Lighting Retailer, Supplier Perspectives on the Massachusetts ENERGY STAR® Lighting Program

FINAL

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1. Executive Summary

DNV KEMA, working as a subcontractor to NMR Group (NMR) on the Massachusetts Residential Retail Products evaluation team, is pleased to submit this draft report of the findings from retailer and supplier interviews conducted in support of the evaluation of the 2011-2012 Massachusetts ENERGY STAR® Lighting Program. This executive summary highlights key findings from the report. The full report presents these and other findings in more detail.

The primary data collection efforts for this evaluation included:

1. *In-depth interviews with the major lighting manufacturers and high-level retail buyers who participated in the Massachusetts program.* We interviewed 10 representatives of participating manufacturers, including representatives of four of the five manufacturers who had the biggest share of product shipments in the program. We also interviewed lighting buyers for three of the five largest retailers in the program. These interviews were conducted in two waves, with the first wave fielded in Q2 and Q3 2012 and the second wave in Q1 and Q2 2013. A few lighting suppliers were interviewed in both waves, but most were interviewed in only one of the two waves.

2. *Store manager CATI survey*. We completed a Computer-Aided Telephone Interview (CATI) survey of 240 store managers who participated in the Massachusetts ENERGY STAR lighting program during the 2011-2012 period. This survey entered the field in December 2012 and was completed in January 2013.

1.1 The Impacts of EISA

The December 2007 Energy Independence and Security Act (EISA) called for a gradual phase-out of inefficient lamps over time starting in 2012. Following are some key findings from the Massachusetts retailer surveys and supplier interviews concerning the impacts of the EISA legislation.

1.1.1 Impacts on the Lighting Market in General

- *Store manager awareness of the EISA legislation has increased significantly since 2010*.[1] Two-thirds (67%) of the store managers we surveyed in December 2012 claimed awareness of the

[1] For the sake of simplicity, throughout this report we will mostly refer to the survey respondents as "store managers." We did ask the survey respondents for their job titles and 63 percent of them called themselves either store managers, managers, assistant managers, general merchandise managers, or store directors. The remainder gave a variety of other job titles. When we asked them how many years they had been working with the sale of lighting products, the average response was 12.5 years.

legislation, compared to just 43 percent in December 2010. All retailer channels except Small Hardware and the Lighting/Electronics showed significant jumps in awareness of the EISA legislation.[2]

- *Less than one-half of the EISA-aware store managers said that the EISA legislation had impacted their stocking practices*. The December 2012 survey asked the store managers who had claimed awareness of the EISA legislation whether the legislation had had any impact on their stocking practices over the past two years. Less than one-half (40%) of them said that it had. Only in two retail channels – Home Improvement and Lighting/Electronics – did a majority of the store managers say that the EISA legislation had impacted their stocking practices.

- *Fifty-six percent of EISA-aware store managers observed changes in their customers' purchasing behavior in response to the new legislation.* When we asked these EISA-aware store managers what changes they had observed, by far the most frequent response (48% of respondents) was that customers were purchasing more CFLs and other energy-efficient bulbs than they had before. Yet over a quarter (28%) of the respondents also said that some of their customers were reluctant to give up on the incandescent bulbs, and 22 percent of them said that some of their customers were stockpiling the 100-Watt and other incandescent bulbs. A number of retailers commented on a generational divide, with their older customers still seeking the incandescent bulbs while young and middle-aged consumers were purchasing the CFLs.

1.1.2 Impacts on Incandescent Bulbs[3]

- *Fifty-five percent of EISA-aware store managers who said that the EISA legislation had impacted their stocking practices said that their stocks of incandescent bulbs had decreased.*[4]

[2] In this report we often break down the survey/interview responses from retailers and suppliers according to the retail channel they represent. There are eight retail channels, including Discount, Drug, Grocery, Small Hardware, Large Home Improvement, Lighting & Electronics, Mass Merchandise, and Membership Club. Brief descriptions of these channels, along with representative examples of the kinds of stores in each, appear in 2.1 of this report.

[3] A word of caution: Because of the filtering of survey questions, the number of retailers who were asked some questions in the survey was sometimes a smaller subsample of the overall retailer sample. For example, only 78 retailers were asked the question about the impact of EISA on their stocking of incandescent bulbs. This is because we first had to filter for whether the retailers were aware of EISA, then we had to filter for whether they had observed EISA impacts on the stocking practices, and finally we had to filter for whether they even stocked incandescent bulbs. Because this filtering was somewhat complicated, we tried to be clear in our text as to what subsample of the overall retailer population was actually asked a given question. One consequence of these smaller sample sizes, especially for questions concerning specific lighting technologies, is that the differences between survey responses are sometimes not statistically significant at the 90% confidence level.

- *EISA impacts on incandescent bulb sales.* Thirty-nine percent of the EISA-aware store managers who had observed EISA-driven changes in their shoppers' behaviors said that their sales of incandescent bulbs had decreased due to EISA, compared to 25 percent who said that sales had increased. This difference was statistically significant at the 90 percent confidence level. Thirty-one percent said that their incandescent bulb sales had stayed about the same.

- *Some lighting market actors reported hoarding of incandescent bulbs.* Twenty-two percent of the store managers who had noticed a change in their customers' purchasing behavior in response to EISA (about 10% of all the retailers in our sample) reported some hoarding of incandescent bulbs. In addition, one buyer for a major retailer, which also has a major presence in the Massachusetts program, indicated that his company had experienced a spike in sales of incandescent bulbs soon after the legislation went into effect. This sales spike encompassed all incandescent wattages, not just the higher wattage bulbs subject to the initial stages of the phase-out. A couple of incandescent bulb manufacturers also reported a spike in demand for these products, which they attributed to hoarding by retailers. However, it is important to note that the onsite surveys that were conducted in the spring of 2013 by another member of the evaluation team did not find much evidence of EISA-driven hoarding.

1.1.3 Impacts on CFLs

- *EISA impacts on CFL sales and stocking.* Two-thirds of the store managers who had said that their stocking practices had changed in response to the EISA legislation said that their stocking of standard CFLs had increased. In addition, nearly three-quarters (74%) of the store managers who had observed changes in consumer behavior due to EISA said that their sales of standard CFLs had increased in response to the new legislation. Both of these percentages were larger, to a statistically significant degree, than those who said that their CFL sales/stocks had decreased or stayed the same due to EISA.

[4] In this example, 47 retailers said that their stocking of incandescent bulbs decreased due to EISA (the percent in this bullet is 55%, not 60% (47/78), due to sample weighting). So if one calculates this proportion based on all the retailers who were aware of EISA (n=174), the unweighted percentage would be 47/174 = 27%. As a general rule, however, we reported the percentages in this report based on the actual subsamples of respondents who were asked the questions and did not try to calculate new percentages based on logical inferences about the implied larger population if filtering had not occurred, as we did in this footnote. One reason for this is that while these percentages are not difficult to calculate in their unweighted format (e.g., 47/174), incorporating the sample weighting makes these calculations much more complicated and time consuming and we wanted to be consistent about using weighted percentages throughout. We did provide information in this report that will allow the curious reader to get a good approximation of what percentage a given subsample was of a larger relevant population. For example, if one multiplies the percentage of EISA-aware retailers who said their stocking practices had changed due to EISA (40%) by the percentage of these respondents who said that their incandescent stocking had decreased (55%), you get 22 percent, which is close to the unweighted calculation of 27 percent.

- *Lighting manufacturers and retail buyers pointed to factors that both increased and limited the sales of the CFLs during the early stages of the EISA phase-out.*

  - Factors increasing the sales of the CFLs included:
    - The willingness of the Massachusetts program to continue to offer buydown discounts on the higher-wattage CFLs, thus keeping them cost competitive with the EISA-compliant halogens.
    - The fact that there was not a higher-wattage LED bulb that was an affordable alternative.
  - Factors limiting the sales of the CFLs included:
    - Four of the ten manufacturers we interviewed mentioned a spike in the price of phosphorous from China in 2011, which caused CFL prices to surge before eventually coming down again.
    - Six of the ten manufacturers mentioned that consumer discontent with some performance aspects of the CFLs (e.g., problems with dimmability and slow start-up times) were limiting consumer demand for CFLs to a certain degree.
    - As indicated previously, some market actors cited some evidence of hoarding of incandescent bulbs.

- *A slight majority of store managers who reported EISA-related impacts said that their sales and stocks of A-line CFLs had increased.* Fifty-nine percent of the store managers who has said that their stocking practices had changed in response to the EISA legislation said that their stocking of A-line CFLs had increased. In addition, 54 percent of the store managers who had observed changes in consumer behavior due to EISA said that their sales of A-line CFLs had increased in response to the new legislation.

- *Fifty-four percent of the store managers who had said that their stocking practices had changed in response to the EISA legislation said that their stocking of specialty CFLs had increased*[5]. In addition, 43 percent of the store managers who had observed changes in consumer behavior due to EISA said that their sales of specialty CFLs had increased in response to the new legislation.

- *Lighting manufacturers and retail buyers reported that emerging LED technologies are more likely to take market share away from specialty CFLs than from standard spiral CFLs.* Some lighting manufacturers speculated that the specialty CFLs that will face the biggest competition

[5] In this report we are defining specialty CFLs the way that the program tracking database defined specialty CFLs at the time we designed the interview guide—that is as including dimmable CFLs, A-line CFLs, candelabra CFLs, CFL reflectors, globe-shaped CFLs, CFL floodlights, and 3-way CFLs.

from the LED bulbs will be A-line CFLs and reflector CFL bulbs such as the R-30s. They said that this was due to the superior performance of the new LED bulbs in terms of start-up times and dimming capability. They also observed that the price difference between LED bulbs and specialty CFLs was smaller than it was between LED bulbs and standard spiral CFLs.

1.1.4 Impacts on LEDs

- *A slight majority of store managers who reported EISA-related impacts said that their sales and stocks of LED bulbs had increased.* Fifty-seven percent of the store managers who had said that their stocking practices had changed in response to the EISA legislation said that their stocking of LED bulbs had increased. In addition, 58 percent of the store managers who had observed changes in consumer behavior due to EISA said that their sales of LED bulbs had increased in response to the new legislation. Other LED market trends and barriers are discussed below.

1.1.5 Impacts on Halogens

- *There was some disagreement among lighting manufacturers as to how well the EISA-compliant halogen bulbs were selling.* Some manufacturers thought that recent decisions by many upstream lighting programs to limit buydown discounts for standard spiral CFLs created a risk that many consumers would switch to the less expensive, but much less efficient, halogens. However, other manufacturer representatives thought that hoarding of incandescent bulbs was evidence that not enough marketing had been done to educate consumers about these halogens.

- *Only a small minority of store managers who reported EISA-related impacts said that their sales and stocks of halogen bulbs had increased.* Only 23 percent of the store managers who has said that their stocking practices had changed in response to the EISA legislation said that their stocking of halogen bulbs had increased. In addition, only 28 percent of the store managers who had observed changes in consumer behavior due to EISA said that their sales of halogen bulbs had increased in response to the new legislation.

1.2 The Market for LED Bulbs

This section presents the findings from the lighting retailer and supplier interviews concerning the Massachusetts market for LED bulbs.

1.2.1 LED Bulb Sales Trends

- *Program penetration of LED sales.* According to the program tracking data, only 41 of the 240 participating stores in our sample (17%) had sold LED products through the program. However, we asked all of the store managers whether they sold LED bulbs, and over one-half (57%) of

them said that they did. The program has the most success getting retailers in the Home Improvement and Membership Club channels to sell LED bulbs through the program.

- *The types of LED bulbs sold.* We asked the 136 store managers who reported selling LED bulbs what types of LED bulbs they sold. Seventy-six percent of them sold general purpose LEDs (A-19s, globes, etc.), 70 percent of them sold LED spotlights/reflectors (both indoor and outdoor), 60 percent sold LED nightlights, 49 percent sold LED holiday lights, and 36 percent sold LED decorative lights.

- *Store manager assessment of LED sales.* We asked the store managers who indicated that they sold LED bulbs – whether through the Massachusetts ENERGY STAR program or outside the program – if they would characterize their sales of these LED bulbs over the past year as "excellent," "good," "fair," or "poor." Only 15 percent of the respondents characterized their sales as "excellent," with another 38 percent assessing their sales as "good," 35 percent rating them as "fair," and 11 percent characterizing them as "poor."

- *General purpose LED bulbs were the best sellers and spotlight/reflector LED bulbs were the worst sellers.* We asked the store managers who sold LED bulbs which types or models of LED bulbs sold the best or worst. Nearly one-half (45%) of the store managers who sold LED bulbs said that the general purpose LED bulbs sold the best. Despite the fact that most of the stores sold them, about one-third (32%) of store managers reported that the spotlight/reflector LEDs sold the worst; about one-fifth (22%) indicating that the decorative LEDs were the worst sellers.

1.2.2 LED Barriers and Opportunities

- *There were many reasons why store managers were not selling LEDs, the most cited reason being that the bulbs are too expensive.* To better understand the barriers to selling more LED bulbs in the Massachusetts market, we asked the retailers in our sample who were not selling LED bulbs why they were not offering these products. Our survey revealed that, rather than there being a few major barriers, there were many smaller ones. The most frequent responses included the bulbs being too expensive for their customers (19%), their corporate offices making the purchasing decisions (16%), their lack of an LED bulb supplier (14%), and the LED bulbs not fitting in well with the rest of their product line (14%). However, there were many other barriers cited.

- *The high price point was the dominant barrier to LED sales cited by retailers already selling the LED bulbs.* We also asked the store managers who were already selling the LED bulbs what factors or barriers prevented more of their LED bulbs from being sold. For these store managers, the higher cost of the LED bulbs was the dominant barrier, with over one-half (52%) of the respondents citing this as a factor. At a distant second (11% of the respondents) was the lack of consumer knowledge of the LED technology and its benefits.

- *The lighting manufacturers and retail buyers agreed with the store managers on the key barriers to LED sales.* Like the store managers, they agreed that the higher price point was the most significant barrier to additional LED product sales. They also cited customer unfamiliarity with the technology as another barrier to LED sales. Finally, they pointed to product performance problems (e.g., poor dimming performance, harmonic distortion), especially with earlier versions of the LED bulbs.
- *In general, the lighting manufacturers and retail buyers were optimistic about future sales of LED products.* They cited a number of reasons, including:

  - Lower prices due to growing economies of scale in production;
  - Lower prices due to improvements in LED production techniques;
  - Growing consumer awareness of the benefits of the technology, including longer bulb lives and superior dimming capabilities and warm-up times compared to CFLs;
  - Improvements in product performance;
  - An expansion in the number of ENERGY STAR-certified LED bulbs; and
  - The impacts of the EISA legislation.

1.2.3 LED Price Trends

Since higher prices continue to be the main barrier to additional LED sales, we asked the lighting market actors some questions about trends in prices for LED bulbs. Some key findings include:

- *Only 20 percent of the retailers who were selling LED bulbs said that the non-discounted retail prices for the LEDs were lower than they had been two years ago.*

- *Nearly one-half (49%) of the store managers who are currently selling LED bulbs predicted that LED prices would go down over the next few years.* Among store managers who thought LED prices would go down, their most common reason – cited by slightly over one-half (52%) of the respondents – was they thought that rising consumer demand would bring down prices by reducing production costs. Over a quarter of the store managers in this group also explained that they thought LED bulb prices would go down because newer technologies always start off expensive and then become cheaper. Many pointed to the CFL as an example of this.

- *The lighting manufacturers and high-level retail buyers universally predicted that LED prices would go down in the next few years.* In making these predictions, they cited factors such as increased economies of scale of production and improvements in production techniques.

1.2.4 The Program Impacts on LED Sales

The Massachusetts ENERGY STAR program has offered significant discounts on LEDs over the past couple of years, and the evaluation team was interested in the store manager perspectives on the effectiveness of these market interventions.

- *The store managers gave a middling rating on the effectiveness of the program in promoting LED bulbs over the past year*. Their average effectiveness rating was 5.6 on an 11-point effectiveness scale, where 10 equaled "very effective" and 0 equaled "not very effective at all." Yet there was a lot of variation in the average ratings among the different retail channels. Nearly one-half (45%) of the store managers who gave effectiveness ratings of five or lower thought that the program was not doing enough advertising and promotions of the LED bulbs. A quarter of them also explained that their LED bulb sales were poor or mediocre.

- *The adequacy of the program's LED rebates.* Nearly half (46%) of the store managers said that these buydown discounts were adequate for LED bulb types, with another 39 percent saying that the buydown discounts were adequate for some LED bulb types but not others. Only seven percent of the respondents thought that the buydown discounts were not adequate for any of the LED bulb types. We asked the store managers who had said the discounts were not adequate which types of LED bulbs they thought needed increased buydown discounts. Nearly one-third (31%) cited the LED floodlights/reflectors and another 28 percent named the A-line LED bulbs.

- *There was some limited evidence for small program-induced effects.* Although the Massachusetts program has only been intervening in the LED market for a couple of years, we were curious to see whether there was any early evidence of program-induced market effects. As indicated below, a minority of the store managers did report that the program influenced what they sold and how they sold it. However, for both of these questions we did not ask the store managers any follow-up questions about whether these changes in behavior would continue in the absence of the program. Therefore, the long-term sustainability of these changes remains an open question.

  - *Effects on product offerings.* Twenty-eight percent of the store managers who were selling LED bulbs (both within the program and outside the program) said that the program has had some effect on the variety of LED bulbs they sell. When we asked them what effects they experienced, nearly two-thirds (64%) of them said that they were selling a greater variety of LED products than they had before. However, only five percent said they were selling LED products for the first time.

  - *Effects on product promotions.* About one-third (31%) of the store managers who were selling LED bulbs said that the program had had some effect on how they promoted the LED products they sell. Most of the store managers who said that the program had affected their promotional practices explained that they were doing more promotion of these LED bulbs

than they had done before, including more signage and giving the bulbs more prominent placement in their stores. A number of the store managers also said that, while they had sold the LED bulbs before becoming involved with the program, they had not really promoted them, mostly because of the high price points.

- *Retailer suggestions for increasing program LED sales.* We sought the suggestions of all the store managers, whether they were currently selling LED bulbs or not, on how the Massachusetts Program Administrators could increase sales of LED bulbs over the next few years. The three most common suggestions were to bring down the price/offer additional discounts (37% of respondents), provide more customer education about LED bulbs (22%), and to do more/better advertising of the program and the products it rebates (14%). However, there were over a dozen other suggestions.

1.3 Program Activity in the Hard-to-Reach Lighting Markets

The Massachusetts ENERGY STAR lighting program has long sought ways to increase the penetration of energy-efficient lighting products in the state's hard-to-reach (HTR) lighting markets, but they have targeted such consumers since 2010. Some key findings regarding this customer group include:

- *The large majority of store managers agreed with the program's definition of hard-to-reach lighting markets.* We told the 2012 participating store managers that the program was currently defining "hard-to-reach" markets for energy-efficient lighting as those that serve low-income, ethnic, non-English-speaking, and less educated customers. We then asked them if they agreed with this definition of HTR markets. Seventy-eight percent of the store managers agreed.

- *Which retailers identified themselves as serving HTR customers.* We asked the 2012 participating store managers to estimate what percentage of their customers would fall into three HTR categories, including being low-income, not having English as their primary language, and being members of ethnic or racial minority groups.

  - *Low-income customers*. Store managers in the Discount channel had the highest average estimate of low-income customers (53%), followed by the Mass Market channel (39%).

  - *Non-English-speaking customers.* Store managers in the Discount channel also had the highest average estimate of non-English-speaking customers (28%), followed by the Membership Club channel (19%).

  - *Customers who are members of racial/ethnic groups.* Store managers in the Discount channel again had the highest average estimate of customers who are members of racial or ethnic minority groups (43%), followed by the Membership Club channel (37%).

- *Whether the program's HTR strategy was focusing on the right retailers.* The large majority (84%) of store managers thought that discount stores and small grocery stores were the right kinds of retailers for the program to work with to make CFLs more accessible to HTR customers.

- *Channel shifting:* One concern about program strategies that promote greater CFL sales in retail channels such as discount stores in an effort to reach HTR customers is that such strategies may simply shift sales from national chain retailers to these discount stores, rather than create new sales. This phenomenon is sometimes called "retail channel shifting" or even "retail cannibalization."

  - *The extent of channel shifting.* We asked the store managers whether they thought these discount and small grocery stores were creating new ENERGY STAR CFL product sales or taking away ENERGY STAR CFL sales that otherwise would have gone to national chain retailers. Nearly two-thirds (64%) of the 2012 respondents said that the effect was "a bit of both," with some new sales being created while other sales were shifted among channels. Twenty-five percent thought that the program was only creating new sales. The 2012 respondents were more willing to believe that the program was creating new sales than those we had surveyed in 2010.

  - *Where sales are being shifted from.* We asked store managers who thought that the program was shifting CFL sales from the national chain retailers which retailers they thought these discount and small grocery stores were taking CFL sales away from. The most common responses were Home Depot (28%), Walmart (22%), and Lowe's (18%).

- *Whether program HTR strategies have been successful.* We asked the store managers whether the proportion of their company's CFL sales going to individuals in these HTR demographic groups has increased, decreased, or stayed about the same over the past couple of years. Nearly one-half (48%) of the 2012 respondents said that their CFL sales to the HTR sector had increased. When compared to responses in 2010, a higher proportion of the 2012 respondents reported that their CFL sales to the HTR sectors had increased. Yet, some of this higher CFL penetration in the HTR sectors may be due to the EISA legislation rather than the program's HTR strategies.

- *Retailer recommendations for greater program access in the HTR sectors.* We asked the 2012 store managers whether they had any suggestions as to what the administrators of the Massachusetts program could do to increase the sales of CFLs in the HTR lighting markets.

  - *Doing more marketing.* The most common suggestion (44% of respondents) was for the program to do more and/or better advertising of the program and the products it rebates. Many suggestions were for more in-store signage, displays, and product demonstrations. A number of retailers also suggested that the program could reach more HTR customers if there were more signage and customer education information in Spanish or Portuguese.

- *Reducing the prices.* After advertising, the next most common suggestion (28% of respondents) was to continue/increase the discounts available for these energy-efficient lighting products so they could be more affordable to the HTR customers.

1.4 Program Satisfaction

We asked the participating store managers about their level of satisfaction with a number of different aspects of the Massachusetts ENERGY STAR program as well as with the program as a whole. We had the store managers use a five-point satisfaction scale where five equaled "very satisfied" and one equaled "very dissatisfied." Some findings concerning program satisfaction included:

- *Satisfaction with reserving/ordering program-discounted bulbs.* We asked store managers who had previously identified themselves as being responsible for ordering the lighting products in their stores how satisfied they had been with the program's process for reserving and ordering the program-discounted CFLs and LEDs. Eighty-one percent of the respondents were satisfied with this process. The most common complaint among those who gave satisfaction ratings of three or lower was that there were inadequate supplies of program-discounted bulbs to meet their needs.

- *Satisfaction with the clarity of program rules.* We asked all the store managers whether the program rules for participating in the program were clear. Only seven percent of them thought the rules were not clear. Three of the store managers thought that they were supposed to check a customer's zip code or electric service provider to determine program eligibility. In commenting on the draft versions of this report, PA representatives indicated that this was not a requirement. Yet this does suggest the need for more education among store managers about program eligibility rules.

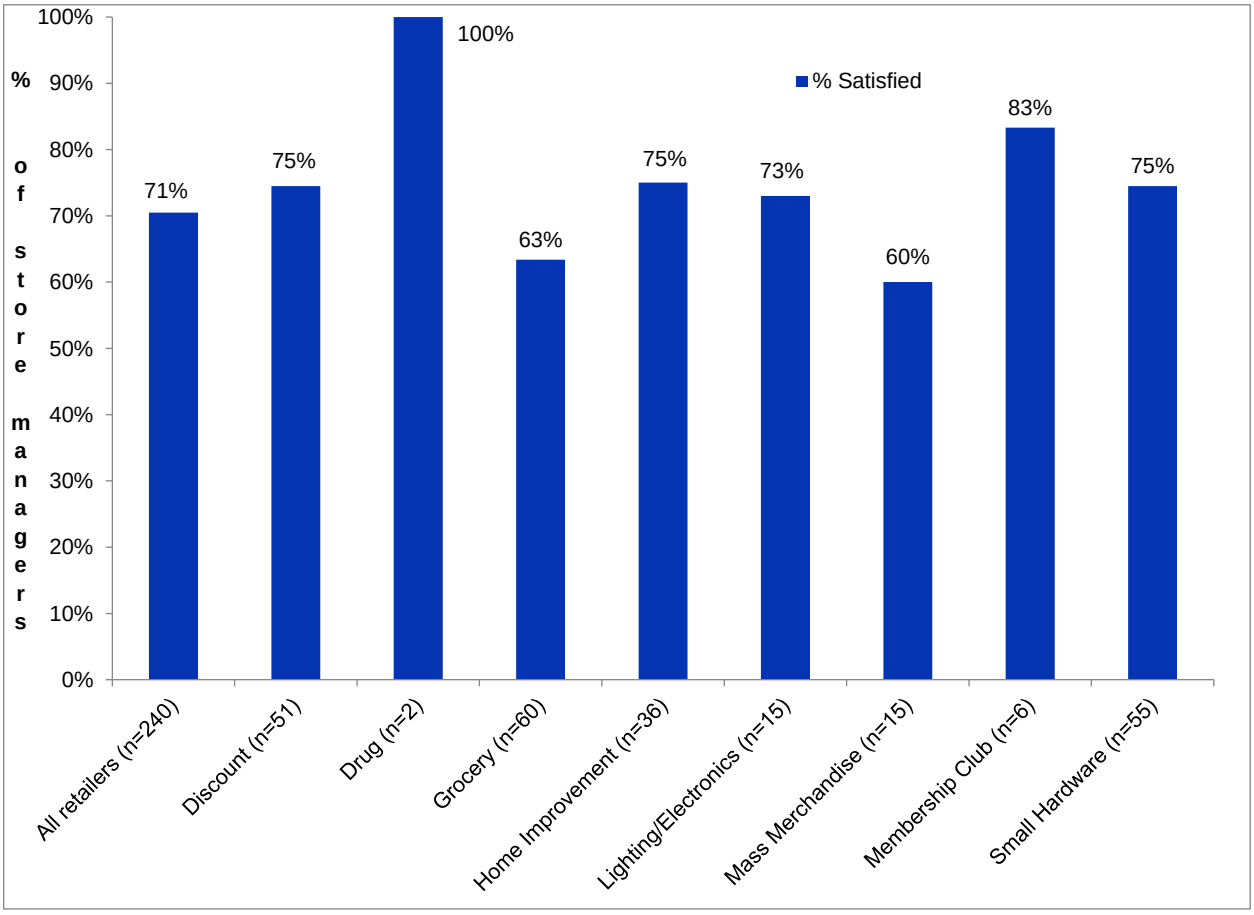
- *Satisfaction with program staff and contractors.* We asked all the store managers whether they had ever interacted with the program staff or contractors. Only 37 percent of them said they had. We then asked the store managers who reported such interactions how satisfied they had been with the way that the program staff or contractors had responded to their questions and requests. Overall, store manager satisfaction with the program staff and contractors was very high (90%).

- *Satisfaction with the program as a whole.* We asked all the store managers how satisfied they have been with the program as a whole. Seventy-one percent of the respondents were satisfied with the program. Figure 1-1 shows the responses broken down by retail channel. Based on our experience evaluating dozens of rebate programs, we consider a satisfaction level below 80 percent as reason for concern and an indication that a program should make improvements in its processes. Yet, when we asked the store managers whether they would participate in the program in the future, 91 percent said they would. In addition this 71 percent level of satisfaction for the program as a whole was an improvement from the 66 percent level of satisfaction we measured

when we conducted a similar store manager survey for our 2011 evaluation, but this improvement was not statistical significant at the 90% confidence level.

- *Reasons for dissatisfaction.* We asked the store managers who gave satisfaction ratings of three or lower why they were less than satisfied with the program. The most common responses were that they were unaware of the program before we had called them and the program did not provide enough information/communications concerning the program or the bulbs.

Figure 1-1. Store Manager Satisfaction with the Program as a Whole



- *Suggestions for getting retailers more involved in promoting the program.* We told the store managers that the program was looking for ways that lighting retailers could become more involved in marketing of the program and asked whether they had any ideas on how this might be done. Thirty-seven percent of the store managers had suggestions. The three most common suggestions were to provide more/better signage (17% of respondents), just to do more advertising (unspecified methods – 15% of respondents), and to do television ads (9%). However, they had over two dozen other suggestions, as detailed in the body of the report.

- *Additional suggestions for program improvements.* We also asked all the store managers whether they had any additional suggestions for program improvements besides the marketing suggestions listed above. Eighteen percent of the store managers did have some additional suggestions. The most common suggestions were more customer education (17% of store managers with additional suggestions), better program communications with retailers (13%), increasing the buydowns/ reducing prices (11%), and doing more advertising (unspecified methods). The store managers had many more suggestions, as detailed in the main body of the report.

1.5 Program Attribution

While program attribution was not a major focus of this evaluation as it was two years ago, we did ask the participating store managers a battery of program attribution questions. This section presents the net-to-gross estimates that resulted from this battery of questions. Table 1-1 summarizes the net-to-gross estimates for each bulb/fixture type. The main body of the report has more detail on the results, including estimates by each retail channel.

Table 1-1. Summary of Net-to-Gross Estimates for Different Bulb/Fixture Types

Bulb/Fixture Type	Net-to-Gross Ratio (All Retailers)	Retail Channel with Highest NTG Ratio*	Retail Channel with Lowest NTG Ratio*
Standard CFLs (n=134)	69%	Discount (88%)	Home Improvement (41%)
A-Line CFLs (n=143)	77%	Discount (94%)	Home Improvement (51%)
Specialty CFLs (n=154)	77%	Lighting/Electronics (98%)	Home Improvement (51%)
LED bulbs (n=31)	62%	Home Improvement (62%)**	Home Improvement (62%)**
LED fixtures (n=31)	66%	Home Improvement (62%)**	Home Improvement (62%)**

*Only includes channels with at least 10 respondents

**This was the only channel that had at least 10 respondents

Following are some observations we made on these net-to-gross estimates.

1.5.1 Standard Spiral CFLs

This 69 percent net-to-gross ratio for basic CFLs is actually higher than what the Massachusetts store managers had reported in the 2011 evaluation (41%). However, it was similar to the net-to-gross ratio for standard CFLs that we calculated based on another recent survey (summer 2012) of store managers participating in the California Upstream Lighting Program.

Our interviews with the lighting manufacturers and high-level retail lighting buyers found a number of reasons why the buydown discounts were still important in driving CFL sales. First, many lighting suppliers pointed to a huge spike in the costs of phosphorous and other raw materials that occurred in 2011. Although these cost increases had mostly subsided by 2012, they had the effect of sharply increasing the production costs of all CFLs. Therefore, the Massachusetts program discounts reduced the price per bulb to something that was more competitive with incandescent bulbs or EISA-compliant halogens. In addition, the emergence of the EISA-compliant halogens, which were not a major alternative to CFLs in 2011, has caused some lighting suppliers to argue that the program discounts are more important than ever.

1.5.2 A-Line CFLs, Other Specialty CFLs

We have found in the past that the store managers report higher net-to-gross ratios for specialty CFLs than they do for basic CFLs, and this certainly was the case for the 2012 store managers. The differences between the various retail channels were similar to what was reported for basic CFLs and similar to what we have seen in past evaluations.

1.5.3 LED Bulbs and Fixtures

This evaluation was the first time that we obtained net-to-gross estimates from store managers for LED bulbs and fixtures, since these were not being sold through the program when our 2011 evaluation was conducted. At first glance, it seems surprising that the net-to-gross estimates for the LED bulbs and fixtures would be lower than those for the CFLs, considering that the program pays much higher buydown rebates for the LED bulbs and fixtures than for the CFLs. However, a number of factors must be considered:

- First, about three-quarters of the store managers who were selling the LED bulbs and fixtures were in the Home Improvement retail channel, and these managers tended to report lower net-to-gross ratios than store managers in other channels.

- Second, just because the program's buydown discounts for LED bulbs and fixtures were much larger than the buydown discounts for CFLs does not mean that these discounts reduced the LED prices enough to convince many consumers to buy them, as the discounted prices remained above those for CFLs, incandescents, and EISA-compliant halogen bulbs. At least some lighting manufacturers commented that customers purchasing their LED products are either affluent or early adopters, making their demand curve for these products more inelastic than that of the typical customer. When customer demand curves are, on average, more inelastic than normal, this can lead to higher levels of free-ridership because the program buydown discounts are not changing the purchasing behavior of many of the participating customers.

- Third, as discussed in the main body of the report, there were also some responses from the lighting suppliers about the need for more customer education. This might imply that those consumers who are purchasing the LED products now might be a minority subset of consumers who have self-educated themselves about the benefits of the LED products and many of whom would have purchased the LED products anyway, even if they had not been discounted by the program.

1.6 Conclusions and Considerations

Although this report was more of a market characterization study than a process evaluation, we did have a few conclusions and considerations for program improvements.

- *The PAs should consider doing more marketing of the program in general and the LED rebates in particular, including through both more point-of-purchase signage and more mass advertising.* Evidence to support this consideration includes:

  - When asked to assess the program's performance in promoting the LED bulbs over the past year, the store managers gave the program a middling rating of 5.6 on an 11-point effectiveness scale where 10 equaled "very effective" and 0 equaled "not very effective at all." Nearly one-half (45%) of the store managers who gave effectiveness ratings of five or lower thought that the program was not doing enough advertising and promotion of the LED bulbs. A quarter of them also explained that their LED bulb sales were poor or mediocre.

  - We sought suggestions from all the store managers, whether they were currently selling LED bulbs or not, on how the Massachusetts Program Administrators could increase sales of LED bulbs over the next few years. The three most common suggestions were to bring down the price/offer additional discounts (37% of respondents), to provide more customer education about LED bulbs (22%), and to do more/better advertising of the program and the products it rebates (14%).

  - We asked the 2012 store managers whether they had any suggestions as to what the administrators of the Massachusetts program could do to increase the sales of CFLs in the HTR lighting markets. The most common suggestion (44% of respondents) was for the program to do more and/or better advertising of the program and the products it rebates. Many suggestions were for more in-store signage, displays, and product demonstrations. A number of retailers also suggested that the program could reach more HTR customers if there were more signage and customer education information in Spanish or Portuguese.

  - When we asked store managers for their ideas about ways to get lighting retailers more involved in marketing of the program, the three most common suggestions were to provide

more/better signage (17% of respondents), to do more advertising (unspecified methods - 15% of respondents), and to do television ads (9%).

  - We also asked all the store managers whether they had any additional suggestions for program improvements besides the marketing suggestions listed above. The most common suggestions were more customer education (17% of store managers with additional suggestions), better program communication with retailers (13%), increasing the buydowns/ reducing prices (11%), and doing more advertising (unspecified methods).

- *The program may want to try to diversify the retail channels through which the LED bulbs are sold by working with retailers already participating in the program.* While the program has had some success in getting stores from the Home Improvement and Membership Club channels to sell LED bulbs through the program, the tracking data indicates that there are few stores outside these retail channels selling LED bulbs through the program—but this is not because stores in these other retail channels do not sell LED bulbs. We asked all of the store managers whether they sold LED bulbs, and over one-half (57%) of them said that they did. Yet, according to the program tracking data, only 41 of the 240 participating stores in our sample (17%) had sold LED products through the program. So it seems reasonable to expect that if the program already has these stores participating via CFL sales, it should not be too difficult to convince them to expand their program participation to their LED product lines. However, it is possible that some of these stores may be selling non-ENERGY STAR LED products, in which case the program could not rebate them (we did not ask these retailers whether or not the LEDs they were selling outside the program were ENERGY STAR).

- *The growing availability of the EISA-compliant halogen lamps and price spikes in CFL production costs means that some subsidization of the standard spiral CFLs is still justified.* A couple of large lighting manufacturers who operate in both the California and Massachusetts lighting markets indicated that the Massachusetts program's buydown discounts for standard CFLs have allowed CFLs in Massachusetts to be price-competitive with the new EISA-compliant halogen lamps, thereby helping to discourage consumer switching to the much less energy-efficient halogens. They indicated that California was much less willing to continue subsidizing these standard spirals, especially for the higher-wattage CFLs, and this has resulted in some loss of the CFL market share. A number of lighting manufacturers also pointed out that in 2011 there was a large spike in the cost of phosphorous and other raw materials for making CFLs, and this would have made the CFLs much less price-competitive with incandescent and halogen bulbs if the buydown discounts had not been available. The store managers also validated the continuing importance of these standard CFL buydown discounts with survey responses that produced a net-to-gross ratio (69%), which was very close to that of the specialty CFLs (77%).

- *The program could improve its outreach efforts to participating store managers*. Outreach would involve more visits and face-to-face time with participating store managers to make sure they understand how the program works and to collect feedback on the program. Since many participating retailers are already offering LED products outside the program, this face-to-face time might also be a good opportunity for program staff to try to bring these LED products into the program.[6] Evidence to support this consideration includes:

  - We asked the store managers who rated their satisfaction with the program as a whole at three or lower why they were less than satisfied with the program. The most common responses were that they were unaware of the program before we had called them and the program did not provide enough information/communications concerning the program or the bulbs.

  - Only 37 percent of the store managers we surveyed said they had any interaction with program staff or contractors.

  - As noted, we asked all the store managers whether they had any additional suggestions for program improvements besides the marketing suggestions listed above. The two most common suggestions were more customer education (17% of store managers with additional suggestions) and better program communications with retailers (13%).

  - As noted, the need for more or better point-of-purchase signage or displays was a frequent participant suggestion for program improvements. A more frequent in-person presence in the participating stores by program staff or contractors would help the program better identify these needs.

- *While the program does offer substantial buydown discounts for the LED bulbs, the store manager survey results indicated that these may not be large enough.* Evidence for this included:

  - When we asked the store managers—whether they were currently selling LED bulbs or not—how the Massachusetts Program Administrators could increase sales of LED bulbs over the next few years, the most common suggestion (37% of respondents) was to bring down the price/offer additional discounts.

  - We asked the store managers who were already selling the LED bulbs what factors or barriers prevented more of their LED bulbs from being sold. For these store managers, the higher cost

[6] Some might wonder if this might raise free ridership concerns since the stores are already selling these LED products. However, simply offering LEDs for sale and selling a good volume of them are two different things, and the program discounts could certainly help with the latter. And our net-to-gross methodology would capture this incremental effect of the program on LED sales volume. Moreover, the stores may not be offering ENERGY STAR qualified LEDs at this time, and the program would ensure that they do.

of the LED bulbs was the dominant barrier, with over one-half (52%) of the respondents citing this as a factor.

  - We asked the retailers in our sample who were not selling LED bulbs why they were not offering these products. The most frequent response (19% of respondents) was that the bulbs were too expensive for their customers.

  - The net-to-gross ratio calculated from the store managers' survey responses was the lowest for LED bulbs (62%) out of all the lighting products we asked them about. Some lighting manufacturers also commented that customers purchasing their LED products are either affluent or early adopters, making their demand curve for these products more inelastic than that of the typical customer.

- *The store managers generally agreed with the program's strategy for reaching the HTR lighting market.* Seventy-eight percent of the store managers agreed with the program's definition of the HTR lighting market. The large majority (84%) of store managers also thought that discount stores and small grocery stores were the right kinds of retailers for the program to work with to make CFLs more accessible to HTR customers. Finally, when we asked retailers to estimate what percent of their customers fell into various HTR customer categories (low-income, non-English-speaking, etc.), the store managers from the Discount channel reported the highest average percentages.

2. Findings from the Lighting Retailer and Supplier Interviews

This chapter contains findings from surveys and interviews performed with store managers, lighting manufacturers, and high-level retail lighting buyers who participate in the Massachusetts ENERGY STAR lighting program.

2.1 Research Scope and Methodology

The report addresses the following topics:[7]

- The market impacts of the EISA legislation on different lighting products and different retail channels;
- Trends in LED product sales and prices;
- Strategies for increasing energy-efficient lighting in hard-to-reach market sectors;
- Participant satisfaction with the program; and
- Considerations for program improvements.

Even though this cycle of the evaluation did not focus on calculating new net-to-gross ratios for the program, the Program Administrators and the EEAC decided to keep the program attribution questions in the surveys. In this report, we calculate net-to-gross ratio estimates from the store manager surveys.

The findings in this report come primarily from two sources:

1. *In-depth interviews with the major lighting manufacturers and high-level retail buyers who participated in the Massachusetts program.* We interviewed 10 representatives of participating manufacturers, including representatives of four of the five manufacturers who had the biggest share of product shipments in the program. We also interviewed lighting buyers for three of the five largest retailers in the program. These interviews were conducted in two waves, with the first wave field in Q2 and Q3 2012 and the second wave in Q1 and Q2 2013. A few of these lighting suppliers were interviewed in both waves, but most were interviewed in one wave or the other.

2. *Store manager CATI survey*. We completed a Computer-Aided Telephone Interview (CATI) survey of 240 store managers who participated in the Massachusetts ENERGY STAR lighting program during the 2011-2012 period. This survey entered the field in December 2012 and was completed in January 2013.

[7] In order to keep both the CATI survey instrument and in-depth interview guide to a manageable size, the PAs and evaluation team decided not to examine some of the less important topics we had planned to cover – like the usefulness of the "Lighting Facts" label.

Table 2-1 shows that we started with an original sample frame of 912 stores. This was adjusted downward to 790 stores, mostly due to store managers not recalling participation in the program (96 stores were removed for this reason) or disconnected phone numbers (20 stores were removed for this reason). Despite this reduction in the sample frame, we actually completed more surveys (240) than we had originally targeted (230). However, the table shows that we fell short of our retail channel targets for the Discount, Drug, and Membership Club channels, even though we exceeded our targets for other retail channels.

Table 2-1. Sampling Disposition for Store Manager CATI Surveys

Channel	Discount	Drug	Grocery	Small Hardware	Large Home Improve-ment	Ltg & Electronics	Mass Merchandise	Membership Club	Total
Sample Size	256	11	303	134	74	45	56	33	**912**
Adjusted Sample Size	220	8	258	123	67	40	43	32	**790**
Target Completes	80	6	50	30	25	10	13	16	**230**
Completed Surveys	51	2	60	55	36	15	15	6	**240**

Following are some definitions and examples of these retail channels:

- *Discount.* These are retail stores that sell a wide variety of products, including light bulbs, at a deep discount. Many items typically sell for $1 or less. Examples in the Massachusetts participating retailer population include Dollar Tree and Ocean State Job Lot.
- *Drug.* These are large chain drugstores that have a small lighting section. Examples in the Massachusetts participating retailer population include Walgreens and CVS.
- *Grocery.* This channel includes both larger chain grocery stores and some smaller independent grocery stores that have small lighting sections. Examples in the Massachusetts participating retailer population include Market Basket and Tedeschi Food Shops.
- *Large Home Improvement.* These are large stores that feature home improvement merchandise as their primary product. These stores are typically large national or regional chains. Corporate buyers usually make lighting purchasing decisions for these stores. Examples in the Massachusetts participating retailer population include Home Depot and Lowe's.
- *Lighting & Electronics.* This channel includes retail stores that feature either lighting or electronics as their primary product. These stores include chains and independently owned businesses. Examples in the Massachusetts participating retailer population include Best Buy and AD Cola Lighting.

- *Mass Merchandise.* These are large retail stores that offer a very wide range of products, including clothing, appliances, electronics, and furniture. The most common example of this store is Walmart.
- *Membership Club.* These are large retail stores that offer a wide array of products, including food, clothing, electronics, and furniture. Many items sold at membership club stores are sold in bulk and at discounted prices. These stores require customers to purchase annual/semi-annual memberships in order to buy merchandise. All membership club stores are large national or regional chains. Examples include Costco, BJ's and Sam's Club.
- *Small Hardware.* These are stores that feature hardware as their primary product and which are smaller than the big box stores in the Large Home Improvement channel. These stores are typically independently owned, but will often be affiliated with national brands such as Ace and True Value. Examples in the Massachusetts participating retailer population include Lambert True Value and Schwartz Ace Hardware.

