperature	N/A	2%	2%
Appropriate for my needs	N/A	1%	1%
Manufactured in USA	N/A	1%	1%
Type (incandescent)	N/A	1%	1%
Environmentally friendly	N/A	1%	1%

Base: All respondents.

Table C-2: Presence of Signs, Displays, or Marketing Material

Marketing material (Multiple Response)	Overall
Sample Size	*113*
Display different types of light bulbs	31%
Compared light appearance between different bulb types	17%
Compared energy use or savings of different light bulbs	17%
Explained lighting terms like lumens, wattage, bulb color, Kelvin, color rendition, color temperature	6%
Provided more information about a certain type of bulb being sold	10%
Provided information about items on sale	8%
Told me the bulb was part of a utility or energy-efficiency program (other than MassSAVE)	8%
Displayed ENERGY STAR signage	7%
Provided more information about the bulb life	5%
Explained what bulbs I should use to replace an incandescent	4%
Provided more information about a brand/manufacturer	4%
Tried to help me choose the best bulb for my needs	3%
Explained that some bulb types would not be sold anymore	3%
Told me the bulb was part of a MassSAVE Program	2%
Provided more information about the bulb shape	2%
Displays that highlight lighting options for different indoor and outdoor tasks	1%
Provided information about available rebates-general	1%
Other	3%
Don't know	6%

Base: Respondents who purchased light bulbs in the past three months and saw marketing material for light bulbs.

Table C-3: Understanding of the Term "Lumens"

Respondents' understanding of "lumens" (Multiple Response)	Overall
Sample size	*574*
Light output or brightness/Amount of light	66%
The same as Watts	3%
Unit of measure of lighting	2%
Candlelight equivalence	2%
Light color	2%
Light/Lighting	2%
Energy emitted	1%
Other	3%
Don't know	14%

Base: Respondents who said they had seen or heard the term "lumens."

Table C-4: Understanding of the Terms "Warm White" and "Cool White"

Respondents' understanding of "warm white" and "cool white" – as in the color white (Multiple Response)	Total
Sample size	*642*
Brightness/Soft vs. harsh light	48%
Color appearance	35%
Relates to your eyes/how your eyes perceive the light	9%
Heat of the bulb	8%
The way you look in the bulb's light	6%
Fluorescent/one resembles fluorescent light	3%
Coated vs. clear bulb	2%
Wavelength spectrum of the light	1%
Other	4%
Don't know	5%

Base: Respondents who said they had seen or heard the terms "warm white" and "cool white."

Table C-5: Whether Respondents Had Seen or Heard the Term "Lumens", "Warm White" and "Cool White"

	Lumens				"Warm White" and "Cool White"			
	Winter 2011	Summer 2012	Winter 2012	Spring 2014	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*582*	*604*	*600*	*940*	*582*	*604*	*600*	*940*
Yes	53%	55%	59%*	56%	64%	67%	72%*α	70%
No	46%	45%	40%*α	42%	35%	33%	28%* α	29%
Don't know/Refused	1%	-	1%	2%	1%	1%	<1%	1%

Base: All respondents

* Significantly different from Winter 2011 at the 90% confidence level.

α Significantly different from Summer 2012 at the 90% confidence level.

Appendix D: Detailed Tables for Potential Reactions to EISA

Table D-1: Reasons for Bulb Choice under EISA - CFL and LED

Reasons (Multiple Response)	CFL	LED
Sample size (n)	*210*	*131*
Less energy consumption/Save on electricity costs	41%	54%
Good lighting/Desired brightness level	10%	26%
Less expensive to buy	19%	1%
Already installed/stocked up	15%	4%
Lasts longer/higher quality	11%	32%
They are readily available in stores	11%	1%
They are familiar/used to them	7%	6%
Comparable to 60W	6%	--
Not as hot/less fire hazard	5%	4%
Satisfied/do not like other options	3%	4%
Better color of lighting	2%	9%
Environmentally friendlier	2%	3%
Someone told me to	1%	5%
Fit fixture type	1%	5%
CFLs take too long to light up	0%	8%
Dangers of mercury and toxins in CFLs	<1%	8%
No reason	2%	2%
Other	4%	1%
Don't know/refused	2%	1%

Base: Respondents who said they would most likely use relevant bulb type

Appendix E: Detailed Tables for Survey Recruitment and Completion Groups

Table E-1: CFL Awareness by Survey Recruitment and Completion Groups

	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Yes	88%	89% [a]	79% [a, b, c]	92% [b]	90% [c]	85% [d]	98% [d]
No	12%	11% [a]	21% [a, b, c]	8% [b]	10% [c]	15% [d]	2% [d]

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-2: CFL Familiarity by Survey Recruitment and Completion Groups

CFL Familiarity	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Very familiar	27%	28%	29%	24%	29%	27%	27%
Somewhat familiar	38%	34% [a]	32% [b]	45% [a, b]	38%	35% [d]	50% [d]
Not too familiar	17%	23% [a, b, c]	13% [a]	17% [b]	14% [c]	17%	16%
Not at all familiar	5%	3%	5%	6%	7%	6%	3%
Not aware	12%	11% a	20% [a, b, c]	8% [b]	11% [c]	15% [a]	4% [a]
Don't know / refused	1%	1%	0%	0% [a]	2% [a]	1%	1%

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-3: LED Familiarity by Survey Recruitment and Completion Groups

LED Familiarity	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Very familiar	23%	23%	25%	23%	22%	22% [d]	29% [d]
Somewhat familiar	31%	24% [a]	29% [b]	40% [a, b, c]	25% [c]	28% [d]	43% [d]
Not too familiar	21%	24%	20%	18%	22%	21%	20%
Not at all familiar	25%	28% [a]	25% b	18% [a, b, c]	32% [c]	29% [d]	8% [d]
Don't know / refused	1%	1%	1%	1%	0%	1%	1%

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-4: Halogen Familiarity by Survey Recruitment and Completion Groups

Halogen Familiarity	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Very familiar	24%	28%	23%	24%	21%	24%	22%
Somewhat familiar	36%	31% [a]	37%	39% [a]	33%	35%	38%
Not too familiar	20%	19%	17%	21%	22%	18% [d]	28% [d]
Not at all familiar	20%	22% [a]	24% [b]	15% [a, b, c]	23% c	23% [d]	10% [d]
Don't know / refused	<1%	0%	0%	1%	0%	0%	2%

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-5: CFLs Ever Installed by Survey Recruitment and Completion Groups

	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Yes	62%	56% [a]	57% [b]	67% [a, b]	64%	59% [d]	76% [d]
No	16%	25% [a, b, c]	12% [a]	14% [b]	14% [c]	16%	13%
Not Aware/Familiar with CFLs	18%	14% [a]	27% [a, b]	14% [b]	20%	21% [d]	7% [d]
Don't know / refused	4%	5%	5%	5%	2%	4%	5%

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-6: CFLs Currently Installed by Survey Recruitment and Completion Groups

	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Yes	57%	52% [a]	53% [b]	60% [a, b]	60%	54% [d]	68% [d]
No longer using	5%	4%	4%	6%	4%	5%	5%
Not Aware/Familiar or Never Used CFLs	38%	44% [a]	43% [b]	33% [a, b]	36%	41% [d]	25% [d]
Don't know / refused	0%	0%	0%	1%	0%	0% [d]	2% [d]

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-7: Number of CFLs Installed on the Interior or Exterior of Home by Survey Recruitment and Completion Groups

	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*565*	*109*	*137*	*203*	*116*	*421*	*144*
≤4 bulbs	31%	28%	21% [a]	38% [a]	30%	29%	36%
5-9 bulbs	32%	28%	30%	32%	36%	33%	29%
≥10 bulbs	37%	43% [a]	49% [b, c]	28% [a, b]	33% [c]	38%	33%
Don't know/Refused	1%	1%	0%	2%	1%	0%	2%

Base: Respondents who said that they have CFLs installed.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-8: CFL Satisfaction by Survey Recruitment and Completion Groups

CFL Satisfaction	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*617*	*198*	*235*	*322*	*185*	*459*	*158*
Very satisfied	34%	36%	39%	30%	35%	37% [d]	27% [d]
Somewhat satisfied	38%	34%	37%	38%	40%	38%	37%
Neither satisfied nor dissatisfied	9%	10%	7%	9%	9%	9%	9%
Somewhat dissatisfied	12%	17%	10%	13%	9%	11%	16%
Very dissatisfied	6%	3%	7%	8%	5%	6%	7%
Don't know / refused	1%	0%	0%	2%	0%	0% [d]	3% [d]

Base: Respondents who use CFLs.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-9: LED Use by Survey Recruitment and Completion Groups

	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*940*	*198*	*235*	*322*	*185*	*731*	*209*
Yes	27%	23%	25%	29%	26%	25% [d]	33% [d]
No	44%	46%	44%	48% [a]	38% [a]	42% [d]	51% [d]
Not Aware	25%	29% [a]	26% [b]	19% [a, b, c]	32% [c]	30% [d]	9% [d]
Don't know / refused	4%	2%	5%	5%	3%	3% [d]	7% [d]

Base: All respondents.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Table E-10: LED Satisfaction by Survey Recruitment and Completion Groups

LED Satisfaction	Overall	Recruitment Group				Completion Group	
		Phone, incentive	Phone, no incentive	Web/ phone, incentive	Web/ phone, no incentive	Phone	Web
Sample size	*265*	*53*	*60*	*95*	*57*	*195*	*70*
Very satisfied	49%	51%	42%	49%	52%	49%	47%
Somewhat satisfied	35%	40%	42%	31%	28%	38% [d]	23% [d]
Neither satisfied nor dissatisfied	13%	4% [a]	14%	16% [a]	11%	10% [d]	20% [d]
Somewhat dissatisfied	3%	4%	2%	1%	6%	2%	5%
Very dissatisfied	1%	0%	0%	1%	4%	1% [d]	3% [d]
Don't know / refused	<1%	0%	0%	1%	0%	0%	2%

Base: Respondents who use LEDs.
Letters indicate value pairs on each row are statistically significant at the 90% confidence level.

Appendix F: Massachusetts Consumer Survey Demographics

The Team collected a standard battery of demographic and housing characteristics that help to assess the nature of the sample. Due to the use of different sampling strategies across the five years[52], we present the *unweighted* demographic data across the five years. We point out when these divergent sampling strategies appear to have resulted in different sample characteristics. We also examine noteworthy differences in demographic characteristics between high CFL users and low CFL users, as such differences could be useful to explain the source of their variation regarding lighting and assist in future campaigns geared at targeting the specific groups.

Housing Characteristics

By design, approximately just under one-half (44%) of Spring 2014 respondents resided in single-family detached homes or single-family attached homes, with 50% residing in multifamily homes, resulting in a sample that is more similar to the percentage of single-family and multifamily homes in Massachusetts than captured in previous surveys.

Table F-1: Type of Home

Type of home	Mass. Census	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*2,809,746*[*]	*503*	*381*	*582*	*604*	*600*	*940*
Single-family detached house	52%	68%	65%	64%	64%	40%	44%
Single-family attached house (townhouse, row house, or duplex)	5%	15%[**]	13%	14%	12%	10%	9%
Apartment building with 2-4 units	21%	6%	9%	10%	11%	49%	19%
Apartment building with 5 or more units	21%	8%	11%	10%	12%		22%
Mobile home or house trailer	1%	1%	1%	<1%	<1%	1%	<1%
Other	<1%	1%	1%	1%	2%	1%	5%
Don't know/Refused		1%	-	<1%	<1%	-	<1%

Base: All respondents.

