SCS ANALYTICS

R1963b SHORT TERM RESIDENTIAL LIGHTING REPORT FINAL

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ABSTRACT

The R1963b: Short Term Residential Lighting Analysis measured the availability and pricing of key light bulb types across a wide range of CT retailers and investigated the progression of federal standards for light bulbs. The research aims to determine the viability of continued promotion of residential lighting products. The study offers three recommendations:

1) Discontinue promotion of products at Club Stores where the product choice landscape already favors efficient LED products (no baseline products are sold) and redirect those efforts toward retailers where baseline products are a viable option for customers.
2) Review and refine the incentive strategies utilized in the program in the following ways:
    a. For Non-Discount retailers, size incentives and design more targeted strategies to promote products based on the pricing and availability information and first cost differentials between LEDs and baseline products established in this study.
    b. For Discount retailers, ensure that incentives are aggressive compared to the other retailers in the program.
3) Reduce incentives from products where the current levels *exceed* the incremental first cost between LEDs and baseline products (in 4 of 6 retail channels for 65W equivalent directional bulbs) unless there is some other compelling barrier to overcome.

These recommendations and the following key findings were established by gathering and analyzing: a) shelf stocking data, b) program tracking data, and c) documentation from two key DOE rulemaking decisions and subsequent lawsuits filed against DOE regarding those decisions. The key findings from this study are:

- **Baseline products are widely available.** First tier EISA compliant baseline halogen and incandescent bulbs for all shapes included in this study (A-Line, G25 Globe, Candelabra, and BR30 Directional bulbs) are widely available in the CT market (e.g. DIY, Food Market, Hardware/Lumber, & Mass Merchants).
- **LED products are more expensive.** Nearly all LED product types[1] are priced higher before program incentives than their first tier EISA compliant baseline counterparts.
- **Incentive strategy is not closely related to incremental cost.** Program incentives are not sized according to the incremental first cost between LEDs and their corresponding baseline products. The fraction of incremental first cost covered by program incentives ranged from 24% to 232% across all retailers and product types.
- **Baseline products are likely to remain in the market.** Petitions against the DOE regarding rulemaking decisions in 2019 are making their way through the US Court of Appeals for the Second Circuit. A decision may be issued in the first case late in 2020. While this process continues, baseline products will remain available in the market.

[1] Exceptions at 80% significance: 65W Eq. BR30 bulbs in Hardware/Lumber and 40W Eq. Globes in Discount.

EXECUTIVE SUMMARY

This report presents results from *R1963b: Short Term Residential Lighting Analysis*. The study gathered and analyzed information on product availability and pricing for key product types across a wide range of CT retailers, program tracking data (esp. incentives), and the progression of federal standards for light bulbs. The primary research goals were to establish the opportunity for continued promotion of residential lighting products through the Energize CT program and recommend promotional strategy modifications that will help the program adapt to changing market conditions. A companion study, *R1963a*, which included review of program tracking data, other market data, and depth interviews with suppliers and stakeholders, is available under separate cover.

METHODOLOGY

This study included three research tasks:

- **Product Availability and Pricing Study.** A new method of shelf inventory was introduced in this research. At each of 30 retailers representing six retail channels (club, discount, DIY, food market, hardware/lumber, and mass merchants), product pricing and characteristic information was gathered for 25 key product types (see Table 4). Within each of these product types, a single product SKU was inventoried to exemplify the type. Information was collected for both LED products and first tier EISA compliant baseline halogen or incandescent products for comparison. An incremental first cost between the non-program LED price and the price of the baseline product was calculated for each product type in each retail channel, where possible. This incremental cost is a primary measure for continued program involvement with these products.
- **Program Tracking Data Analysis.** Program incentive levels were compiled for program SKUs that fall within the LED product types described above. Sales weighted average incentive levels were calculated for each of these product types and compared to the incremental first cost between LEDs and baseline products. This comparison generated valuable feedback on program design.
- **Monitor Progression of Federal Standards.** Two key DOE determinations were finalized in 2019. The first rule caused the definitions of general service lamps (GSLs) and general service incandescent lamps (GSILs) to revert to those in place prior to January 2017. The second determination found that the federal standards for GSILs was not "economically justified." Both rules are being challenged in the US Court of Appeals for the Second Circuit. The implications of these developments are presented in this report.

KEY FINDINGS

Product Availability

- Baseline incandescent and halogen products are widely available in DIY, Food Markets, Hardware/Lumber, and Mass Merchants, especially for general purpose A-Line bulbs.
- LED products are widely available in all retail channels.
- Discount stores[2], except Dollar stores, do not carry baseline products and primarily only carry LED products that are "brought in" by the Energize CT program.
- Club stores do not carry baseline products of any type.
- 25W equivalent LEDs and baseline specialty products (G25 Globes and Candelabra) are less commonly available across all retail channels than brighter bulbs (esp. 40W equivalent).
- Dimmable LED BR30 directional products and their corresponding baseline incandescent bulbs are widely available across all retail channels. Non-dimmable BR30 products are rarely available.

Product Pricing

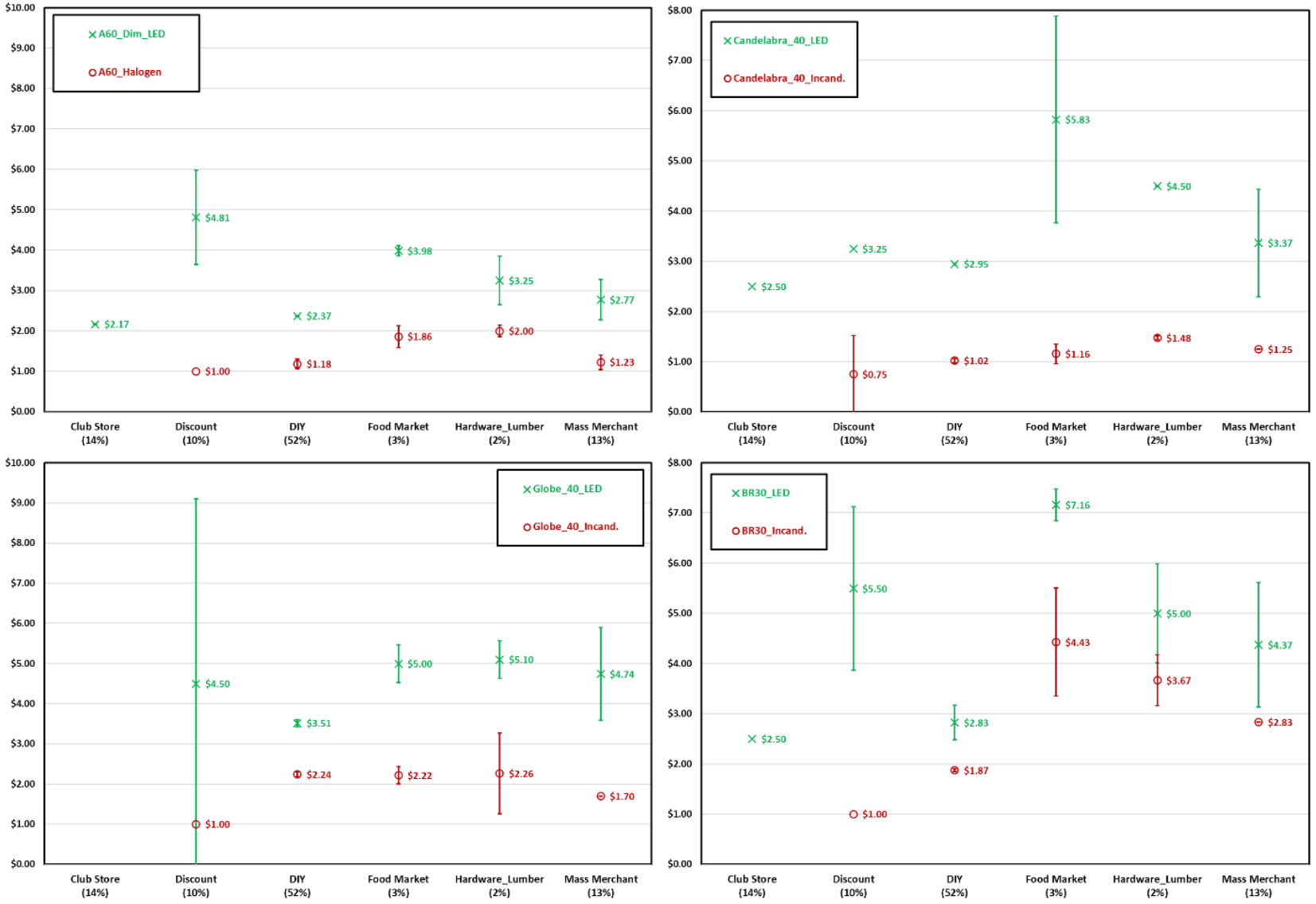
Figure 1[3] shows the non-program pricing for select LEDs and baseline halogen/incandescent products (from upper left through to bottom right: 60W equiv. A-Line, 40W equiv. Candelabra, 40W equiv. G25 Globe, and 65W equiv. BR30 Directional). Pricing for all products included in the study are available in the main body of the report. Key findings regarding product pricing are:

- LED products are significantly more expensive before program incentives than their baseline halogen/incandescent counterparts in all but two specific cases (40W equiv. Globe in Discount retailers and BR30 Directional bulbs in Hardware/Lumber).
- Non-program pricing for both LEDs and baseline products tends to be higher in Food Markets and Hardware/Lumber channels than the other retail channels.
- Non-program pricing increases with brightness for LEDs and baseline products within each retail channel, except baseline incandescent Candelabras which tend to have similar pricing across brightness levels.
- Baseline product pricing for each product type tends to be more similar across different retail channels than the LED non-program pricing for the same product type.