2.2 The Impacts of EISA

This section includes our findings from the interviews/surveys of lighting suppliers concerning the impact of the December 2007 Energy Independence and Security Act (EISA) on the lighting market. One component of the EISA legislation calls for a gradual phase-out of inefficient lamps over time starting in 2012. This section covers the following topics:

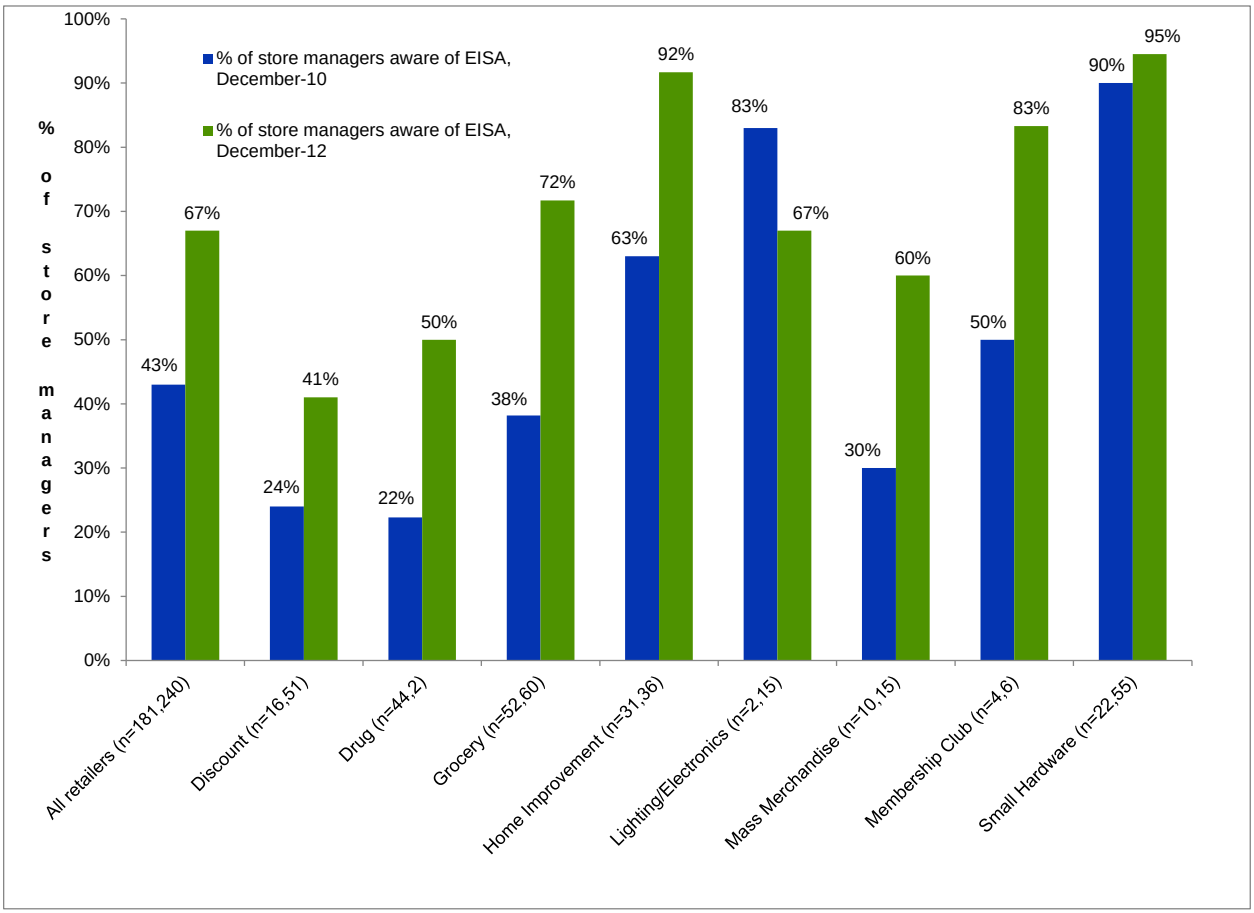
- Retailer awareness of the EISA legislation; and
- The impact of EISA on the stocking and sales of different lighting technologies.

2.2.1 Retailer Awareness of EISA

Our surveys of participating store managers revealed that awareness of the EISA legislation has increased significantly over the last couple of years. Two-thirds (67%) of the store managers we surveyed in December 2012 claimed awareness of the legislation, compared to just 43 percent in December 2010.[8] Figure 2-1 compares the 2010 EISA awareness levels with the 2012 EISA awareness levels for all participating retail channels. The chart shows that all retailer channels except Small Hardware and Lighting/Electronics showed significant jumps in awareness of the EISA legislation. The 2010 sample of Lighting/Electronics stores had only two stores, so the decline in EISA awareness for this chain is likely an artifact of this small sample size.

[8] The survey question was worded as follows: "E5. In December 2007 Congress passed an energy bill called the Energy Independence and Security Act. One component of the bill calls for a gradual phase-out of inefficient lamps over time starting in 2012... Before now, were you aware of this federal phase-out of inefficient lamps?"

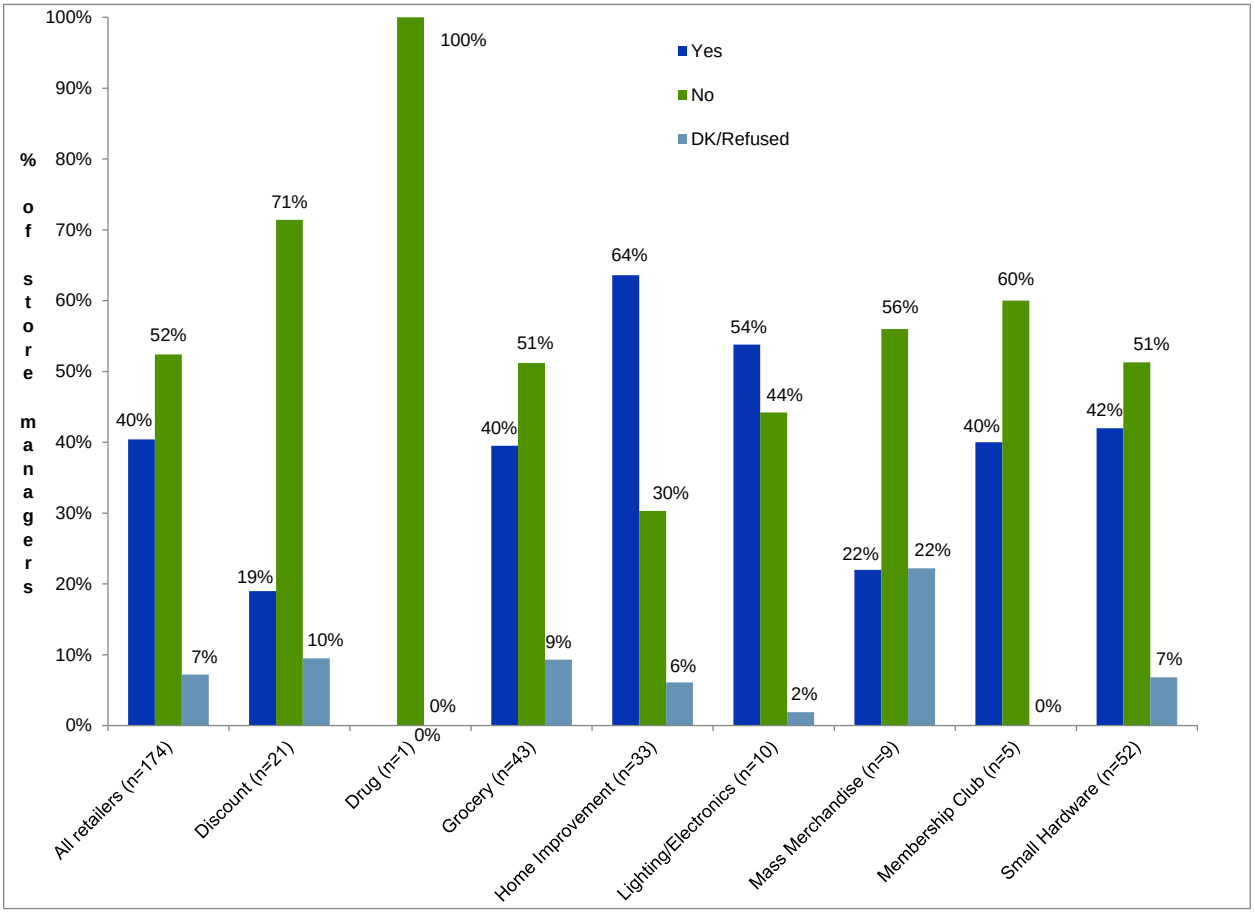
Figure 2-1. Store Manager Awareness of EISA Legislation December 2010 vs. December 2012



2.2.2 The Impact of EISA on the Stocking and Sales of Different Lighting Technologies

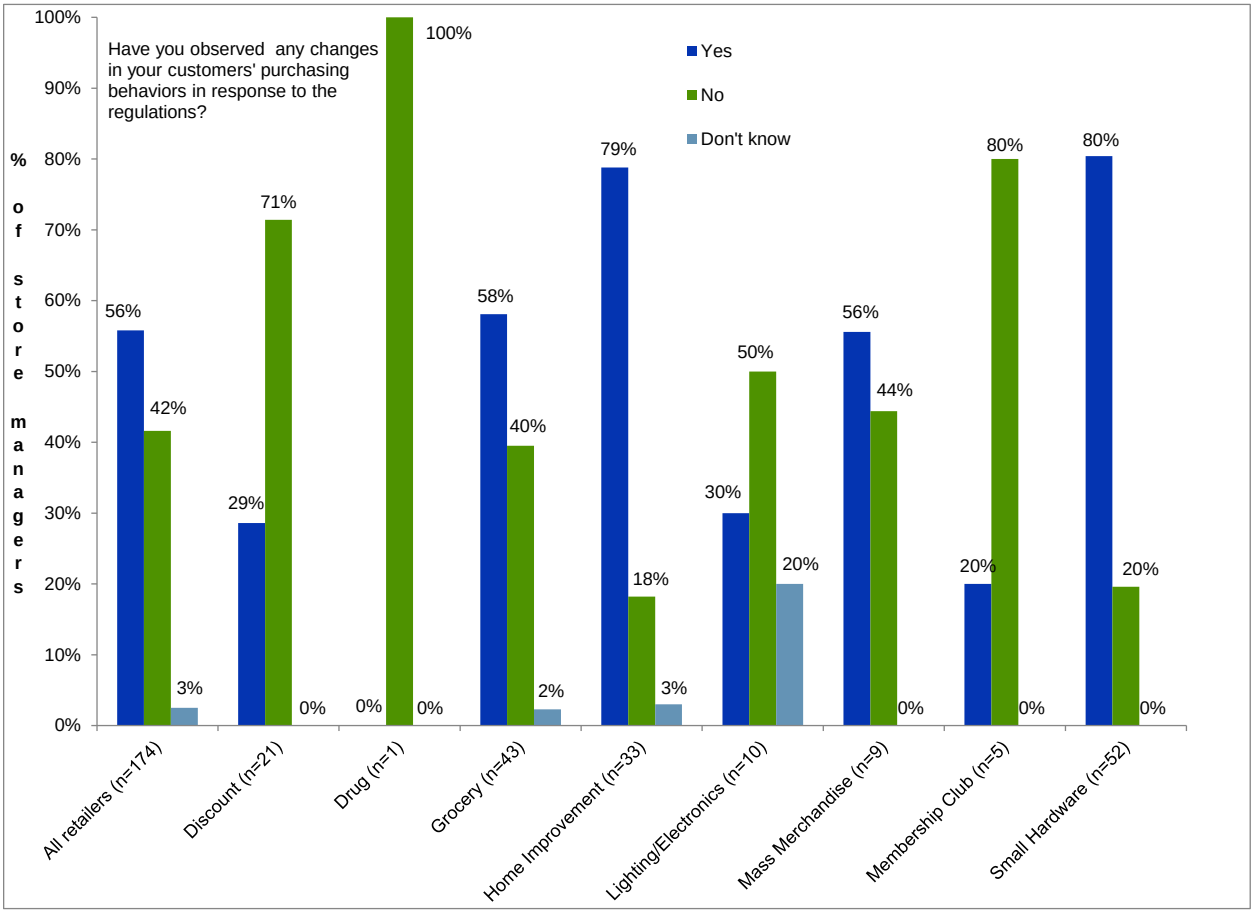
The December 2012 survey asked the store managers who had claimed awareness of the EISA legislation whether the legislation had had any impact on their stocking practices over the past two years. Less than one-half (40%) of them said that it had. Only in two retail channels – Home Improvement and Lighting/Electronics – did a majority of the store managers say that the EISA legislation had impacted their stocking practices (Figure 2-2).

Figure 2-2. Whether the EISA Legislation Had an Impact on Retail Stocking Practices over the Last Two Years



We also asked the EISA-aware store managers whether they had observed any changes in their customers' purchasing behavior in response to the new legislation. Figure 2-3 shows that a slight majority (56%) of them had, with store managers in the Home Improvement and Small Hardware channels most frequently reporting changes in their customers' purchasing behavior.

Figure 2-3. Whether EISA-Aware Store Managers Observed Changes in Their Customers' Purchasing Behavior in Response to the New Legislation



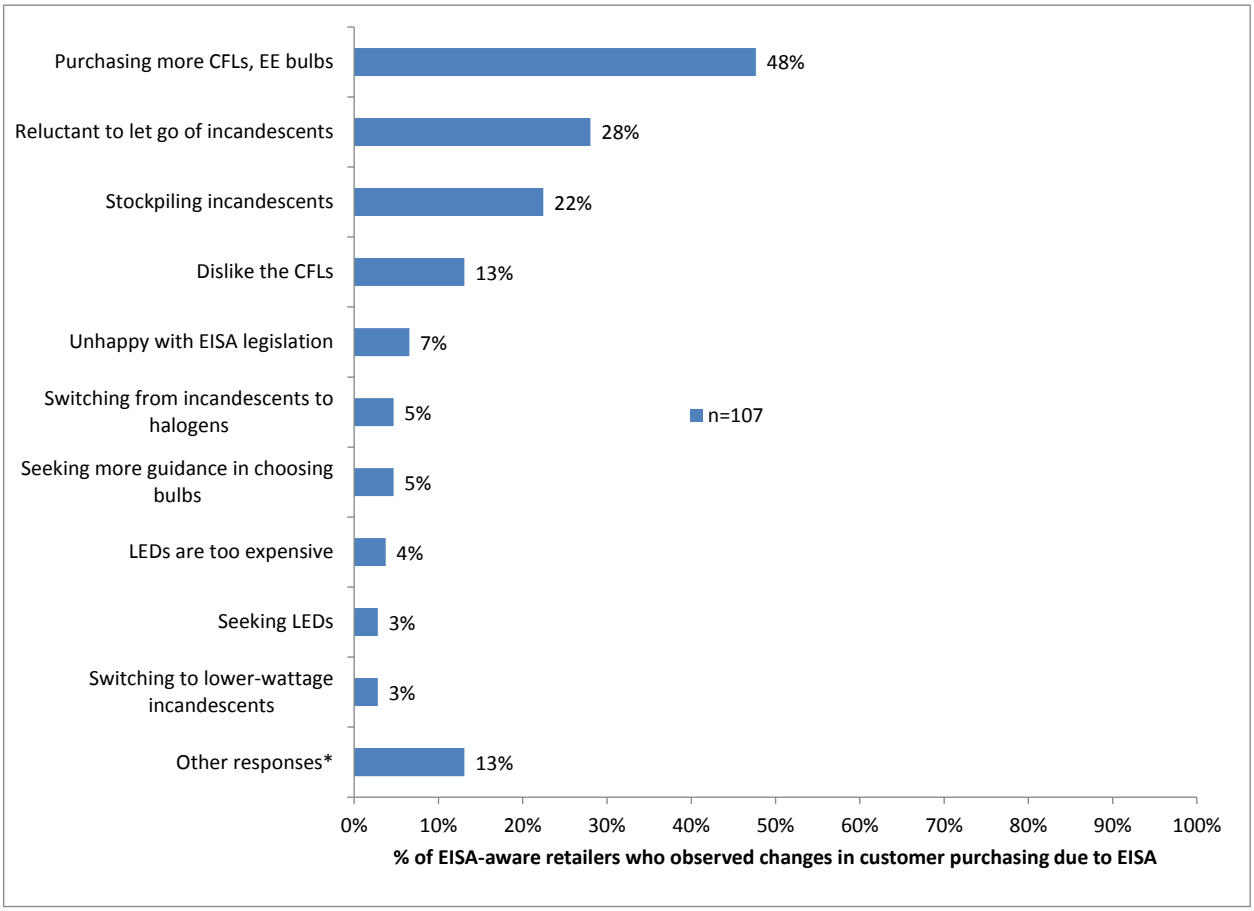
We asked those EISA-aware store managers who had observed changes in their customers' purchasing behavior what changes they had observed. Figure 2-4 shows that, by far, the most frequent response (48% of respondents) was that customers were purchasing more CFLs and other energy-efficient bulbs than they had before in response to EISA. However, over a quarter (28%) of the respondents also said that some of their customers were reluctant to give up on the incandescent bulbs, and 22 percent of them said that some of their customers were stockpiling the 100-Watt and other incandescent bulbs.

A number of retailers commented on a generational divide, with their older customers still seeking the incandescent bulbs while young and middle-aged consumers were purchasing the CFLs, and in some cases LEDs. Following are some of their verbatim responses.

- "I've noticed that people buy what they like. I've noticed that the older people stick with the incandescents, and the young, 40s baby boomers, the younger generation that are open to change and upcoming technology have switched to CFLs."

- "Most are buying fluorescents. The elderly cannot see with the fluorescents so they buy standard bulbs."
- "It varies. Some customers stock up on the incandescent because they are disappearing and some get the spirals. It depends on the age. The older people tend to want the incandescent, the younger go for the spiral. The older the customer, the more likely they will want incandescents."
- "They are still a little questionable about CFLs. They are still used to buy the standards so it's hard to educate them a little more, especially the older customers. The older customers are kind of fixed in their ways, they don't understand what a 13-Watt means, that less wattage will be the same, and they are afraid that their older fixtures won't fit them."

Figure 2-4. What EISA-Aware Store Managers Observed as Changes in Their Customers' Purchasing Behavior Due to the New Legislation

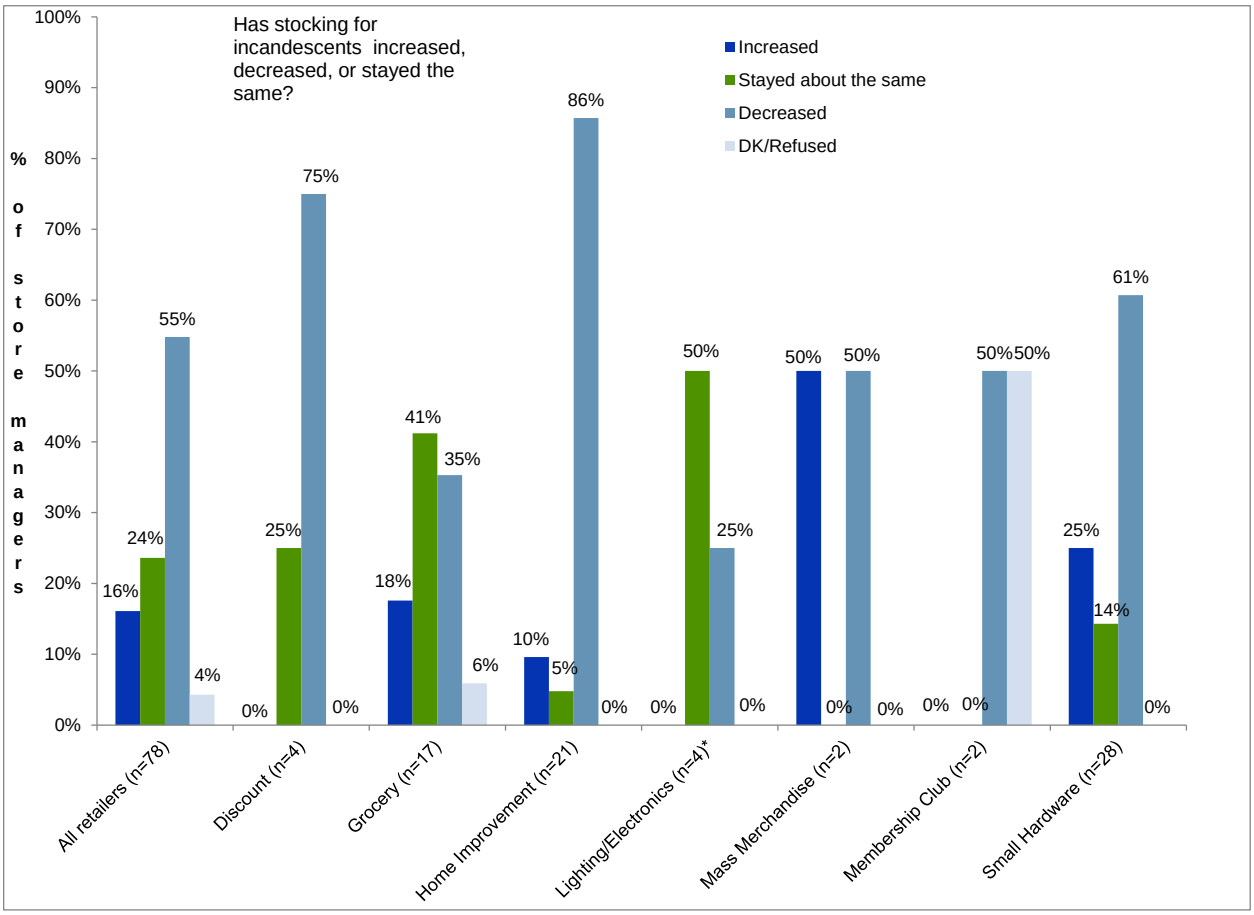


Note: Total exceeds 100% because multiple responses were allowed. Other responses include: consumers are purchasing bulbs less often because of longer bulb lifetimes, the retailers are trying to educate their customers about CFLs and LEDs, consumers having more bulb options than before, consumers shopping around more for bulbs than they had before, and various comments about bulb sales trends where the retailer did not specify what types of bulbs they were talking about.

2.2.2.1 The Impact of EISA on Incandescent Stocking and Sales

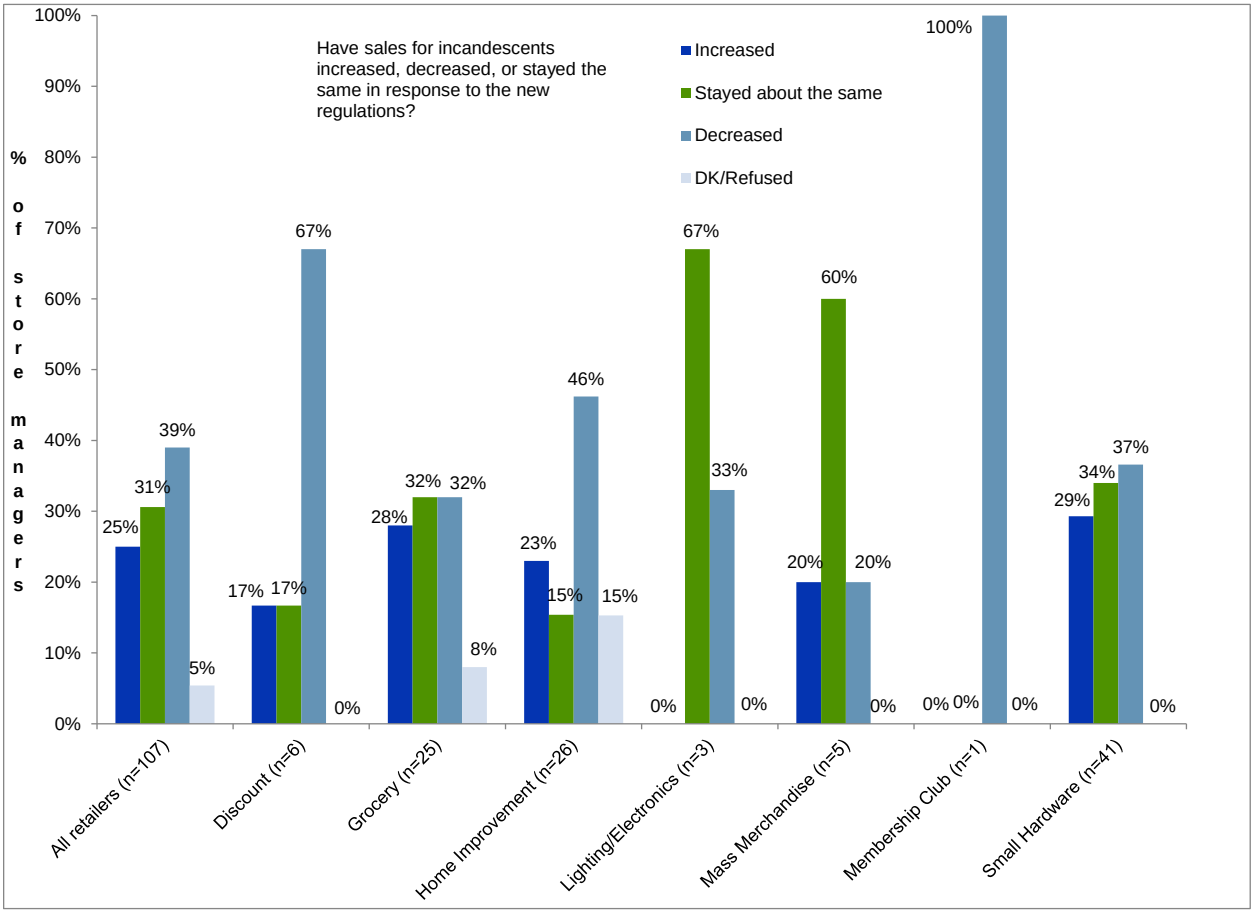
The store managers who sold incandescent bulbs and said that the EISA legislation had impacted their stocking practices were asked whether their stocking of various types of lighting had increased, decreased, or stayed the same. Over one-half (55%) of these store managers said that their stocks of incandescent bulbs had decreased (Figure 2-5). The Grocery and Lighting/Electronics channels were the only retail channels where the store managers did not report a significant decrease in incandescent stocking levels.

Figure 2-5. Whether the Stocking of Incandescent Bulbs has Changed in Response to the EISA Legislation



We also asked the store managers who observed changes in their customers' purchasing behavior in response to the new legislation whether their sales of the incandescent bulbs had increased, decreased, or stayed about the same. Figure 2-6 shows that the store managers were much more likely to say that their incandescent sales had decreased than they were to say the sales of these bulbs had increased.

Figure 2-6. Whether Sales of Incandescent Bulbs Have Changed in Response to the EISA Legislation



Our most recent round of in-depth interviews with lighting manufacturers and high-level retail buyers, performed in 2013, indicated that the 100-Watt incandescent bulbs have pretty much sold out, but there were still some 75-Watt bulbs being sold.

Twenty-two percent of the store managers who had noticed a change in their customers' purchasing behavior in response to EISA (about 10% of all the retailers in our sample) reported some hoarding of incandescent bulbs. In addition, some of the lighting manufacturers/corporate buyers we interviewed indicated that some hoarding of the incandescent bulbs was taking place. One buyer for a major retailer indicated that his company had experienced a spike in their sales of incandescent bulbs soon after the legislation went into effect. He indicated that this sales spike encompassed not only the 100- and 75-Watt bulbs that were the initial targets of the phase-out, but also other incandescent wattages that were not yet subject to the phase-out.

A couple of manufacturers of incandescent bulbs also indicated that they had seen a spike in sales of their incandescent products, which they attributed to hoarding. "We know that certain retailers stocked up based on the ruling," said a representative for one of these manufacturers. Another manufacturer of incandescent bulbs gave a dramatic account of the hoarding of their higher-wattage products and predicted that similar reactions would occur as lower-wattage incandescent bulbs were phased out:

> *The beginning of all of this was we had to stop making the 85- and 125-Watt BR reflectors, incandescent reflectors. And I can tell you that as long as we had them, because they gave a certain amount of time to continue to manufacture them, and the bottom line was if they were in your warehouse, you could still sell them, even though we were past the date. And guys just loaded up warehouses and people started hoarding these things, and the prices started to double. And it really made a lot of people very angry . . . fist-punching angry. And I think that that's going to, for the next couple of years, as we take first the 100-Watt, then the 75, then the 60, and we take that away from them, and at the same time we change the way the package looks so that they don't even understand what it is we're trying to say to them, we're going to get some angry people again.*

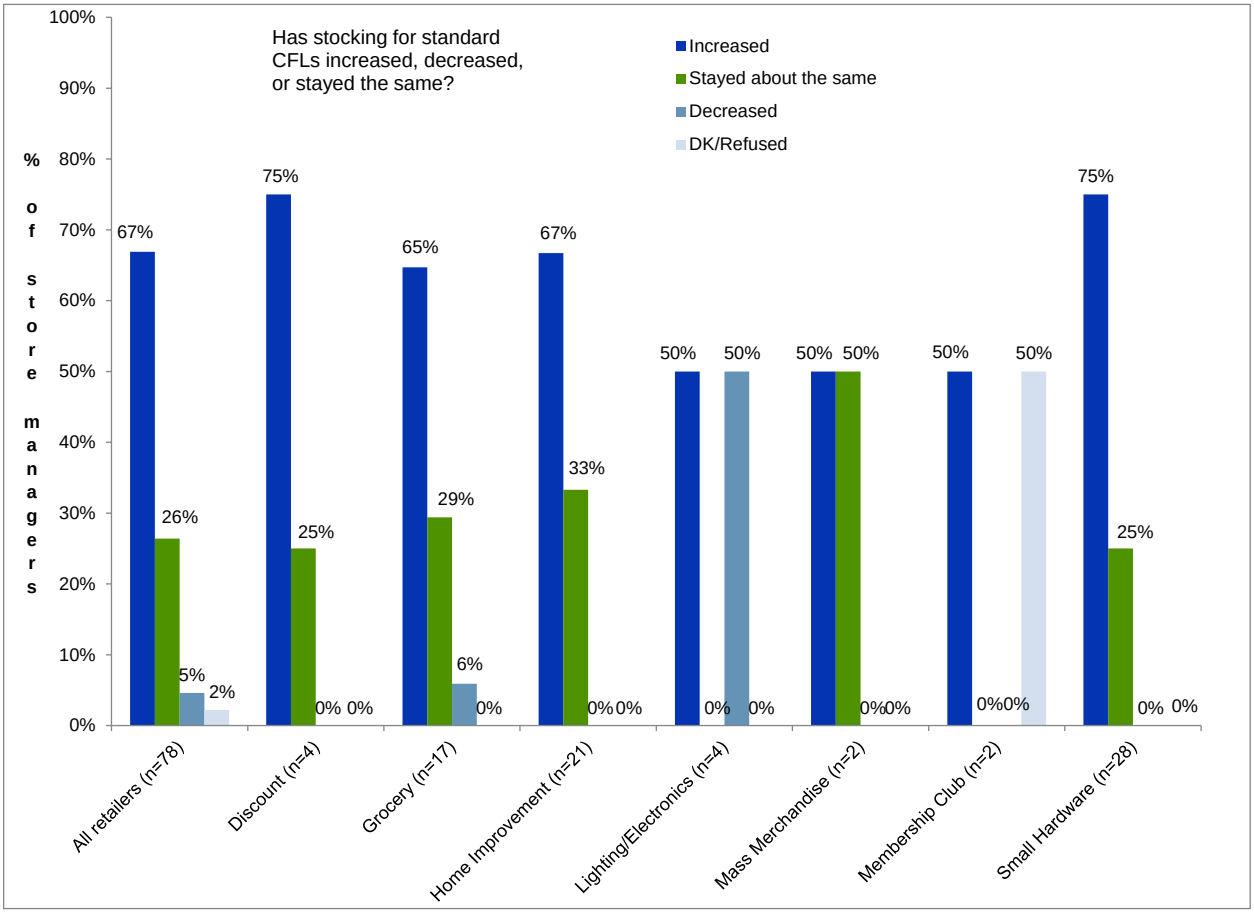
Another manufacturer representative thought that whatever incandescent hoarding might be going on is partly due to inadequate education from both suppliers and utilities about the availability of the EISA-compliant halogen bulbs as a comparable alternative. His comments appear below in the discussion of EISA impacts on EISA-compliant halogens. However, it is important to note that the onsite surveys conducted in the spring of 2013 by another member of the evaluation team did not find much evidence of EISA-driven hoarding.

In addition to hoarding of the incandescent bulbs, some suppliers also indicated that EISA was motivating many consumers to simply move to lower-wattage incandescent bulbs – e.g., move from 100-Watt bulbs to 60-Watt bulbs, rather than switch to higher-wattage CFL or LED alternatives. This phenomenon is sometimes referred to as "bin jumping." However, it is worth noting that these behaviors will be more constrained as the lower-wattage bulbs are phased out, since customers are unlikely, for example, to use a 40-Watt incandescent in a lighting application that previously used a 100-Watt incandescent.

2.2.2.2 The Impact of EISA on the Stocking and Sales of Standard Spiral CFLs

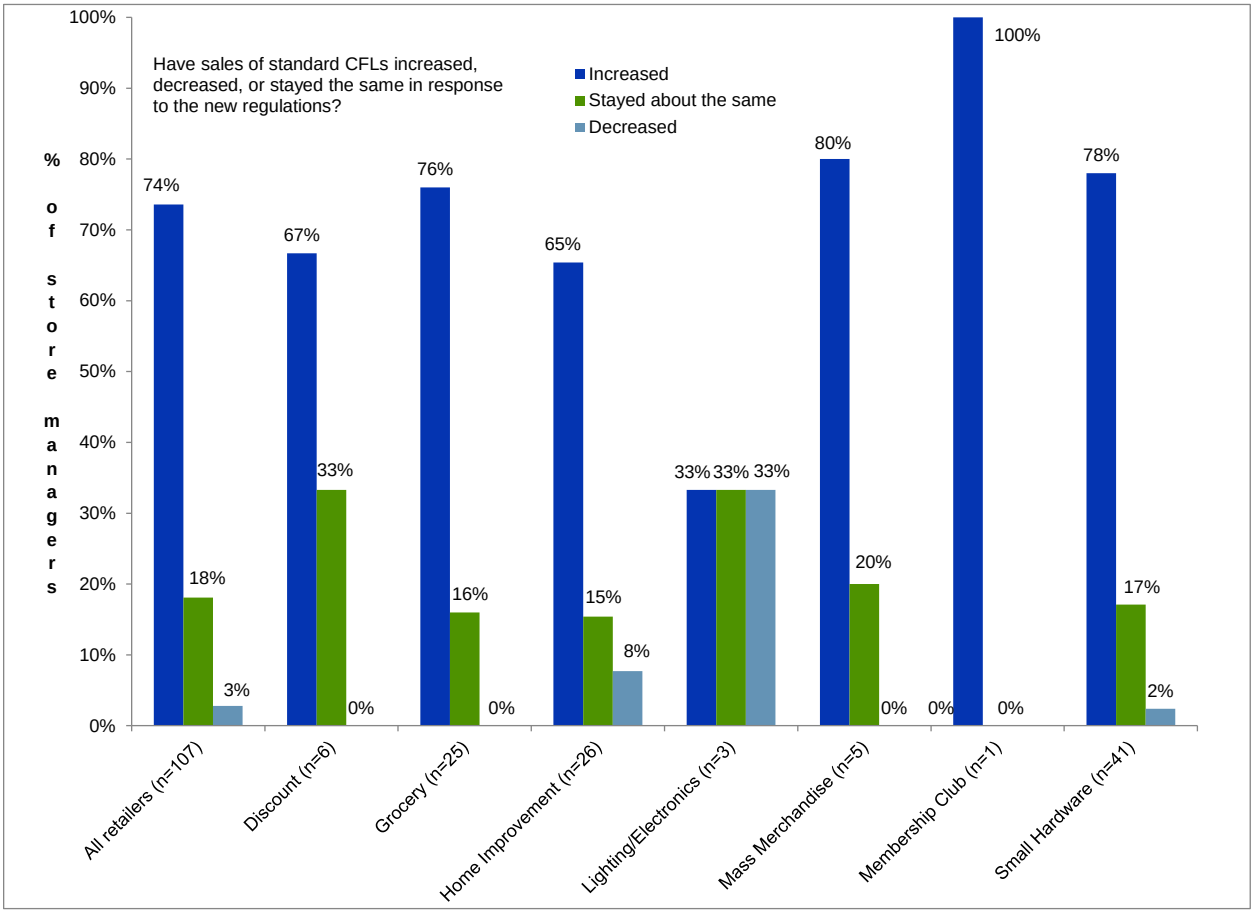
Since the standard spiral CFL is the most affordable substitute for the incandescent bulb, it is not surprising that, as the stocking and sales of incandescent bulbs are decreasing, those of the standard CFLs are moving in the opposite direction. Two-thirds of the store managers who had said that their stocking practices had changed in response to the EISA legislation said that their stocking of standard CFLs had increased (Figure 2-7).

Figure 2-7. Whether the Stocking of Standard CFLs has Changed in Response to the EISA Legislation



We also asked the store managers how the EISA legislation had impacted their sales of standard CFLs. Figure 2-8 shows that nearly three-quarters (74%) of the store managers said that their sales of standard CFLs had increased in response to the new legislation. A majority of the store managers from all retail channels except for lighting/electronics (which had a very small sample size) reported an increase in standard CFL sales.

Figure 2-8. Whether Sales of Standard CFLs Have Changed in Response to the EISA Legislation



The lighting manufacturers and retail buyers pointed to some factors that both increased and limited the sales of the CFLs during the early stages of the EISA phase-out.

- Factors increasing the sales of the CFLs included:
  - As described in the previous section, lighting suppliers reported that Massachusetts, unlike California, continued to offer buydown discounts on the higher-wattage CFLs that are replacements for the 75-Watt and 100-Watt incandescent bulbs. This kept them cost-competitive with the EISA-compliant halogens.
  - Lighting suppliers also observed that there was not a higher-wattage LED bulb that was an affordable alternative, with some bulbs in this category carrying price tags of as much as $50 per bulb.
- Factors limiting the sales of the CFLs included:

- A number of suppliers observed how a 2011 spike in the price of phosphorous from China caused CFL prices to surge before eventually coming down again. "I think there was that scare with the phosphor issue and the rare earth materials over there, and I think that skyrocketed costs," said one manufacturer, "but I think that's settled and things are kind of working themselves out again."

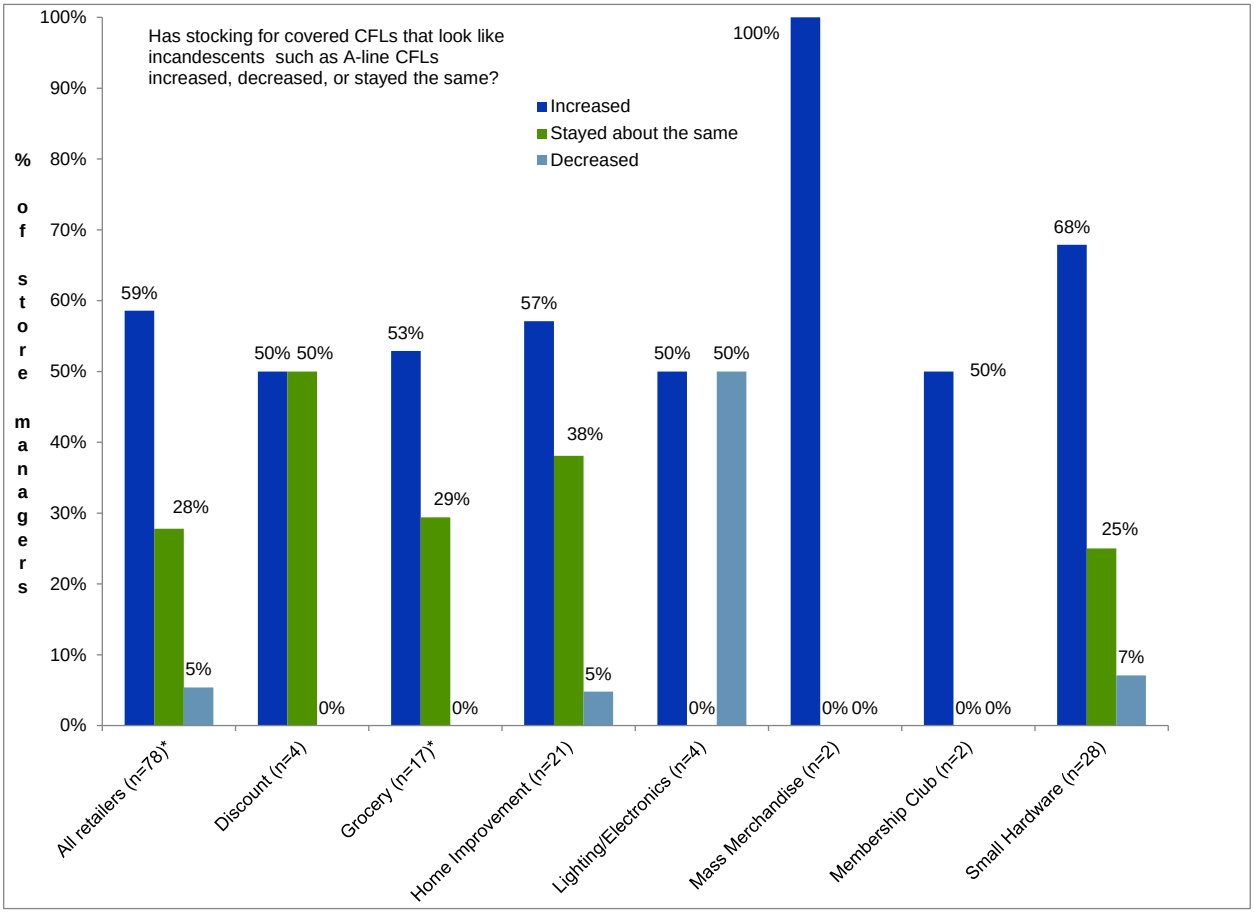
- Some lighting suppliers indicated that consumer discontent with some performance aspects of the CFLs were limiting demand for these products. One buyer for a major retailer pointed to problems with dimmability and slow start-up times as factors that were limiting consumer demand for CFLs to some degree. One manufacturer representative indicated that when lighting manufacturers improve the technology of the omnidirectional LED bulbs, this will displace some CFL sales because, unlike the CFLs, these LED bulbs will be "instant on," with no warm-up time required.

- As discussed in the previous section, some lighting suppliers did report hoarding of incandescent bulbs in 2011. One buyer for a major retailer claimed that, as a result of this hoarding, some consumers have not purchased new bulbs for a number of years.

2.2.2.3 The Impact of EISA on the Stocking and Sales of A-Line CFLs

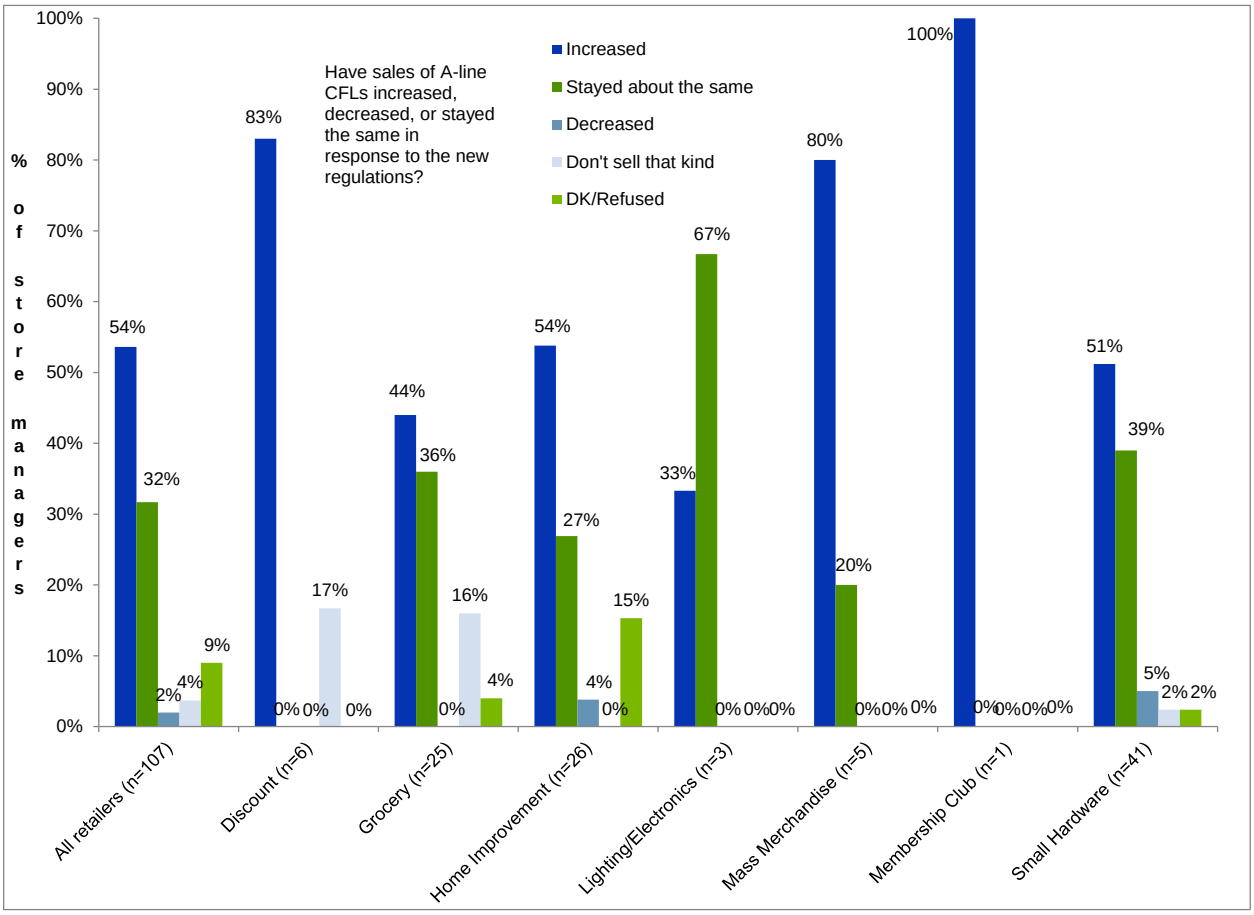
A-line CFLs have the same shape as incandescent bulbs and therefore they represent the closest substitute for the incandescents in terms of aesthetic properties. For this reason, we expected that their stocking and sales would increase as those of the incandescents declined. This proved to be the case. We asked the store managers who said that the EISA legislation had impacted their stocking practices whether their stocking of the A-line CFLs had increased, decreased, or stayed the same. Over one-half (59%) of these store managers said that their stocks of the A-line CFLs had increased. Figure 2-9 shows the full range of responses.