* Total occupied housing units

** Duplexes counted with single-family attached in 2009, but with all two-to-four unit buildings in 2010, which is more in keeping with Census reporting.

[52] The 2009 survey relied on a random digit dial survey of all landlines, while the 2010 survey also relied on a random digit dial approach but of both landlines and cell phone lines. The Winter 2011 and Summer 2012 studies drew respondents from the PAs' customer lists. The efforts in 2012 and Spring 2014 also drew from customer lists, but, over sampled multifamily homes in support of recruitment efforts for the on-site studies in those years.

As expected, examining housing characteristics by level of CFL use reveals that high CFL users are more likely than low CFL users to live in single-family homes (62% versus 47%), and low CFL users are more likely to live in apartment buildings (33% versus 47%). While high CFL Users tend to have greater sockets because of the homes in which they live, residents in multifamily homes with few sockets tend to have higher CFL saturation levels.

Table F-2: Type of Home by Level of CFL Use

Type of home	Mass. Census	Spring 2014	High CFL Users	Low CFL Users
Sample size	*2,809,746**	*940*	*392*	*548*
Single-family detached house	52%	44%	52%	38%**
Single-family attached house (townhouse, row house, or duplex)	5%	9%	10%	9%
Apartment building with 2-4 units	21%	19%	18%	21%
Apartment building with 5 or more units	21%	22%	15%	26%**
Mobile home or house trailer	1%	<1%	<1%	1%
Other	<1%	5%	5%	5%
Don't know/Refused	0%	<1%	0%	<1%**

Base: All respondents.
* Total occupied housing units.
** Significantly different from high CFL users at the 90% confidence level.

Respondents living in houses also revealed the decade in which their home was built. As in previous years, among the Spring 2014 respondents the largest percentage of homes were built before 1940.

Table F-3: Decade in Which Home was Built

Decade	Mass. Census	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*2,809,746**	*409*	*296*	*458*	*456*	*304*	*513*
1930s or earlier	35%	26%	31%	25%	24%	31%	23%
1940s	6%	7%	4%	5%	4%	6%	5%
1950s	12%	13%	14%	13%	15%	15%	11%
1960s	10%	9%	10%	13%	14%	5%	11%
1970s	12%	11%	10%	11%	11%	12%	10%
1980s	11%	13%	13%	11%	13%	13%	13%
1990s	7%	12%	7%	9%	7%	8%	10%
2000 or later	8%	6%	9%	9%	9%	8%	10%
Don't know/Refused		3%	3%	2%	2%	2%	7%

Base: Respondents living in single family houses.
* Total occupied housing units

The majority (64%) of Spring 2014 respondents reported owning their homes, while the remaining 35% rented or leased (Table F-4). The proportion of owners from the 2014 sample is significantly lower than those from 2009 through Summer 2012. The higher percentage of renters in Winter 2012 and Spring 2014 is due to over sampling multifamily homes, which also had the advantage of closely approximating the owner/renter split in Massachusetts as a whole.

Table F-4: Ownership of Occupied Homes

Tenure	Mass. Census	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*2,524,028*	*503*	*381*	*582*	*604*	*600*	*940*
Own/Buying	62%	82%	75%	78%	77%	62%	64%
Rent/Lease	38%	17%	24%	21%	23	38%	35%
Occupied without payment or rent	-	0%	<1%	0%	<1%	0%	1%
Other	-	0%	0%	<1%	0%	<1%	<1%
Don't know/Refused	-	1%	<1%	<1%	<1%	<1%	<1%

Base: All respondents.

A greater proportion of high CFL users than of low CFL users own or are in the process of buying their homes (72% versus 58%) (Table F-5), which is consistent with the finding that high CFL users are also more likely to live in single-family homes and less likely to live in multifamily units and apartment buildings (Table F-2).

Table F-5: Home Ownership by Level of CFL Use

Tenure	Mass. Census	Overall	High CFL Users	Low CFL Users
Sample size	*2,524,028*	*940*	*392*	*548*
Own/Buying	62%	64%	72%	58%*
Rent/Lease	38%	35%	27%	40%*
Occupied without payment or rent	-	<1%	1%	1%
Other	-	<1%	0%	<1%
Don't know/Refused	-	<1%	<1%	<1%

Base: All respondents.
*Significantly different from high CFL users at the 90% confidence level.

The vast majority of homes surveyed in Spring 2014 (95%) were less than 3,500 square feet in size. The homes were smaller in Winter 2012 and in Spring 2014 than in previous years because in the most recent two years we sampled more multi-family homes. Note that the Census does not track the square footage of homes.

Table F-6: Size of Home

Square Feet	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*350*	*273*	*441*	*517*	*467*	*705*
Less than 1,400	24%	34%	32%	32%	41%	42%
1,400 – 1,999	28%	25%	29%	36%	32%	27%
2,000 –2,499	19%	19%	17%	15%	17%	16%
2,500 – 3,499	16%	14%	15%	13%	8%	10%
3,500 – 3,999	3%	5%	4%	2%	1%	1%
4,000 – 4,999	3%	2%	2%	1%	1%	2%
5,000 or more	6%	2%	2%	2%	1%	1%
Don't know/Refused (sample size)	153	108	141	87	133	235

Base: All respondents.

Low CFL users were more likely than high CFL users to report living in a home of less than 1,400 square feet (Table F-7).

Table F-7: Size of Home by Level of CFL Use

Square Feet	Overall	High CFL Users	Low CFL Users
Sample size	*705*	*325*	*380*
Less than 1,400	42%	37%	46%*
1,400 – 1,999	27%	27%	27%
2,000 –2,499	16%	19%	14%*
2,500 – 3,499	10%	12%	8%*
3,500 – 3,999	1%	2%	<1%
4,000 – 4,999	2%	2%	3%
5,000 or more	1%	1%	2%
Don't know/Refused (sample size)	235	67	168

Base: All respondents.
*Significantly different from High CFL Users at the 90% confidence level.

The number of rooms in respondents' homes are shown below. The most common number of rooms per home in Spring 2014 was evenly split between five and six (17% each).

Table F-8: Rooms in Home

Total Rooms	Massa-chusetts Census	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*2,809,746*	*503*	*381*	*582*	*604*	*600*	*940*
1	2%	<1%	3%	1%	1%	1%	2%
2	3%	1%	2%	2%	1%	3%	5%
3	10%	4%	8%	7%	9%	12%	11%
4	16%	7%	9%	11%	11%	17%	15%
5	18%	14%	14%	14%	17%	15%	17%
6	18%	24%	20%	19%	17%	17%	17%
7	12%	17%	15%	14%	14%	12%	12%
8	9%	11%	12%	11%	14%	10%	8%
9	11%**	8%	9%	8%	6%	5%	5%
10 or more		12%	7%	12%	9%	7%	8%
Don't know/Refused	-	2%	<1%	1%	1%	1%	1%

Base: All respondents.
*Total occupied housing units.
** The ACS reports only 9 or more rooms.

As might be expected, low CFL users were more likely than high CFL users to report having fewer rooms in their homes, specifically representing a greater proportion of respondents from homes with three or four rooms (30% of low CFL users versus 20% of high CFL users).

Table F-9: Rooms in Home by Level of CFL Use

Total Rooms	Massachusetts Census	Spring 2014	High CFL Users	Low CFL Users
Sample size	*2,809,746*	*940*	*392*	*548*
1	2%	2%	1%	3%***
2	3%	5%	3%	6%***
3	10%	11%	9%	12%
4	16%	15%	11%	18%***
5	18%	17%	16%	18%
6	18%	17%	20%	14%***
7	12%	12%	16%	9%***
8	9%	8%	9%	7%
9	11%**	5%	6%	4%
10 or more		8%	9%	7%
Don't know/Refused	-	1%	1%	1%

Base: All respondents.
*Total occupied housing units.
** The ACS reports only 9 or more rooms.
*** Significantly different from High CFL Users at the 90% confidence level.

Social Attributes

As in previous years, the majority of respondents in 2014 (57%) reported having a Bachelor's degree or higher (Table F-10). This is one of the few characteristics that were not influenced by the multifamily sampling strategy.

Table F-10: Highest Level of Education

Degree Attained	2009	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*503*	*582*	*582*	*604*	*600*	*940*
Less than high school graduate	3%	3%	2%	2%	4%	3%
High school graduate (Includes GED)	16%	15%	15%	17%	17%	15%
Some college or associates degree	20%	25%	21%	23%	25%	22%
Bachelor's degree or higher	57%	56%	61%	57%	53%	57%
Don't know/refused	3%	1%	2%	1%	2%	3%

Base: All respondents.

High CFL users also reported higher levels of education than did low CFL users. Roughly two-thirds (64%) of high CFL users reported holding a Bachelor's degree or higher compared to one-half (52%) of low CFL users.

Table F-11: Highest Level of Education by Level of CFL Use

Degree Attained	Spring 2014	High CFL Users	Low CFL Users
Sample size	*940*	*392*	*548*
Less than high school graduate	3%	1%	3%*
High school graduate (Includes GED)	15%	12%	17%*
Some college or associates degree	22%	20%	24%
Bachelor's degree or higher	57%	64%	52%*
Don't know/refused	3%	3%	3%

Base: All respondents.
* Significantly different from High CFL Users at the 90% confidence level.

The respondents from Spring 2014 and from Winter 2012 were more likely to live alone than were respondents in previous years (26% versus 17-21%). This question was asked differently in 2009, so no comparable data is available for that year.

Table F-12: Number of Persons Living In the Home

Number of household members	Massa-chusetts Census	2010	Winter 2011	Summer 2012	Winter 2012	Spring 2014
Sample size	*2,524,028**	*381*	*582*	*604*	*600*	*940*
1	29%	21%	17%	21%	26%	26%
2	33%	37%	37%	39%	37%	40%
3	16%	15%	19%	16%	15%	13%
4	22%**	16%	15%	17%	15%	12%
5		7%	7%	5%	5%	4%
6 or more		3%	5%	1%	2%	2%
Don't know/refused		1%	<1%	2%	1%	2%

Base: All respondents.
* Total occupied housing units.
** The ACS reports only 4-or-more person household.

Respondents were asked their household income level to determine whether they qualified for *low income* status. About one-third (32%) were identified as low income, and 57% were identified as not low income. A greater proportion of low CFL users than high CFL users were designated as *low income* (32% versus 20%).

Table F-13: Income Status by CFL Use

Income Level	Overall	High CFL Users	Low CFL Users
Sample size	*940*	*392*	*548*
Low income	27%	20%	32%*
Not low income	57%	66%	50%*
Prefer not to answer	16%	12%	19%*

Base: All respondents.
* Significantly different from high CFL users at the 90% confidence level.

The phone only, no incentive recruitment group was more likely to be designated as *not low income*, but this was not statistically different from the other groups.

Table F-14: Level of Income

Income Level	Phone only No Incentive	Phone Only Incentive	Phone/web No incentive	Phone/web Incentive
Sample size	*235*	*198*	*185*	*322*
Low income	27%	32%	29%	22%
Not low income	61%	56%	55%	56%
Prefer not to answer	12%	12%	16%	23%

Base: All respondents.

Respondents' household income levels are presented in the table below. Low CFL users were more likely than were high CFL users to report a household income of less than $50,000 (the lowest income category). This distinction in CFL use based on income also in light of differences by home size and home ownership may indicate that the choice to install CFLs may be driven by important demographic factors such as these.