[2] Discount stores included: all Dollar stores (Dollar General, Dollar Tree, Dollar-N-Things, Dollar Magic, etc.), Goodwill, Habitat for Humanity Restore, Ollie's Bargain Stores, Ocean State Job Lots, Salvation Army, and other miscellaneous discount retailers (e.g.: A Buck and Up, St. Vincent DePaul, Bargain Outlet).

[3] Larger versions of these figures are available later in the report in Sections 3.2.1-3.2.4.

Figure 1. Non-Program Pricing for Select Products *,+



* Non-Program Pricing for LEDs is the price before program incentive is applied. + Percentages on horizontal axis labels show the distribution of program incentives for 2019.

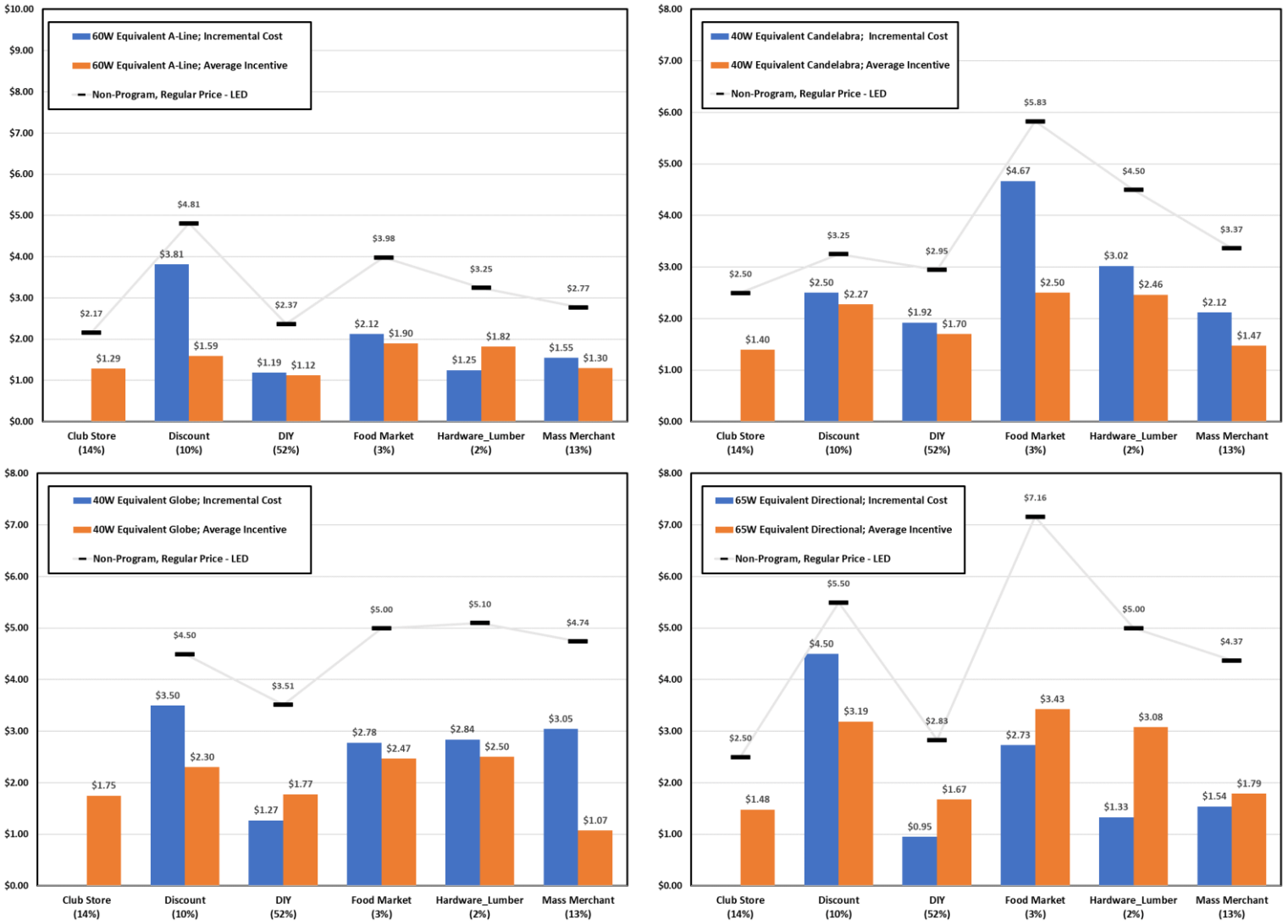
Incentive Levels[4]

Figure 2[5] shows incentive levels for select LEDs and baseline halogen/incandescent products compared to the incremental first cost between LEDs and their baseline counterparts (from upper left through to bottom right: 60W equiv. A-Line, 40W equiv. Candelabra, 40W equiv. G25 Globe, and 65W equiv. BR30 Directional). These same results for all products included in the study are available in the main body of the report. Key findings from these comparisons are:

- Incentives are nearly equal to or exceed (as in the case of Hardware/Lumber) the incremental first cost for 60W equivalent A-Line bulbs (55% of 2019 program sales) across all retail channels except Discount retailers.
- Incentive levels *exceed* the incremental first cost for 65W equivalent BR30 Directional bulbs (11% of 2019 program sales) in *all* retail channels except Discount where the incremental first cost is highest.
- Incentives are lower in Discount retailers than in Food Market and Hardware/Lumber retailers for several product types (60W A-Lines, 40W Candelabras, 40W G25 Globes) despite the commonly larger incremental first costs in the Discount channel.
- Incentives as a fraction of incremental first cost are lower in the Mass Merchant than DIY channels for several product types (all A-Lines, 40W and 60W Candelabras, 40W G25 Globes, and 65W BR30 Directional).
- Factors beyond the first cost appear to affect the purchase of the popular 60W equiv. A-Line bulbs. Although incentives are equal to or exceed the incremental first cost, LEDs constitute only about ½ (53%) of sales.[6] This could indicate that there is some unaddressed barrier/challenge beyond first cost preventing LEDs from achieving overwhelming market share.

[4] In this section and throughout the report, "Incentive level(s)" refers to the sales weighted average incentive level for the category under consideration.
[5] Larger versions of these figures are available later in the report in Sections 3.3.1-3.3.4.
[6] NMR Group, 2020. "R1963a: Short Term Residential Lighting Report." Prepared for CT EEB. https://www.energizect.com/sites/default/files/R1963a%20Short-term%20Lighting%20Report%202020%2009%2011%20FINAL.pdf.

Figure 2. Program Incentives Compared to Incremental First Cost for Select Products *,+



* Non-Program Pricing for LEDs is the price before program incentive is applied.

+ Incremental first cost is between non-program price for LEDs and corresponding first tier EISA complaint baseline products.

Progression of Federal Standards

Two major developments in the DOE rulemaking process have significant implications for the kinds of light bulbs that will continue to be available for purchase in the U.S. market. First, the withdrawal of January 2017 revised definitions of General Service Lamps (GSLs) and General Service Incandescent Lamps (GSILs). Second, the determination late in December 2019 that new standards for GSILs were not "economically justified." Challenges to these actions are the subjects of two petitions making their way through the U.S. Court of Appeals for the Second Circuit. As of June 15, 2020, arguments for the first petition (regarding definitions) have been filed with the court. The second petition is being held in abeyance while the first petition is decided. A decision in the first case is not expected until late 2020.

For the next year or two, baseline product availability will remain unchanged in the U.S. market based on the federal standards.

RECOMMENDATIONS

Program Recommendations

Based on the results above and the more detailed results in the following sections, the study offers the following program recommendations:

1) Discontinue promotion of products at Club Stores where the product choice landscape already favors efficient LED products (no baseline products are sold) and redirect those efforts toward retailers where baseline products are a viable option for customers.
2) Review and refine the incentive strategies utilized in the program in the following ways:
    a. For Non-Discount retailers, size incentives and design more targeted strategies to promote products based on the pricing and availability information and first cost differentials between LEDs and baseline products established in this study.
    b. For Discount retailers, ensure that incentives are aggressive compared to the other retailers in the program.
3) Reduce incentives from products where the current levels *exceed* the incremental first cost between LEDs and baseline products (in 4 of 6 retail channels for 65W equivalent directional bulbs) unless there is some other compelling barrier to overcome.

Table 1 below offers some tailored suggestions for program efforts based on the product availability and pricing and program incentive analysis completed in this research.