Figure 2-9. Whether the Stocking of A-Line CFLs has Changed in Response to the EISA Legislation



We also asked the EISA-aware store managers who had reported that their customers had changed their purchase behavior in responses to EISA whether the legislation had impacted their sales of the A-line CFLs. A similar percentage of store managers (54%) reported an increase in sales as had reported an increase in stocking (59%). Figure 2-10 shows the responses of all the retail channels. The Lighting/Electronics channel was the one exception to the rule but, as noted above, the sample size for this channel was very small.

Figure 2-10. Whether Sales of A-Line CFLs Have Changed in Response to the EISA Legislation

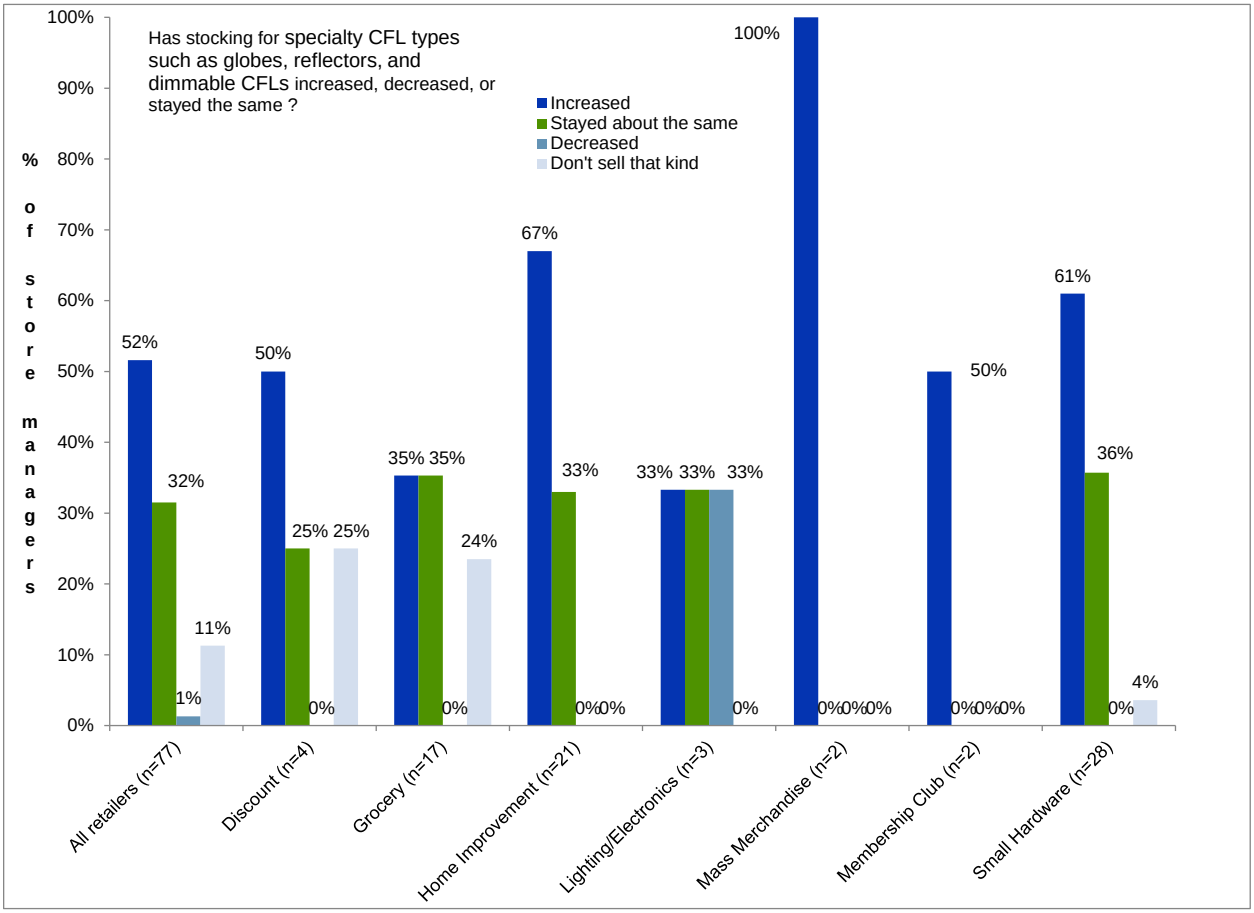


2.2.2.4 The Impact of EISA on the Stocking and Sales of Specialty CFLs

We defined *specialty CFLs* as CFLs that do not have the spiral shape, like A-shape or globe-shape lamps, or CFLs with special features, such as dimmable, 3-way, or reflector CFLs.[9] We asked the store managers who said that the EISA legislation had impacted their stocking practices whether their stocking of specialty CFLs had increased, decreased, or stayed the same. Figure 2-11 shows that over one-half (52%) of the store managers who said that the legislation had impacted their stocking practices said that the effect was that they increased their stocking of these specialty CFLs.

[9] It should be noted that this report does have a separate analysis on the program's impact on A-shape lamps.

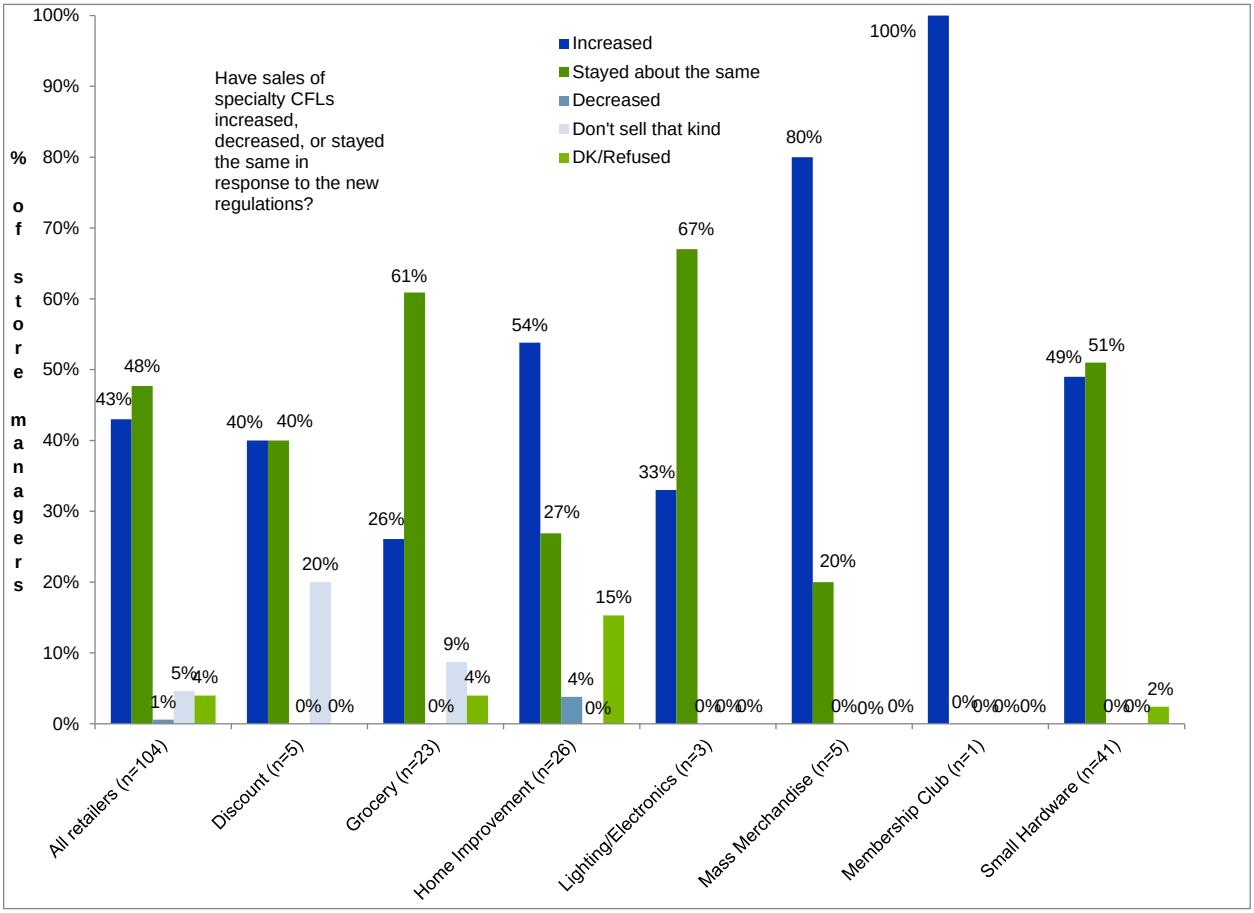
Figure 2-11. Whether the Stocking of Specialty CFLs has Changed in Response to the EISA Legislation



We also asked the store managers about the impact of EISA on their sales of specialty CFLs. Figure 2-12 shows their responses. The store managers were much less likely to say that their sales of specialty CFLs had increased than they were to say that sales of spiral and A-line CFLs had increased. Our interviews with lighting suppliers and store managers over the years have revealed that, while lighting rebate programs like the Massachusetts ENERGY STAR program have been successful in increasing the stocking of specialty CFLs, the sales volumes of these specialty CFLs are inherently limited. This is because the typical household only has a small percentage of lighting sockets that require specialty capabilities. Figure 2-11 and Figure 2-12 indicate that the EISA impacts on specialty CFLs show a similar divergence between stocking volumes and sales volumes.

It is also important to point out that A-line lamps are a subcategory of specialty CFLs. The fact that the increase in sales of the A-line lamps reported in the previous subsections (54% of respondents) was much higher than the sales increase for the specialty CFL category as a whole (43%) means that the sales of specialty CFLs that are not A-line lamps is much smaller than this 43 percent increase.

Figure 2-12. Whether Sales of Specialty CFLs Have Changed in Response to the EISA Legislation



Some of the lighting manufacturers and retail buyers indicated that the Massachusetts program forced them to promote the specialty CFLs by limiting buydown discounts on the standard CFLs for much of the 2011-2012 period. "There was a strong emphasis only on specialty products," said one manufacturer representative, "and so it forced us to emphasize specialty products." She observed that the Big Box stores in Massachusetts like Walmart and Costco continued to offer the bare spirals during this period – because they have to carry the full range of products – but these were not discounted.

Some lighting manufacturers speculated that the specialty CFLs that will face the biggest competition from the LED bulbs will be A-line CFLs and reflector CFL bulbs such as the R-30s. "I think [the emergence of the LED technology] is going to affect more of the specialty products. I think normal everyday CFLs are going to be fine," said one manufacturer representative. "I think what we'll see are maybe the A lamps, maybe the R-30-type products . . . taking a little bit of a hit there because of the quality of the [LED] product and the light." Another manufacturer representative said he sold dimmable

CFLs but that he did not think that dimmability and CFL technology were a good mix. "We do carry a dimmable reflector," he said, "but in my opinion, dimmable products should be LED."

The manufacturers also noted that the LED technologies pose a greater threat to the specialty CFLs than to the basic CFLs because the specialty CFLs are already much more expensive than the basic CFLs, and therefore the price difference between them and the LED bulbs is not as great. One manufacturer observed that the specialty CFLs not only faced the same 2011 increase in phosphorous and raw material input costs that the basic CFLs experienced, but that there was also a spike in the production costs for the glass covers used in covered specialty lamps such as globes and A-line lamps.

2.2.2.5 The Impact of EISA on the Stocking and Sales of LEDs

As we did for the other lighting technologies, we asked the EISA-aware store managers who had reported a change in their stocking practices or consumer purchasing behavior due to EISA whether their stocking or sales of these LED bulbs had increased, decreased, or stayed about the same. Figure 2-13 shows that over one-half (58%) of the store managers said that their stocking of the LED bulbs had increased. The Home Improvement and Lighting/Electronics channels reported the largest increases in LED stocking. Figure 2-14 shows that an equivalent percentage (57%) of the store managers said that their sales of LED bulbs had increased, with similar patterns among the retail channels as had been the case for LED stocking. We will discuss more characteristics of the LED market in the next section.

Figure 2-13. Whether the Stocking of LEDs has Changed in Response to the EISA Legislation

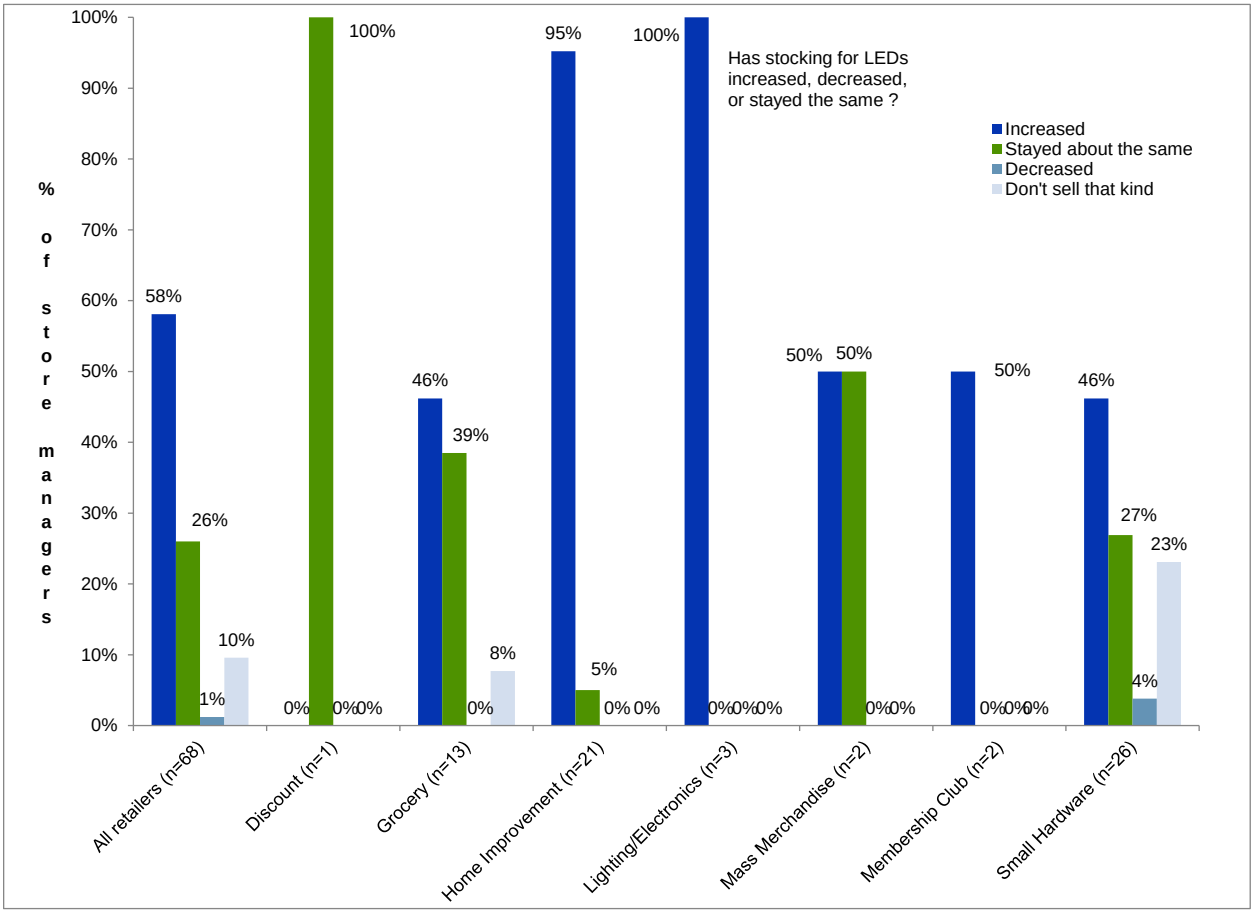
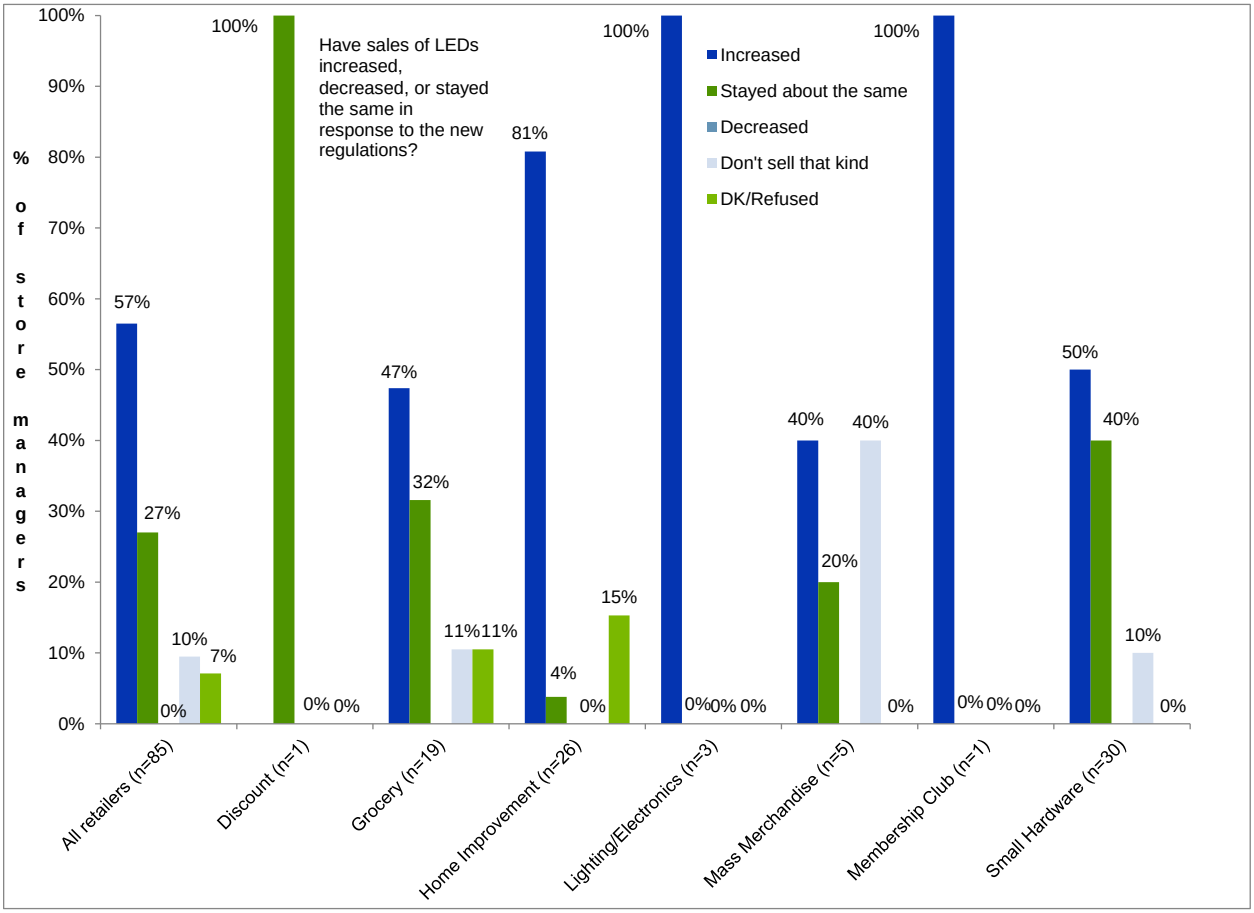


Figure 2-14. Whether Sales of LEDs Have Changed in Response to the EISA Legislation



2.2.2.6 The Impact of EISA on the Stocking and Sales of Halogens

With the phasing out of the incandescent lamps dictated by the EISA legislation, some lighting market observers assumed that incandescent lamp manufacturers would try to preserve some of their market share through sales of EISA-compliant halogen lamps. These are halogen lamps that look like incandescent bulbs, yet are efficient enough to comply with the new EISA requirements. One lighting manufacturer described the process for producing the new EISA-compliant halogens:

> *We are promoting, in a big way, those products [the xenon halogen incandescent A-19 bulbs] that are designed specifically for replacing the ones that are no longer allowed to be manufactured . . . . What we do is we put a halogen burner inside an A-19 . . . with some xenon gas to help us get to the lumen-output requirements . . . everybody in this business does the same thing.*

There was, however, some disagreement among the lighting manufacturers as to how well these EISA-compliant halogen bulbs were selling. One manufacturer representative thought that recent decisions by many upstream lighting programs, including the Massachusetts program, to limit buydown discounts for standard spiral CFLs created a risk that many consumers would switch to less expensive but much less efficient halogens:

> *It's a very, very critical time for the lighting business. And it is, you know, really important that all utilities run their [upstream lighting] programs continuously for the next few years as people are going to be making some new choices on lighting. And without a low-cost CFL alternative, and with the advertising and the salesmanship of [the interviewee named four lighting manufacturers of halogen/incandescent lamps], they're going to be giving a message to the retailers to switch to halogen, low-cost alternative. And in the absence of CFLs to combat that price . . . it is incumbent on the utilities right now to be rebating these programs heavier than ever. Otherwise, all the hard work we've done, you know, creating, you know, let's just say a 10% or 15% nationwide market share, is going to go in the toilet and all of our work. Because basically, the incandescent light bulb companies . . . are all going to be pushing this low-cost halogen alternative . . . with 18 lumens a Watt, which meets EISA, but it's a far cry from, you know, 70 lumens a Watt on a CFL.*

However, another lighting manufacturer representative thought that whatever incandescent hoarding might be going on is partly due to inadequate education from both suppliers and utilities about the availability of the EISA-compliant halogen bulbs as a comparable alternative.

> *And there's really not a big campaign out there in any way, shape, or form through the utilities or through the major manufacturers to tell the consumer: "Hey, you know what, these [incandescent] bulbs are still going to be around, but they're going to be more efficient. . . . They'll cost you a little more, but they're going to give you much more back in return. They're still going to be able to utilize them in similar ways that they used light as the older incandescent bulbs." But the consumer doesn't understand that at this point. I think there has to be more education to that point.*

Two manufacturers pointed to differences between the Massachusetts and California lighting markets that allowed the CFLs in Massachusetts to be more price competitive with the EISA-compliant than was the case in California. One lighting manufacturer representative whose company sold into both the Massachusetts and California lighting markets indicated that, because the Massachusetts upstream lighting program was relatively consistent in providing buydown discounts for CFLs, the CFLs and the EISA-compliant halogens were usually equivalent in price, both selling for about $1 per bulb. Therefore, in the Massachusetts market, there was limited risk of customers "regressing" to the less energy-efficient halogens or incandescents for price reasons. However, he maintained that this was not the case in California, where the upstream lighting program price discounts for the CFLs were often not available. He claimed that, during periods when the California CFL buydown discounts were not available, the

typical retail price for a basic CFL was $3.99 and this was causing many consumers to buy the cheaper incandescent bulbs and EISA-compliant halogen bulbs instead.

Another lighting manufacturer representative who also sold into both the Massachusetts and California lighting markets made a similar observation. “In California, most of the utilities are not rebating anything but [CFL equivalents for] the 60-Watt bare spiral now, where you can see in Massachusetts, from February until now [September 2012] they’re still rebating [CFL equivalents] for 75 and 100 Watts,” she said. “So I’m not sure regulatory-wise why they’re allowed to do it and California is not.”

The December 2012 surveys of Massachusetts store managers indicated that halogen stocking and sales have increased market share due to the EISA legislation, but not as much as other lighting alternatives to the incandescent bulbs (e.g., CFLs and LED bulbs). Only 23 percent of store managers reported increased stocking of halogens (Figure 2-15) and only 28 reported increased sales of the halogens (Figure 2-16). As discussed elsewhere in this report, Massachusetts’ continuing support of the standard spiral CFLs, including higher-wattage models, may be taking away some potential sales of the halogen bulbs.

Figure 2-15. Whether the Stocking of Halogens has Changed in Response to the EISA Legislation

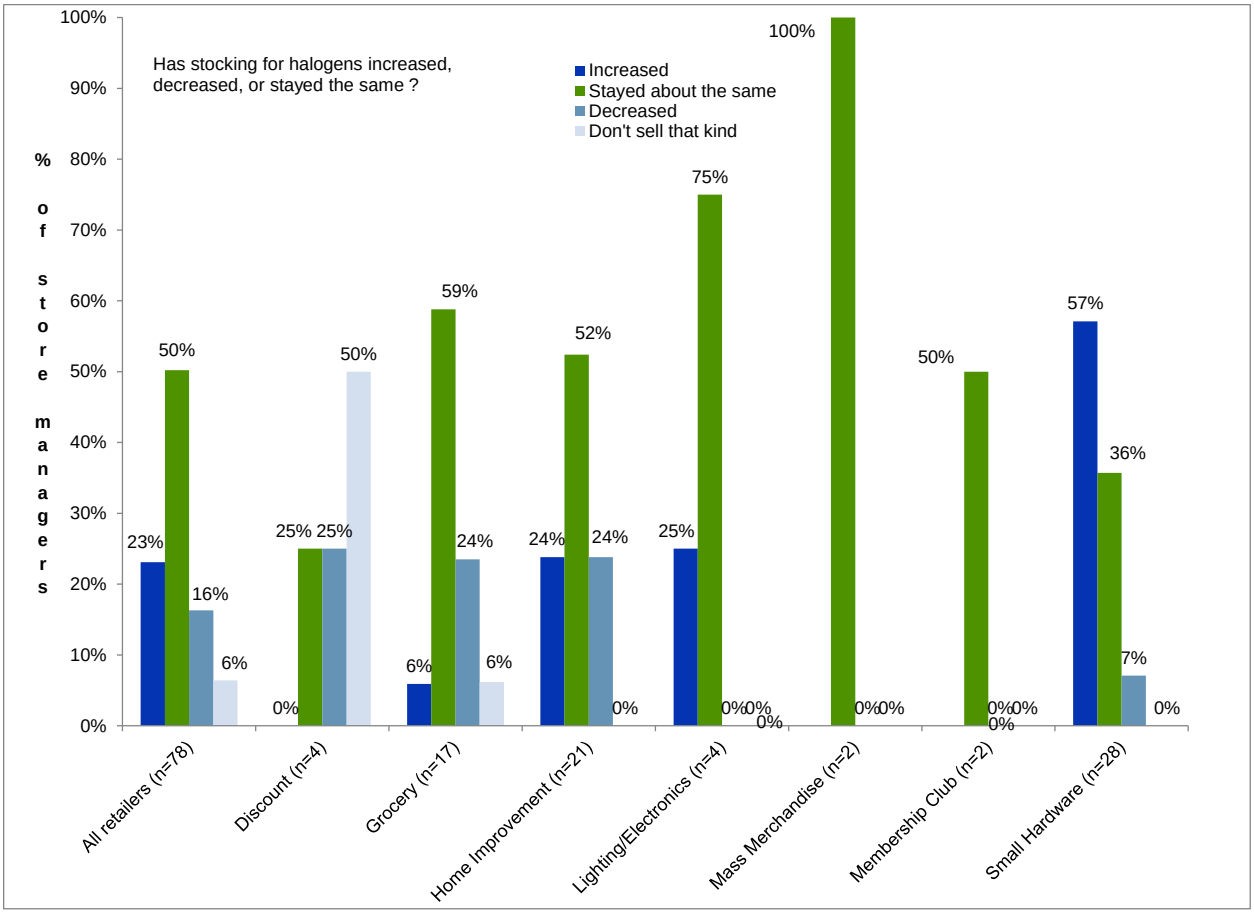
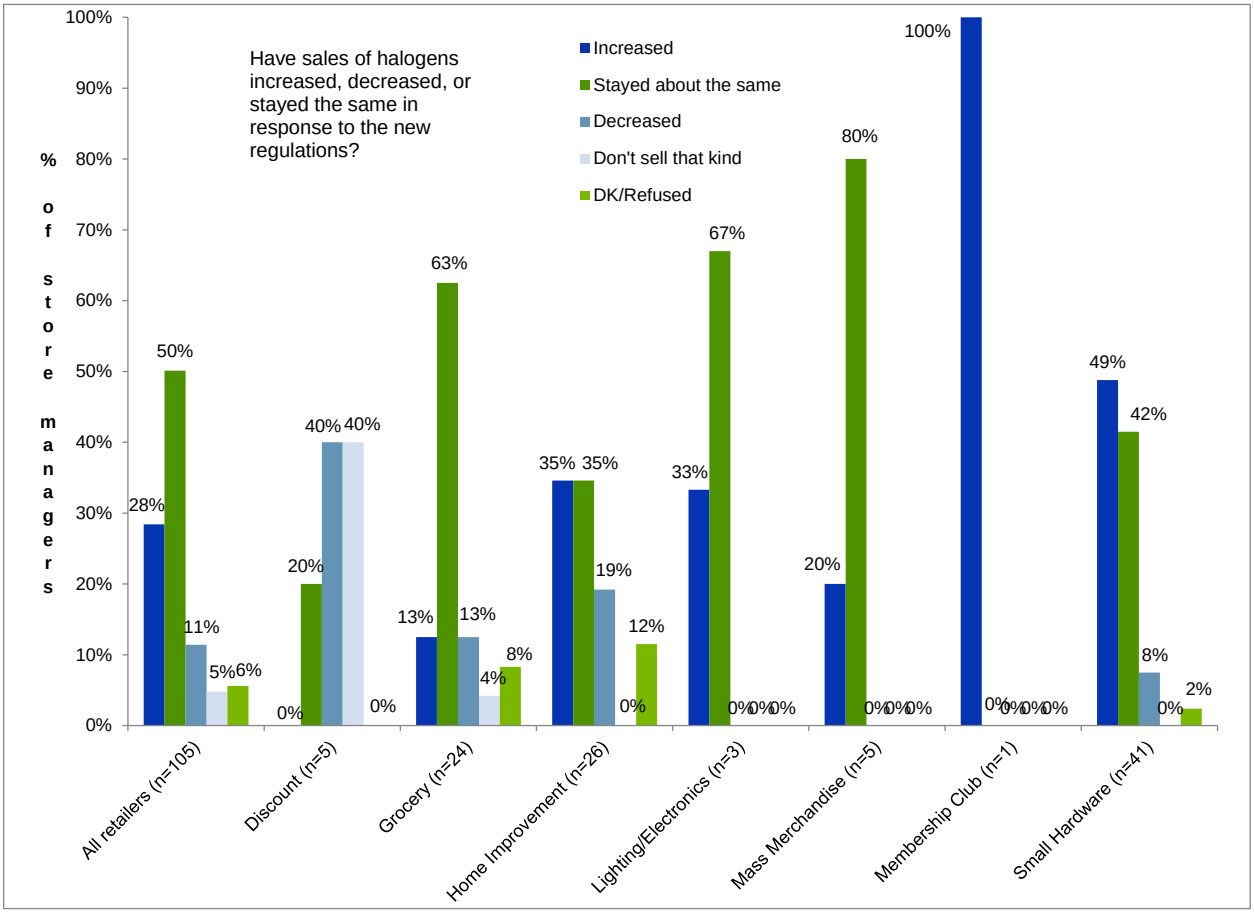


Figure 2-16. Whether Sales of Halogen Bulbs Have Changed in Response to the EISA Legislation



2.3 The Market for LED Bulbs

This section presents the findings from the lighting retailer and supplier interviews concerning the Massachusetts market for LED bulbs. Topics covered in this section include:

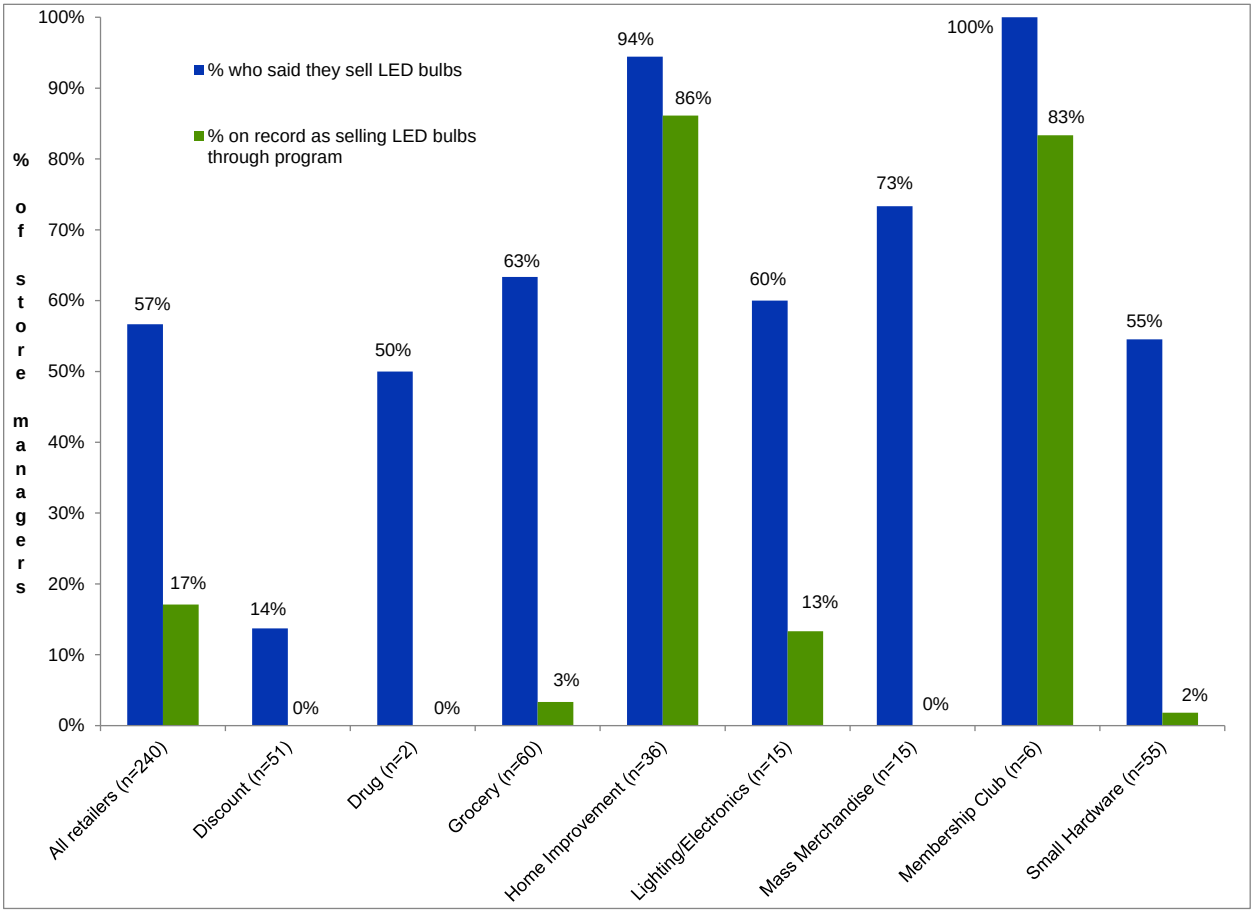
- Assessing recent sales of LED bulbs;
- Barriers to selling LEDs;
- LED price trends; and
- The program impacts on LED sales.

2.3.1 Assessing Recent Sales of LED Bulbs

According to the program tracking data, only 41 of the 240 participating stores in our sample (17%) had sold LED products through the program. However, we asked all of the store managers whether they sold LED bulbs, and over one-half (57%) of them said that they did. Figure 2-17 compares the percentage of

store managers selling LED bulbs with the percentage who were selling LED bulbs through the program. The chart indicates that many of the retailers who are participating in the program are selling LED bulbs, but not through the program. The program has the most success getting retailers in the Home Improvement and Membership Club channels to sell LED bulbs through the program.

Figure 2-17. The Frequency with which Store Managers Reported Selling LED Bulbs Overall vs. Through Program

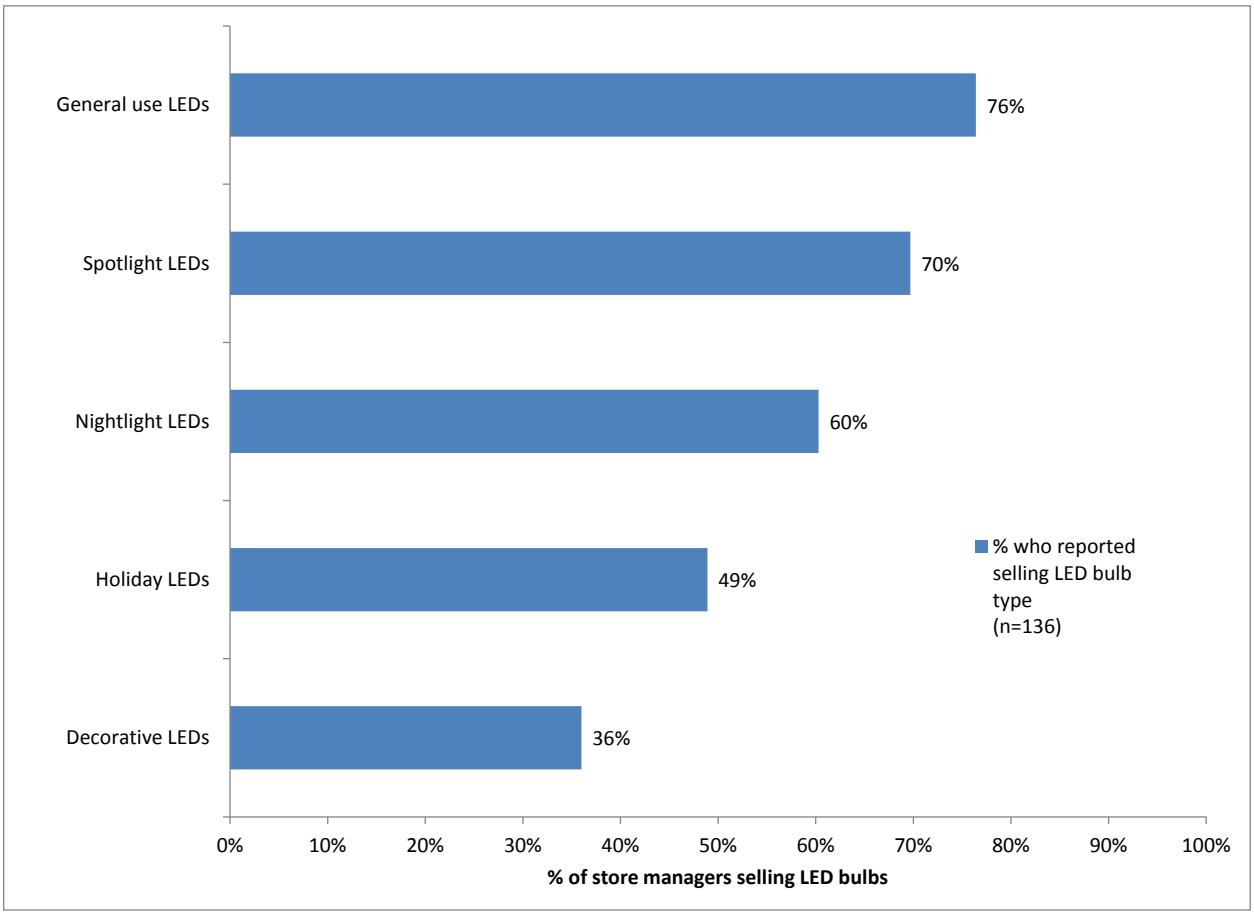


We also asked the store managers who reported selling LED bulbs what types of LED bulbs they sold. This was based on a battery of prompted questions, where we named a list of LED bulb categories and then asked the store manager whether his/her store sold them. The LED bulb categories included:

- General use LEDs, such as A-lamps, globes, typically medium-base;
- Spotlight LEDs, such as floodlight/reflector LEDs (e.g., BR-40, R-30, PAR-30, MR-16);
- Decorative LEDs;
- Nightlight LEDs, such as C-7 and C-9; and
- Holiday LEDs.

Figure 2-18 shows that the large majority reported selling the general use and spotlight LEDs, but less than one-half (49%) reported selling the holiday LEDs, and only 36 percent sold the decorative LEDs.

Figure 2-18. The Types of LED Bulbs Sold

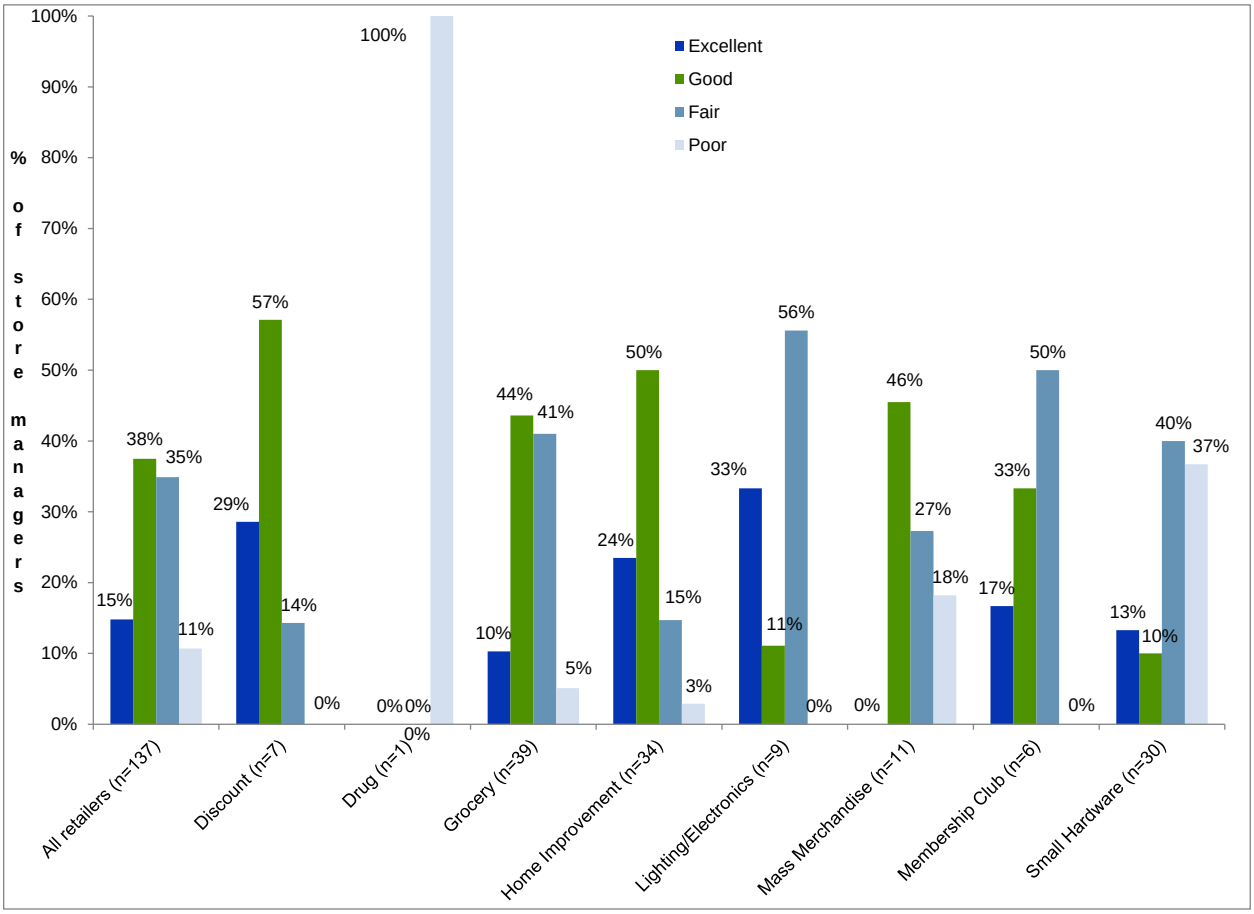


We asked the store managers who indicated that they sold LED bulbs – whether through the Massachusetts ENERGY STAR program or outside the program – if they would characterize their sales of these LED bulbs over the past years as "excellent," "good," "fair," or "poor." Only 15 percent of the respondents characterized their sales as "excellent," with another 38 percent assessing their sales as "good," 35 percent rating them as "fair," and 11 percent characterizing them as "poor."