Table F-15: 2013 Pre-Tax Household Income

Income Level	Overall	High CFL Users	Low CFL Users
Sample size	*940*	*392*	*548*
Less than $50,000	31%	23%	37%*
$50,000 to less than $75,000	15%	17%	12%*
$75,000 to less than $100,000	11%	13%	9%*
$100,000 to less than $150,000	13%	16%	11%*
$150,000 or more	8%	10%	7%
Prefer not to answer	23%	21%	24%

Base: All respondents.
* Significantly different from High CFL Users at the 90% confidence level.

Appendix G: Weighting Schemes from Previous Survey Waves

The Spring 2014 sampling strategy targeted 50% single-family and 50% multifamily households in the final sample. While consistent with the Winter 2012 survey, this did represent a change from the Winter 2011 and Summer 2012 survey waves in which we did not set targets for building type. The implication is that the Spring 2014 sample, like the Winter 2012 one, achieved a higher proportion of renters overall—and especially high-school educated renters—compared to the two earlier samples. Similar to our decision for the Winter 2012 sample, we weighted the Spring 2014 sample on the same characteristics as in Winter 2011 and Summer 2012—and from 2009 and 2010 as well—in order to limit any bias in the results.

Table G-1: Current and Previous Weighting Schemes

	Households	Sample Size	Weight
Spring 2014			
State Total	*2,524,028*	*940*	
Owner-occupied housing units			
Less than high school graduate	91,246	5	6.80
High school graduate	346,056	76	1.70
Some college or Associate's degree	393,286	133	1.10
Bachelor's degree or higher	742,453	362	0.76
Renter-occupied housing units			
Less than high school graduate	153,452	19	3.01
High school graduate	254,892	63	1.51
Some college or Associate's degree	252,845	76	1.24
Bachelor's degree or higher	289,798	173	0.62
Don't know, refused		33	1
Winter 2012			
State Total	*2,512,552*	*600*	
Owner-occupied housing units			
Less than high school graduate	106,875	7	3.65
High school graduate	367,185	59	1.49
Some college or Associate's degree	397,959	97	0.98
Bachelor's degree or higher	736,455	205	0.86
Renter-occupied housing units			
Less than high school graduate	155,720	17	2.19
High school graduate	251,964	40	1.5
Some college or Associate's degree	226,427	54	1
Bachelor's degree or higher	269,967	110	0.59

	Households	Sample Size	Weight
Summer 2012			
State Total	*2,512,552*	*604*	
Owner-occupied housing units			
Less than high school graduate	106,875	9	2.85
High school graduate	367,185	73	1.21
Some college or Associate's degree	397,959	109	0.88
Bachelor's degree or higher	736,455	268	0.66
Renter-occupied housing units			
Less than high school graduate	155,720	4	9.36
High school graduate	251,964	30	2.02
Some college or Associate's degree	226,427	28	1.94
Bachelor's degree or higher	269,967	73	0.89
Winter 2011			
State Total	*2,512,552*	*582*	
Owner-occupied housing units			
Less than high school graduate	106,875	6	4
High school graduate	367,185	68	1.22
Some college or Associate's degree	397,959	91	0.99
Bachelor's degree or higher	736,455	288	0.59
Renter-occupied housing units			
Less than high school graduate	155,720	3	11.67
High school graduate	251,964	21	2.71
Some college or Associate's degree	226,427	28	1.82
Bachelor's degree or higher	269,967	66	0.94

Appendix H: Consumer Survey Questionnaire

MA Survey Questionnaire

National Grid, NSTAR, Cape Light Compact, Unitil, and Western Massachusetts Electric Co. are interested in your knowledge and experience with various lighting products. This survey asks a number of questions about lighting your home. Please answer the questions to the best of your ability. All of your responses will remain confidential. The survey will take approximately 15 minutes to complete.

Hello, my name is _____ and I am calling from Tetra Tech on behalf of (PA). We are conducting a survey about household lighting. I'm not selling anything. I just want to ask you some questions about lighting in your home. The survey will take about 15 minutes to complete.

May I please speak with [INSERT NAME ON THE ACCOUNT].

[IF ACCOUNT HOLDER ISN'T AVAILABLE, READ] Is there an adult over the age of 18 available who is responsible for purchasing the light bulbs for your household? [IF NOT AVAILABLE, TRY TO RESCHEDULE AND THEN TERMINATE]

[IF NECESSARY, OFFER THE CONTACT NAME FROM BELOW AS THE PERSON TO CONTACT WITH ANY QUESTIONS ABOUT THE VALIDITY OF THE RESEARCH.]

Gail Azulay	Cape Light Compact	508-744-1266
Melanie Coen	National Grid (NGrid/Massachusetts Electric)	781-907-2486
Matt Nelson	NSTAR Electric	781-441-3456
Matt Nelson	Western Massachusetts Electric Company (WMECO/Northeast Utilities)	781-441-3456
Lisa Glover	Unitil (Fitchburg Gas and Electric)	603-773-6483

Screeners:

R1. Are you 18 years of age or older?
1. Yes **[CONTINUE]**
2. No **[THANK AND TERMINATE] [SKIP TO TERM]**

R2. Is [ADDRESS] in Massachusetts your primary address, meaning that you live here most of the year?
1. Yes [**CONTINUE**]
2. No [**SKIP TO R2A**]
98. (Don't know) **[THANK AND TERMINATE][SKIP TO TERM]**

R2A. **(IF R2 = 2)**Is your primary address in Massachusetts?

[INTERVIEWER NOTE: IF R DOES NOT HAVE A PRIMARY ADDRESS IN MASSACHUSETTS, THANK AND TERMINATE]

1 Yes

2 No, I do not have a primary address in Massachusetts **[THANK AND TERMINATE] [SKIP TO TERM]**

D DON'T KNOW **[THANK AND TERMINATE] [SKIP TO TERM]**

DEM1. Please keep your primary address in mind while answering the remaining survey questions. What type of home do you live in?

1. A one-family house detached from any other house
2 A one-family house attached to one or more houses
3 In a building with 2, 3, or 4 apartments
4 In a building with 5 or more apartments
5 A mobile home?

6. Or something else? [SPECIFY]
98. (Don't know/refused)

DEM1A. (IF DEM1=6) Is your home considered a condominium?

1 Yes
2 Something else (SPECIFY)

DEM1B. (IF DEM1A= 1) What type of condominium is it?

1 A townhouse condominium that has one or more units, with a wall separating the units from basement to roof

2 A condominium in a building with 2, 3, or 4 units attached to each other but without a wall separating the units from basement to roof (IF NEEDED: triple-deckers are a common example)

3 A condominium in a building with 5 or more units attached to each other but without a wall separating the units from basement to roof (IF NEEDED: what people typically think of as a condo in an "apartment building" is a common example)

4 Another type of condominium, specify

AWARENESS OF ENERGY-SAVING LIGHT BULBS

S1. Before today, had you ever heard of Compact fluorescent light bulbs or CFLs?

1. Yes [SKIP TO S3 FOR PHONE, S2A FOR WEB]
2. No
96. DON'T KNOW

[ASK S2 IF S1 = 2, 96 OTHERWISE, SKIP TO S3.]

S2. Compact fluorescent light bulbs – also known as CFLs – usually do not look like regular incandescent bulbs. The most common type of compact fluorescent bulb is made with a glass tube bent into a spiral, resembling soft-serve ice cream, and it fits in a regular light bulb socket. Thinking about it again, before today, had you heard of CFLs?

1. Yes [SKIP TO S3 FOR PHONE, S2A FOR WEB]
2. No [SKIP TO S4]
96. DON'T KNOW [SKIP TO S4]

S2A. [WEB ONLY] Does this look like the type of bulb you had in mind?

1. Yes
2. No [SKIP TO S4]
97. DON'T KNOW [SKIP TO S4]

[ASK S3 [IF S1=1 OR S2=1 PHONE] OR [S2=1 WEB], OTHERWISE SKIP TO S4].

S3. How familiar are you with CFLs? [PHONE: WOULD YOU SAY THAT YOU ARE…?]

1. Very familiar
2. Somewhat familiar
3. Not too familiar
4. Not at all familiar
96. DON'T KNOW

S4. Another type of light bulb that is used in homes is called an LED **[PHONE: SAY THE LETTERS L-E-D]**, also known as a light emitting diode bulb. These bulbs have regular screw bases that fit into most sockets. We are not referring to battery-operated LEDs, holiday lights, or decorative strands. How familiar are you with LED light bulbs that screw into regular light sockets? [PHONE WOULD YOU SAY THAT YOU ARE…?]

1. Very familiar
2. Somewhat familiar
3. Not too familiar
4. Not at all familiar

96. DON'T KNOW

S5. Another type of light bulb is a halogen bulb. These bulbs have regular screw bases that fit into most sockets; they do not need special attachments to work in regular sockets. How familiar are you with halogen bulbs that screw into regular light sockets? [PHONE WOULD YOU SAY THAT YOU ARE…?]

1. Very familiar
2. Somewhat familiar
3. Not too familiar
4. Not at all familiar

96. DON'T KNOW

S6. **[IF S5=1 OR 2 AND S3=1 OR 2; OTHERWISE SKIP TO** EISA1**]** As far as you know, which type of bulb uses less energy to produce light—[**RANDOMIZE AND READ**: "compact fluorescent light bulbs" or "halogen bulbs"]—or do both bulbs use about the same amount of energy? **[USE SAME RANDOM ORDER PREVIOUSLY USED IN THE QUESTION; ACCEPT ONE RESPONSE.]**

1. Compact fluorescent light bulbs use less energy
2. Halogen bulbs use less energy
3. Both bulbs use about the same amount of energy

96. DON'T KNOW

EISA Awareness & Future Expectations

EISA1. A recent federal law, the Energy Independence and Security Act of 2007, restricted the sale of standard 100 watt incandescent bulbs manufactured after January 1, 2012, standard 75 Watt incandescent bulbs manufactured after January 1, 2013, and standard 40 and 60 Watt incandescent bulbs manufactured after January 1, 2014. Had you heard about this law before today?

1. Yes
2. No
96. DON'T KNOW

EISA2. Do you currently use ANY incandescent light bulbs, of any wattage, in your home?

1. Yes [SKIP TO EISA4]
2. No
96. DON'T KNOW [SKIP TO EISA4]

EISA3. **[IF EISA2 = 2]** Why don't you currently use any incandescent light bulbs in your home?

(Please type answer below)

[PHONE: DO NOT READ RESPONSES; MULTPLE RESPONSE]

1. (They are too bright)
2. (I use CFLs/Halogens/efficient lighting)
3. (They use too much energy)
4. (My socket says only to use a certain watt bulb/fixtures won't take such high wattage)
5. (Switching over to energy efficient bulbs)
6. (Switching over to lower wattage bulbs)
7. (Other reason, **specify**)
96. DON'T KNOW
97. Refused

EISA4. **[IF EISA2=2 GO TO INSTRUCTIONS AFTER EISA7]** We are interested to know the type of bulb you would be likely to use instead of a 60-watt incandescent bulb once this is no longer available for purchase. [PHONE: I'M GOING TO NAME DIFFERENT TYPES OF BULBS THAT MAY BE OPTIONS AND AFTER I READ THE LIST, I'D LIKE YOU TO TELL ME] Below are the names of different types of bulbs that may be options, please select which one you would be most likely to use instead of the 60-watt incandescent bulb.