Table 1. Tailored Program Suggestions

Retail Channel	Suggestion
All Channels	**GENERAL SUGGESTIONS** • Make sure that **program incentive strategies are sized to first cost differentials** in a way that achieves program goals without overspending. • **Program Tracking Data:** For all SKUs promoted through the program: (1) Add fields to the program data tracking systems that identify product subtype and equivalent wattage. (2) Accurately track the non-program price and the program adjusted price. All these values are present in the MOU product tables negotiated for the program. They should also be in the program tracking systems. **DETAILED SUGGESTIONS** • Consider discontinuing promotion of 5/6" LED retrofit kits. These products are much more expensive than BR30 Directional Bulbs and accomplish very nearly the same lighting task. • Consider simplifying promotional efforts for A-Line products to focus on 60W and 100W equivalents. • Make sure that overall funding and product level incentives are adequate for 100W A-Line LEDs. • Focus program efforts on the 40W equivalent level for G25 Globe LEDs. • Focus program efforts on both the 40W and 60W equivalent level for Candelabra LEDs.
Club Stores	Discontinue the promotion of products at Club Stores due to the lack of competition with baseline products in these retailers.
DIY	Consider a more targeted approach to selecting products for promotion through the program based on product availability, incremental first costs, and competition with baseline products rather than the widespread promotional approach that has been utilized in the past.
Discount	Continue the strategy of working with program partners to "bring-in" product that would not otherwise be sold in discount retailers. Focus efforts on 60W and 100W equivalent A-Line LEDs, 40W G25 Globes, 40W and 60W Candelabras, and 65W BR30 Directional LEDs. There could also be some bulb types (e.g. 90W equiv. PAR LED lamps) that were not investigated in this study that could be considered for promotion in the Discount channel.
Food Markets and Hardware/Lumber	Continue promoting product that is commonly stocked in these channels using the suggestions above. Consider working with program partners to develop more special opportunities for deeply discounted products to be "brought-in" to these locations for off-shelf and on-shelf opportunities.
Mass Merchant	Program strategy in Mass Merchant should be nearly equivalent to the strategies utilized in DIY. Incentive levels should be equally aggressive in both of these retail channels.

Future Research

This research project (*R1963b*) demonstrates the value of targeted shelf inventory data collection to inform program planning. Future research could be altered in the following ways to obtain more robust results with a similar level of effort:

- Sample sizes can be expanded in retail channels where greater variability in product pricing exists (e.g. Discount, Food Markets, Hardware/Lumber).
- Sample sizes can be reduced in the Club Store, DIY, and Mass Merchant channels further leveraging the homogeneity of product availability and pricing in these retailers.
- Drug Stores could be sampled directly and added to the sample design. Although Drug Stores represent a small fraction of total program sales (1.4%), useful trends could be observed.

Additionally, future research using nearly the same data collection methods could be designed to address program evaluation goals. For example:

- Program LED SKUs could be selected for inventory and analyzed to:
    - Ensure that program pricing is correct.
    - Measure the fraction of program incentives that are passed on to customers.
    - Capture and verify "was/now" pricing.
    - Verify the proper use of program labeling on individual SKUs.
    - Capture the product placement of program SKUs (e.g. shelf level, endcap, off-shelf).
- Display inventory could be completed to ascertain the prevalence and effectiveness of program point-of-purchase signage and other material.

1. INTRODUCTION

This report provides results from project *R1963b: Short Term Residential Lighting Analysis*. The primary goal of the overall R1963 study is to provide a characterization of the residential lighting market in Connecticut especially in light of the uncertainty caused by the implementation of the second phase of the EISA (2007) standards and product definitions established by the DOE in the rulemaking process for lighting products. A second study (*R1963a*, by NMR Group) analyzes program activity over the past several years compared to other data sources (esp. CREED LightTracker Data) and interviews with residential lighting stakeholders is being completed under separate cover.

Three primary activities were completed in this study (*R1963b*):

a) A targeted product availability and pricing study for CT retailers for key, high sales volume lighting product types.
b) An analysis of program incentives for the key product types included in this study.
c) Monitoring the progression of the DOE Rulemaking for General Service Lamps (GSLs).

Through these efforts, the study has accomplished the following study objectives:

- Establish the availability of both efficient LED and their baseline counterparts in a wide range of retailer types throughout the Connecticut market.
- Establish non-program pricing (price before incentives) for key, high sales volume light bulb types.
- Measure incremental first costs between LED bulbs and their first tier EISA complaint baseline counterparts.
- Analyze program tracking data to determine sales weighted average incentive levels for efficient LED products sold through the program in 2019.
- Compare program incentives to the incremental first cost as a metric of program design performance.
- Track developments in critical DOE decisions on lighting product definitions and whether to update standards for General Service Incandescent Lamps (GSILs).
- Monitor petitions filed against the DOE in the U.S. Court of Appeals for the Second Circuit regarding both of those decisions.

The remainder of this report describes the methodology and results from the research.

2. METHODOLOGY

2.1 SAMPLE SELECTION

The sample of retail locations to be included in the product availability and pricing study was designed to be representative of the full market and program efforts. 2019 YTD Eversource program sales data (through September) were used for sample selection (See Table 2 below).

Techniart event promotions and pop-up retail efforts represent non-traditional retail sales. Those sales were removed from consideration when developing the sample for this study.

Table 2. YTD 2019 Eversource Program Participation Data

Retailer Type	# of Locations	TOTAL	% of Total	Bulbs/Location	% Total (w/o Techniart)
Club Store+	15	**405,261**	14.2%	**27,017**	14.5%
Discount	166	**336,127**	11.8%	**2,025**	12.0%
Drug Store	188	**38,848**	1.4%	**207**	1.4%
Food Market	135	**74,810**	2.6%	**554**	2.7%
Hardware/Lumber	81	**80,997**	2.8%	**1,000**	2.9%
Lighting Showroom	3	**68,107**	2.4%	**22,702**	2.4%
Miscellaneous	28	**40,802**	1.4%	**1,457**	1.5%
National Retailers+	73	**1,744,746**	61.2%	**23,901**	62.5%
Techniart	1	**63,059**	2.2%	**63,059**	
TOTAL	**690**	**2,852,757**	100.0%		100.0%

+ Club Stores: BJ's Wholesale, Costco, Sam's Club. National Retailer Chains: Home Depot, Lowe's, Target, Wal-Mart.

The sample design (Table 3) leveraged the homogeneity within each national retailer (e.g. Home Depot, Lowe's, Target, Walmart) to represent over 60% of program activity with approximately one-third of the sample. For Club Stores and each National Retailer, two locations were chosen within Eversource's territory and one location within UI's territory to ensure representation within both utility service territories. Food Stores and Drug Stores were combined into a single category. In all cases, sample store locations were selected randomly with probability proportional to size (YTD 2019 Eversource bulb sales).

Table 3. On-Site Shelf Inventory Sample Design

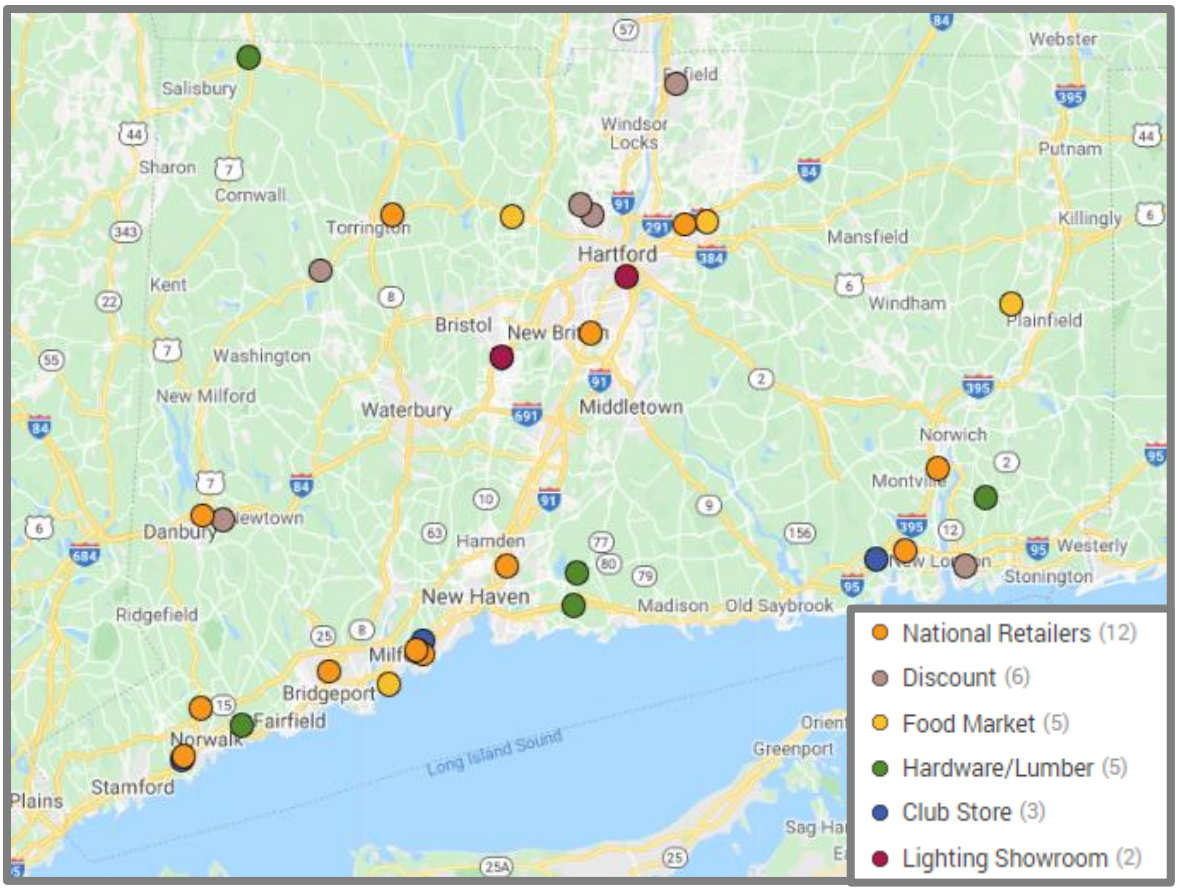
Retailer Type	Sample	Notes
Club Store+	3	2 from Eversource; 1 UI [sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
Discount	6	[sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
Drug Store/ Food Market*	5	[sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
Hardware/Lumber	5	[sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
Lighting Showroom	2	[sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
National Retailers+	12	2 from Eversource; 1 UI - for each retail chain [sample units selected randomly with probability proportional to size (YTD 2019 Bulb sales)]
Total	**33**	

* Food Markets and Drug Stores were combined in the sample design, but since no Drug Stores were randomly selected into the sample, results are shown for Food Markets alone.