Figure 2-19 shows these responses broken down by retail channel. The Discount, Home Improvement, and Lighting/Electronics channels had the highest percentage of store managers reporting their LED sales as "excellent." The responses from the Home Improvement and Lighting/Electronics store managers were not too surprising since these store types are well known as "destination stores" for customers seeking specialty lighting products of any kind. The responses from the store managers in the Discount channel are somewhat surprising since Discount stores are not generally considered destination stores for lighting products. However, in this case one must pay attention to the sample size. These responses are from the

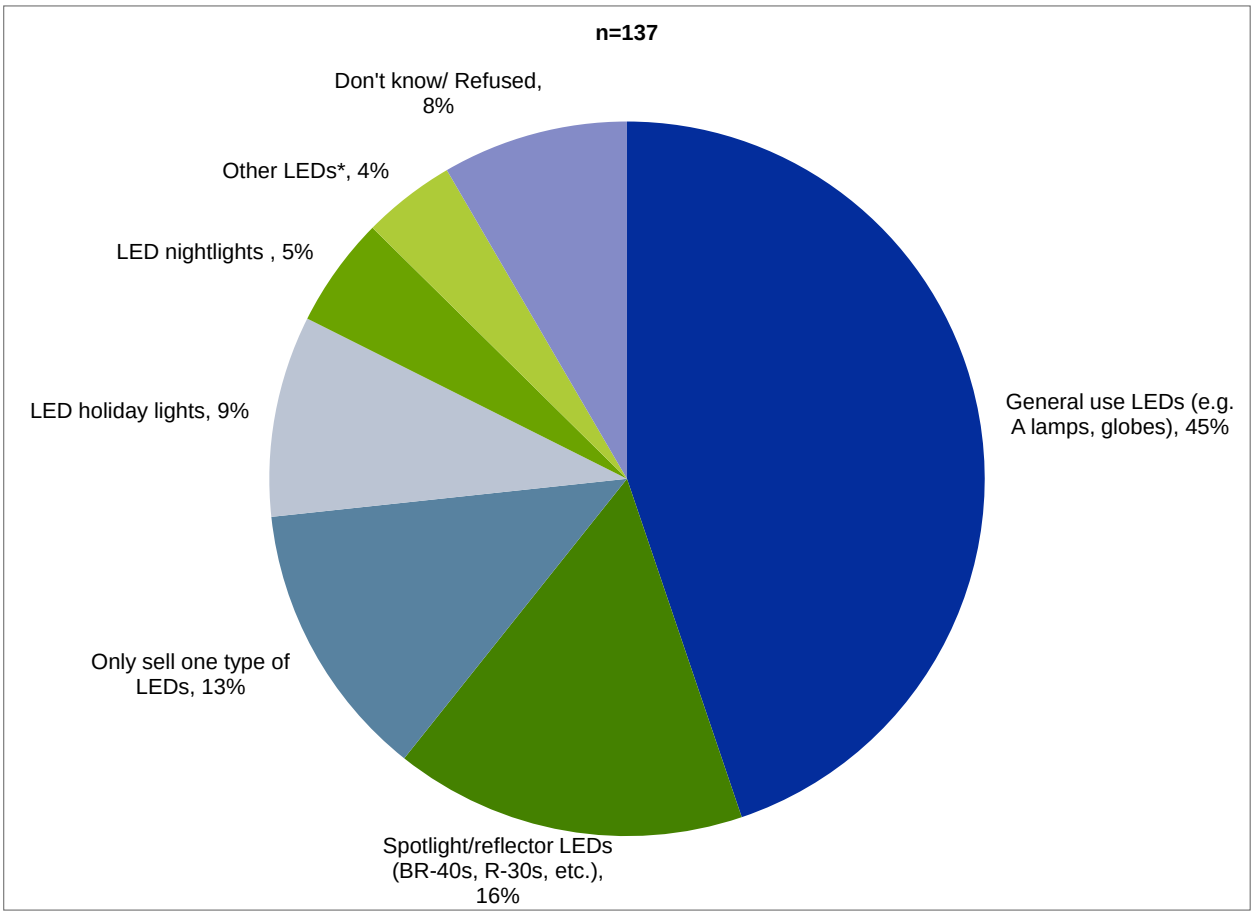
seven Discount store managers out of the 51 we surveyed who actually sold LED lighting products. Therefore, there is likely something about these seven Discount stores – whether it is how they price their products, what kinds of customers they serve, or even the environmental attitudes of the store managers – that distinguishes them from the other Discount stores in our sample.

Figure 2-19. Characterizing LED Bulbs Sales Over the Past Year



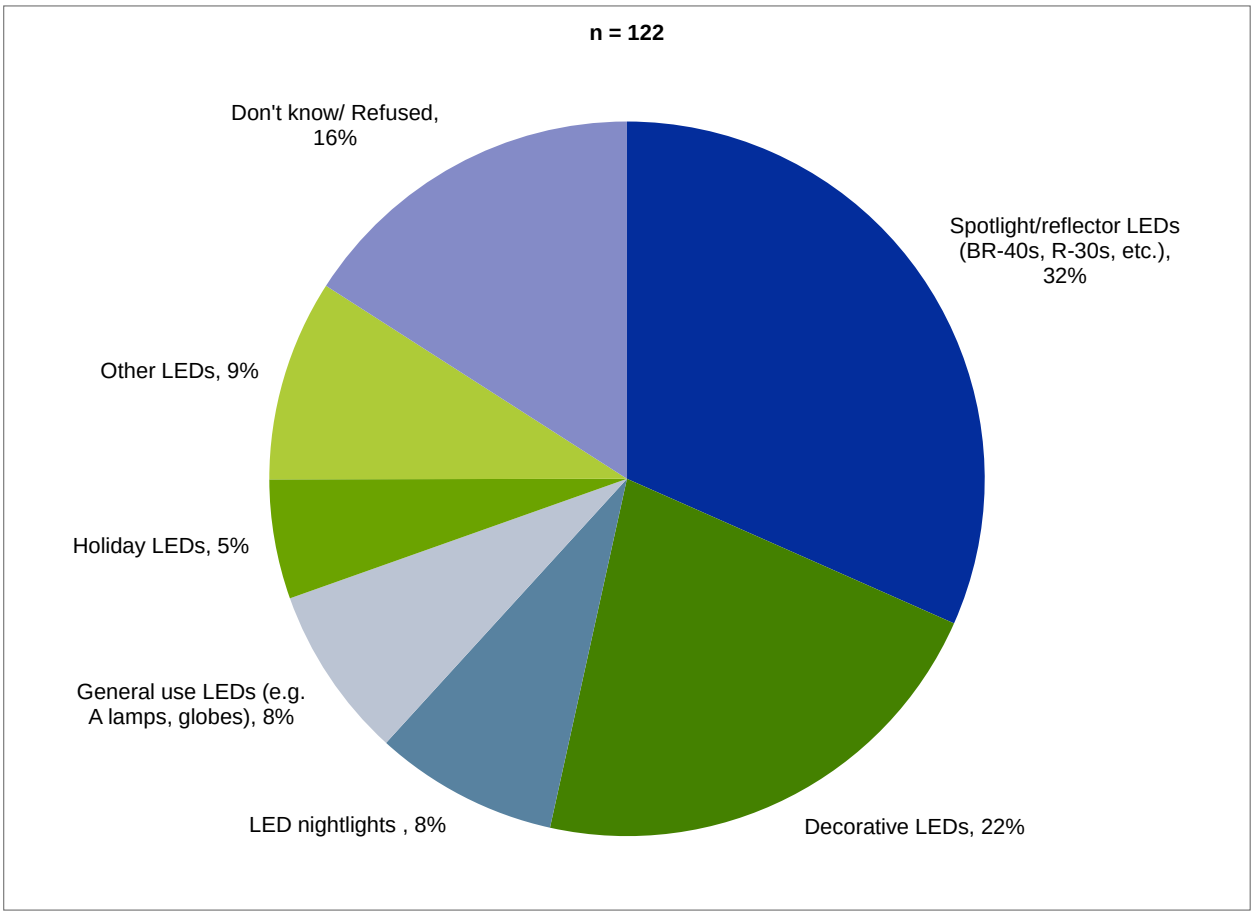
We asked the store managers who sold LED bulbs about which types or models of LED bulbs sold the best. Figure 2-20 shows that nearly one-half (45%) of the store managers who sold LED bulbs said that the general purpose LED bulbs sold the best, with the spotlight/reflector LEDs a distant second.

Figure 2-20. Which LED Bulb Types Sell the Best



We also asked the store managers who sold LED bulbs which LED products sold the worst. Figure 2-21 shows that about one-third (32%) reported that the spotlight/reflector LEDs sold the worst, with about one-fifth (22%) indicating that the decorative LEDs were the worst sellers.

Figure 2-21. Which LED Bulb Types Sell the Worst

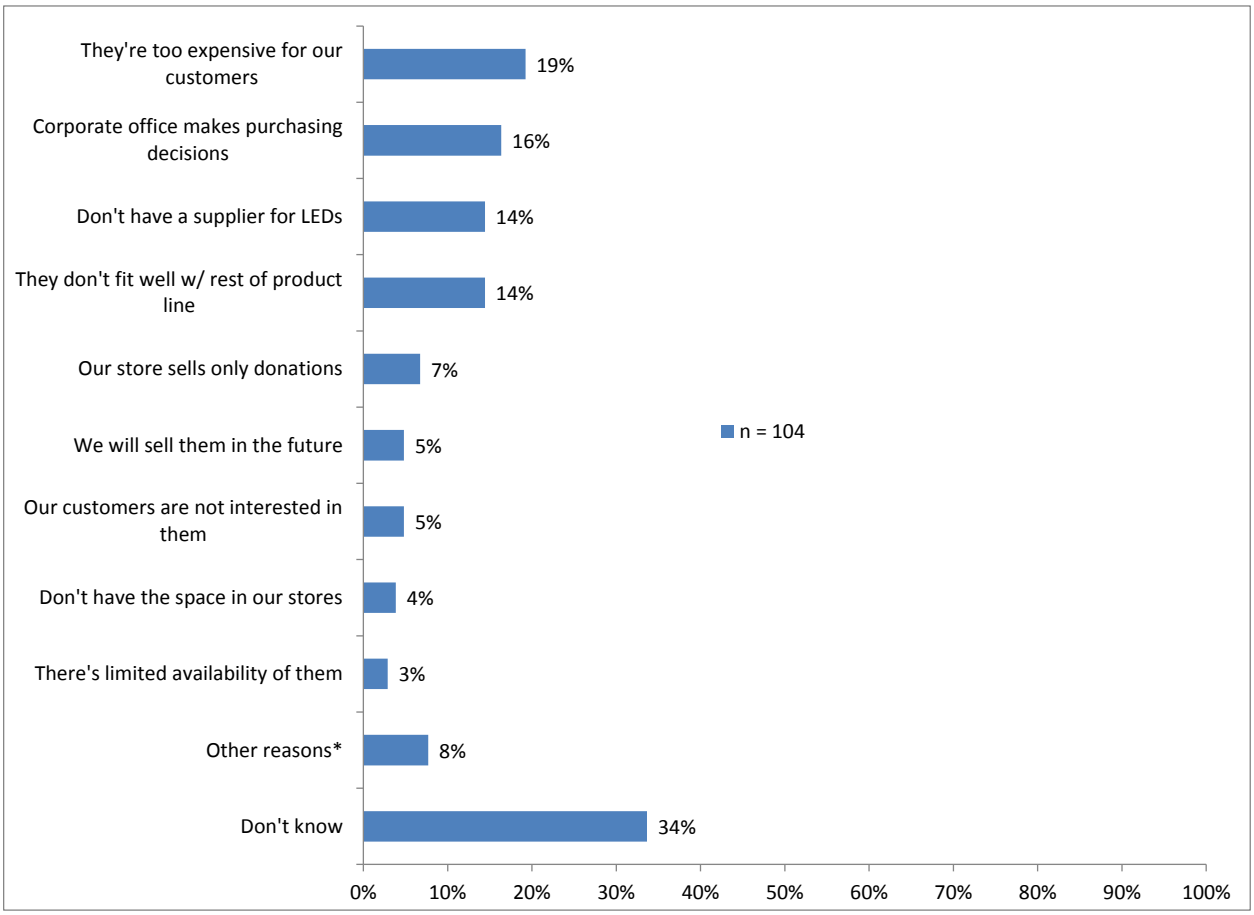


The lighting manufacturers and high-level retail lighting buyers were in general agreement that initial LED sales had been slow due to high prices, the limited number of LED products that had ENERGY STAR certification, and some product performance problems. These barriers are discussed in the next subsection. However, these lighting suppliers were also generally optimistic that LED product sales would increase due to a number of factors that are also discussed in the next section.

2.3.2 LED Barriers and Opportunities

To better understand the barriers to selling more LED bulbs in the Massachusetts market, we asked the retailers in our sample who were not selling LED bulbs why they were not offering these products. Our survey revealed that, rather than a few major barriers, there were many smaller ones. The most frequent responses included the bulbs being too expensive for their customers (19%), their corporate offices making the purchasing decisions (16%), their lack of an LED bulb supplier (14%), and the LED bulbs not fitting in well with the rest of their product line (14%). Figure 2-22 shows that there were many additional reasons why these stores were not selling the LED bulbs.

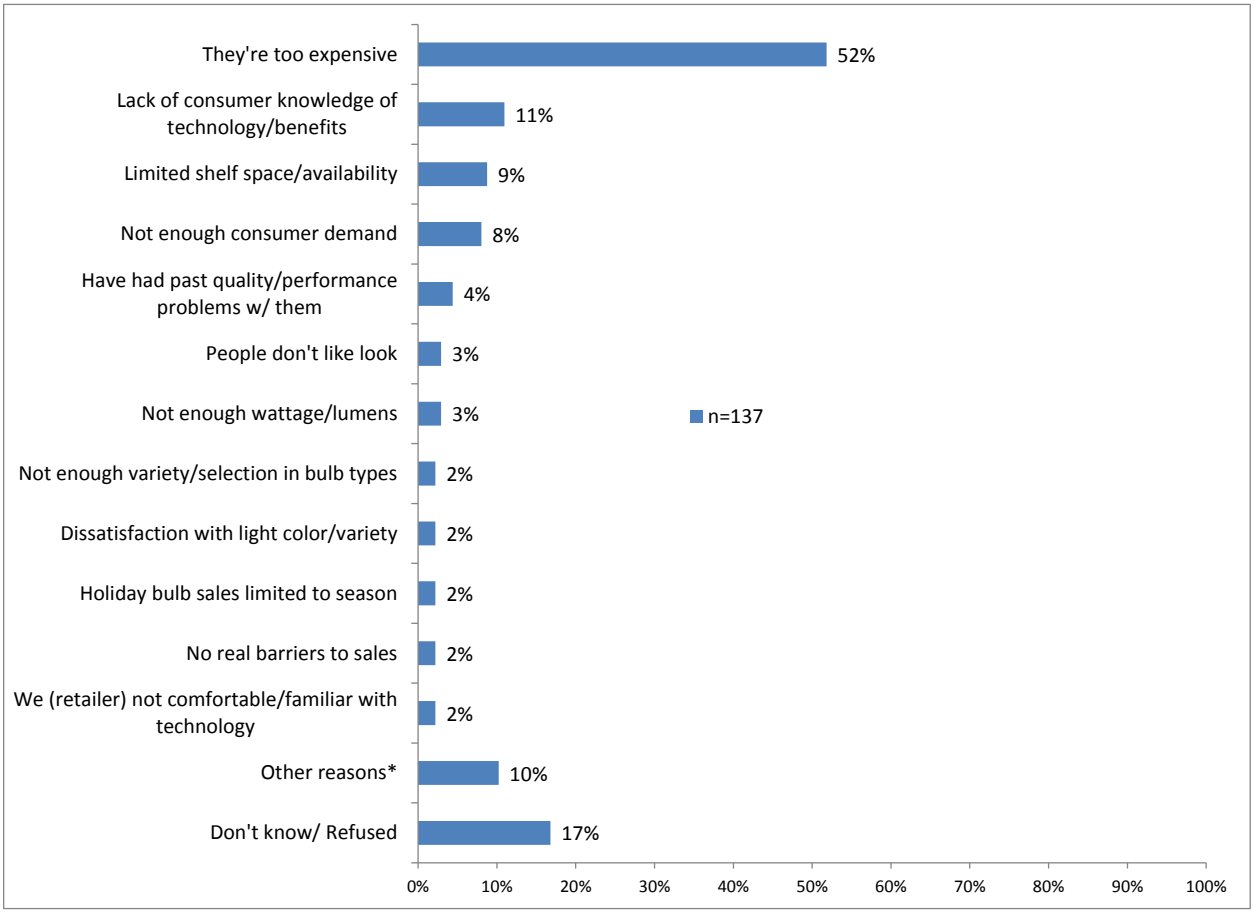
Figure 2-22. Why Some Retailers Are Not Selling LED Bulbs



Note: *Other reasons include "we're not comfortable/familiar with technology," "they don't sell well," 'we actually do sell LEDs," et al.

We also asked the store managers who were already selling the LED bulbs what factors or barriers prevented more of their LED bulbs from being sold. For these store managers, the higher cost of the LED bulbs was the dominant barrier, with over one-half (52%) of the respondents citing this as a factor. At a distant second (11% of the respondents) was the lack of consumer knowledge of the LED technology and its benefits. The store managers who were already selling the LED bulbs cited many other barriers to additional LED sales, as Figure 2-23 shows.

Figure 2-23. Why Retailers Who Are Already Selling LED Bulbs Are Not Selling More of Them



Note: Total exceeds 100% because multiple responses were allowed. *Other reasons include: "not enough demand for them," "newer technology/ people resistant to change," "take too long to light up," et al.

As noted in the previous subsection, the lighting manufacturers and high-level retail lighting buyers generally agreed that initial LED sales had been slow due to high prices and the limited number of LED products that had ENERGY STAR certification. In a 2012 interview, one lighting manufacturer explained the situation:

> *INTERVIEWER: And what kinds of LED products are being promoted?*
> *MANUFACTURER REPRESENTATIVE: Well, they have to be ENERGY STAR. And, you know, so that means that, up until this point, it's strictly been LED PARs, which is a very limited market because of cost, mainly. And if you don't have a recessed light, you don't use them. And now, and then the omni-directional A-19, which is a complete bust.*
> *INTERVIEWER: And why was that a bust?*

RESPONDENT: It's too expensive. Nobody buys them. And, I mean, nobody buys any of them. And then now, with the coming of the nonstandard LED ENERGY STAR, now the market is going to change, and there'll be a lot of penetration for LED.

Like the store managers, the lighting suppliers pointed to the high first cost of the LED bulbs as the most significant barrier. In fact, one manufacturer referred to it as "the only barrier." One manufacturer representative explained:

Even with the $15 rebate on a $30 [LED] light bulb, and ours is probably the most competitive, it's still more than $20 retail. And that limits it to first adopters and rich people. That's really who can buy a $20 light bulb. . . . You know, once you captured the person, there's only so many first adopters, and then they've adopted.

Another manufacturer representative compared CFLs to Chevrolets and LED bulbs to Mercedes. He noted that, while there are markets for both of these products, because of the cost difference a lot more Chevrolets are sold then Mercedes.

Like the store managers, the lighting manufacturers and retail buyers also cited lack of customer familiarity with the technology as another barrier to LED sales. "They're not used to the LED light," said one manufacturer representative. "They're not as familiar with this, and being not as familiar, they don't know what it's supposed to do, going to do, what it does, to the extent it does. Do they like the light itself? Do they like the brightness of the LED compared to normal light bulbs?"

The lighting manufacturers and retail buyers did give the Massachusetts program credit for reducing LED bulb prices enough so that some customers would be willing to experiment with the technology. "[LED bulbs are] so new that they're [customers] kind of dipping their toes in the water testing it here and there," said one lighting manufacturer representative.

Some of the lighting manufacturers also observed that some of the early LED products had performance problems such as poor dimming, unappealing light color, and harmonic distortion. Even now, lighting manufacturers are having difficulty producing LED bulbs that have wattage/lumen outputs equivalent to higher-wattage CFLs without encountering heat gain problems that can shorten the lives of the LED bulbs.

However, many of these performance barriers are being overcome. For example, a number of the lighting manufacturers noted that the dimming capability of the LED bulbs has improved tremendously, and this feature will give the LED bulbs and advantage over the CFLs once LED prices come down. One manufacturer representative said:

I think there's going to be a quick jump over as soon as the LED lamp gets to [an affordable price] point. I believe that the omni-directional LED will become a significant sale because of

its dimmability features. It does dim very, very nicely—the quality ones, anyway. So I think dimmability is going to be, is a huge, huge factor in what you're talking about.

In general, the lighting manufacturers and retail buyers were optimistic about future sales of LED products for a number of reasons, including:

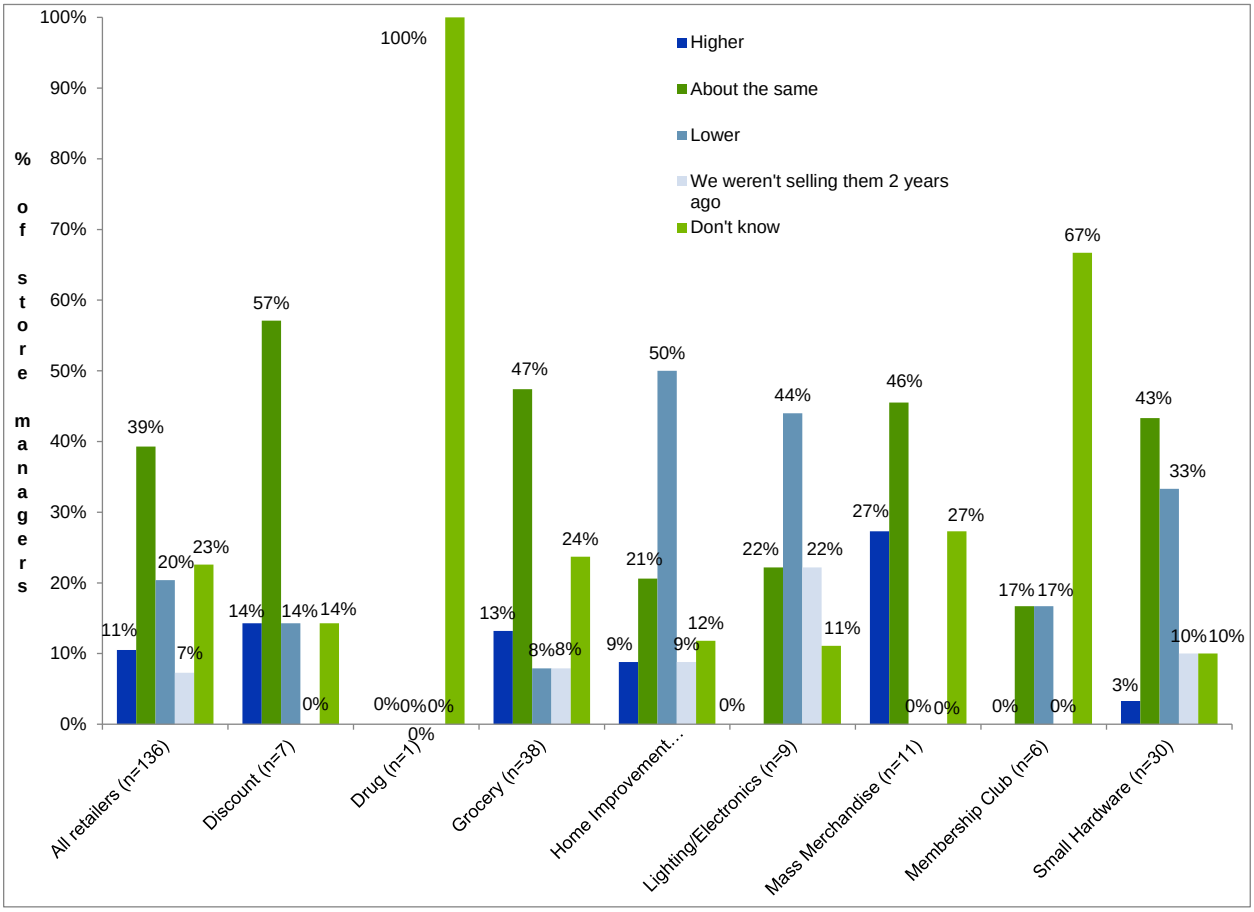
- Lower prices due to growing economies of scale in production;
- Lower prices due to improvements in LED production techniques;
- Growing consumer awareness of the benefits of the technology, including longer bulb lives and superior dimming capabilities and warm-up times compared to CFLs;
- Improvements in product performance;
- An expansion in the number of ENERGY STAR-certified LED bulbs; and
- The impacts of the EISA legislation.

2.3.3 LED Price Trends

Since higher prices continue to be the main barrier to additional LED sales, we asked the store managers some questions about trends in prices for LED bulbs. We asked the store managers who were selling the LED bulbs whether the regular retail prices for their LED bulbs, not counting any discounts from the program or any other sources, were higher, lower, or about the same as they were two years ago.

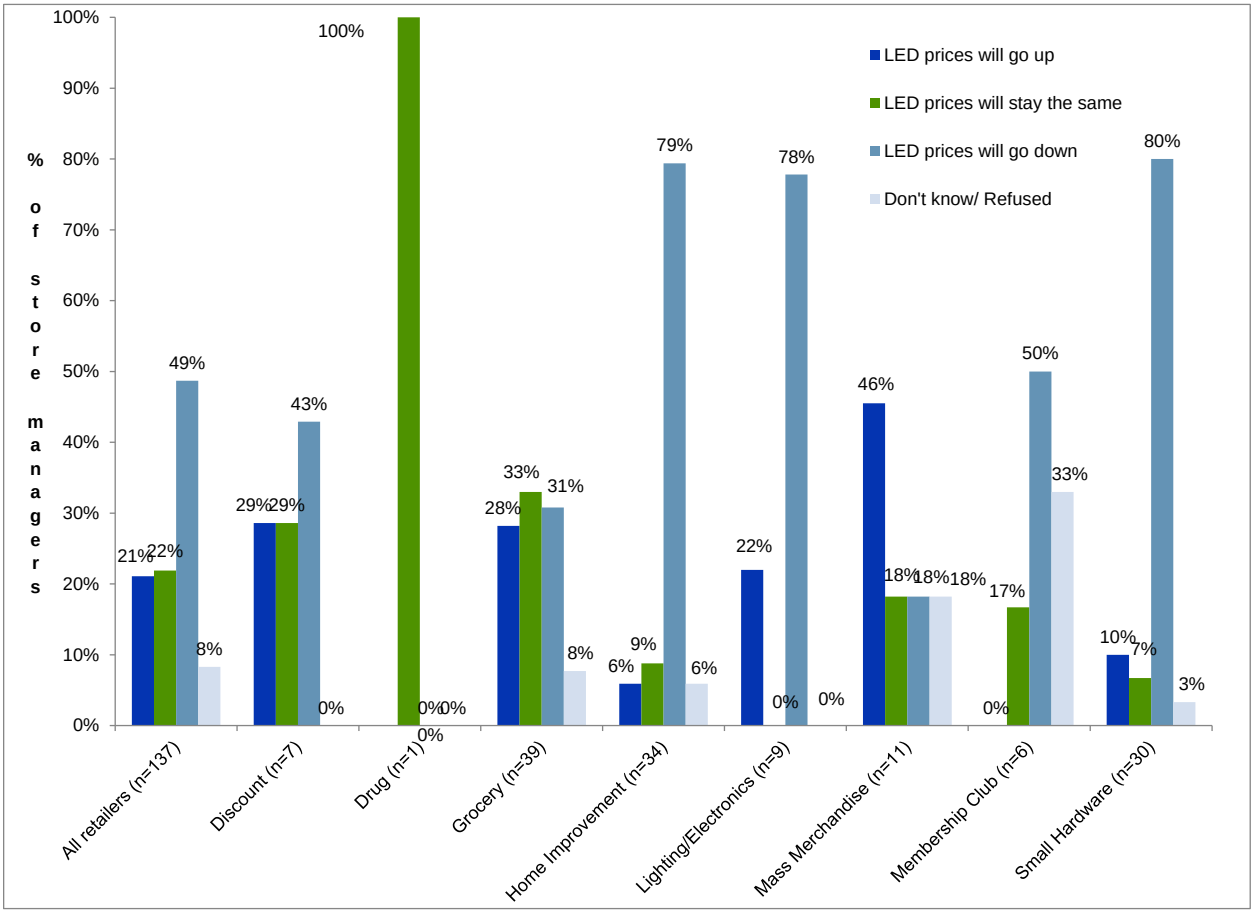
Figure 2-24 shows that only 20 percent of the retailers said that the non-discounted retail prices for the LEDs bulbs were lower than they had been two years ago.

Figure 2-24. Whether Retailers Already Selling LED Bulbs Think That Regular Retail Prices for LED Bulbs Are Higher, Lower, or About the Same as They Were Two Years Ago



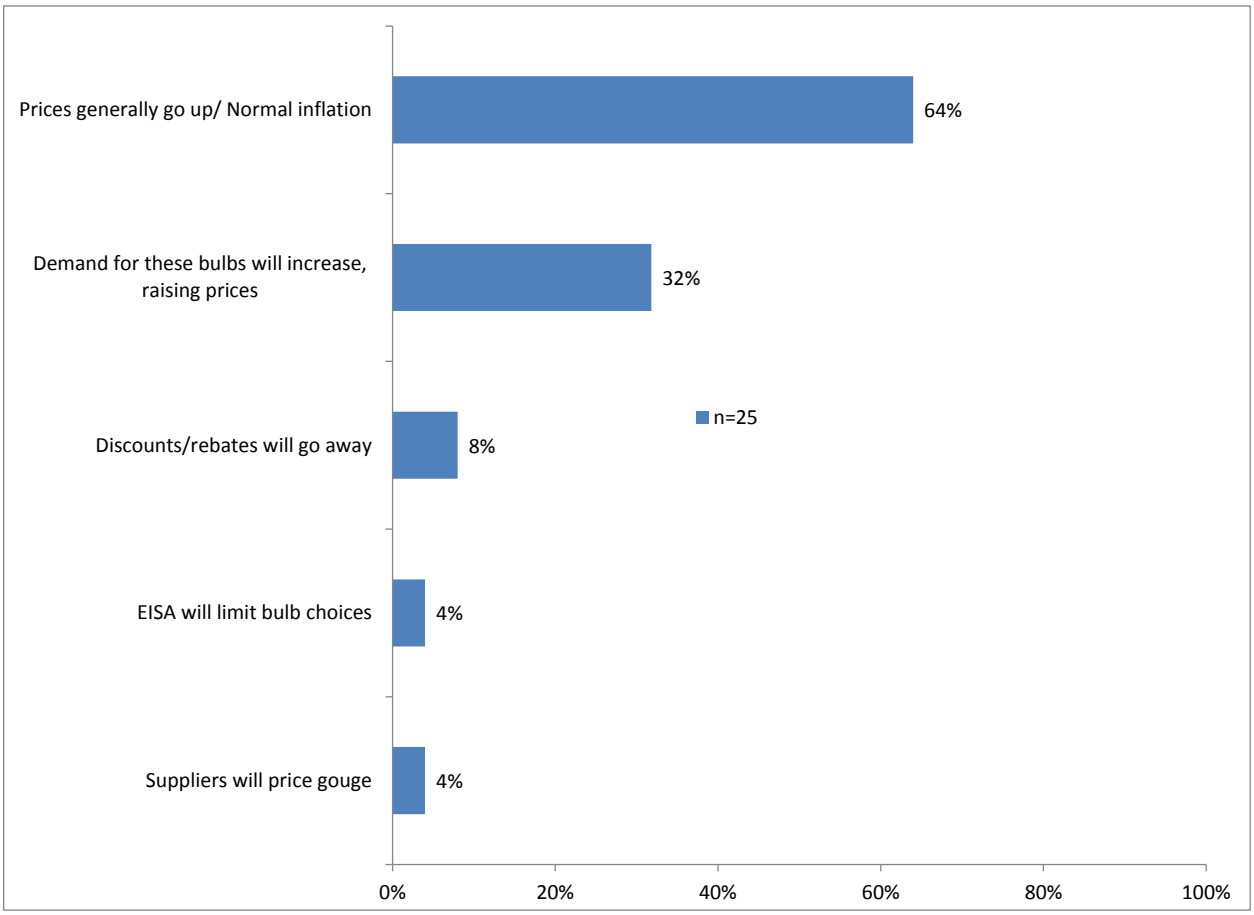
While only one-fifth of the retailers who sold LED bulbs said that LED retail prices had gone down in the recent past, they were much more willing to predict that this would happen in the near future. We asked them whether they thought retail prices for LED bulbs over the next few years will go up, go down, or stay about the same. Nearly one-half (49%) of them predicted that LED prices would go down. Figure 2-25 shows the full range of responses.

Figure 2-25. Whether Retailers Already Selling LED Bulbs Think Future LED Bulb Prices Will Go Up, Go Down, or Stay About the Same



We asked the store managers to explain why they thought LED prices would go up, go down, or stay the same. Among store managers who thought LED prices would go up, their most common reason – cited by nearly two-thirds (64%) of the respondents – was they thought that the natural tendency of product prices was to rise over time. About one-third (32%) of the store managers in this group also thought that increasing consumer demand for the LED bulbs would allow suppliers and retailers to charge higher prices. Figure 2-26 shows all of the reasons cited by store managers who thought LED prices would increase.

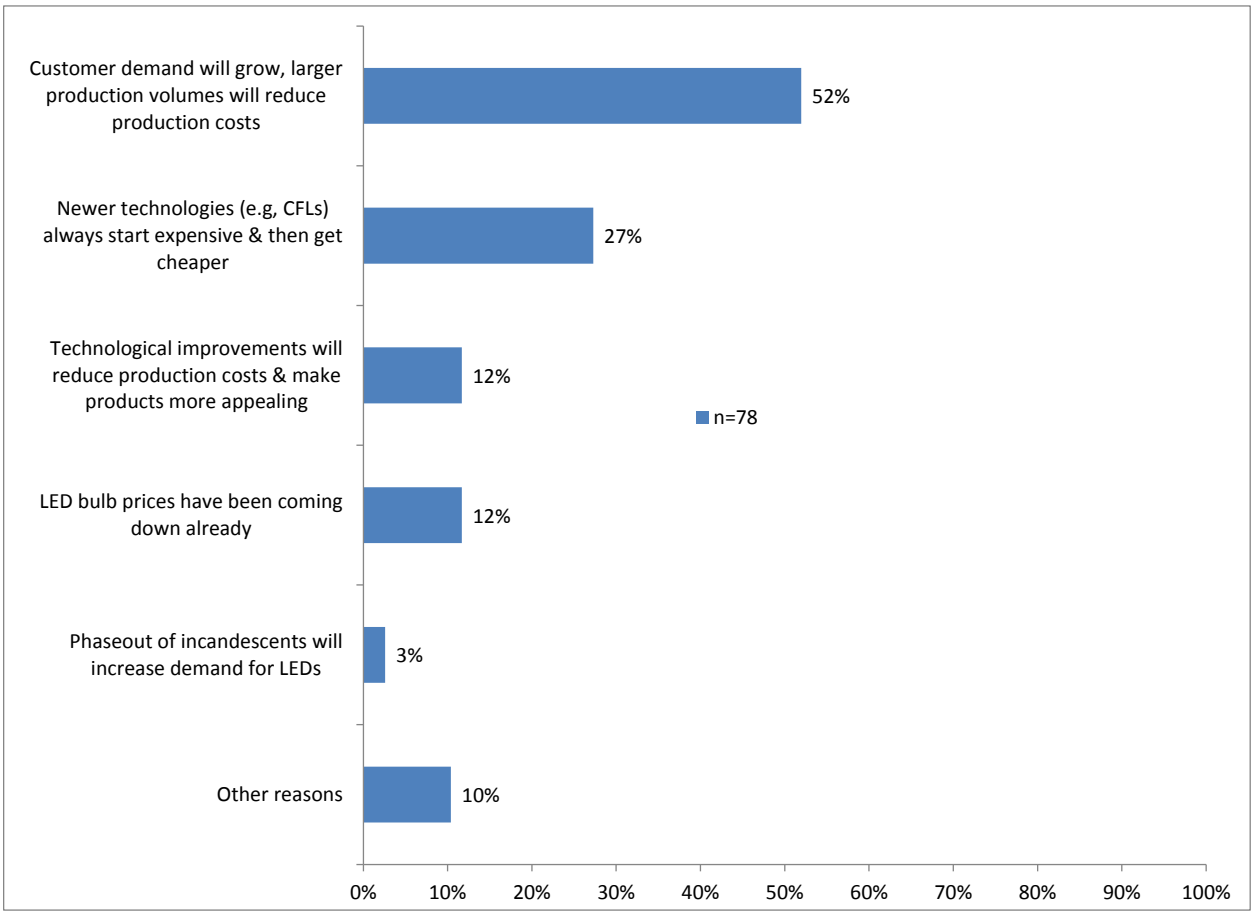
Figure 2-26. Why Retailers Selling LED Bulbs Think LED Bulb Prices Will Go Up



Note: Total exceeds 100% because multiple responses were allowed.

Among store managers who thought LED prices would go down, their most common reason – cited by slightly over one-half (52%) of the respondents – was they thought that rising consumer demand would bring down prices by reducing production costs. A few of these respondents thought that the causal relationship would work in both directions – e.g., that lower production costs would reduce prices and drive additional consumer demand. Over a quarter of the store managers in this group also explained that they thought LED bulb prices would go down because newer technologies always start off expensive and then become cheaper. Many pointed to the CFL as an example of such a technology. Figure 2-27 shows all the responses.

Figure 2-27. Why Retailers Selling LED Bulbs Think LED Bulb Prices Will Go Down



Note: Total exceeds 100% because multiple responses were allowed.

It is likely that the recent success of store managers in these channels in selling LED bulbs has caused them to hypothesize that this product will reap some economies-of-scale benefits. While some store managers thought that LED bulb prices might go up, the lighting manufacturers and high-level retail buyers were universal in predicting that LED prices would go down in the next few years. In making these predictions, they cited factors that were mentioned in the previous subsection, such as increased economies-of-scale of production and improvements in production techniques.

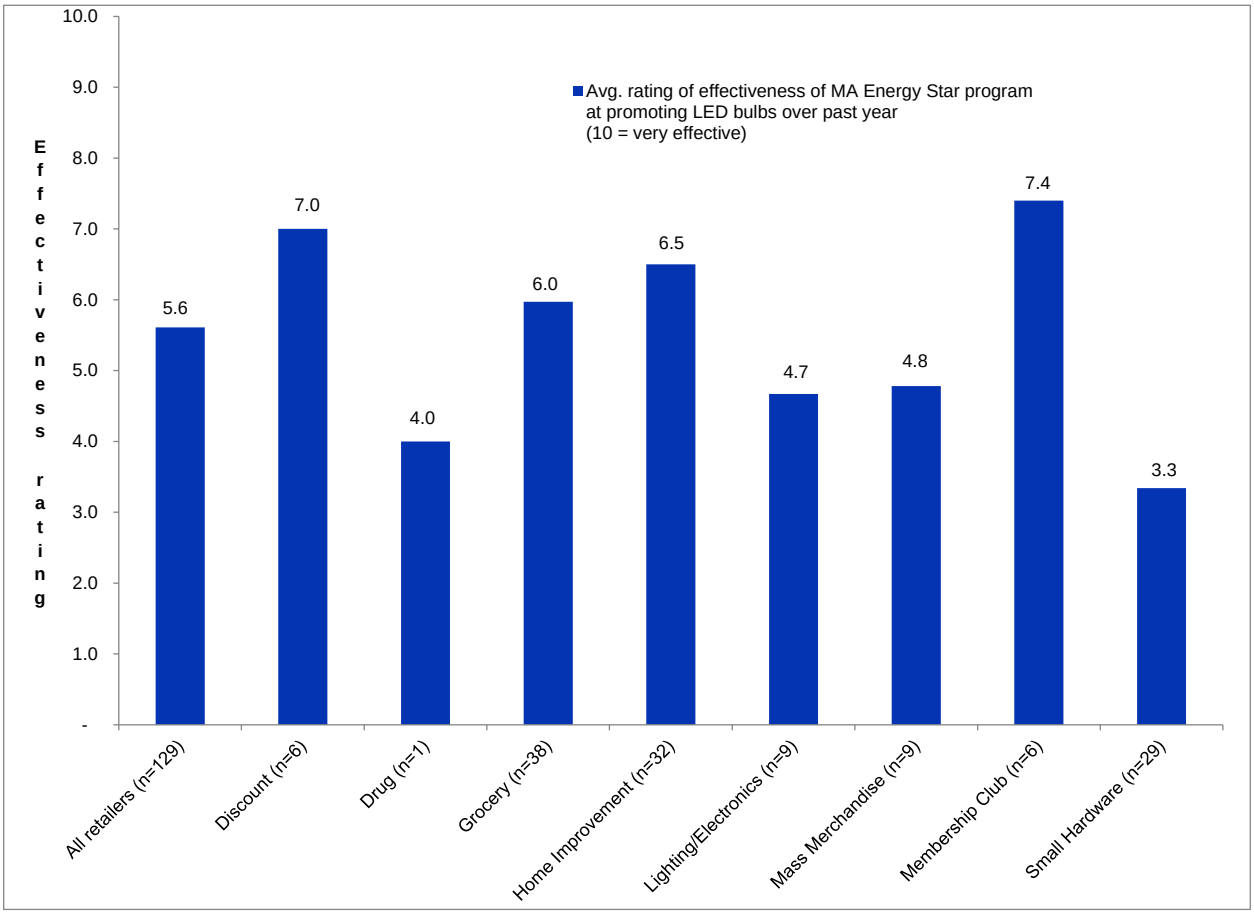
2.3.4 The Program Impacts on LED Sales

The Massachusetts ENERGY STAR program has offered significant discounts on LED sales over the past couple of years and the evaluation team was interested in the store managers' perspectives on the effectiveness of these market interventions.

2.3.4.1 Program Promotion of LED Bulbs

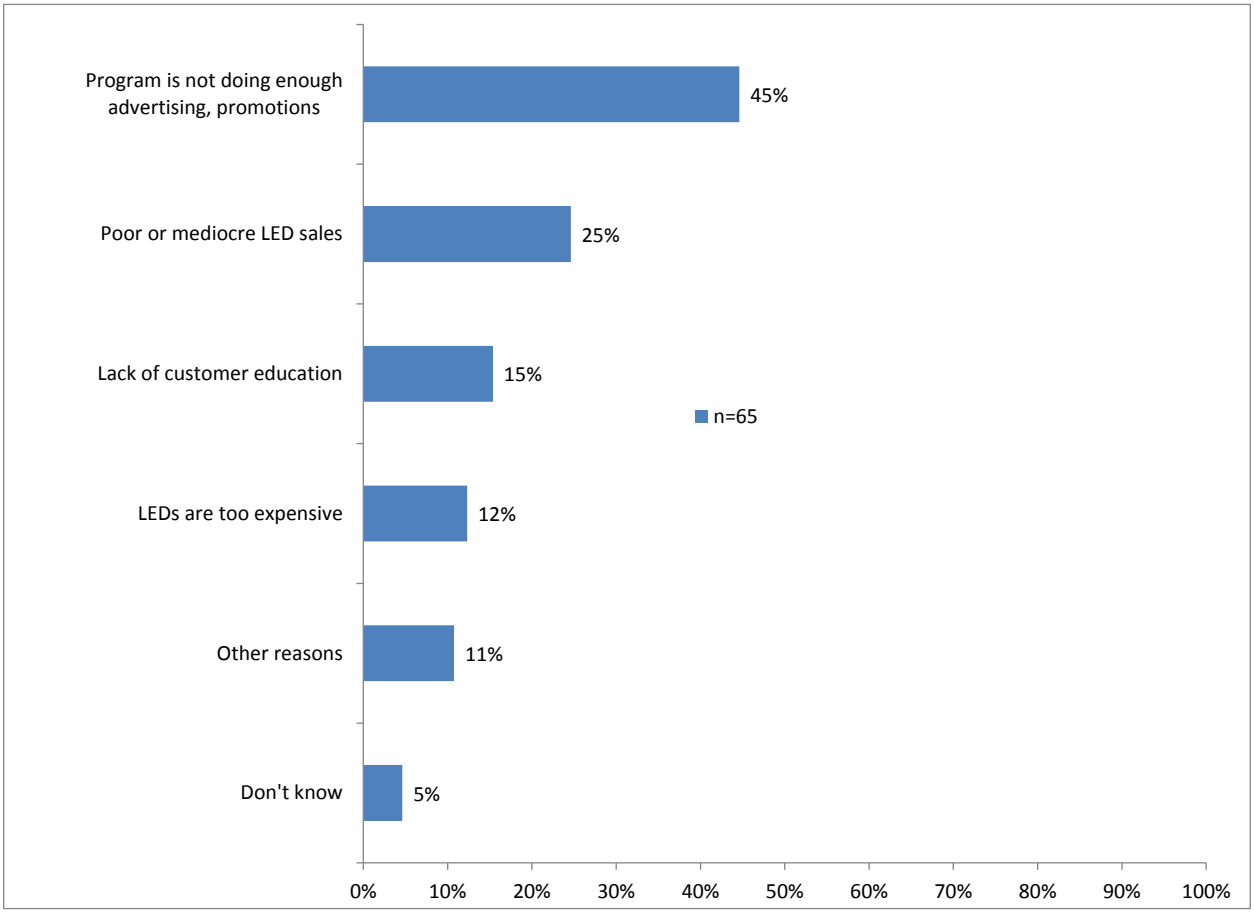
We asked the store managers who were selling LEDs through the program to rate the effectiveness of the program at promoting LED bulbs over the past year. We asked them to use an 11-point effectiveness scale where 10 equaled "very effective" and 0 equaled "not very effective at all." Figure 2-28 shows that they gave the program an effectiveness rating in the middle of this 11-point range and that there was a lot of variation in the average ratings among the different retail channels.