The options are **[PHONE: READ ENTIRE LIST BASED ON INSTRUCTIONS BELOW]. THEN IMMEDIATELY ASK**: Which one of these bulbs would you be **most** likely to use instead of the 60-watt incandescent?
[PROGRAMMER: RANDOMIZE LIST. INCLUDE 2 IN LIST ABOVE AND IN THE ACCEPTABLE RESPONSES ONLY IF S5=1 OR 2; SIMILARLY, INCLUDE 3 ONLY IF S3=1 OR 2 and ([S1 OR S2=2 PHONE] OR S2=1 WEB]), AND INCLUDE 4 ONLY IF S4=1 OR 2]

BULB TYPES
1. A lower wattage incandescent bulb
2. A 43 Watt screw-in halogen bulb meant to replace a 60 watt bulb
3. A 13 Watt screw-in compact fluorescent bulb meant to replace a 60 watt incandescent bulb
4. A 9 to 13 Watt screw-in LED **[PHONE: SAY THE LETTERS L-E-D]** or light-emitting diode bulb meant to replace a 60 watt incandescent bulb
4. A higher wattage incandescent bulb
96. DON'T KNOW **[ONLY ALLOW FOR ENTIRE QUESTION] [SKIP TO EISA6]**

EISA5. **[SKIP IF EISA4=96]**You said you would be most likely to instead use **[IF EISA4=1 READ:** a lower wattage incandescent bulb]/[**EISA4=2 READ:** a 43 Watt screw-in halogen bulb][**IF EISA4=3 READ:** an 13 Watt screw-in compact fluorescent bulb**]/[IF EISA4=4 READ:** a 9 to 13 Watt screw-in LED bulb**]/[IF EISA4=5 READ:** a higher wattage incandescent bulb)]. Why that bulb? (Please type answer below)

1. **[RECORD VERBATIM]**
96. PHONE: DON'T KNOW

EISA6. The federal law mentioned earlier restricted the sale of 100 Watt incandescent bulbs in January 2012. Did you buy extra 100 Watt incandescent light bulbs to save them for use after they were no longer available on store shelves?

1. Yes
2. No
96. DON'T KNOW

EISA7. How likely are you to buy extra 60 Watt incandescent light bulbs and save them for use once the next phase of the federal law has gone into effect? [PHONE WOULD YOU SAY THAT YOU ARE…?]. . . **[READ LIST]. [RECORD ONE ANSWER]**:

1. Very likely
2. Somewhat likely
3. Somewhat unlikely, [PHONE: or]
4. Very unlikely [PHONE: to buy and save 60 Watt incandescent light bulbs for use?]
96. DON'T KNOW

[ASK CFL USE AND SATISFATION IF S3= 1, 2, 3, AND ([S1 = 1 OR S2=1 PHONE] OR [S2A = 1 WEB] OTHERWISE SKIP TO LED1 Alternative Lighting Technologies Section.]

CFL USE AND SATISFACTION

USE1. Have you EVER used a compact fluorescent light bulb, or CFL, on the interior or exterior of your home?

1. Yes
2. No
96. DON'T KNOW

[IF USE1=2, 96, SKIP TO INTRO PRECEDING LED1 Alternative Lighting Technologies Section]

USE2. Do you CURRENTLY have CFLs installed on the interior or exterior of your home?

1. Yes
2. No
96. DON'T KNOW

USE2A. **[IF USE2= 1]** Approximately how many compact fluorescent bulbs are currently installed on the interior or exterior of your home?

1. Four or less
2. Five to nine
4. Ten or more
96. DON'T KNOW

USE3. **[IF USE1= 1 AND USE2=2]** Why do you no longer have CFLs installed on the interior or exterior of your home? (Please explain below)

1. [RECORD VERBATIM]
96. [PHONE: (DON'T KNOW)]

USE4. [**USE1= 1]** Have any CFLs in your home burned out over the past year?

1. Yes
2. No [GO TO USE7]
96. DON'T KNOW [GO TO USE7]

USE5. About how many CFLs burned out over the past year? (Enter number below, if you are unsure please make an educated guess)

[RECORD NUMBER _____; 1 to 50 allowed]

USE6. [IF USE5= 0 SKIP TO USE7; IF USE5>1 READ "Thinking about the MOST RECENT CFL to burn out -] What type of bulb did you use to replace the CFL that burned out? [PHONE: DID YOU REPLACE IT WITH…?] [RANDOMIZE AND READ 1 THROUGH 4; THEN 5 TO 97 IF NEEDED]

1. Another CFL
2. An incandescent bulb
3. An LED
4. A halogen bulb
5. SOME OTHER TYPE OF BULB [SPECIFY _____]
6. I DIDN'T REPLACE IT WITH ANYTHING/I GOT RID OF THE LAMP
96. DON'T KNOW

USE7. How satisfied are you with the compact fluorescent light bulbs currently in your home or, if you have no CFLs installed right now, the ones you have used in the past? [PHONE: WOULD YOU SAY THAT YOU ARE…?]

1. Very satisfied
2. Somewhat satisfied
3. Neither satisfied nor dissatisfied
4. Somewhat dissatisfied
5. Very dissatisfied
96. DON'T KNOW

USE8. In your experience, what do you like about compact fluorescent light bulbs? (Please type answer below)

[PHONE: DO NOT READ; SELECT ALL THAT APPLY]:

1. (Save energy)
2. (Save money on bills)
3. (Good quality)
4. (Help environment)
5. (Longer bulb life)
6. (Other, **[specify]**)
7. (Do not like anything about them)

96. (DON'T KNOW)
97. Refused

USE9. Is there anything that you do NOT like about compact fluorescent light bulbs? (Please type answer below)

[PHONE: DO NOT READ; SELECT ALL THAT APPLY]

1. (Poor light color)
2. (Poor light output)
3. (Not bright enough)
4. (Too bright)
5. (Slow to turn on/brighten)
6. (Flicker)
7. (Buzz)
8. (Poor manufacturing (unspecified))
9. (Shorter bulb life than promised)
10. (Mercury/disposal issues)
11. (Other **[SPECIFY]**)
12. (Nothing I don't like about them)

96. (DON'T KNOW)
97. (REFUSED)

LIGHT EMITTING DIODES

[**ASK LED1 IF S4= 1, 2, OR 3**; [**IF S4= 4, 96 SKIP TO INTRO PRECEDING BUY1 Recent Lighting Purchases Section**]

This next section contains a few questions about your use of other types of light bulbs.

LED1. Are you currently using LED screw in bulbs in your home—the kind that screw into regular light fixtures?

1. Yes
2. No **[SKIP TO BUY1]**
96. DON'T KNOW **[SKIP TO BUY1]**

LED2. **[IF LED1=1]** Thinking about the LED bulbs you have used in your home, either now or in the past, how satisfied are you with the LEDs? [PHONE WOULD YOU SAY THAT YOU ARE…?]

1. Very satisfied
2. Somewhat satisfied
3. Neither satisfied nor dissatisfied
4. Somewhat dissatisfied
5. Very dissatisfied
96. DON'T KNOW

LED3. In your experience, what do you like about LEDs?
(Please type answer below)
[PHONE: DO NOT READ; SELECT ALL THAT APPLY]:

1. (Save energy)
2. (Save money on bills)
3. (Good quality)
4. (Help environment)
5. (Longer bulb life)
6. (Other, specify)
7. (Do not like anything about them)
96. (DON'T KNOW)
97. (REFUSED)

LED4. Is there anything that you do NOT like about LEDs?

(Please type answer below)

[PHONE: DO NOT READ; SELECT ALL THAT APPLY]:

1. (Poor light color)
2. (Poor light output)
3. (Not bright enough)
4. (Too bright)
5. (Slow to turn on/brighten)
6. (Flicker)
7. (Buzz)
8. (Poor manufacturing (unspecified))
9. (Shorter bulb life than promised)
10. (Other, specify)
11. (Nothing I don't like about them)

96. (DON'T KNOW)
97. (REFUSED)

RECENT LIGHTING PURCHASES

BUY0A. Where do you **most frequently** buy light bulbs? (Check one)

[RANDOMIZE AND READ 1 through 10, then ask 11]

1. Grocery store or supermarket, such as Shaw's, Stop n Shop, or Market Basket
2. Warehouse store, such as Sam's Club, BJ's, or Costco
3. Home improvement store, such as Home Depot or Lowe's
4. Hardware store, such as TruValue or ACE Hardware
5. Mass merchandise or discount department store, such as a Wal-Mart, Kohls, K-Mart, or Target
6. Drugstore, such as Walgreen's, Rite Aid, or CVS
7. Convenience store, such as 7-Eleven, White Hen Pantry, or Cumberland Farms
8. Home furnishing store, such as a Bed, Bath, and Beyond or Pottery Barn
9. Bargain store, such as Building 19, Dollar Store, or Family Dollar
10. Office supply store, such as Office Depot or Staples
11. Any other type of store [WEB: NOT MENTIONED] [PHONE: I DID NOT MENTION]? (Specify): _____

BUY0B. What mode of transportation do you typically use when you go to buy light bulbs? (Check one)

(RANDOMIZE AND READ 1 through 4, then 6)

1. A car, truck, or motorcycle (your own, a friend's, or a taxi)
2. Public transportation (such as bus, train, the T)
3. Bicycle
4. Walk

5. Other (SPECIFY _____)
96. DON'T KNOW

BUY0C. About how many minutes does it take you to travel from your home to the store where you buy light bulbs? (Check one)

1. Less than 5 minutes
2. 5-9 minutes
3. 10-14 minutes
4. 15-19 minutes
5. 20-24 minutes
6. 25-29 minutes
7. 30-39 minutes
8. 40-49 minutes
9. 50-59 minutes
10. 60 minutes or more.

96. DON'T KNOW

BUY1. The following questions are about your potential purchases of light bulbs. Have you purchased any light bulbs in the past three months?

1. Yes
2. No **[SKIP TO BUY2]**
96. Don't know **[SKIP TO BUY2]**

BUY1A-E. Have you purchased any of the following types of light bulbs in the past three months? **[RANDOMIZE AND READ A-G THEN H; MULTIPLE RESPONSE]**

A. [**SKIP IF S2=2 [PHONE] or S2A= 2, 96 [WEB] or if S3=3, 4, 96, [EITHER**] Compact fluorescent lamps or CFLs that screw into regular light sockets

B. [**SKIP IF S4=3, 4, 96,**] L-E-Ds that screw into regular light sockets

C. [**SKIP IF S5=3, 4, 96,)**] Halogen bulbs that screw into regular light sockets

D. Incandescent or regular light bulbs

E. Pin-based fluorescent tubes that can only be used in fluorescent light fixtures

F. [**SKIP IF S2=2 [PHONE] or S2A= 2, 96 [WEB] or if S3=3, 4, 96, [EITHER**] Pin-based CFLs that can only be used in special light fixtures

G. **[SKIP IF S4=3 or 4, 96]** Pin-based L-E-Ds that can only be used in special light fixtures

H. OTHER **[SPECIFY]**

BUY2. What information do you look for on BULB packaging to help you decide which bulb to purchase?

(Please type answer below)

[PHONE: DO NOT READ. RECORD VERBATIM ANY RESPONSES THAT DO NOT FIT PRECODES. ACCEPT MULTIPLE RESPONSES.]

1. (Price)
2. (Lighting Facts/Energy Facts Label)
3. (Wattage)
4. (Watt Equivalency)
5. (ENERGY STAR Label)
6. (UL, or Underwriters Laboratories Label)
7. (Lumens)
8. (CRI, or Color Rendition Index)
9. (Bulb Life)
10. (Dimming)
11. (3-way)
12. (Shape)
13. (Mercury Content)
14. (Color Appearance)
15. (Other) **[SPECIFY]**
16. (DON'T KNOW)
17. (REFUSED)

BUY3. [**IF BUY2 NE 2]** Do you use the Lighting Facts Label or Energy Facts Label that is located on bulb packaging to guide your purchasing decision?