+ Club Stores: BJ's Wholesale, Costco, Sam's Club. National Retailer Chains: Home Depot, Lowe's, Target, Wal-Mart.

Figure 3 shows a map of the sample locations across the state. See Appendix A for a detailed listing of sample locations.

Figure 3. Map of Sample Locations



2.2 DATA COLLECTION METHODOLOGY

2.2.1 PRODUCT AVAILABILTY AND PRICING STUDY

This research was designed to generate product availability and pricing information for key product types to inform market conditions and program planning. Data were collected in June 2020 having been delayed from March 2020 due to CT's Covid-19 response. A new approach was used in this shelf inventory compared to other studies within the region. It was not an exhaustive shelf inventory. Rather, it aimed to show a clear representation of the differences between LED products and corresponding baseline products within key product types and retail channels primarily for program planning purposes.

For each of 25 key product types (see Table 4), a single model SKU is selected to be inventoried at each location. The individual SKUs to be inventoried were selected on-site to represent the product type much in the same way that a consumer selects exactly which SKU to purchase within a certain set of parameters around what they need. In some cases (e.g. often in Discount stores),

there was only one SKU to select within each product type. In others (e.g. DIY, Mass Merchant), there were multiple options within product types – different brands, different package sizes, different color temperatures.

Certain consumer preference characteristics such as color temperature do not affect product efficiency or pricing. As such, these were chosen arbitrarily in this study. For example, wherever possible, soft white (≈2700K) products were inventoried. Other characteristics such as brand and package size *DO* have an impact on product pricing. Where choices needed to be made between competing SKUs with these price varying characteristics, a SKU was selected based on the price information available. Two guidelines were used in these cases to make the selection: 1) the availability of non-program pricing on the shelf at the time of data collection and 2) the lowest non-program price per bulb.

The result of this selection process was to inventory products that *favorably* represent the product type without the program adjusted pricing influence. This ensured that the research gathered market data that could accurately address the research goal of assessing the future opportunity to promote residential lighting products. More information about this selection process along with a detailed example from the retail environment is provided in Appendix B.

For each SKU inventoried, additional product characteristics: bulbs per package, wattage, light output, and color temperature were captured. Retailer specific information: shelf area, regular retail price (non-program price), and program adjusted price were captured (where available). Additionally, whether the SKU was ENERGY STAR labeled or labeled by the Energize CT program was captured. The data collection instrument is included in Appendix C for specific detail on the information that was collected.

Table 4. Key Product Types

Technology	Shape	Equiv. Wattage	Dimmable?
LED	A-Line	60	Yes
		75	
		100	
		60	No
		75	
		100	
Incandescent/ Halogen	A-Line	60	Yes
		75	
		100	
LED	Globe	25	Yes
		40	
		60	
Incandescent/ Halogen	Globe	25	Yes
		40	
		60	
LED	Candelabra	25	Yes
		40	
		60	
Incandescent/ Halogen	Candelabra	25	Yes
		40	
		60	
LED	BR30 Reflector	65	Yes
LED	BR30 Reflector	65	No
LED	5/6 Retrofit Kit	75	Yes
Incandescent/ Halogen	BR30 Reflector	65	Yes

Both the non-program price and the program adjusted price were not available for some LED SKUs in some locations. In nearly all these cases, the program adjusted price is posted but not along with the non-program price. The program adjusted pricing was verified and the non-program pricing was updated in the collected data using both cross-location comparisons and MOU product table data. For example, the Manchester Home Depot location did not list the non-program price for the general-purpose dimmable A-Line LED bulbs that were inventoried. At each brightness level (60W eq. 4-pack: $5.48; 75W eq. 2-pack: $4.65; 100W eq. 2-pack: $5.23), the same EcoSmart products were inventoried at both the Uncasville and Bridgeport locations with the same program adjusted pricing AND the non-program prices (60W eq.: $9.48; 75W eq.: $7.85; 100W eq.: $8.43). This cross-location comparison was used to update the non-program price data for the Manchester location. The SKU level product information listed in program MOUs was also used to identify regular retail pricing where none was listed at retail locations.

It was not possible to complete the data collection in three stores in the sample because of Covid-19 guidelines. Connecticut Lighting Center locations participate in the program through a two-party MOU and promote LED bulbs (mostly Satco and Bulbrite). Both locations exclusively carry LED bulbs. The displays of these products are near the registers/computers where sales associates are working with customers. It was not possible to complete the data collection while maintaining physical distance and without interfering with the sales process. Data collection was also not possible at one True Value Hardware location. This is a small independent hardware store with a wide selection of Satco bulbs and some other brands. The location no longer participates in the program. It was not possible to collect data while maintaining physical distance and not interfering with sales.

2.2.2 PROGRAM INCENTIVES

Program tracking data (UI: January-December 2019; Eversource: January-September 2019) were analyzed to generate sales weighted average incentive levels for the key LED product types in this study. Unfortunately, the product characteristics available in the program tracking data were not sufficient to categorize program SKUs into the key product types used for this study (Table 4). The program tracking data capture only the highest level of product shape information: a) Directional/Downlight LED, b) General LED, c) Non-General LED, and d) Indoor Hardwired Fixture (Eversource only). To match the key product types in this research, program SKUs were researched and updated with relevant product subtype/shape and equivalent wattage information until enough SKUs to represent at least 90% of program sales were categorized.

3. RESULTS

3.1 PRODUCT AVAILABILTY

Table 5 provides a breakdown of where key product types are available in each retail channel. The values for each product type row in the table show the percent of individual locations where

products of the given type were available. The values in the top row of the table show the total number of locations in the sample for that retail channel.

National Retailers were categorized into DIY (Home Depot and Lowe's) and Mass Merchant (Target and Wal-Mart) to allow better comparison with other studies of retail programs. Food Market is represented alone since no Drug Store locations were selected into the sample. Also, there are no data on Lighting Showrooms since those locations could not be inventoried due to Covid-19 guidelines.

Table 5. Availability of Key Product Types by Retail Channel

Shape	Tech	Dim	Equiv. Watts	Club Store	Discount Store	DIY	Food Market	Hardware/ Lumber	Mass Merch.
TOTAL LOCATIONS[+]:				**3**	**6**	**6**	**5**	**4**	**6**
A-Line	LED	Yes	60	100%[*]	100%	100%	100%	100%	100%
A-Line	LED	Yes	75	[#]	33%	100%	60%	100%	100%
A-Line	LED	Yes	100	100%	83%	100%	80%	100%	100%
A-Line	LED	No	60		33%	100%	60%	100%	67%
A-Line	LED	No	75				60%	100%	67%
A-Line	LED	No	100			100%	60%	100%	67%
A-Line	Halogen	Yes	60		33%	100%	80%	100%	100%
A-Line	Halogen	Yes	75			100%	80%	100%	100%
A-Line	Halogen	Yes	100		33%	100%	80%	100%	100%
Globe	LED	Yes	25				40%	50%	50%
Globe	LED	Yes	40		33%	100%	60%	100%	100%
Globe	LED	Yes	60			100%	40%	100%	100%
Globe	Incand	Yes	25			100%	40%	75%	33%
Globe	Incand	Yes	40		33%	100%	60%	75%	50%
Globe	Halogen	Yes	60		17%	67%	40%	75%	33%
Candelabra	LED	Yes	25			100%	20%	100%	50%
Candelabra	LED	Yes	40	100%	17%	100%	60%	100%	100%
Candelabra	LED	Yes	60		17%	100%	40%	75%	100%
Candelabra	Incand	Yes	25			100%	60%	100%	17%
Candelabra	Incand	Yes	40		33%	100%	80%	100%	50%
Candelabra	Incand	Yes	60		33%	100%	80%	100%	50%
BR30 Reflector	LED	Yes	65	100%	50%	100%	60%	100%	100%
BR30 Reflector	LED	No	65					75%	17%
5/6 Retrofit Kit	LED	Yes	75	100%	17%	100%		100%	17%
BR30 Reflector	Incand	Yes	65		33%	100%	80%	100%	50%

[+] Total number of sample locations for each retail channel. [*]Vales represent percent of locations with product available.
[#] Blank cells = 0%.

Key Findings for Product Availability:

- Baseline incandescent and halogen products are widely available in DIY, Food Markets, Hardware/Lumber, and Mass Merchants, especially for general purpose A-Line bulbs.
- LED products are widely available in all retail channels.