Figure 2-28. Average Store Manager Ratings of the Effectiveness of the MA Energy Star Program at Promoting LED Bulbs over the Past Year



We asked the store managers to explain their ratings of the program's effectiveness at promoting the LED bulbs. Figure 2-29 shows the reasons provided by store managers who gave the program effectiveness ratings of five or lower. The chart shows that nearly one-half (45%) of the store managers giving these lower ratings thought that the program was not doing enough advertising and promotion of the LED bulbs. A quarter of them also explained that their LED bulbs sales were poor or mediocre.

Figure 2-29. Why Participating Store Managers Gave the Program Effectiveness Ratings of Five or Lower for the Promotion of LED Bulbs



Note: Total exceeds 100% because multiple responses were allowed.

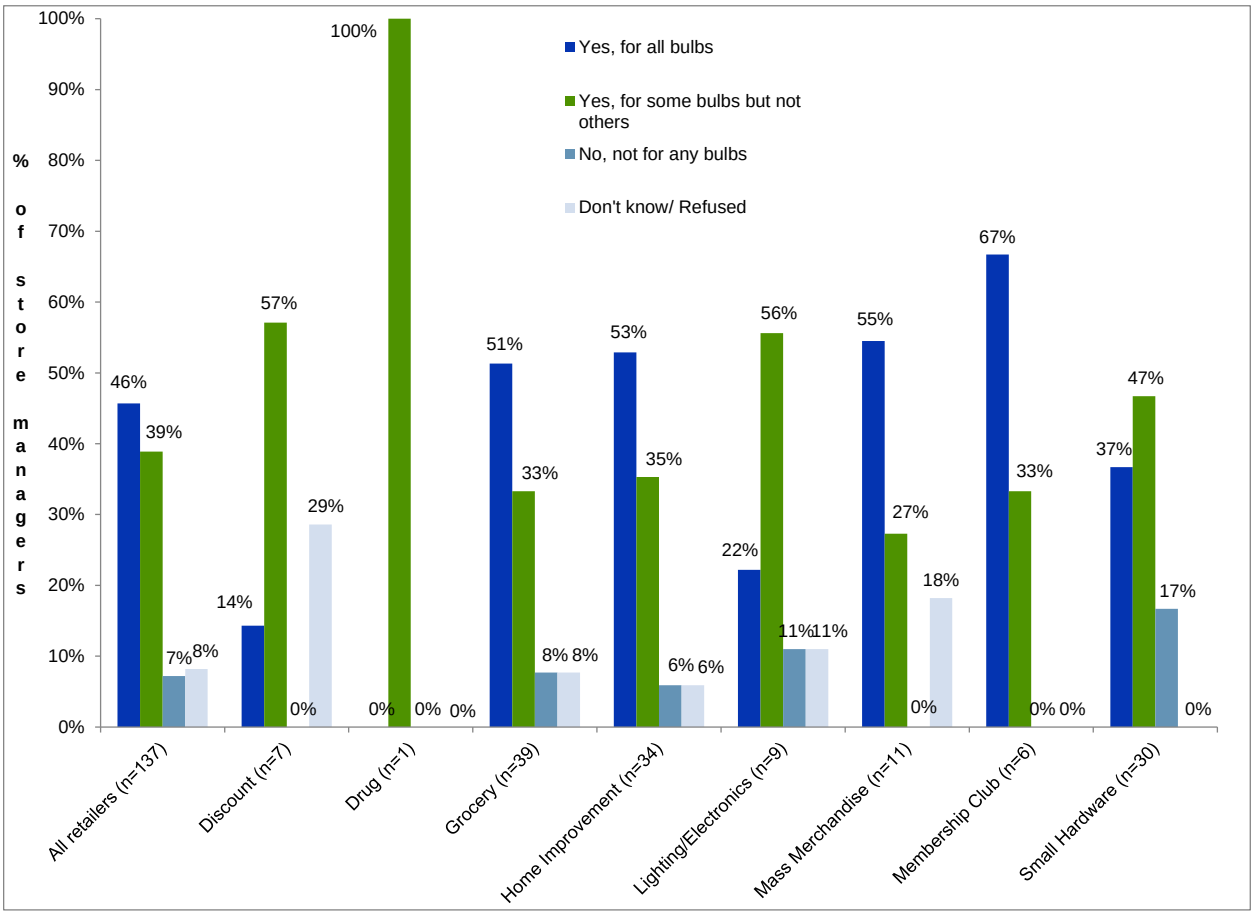
Not surprisingly, there was some correlation between the recent experiences of the retailers in selling these LED bulbs and the effectiveness ratings they gave the program for promoting these bulbs. For example, store managers in the Discount and Home Improvement channels had reported good LED bulb sales over the past year (Figure 2-30), and both gave the program higher-than-average ratings for the effectiveness of LED bulb promotions. Similarly, the store managers in the Small Hardware retail channel were most likely to say that their recent LED bulb sales had been poor and they were also the ones who gave the program the lowest effectiveness rating.

2.3.4.2 The Program Buydown Discounts for LED Bulbs

We reminded the store managers that they received buydown discounts on the LED bulbs from the program that averaged $18 per bulb, and we asked them whether these discounts were adequate to move consumer demand for all LED bulbs, some LED bulbs, or none of the LED bulbs. Across all retail channels, nearly one-half (46%) of the store managers said that these buydown discounts were adequate

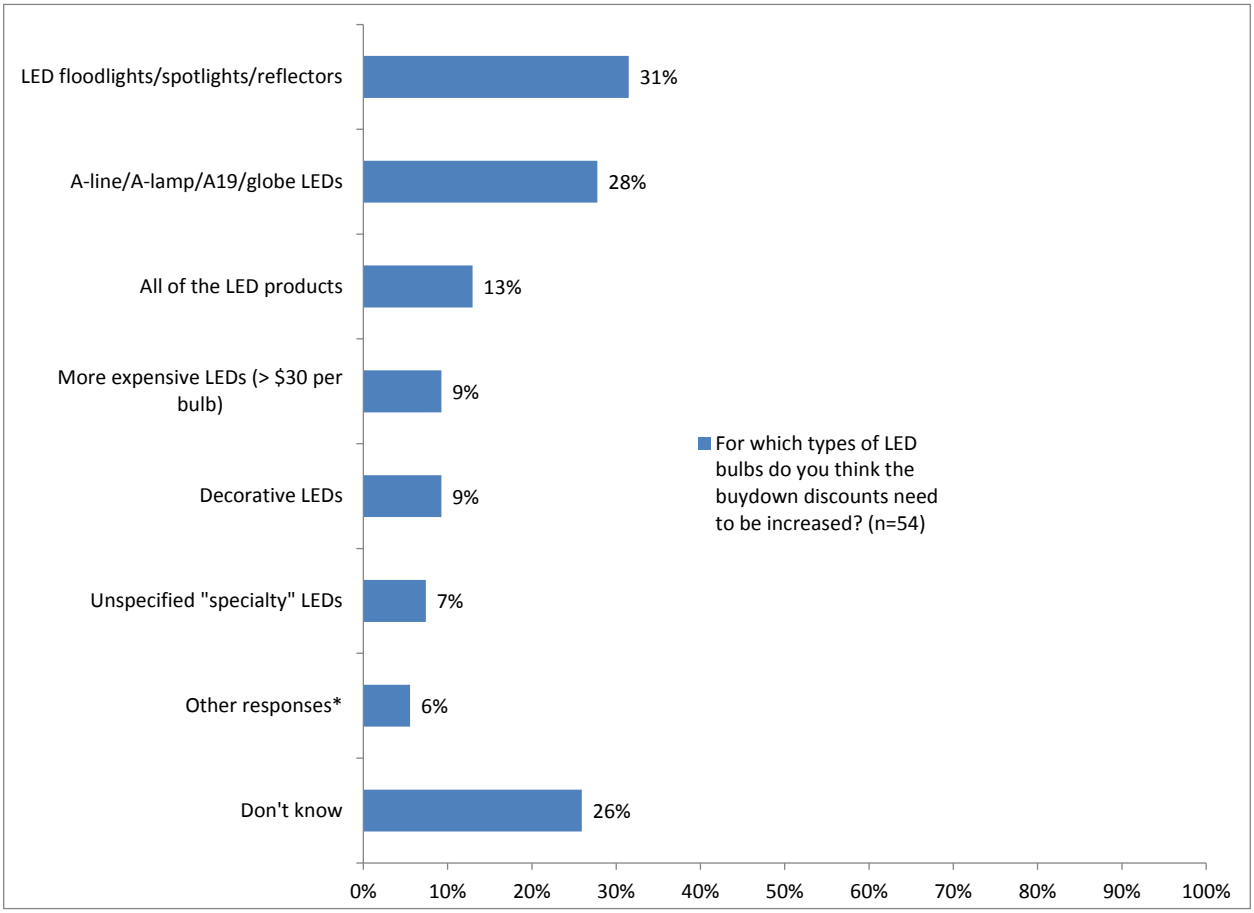
for LED bulb types, with another 39 percent saying that the buydown discounts were adequate for some LED bulb types but not others. Only seven percent of the respondents thought that the buydown discounts were not adequate for any of the LED bulb types. However, as Figure 2-30 shows, there was a lot of variation in responses among the different retail channels. The Discount, Lighting/Electronics, and Small Hardware channels were the least likely to say that the discounts were adequate for all bulb types and the Lighting/Electronics and Small Hardware channels were most likely to say that the discounts were not adequate for any of the LED bulb types.

Figure 2-30. Whether Store Managers Selling LED Bulbs Thought the Program Discounts Were Adequate to Move Consumer Demand



We asked the store managers who had said the discounts were not adequate – either for some of the LED bulbs or all of the LED bulbs – which types of LED bulbs they thought needed increased buydown discounts. Figure 2-31 shows that nearly one-third (31%) cited the LED floodlights/reflectors and another 28 percent named the A-line LED bulbs.

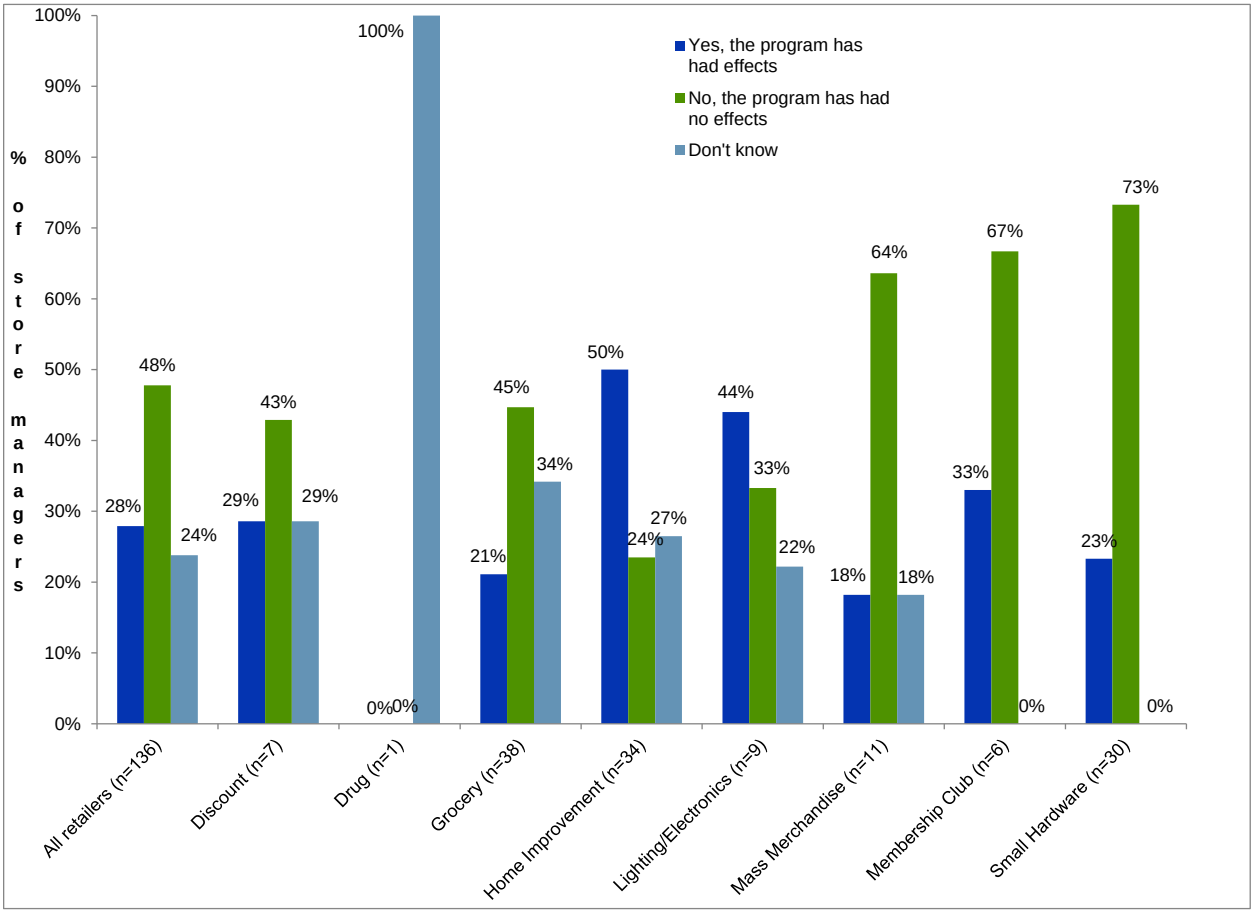
Figure 2-31. For Which LED Bulb Types Store Managers Thought the Program Should Increase the Buydown Discounts



2.3.4.3 Evidence for Program-Induced LED Market Effects

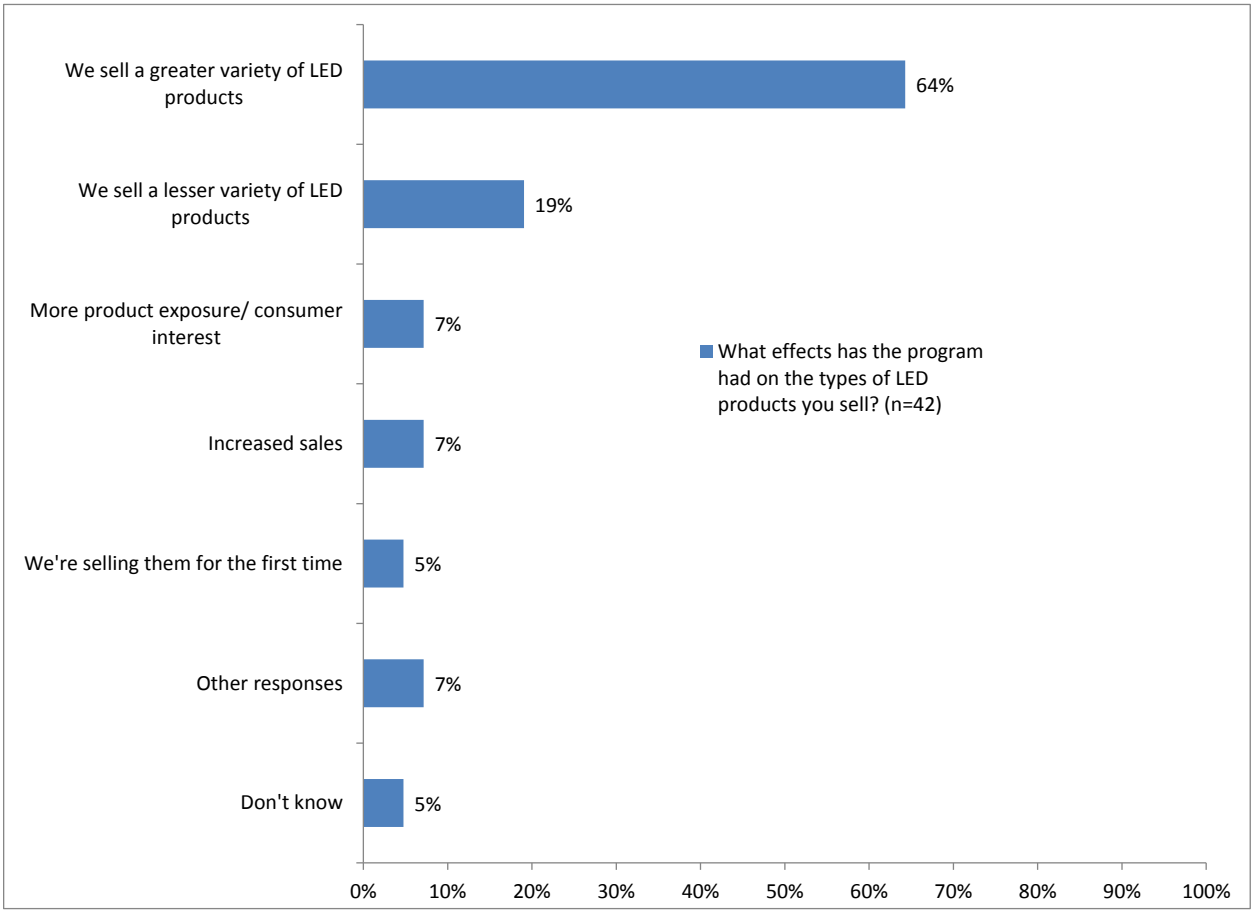
Although the Massachusetts ENERGY STAR program has only been intervening in the LED market for a couple of years, we were curious to see whether there was any early evidence of program-induced market effects. We asked the store managers who were selling LED bulbs: "The program has been offering rebates on LED products since 2011. Have these programs had any effects on the variety of LED products that you sell in Massachusetts?" Figure 2-32 shows that 28 percent of the store managers did say that the program has had some effects on the variety of LED bulbs they sell.

Figure 2-32. Whether Store Managers Who Are Selling LED Bulbs Have Experienced Program Effects on the Variety of the LED Products They Sell



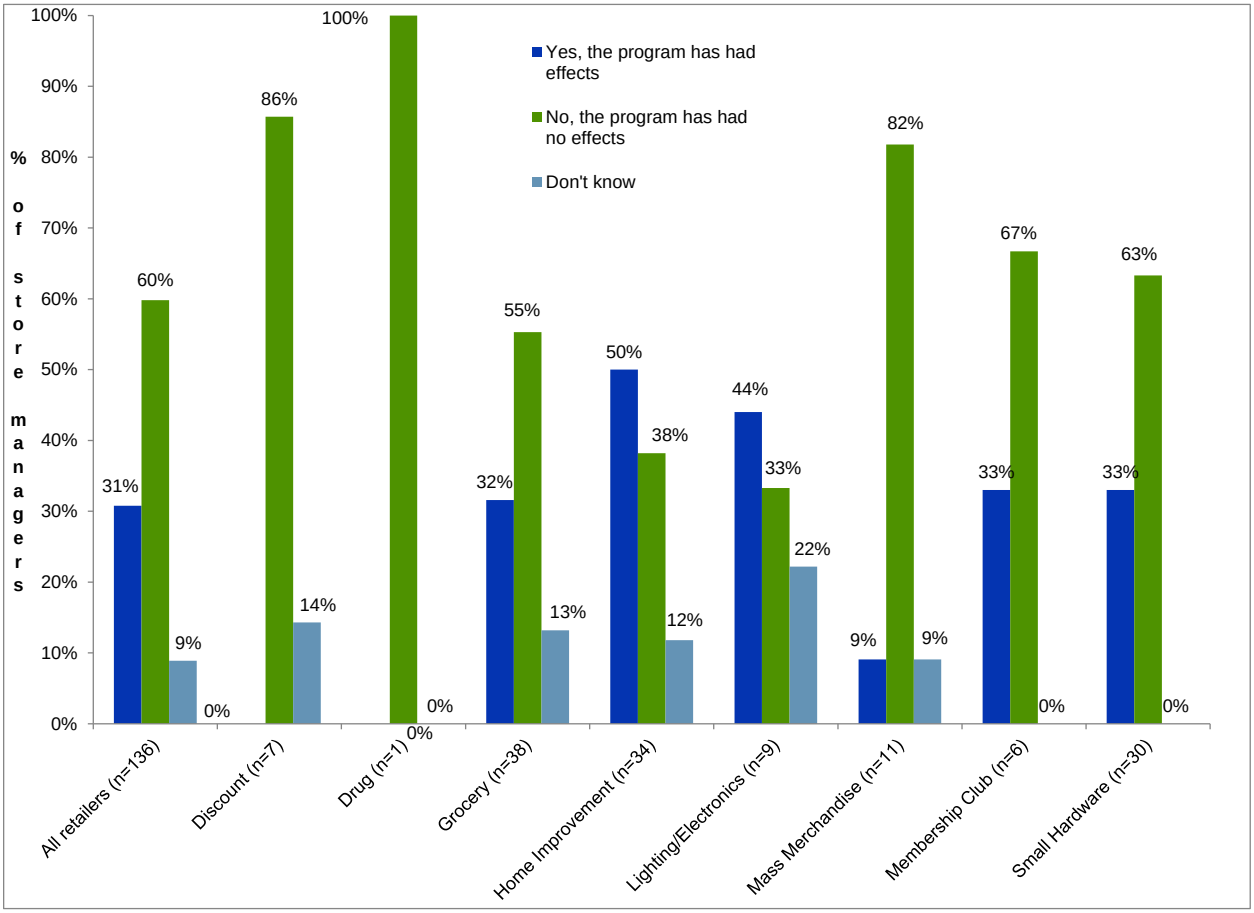
We asked the store managers who said that the program has had an effect on the types of LED bulbs they sell what effects they had experienced. Nearly two-thirds (64%) of them said that they were selling a greater variety of LED products than they had before. Interestingly, about one-fifth (19%) said they were actually selling less variety of LED products. Only five percent said they were selling LED products for the first time. Figure 2-33 shows all of the responses.

Figure 2-33. What Effects the Program Had on the Variety of LED Products That Retailer Sold



We also asked the store managers who were selling LED bulbs: "Have the Massachusetts lighting rebate and discount programs had any effects on how you promote the LED products that you sell in Massachusetts?" Figure 2-34 shows that about one-third (31%) of the respondents said that the program had some effect on how they promoted the LED products they sell. Most of the store managers who said that the program had affected their promotional practices explained that they were doing more promotion of these LED bulbs than they had done before, including more signage and giving the bulbs more prominent placement in their stores. A number of the store managers also said that, while they had sold the LED bulbs before becoming involved with the program, they had not really promoted them, mostly because of the high price points.

Figure 2-34. Whether Store Managers Who Are Selling LED Bulbs Have Experienced Program Effects on How They Promote the LED Products They Sell

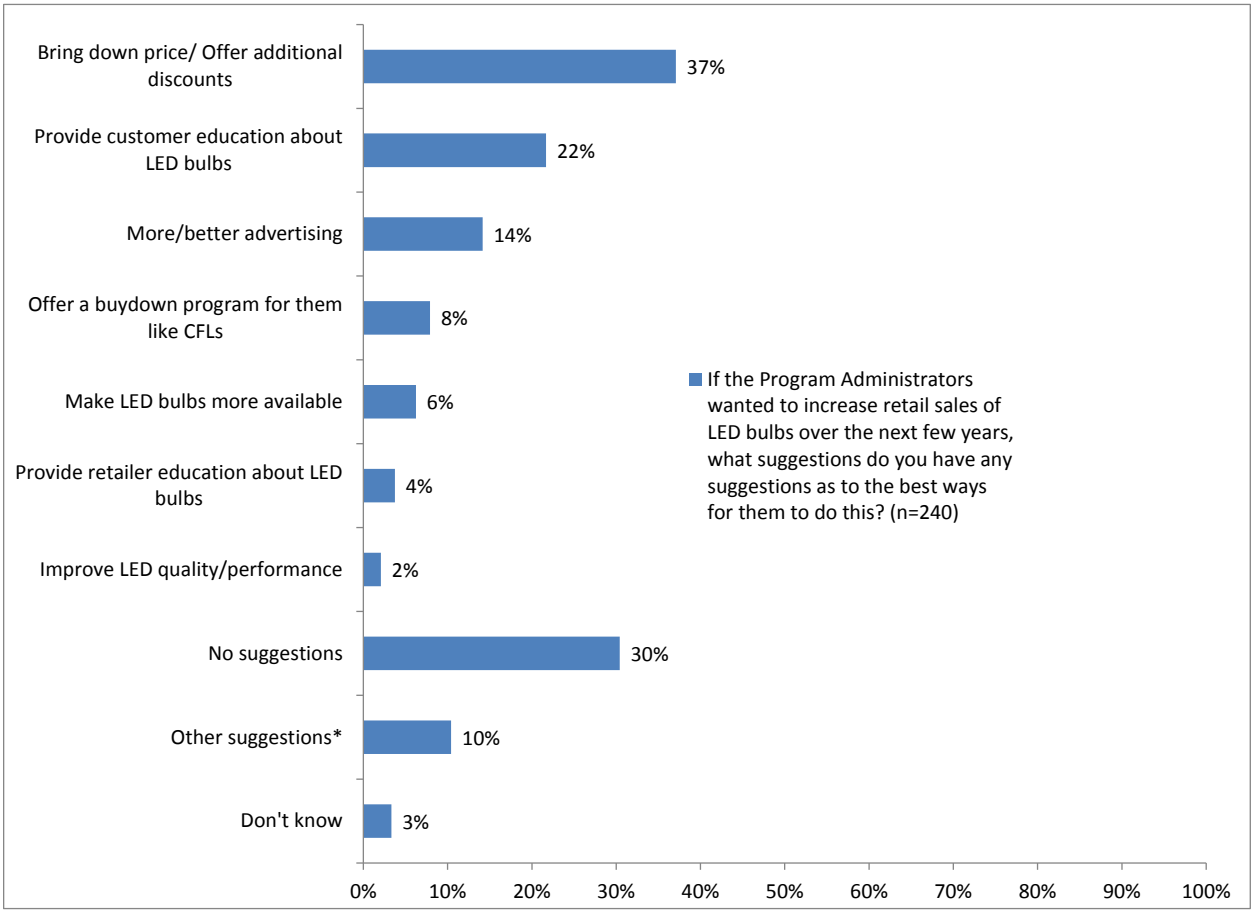


However, for both these questions – whether the program impacted what they sell and how they promote it – we did not ask the store managers any follow-up questions about whether any of these changes in behavior would continue in the absence of the program. Therefore, the long-term sustainability of these changes remains an open question and should be explored in future evaluation efforts.

2.3.4.4 Retailer Suggestions for Increasing LED Bulb Sales

We sought the suggestions of all the store managers, whether they were currently selling LED bulbs or not, on how the Massachusetts Program Administrators could increase sales of LED bulbs over the next few years. The two most common suggestions were bringing down the prices through additional discounts (37% of respondents) and providing more customer education about LED bulbs (22%). Figure 2-35 shows all the responses.

Figure 2-35. Store Manager Suggestions on How the Program Administrators Could Increase Sales of LED Bulbs over the Next Few Years



*Other suggestions included making programs easy for retailers to participate in, making sure to learn from experience when CFLs were first introduced, producing information in Spanish, consignment-type selling arrangements, getting rid of the incandescents, requiring LEDs in new construction, improving the packaging, encouraging manufacturers to make them cheaper, making it easier for people to compare lumens to wattage, making the product warranty match the rated bulb life, partnering with social services, the government not taking away bulbs, placing LED bulbs more strategically in store, and working more with the electric companies.

2.4 Program Activity in the Hard-to-Reach Lighting Markets

The Massachusetts ENERGY STAR lighting program has long sought ways to increase the penetration of energy-efficient lighting products in the state's hard-to-reach lighting markets. This section discusses the findings from the lighting market actor interviews concerning the following:

- Assessing the program's HTR definition and strategy;
- The prevalence of HTR lighting customers among program participants;

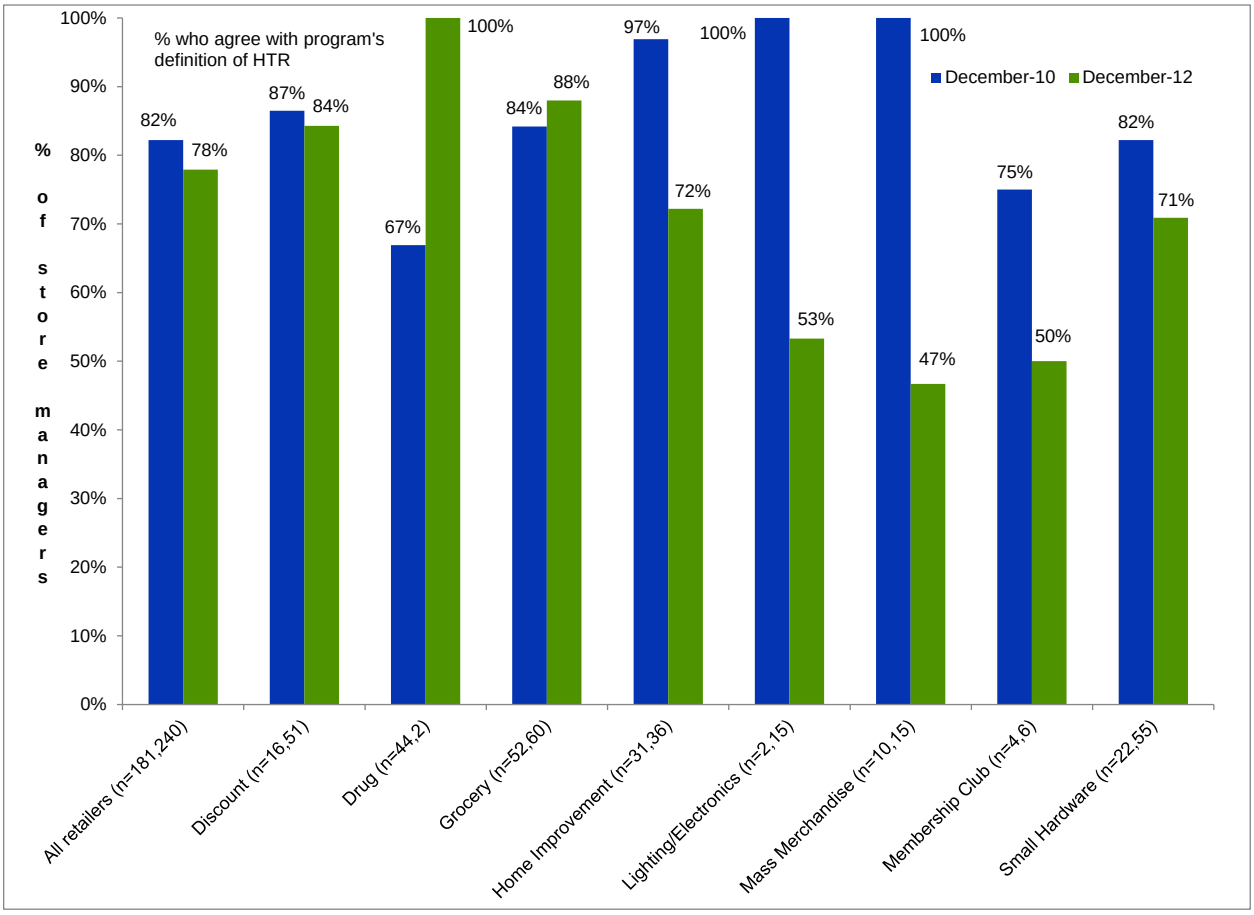
- Whether the program's efforts to encourage more CFL sales in the Discount and HTR Grocery sectors is taking away CFL sales from national retailers, creating new sales, or doing a bit of both; and

- How effective the lighting market actors think the program's HTR strategies have been.

2.4.1 Assessing the Program's HTR Definition and Strategy

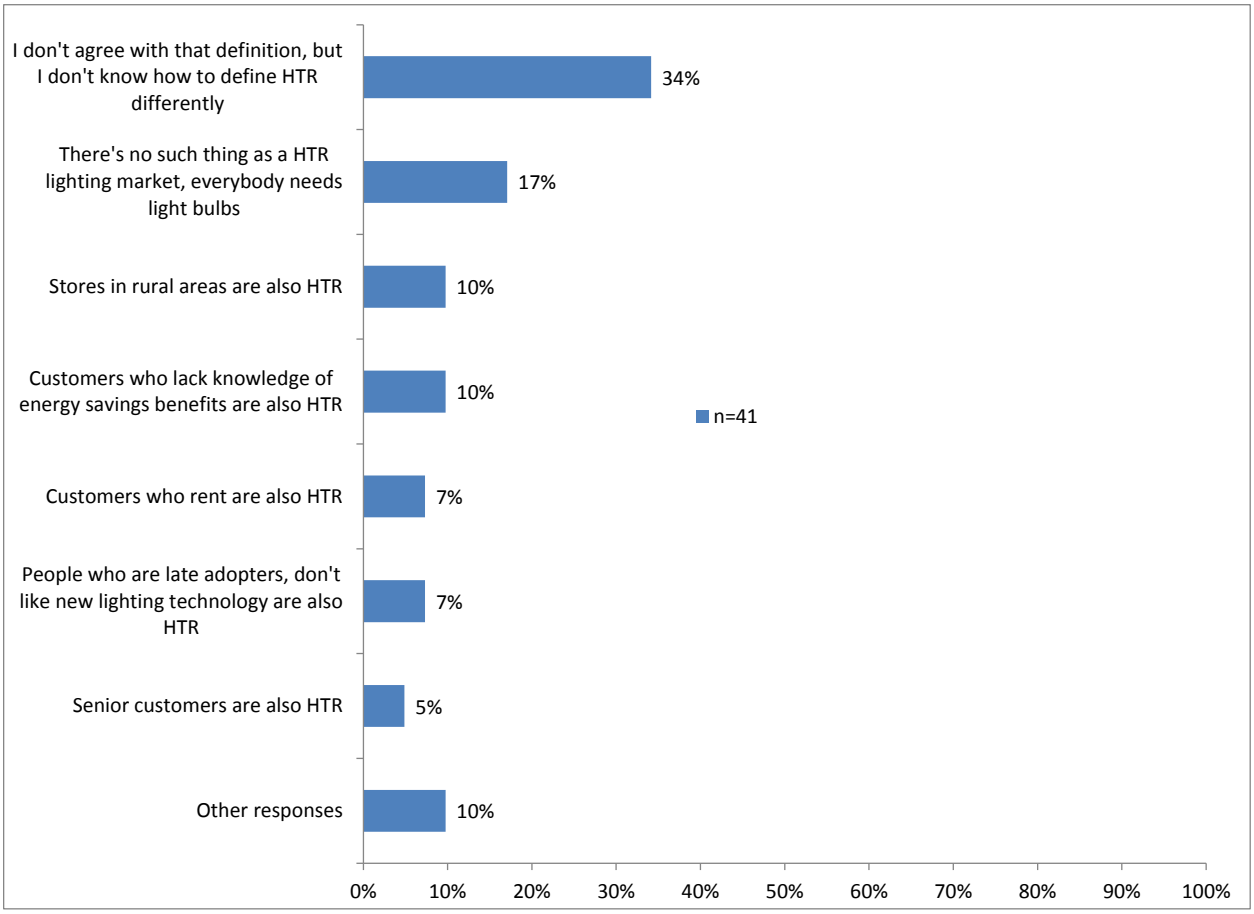
We told the 2012 participating store managers that the program currently defines "hard-to-reach" markets for energy-efficient lighting as those that serve low-income, ethnic, non-English-speaking, and less educated customers. We then asked them if they agreed with this definition. Figure 2-36 shows that a large majority (78%) of the 2012 store managers agreed with this definition, although this was a slight dip from the 2010 survey. There were larger decreases in levels of agreement between 2010 and 2012 in the Home Improvement, Lighting/Electronics, Mass Merchandise, and Membership Club channels.

Figure 2-36. Whether Store Managers Agree with the Program's Definition of HTR Energy-Efficient Lighting Markets 2010 vs. 2012



We asked the 2012 participating store managers who disagreed with the program definition of HTR energy-efficient lighting markets why they disagreed with it. Figure 2-37 shows that about one-third of these respondents (34%) said that while they disagreed with the program definition, they could not think of an alternative definition. The second-most-common response (17% of respondents) was that there is no such thing as a HTR lighting market because everybody needs light bulbs. In these cases, the surveyors probably should have clarified that the question was about HTR markets for energy-efficient lighting and not just lighting in general. Other respondents indicated they would have liked to expand the HTR definition to include rural areas, customers who lack knowledge of the potential energy savings from energy-efficient bulbs, customers who rent, customers who are late adopters for new technologies, and senior customers. Figure 2-37 shows all the responses.

Figure 2-37. Why Store Managers Disagreed with the Program's HTR Definition



We asked the 2012 participating store managers to estimate what percentage of their customers would fall into three HTR categories:

1) Being low-income;

2) Not having English as their primary language, and

3) Being members of ethnic or racial minority groups.

Figure 2-38 shows that store managers in the Discount channel had the highest average estimate of low-income customers (53%), followed by the Mass Market channel (39%). Figure 2-39 shows that store managers in the Discount channel also had the highest average estimate of non-English-speaking customers (28%), followed by the Membership Club channel (19%). Finally, Figure 2-40 shows that store managers in the Discount channel also had the highest average estimate of customers who are members of racial or ethnic minority groups (43%), followed by the Membership Club channel (37%).