1. Yes
2. No
96. DON'T KNOW

BUY4. [PHONE: I'M GOING TO READ A LIST OF]The next set of question will list types of information you might look for on bulb packaging. You may have already mentioned this, but for each item, please indicate whether or not you have looked for it. **[PHONE: DO NOT SHOW ITEMS 1-14 RECORDED IN BUY2. RANDOMIZE A-N, THEN READ O. RECORD AS YES/NO FOR EACH. ACCEPT MULTIPLE RESPONSES.]**

Have you looked for -

A. Price?
B. Wattage?
C. Watt equivalency?
D. The ENERGY STAR label?
E. The UL, or Underwriters Laboratories Label?
F. Lumens?
G. CRI, or color rendition index?
H. Bulb life?
I. Dimming?
J. 3-Way ability?
K. Certain bulb shape?
L. Mercury content?
M. Color appearance?
N. Anything else [PHONE: I DIDN'T ALREADY MENTION?]**[SPECIFY]**

1. Yes
2. No
96. DON'T KNOW

BUY5. [IF **BUY1 = 1**] When you bought light bulbs in the past three months, did you see any lighting signs, displays, or other materials near the light bulbs? These would be signs other than the price of the bulb.

1. Yes
2. No
96. DON'T KNOW

BUY6. [IF **BUY5 = 1**] What sign, displays, or other materials did you see?

(Please type answer below)

[PHONE: DO NOT READ. RECORD VERBATIM ANY RESPONSES THAT DO NOT FIT PRECODES. ACCEPT MULTIPLE RESPONSES.]

1. (Told me the bulb was part of a MassSAVE program)
2. (Told me that the bulb was part of a utility or energy-efficiency program)
3. (Displayed different types of light bulbs)
4. (Tried to help me choose the best bulb for my needs)
5. (Explained what bulbs I should use to replace an incandescent)
6. (Compared energy use or savings of different light bulbs)
7. (Explained that some bulb types would not be sold anymore)
8. (Explained lighting terms like lumens, wattage, bulb color, Kelvin, color rendition)
9. (Other, specify
96. DON'T KNOW
97. REFUSED

Lumens & Key Lighting Knowledge

P1. Before today, have you seen or heard of the word "lumens" used in relation to lighting?

1. Yes
2. No **[SKIP TO P3]**
96 DON'T KNOW **[SKIP TO P3]**

P2. What does the word "lumens" mean to you?
(Please type answer below)

[PHONE: DO NOT READ. FILL IN CLOSEST ANSWER CATEGORY OR RECORD VERBATIM. MULTIPLE ANSWERS ALLOWED. IF RESPONDENT SAYS 'LIGHT QUALITY', PROBE FOR EXACTLY WHAT 'QUALITY' THEY MEAN]

1. (Light Output or Brightness)
2. (Light Color)
3. (Same as Watts)

95 (OTHER)**[SPECIFY]**
96 DON'T KNOW
97 REFUSED

P3. Have you seen or heard the terms "warm white" and "cool white"- as in the color white - used in relation to lighting?

1. Yes
2. No **[SKIP TO R3]**
96 DON'T KNOW **[SKIP TO R3]**

P4. What do the terms "warm white" and "cool white" - as in the color white -mean to you?
[**RECORD VERBATIM. MULTIPLE ANSWERS ALLOWED. IF RESPONDENT SAYS 'LIGHT QUALITY', PROBE FOR EXACTLY WHAT 'QUALITY' THEY MEAN] (Please explain below)**

1. **[RECORD VERBATIM]**

96. [PHONE: (DON'T KNOW)]
97. [PHONE: (REFUSED)]

CUSTOMER DEMOGRAPHICS

Just a few more questions to ask you!

[CHECK QUOTA COUNTS (TO BE PROVIDED): IF DEM1= 1, 2, OR 5 (SINGLE FAMILY); IF DEM1= 3 (SMALL MULTIFAMILY); IF DEM1=4 (LARGE MULTIFAMILY); IF DEM1= 6 OR 98 GO TO DEM3]

R3. [INSERT PA] is offering you the opportunity to take part in an important study. We are offering eligible households $150 to allow a trained technician to visit their homes to gather more information about the lighting products they use. The visit should take about an hour. If your home is found to be eligible, the visit may also involve a trained technician walking through your home and recording the types of lighting products that you are using. During this visit, there will be no attempt to sell you anything. The information gathered will be used to evaluate and improve the energy efficiency programs offered by your electric utility.

Would you be interested in being a part of this type of visit?

1. Yes **[GO TO R5 BELOW FAQ]**
2. No **[GO TO DEM2]**

98. (Don't know **[GO TO R4]**

FAQ – Answers to frequently asked questions: (FAQs above question on R4)

We understand you are unsure about the home visit, here is some additional information to help make your decision -

- **What's in it for me and how long will this take?**
  - We are offering $150 for your time
  - The visit should take around one hour, depending on the size of your house
- **What does the visit involve?** Technicians will walk around your home and count the various types of lighting products you have installed.
- **When will the visits take place?/Can I schedule a visit now?** We will be calling in in the next two to six weeks to schedule the visits. The visits will happen in March, April, and May.
- **Who we are?** The NMR Group, Inc. and Tetra Tech are consulting firms. We have been hired by [INSERT PA] to perform this study.
- **What is the purpose of this Study?**
  - Establish customer awareness of lighting options and changes in the lighting market
  - The results of the study will be used in planning for future energy needs in Massachusetts
- **How do I know you are legitimate ?** [INSERT PA] is sponsoring this program and study. The contact person is [FILL IN INFORMATION FROM ABOVE, ASKING RESPONDENT WHICH PA SERVES THEM].

R4. [**IF R3=98**] You do not have to decide now. Would it be okay if someone calls you when visits are being scheduled to talk more about what would be involved?

1. Yes **[CONTINUE TO R5]**
2. No **[GO TO DEM2]**

R5. [**IF R3=1 or R4=1, READ**. "[PHONE: I just need to get some] [WEB: Please provide your] contact information so we can call and [schedule the visit./talk about the visit]"]

First and Last Name: [RECORD]_____

R6. [**IF R3=1 or R4=1**] Primary Number (###-###-####):

[RECORD NUMBER; IF SAME NUMBER CALLED FOR SURVEY INDICATE HERE]_____

R7. Secondary Number (###-###-####): _____

R8. [PHONE: IF RESPONDENT VOLUNTEERS THAT THEY PREFER TO BE CONTACTED BY EMAIL COLLECT EMAIL ADDRESS. OTHERWISE, DO NOT COLLECT EMAIL ADDRESS.

EMAIL: _____]

R9. [IF YES] What is the best time of day to reach you? Morning, afternoon, or evening?

1. Morning
2. Afternoon
3. Evening
99. (Anytime/[PHONE: Don't know/refused)]

[**IF YES & New Address R2=2**] In what city do you live, and what is your zip code?

R10. **CITY**: _____

R11. **ZIP CODE:** _____

[IF R3=1 If your household is eligible for this study, when we call to schedule, your caller ID will most likely say "NMR or NMR Group" and will have a 617 area code.] Now, there are just have a few more questions about some characteristics of your households. [IF R3=1 These questions will help us make sure we visit a wide variety of homes in the state.]

DEM2. **[ASK DEM2 IF DEM1= 1, 2 OR DEM1B= 1. OTHERWISE, SKIP TO DEM3.]** When was your home built? [PHONE: PLEASE STOP ME WHEN I GET TO THE APPROPRIATE CATEGORY.]

1. 1930s or earlier
2. 1940s
3. 1950s
4. 1960s
5. 1970s
6. 1980s
7. 1990s
8. 2000 or later

96. DON'T KNOW

DEM3. Do you or members of your household own this home or do you rent?

1. Own/Buying
2. Rent/Lease
3. Occupied without Payment or Rent
4. OTHER (SPECIFY): _____

96. DON'T KNOW

DEM4. Approximately how large is your home? [PHONE: READ LIST IF NECESSARY]

1. Less than 1,400 square feet
2. 1,400 to less than 2000 square feet
3. 2,000 to less than 2500 square feet
4. 2,500 to less than 3500 square feet
5. 3,500 to less than 4000 square feet
6. 4,000 to less than 5000 square feet
7. 5,000 square feet or more

96. DON'T KNOW

DEM5. How many rooms are in your home, not counting bathrooms?

[PHONE: HELP RESPONDENTS COUNT ROOMS IF NEEDED, KEEPING TRACK ON A PIECE

OF PAPER OF THE # OF ROOMS AS THEY NAME THEM]

__ RECORD RESPONSE

96. DON'T KNOW

DEM6. What is the highest level of education that the head of household has completed so far?

[PHONE: READ CATEGORIES, IF NECESSARY.]

1. Less than Ninth Grade
2. Ninth to Twelfth Grade, No Diploma
3. High School Graduate (includes GED)
4. Some College, No Degree
5. Associates Degree
6. Bachelor's Degree
7. Graduate or Professional Degree

96. Prefer not to answer

DEM7. Counting yourself, how many people live in your home for most of the year?

1. (1) Person **[GO TO DEM10_1]**
2. (2) People **[GO TO DEM10_2]**
3. (3) People **[GO TO DEM10_3]**
4. (4) People **[GO TO DEM10_4]**
5. (5) People **[GO TO DEM10_5]**
6. (6) People **[GO TO DEM10_6]**
7. (7) People **[GO TO DEM10_7]**
8. (8) or more people **[GO TO DEM10_8]**

98. Prefer not to answer **[GO TO INTRO BEFORE DEM11]**

D10_1. [IF DEM7=1] Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1. Less than $32,065, OR **[GO TO DEM11]**
2. $32,065 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_2. [IF DEM7=2] Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1. Less than $41,932, OR **[GO TO DEM11]**
2. $41,932 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_3. [IF DEM7=3] Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1. Less than $51,798, OR **[GO TO DEM11]**
2. $51,798 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_4. [IF DEM7=4] Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1 Less than $61,664 OR **[GO TO DEM11]**
2. $61,664 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_5. [IF DEM7=5] Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1 Less than $71,530, OR **[GO TO DEM11]**
2. $71,530 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_6. [IF DEM7=6] Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1. Less than $81,396, OR **[GO TO DEM11]**
2. $81,396 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_7. [IF DEM7=7] Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1. Less than $83,246, OR **[GO TO DEM11]**
2. $83,246 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

D10_8. [IF DEM7=8] Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1. Less than $85,096, OR **[GO TO DEM11]**
2. $85,096 or more **[GO TO DEM11]**
98. Prefer not to answer **[GO TO DEM11]**

DEM11. [EVERYONE] Which category best describes your total household income in 2013 before taxes? [PHONE: Please stop me when I get to the appropriate category.]

1 Less than $15,000
2 $15,000 to less than $20,000
3 $20,000 to less than $30,000
4 $30,000 to less than $40,000
5 $40,000 to less than $50,000
6 $50,000 to less than $75,000
7 $75,000 to less than $100,000
8 $100,000 to less than $150,000
9 $150,000 or more
96 Prefer not to answer

[CONCLUSION] Thank you very much for taking the time to complete this important survey. **(IF R3=1 or R4 = 1:** The NMR Group will be scheduling these visits in the next few weeks and will call you then.) (Please press 'Next' to submit your survey)

Do you have any comments you would like to share with the research team?

TERM Thank you for your interest in this study. [You must be 18 years or older to complete the survey./We are currently only surveying people who live in Massachusetts permanently.] Please proceed to the next page to find out more about ways to save energy.