- Discount stores, except Dollar stores, do not carry baseline products and primarily only carry LED products that are "brought in" by the Energize CT program.
- Club stores do not carry baseline products of any type.
- 25W equivalent LEDs and baseline specialty products (G25 Globes and Candelabra) are less commonly available across all retail channels than brighter bulbs (esp. 40W equivalent).
- Dimmable LED BR30 directional products and their corresponding baseline incandescent bulbs are widely available across all retail channels. Non-dimmable BR30 products are rarely available.

3.2 NON-PROGRAM PRICING

Upstream lighting programs have promoted lighting products using incentives to reduce the first cost disadvantage of efficient products compared to baseline products. A key determination of the remaining opportunity to promote LEDs is whether an incremental first cost exists between LEDs and baseline products, and if so, how large it is.

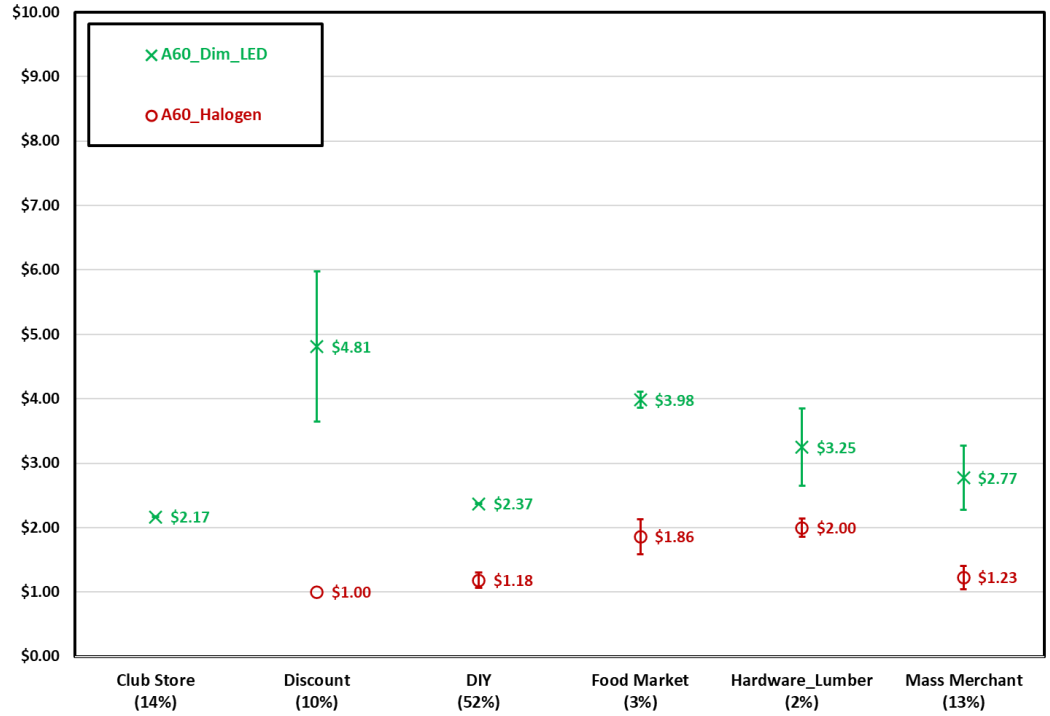
The figures in the next four sections provide the non-program pricing information (the price before program incentives) for 11 key LED product types and their corresponding baseline products. In all cases, the average non-program price per bulb from varying package configurations (based on what was inventoried for the key product type in each location) is presented. In all cases, this pricing **does not include program incentives**. Program adjusted prices for LEDs inventoried in this study are provided in Appendix D.

A reminder that pricing information in this research *does NOT* represent an average of *all* SKUs and *all* package configurations within each key product type. It is the average of the *individual* SKUs chosen to represent the key product type in each location. As such, this pricing information does not represent the full range of pricing available in the market. Rather, it aims to show a clear representation of the difference between key efficient and baseline products in the market for planning purposes.

For the figures in the following sections, the error bars reflect the 80% confidence intervals for the observations. Some product-retail channel combinations (e.g. 75W Equiv. A-Line bulbs in Discount retailers) have extremely small sample sizes and correspondingly large confidence intervals. In some other instances (e.g. Club Stores, all products; Discount store baseline products) there is little price variation across the market. Confidence intervals are small or non-existent in those cases. Table 5 above provides the sample sizes for each product and retailer combination. The fraction of total program incentives processed through the individual retail channels are shown in the horizontal axis labels to show the volume of program activity. These fractions sum to 94%. The remaining program sales are through Drug Stores (2%), Miscellaneous (1%), and Techniart (3%). Although Drug Stores were grouped together with Food Markets in the sample selection, no Drug Stores were randomly selected into the sample, so results represent Food Markets alone. LED pricing is shown in green and baseline product pricing is shown in red for all figures.

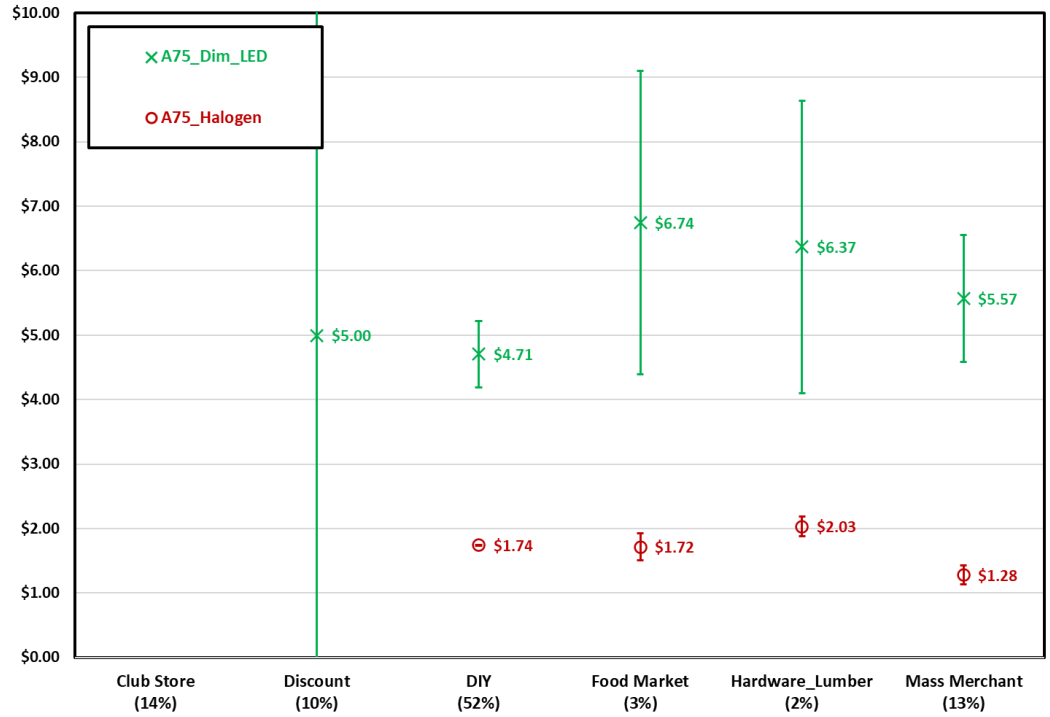
3.2.1 General Purpose (A-Line) Products

Figure 4: Non-Program Pricing: 60W Equivalent A-Line Bulbs*,+



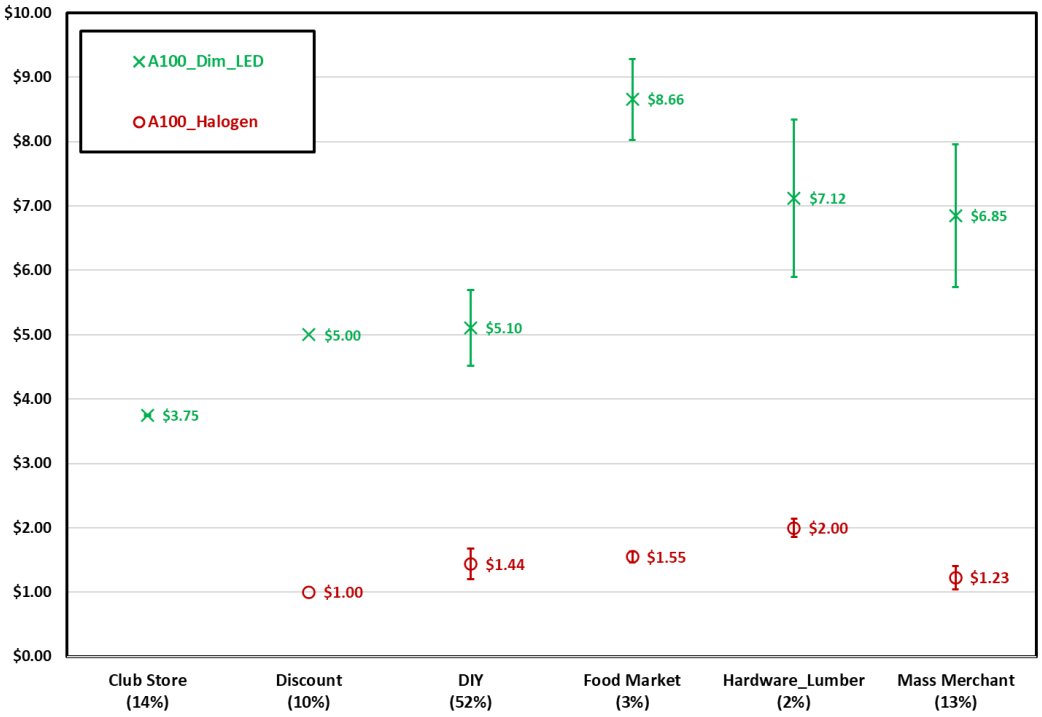
* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 5: Non-Program Pricing: 75W Equivalent A-Line Bulbs*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 6: Non-Program Pricing: 100W Equivalent A-Line Bulbs*,+