Figure 2-38. What % of Their Customers Store Managers Estimated to be Low-Income

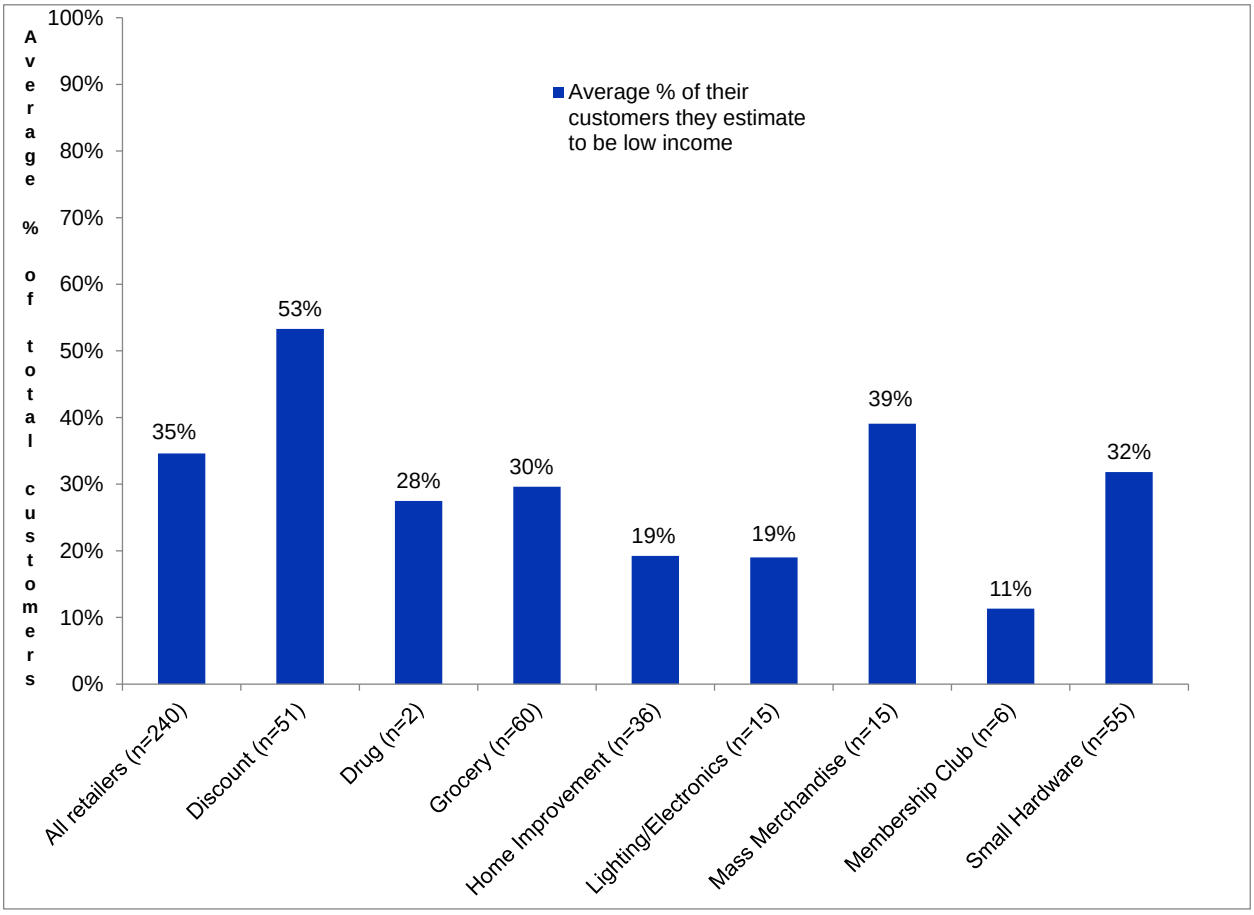


Figure 2-39. What % of Their Customers Store Managers Estimated to be Non-English-Speaking

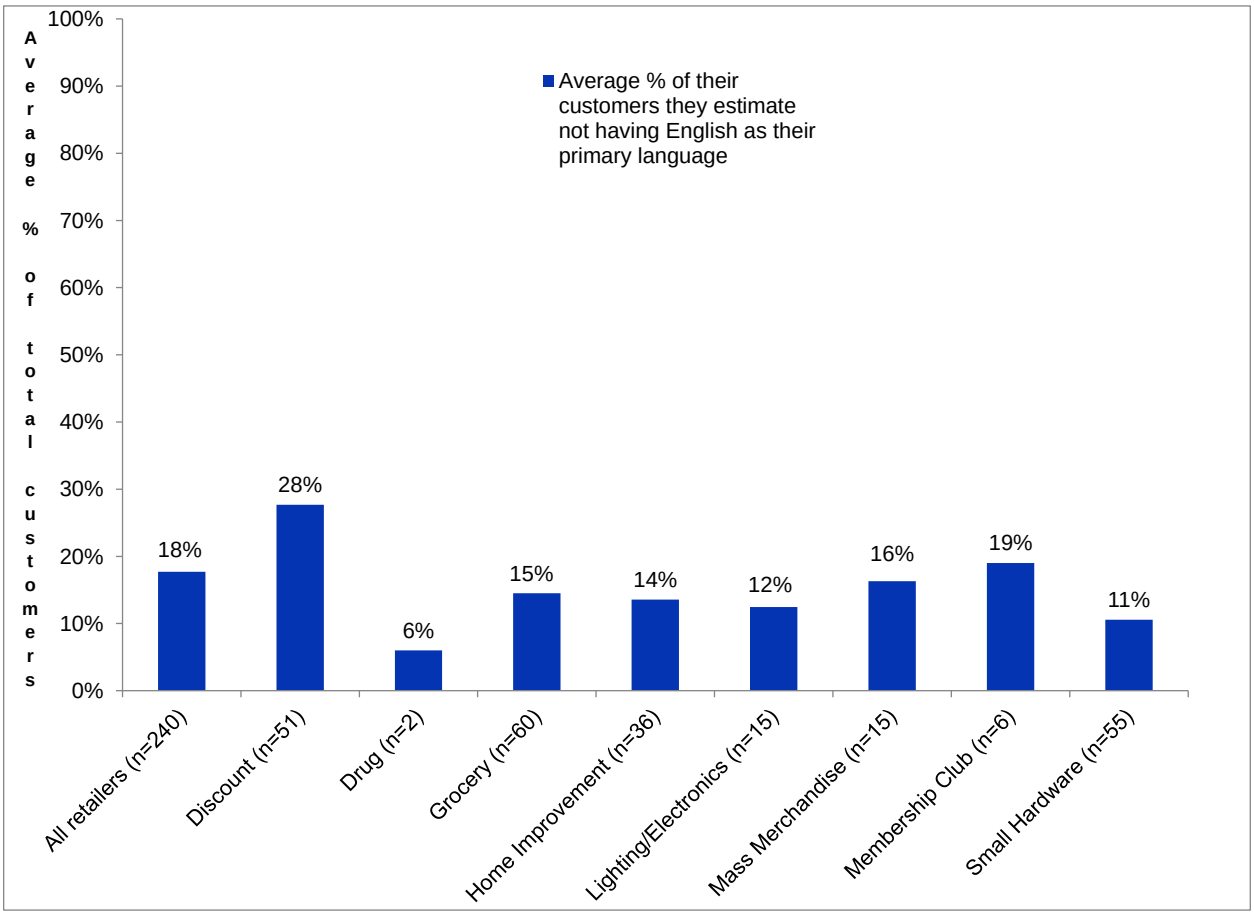
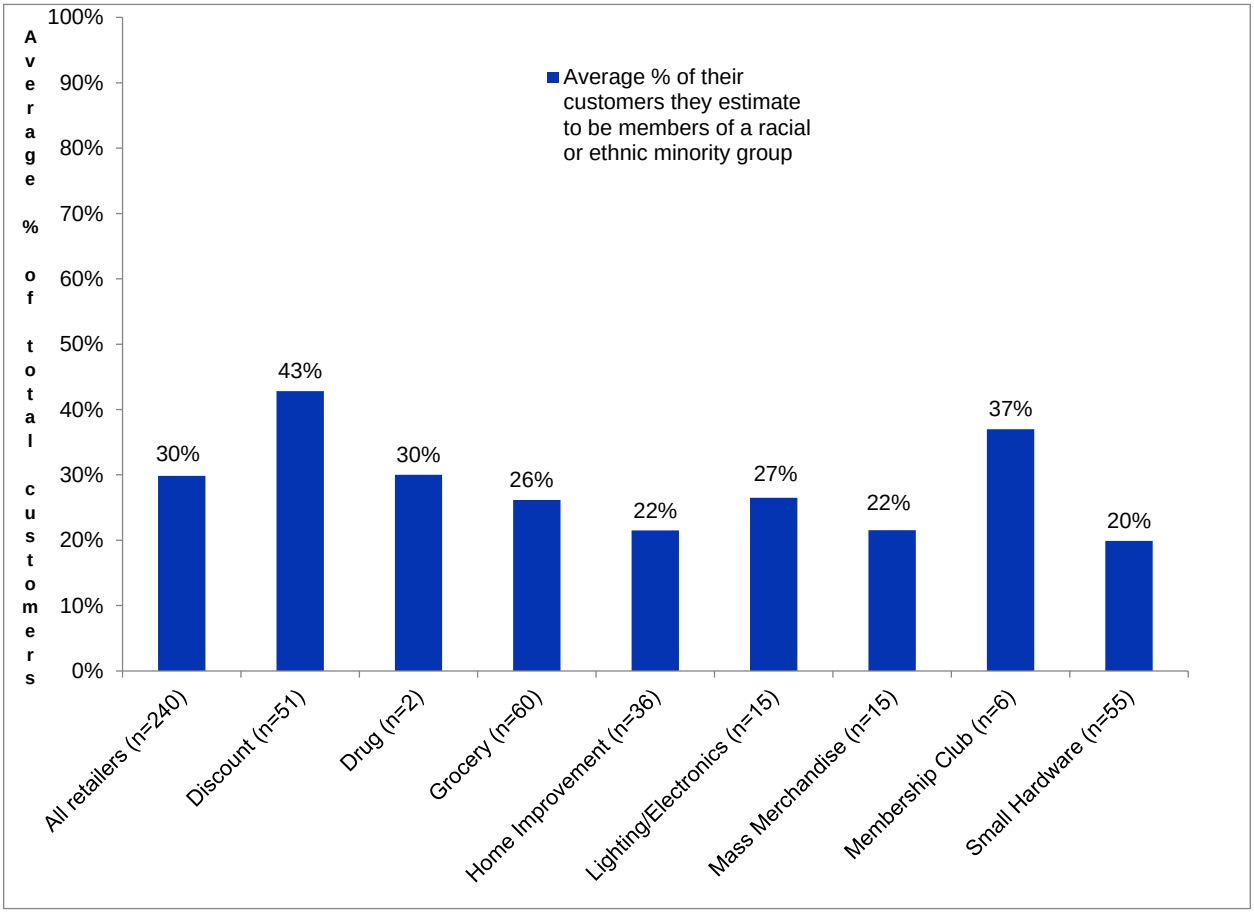
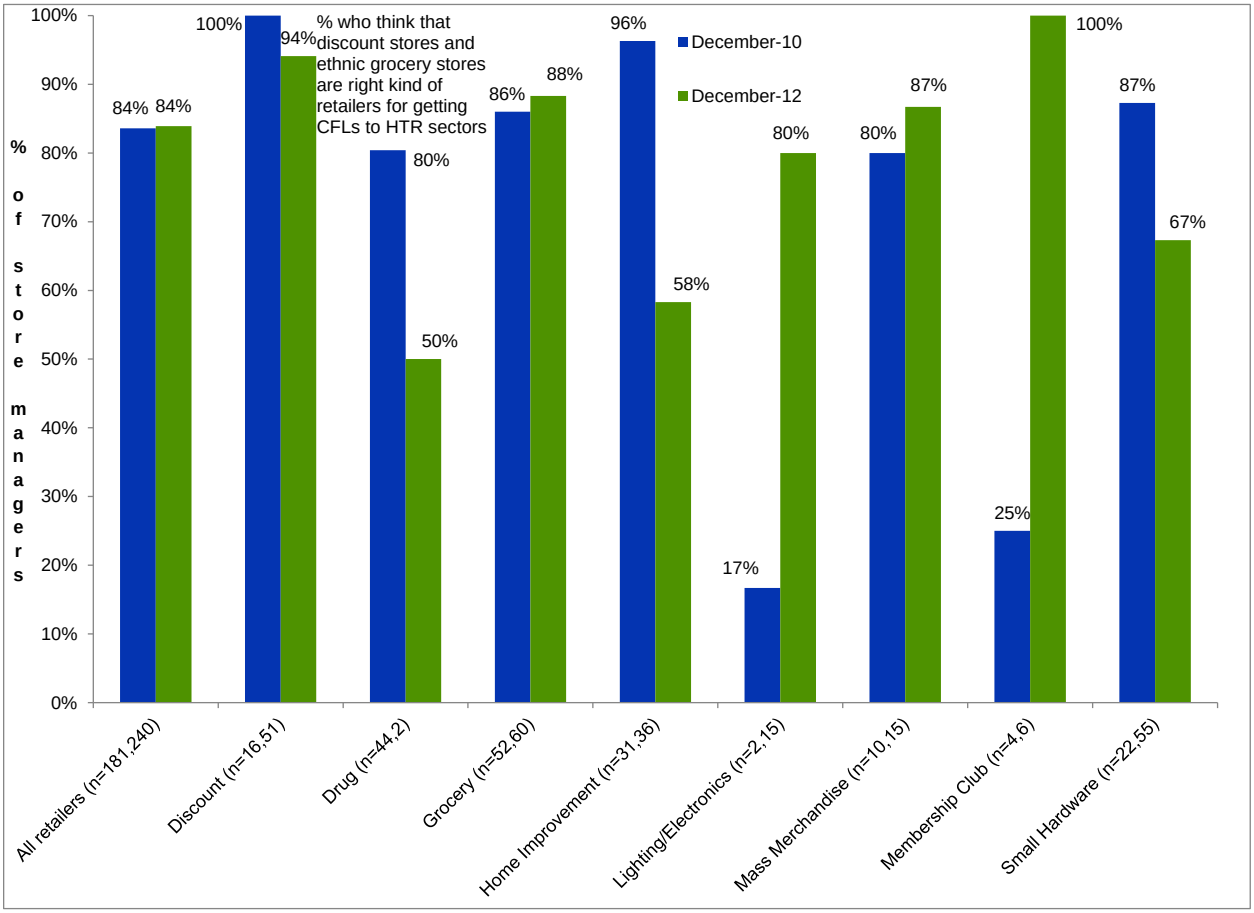


Figure 2-40. What % of Their Customers Store Managers Estimated to be Members of an Ethnic or Minority Group



We also asked the store managers whether they thought that discount stores and small grocery stores were the right kinds of retailers that the program should be working with to make CFLs more accessible to hard-to-reach customers. Figure 2-41 shows the percent of the 2012 store managers who agreed with this strategy and compares their responses to those from the 2010 survey. The chart shows that a large majority (84%) of the store managers agreed with the program's HTR strategy. It also shows that across the retail channels there was no change in the store managers' attitudes towards this HTR strategy between 2010 and 2012, but there were changes in attitudes during this period within the individual retail channels. However, some of these differences may be due to smaller sample sizes.

Figure 2-41. Whether Store Managers Agree with the Program's Strategy for Getting CFLs into the HTR Energy-Efficient Lighting Markets



2.4.2 Retail Channel Shifting

One concern about program strategies that promote greater CFL sales in select retail channels (e.g., discount stores) in an effort to reach HTR customers is that such strategies may simply shift sales from national chain retailers (e.g., home improvement and mass merchandise stores) to these discount stores, rather than create new sales. This phenomenon is sometimes called "retail channel shifting" or even "retail cannibalization."

We asked the store managers whether they thought these discount and small grocery stores are creating new ENERGY STAR CFL product sales or taking away ENERGY STAR CFL sales that otherwise would have gone to national chain retailers. Figure 2-42 shows that nearly two-thirds (64%) of the 2012 respondents said that the effect was "a bit of both," with some new sales being created while other sales were being shifted among channels. The chart also compares the 2012 survey responses with those from

2010. This comparison shows that the 2012 respondents were more willing to believe that the program was creating new sales than had been the case in 2010.

Figure 2-43 shows the 2012 responses broken down only by retail channel. Store managers in the Grocery and Lighting/Electronics channels were the most likely to say that the program was creating new sales.

Figure 2-42. Whether Store Managers Thought That the Program was Creating New Sales or Shifting Sales from National Chain Retailers 2010 vs. 2012

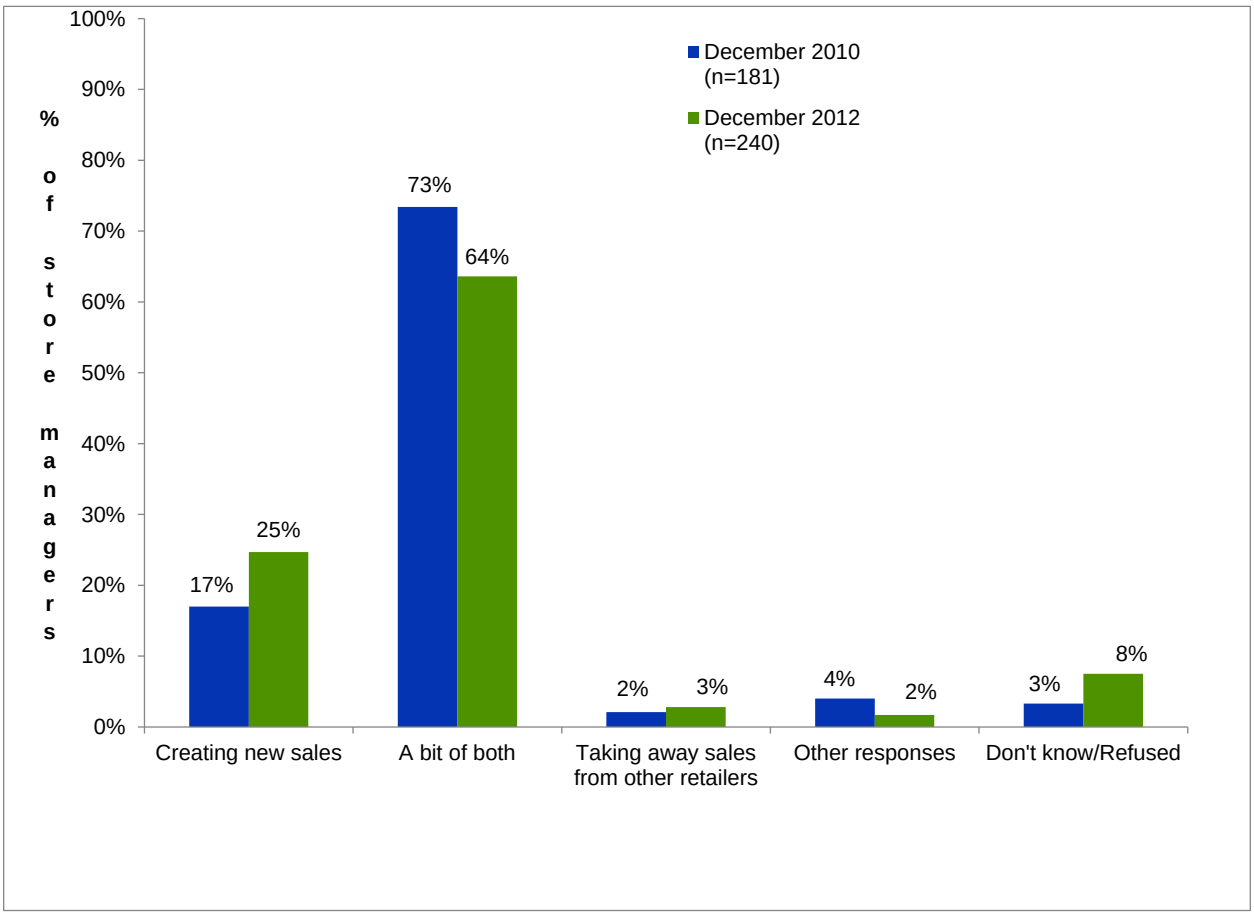
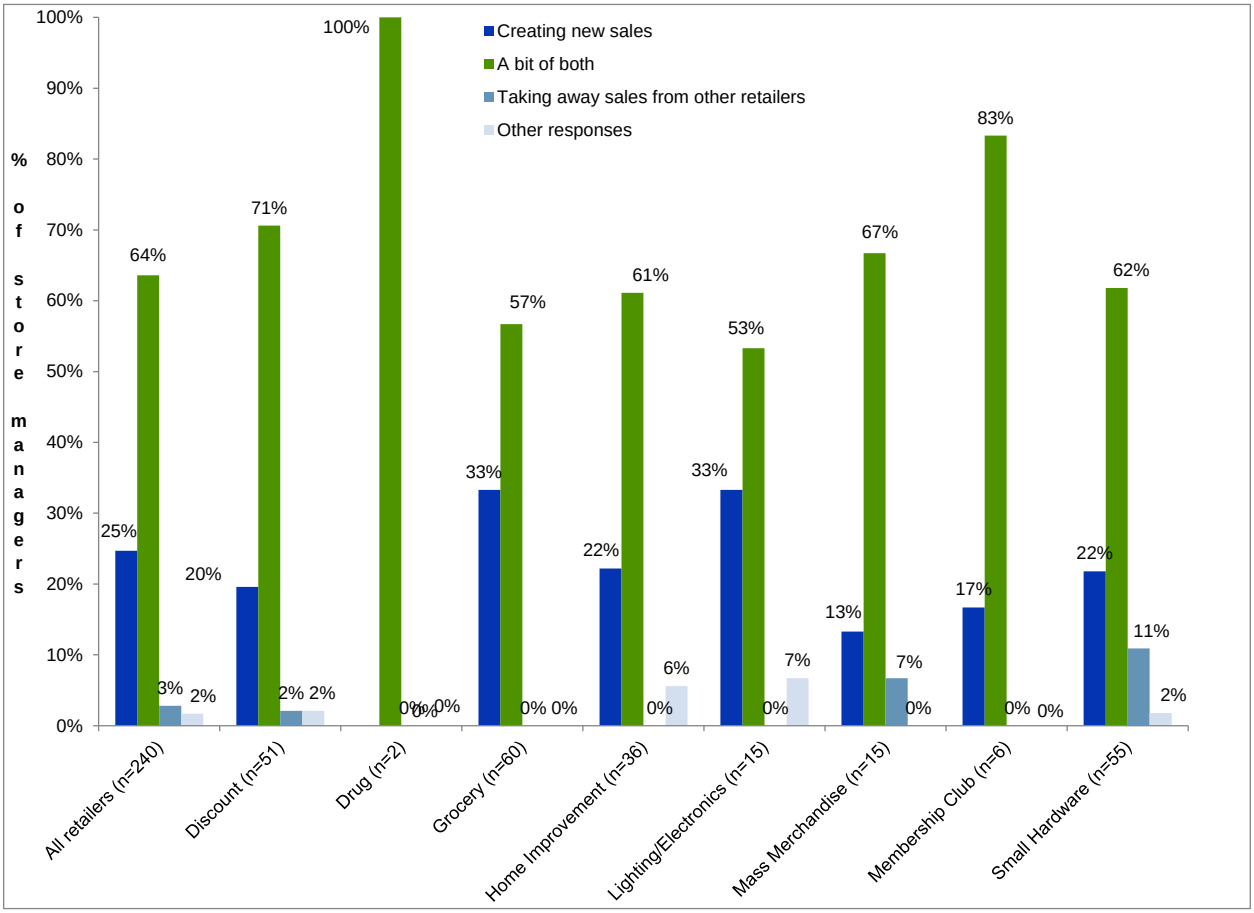


Figure 2-43. Whether Store Managers Thought That the Program was Creating New Sales or Shifting Sales from National Chain Retailers 2012 Estimates by Retail Channel



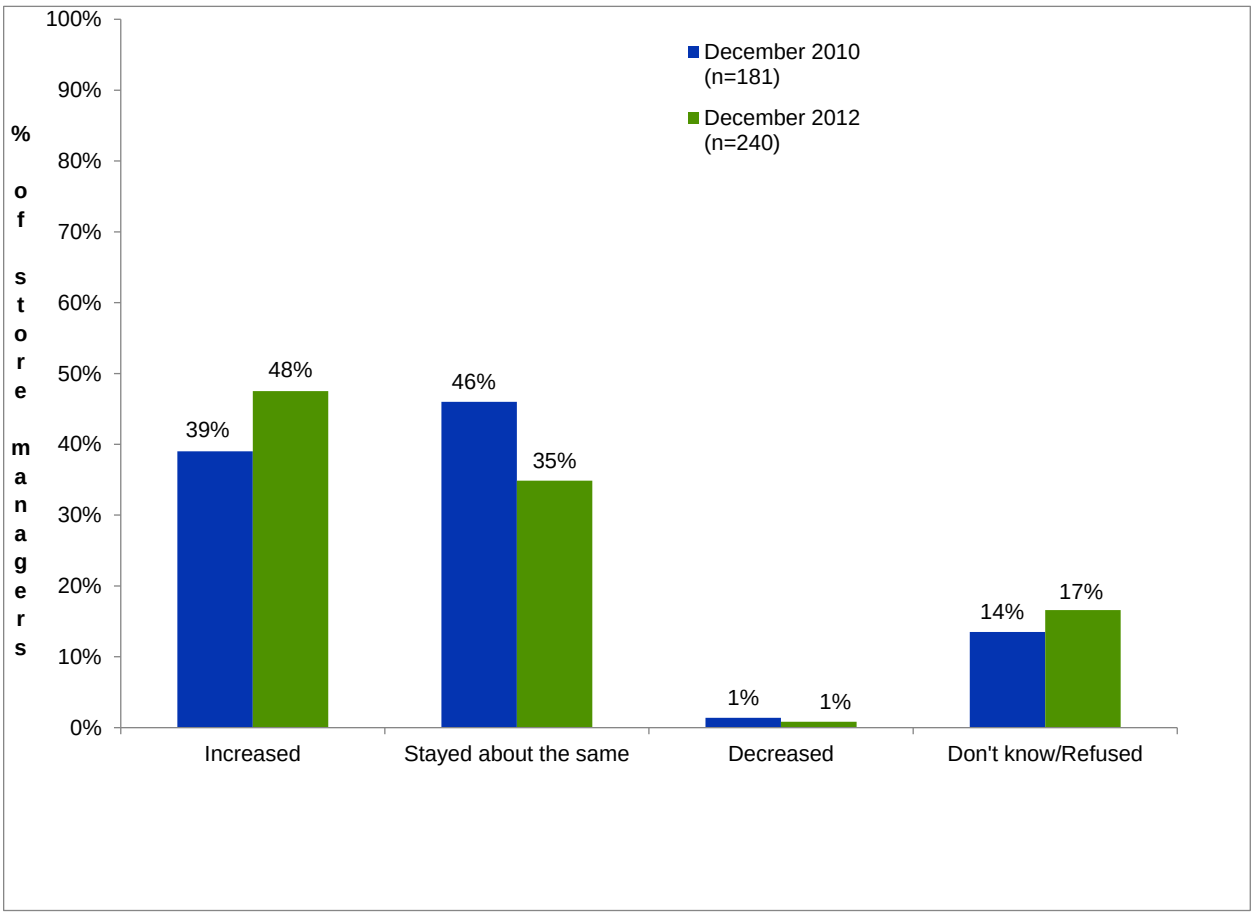
We asked the store managers who thought that the program was shifting CFL sales from the national chain retailers which retailers they thought these discount and small grocery stores were taking CFL sales away from. The most common responses were Home Depot (28% of respondents), Walmart (22%), and Lowe's (18%).

2.4.3 Assessing the Effectiveness of the Program's HTR Strategies

To assess the effectiveness of the program's effort to increase the penetration of energy-efficient lighting technologies in the HTR market sectors, we asked the store managers: "In the past two years, do you think the proportion of your company's CFL sales that are going to individuals in these hard-to-reach demographic groups has increased, decreased, or stayed about the same?" Figure 2-44 shows that nearly one-half (48%) of the 2012 respondents said that their CFL sales to the HTR sector had increased. The chart also shows that, compared to the 2010 respondents, a higher proportion of the 2012 respondents reported their CFL sales to the HTR sectors had increased. However, it is important to note that some of

this higher CFL penetration in the HTR sectors in 2012 may be due to the EISA legislation rather than the program's HTR strategies.

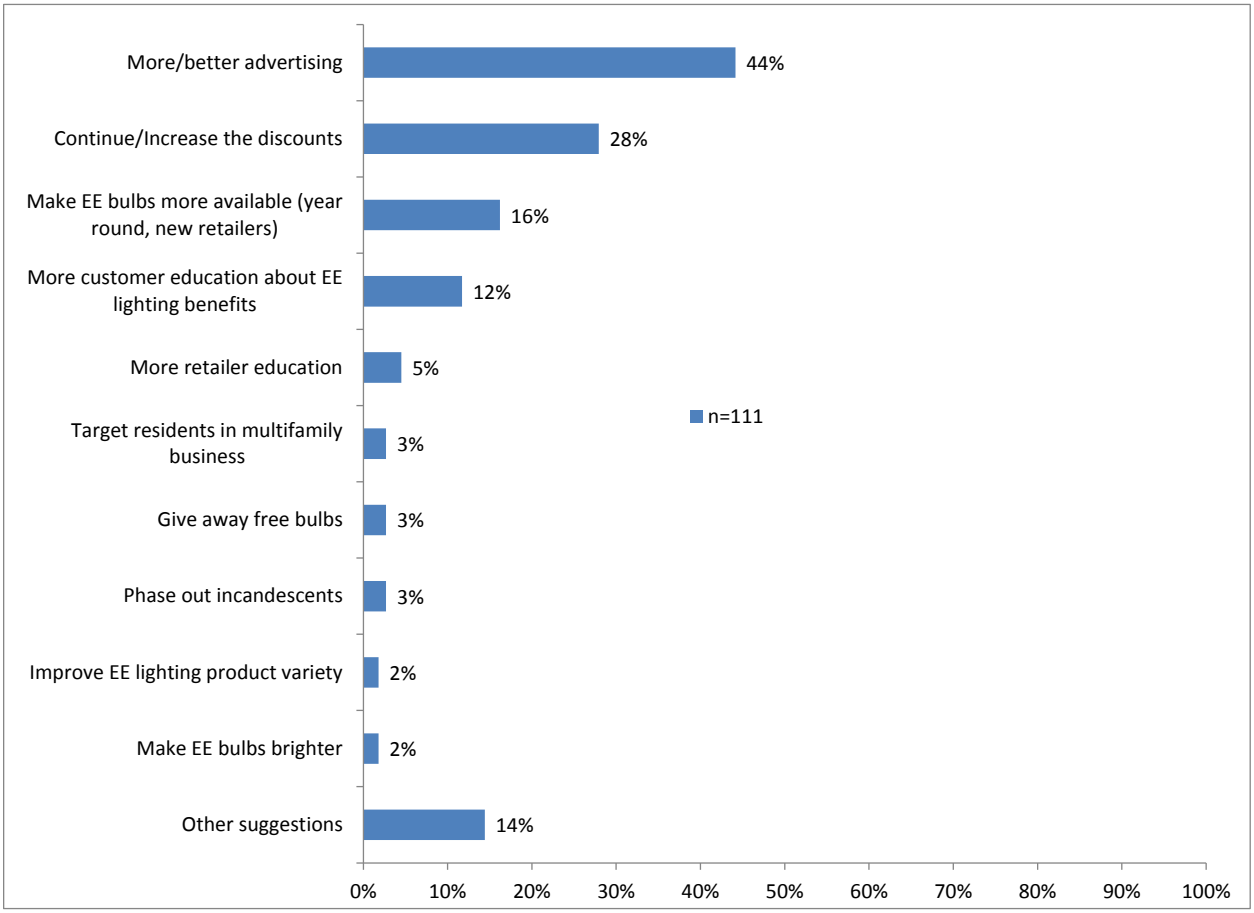
Figure 2-44. Whether CFL Sales to Customers in HTR Market Sectors Have Increased, Decreased, or Stayed About the Same 2010 vs. 2012



Finally, we asked the 2012 store managers whether they had any suggestions of what the administrators of the Massachusetts program could do to increase the sales of CFLs in the HTR lighting markets. About one-half (46%) of them did.

We then asked these store managers what suggestions they had. Figure 2-45 shows that the most common suggestion (44% of respondents) was for the program to do more and/or better advertising of the program and the energy-efficient lighting products. Many suggestions were for more in-store signage, displays, and product demonstrations. A number of retailers also suggested that the program could reach more HTR customers if there was more signage and customer education information in Spanish or Portuguese. After advertising, the next most common suggestion (28% of respondents) was to continue/increase the discounts available for these energy-efficient lighting products so they could be more affordable to the HTR customers. Figure 2-45 shows the full range of responses.

Figure 2-45. What 2012 Store Managers Suggested the Program Should Do to Increase CFL Sales in the HTR Sectors



2.5 Program Satisfaction

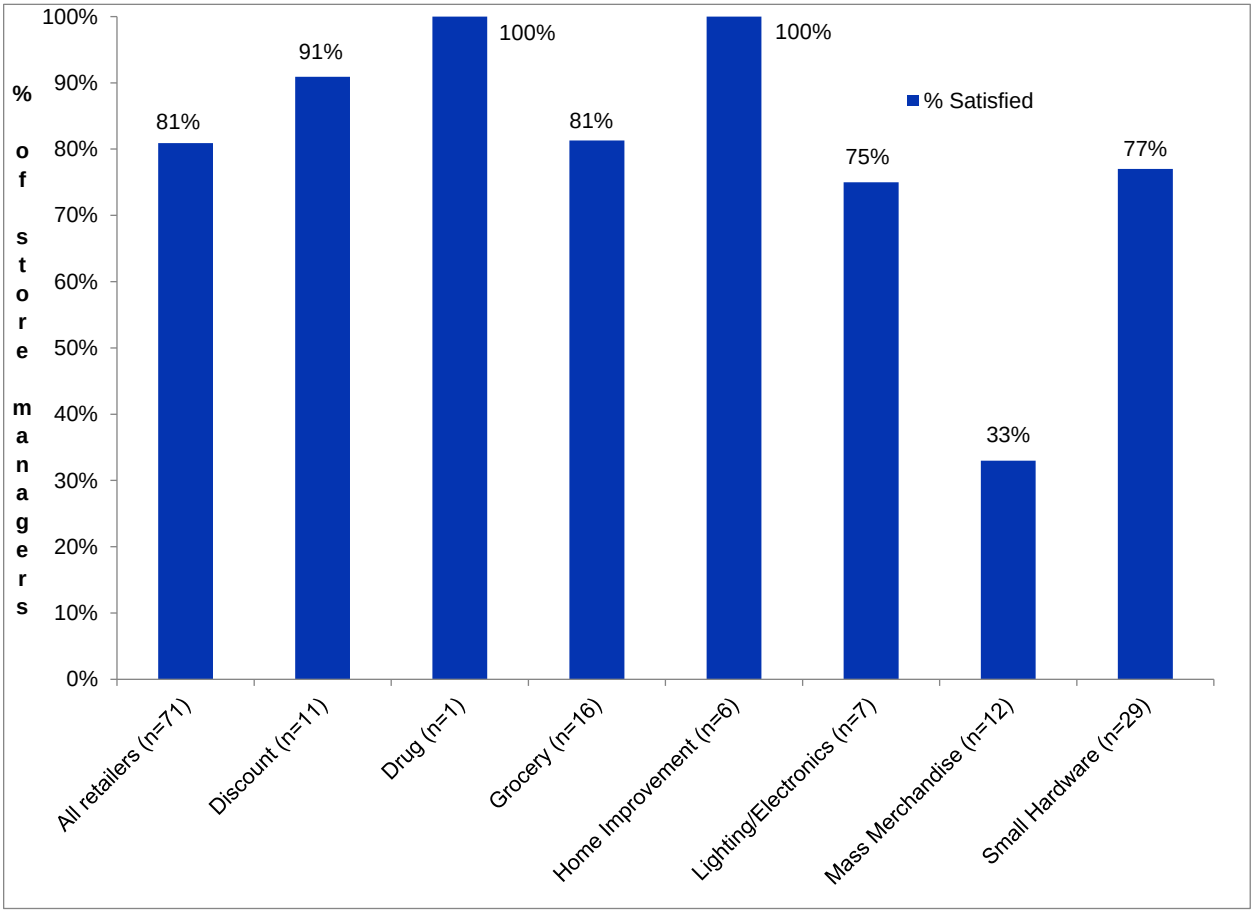
We asked the participating store managers about their level of satisfaction with a number of different aspects of the Massachusetts ENERGY STAR program as well as with the program as a whole. We had the store managers use a five-point satisfaction scale, where five equaled "very satisfied" and one equaled "very dissatisfied." Based on our experience evaluating many energy efficiency rebate programs, we consider percentages of satisfied respondents (those providing satisfaction ratings of 4 or 5) above 90 percent to be very good, satisfaction ratings above 80 percent to be good, and those below 80 percent as reasons for concern and indications that the program should make improvements in its processes.

2.5.1 Satisfaction with Reserving/Ordering Program-Discounted Bulbs

We asked store managers who had previously identified themselves as being responsible for ordering the lighting products in their stores how satisfied they had been with the program's process for reserving and

ordering the program-discounted CFLs and LEDs. Figure 2-46 shows that the satisfaction level was in the "good" range for all the retailers, but there was a lot of variation among the different retail channels. The most common complaint among those who gave satisfaction ratings of three or lower was that there were inadequate supplies of program-discounted bulbs to meet their needs.

Figure 2-46. Store Manager Satisfaction with the Process of Reserving/Ordering the Program-Discounted CFLs and LEDs



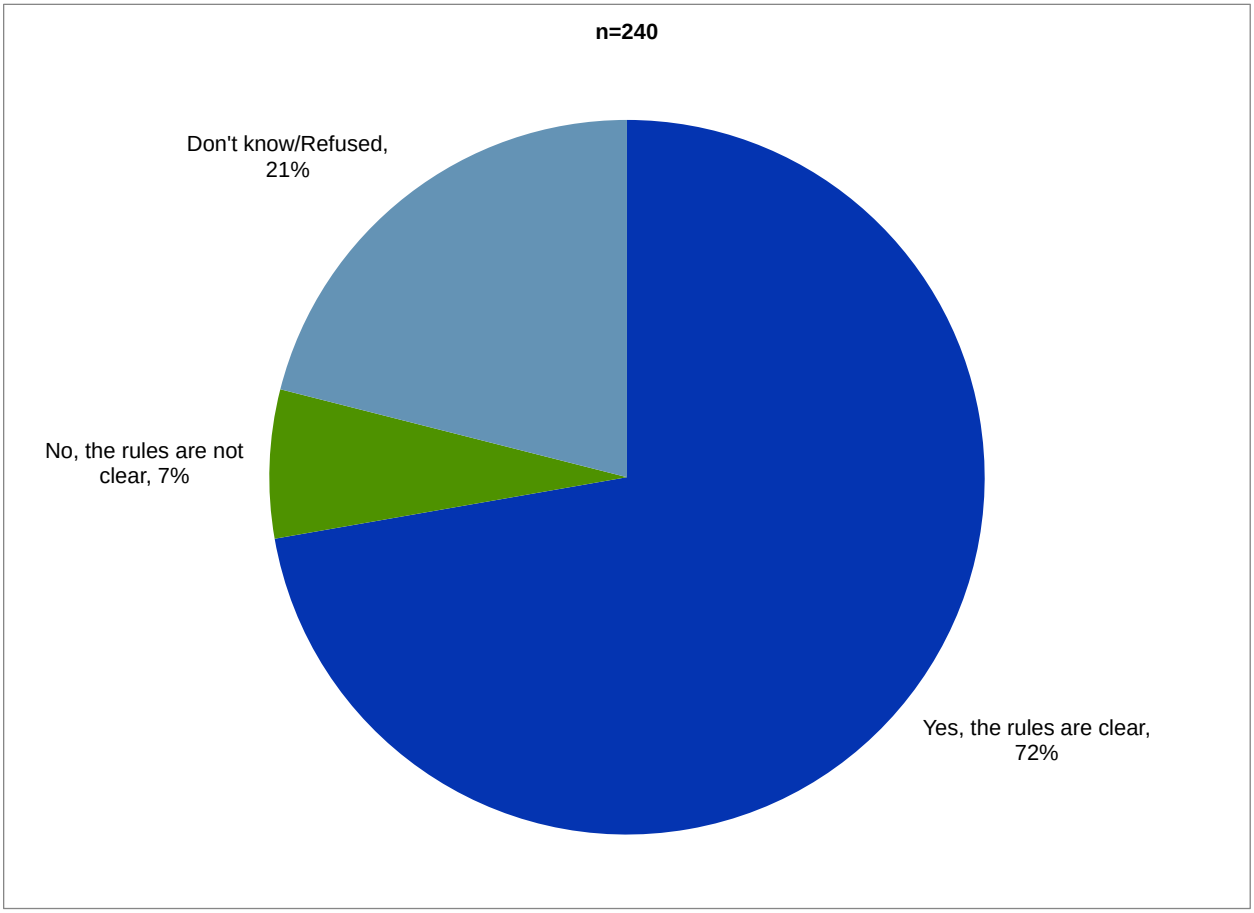
We asked the store managers who had identified themselves as being responsible for ordering lighting supplies and who also sold LED bulbs through the program how satisfied they had been with the program-discounted LED bulbs. Seventy-eight percent of them (n=31) were satisfied with LED bulb availability.

2.5.2 Satisfaction with the Clarity of Program Rules

We asked all the store managers whether the rules for participating in the program were clear. Only seven percent of them thought the rules were not clear. Three of the store managers thought that they were supposed to check a customer's zip code or electric service provider to determine program eligibility. In

commenting on the draft versions of this report, PA representatives indicated that this was not a requirement. Yet this does suggest the need for more education among store managers about program eligibility rules.

Figure 2-47. Whether Participating Store Managers Think the Program Rules are Clear



2.5.3 Satisfaction with Program Staff and Contractors

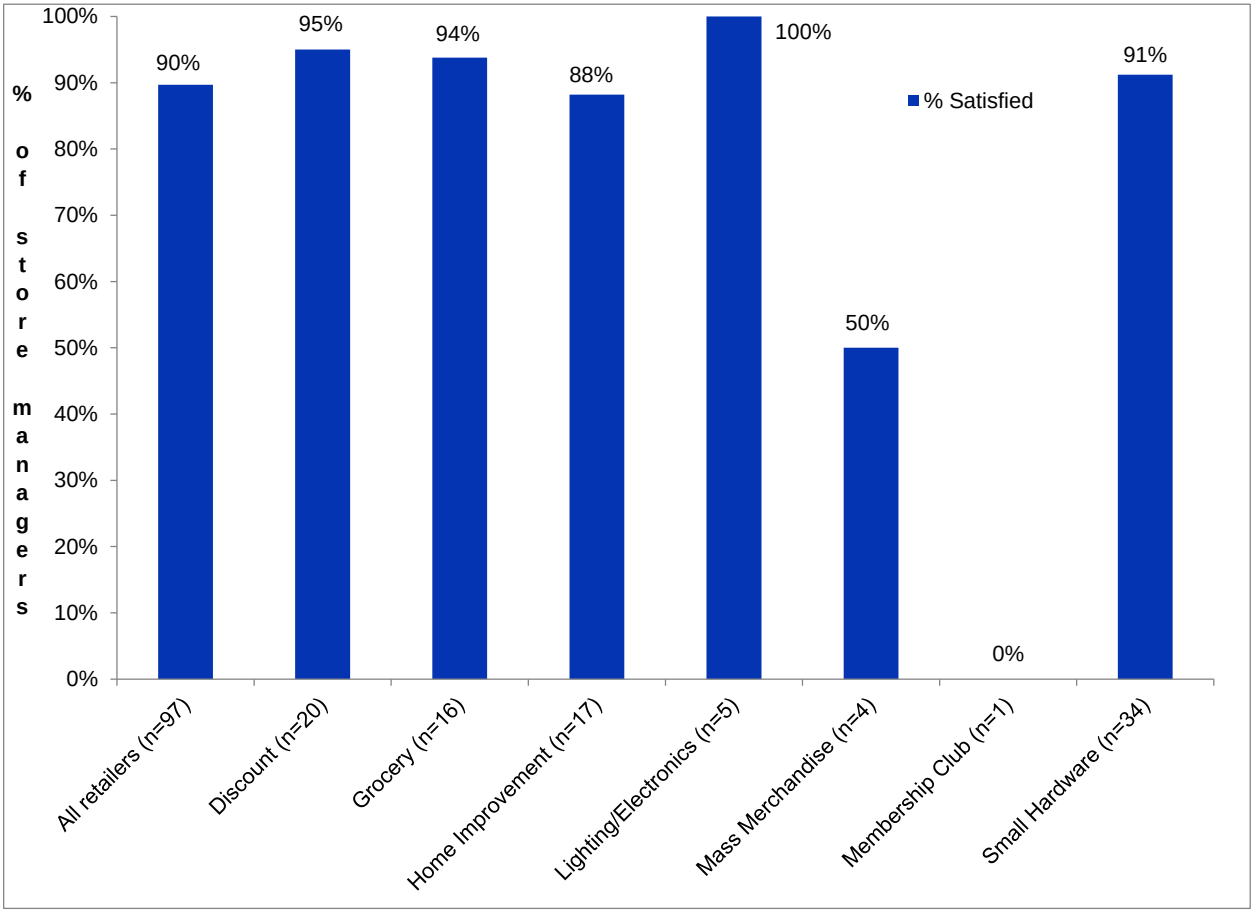
We asked all the store managers whether they had ever interacted with the program staff or contractors. Only 37 percent of them said they had. We then asked the store managers who reported such interactions how satisfied they had been with the way that the program staff or contractors had responded to their questions and requests. Figure 2-48 shows that overall store manager satisfaction with program staff and contractors was very high (90%). There were two retail channels – Mass Merchandise and Membership Club – where the satisfaction levels were much lower, but both of these had tiny sample sizes.

Some of the comments from store managers who were less than satisfied with the program staff or contractors indicated that they wished there were more personal interaction. “She doesn’t really say

anything; she just drops off signs and leaves. I don't get to see her at all," said one store manager. "I've only seen them personally once," said another.

Others wished they could get more clarity from program staff and contractors on when discounts will be available and for what products. "The staff, I don't get a clear answer to what's upcoming for rebates or when they will be done," said one store manager. "Sometimes they've been varying on what's coming to market with the discounts, sometimes it's been with the vendors, sometimes it's been after the fact," said another. One store manager was unhappy because he/she wanted the program staff to promote the program more. "Because I don't think they are really pushing the program, they put stickers on your shelf; that's about it," the store manager said.