CFL REFERENCE FOR INTERVIEWERS

(source: http://www.energystar.gov/index.cfm?c=cfls.pr_cfls_shapes**):**

Bulb Image	Type of Bulb
	Spirals
	A-shaped bulbs: Made to look and feel like traditional incandescents.
	Globe: This refers to a CFL that has a round shape and might be used in a fixture, such as a vanity light.
	Tubed
	Candelabra: Small bulbs for use in decorative fixtures where you can see the light bulb. Often used in chandeliers
	Posts, Capsules, Barrels: Covered post bulbs for outdoor fixtures; there are also yellow "bug light" covered posts, designed to keep away insects.

	Indoor Reflectors: Provide directional light; recessed ceiling lights or ceiling fans.

Appendix I: Example of Advance Letter

Phone Only/Incentive

ID: <<ID>>

Dear <<firstname>> <<lastname>>:

[UTILITY] is continually looking to gain a better understanding of our customers' views on energy use and energy efficiency. Currently, we are conducting a study to give customers like you an opportunity to share your opinions and experiences with us so we can design programs and services that are right for you. [UTILITY] has hired a professional research firm, Tetra Tech, to conduct this survey on our behalf.

Your household is one of a small group that has been randomly selected to represent the many different types of customers [UTILITY] serves. Whether yours is a large household with many people using electricity or just one person, your participation is very important. It will help ensure that other households similar to yours are adequately represented.

Within the next few weeks, you will have the opportunity to participate in a survey that will ask about the use of lighting in your home. This is not a sales effort, and all answers you provide to the survey will be kept confidential. The purpose is to find out how we can better serve our customers. We hope that you will agree to answer the survey. We have included $5 with this letter as a token of our appreciation for your participation in this important survey.

If you have questions about this study, or want to complete the survey over the phone, you can call Tetra Tech's toll free line at 1-800-454-5070 and refer to your ID number at the top right corner of this letter. Tetra Tech's business hours are 9 AM to 8 PM Monday through Thursday, and 9 AM to 5 PM on Friday and Saturday, eastern time. If you leave a message, please let us know the best time to call you back. You may also call [PA CONTACT NAME] at [PA CONTACT PHONE NUMBER].

Thank you in advance for your participation.

Sincerely,

[PA SIGNATURE AND CONTACT INFORMATION]

Si prefiere completar la encuesta en español, por favor llame a 1-800-454-5070 y deje su nombre, número telefónico y la mejor hora para llamarle.

Phone Only/No Incentive

ID: <<ID>>

Dear <<firstname>> <<lastname>>:

[UTILITY] is continually looking to gain a better understanding of our customers' views on energy use and energy efficiency. Currently, we are conducting a study to give customers like you an opportunity to share your opinions and experiences with us so we can design programs and services that are right for you. [UTILITY] has hired a professional research firm, Tetra Tech, to conduct this survey on our behalf.

Your household is one of a small group that has been randomly selected to represent the many different types of customers [UTILITY] serves. Whether yours is a large household with many people using electricity or just one person, your participation is very important. It will help ensure that other households similar to yours are adequately represented.

Within the next few weeks, you will have the opportunity to participate in a survey that will ask about the use of lighting in your home. This is not a sales effort, and all answers you provide to the survey will be kept confidential. The purpose is to find out how we can better serve our customers. We hope that you will agree to answer the survey.

If you have questions about this study, or want to complete the survey over the phone, you can call Tetra Tech's toll free line at 1-800-454-5070 and refer to your ID number at the top right corner of this letter. Tetra Tech's business hours are 9 AM to 8 PM Monday through Thursday, and 9 AM to 5 PM on Friday and Saturday, eastern time. If you leave a message, please let us know the best time to call you back. You may also call [PA CONTACT NAME] at [PA CONTACT PHONE NUMBER].

Thank you in advance for your participation.

Sincerely,

[PA SIGNATURE AND CONTACT INFORMATION]

Si prefiere completar la encuesta en español, por favor llame a 1-800-454-5070 y deje su nombre, número telefónico y la mejor hora para llamarle.

Phone/Web/Incentive

ID: <<ID>>

Dear <<firstname>> <<lastname>>:

[UTILITY] is continually looking to gain a better understanding of our customers' views on energy use and energy efficiency. Currently, we are conducting a study to give customers like you an opportunity to share your opinions and experiences with us so we can design programs and services that are right for you. [UTILITY] has hired a professional research firm, Tetra Tech, to conduct this survey on our behalf.

Your household is one of a small group that has been randomly selected to represent the many different types of customers [UTILITY] serves. Whether yours is a large household with many people using electricity or just one person, your participation is very important. It will help ensure that other households similar to yours are adequately represented.

We are asking that you participate in a survey that asks about the use of lighting in your home. Within the next few weeks, you will have the opportunity to participate in a survey that will ask about the use of lighting in your home. This is not a sales effort, and all answers you provide to the survey will be kept confidential. The purpose is to find out how we can better serve our customers. We hope that you will agree to answer the survey.

To complete the survey on-line, please go to <survey website> before <DATE> and use the ID number «caseID». We have included $5 with this letter as a token of our appreciation for your participation in this important survey. If you are unable to complete the survey on-line, an interviewer from Tetra Tech will be contacting you in the next couple of weeks to ask about your household's lighting equipment.

If you have questions about this study, or want to complete the survey over the phone, you can call Tetra Tech's toll free line at 1-800-454-5070 and refer to your ID number at the top right corner of this letter. Tetra Tech's business hours are 9 AM to 8 PM Monday through Thursday, and 9 AM to 5 PM on Friday and Saturday, eastern time. If you leave a message, please let us know the best time to call you back. You may also call [PA CONTACT NAME] at [PA CONTACT PHONE NUMBER].

Thank you in advance for your participation.

Sincerely,

[PA SIGNATURE AND CONTACT INFORMATION]

Si prefiere completar la encuesta en español, por favor llame a 1-800-454-5070 y deje su nombre, número telefónico y la mejor hora para llamarle.

Phone/Web/No Incentive

ID: <<ID>>

Dear <<firstname>> <<lastname>>:

[UTILITY] is continually looking to gain a better understanding of our customers' views on energy use and energy efficiency. Currently, we are conducting a study to give customers like you an opportunity to share your opinions and experiences with us so we can design programs and services that are right for you. [UTILITY] has hired a professional research firm, Tetra Tech, to conduct this survey on our behalf.

Your household is one of a small group that has been randomly selected to represent the many different types of customers [UTILITY] serves. Whether yours is a large household with many people using electricity or just one person, your participation is very important. It will help ensure that other households similar to yours are adequately represented.

We are asking that you participate in a survey that asks about the use of lighting in your home. Within the next few weeks, you will have the opportunity to participate in a survey that will ask about the use of lighting in your home. This is not a sales effort, and all answers you provide to the survey will be kept confidential. The purpose is to find out how we can better serve our customers. We hope that you will agree to answer the survey.

To complete the survey on-line, please go to <survey website> before <DATE> and use the ID number «caseID». If you are unable to complete the survey on-line, an interviewer from Tetra Tech will be contacting you in the next couple of weeks to ask about your household's lighting equipment.

If you have questions about this study, or want to complete the survey over the phone, you can call Tetra Tech's toll free line at 1-800-454-5070 and refer to your ID number at the top right corner of this letter. Tetra Tech's business hours are 9 AM to 8 PM Monday through Thursday, and 9 AM to 5 PM on Friday and Saturday, eastern time. If you leave a message, please let us know the best time to call you back. You may also call [PA CONTACT NAME] at [PA CONTACT PHONE NUMBER].

Thank you in advance for your participation.

Sincerely,

[PA SIGNATURE AND CONTACT INFORMATION]

Si prefiere completar la encuesta en español, por favor llame a 1-800-454-5070 y deje su nombre, número telefónico y la mejor hora para llamarle.

Appendix J: Detailed Tables for Comparison Area[53]

Awareness of Energy-Saving Light Bulbs and EISA

CFL Awareness and Bulb Familiarity

Table J-1: CFL Awareness by Region

	MA	GA	KS
Sample size	*235*	*526*	*556*
Yes	79%	77%	87%*
No	21%	23%	13%*

Base: All respondents.
* Significantly different from MA and GA at the 90% confidence level.

Table J-2: CFL Familiarity by Region

CFL Familiarity	MA	GA	KS
Sample size	*235*	*526*	*556*
Very familiar	29%	21%	24%
Somewhat familiar	32%	36%	37%
Not too familiar	13%	14%	21%
Not at all familiar	5%	6%	4%
Not aware	20%	23%	13%
Don't know / refused	0%	2%	1%

Base: All respondents.

Table J-3: LED Familiarity by Region

LED Familiarity	MA	GA	KS
Sample size	*235*	*526*	*556*
Very familiar	25%	25%	21%
Somewhat familiar	29%	29%	32%
Not too familiar	20%	19%	20%
Not at all familiar	25%	26%	26%
Don't know / refused	1%	1%	2%

Base: All respondents.

[53] To be consistent with the comparison area findings, the results for Massachusetts only include responses from individuals who completed the survey by telephone and did not receive an incentive (phone-only, no incentive group).

Table J-4: Judgments about Relative Energy Use by Region

Which bulb uses less energy?	MA	GA	KS
Sample size	*105*	*197*	*233*
CFLs use less energy	67%	63%	60%
Halogens use less energy	10%	13%	12%
They use about the same	11%	14%	13%
Don't know/refused	12%	10%	15%

Base: Respondents who are somewhat or very familiar with both CFLs and halogens bulbs.

EISA Awareness

Table J-5: EISA Awareness by Region

Had you heard about this law before this call?	MA	GA	KS
Sample size	*235*	*526*	*556*
Yes	*48%*	*47%*	*59%*
No	52%	*52%*	*40%*
Don't know/Refused	0%	*1%*	*1%*

Base: All respondents.

Use of Various Lighting Technologies

CFL Bulb Use

Table J-6: Current CFL Use by Region

Do you currently have CFLs installed on the interior or exterior of your home?	MA	GA	KS
Sample size	*235*	*526*	*556*
Yes	53%	56%	60%*
No	4%	14%	21%
Not Aware/Familiar with CFLs	43%	27%	18%
Don't know/Refused	0%	3%	2%

Base: All respondents.
GA and KS responses weighted to be consistent with the demographic characteristics of MA.

Table J-7: Number of CFLs Installed by Region

Number of bulbs installed on the interior or exterior of your home?	MA	GA	KS
Sample size	*137*	*285*	*337*
≤4 bulbs	21%	*28%*	29%
5-9 bulbs	30%	*36%*	28%
≥10 bulbs	49%	*35%*	43%
Don't know/Refused	0%	0%	0%

Base: Respondents who said that they have CFLs installed.

LED Bulb Use

Table J-8: LED Use by Region

Are you currently using LED screw in bulbs in your home	MA	GA	KS
Sample size	*235*	*386*	*407*
Yes	25%	35%	32%
No	44%	36%	37%
Not Aware	26%	27%	27%
Don't know/Refused	5%	3%	4%

Base: All respondents.
GA and KS responses weighted to be consistent with the demographic characteristics of MA

Housing Characteristics [54]

Table J-9: Type of Home by Region

Type of home	MA	GA	KS
Sample size	*235*	*526*	*556*
Single-family detached house	36%	71%*	72%*
Single-family attached house (townhouse, row house, or duplex)	7%	3%*	8% $^{\alpha}$
Apartment building with 2-4 units	20%	6%*	4%*
Apartment building with 5 or more units	31%	12%*	11%*
Mobile home or house trailer	0%	7%*	4%* $^{\alpha}$
Other	6%	1%*	1%*
Don't know/Refused	0%	<1%	0%

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
$^{\alpha}$ Significantly different from GA at the 90% confidence level.

[54] The results for housing characteristics and social attributes are unweighted demographic features of the three samples. This is consistent with how the demographic items are reported for the Massachusetts Consumer Survey.