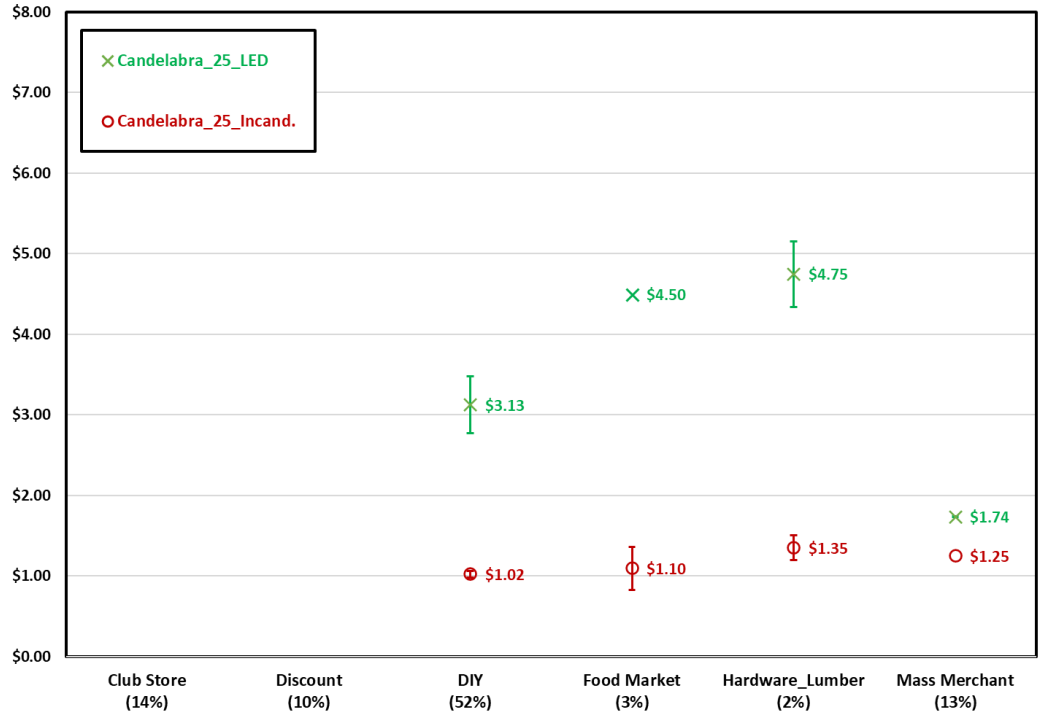
* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Detailed Findings for General Purpose (A-Line) Products:

- A-Line LED products are priced higher than their baseline halogen counterparts across all brightness levels.
- Non-program pricing for LEDs tends to be lowest in Club Stores and DIY followed by the Mass Merchant channel. LEDs are priced higher in Food Markets and Hardware/Lumber channels. Some of this difference could be caused by different package configurations found in these different retail channels.
- Baseline halogen products are similarly priced across all brightness levels and retail channels.
- The incremental first cost difference between LEDs and baseline products is larger for brighter LEDs (75W and 100W equivalent) than the more popular 60W equivalent LEDs.

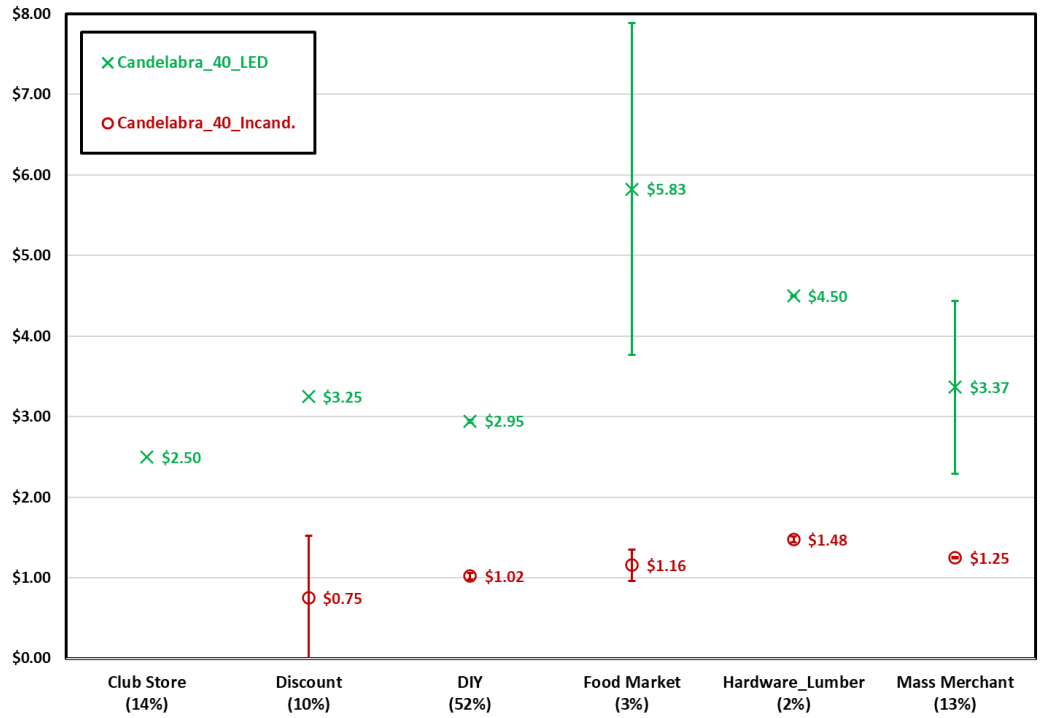
3.2.2 Candelabra Products

Figure 7: Non-Program Pricing: 25W Equivalent Candelabra Bulbs*,+



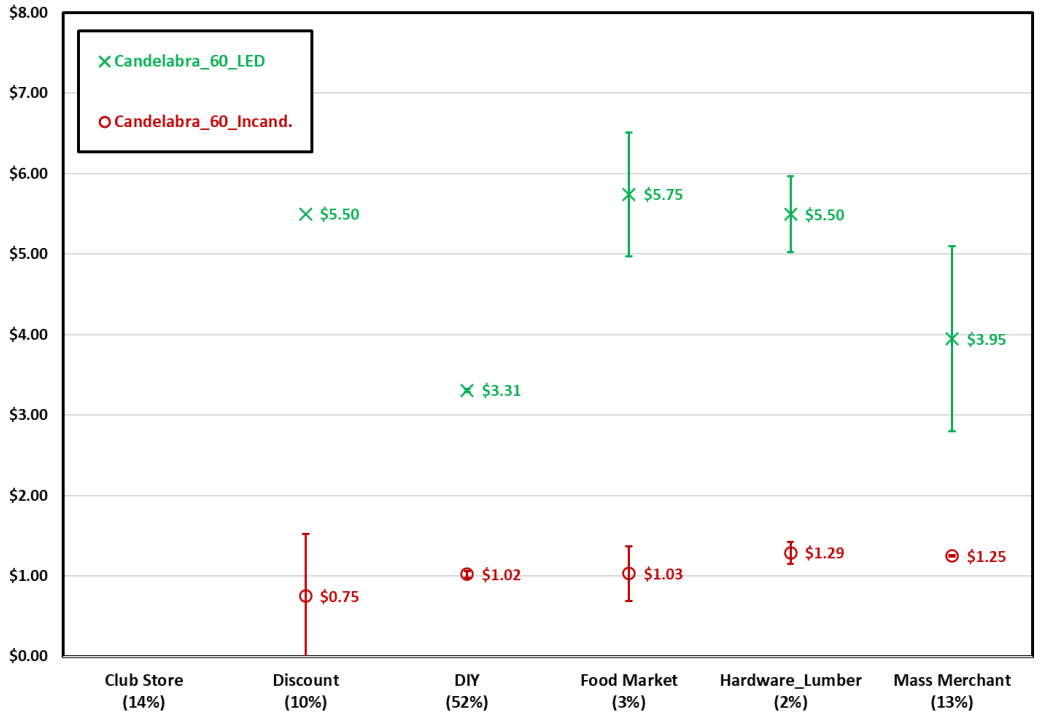
* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 8: Non-Program Pricing: 40W Equivalent Candelabra Bulbs*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 9: Non-Program Pricing: 60W Equivalent Candelabra Bulbs*,+