Figure 2-48. Store Manager Satisfaction with the Program Staff, Contractors

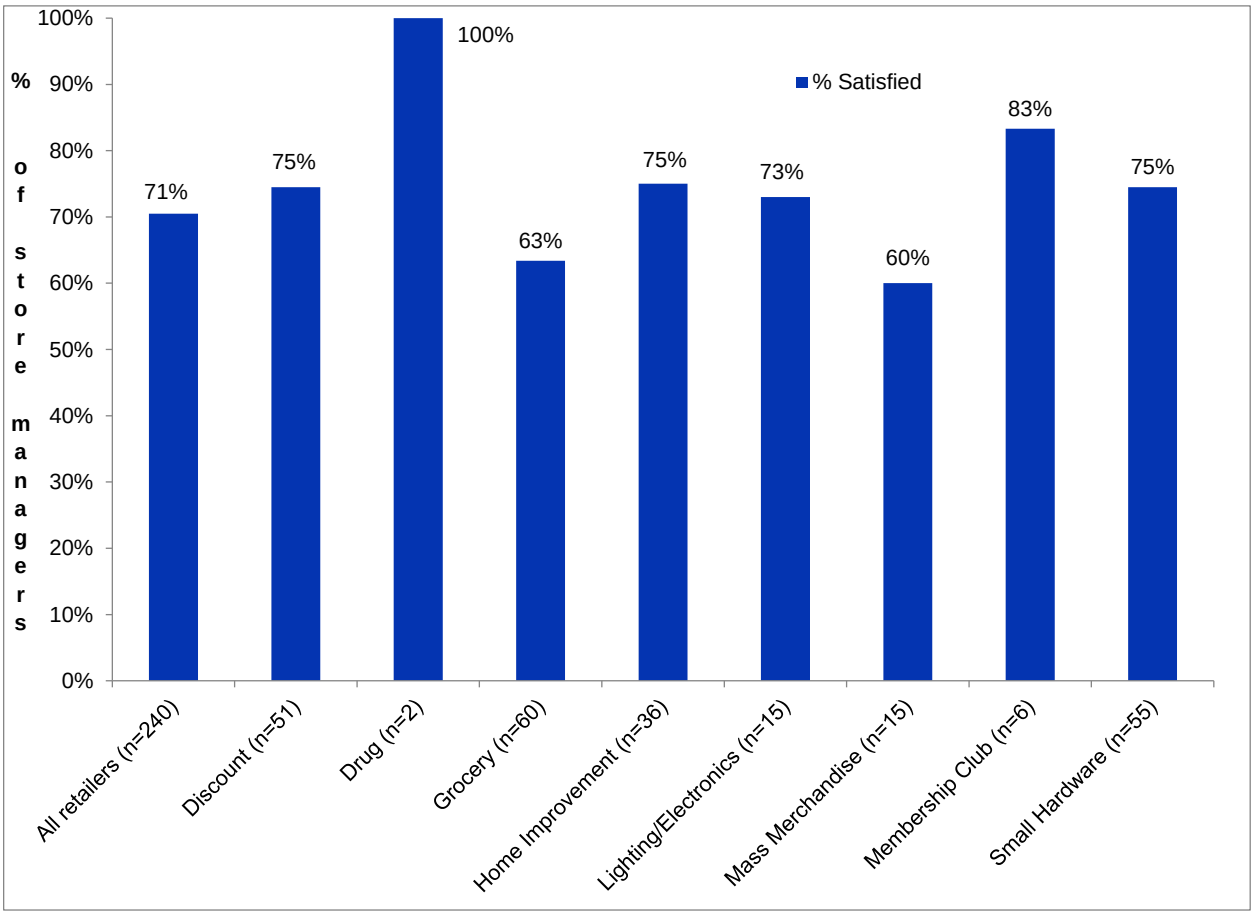


2.5.4 Satisfaction with the Program as a Whole

We asked all the store managers how satisfied they have been with the program as a whole. Seventy-one percent of the respondents were satisfied with the program. As noted above, we consider a level of satisfaction below 80 percent as cause for concern and an indication that a program should make

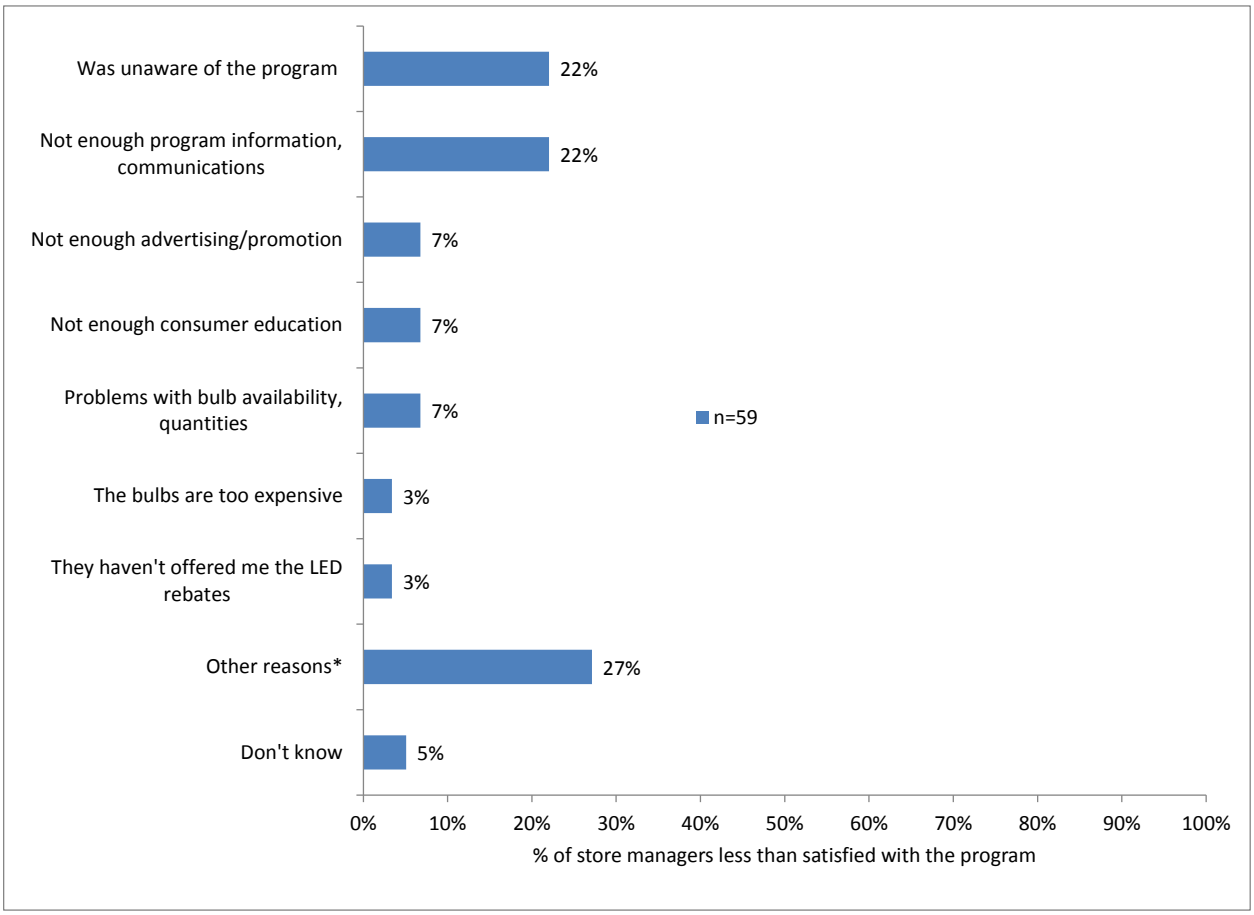
improvements in its processes. However, when we asked the store managers whether they would participate in the program in the future, 91 percent said they would.

Figure 2-49. Store Manager Satisfaction with the Program as a Whole



We asked the store managers who gave satisfaction ratings of 3 or lower why they were less than satisfied with the program. The most common responses were that they were unaware of the program before we had called them and the program did not provide enough information/communications concerning the program or the bulbs. Both of these were cited by 22 percent of the less-than-satisfied store managers. Figure 2-50 shows all the responses.

Figure 2-50. Why Some Store Managers were Less than Satisfied with the Program as a Whole

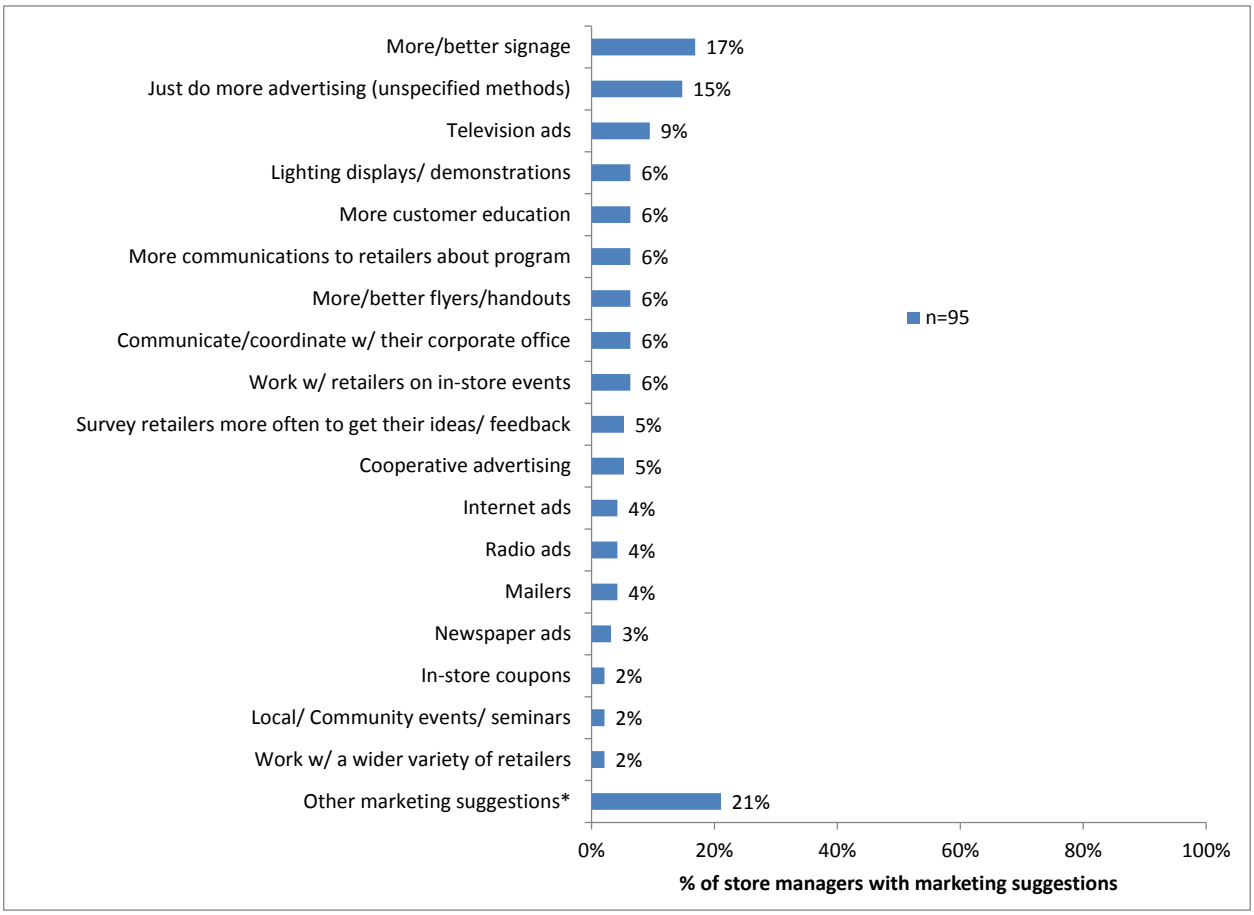


*Other reasons included just wanting to provide a midpoint satisfaction rating, not liking the lighting technologies being discounted, not liking the program offering larger discounts for specialty CFLs vs. standard spiral CFLs, inconsistent program funding, not offering discounts on a larger variety of bulbs, bulb packaging taking up too much space, and no clear answers from program staff on program beginning/end dates.

2.5.5 Suggestions for Program Improvements

We told the store managers that the program was looking for ways that lighting retailers could become more involved in marketing the program and asked whether they had any ideas on how this might be done. Thirty-seven percent of the store managers had suggestions. Figure 2-51 shows that they had many different suggestions, with the most frequent suggestion being that the program should provide the stores with more and/or better point-of-purchase signage.

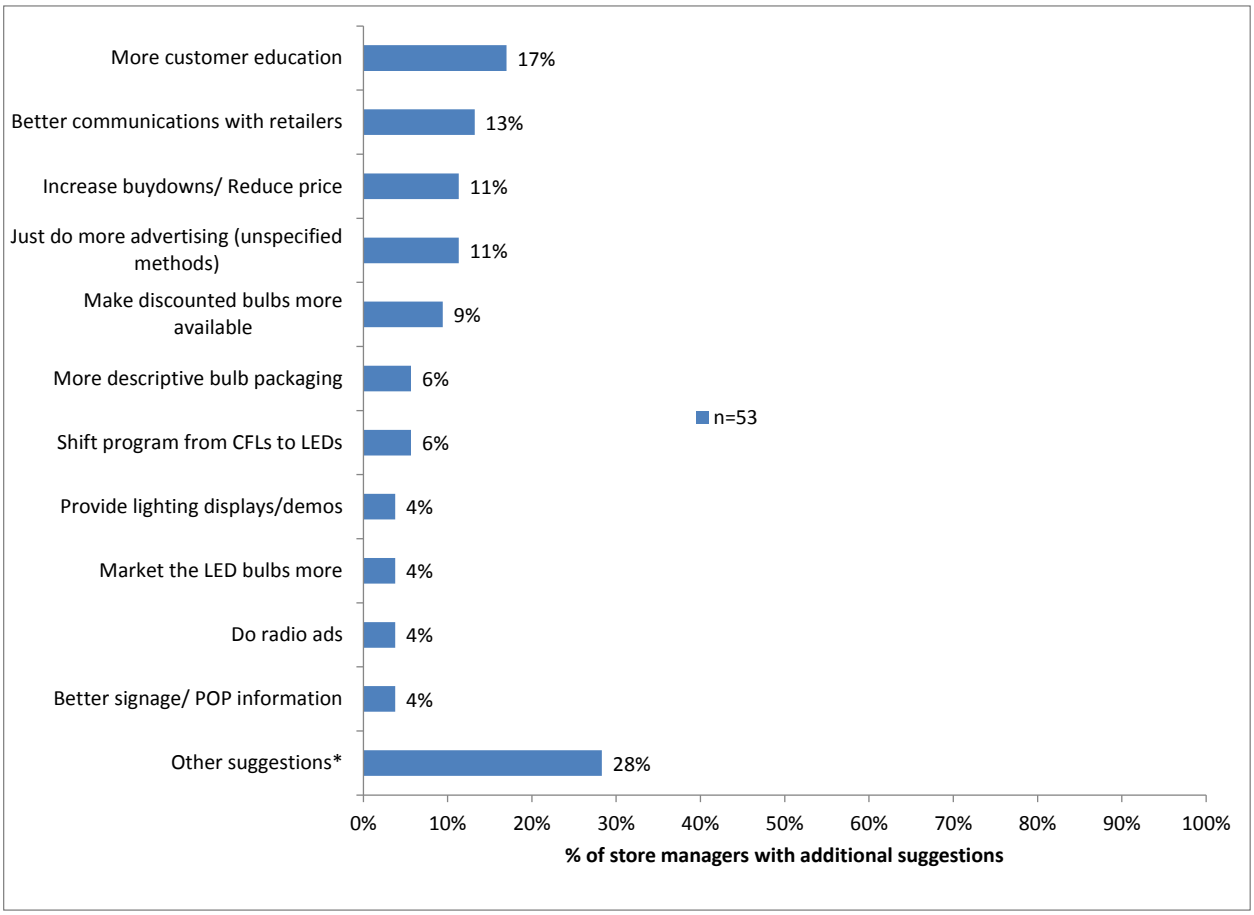
Figure 2-51. Store Manager Suggestions on Getting Retailers More Involved in Marketing Program



* Other marketing suggestions included providing "shelf talkers," providing portable wing stacks, making in-person visits to the stores to see how things are displayed, better product placements, providing ad-ready copy so retailers can include it in their flyers, offering free bulbs, putting coupons in retailer flyers, providing signage and program materials in Spanish, partnering with the State of Massachusetts, increasing incentives, providing more discounted bulbs, continuing current discounts, partnering with social service agencies, offering promotions more frequently, reducing the price point for LED bulbs, providing free bulbs at food pantries, and paying retailers for better product placement (e.g., end caps).

We also asked all the store managers whether they had any additional suggestions for program improvements besides the marketing suggestions listed above. Eighteen percent of the store managers did have some additional suggestions. The most common suggestions were more customer education (17% of store managers with additional suggestions) and better program communications with retailers (13%). However, the store managers had many more suggestions, as Figure 2-52 shows.

Figure 2-52. Store Manager Suggestions on Additional Program Improvements



* Other program improvement suggestions included not "flooding the market" by including too many retailers in the program, providing brighter bulbs, using sturdier packaging for LED bulbs, creating a website where customers could type in their zip code and find program-discounted bulbs in their area, offering coop advertising, providing program information for non-English-speakers, keeping the current program buydowns going, making lighting displays less susceptible to bulb theft, improving product quality, offering coupons, using television ads, using Internet ads, and sending out program mailers.

2.6 Program Attribution

While program attribution was not a major focus of this evaluation, as had been the case two years ago, we did ask the participating store managers a battery of program attribution questions. This section presents the net-to-gross estimates that resulted from this battery of questions.

2.6.1 Methodology

We used a similar battery of supplier self-report net-to-gross questions as we did in the 2011 evaluation of this program. The questions for store managers selling standard CFLs through the program included:

- A3. During the 2011-2012 period, the Massachusetts ENERGY STAR program provided average buydown discounts of about $1.50 for every standard CFL bulb sold through the program. If these discounts had not been available, do you think your store(s) would have sold any of these types of standard CFLs in the 2011-2012 period?

- A4. If these average buydown discounts offered by the program of $1.50 per standard CFL bulb were not available, do you think your sales of these CFL bulbs would be about the same, lower, or higher?

- A5. By what percentage do you estimate your store's sales of these standard CFLs would be lower during this 2011-2012 period if the program discounts averaging $1.50 per standard CFL bulb were not available?

- A6. I want to make sure I understand you correctly when you say your store's sales of standard CFLs would be [%FROM QUESTION A5] lower without the program buydown discounts. So you're saying that if you sold 100 CFLs in a given week with the program discounts, you would have only sold [100 - (%FROM QUESTION A5 * 100)] that week without the program discounts.

- A7B. By what percentage do you estimate your store's sales of these standard CFLs would be higher during this 2011-2012 period if the program discounts averaging $1.50 per standard CFL bulb were not available?

- A7C. I want to make sure I understand you correctly when you say your store's sales of standard CFLs would be [%FROM QUESTION A7B] higher without the program buydown discounts. So you're saying that if you sold 100 standard CFLs in a given week with the program discounts, you would have sold [100 + (% FROM QUESTION A7B * 100)] that week without the program discounts.

While this battery was for store managers who sold standard CFLs through the program, we had similar batteries for store managers who sold specialty CFLs, A-line CFLs, and LED bulbs through the program. For these other question batteries, the questions differed from those only in naming different bulb types and different program buydown amounts.

To calculate net-to-gross ratios for each store manager we surveyed, we did the following:

- If the store manager said "no" to question A3 (i.e., they would not have sold any of the discounted lighting products without the program buydown discounts), then we applied a net-to-gross ratio of 100% (0% free-ridership) to that retail store and to the volume of bulbs of that lighting type that were listed for that store in the tracking data. All store managers who said "no" to this question were also skipped past the other questions in the program attribution battery.

- If the store manager provided a response other than "no" to question A3, they were skipped to question A4.
  - If they responded "lower" to question A4, they were asked questions A5 and A6 to obtain (and verify) an estimate of how much lower their sales would have been in the absence of the program buydown discounts. This percentage was then used to estimate their net-to-gross ratio.
  - If they responded "about the same" to question A4, they were assumed to be total free riders and their net-to-gross ratio was set to zero.
  - None of the store managers said that their sales would have been higher in the absence of the discounts. If they had, we would have subtracted their sales from the total sales attributable to the program.
- All net-to-gross estimates were weighted by the number of bulbs sold by the store manager and these sales-weighted estimates were then aggregated up to retail channel-wide and program-wide estimates.

2.6.2 Net-to-Gross Estimates

This section shows the net-to-gross estimates for the various lighting technologies sold through the program.

2.6.2.1 Standard CFLs

Using the analysis of survey responses from store managers who sold standard spiral CFLs through the program, we calculated net-to-gross estimates for basic CFLs (Figure 2-53). The sales-weighted average net-to-gross ratio for standard CFLs across all channels was 69 percent, but there was a lot of variation among the average net-to-gross estimates for the different retail channels. The differences between the various retail channels were similar to what we have seen in past evaluations, with the Discount and Grocery channels having higher net-to-gross ratios than "Big Box" channels such as Home Improvement and Mass Merchandise.

This 69 percent net-to-gross ratio for basic CFLs is actually higher than what the Massachusetts store managers had reported in the 2011 evaluation (41%). However, it was similar to the net-to-gross ratio for standard CFLs that we calculated based on a more recent survey (summer 2012) of store managers participating in California Upstream Lighting Program.

Our interviews with the lighting manufacturers and high-level retail lighting buyers found a number of reasons why the buydown discounts were still important in driving CFL sales. First, many lighting suppliers pointed to a huge spike in the costs of phosphorous and other raw materials that occurred in

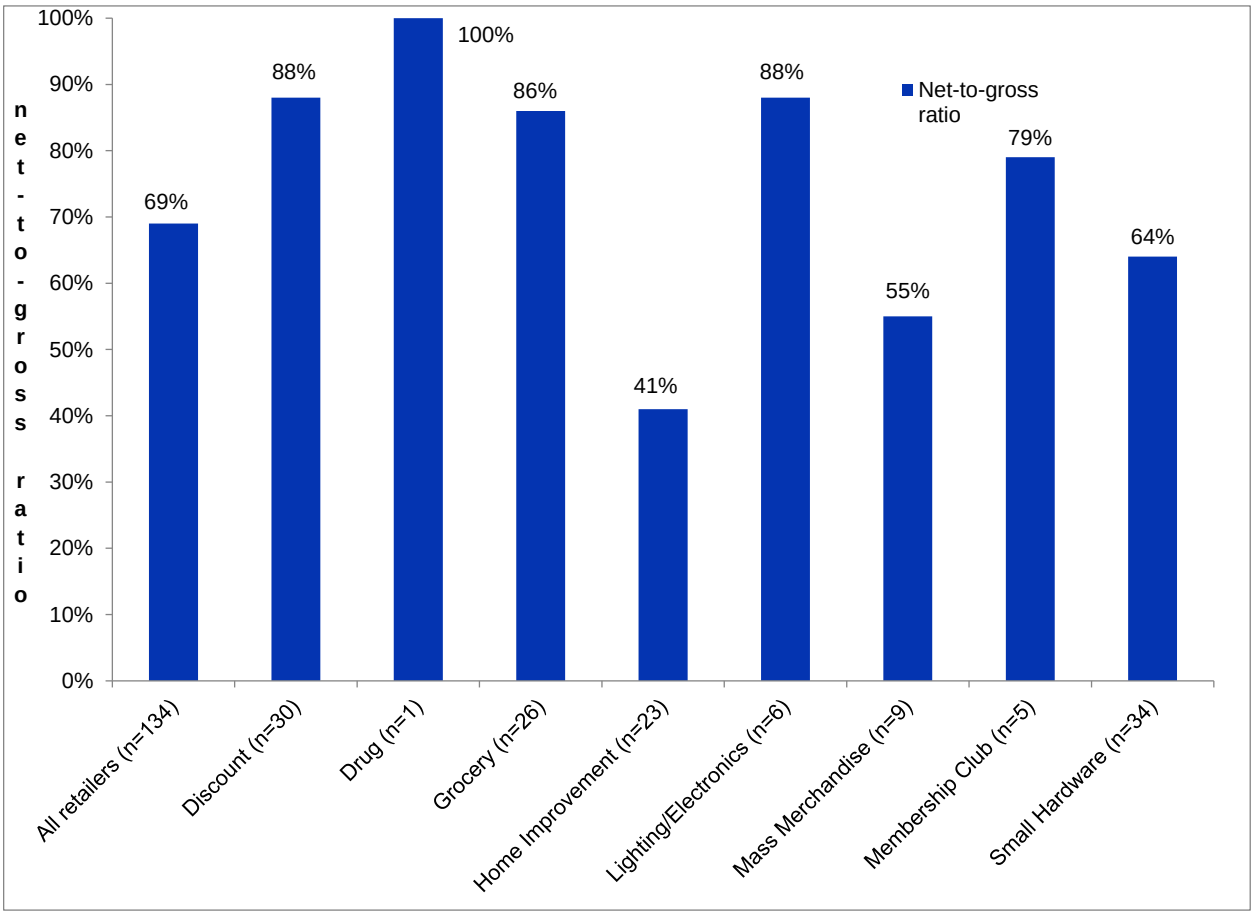
2011. Although these cost increases had mostly subsided by 2012, they had the effect of sharply increasing the production costs of all CFLs. Therefore, if program buydown discounts had not been available, many consumers may have avoided the CFLs, which would have sold for $3-$4 per bulb, and purchased incandescent bulbs or EISA-compliant halogens instead.

In addition, when the CFL production costs spiked, a number of lighting manufacturers who normally supply to discounts stores that have 99 cent/$1 product price caps told us that they could no longer sell bulbs to these stores. This was because these retailers usually expected these bulbs to be free (after the program buydowns) and at most would pay $0.50-0.55 per bulb. Lighting manufacturers reported that, during the phosphorous price spike, the production costs for a basic spiral rose to $1.25 per bulb. Therefore, without the program discounts, there would be no way that these manufacturers could supply the 99 cents/$1 stores and still make money.

Finally, the emergence of the EISA-compliant halogens, which were not a major alternative to the CFLs in 2011, has caused some lighting suppliers to argue (see also the discussion in the halogen section above) that the program discounts are more important than ever. When asked why he thought the program CFL buydown discounts were still needed despite the EISA phase-out of traditional incandescent bulbs, one lighting manufacturer representative explained:

> *And I say that because there's going to be halogen products in the stores, and it's going to look so close to what they've been buying. When they see that and they see the price point is at a certain price that may be higher than what they were paying, but it's still a premium [discount] compared to LEDs or even CFLs, if the programs are gone. It looks just like what they're already using, so they're going to go for it, and they're going to assume that if it hits EISA, it's extremely eco-friendly and it's going to save me money and all this stuff. And while it meets the specs, like I was saying earlier, it's going to be the specs on the low end, so they're not going to get the full savings that they need. And they may be confused by that, and that's where other product categories could ultimately suffer.*

Figure 2-53. Store Manager Net-to-Gross Estimates for Standard CFLs



2.6.2.2 Specialty CFLs

We also obtained net-to-gross estimates for specialty CFLs, including the A-line type of specialty CFLs and the specialty CFL class as a whole. Figure 2-54 and Figure 2-55 show the net-to-gross estimates for these two lighting types. We have found in the past that the store managers report higher net-to-gross ratios for specialty CFLs than they do for basic CFLs, and this certainly was the case for the 2012 store managers. The differences between the various retail channels were similar both to what was reported for basic CFLs and to what we have seen in past evaluations.

One lighting manufacturer representative who sold program-discounted specialty CFLs through multiple retail channels indicated that her drop in sales of the reflectors in the absence of the program would not be as great in the Membership Club channel as it would be for other retail channels. She explained that this was because the Membership Clubs tend not to increase their reflector prices in the absence of the program as much as other retailer types.

Figure 2-54. Store Manager Net-to-Gross Estimates for A-Line CFLs

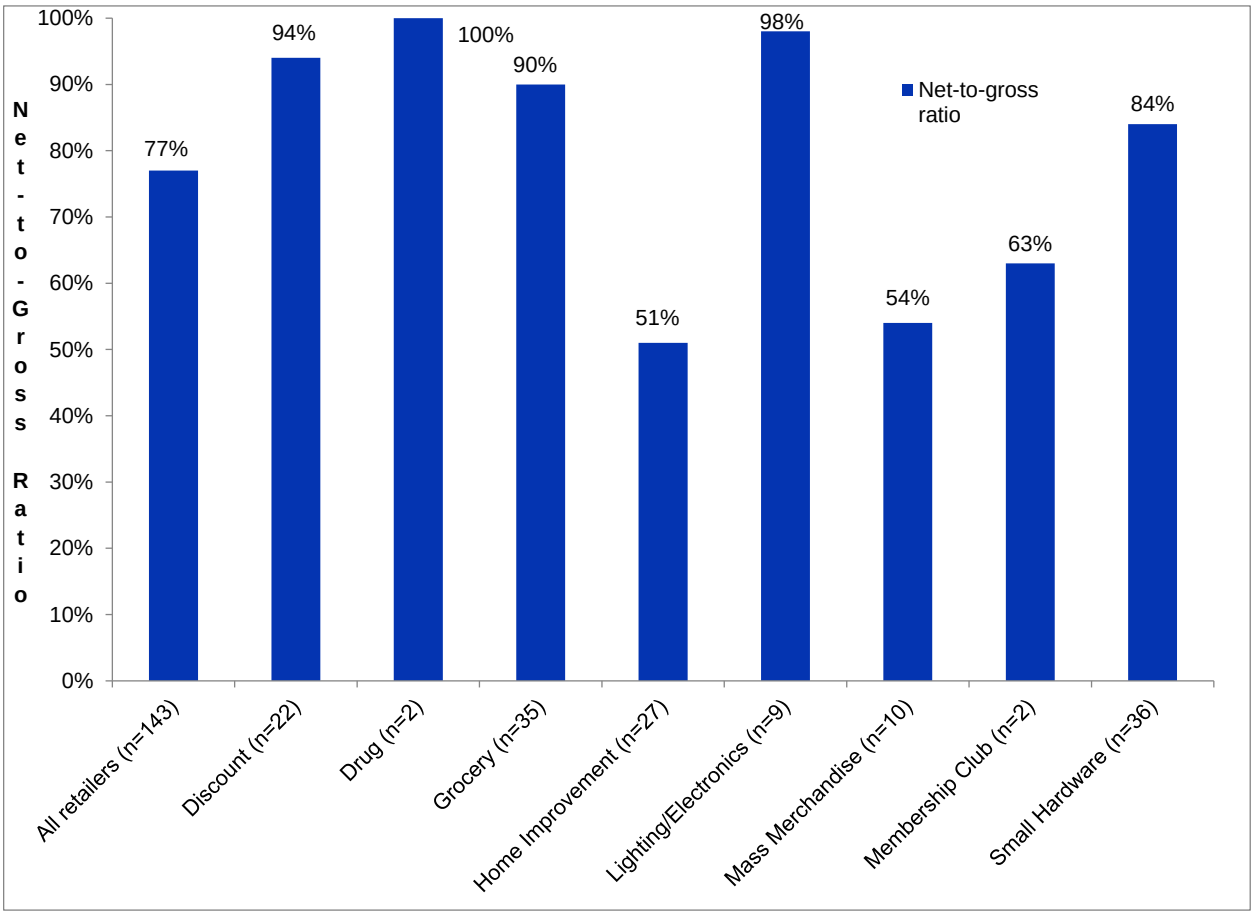
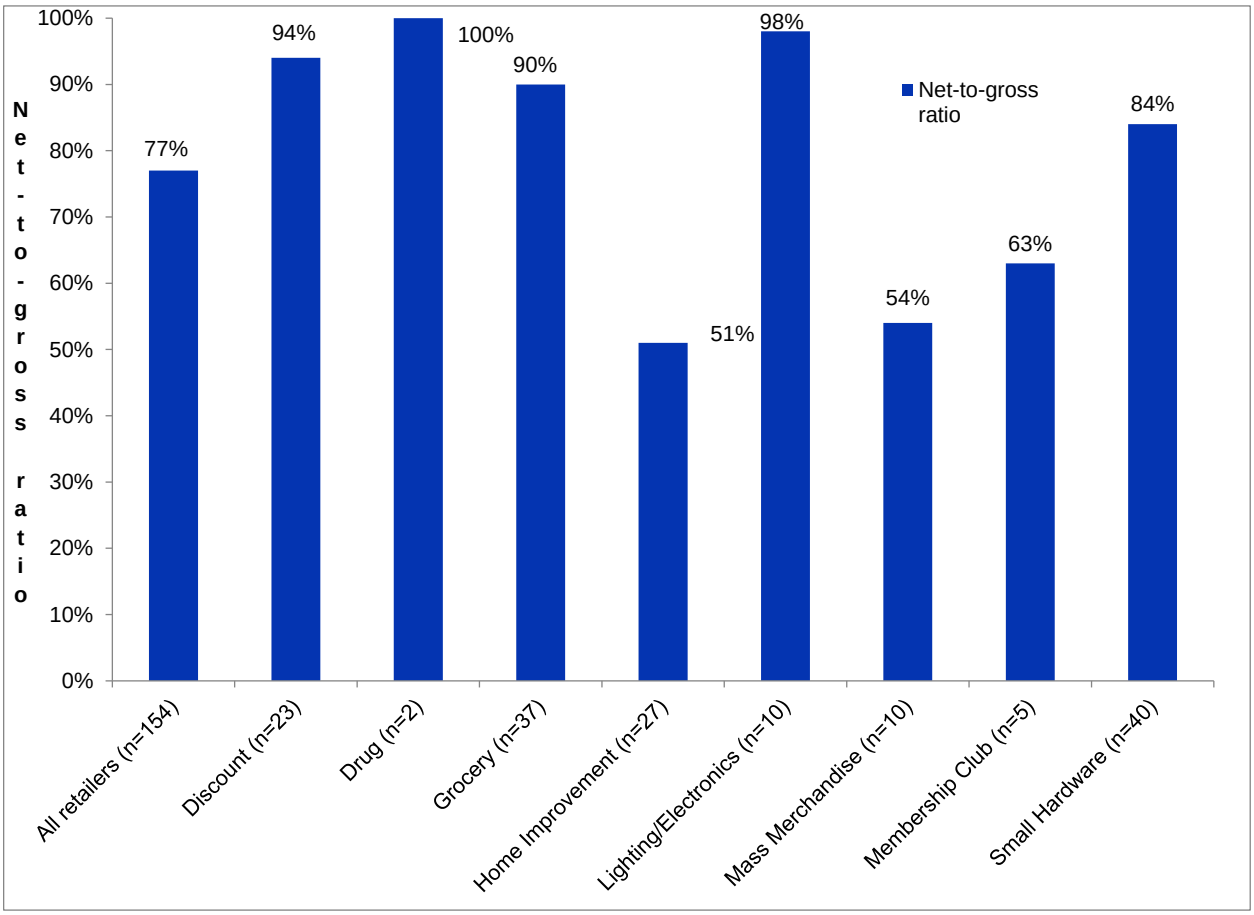


Figure 2-55. Store Manager Net-to-Gross Estimates for Specialty CFLs



2.6.2.3 LED Bulbs and Fixtures

This evaluation was the first time that we obtained net-to-gross estimates from store managers for LED bulbs and fixtures, since these were not being sold through the program when we conducted our 2011 evaluation. Figure 2-56 and Figure 2-57 show that the sales-weighted average net-to-gross estimate for LED bulbs was 62 percent and that for LED fixtures was 66 percent.

Figure 2-56. Store Manager Net-to-Gross Estimates for LED Bulbs

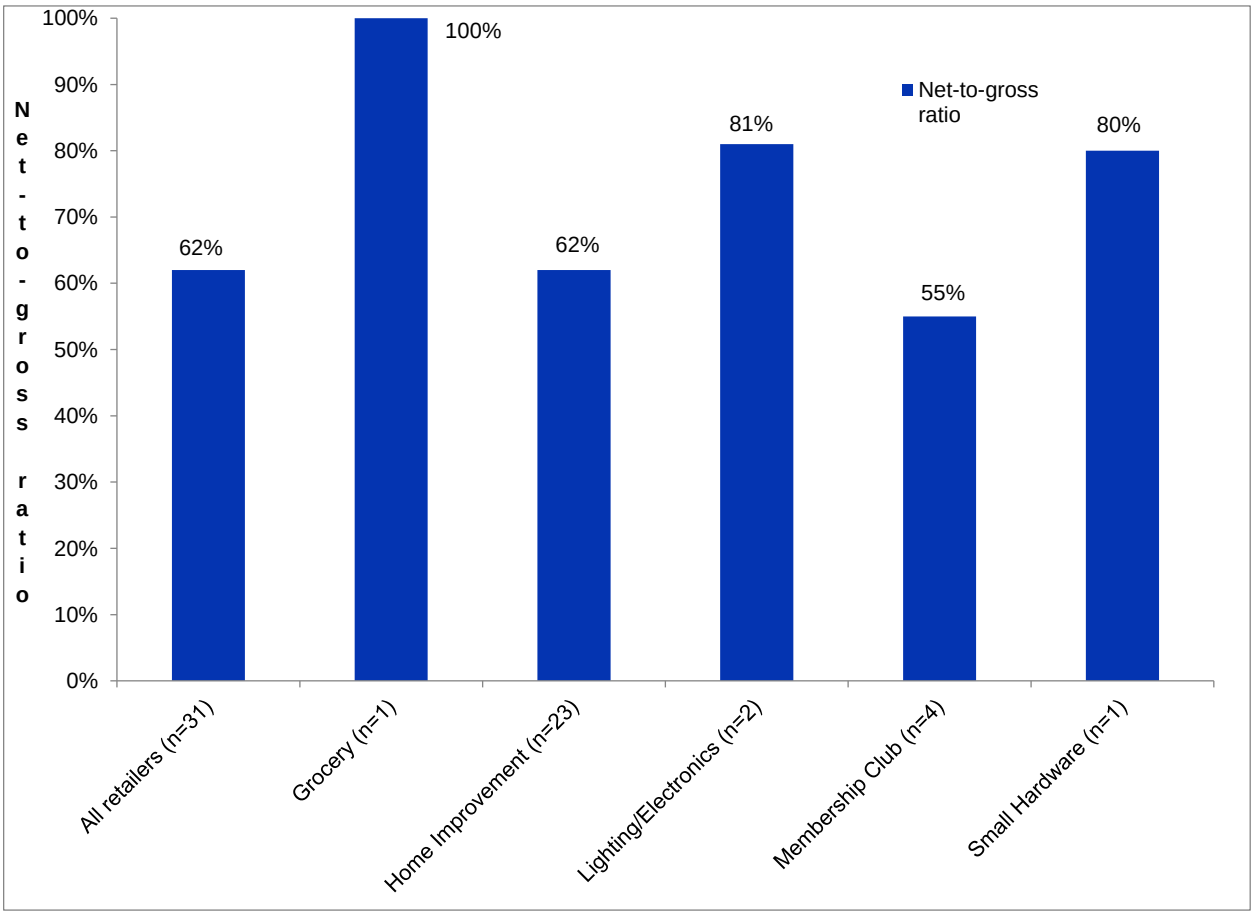
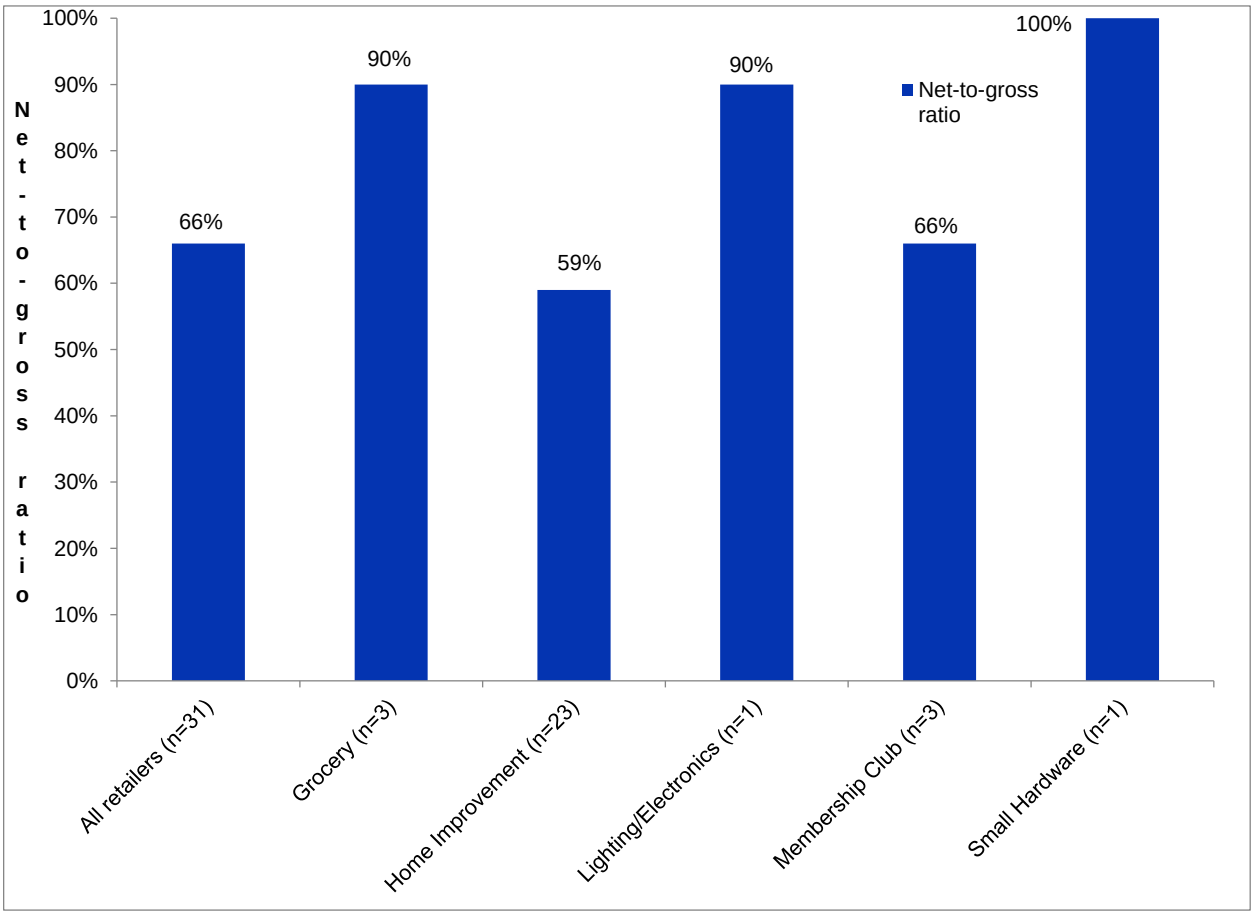


Figure 2-57. Store Manager Net-to-Gross Estimates for LED Fixtures



At first glance, it seems surprising that the net-to-gross estimates for the LED bulbs and fixtures would be lower than those for the CFLs, considering that the program pays much higher buydown rebates for the LED bulbs and fixtures than for the CFLs. However, a number of factors must be considered. First, Figure 2-56 and Figure 2-57 show that about three-quarters of the store managers who were selling the LED bulbs and fixtures were in the Home Improvement retail channel. As the charts showing the CFL net-to-gross ratios also demonstrated, store managers in this channel tend to report lower net-to-gross ratios than store managers in other channels. Even though the Home Improvement channel store managers gave higher net-to-gross estimates for the LED bulbs (62%) and fixtures (59%) than they did for the standard spiral CFLs (41%), A-line CFLs (51%), and specialty CFLs (51%) because they accounted for three-quarters of the store managers' estimates for the LED bulbs and fixtures, the overall effect was lower net-to-gross estimates across all channels.

Second, just because the program's buydown discounts for LED bulbs and fixtures were much larger than the buydown discounts for the CFLs does not mean that these discounts reduced the LED prices enough to convince many consumers to buy them. The discussion of market barriers to sales of LED bulbs in

subsection 2.3.2 addresses this issue. We asked the store managers who were already selling the LED bulbs what factors or barriers prevented more of their LED bulbs from being sold. For these store managers, the higher cost of the LED bulbs was the dominant barrier, with over one-half (52%) of the respondents citing this as a factor.

The fact that LED product prices remain very high even after the significant program buydown discounts raises the possibility that many consumers may be purchasing these expensive bulbs or fixtures for reasons that make their demand curves more inelastic than that of the typical customer – e.g., because they are very environmentally conscious or because they are "early adapters" of new technologies. When customer demand curves are, on average, more inelastic than normal, this can lead to higher levels of free ridership because the program buydown discounts are not changing the purchasing behavior of many of the participating customers.

The discussion of consumer knowledge barriers to LED products in subsection 2.3.2 also lends support to the theory that those purchasing LED products now may be a unique subset of the lighting market with more inelastic demand curves. In that subsection, we sought the suggestions of all the store managers, whether they were currently selling LED bulbs or not, on how the Massachusetts Program Administrators could increase sales of LED bulbs over the next few years. The second most common suggestion, after bringing down the prices through additional discounts (37% of respondents), was to provide more customer education about LED bulbs (22%). Many store managers believed that there is currently not enough consumer education about LEDs and there needs to be more information, including in-store demonstrations, lighting displays, etc. This might imply that those consumers who are purchasing the LED products now might be a minority subset of consumers who have educated themselves about the benefits of the LED products and many of whom would have purchased the LED products anyway, even if they had not been discounted by the program.

A. Store Manager CATI Survey

2012 Massachusetts ENERGY STAR
Retail Store/Product Manager
Survey Codebook

SURVEY HOUSE INSTRUCTIONS

1. Variable names are in bold type.
2. A code of (-6) means programmed skip (i.e., a skip that was purposely programmed based
3. on skip patterns)
4. A code of (-8) means don't know.
5. A code of (-9) means refused.
6. Questions were asked of all respondents unless indicated otherwise.
7. Response codes with an asterisk (*) are recoded responses to open-ended questions, or
8. responses added during data cleaning.

SURVEY FILES

Data file: MA Retail 2012 Data 25JAN2013.xlsx

SAMPLE VARIABLES

Variable	Definition
caseid	Unique case identification number
respnum$	Respondent number
intdate	Interview date
company	Company
fname	Contact first name
lname	Contact last name
store_address_formatted	Retailer address
phone	Phone number
geo_id	Geo ID assigned by KEMA
random#	Random number assigned by KEMA
paname	Program administrator name
supplier	Lighting supplier
channel	Retail channel
spcfldb	Program specialty CFL bulb flag
ledblbdb	Program LED bulb flag
ledfxdb	Program LED fixture flag
stcfldb	Program standard CFL bulb flag
alampdb	Program A lamp CFL bulb flag

FINDING THE DECISION MAKER

I1 [<IF CONTACT NAME> IS BLANK THEN SKIP TO I2] Hello, may I please speak with [USE CONTACT NAME, IF AVAILABLE]?

1 Contact available *[SKIP TO l4]*

2 Contact currently unavailable *[ARRANGE CALL BACK]*

I2 According to our records, your store has recently participated in the Massachusetts Energy Star lighting program. The Massachusetts electric utilities and the Cape Light Compact run this program. I'd like to speak with someone in your store who deals with stocking and supplying your lighting products such as light bulbs.

[IF THEY WANT VERIFICATION OF THE LEGITIMACY OF THE RESEARCH, TELL THEM TO CALL MATT NELSON OF NSTAR AT (781) 441-3456

[IF THEY WANT TO KNOW HOW LONG THE SURVEY IS, SAY: "ABOUT 15-20 MINUTES."]

Philip Moffitt	Cape Light Compact	508-744-1279
Wendy Todd	National Grid (NGrid/Massachusetts Electric)	781-907-2232
Matt Nelson	NSTAR Electric, Western Massachusetts Electric Company (WMECO/Northeast Utilities)	781-441-3456
Lisa Glover	Unitil (Fitchburg Gas and Electric)	603-773-6483

1 Person responsible available *[SKIP TO I4]*

2 Person responsible currently unavailable *[ARRANGE CALL BACK]*

3 No person responsible for stocking or management of lighting products *[ASK: "MAY I SPEAK TO THE STORE MANAGER."]*

-8 Don't know *[ASK: "May I speak to the store manager."]*

-9 Refused *[THANK AND TERMINATE]*

I3 *[If I2≠3, SKIP]* I understand you're the store manager. Are you familiar with the stocking patterns or sales trends for the lighting products that you sell?