Table J-10: Decade in Which Home was Built by Region

Decade	MA	GA	KS
Sample size	*105*	*391*	*444*
1930s or earlier	23%	4%*	14%* α
1940s	7%	1%*	6% α
1950s	12%	5%*	13% α
1960s	9%	9%	12%
1970s	12%	14%*	16%*
1980s	13%	14%	9%* α
1990s	7%	20%*	11% α
2000 or later	10%	25%*	12% α
Don't know/Refused	7%	7%	8%

Base: Those living in single family houses
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level.

Table J-11: Ownership of Occupied Homes by Region

Tenure	MA	GA	KS
Sample size	*235*	*526*	*556*
Own/Buying	58%	65%	67%
Rent/Lease	41%	34%	31%
Occupied without payment or rent	0%	0%	0%
Other	0%	0%	1%
Don't know/Refused	0%	1%	0%

Base: All Respondents

Table J-12: Size of Home by Region

Square Feet	MA	GA	KS
Sample size	*173*	*336*	*401*
Less than 1,400	47%	22%*	34%* α
1,400 – 1,999	29%	36%*	36%*
2,000 –2,499	13%	18%	13% α
2,500 – 3,499	6%	13%	10%
3,500 – 3,999	1%	3%*	4%*
4,000 – 4,999	2%	3%	2%
5,000 or more	2%	3%*	1% α
Don't know/Refused (sample size)	62	160	155

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Table J-13: Rooms in Home by Region

Total Rooms	MA	GA	KS
Sample size	*235*	*526*	*556*
1	3%	0%*	1% α
2	6%	2%*	2% *
3	14%	9%	10%
4	16%	14%	12% *
5	18%	19%	19%
6	14%	18%	17%
7	11%	15%	13%
8	6%	9%	14% * α
9	3%	5%	5%
10 or more	6%	9%	7%
Don't know/Refused	1%	<1%	<1%

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Social Attributes

Table J-14: Highest Level of Education by Region

Degree Attained	MA	GA	KS
Sample size	*235*	*526*	*556*
Less than high school graduate	2%	13%*	9%* α
High school graduate (Includes GED)	14%	26%*	25%*
Some college or associates degree	20%	30%*	33%*
Bachelor's degree or higher	62%	30%*	30%*
Don't know/refused	1%	1%*	2%

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Table J-15: Number of Persons Living In the Home by Region

Number of household members	MA	GA	KS
Sample size	*235*	*526*	*556*
1	30%	20%*	29% α
2	45%	34%*	37%
3	11%	18%*	11% α
4	9%	15%	10% α
5	3%	8%*	8%*
6 or more	1%	4%*	4%*
Don't know/refused	1%	<1%	<1%

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Table J-16: Level of Income by Region

Income Level	MA	GA	KS
Sample size	*235*	*526*	*556*
Low income	27%	25%	18%* α
Not low income	61%	58%	64% α
Prefer not to answer	11%	17%	12% α

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Table J-17: 2013 Pre-Tax Household Income by Region

Income Level	MA	GA	KS
Sample size	*235*	*526*	*556*
Less than $50,000	37%	51%*	49%*
$50,000 to less than $75,000	15%	10%*	11%*
$75,000 to less than $100,000	11%	6%*	9% α
$100,000 to less than $150,000	14%	7%*	7%*
$150,000 or more	8%	6%	4%*
Prefer not to answer	14%	20%	20%

Base: All Respondents
* Significantly different from MA at the 90% confidence level.
α Significantly different from GA at the 90% confidence level

Appendix K: Comparison Area Weighting Schemes

To align the data with the demographic characteristics of the respective comparison areas, the team applied a weighting scheme to reflect the conditions in those regions. In a couple of key instances where results serve as a proxy for Massachusetts, the data were weighted to be consistent with demographic characteristics of Massachusetts.

Table K-1: Comparison Area Weighting Scheme

	Households	Sample Size	Weight proportionate to Comparison Area	Weight proportionate to MA
Georgia				
State Total	*3,504,888*	*526*		
Owner-occupied housing units				
Less than high school graduate	245,031	24	2.35	0.79
High school graduate	576,202	79	1.12	0.91
Some college or Associate's degree	645,648	111	0.98	0.74
Bachelor's degree or higher	809,271	195	0.59	0.79
Renter-occupied housing units				
Less than high school graduate	224,415	9	4.63	3.55
High school graduate	347,152	31	1.77	1.71
Some college or Associate's degree	407,472	33	1.93	1.60
Bachelor's degree or higher	249,697	30	1.27	2.01
Don't know, refused		14	1.00	1.00
Kansas				
State Total	*1,095,088*	*556*		
Owner-occupied housing units				
Less than high school graduate	55,452	12	2.35	1.68
High school graduate	188,794	86	1.12	0.89
Some college or Associate's degree	239,355	124	0.98	0.70
Bachelor's degree or higher	261,280	224	0.59	0.73
Renter-occupied housing units				
Less than high school graduate	45,590	5	4.63	6.76
High school graduate	94,261	27	1.77	2.08
Some college or Associate's degree	132,917	35	1.93	1.59
Bachelor's degree or higher	77,439	31	1.27	2.06
Don't know, refused	55,452	12	1.00	1.00

Appendix L: Comparison Area Questionnaire

Introduction

R0 Hello, my name is _____ and I am calling from Tetra Tech, a research and consulting firm. We are conducting a study about household lighting in order to inform energy efficiency policy. I'm not selling anything. I just want to ask you some questions about lighting in your home. The survey will take about 10 minutes to complete, and if you agree to let us come on site to conduct an inventory of your lighting you will receive $150.

Is there an adult over the age of 18 available who is responsible for purchasing the light bulbs for your household?

1 Yes
2 No **[SKIP TO ENDCALL]**
3 Not available **[TRY TO RESCHEDULE AND THEN TERMINATE]**

R0a This survey is being conducted on behalf of energy-efficiency program administrators in Massachusetts. They are interested in learning about lighting use in states across the nation to improve programs and policies not only in Massachusetts but across the country.

[If necessary: Matt Nelson at Northeast Utilities, NSTAR Electric can answer your questions about this study. He can be reached at 781-441-3456. We have also notified the call centers at local electric utilities about this study, and they should be able to verify its legitimacy.]

[If necessary: The program administrators are electric utilities and energy service providers in Massachusetts.]

1 Continue

Screeners

CELL1 **[ASK IF CELL=1]** I would just like to confirm that you are in a location where it is safe to talk to you on your cell phone [NOTE: We want to be sure the respondent is not talking on their cell phone while driving a car.]

1 Yes, it is okay to continue conversation
2 No **[SCHEDULE A TIME TO CALLBACK AND TERMINATE]**

R1 **[ASK IF CELL1=1]** Are you 18 years of age or older?

1 Yes
2 No **[SKIP TO ENDCALL]**
D Don't know/refused **[SKIP TO ENDCALL]**

R2 **[ASK IF R1=1]** Is your permanent address in **[STATE]?**
[IF NEEDED: By permanent address we mean you live here most of the year.]

1	Yes	
2	No	**[SKIP TO ENDCALL]**
D	Don't know/refused	**[SKIP TO ENDCALL]**

R2A **[ASK IF R2=1 & KANSAS=1]** In which county do you live?

1	Allen	19	Geary	36	Nemaha	
2	Anderson	20	Greenwood	37	Neosho	
3	Atchison	21	Harper	38	Osage	
4	Bourbon	22	Harvey	39	Pottawatomie	
5	Brown	23	Jackson	40	Reno	
7	Butler	24	Jefferson	41	Riley	
8	Chase	25	Johnson	42	Sedgwick	
9	Chautauqua	26	Kingman	43	Shawnee	
10	Cherokee	27	Labette	44	Sumner	
11	Coffey	28	Leavenworth	45	Wabaunsee	
12	Cowley	29	Linn	46	Wilson	
13	Crawford	30	Lyon	47	Woodson	
14	Dickinson	31	McPherson	48	Wyandotte	
15	Doniphan	32	Marion	49	Other [SPECIFY]	**[SKIP TO ENDCALL]**
16	Douglas	33	Miami	50	Don't know	**[SKIP TO ENDCALL]**
17	Elk	34	Montgomery	51	Refused	**[SKIP TO ENDCALL]**
18	Franklin	35	Morris			

Awareness of Energy-Saving Light Bulbs

S1 Before this call today, had you ever heard of Compact fluorescent light bulbs or CFLs?

1	Yes	**[SKIP TO S3]**
2	No	
D	Don't know	
R	Refused	

S2 **[ASK IF S1=2 OR D OR R]** Compact fluorescent light bulbs – also known as CFLs – usually do not look like regular incandescent bulbs. The most common type of compact fluorescent bulb is made with a glass tube bent into a spiral, resembling soft-serve ice cream, and it fits in a regular light bulb socket. Thinking about it again, before today, had you heard of CFLs?

1	Yes	
2	No	**[SKIP TO S4]**
D	Don't know	**[SKIP TO S4]**
R	Refused	**[SKIP TO S4]**

S3 **[ASK IF S1 =1 OR S2=1]** How familiar are you with CFLs? Would you say that you are…?

1 Very familiar
2 Somewhat familiar
3 Not too familiar
4 Not at all familiar
D Don't know
R Refused

S4 Another type of light bulb that is used in homes is called an L-E-D **[SAY THE LETTERS L-E-D]**, also known as a light emitting diode bulb. These bulbs have regular screw bases that fit into most sockets. We are not referring to battery-operated LEDs, holiday lights, or decorative strands. How familiar are you with LED light bulbs that screw into regular light sockets? Would you say that you are…?

1 Very familiar
2 Somewhat familiar
3 Not too familiar
4 Not at all familiar
D Don't know
R Refused

S5 Another type of light bulb is a halogen bulb. These bulbs have regular screw bases that fit into most sockets; they do not need special attachments to work in regular sockets. How familiar are you with halogen bulbs that screw into regular light sockets? Would you say that you are…?

1 Very familiar
2 Somewhat familiar
3 Not too familiar **[SKIP TO EISA1]**
4 Not at all familiar **[SKIP TO EISA1]**
D Don't know **[SKIP TO EISA1]**
R Refused **[SKIP TO EISA1]**

S6 **[ASK IF S5=1 OR 2 AND S3=1 OR 2]** As far as you know, which type of bulb uses less energy to produce light**—[RANDOMIZE AND READ: "compact fluorescent light bulbs" or "halogen bulbs"]**—or do both bulbs use about the same amount of energy? [USE SAME RANDOM ORDER PREVIOUSLY USED IN THE QUESTION; ACCEPT ONE RESPONSE.]

1 Compact fluorescent light bulbs use less energy
2 Halogen bulbs use less energy
3 Both bulbs use about the same amount of energy
D Don't know
R Refused

EISA Awareness & Future Expectations

EISA1 A recent federal law, the Energy Independence and Security Act of 2007, restricted the sale of standard 100 Watt incandescent bulbs manufactured after January 1, 2012, standard 75 Watt incandescent bulbs manufactured after January 1, 2013, and standard 40 and 60 Watt

incandescent bulbs manufactured after January 1, 2014. Had you heard about this law before this call?

1 Yes
2 No
D Don't know
R Refused

Energy-Efficient Light Bulb Use

USE1 **[ASK IF S3= 1, 2, 3]** Do you CURRENTLY have CFLs installed on the interior or exterior of your home?

1 Yes
2 No **[SKIP TO LED1]**
D Don't know **[SKIP TO LED1]**
R Refused **[SKIP TO LED1]**

USE1A **[ASK IF USE1 = 1]** Approximately how many compact fluorescent bulbs are currently installed on the interior or exterior of your home? Four or less, Five to nine, or Ten or more?