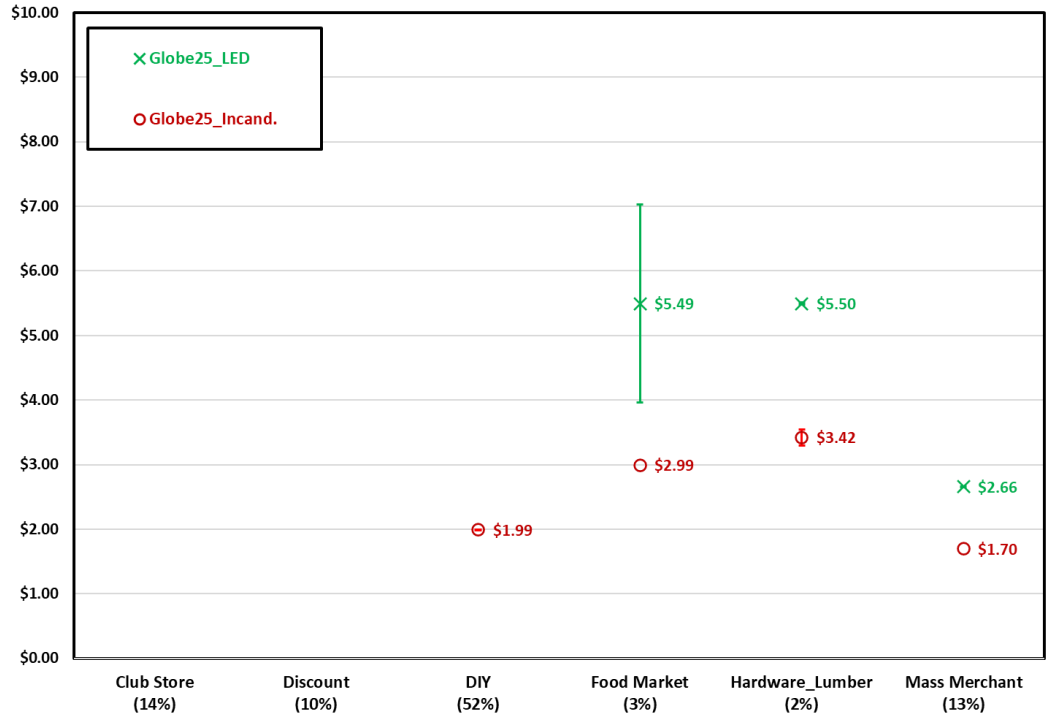
* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Detailed Findings for Candelabra Products:

- Candelabra LEDs are priced higher than their baseline incandescent counterparts across all brightness levels and retail channels.
- Similar to A-Line products, non-program prices for Candelabra LEDs are lowest in Club Stores, DIY, and Mass Merchants and highest in Food Markets and Hardware/Lumber stores. Some of this difference could be caused by different package configurations found in these retail channels.
- The pricing for baseline incandescent Candelabra bulbs does not vary with brightness level and is similar across all retail channels.

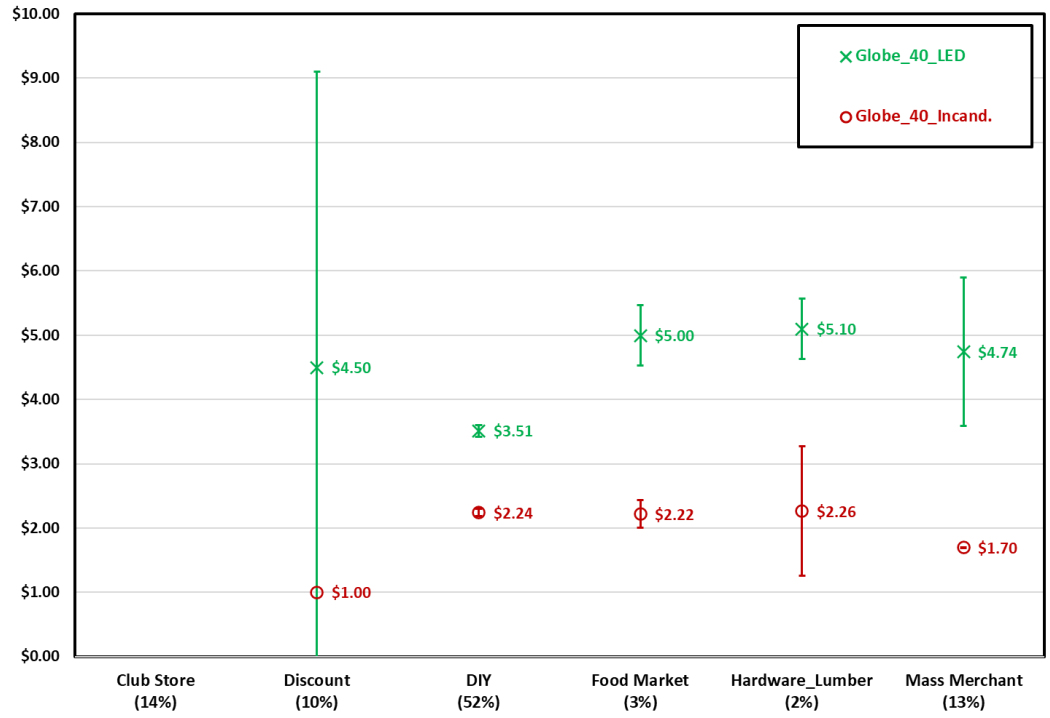
3.2.3 G25 Globe Products

Figure 10: Non-Program Pricing: 25W Equivalent G25 Globe Bulbs*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 11: Non-Program Pricing: 40W Equivalent G25 Globe Bulbs*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 12: Non-Program Pricing: 60W Equivalent G25 Globe Bulbs*,+

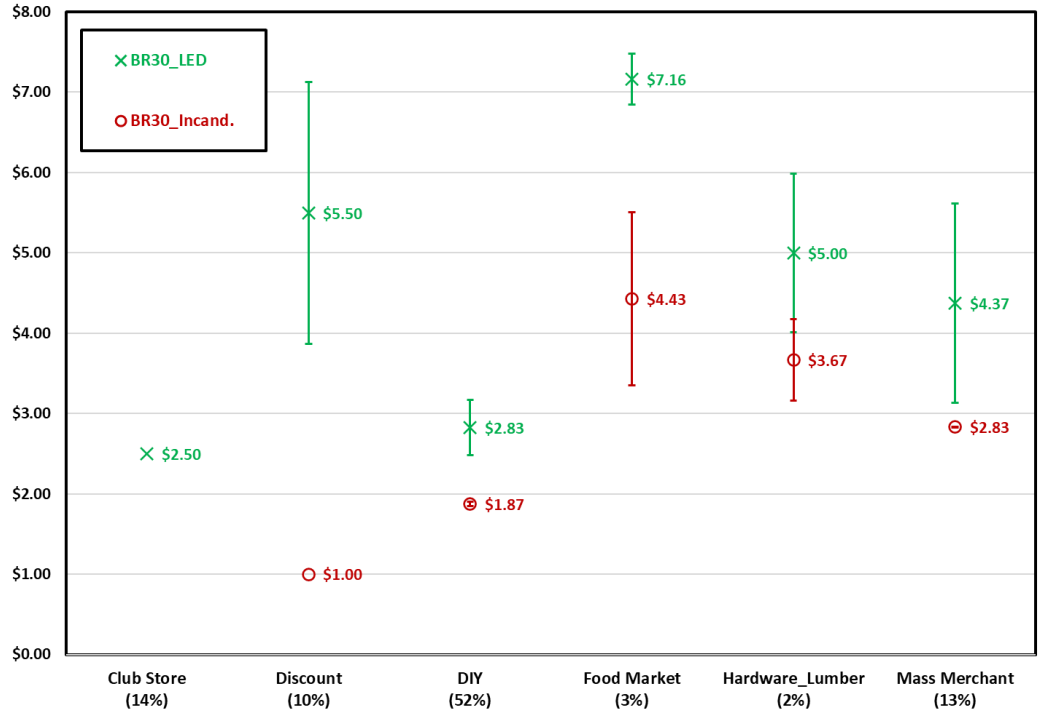
* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Detailed Findings for G25 Globe Products:

- LED G25 Globe products are priced higher before incentives than their baseline incandescent/halogen counterparts across nearly all brightness levels and retail channels (exception: 40W equiv. LEDs in the Discount channel).
- Non-program pricing for LED G25 Globe products tends to be lowest in the DIY channel and highest in the Food Market and Hardware/Lumber Channel. Some of this difference could be caused by different package configurations found in these retail channels.

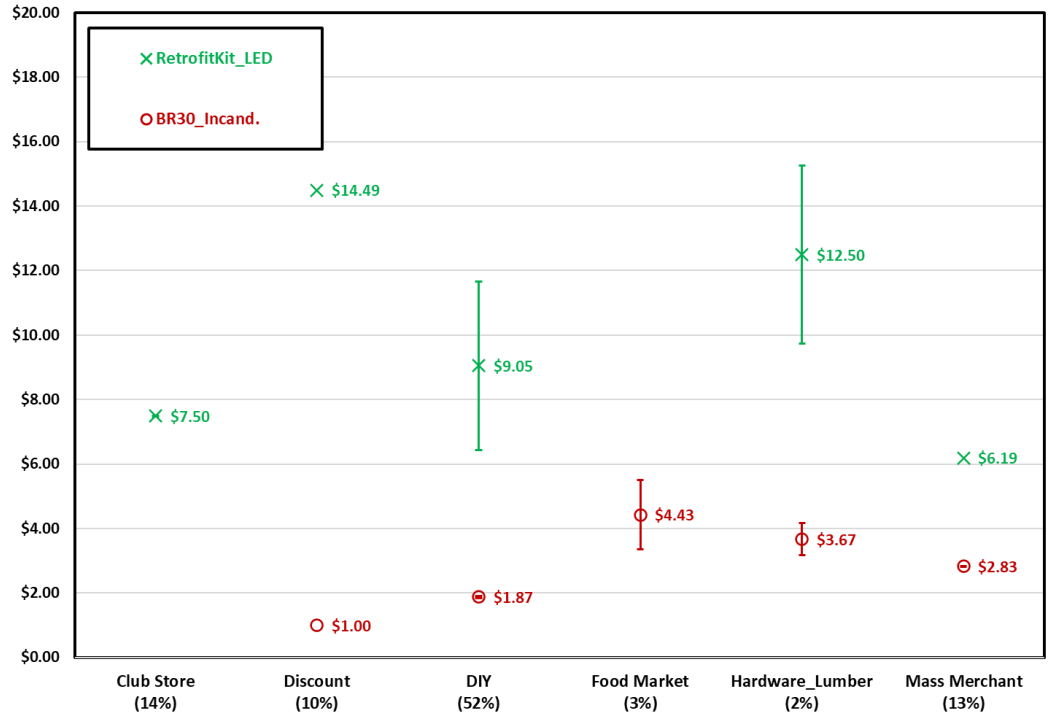
3.2.4 Directional Products

Figure 13: Non-Program Pricing: 65W Equivalent BR30 Directional Bulbs*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Figure 14: Non-Program Pricing: 65W Equivalent Retrofit Kits*,+



* Non-program pricing = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.