[IF THEY ASK WHY, SAY: "ACCORDING TO OUR RECORDS, YOUR STORE HAS RECENTLY PARTICIPATED IN THE MASSACHUSETTS ENERGY STAR LIGHTING PROGRAM. THE MASSACHUSETTS ELECTRIC UTILITIES AND CAPE LIGHT COMPACT RUN THIS PROGRAM

[IF THEY WANT VERIFICATION OF THE LEGITIMACY OF THE RESEARCH, TELL THEM TO CALL MATT NELSON OF NSTAR AT (781) 441-3456

Philip Moffitt	Cape Light Compact	508-744-1279
Wendy Todd	National Grid (NGrid/Massachusetts Electric)	781-907-2232
Matt Nelson	NSTAR Electric, Western Massachusetts Electric Company (WMECO/Northeast Utilities)	781-441-3456
Lisa Glover	Unitil (Fitchburg Gas and Electric)	603-773-6483

[IF THEY ASK WHO THE ADMINISTRATORS ARE, READ 'CAPE LIGHT COMPACT, NATIONAL GRID, NSTAR, UNITIL AND WESTERN MASSACHUSETTS ELECTRIC.']

[RECORD NAME]

1 Yes *[SKIP TO I4]*

2 No *[ASK: "WHO WOULD BE FAMILIAR WITH SALES AND STOCKING TRENDS FOR LIGHTING PRODUCTS IN YOUR STORE?". IF NAME RECEIVED OBTAIN PHONE NUMBER AND CONTACT THAT PERSON (STARTING WITH I4). IF NO NAME RECEIVED, THANK AND TERMINATE]*

-8 Don't know/Not sure/Can't remember

-9 Refused

I4 Hello I am _____ from *[CATI SURVEY FIRM]*. I am calling on behalf of the [PA Name and] Massachusetts ENERGY STAR lighting program. According to our records, your store recently participated in this program by selling discounted compact fluorescent light bulbs from *[SUPPLIER]*. The program paid *[SUPPLIER]* an incentive ranging from about $1.50 to $4 per CFL and about $18 per LED bulb so that you could sell them at a discounted price. The Massachusetts ENERGY STAR lighting program is trying to improve their lighting rebate program and was hoping you could help us out by answering a few questions. Are you familiar with this program?

1 Yes *[SKIP TO I6]*

2	No	
-8	Don't know/Not sure/Can't remember	
-9	Refused	*[THANK AND TERMINATE]*

I5 Who would be familiar with this program?

1	Record Name and Phone, Callback Now	*[Skip to I4 and Repeat]*
2	Record Name and Phone, Callback Later	*[Callback]*
3	No additional contact information	*[THANK AND TERMINATE]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember]	*[THANK AND TERMINATE]*
-9	Refused	*[THANK AND TERMINATE]*

I5_2_opn Contact information from I5

I6 What is your job title? *[DO NOT READ]*

1	Store manager
2	Manager
3	Assistant manager
4	General merchandise manager
5	Store director
6	Other *[Specify]*
-8	Don't know/Not sure/Can't remember
-9	Refused

I6_6_opn Other job title from I6

I6 About how many months or years have you been working with the sale of lighting products?

I6a	__	# OF MONTHS
I6b	__	# OF YEARS
	-8	Don't know/Not sure/Can't remember
	-9	Refused

I7 Now I'm going to use the abbreviation "CFL" to refer to compact fluorescent lamps. Are you the primary person who decides how many discounted CFLs your store(s) receives in shipments from *[SUPPLIER]* as part of this Massachusetts ENERGY STAR lighting program?

1	Yes	*[SKIP TO P1]*
2	No	
-8	Don't know/Not sure/Can't remember	
-9	Refused	

I8_opn Who is the primary decision-maker?

[RECORD NAME AND PHONE NUMBER, PROCEED TO P1. CONTACT INFORMATION MAY BE USED IN A LATER SURVEY]

PARTICIPANT INFORMATION

P1 *[IF <ST CFL DB> =1 SKIP TO P2]* Does your store currently sell standard CFLs? By standard CFLs I mean bulbs that have spiral shapes and which do not have any special features such as dimmability or three-way capability?

1	Yes	*[SKIP TO P4]*
2	No	*[SKIP TO P4]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P4]*
-9	Refused	*[SKIP TO P4]*

P2 Does your store currently sell standard CFLs that have not been discounted by the Massachusetts ENERGY STAR lighting program?

1	Yes	
2	No	*[SKIP TO P4]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P4]*
-9	Refused	*[SKIP TO P4]*

P3 *[IF <ST CFL DB> ≠ 0 AND P2 =1 ELSE SKIP TO P4]* Roughly what percent of the standard CFLs that your store sold during the 2011-2012 period were discounted by the program and what percent were not? *[NOTE THE TWO PERCENTAGES SHOULD ADD UP TO 100%]*

__	% DISCOUNTED BY MA ES PROGRAM	
P3a __	% NOT PROGRAM DISCOUNTED	
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	

-9	Refused	

P4 *[IF <SP CFL DB> = 0 ELSE SKIP TO P5A]* Does your store currently sell specialty CFLs that do not have the spiral shape, like A-shape or globe-shape lamps, or CFLs with special features such as dimmable, 3-way, or reflector CFLs?

1	Yes	
2	No	*[SKIP TO P7]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P7]*
-9	Refused	*[SKIP TO P7]*

P5 Does your store sell CFL bulbs that have a similar shape to incandescent bulbs? These are often called A-shape or A-line CFLs?

1	Yes	*[SKIP TO P7]*
2	No	*[SKIP TO P7]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P7]*
-9	Refused	*[SKIP TO P7]*

P5A Does your store currently sell specialty CFLs that have **not** been discounted by the program? By specialty CFLs I mean CFLs that do not have the spiral shape like A-shape or globe-shape lamps or CFLs with special features such as dimmable, 3-way, or reflector CFLs?

1	Yes	
2	No	*[SKIP TO P7]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P7]*
-9	Refused	*[SKIP TO P7]*

P5B Does your store currently sell A-shape or A-line CFLs that have not been discounted by the Massachusetts ENERGY STAR lighting program? By A-shape or A-line CFLs I mean those that have a similar shape to incandescent bulbs?

1	Yes
2	No
-6	Programmed skip

-8 Don't know/Not sure/Can't remember
-9 Refused

P6 Roughly what percent of the specialty CFLs that your store sold during the 2011-2012 period were discounted by the program and what percent were not? *[NOTE THE TWO PERCENTAGES SHOULD ADD UP TO 100%]*

P6_1 __ % DISCOUNTED BY MA ES PROGRAM
P6_2 __ % NOT PROGRAM DISCOUNTED
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

P6A *[IF <A LAMP DB> =1 AND P5B =1 ELSE SKIP TO P7]* Roughly what percent of the A-shape CFLs that your store sold during the 2011-2012 period were discounted by the program and what percent were not? *[NOTE THE TWO PERCENTAGES SHOULD ADD UP TO 100%]*

P6a_1 __ % DISCOUNTED BY MA ES PROGRAM
P6a_2 __ % NOT PROGRAM DISCOUNTED
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

P7 *[IF < LED BULB DB> = 0 ELSE SKIP TOP7a]* Does your store currently sell LED bulbs?

1	Yes	
2	No	*[SKIP TO P13]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P13]*
-9	Refused	*[SKIP TO P13]*

P7A What types of LED bulbs does your store sell? Do you sell… *[READ CATEGORIES AND SELECT ALL THAT APPLY]*

For P7a_1 through P7a_8:

0 Not mentioned
1 Mentioned
-6 Programmed skip

P7a_1 General Use LEDS, such as: A-lamp, Globes, typically medium base LEDs
P7a_2 Spotlight LEDs, such as: floodlight/ reflector LEDs e.g., BR-40, R-30, PAR-30, MR-16 LEDs
P7a_3 Decorative LEDs
P7a_4 Nightlight LEDS, such as: C-7 and C-9 LEDs
P7a_5 Holiday LEDs
P7a_6 Other *[Specify]*
P7a_7 Don't know/Not sure/Can't remember
P7a_8 Refused
P7a_6_opn Other specify from P7a_6

P8 *[IF <LED BULB DB> = 0 SKIP TO P13]* Does your store currently sell LED bulbs that have not been discounted by the Massachusetts ENERGY STAR lighting program?

1	Yes	
2	No	*[SKIP TO P13]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO P13]*
-9	Refused	*[SKIP TO P13]*

P9 *[IF <LED BULB DB>=1 AND P8=1 ELSE SKIP TO P13]* Roughly what percent of the LED bulbs that your store sold during the 2011-2012 period were discounted by the program and what percent were not? *[NOTE THE TWO PERCENTAGES SHOULD ADD UP TO 100%]*

__ % DISCOUNTED BY MA ES PROGRAM
P9a __ % NOT PROGRAM DISCOUNTED
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

P13 *[IF < LED FIXTURE DB>=0 ELSE SKIP TO P14]* Does your store currently sell LED fixtures such as LED downlights?

1	Yes	
2	No	*[SKIP TO E1]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO E1]*
-9	Refused	*[SKIP TO E1]*

P13A_opn What kind of LED fixtures does your company sell? *[SKIP TO E1]*

P14 Does your store currently sell LED fixtures that have not been discounted by the program?

1	Yes	
2	No	*[SKIP TO E1]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO E1]*
-9	Refused	*[SKIP TO E1]*

P15 *[IF <LED FIXTURE DB> =1]* Roughly what percent of the LED fixtures that your store sold during the 2011-2012 period were discounted by the program and what percent were not? *[NOTE THE TWO PERCENTAGES SHOULD ADD UP TO 100%]*

__	% DISCOUNTED BY MA ES PROGRAM	
P15a __	% NOT PROGRAM DISCOUNTED]	
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	
-9	Refused	

EISA IMPACTS

E1 In December 2007 Congress passed an energy bill called the Energy Independence and Security Act. One component of the bill calls for a gradual phase-out of inefficient lamps over time starting in 2012. Were you aware of this phase out?

[IF NECESSARY: The phase-out began for 100 Watt general service lamps on January 1, 2012, for 75-Watt lamps the phase out starts in 2013, and for 60 and 40 Watt lamps in 2014.]

1	Yes

2	No	*[SKIP TO A3]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO A3]*
-9	Refused	*[SKIP TO A3]*

E2 Has this legislation had any impact on your stocking practices since January 2011?

1	Yes	
2	No	*[SKIP TO E4]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO E4]*
-9	Refused	*[SKIP TO E4]*

Note: Added skips on 12/12/12

E3 Has stocking for [these bulbs] increased, decreased, or stayed the same? *[RUN THROUGH THE WHOLE E3_1=E3_6/E3A_1-E3A_6 BATTERY BEFORE GOING TO E4]*

For E3_1 through E3_6:

1	Increased
2	Decreased
3	Stayed the same
4	Not applicable/Don’t sell that bulb type
-6	Programmed skip
-8	Don’t know/not sure/can’t remember
-9	Refused

E3_1 Incandescents
E3_2 *[If P1=2, SKIP]* Standard Spiral CFLs
E3_3 *[If P5=2, SKIP]* Covered CFLs that look like incandescents such as A-line CFLs
E3_4 *[If P4=2, SKIP]* Other specialty CFL types such as globes, reflectors, and dimmable CFLs
E3_5 *[If P7=2, SKIP]* LEDs
E3_6 Halogens

E3a By what percentage?

For E3a_1 through E3a_6:

__	Percentage
-6	Programmed skip
-8	Don't know/not sure/can't remember
-9	Refused

E3a_1 *[If E3_1=1 or E3_1=2]* Incandescents
E3a_2 *[If E3_2=1 or E3_2=2]* Standard Spiral CFLs
E3a_3 *[If E3_3=1 or E3_3=2]* Covered CFLs that look like incandescents such as A-line CFLs
E3a_4 *[If E3_4=1 or E3_4=2]* Other specialty CFL types such as globes, reflectors, and dimmable CFLs
E3a_5 *[If E3_5=1 or E3_5=2]* LEDs
E3a_6 *[If E3_6=1 or E3_6=2]* Halogens

E4 Have you observed any changes in your customers' purchasing behavior in response to the new regulations?

1	Yes	
2	No	*[SKIP TO A3]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO A3]*
-9	Refused	*[SKIP TO A3]*

E5_opn What changes have you observed?

Note: Added skips on 12/12/12

E7 Have sales for [these bulbs] increased, decreased, or stayed the same in response to the new regulations? *[RUN THROUGH THE WHOLE E7_1=E7_6/E7A_1-E7A_6 BATTERY BEFORE GOING TO A3]*
For E7_1 through E7_6

1	Increased
2	Decreased
3	Stayed the same
4	Not applicable/Don't sell that bulb type
-6	Programmed skip

-8 Don't know/not sure/can't remember
-9 Refused

E7_1 *[If E3_1=4, SKIP]* Incandescents
E7_2 *[If P1=2 or E3_2=4, SKIP]* Standard CFLs
E7_3 *[If P5=2 or E3_3=4, SKIP]* Covered CFLs that look like incandescents such as A-line CFLs
E7_4 *[If P4=2 or E3_4=4, SKIP]* Other specialty CFL types such as globes, reflectors, and dimmable CFLs
E7_5 *[If P7=2 or E3_5=4, SKIP]* LEDs
E7_6 *[If E3_6=4, SKIP]* Halogens

E7a By what percentage?

For E7a_1 through E7a_6:

__ Percentage
-6 Programmed skip
-8 Don't know/not sure/can't remember
-9 Refused

E7a_1 *[If E7_1=1 or E7_1=2]* Incandescents
E7a_2 *[If E7_2=1 or E7_2=2]* Standard Spiral CFLs
E7a_3 *[If E7_3=1 or E7_3=2]* Covered CFLs that look like incandescents such as A-line CFLs
E7a_4 *[If E7_4=1 or E7_4=2]* Other specialty CFL types such as globes, reflectors, and dimmable CFLs
E7a_5 *[If E7_5=1 or E7_5=2]* LEDs
E7a_6 *[If E7_6=1 or E7_6=2]* Halogens

SALES TRENDS AND PROGRAM ATTRIBUTION

A3 *[IF <ST CFL DB> ≠ 0 ASK A3 ELSE SKIP TO A8]* During the 2011-2012 period the Massachusetts ENERGY STAR program provided average buydown discounts of about $1.50 for every standard CFL bulb sold through the program. If these discounts had not been available, do you think your store(s) would have sold any of these types of standard CFLs in the 2011-2012 period?

1 Yes
2 No *[SKIP TO A8]*
3 Store doesn't sell product type *[SKIP TO A8]*
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A4 If these average buydown discounts offered by the program of $1.50 per standard CFL bulb were not available, do you think your sales of these CFL bulbs would be about the same, lower, or higher?

1 Same *[SKIP TO A7A]*
2 Lower
3 Higher *[SKIP TO A7A]*

-6 Programmed skip
-8 Don't know/Not sure/Can't remember *[SKIP TO A8]*
-9 Refused *[SKIP TO A8]*

A5 By what percentage do you estimate your store's sales of these standard CFLs would be lower during this 2011-2012 period if the program discounts averaging $1.50 per standard CFL bulb were not available?

__ Record percentage
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A6 *[IF A5 = -8 OR -9 THEN SKIP TO A8]* I want to make sure I understand you correctly when you say your store's sales of standard CFLs would be *[%FROM QUESTION A5]* lower without the program buydown discounts. So you're saying that if you sold 100 CFLs in a given week with the program discounts, you would have only sold *[100 - (%FROM QUESTION A5 * 100)] that* week without the program discounts.

1 Yes
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A7A_opn *[IF A4 ≠ 1 AND A4 ≠ 3 THEN SKIP TO A8]* Please explain why you think your sales of standard CFLs would be *[IF A4=1 THEN SAY "THE SAME", IF A4=3 THEN SAY "HIGHER"]* in the absence of the Massachusetts ENERGY STAR program

A7B *[IF A4 ≠3 SKIP TO A8]* By what percentage do you estimate your store's sales of these standard CFLs would be higher during this 2011-2012 period if the program discounts averaging $1.50 per standard CFL bulb were not available?

__ Record percentage
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A7C *[IF A7B = -8 OR -9 THEN SKIP TO A8]* I want to make sure I understand you correctly when you say your store's sales of standard CFLs would be [%FROM QUESTION A7B] higher without the program buydown discounts. So you're saying that if you sold 100 standard CFLs in a given week with the program discounts, you would have sold *[100 + (% FROM QUESTION*

*A7B * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A7B]*

A8 *[IF <SP CFL DB> =1 ASK A8, ELSE SKIP TO A20]* Now I'm going to ask you about the effect of the Massachusetts ENERGY STAR program buydown discounts on your sales of specialty CFLs. Throughout the whole program there was an average buydown discount of about $4 per specialty CFL bulb. If these buydown discounts had not been available, do you think your store(s) would have sold these types of specialty CFLs in the 2011-2012 period? *[IF NEEDED: specialty CFLs are those that do not have the spiral shape, like A-shape or globe-shape lamps, or CFLs with special features such as dimmable, 3-way, or reflector CFLs.]*

1	Yes	
2	No	*[SKIP TO A20]*
3	Store doesn't sell product type	*[SKIP TO A20]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	
-9	Refused	

A9 If these average buydown discounts offered by the program of about $4 per specialty CFL bulb were not available, do you think your sales of these types of specialty CFL bulbs would be about the same, lower, or higher?

1	Same	*[SKIP TO A12A]*
2	Lower	
3	Higher	*[SKIP TO A12A]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO A20]*
-9	Refused	*[SKIP TO A20]*

A10 By what percentage do you estimate your store's sales of these specialty CFLs would be lower during this 2011-2012 period if the average program discounts of $4 per specialty CFL bulb were not available?

__	Record percentage
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

A10A *[IF <A LAMP CFL DB> =1 ASK A10A, ELSE SKIP TO A20]* According to our records, one of the types of specialty bulbs you sell through the program are covered CFLs that look like

incandescents such as A-line CFLs. By what percentage do you estimate your store's sales of these A-line CFLs would be lower during this 2011-2012 period if the average program discounts of about $5 per A-line CFL were not available?

__ Record percentage
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A11 *[IF RESPONDENT WAS ALREADY ASKED A6 OR A7C; OR A10 = -8 OR -9 THEN SKIP TO A20]* I want to make sure I understand you correctly when you say your store's sales of specialty CFLs would be *[% FROM QUESTION A10]* lower without the program buydown discounts. So you're saying that if you sold 100 specialty CFLs in a given week with the program discounts, you would have only sold *[100 - (%FROM QUESTION A10 * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A10]*

1 Yes
-6 Programmed skip

A12A_opn *[IF A9 ≠ 1 AND A9 ≠ 3 THEN SKIP TO A20]* Please explain why you think your sales of specialty CFLs would be *[IF A9=1 THEN SAY "THE SAME", IF A9=3 THEN SAY "HIGHER"]* in the absence of the program

A12B *[IF A9 ≠ 3 SKIP TO A20]* By what percentage do you estimate your store's sales of these specialty CFLs would be higher during this 2011-2012 period if the program discounts averaging about $4 per specialty CFL bulb were not available?

__ Record percentage
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A12C *[IF RESPONDENT WAS ALREADY ASKED A6, A7C; OR A11; OR IF A12B = -8 OR -9 THEN SKIP TO A20]* I want to make sure I understand you correctly when you say your store's sales of specialty CFLs would be *[% FROM QUESTION A12B]* higher without the program buydown discounts. So you're saying that if you sold 100 specialty CFLs in a given week with the program discounts, you would have sold *[100 + (% FROM QUESTION A12B * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A12B]*

-6 Programmed skip

A20 *[IF <LED BULB DB> =1 ASK A20 ELSE SKIP TO A27]* Now I'm going to ask you about the effect of the Massachusetts ENERGY STAR program buydown discounts on your sales of LED bulbs. Throughout the whole program there was an average buydown discount of about $18 per LED bulb. If these buydown discounts had not been available, do you think your store(s) would have sold these types of LED bulbs in the 2011-2012 period?

1	Yes	
2	No	*[SKIP TO A27]*
3	Store doesn't sell product type	*[SKIP TO A27]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	
-9	Refused	

A21 If these average buydown discounts offered by the program of $18 per indoor LED bulb were not available, do you think your sales of these LED bulbs would be about the same, lower, or higher?

1	Same	*[SKIP TO A24]*
2	Lower	
3	Higher	*[SKIP TO A24]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO A27]*
-9	Refused	*[SKIP TO A27]*

A22 By what percentage do you estimate your store's sales of these LED bulbs would be lower during this 2011-2012 period if the average program discounts of $18 per LED bulb were not available?

__	Record percentage
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

A23 *[IF RESPONDENT WAS ALREADY ASKED A6, A7C; A11, A12C;, OR IF A22 = -8 OR -9 THEN SKIP TO A27]* I want to make sure I understand you correctly when you say your store's sales of LED bulbs would be *[% FROM QUESTION A22]* lower without the program buydown discounts. So you're saying that if you sold 100 LED bulbs in a given week with the program discounts, you would have only sold *[100 - (%FROM QUESTION A22 * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A22]*

1	Yes

-6 Programmed skip

A24_opn *[IF A21≠ 1 AND A21 ≠ 3 THEN SKIP TO A27]* Please explain why you think your sales of LED bulbs would be *[IF A21=1 THEN SAY "THE SAME", IF A21=3 THEN SAY "HIGHER"]* in the absence of the program?

A25 *[IF A21 ≠ 3 SKIP TO A27]* By what percentage do you estimate your store's sales of these LED bulbs would be higher during this 2011-2012 period if the program discounts averaging $18 per LED bulbs were not available?

__ Record percentage
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

A26 *[IF RESPONDENT WAS ALREADY ASKED A6, A7C; A11, A12C;, A23 OR IF A25 = -8 OR -9 THEN SKIP TO A27]* I want to make sure I understand you correctly when you say your store's sales of LED bulbs would be *[% FROM QUESTION A25]* higher without the program buydown discounts. So you're saying that if you sold 100 LED bulbs in a given week with the program discounts, you would have sold *[100 + (% FROM QUESTION A25 * 100)] that* week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A25]*

-6 Programmed skip

A27 *[IF <LED FIXTURE DB> =1 ASK A27 ELSE SKIP TO A34]* Now I'm going to ask you about the effect of the Massachusetts ENERGY STAR program buydown discounts on your sales of LED fixtures. Throughout the whole program there was an average buydown discount of about $24 per LED fixture. If these buydown discounts had not been available, do you think your store(s) would have sold these types of LED fixtures in the 2011-2012 period?

1	Yes	
2	No	*[SKIP TO A34]*
3	Store doesn't sell product type	*[SKIP TO A34]*
-4	Programming error	
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	
-9	Refused	

A28 If these average buydown discounts offered by the program of about $24 per LED fixture were not available, do you think your sales of these LED fixtures would be about the same, lower, or higher?

1	Same	*[SKIP TO A31]*
2	Lower	
3	Higher	*[SKIP TO A31]*
-4	Programming error	
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO A34]*
-9	Refused	*[SKIP TO A34]*

A29 By what percentage do you estimate your store's sales of these LED fixtures would be lower during this 2011-2012 period if the average program discounts of about $24 per LED fixture were not available?

__	Record percentage
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

A30 *[IF RESPONDENT WAS ALREADY ASKED A6, A7C; A11, A12C;, A23, A26; OR IF A29 = -8 OR -9 THEN SKIP TO A34]* I want to make sure I understand you correctly when you say your store's sales of LED fixtures would be *[% FROM QUESTION A29]* lower without the program buydown discounts. So you're saying that if you sold 100 LED fixtures in a given week with the program discounts, you would have only sold *[100 - (%FROM QUESTION A29 * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A29]*

1	Yes
-6	Programmed skip

A31_opn *[IF A28≠1 AND A28 ≠ 3 THEN SKIP TO A34]* Please explain why you think your sales of LED fixtures would be *[IF A28=1 THEN SAY "THE SAME", IF A28=3 THEN SAY "HIGHER"]* in the absence of the program?

A32 *[IF A28 ≠ 3 THEN SKIP TO A34]* By what percentage do you estimate your store's sales of these LED fixtures would be higher during this 2011-2012 period if the program discounts averaging about $24 per LED fixture were not available?

__	Record percentage
-6	Programmed skip

-8 Don't know/Not sure/Can't remember
-9 Refused

A33 *[IF RESPONDENT WAS ALREADY ASKED A6, A7C; A11, A12C; A23, A26, OR A30; OR IF A32 = -8 OR -9 THEN SKIP TO A34]* I want to make sure I understand you correctly when you say your store's sales of LED fixtures would be *[% FROM QUESTION A32]* higher without the program buydown discounts. So you're saying that if you sold 100 LED bulbs in a given week with the program discounts, you would have sold *[100 + (% FROM QUESTION A32 * 100)]* that week without the program discounts. *[IF RESPONSE IS ≠ YES THEN CLARIFY RESPONSE TO A32]*

-6 Programmed skip

A34 Besides the discounts, do you think the program does anything else to help you sell energy efficient lighting products?

1	Yes	
2	No	*[SKIP TO A35A]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO A35A]*
-9	Refused	*[SKIP TO A35A]*

A35 What else does the program do to help sell energy-efficient lighting products? *[ACCEPT MULTIPLE RESPONSES. DO NOT READ]*

For A35_1 through A35_7:

0 Not mentioned
1 Mentioned
-6 Programmed skip

A35_1 Provide in-store signage
A35_2 Provide co-op advertising support
A35_3 Provide other marketing support
A35_4 Provide customer education
A35_5 Other *[Specify]*
A35_6 Don't know/Not sure/Can't remember
A35_7 Refused

A35_5_opn Other specify response from A35_5

A35A *[IF A35 = 1 SKIP TO A35B]* Has the program provided you with any in-store signage?

1	Yes
2	No
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

A35B *[IF A35 = 2 OR 3 SKIP TO A36]* Has the program provided you with any kinds of marketing support?

1	Yes	
2	No	*[SKIP TO A36]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO A36]*
-9	Refused	*[SKIP TO A36]*

A35C_opn What kind of marketing support have they provided?

A36 Does *[RETAILER]* do anything on its own, without the program's help, to help sell energy-efficient lighting products?

1	Yes	
2	No	*[SKIP TO H1]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO H1]*
-9	Refused	*[SKIP TO H1]*

A37 What does *[RETAILER]* do on its own to help sell energy-efficient lighting products? *[DO NOT READ RESPONSES. ALLOW MULTIPLE RESPONSES]*

For A37_1 through A37_7:

0	Not mentioned
1	Mentioned
-6	Programmed skip

A37_1 Provide in-store signage
A37_2 Place products in end caps/ more prominent store locations
A37_3 Provide lighting displays
A37_4 Provide advertising flyers
A37_5 Other *[Specify]*
A37_6 Don't know/Not sure/Can't remember
A37_7 Refused

A37_5_opn Other specify response from A37_5

HARD-TO-REACH LIGHTING CUSTOMERS

H1 *[If P1=2 and P4=2 and <SP CFL DB> =0 and <ST CFL DB> =0, SKIP TO SP1]* The Massachusetts ENERGY STAR Lighting Program is trying to increase the penetration of CFLs in so-called 'hard-to-reach" energy efficient lighting markets. The program is currently defining these markets as those that serve low-income, ethnic, non-English-speaking, and less educated customers. The program is trying to reach these customers through discount stores and small grocery stores. First of all, do you agree with that definition of hard-to-reach lighting markets?

1	Yes	*[SKIP TO H3]*
2	No	
-8	Don't know/Not sure/Can't remember	*[SKIP TO H3]*
-9	Refused	*[SKIP TO H3]*

H2_opn How would you define the hard-to-reach lighting markets in Massachusetts?

H3 Do you think discount stores and small grocery stores are the right kinds of retailers that the program should be working with to make CFLs more accessible to hard-to-reach customers?

1	Yes	*[SKIP TO H4A]*
2	No	
-8	Don't know/Not sure/Can't remember	*[SKIP TO H4A]*
-9	Refused	*[SKIP TO H4A]*

H3A_opn *[IF H3=2 ELSE SKIP TO H4A]* Why do you say that?

H4_opn What types of retailers should the program be working with to reach these hard-to-reach customers?

H4A By making ENERGY STAR CFLs available in the discount and small grocery stores, do you think the program is creating new CFL sales that didn't exist before, taking away CFL sales from other retailers, or doing a bit of both?

1	Creating new sales	*[SKIP TO H5]*
2	Taking away sales from other retailers	
3	A bit of both	
4	Other *[Specify]*	*[SKIP TO H5]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO H5]*

-9 Refused *[SKIP TO H5]*

H4A_4_opn Other specify response from H4A

H4B *[IF H4A = 2 OR 3 ELSE SKIP TO H5]* From which retailers do you think these discount and small grocery stores are taking away CFL sales? *[ALLOW MULTIPLE RESPONSES]*

For H4B_1 through H4B_6:

0 Not mentioned
1 Mentioned
-6 Programmed skip

H4B_1 Wal-Mart
H4B_2 Home Depot
H4B_3 Lowe's
H4B_4 Other *[Specify]*
H4B_5 Don't know
H4B_6 Refused

H4B_4_opn Other specify response from H4B_4

H5 In the past two years do you think the proportion of your company's CFL sales that are going to individuals in these hard-to-reach demographic groups has increased, decreased, or stayed about the same?

1 Increased
2 Decreased
3 Stayed about the same
-8 Don't know/Not sure/Can't remember
-9 Refused

H6_opn Why do you say this? *[PROBE FOR SPECIFICS]*

H7 Do you have any suggestions on what the administrators of the program(s) could do to increase the sales of CFLs in the "hard-to-reach" lighting markets?

1 Yes
2 No *[SKIP TO H9]*

-8	Don't know/Not sure/Can't remember	*[SKIP TO H9]*
-9	Refused	*[SKIP TO H9]*

H8 What suggestions do you have? *[DO NOT READ; ALLOW MULTIPLE RESPONSES]*

For H8_1 through H8_9:

0	Not mentioned
1	Mentioned
-6	Programmed skip

H8_1 Offer larger rebates/incentives on CFLs
H8_2 Provide customer education
H8_3 Provide retailer education
H8_4 Provide more multilingual information
H8_5 Get more discount stores into program
H8_6 Get more small, ethnic grocery stores into program]
H8_7 Other *[Specify]*
H8_8 Don't know/Not sure/Can't remember
H8_9 Refused
H8_7_opn Other specify response from H8_7

H9 Please estimate what percentage of your customers you would consider low-income?

__	Record percentage
-8	Don't know/Not sure/Can't remember
-9	Refused

H10 Please estimate what percentage of your customers do not speak English as a primary language?

__	Record percentage
-8	Don't know/Not sure/Can't remember
-9	Refused

H11 Please estimate what percentage of your customers are members of a racial or ethnic minority group?

__ Record percentage
-8 Don't know/Not sure/Can't remember
-9 Refused

PROMOTING LED BULBS

SP1 *[IF <LED BULB DB> = 0 AND P7 ≠ 1 ELSE SKIP TO SP2]* According to our records and your previous responses your store currently does not sell any LED bulbs? Why doesn't your store offer this product? *[DO NOT READ; ALLOW MULTIPLE RESPONSES]*

For SP1_1 through SP1_11:

0 Not mentioned
1 Mentioned
-6 Programmed skip

SP1_1 They are too expensive for our customers
SP1_2 They don't fit well with the rest of our product line
SP1_3 They don't sell well
SP1_4 We've had quality/performance problems with them in the past
SP1_5 Our customers are not interested in them
SP1_6 We're not familiar/comfortable enough with these products
SP1_7 There's limited availability of them
SP1_8 Your info is incorrect, I do sell LED bulbs [SKIP TO SP2]
SP1_9 Other reasons *[Specify]*
SP1_10 Don't know/Not sure/Can't remember
SP1_11 Refused

SP1_9_opn Other specify response from SP1_9

SP2 *[IF <LED BULB DB> = 0 AND P7 ≠ 1 SKIP TO SP9]* According to our records and your previous responses your store currently sells LED bulbs. Within the past year would you characterize sales of these products as being excellent, good, fair, or poor?

1 Excellent
2 Good
3 Fair

4 Poor
5 Your info is incorrect, I do not sell LED bulbs *[GO BACK TO SP1]*
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

SP2a Of the LED bulbs that you currently sell, which one type or model sell the best? *[ONLY ALLOW ONE RESPONSE]*

1 General Use LEDS (A-lamp, Globes, typically medium base LEDs)
2 Spotlight LEDs (including floodlight/ reflector LEDs e.g., BR-40, R-30, PAR-30, MR-16 LEDs)
3 Decorative LEDs
4 Nightlight LEDS (e.g., C-7 and C-9 LEDs)
5 Holiday LEDs
6 Other *[Specify]*
7 Only sell one LED type *[SKIP TO SP2c]*
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

SP2a_6_opn Other specify response from SP2a

SP2b Of the specialty LED bulbs that you currently sell, which one type or model sell the worst? [ONLY ALLOW ONE RESPONSE]

1 General Use LEDS (A-lamp, Globes, typically medium base LEDs)
2 Spotlight LEDs (including floodlight/ reflector LEDs e.g., BR-40, R-30, PAR-30, MR-16 LEDs)
3 Decorative LEDs
4 Nightlight LEDS (e.g., C-7 and C-9 LEDs)
5 Holiday LEDs
6 Other *[Specify]*
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

SP2B_6_opn Other specify response from SP2b

SP2c What factors or barriers prevent more of these LED bulbs from being sold? *[DO NOT READ LIST. ALLOW MULTIPLE RESPONSES]*

For SP2c_1 through SP2c_10:

0	Not mentioned
1	Mentioned
-6	Programmed skip

SP2c_1	They are too expensive for our customers
SP2c_2	They don't fit well with the rest of our product line
SP2c_3	They don't sell well
SP2c_4	We've had quality/performance problems with them in the past
SP2c_5	Our customers are not interested in them
SP2c_6	We're not familiar/comfortable enough with these products
SP2c_7	There's limited availability of them *[Specify]*
SP2c_8	Other reasons *[Specify]*
SP2c_9	Don't know/Not sure/Can't remember
SP2c_10	Refused

SP2C_7_opn Other specify response from SP2c_7

SP2C_8_opn Other specify response from SP2c_8

SP2d Do you think retail prices for LED bulbs over the next few years will go up, go down, or stay about the same?

1	Prices will go up
2	Prices will go down
3	Prices will stay about the same
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

SP3_opn *[IF SP2D = 1, 2 OR 3 ELSE SKIP TO SP4]* Why do you say this?

SP4 The Massachusetts ENERGY STAR lighting program has tried to promote LED bulbs over the past year. Using a scale of zero to ten where zero means "not very effective at all" and ten means "very effective" and how would you rate the effectiveness of these efforts?

__ Record effectiveness rating
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

SP5_opn Why do you say this?

SP6 The program currently offers average buydown discounts for LED bulbs of about $18 per bulb. Do you think these incentive levels are adequate to move consumer demand for all LED bulbs, some LED bulbs, or not any LED bulbs?

1 Yes, for all LED bulbs
2 Yes for some LED bulbs, not for others
3 No, not for any LED bulbs
-6 Programmed skip
-8 Don't know/Not sure/Can't remember
-9 Refused

SP7 *[IF SP6 = 2 ELSE SKIP TO SP8]* For which types of LED bulbs do you think the buydown discounts need to be increased?

For SP7_1 through SP7_5:

0 Not mentioned
1 Mentioned
-6 Programmed skip

SP7_1 A-line/A-lamp/A19 LED bulbs
SP7_2 Par 30/Par 38 LED bulbs
SP7_3 Other *[Specify]*
SP7_4 Don't know/Not sure/Can't remember
SP7_5 Refused

SP7_3_opn Other specify response from SP7_3

Note: Changed from a numeric to an open ended question on 12/12/12
SP8_opn_opn *[IF SP6 = 3 ELSE SKIP TO SP9]* What incentive levels do you think are needed to move consumer demand for these products? [IF NEEDED, REMIND THAT THE CURRENT AVERAGE BUYDOWN AMOUNT IS $18.]

Note: Added response categories on 12/12/12

SP9 If the Program Administrators wanted to increase retail sales of LED bulbs over the next few years, do you have any suggestions as to best ways for them to do this? *[DO NOT READ; ALLOW MULTIPLE RESPONSES]*

For SP9_1 through SP9_11:

0	Not mentioned
1	Mentioned

SP9_1 No suggestions
SP9_2 Offer larger rebates/incentives on LED bulbs to the retailer/supplier
SP9_3 Provide customer education about LED bulbs
SP9_4 Provide retailer education about LED bulbs
SP9_5 Improve the quality/performance of these LED bulbs
SP9_6 Make these LED bulbs more available
SP9_7 Other *[Specify]*
SP9_8 Don't know/Not sure/Can't remember
SP9_9 Refused
SP9_10 Make the bulbs more affordable for the consumer
SP9_11 Encourage the manufacturer to make the bulbs cheaper

SP9_7_opn Other specify response from SP9_7

LED BULB PRICING

C1 *[IF <LED BULB DB> = 0 AND P7 ≠ 1 SKIP TO S1, IF <LED BULB DB> = 0 AND P7 = 1 SKIP TO C3 (Skip added on 12/18/12)]* Now I would like to ask you a few questions about your LED bulb pricing. For the LED bulbs that you sell through the program, do you know how your company determines the retail prices for these products?

1	Yes	
2	No	*[SKIP TO C3]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO C3]*
-9	Refused	*[SKIP TO C3]*

C2 How are these retail LED bulb prices determined? *[DO NOT READ; ALLOW MULTIPLE RESPONSES]*

For C2_1 through C2_6:

0 Not mentioned
1 Mentioned
-6 Programmed skip

C2_1 Based on competitor's pricing
C2_2 Standard discount off LED bulbs not discounted by program
C2_3 Doubling the wholesale price (keystone pricing)
C2_4 Other *[Specify]*
C2_5 Don't know/Not sure/Can't remember
C2_6 Refused

C2_4_opn Other specify response from C2_4

C3 Are the regular retail prices for your LED bulbs, not counting any discounts from the program or any other sources, higher, lower, or about the same as they were two years ago?

1	Higher	
2	Lower	
3	About the same	*[SKIP TO C4]*
4	We were not selling LED bulbs two years ago	*[SKIP TO C4]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO C4]*
-9	Refused	*[SKIP TO C4]*

C3A What do you think might be causing this change in prices? *[DO NOT READ. ALLOW MULTIPLE RESPONSES]*

For C3A_1 through C3A_8:

0	Not mentioned
1	Mentioned
-6	Programmed skip

C3A_1 Higher raw material/components costs
C3A_2 Changes in production volumes
C3A_3 Higher labor costs
C3A_4 Improvements in manufacturing processes/technology
C3A_5 Increases in competition among manufacturers
C3A_6 Other *[Specify]*
C3A_7 Don't know/Not sure/Can't remember
C3A_8 Refused

C3A_6_opn Other specify response from C3A_6

C4 *[IF <LED BULB DB> =1 AND P8=1 ELSE SKIP TO C5]* You indicated earlier that you sold LED bulbs both through the program and outside the program. On a per-bulb basis, on average how much higher are the retail prices for these non-program LED bulbs than the LED bulbs that you sell through the program?

__	RECORD ESTIMATE IN $/BULB	*[SKIP TO C5]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO C5]*
-9	Refused	*[SKIP TO C5]*

C5 *[IF <LED BULB DB> = 0 SKIP TO ME1]* When the program is providing upstream buydown or markdown discounts for the LEDs that you sell, does your company ever provide any of its own price discounts in addition to those provided by the program?

1	Yes	
2	No	*[SKIP TO ME1]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO ME1]*
-9	Refused	*[SKIP TO ME1]*

C6 What is the typical range of these additional discounts on a $ per bulb basis?

__	RECORD ESTIMATE IN $/BULB
-6	Programmed skip
-8	Don't know/Not sure/Can't remember
-9	Refused

OTHER POSSIBLE PROGRAM/MARKET EFFECTS

ME1 The program has been offering rebates on LED products since 2011. Have these programs had any effects on the variety of LED products that you sell in Massachusetts?

1	Yes	
2	No	*[SKIP TO ME3]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO ME3]*
-9	Refused	*[SKIP TO ME3]*

ME2 What effects has the program had on the types of LED products you sell? *[DO NOT READ; ALLOW MULTIPLE RESPONSES]*

For ME2_1 through ME2_5:

0	Not mentioned
1	Mentioned
-6	Programmed skip

ME2_1	We sell a greater variety of LED products since joining the program
ME2_2	We sell a lesser variety of LED products since joining the program
ME2_3	Other *[Specify]*
ME2_4	Don't know/Not sure/Can't remember
ME2_5	Refused

ME2_3_opn Other specify response from ME2_3

ME3 Have the Massachusetts lighting rebate and discount programs had any effects on how you promote the LED products that you sell in Massachusetts?

1	Yes	
2	No	*[SKIP TO S1]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S1]*
-9	Refused	*[SKIP TO S1]*

ME4_opn How have these lighting rebate and discount programs affected the way you promote these LED products?

PROGRAM SATISFACTION

We're almost done here. Finally I want to get your feedback on this program.

S1 *[IF I7 = 1 ELSE SKIP TO S3]* Using a scale of one to five where five equals "very satisfied" and one equals "very dissatisfied," how satisfied have you been with the process of reserving and ordering these program-discounted CFLs and LEDs?

1	Very dissatisfied	
2		
3		
4		*[SKIP TO S3]*
5	Very satisfied	*[SKIP TO S3]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S3]*
-9	Refused	*[SKIP TO S3]*

S2_opn Why are you less than satisfied with this process?

S3 *[IF <LED BULB DB> = 1 ELSE SKIP TO S7]* Using a scale of one to five where five equals "very satisfied" and one equals "very dissatisfied,", how satisfied have you been with the availability of these program-discounted LED bulbs? *[REMIND RESPONDENT OF SATISFACTION SCALE, IF NECESSARY]*

1	Very dissatisfied	
2		
3		
4		*[SKIP TO S7]*

5	Very satisfied	*[SKIP TO S7]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S7]*
-9	Refused	*[SKIP TO S7]*

S5 Are there certain types of LED bulbs that you have greater concern about availability than others?

1	Yes	
2	No	*[SKIP TO S7]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S7]*
-9	Refused	*[SKIP TO S7]*

S6 Which types? *[INDICATE ALL THAT APPLY]*

For S6_1 through S6_5:

0	Not mentioned
1	Mentioned
-6	Programmed skip

S6_1 A-line/A-lamp/A19 LED bulbs
S6_2 Par 30/Par 38 LED bulbs
S6_3 Other
S6_4 Don't know/Not sure/Can't remember
S6_5 Refused

S6_3_opn Other specify response from S6_3

S7 Are the rules for participating in the program clear?

1	Yes	*[SKIP TO S9]*
2	No	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S9]*
-9	Refused	*[SKIP TO S9]*

S8_opn Which program rules are not clear?

S9 Have you ever interacted with the staff or contractors who work with the program?

1	Yes	
2	No	*[SKIP TO S12]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO S12]*
-9	Refused	*[SKIP TO S12]*

S10 Using a scale of one to five where five equals "very satisfied" and one equals "not satisfied at all," how satisfied have you been with the way that program staff or contractors responded to your questions and requests?

1	Not satisfied at all	
2		
3		
4		*[SKIP TO S12]*
5	Very satisfied	*[SKIP TO S12]*
-6	Programmed skip	
-8	Don't know/Not sure/Can't remember	*[SKIP TO S12]*
-9	Refused	*[SKIP TO S12]*

S11_opn Why are you less than satisfied with the program staff or contractors?

S12 Using a scale of one to five where five equals "very satisfied" and one equals "not satisfied at all," how satisfied have you been with program as a whole? *[IF NECESSARY, REMIND RESPONDENT OF SATISFACTION SCALE]*

1	Not satisfied at all	
2		
3		
4		*[SKIP TO S13A]*
5	Very satisfied	*[SKIP TO S13A]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO S13A]*
-9	Refused	*[SKIP TO S13A]*

S13_opn Why are you less than satisfied with the program?

S13A The program is looking for ways that lighting retailers could become more involved in marketing this program. Do you have any ideas on how this might be done?

1	Yes	
2	No	*[SKIP TO S14]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO S14]*
-9	Refused	*[SKIP TO S14]*

S13B_opn What ideas do you have?

S14 Do you have any other suggestions on how this program could be improved?

1	Yes	
2	No	*[SKIP TO S16]*
-8	Don't know/Not sure/Can't remember	*[SKIP TO S16]*
-9	Refused	*[SKIP TO S16]*

S15_opn What suggestion do you have?

S16 Will you participate in this program in the future?

1	Yes	[THANK AND TERMINATE]
2	No	
-8	Don't know/Not sure/Can't remember	

S17_opn Why not?

END RESPONDENT COMMENTS

1	Yes *[Specify]*
2	No

END_1_opn Specific comments from End