1 Four or less
2 Five to nine
3 Ten or more
D Don't know
R Refused

LED1 **[ASK IF S4= 1, 2, OR 3]** Are you currently using L-E-D screw in bulbs in your home—the kind that screw into regular light sockets?

1 Yes
2 No
D Don't know
R Refused

Onsite Recruitment

R3int The Massachusetts energy-efficiency program administrators are offering you the opportunity to take part in an important study.
[If needed: The program administrators are electric utilities and energy service providers in Massachusetts.]

We are offering eligible households $150 to allow a trained technician to visit their homes to gather more information about the lighting products they use. The visit should take about two hours. If your home is found to be eligible, the visit may also involve a trained technician walking through your home and recording the types of lighting products that you are using. During this visit, there will be no attempt to sell you anything. The information gathered will be used to evaluate and improve energy efficiency programs. You can follow the technician around or spend your time doing something else, it is your choice.

[If needed: Again, the person to call in Massachusetts to confirm the legitimacy of the study is Matt Nelson of Northeast Utilities, NSTAR Electric at 781-441-3456.]

We have also informed the local electricity utilities in the area about this study.

1 Continue

R3 Would you be interested in being a part of this type of visit? [READ FAQ IF NEEDED]
[IF GEOGIA=1 SHOW "IF NEEDED: NMR will issue the $150 using checks.]
[IF KANSAS=1 SHOW "IF NEEDED: Navigant will issue the $150 using gift cards.]

1	Yes	**[SKIP TO R5]**
2	No	**[SKIP TO DEMint]**
D	Don't know	**[ADDRESS ANY QUESTIONS]**

R4 **[ASK IF R3=D]** That's OK; you do not have to decide now. Would it be OK if I take your name and have someone call you when we are scheduling these visits?

1	Yes	
2	No	**[SKIP TO DEMint]**

R5int **[ASK IF R3=1 OR R4=1]** I just need to get some contact information from you so we can call and **[IF R3=1 "schedule the visit."] [IF R4=1 "talk about the visit."]**

R5 What is your name? First: **[RECORD]**

Last:

- ### -

R6 And what is the best number to call you about a visit? PHONE1: **[RECORD]**

R7 Is there a second number that we can also try to call you at? ### - ### - ####
PHONE2: **[RECORD]**

R8 **[IF R VOLUNTEERS THAT THEY PREFER TO BE CONTACTED BY EMAIL, COLLECT EMAIL ADDRESS. OTHERWISE, DO NOT COLLECT EMAIL ADDRESS.]** EMAIL: **[RECORD]**

R9 What is the best time of day to reach you? Morning, afternoon, or evening?

1 Morning
2 Afternoon
3 Evening
D Anytime/Don't know/refused

R10 **[IF R3=1]** What is your address?

R10A	STREET ADDRESS	**[RECORD]**
R10B	CITY	**[RECORD]**
R10C	ZIP CODE	**[RECORD]**

R11 **[SHOW IF GEORGIA=1]** If your household is eligible for this study, when we call to **[R3=1 "schedule"] [R4=1 "talk about the visit"],** your caller ID will most likely say "NMR or NMR Group" and will have a 617 area code. If you'd like to make an appointment yourself, please contact NMR's scheduler, Erin Coates, at 617-284-6230 x19 or ecoates@nmrgroupinc.com.

[SHOW IF KANSAS=1] If your household is eligible for this study, when we call to **[R3=1 "schedule"] [R4=1 "talk about the visit"],** your caller ID will most likely say "Navigant or Navigant Consulting" and will have a 303 area code. If you'd like to make an appointment yourself, please contact Thom Lynch, at 303-728-2552 or Thom.Lynch@navigant.com.

1 Continue

Customer Demographics

DEMint Now, I just have a few more questions about some characteristics of your household.

1 Continue

DEM1 What type of home do you live in? Is it . . .? [If asked why you're asking this question, READ: "We want to make sure everyone in your area has an equal chance of being included in the survey, so that the sample is as representative as possible. For that reason we collect demographic information, such as this question."]

1 A one-family house detached from any other house **[SKIP TO DEM2]**
2 A one-family house attached to one or more houses **[SKIP TO DEM2]**
3 In a building with 2, 3, or 4 apartments **[SKIP TO DEM3]**
4 In a building with 5 or more apartments **[SKIP TO DEM3]**
5 A mobile home **[SKIP TO DEM3]**
6 Or something else? [SPECIFY]
D Don't know/refused **[SKIP TO DEM3]**

DEM1A **[ASK IF DEM1=6] [DO NOT READ]** Was the home described a condominium?

1 Condominium
2 Something else [SPECIFY] **[SKIP TO DEM3]**

DEM1B **[ASK IF DEM1A = 1]** What type of condominium is it? Is it . . .?

1 A one-family condominium attached to one or more units, with a wall separating the units from basement to roof
2 A condominium in a building with 2, 3, or 4 units **[SKIP TO DEM3]**
3 A condominium in a building with 5 or more units **[SKIP TO DEM3]**
4 Another type of condominium? [SPECIFY] **[SKIP TO DEM3]**

DEM2 **[ASK IF DEM1 = 1, 2 OR DEM1B= 1]** When was your home built? Please stop me when I get to the appropriate category.

1 1930s or earlier
2 1940s
3 1950s
4 1960s
5 1970s
6 1980s
7 1990s
8 2000 or later
D Don't know
R Refused

DEM3 Do you or members of your household own this home or do you rent?

1 Own/Buying
2 Rent/Lease
3 Occupied without Payment or Rent
4 Other [SPECIFY]
D Don't know
R Refused

DEM4 Approximately how large is your home**? [READ LIST IF NECESSARY]**

1 Less than 1,400 square feet
2 1,400 to less than 2000 square feet
3 2,000 to less than 2500 square feet
4 2,500 to less than 3500 square feet
5 3,500 to less than 4000 square feet
6 4,000 to less than 5000 square feet
7 5,000 square feet or more
D Don't know
R Refused

DEM5 How many rooms are in your home, not counting bathrooms? **[HELP RESPONDENTS COUNT ROOMS IF NEEDED, KEEPING TRACK ON A PIECE OF PAPER OF THE # OF ROOMS AS THEY NAME THEM] [IF NEEDED: Please count rooms in the basement only if you consider them livable.]**

__ [RECORD RESPONSE]

88 Don't know
99 Refused

DEM6 What is the highest level of education that the head of household has completed so far? [READ CATEGORIES IF NECESSARY] **[IF NEEDED: Please answer this question for whoever you would define as the head of your household.]**

1 Less than Ninth Grade
2 Ninth to Twelfth Grade, No Diploma
3 High School Graduate (includes GED)
4 Some College, No Degree
5 Associates Degree
6 Bachelor's Degree
7 Graduate or Professional Degree
D Don't know
R Refused

DEM7 Counting yourself, how many people live in your home for most of the year?

1	(1)	**[GO TO DEM8_1]**
2	(2)	**[GO TO DEM8_2]**
3	(3)	**[GO TO DEM8_3]**
4	(4)	**[GO TO DEM8_4]**
5	(5)	**[GO TO DEM8_5]**
6	(6)	**[GO TO DEM8_6]**
7	(7)	**[GO TO DEM8_7]**
8	(8) or more	**[GO TO DEM8_8]**
D	Don't know/refused	**[GO TO DEM9]**

[ASK DEM8_Gs IF GEORGIA=1]

DEM8_1G **[ASK IF DEM7=1]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $21,029, OR	**[SKIP TO DEM9]**
2	$21,029 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_2G **[ASK IF DEM7=2]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $27,500, OR	**[SKIP TO DEM9]**
2	$27,500 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_3G **[ASK IF DEM7=3]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $33,970, OR	**[SKIP TO DEM9]**

2	$33,970 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_4G **[ASK IF DEM7=4]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $40,441 OR	**[SKIP TO DEM9]**
2	$40,441 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_5G **[ASK IF DEM7=5]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $46,912, OR	**[SKIP TO DEM9]**
2	$46,912 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_6G **[ASK IF DEM7=6]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $53,382, OR	**[SKIP TO DEM9]**
2	$53,382 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_7G **[ASK IF DEM7=7]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $54,595, OR	**[SKIP TO DEM9]**
2	$54,595 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_8G **[ASK IF DEM7=8]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $55,809, OR	**[SKIP TO DEM9]**
2	$55,809 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

[ASK DEM8_Ks IF KANSAS=1]

DEM8_1K **[ASK IF DEM7=1]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $15,171, OR	**[SKIP TO DEM9]**
2	$15,171 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_2K **[ASK IF DEM7=2]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $20,449 OR	**[SKIP TO DEM9]**
2	$20,449 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_3K **[ASK IF DEM7=3]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $25,727, OR	**[SKIP TO DEM9]**
2	$25,727 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_4K **[ASK IF DEM7=4]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $31,005 OR	**[SKIP TO DEM9]**
2	$31,005 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_5K **[ASK IF DEM7=5]** Which of these categories best describes your total household income in 2013 before taxes—counting everyone living in your house?

1	Less than $36,283, OR	**[SKIP TO DEM9]**
2	$36,283 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_6K **[ASK IF DEM7=6]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $41,561, OR	**[SKIP TO DEM9]**
2	$41,561 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_7K **[ASK IF DEM7=7]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $46,839, OR	**[SKIP TO DEM9]**
2	$46,839 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM8_8K **[ASK IF DEM7=8]** Which of these categories best describes your total household income in 2013 before taxes— counting everyone living in your house?

1	Less than $52,117, OR	**[SKIP TO DEM9]**
2	$52,117 or more	**[SKIP TO DEM9]**
D	Don't know/refused	**[SKIP TO DEM9]**

DEM9 Which category best describes your total household income in 2013 before taxes? Please stop me when I get to the appropriate category.

1	Less than $15,000
2	$15,000 to less than $20,000
3	$20,000 to less than $30,000
4	$30,000 to less than $40,000
5	$40,000 to less than $50,000
6	$50,000 to less than $75,000
7	$75,000 to less than $100,000
8	$100,000 to less than $150,000
9	$150,000 or more
D	Don't know
R	Refused

DEM10 To confirm, have we reached you on your **[IF CELL=1, SHOW "cell phone"] / [IF LANDLINE=1, SHOW "landline phone"]** today?

1	Reached on cell phone	
2	Reached on landline phone	**[SKIP TO DEM12]**
D	Don't know/Refused	**[SKIP TO END]**

DEM11 **[ASK IF DEM10=1]** Do you also have a working landline phone? [IF NEEDED: This would be your home phone, not a cell phone or mobile phone.]

1	Yes	**[SKIP TO DEM13]**
2	No	**[SKIP TO END]**
D	Don't know/Refused	**[SKIP TO END]**

DEM12 **[ASK IF DEM10=2]** Do you also have a working cell phone?

1	Yes	
2	No	**[SKIP TO END]**
D	Don't know/Refused	**[SKIP TO END]**

DEM13 **[ASK IF DEM11=1 OR DEM12=1]** Of all the telephone calls that you receive, are …

1	All or almost all calls received on cell phone
2	Some received on cell phone and some on regular phone
3	Very few or none on cell phone
D	Don't know/Refused

END Thank you very, very much. **[IF R3=1 OR R4=1 SHOW: "As I said, [NMR/Navigant] will be scheduling these visits in the next few weeks and will call you then."]** Those are all the questions I have for you today. Do you have any comments?

[RECORD RESPONSE] [IF NO COMMENTS, HIT ENTER TWICE]