Detailed Findings for Directional Products:

- LED 65W equivalent Directional products are priced significantly higher before program incentives than their baseline counterparts (exception: BR30 in Hardware/Lumber).
- The 5/6″ LED retrofit kits is priced much higher before incentives than the LED 65W equivalent BR30 directional bulbs. The baseline product for both LEDs is the BR30 incandescent bulb.

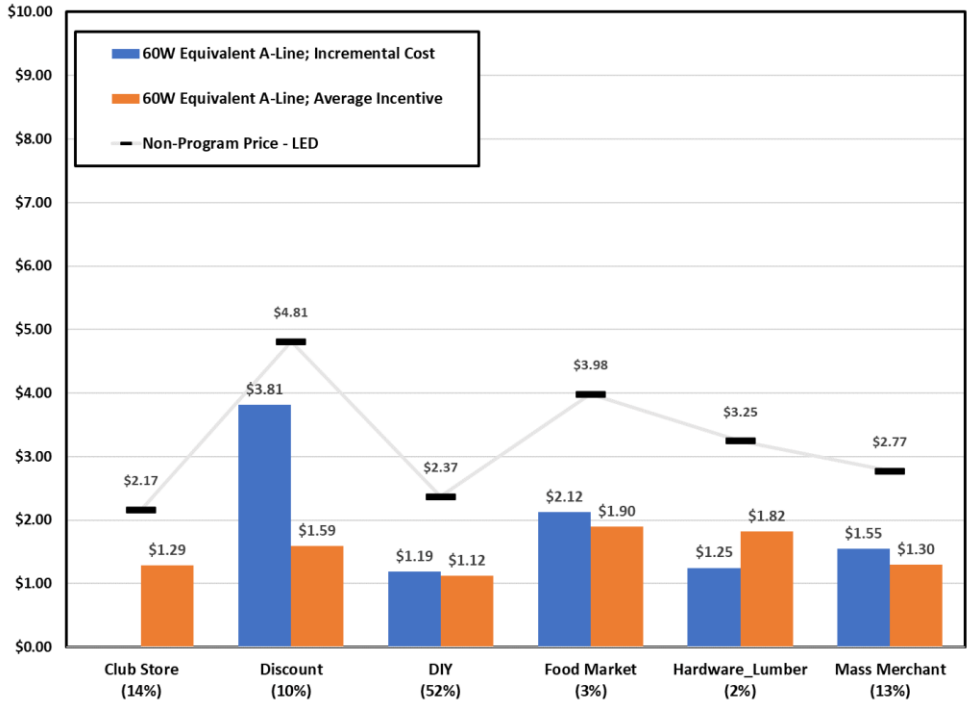
3.3 INCREMENTAL COST AND PROGRAM INCENTIVES

The incremental first cost pricing information generated in this research provides a clear indication of the opportunity to promote residential lighting products within each of the retail channels. These incremental first costs compared to program incentive levels generate additional insight regarding the effectiveness of program design. This comparison particularly addresses the question of whether incentives are appropriately sized to cover the first cost disadvantage for LEDs.

Program tracking data[7] were used to calculate the sales weighted average incentive levels for the key product types in the study. The figures in this section show the average incentive levels (**orange** columns) compared to the incremental first cost between the LED non-program price and the corresponding baseline products (**blue** columns). The non-program price for LED bulbs is shown in the figures for context (**black** bars).

3.3.1 General Purpose (A-Line) Products

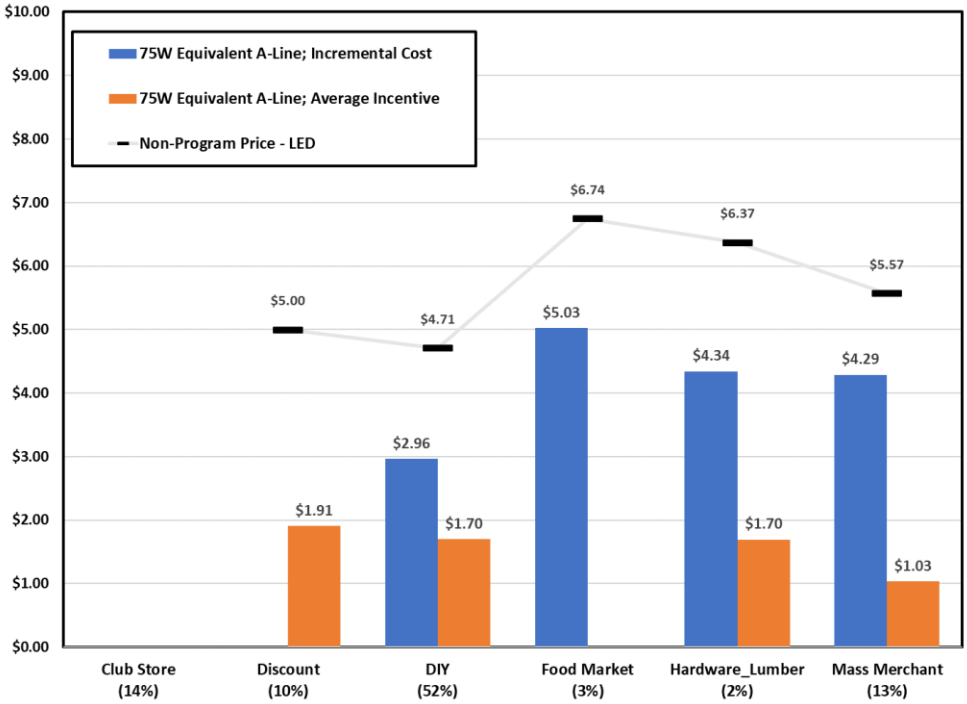
Figure 15: 60W Equivalent A-Line LED Bulbs*,+,#



* Non-program price = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

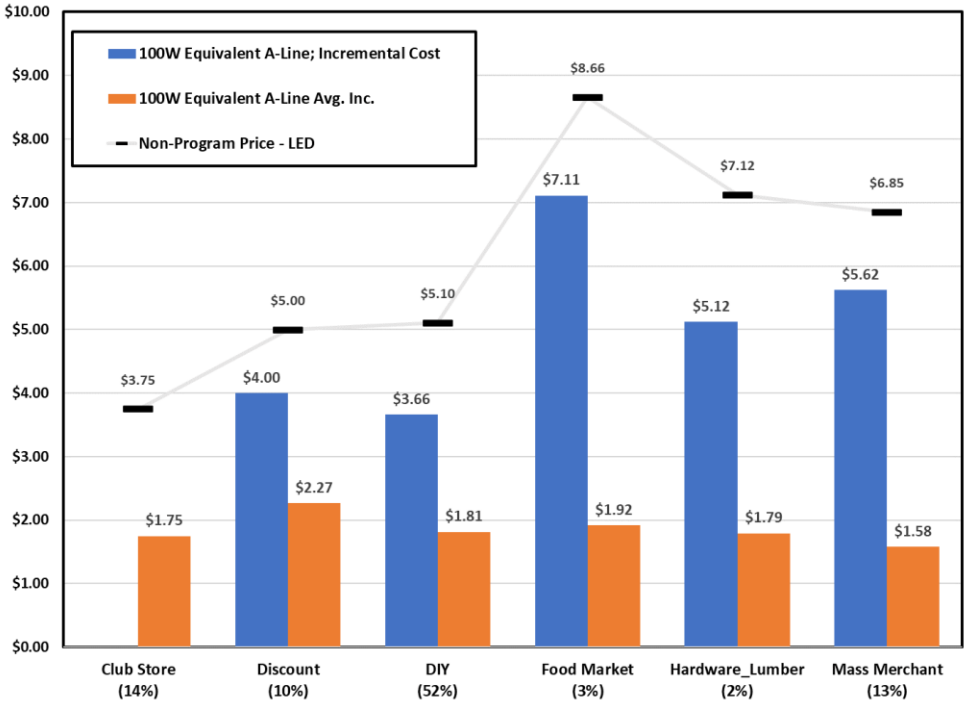
[7] UI: January-December 2019; Eversource: January-September 2019

Figure 16: 75W Equivalent A-Line LED Bulbs



* Non-program price = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

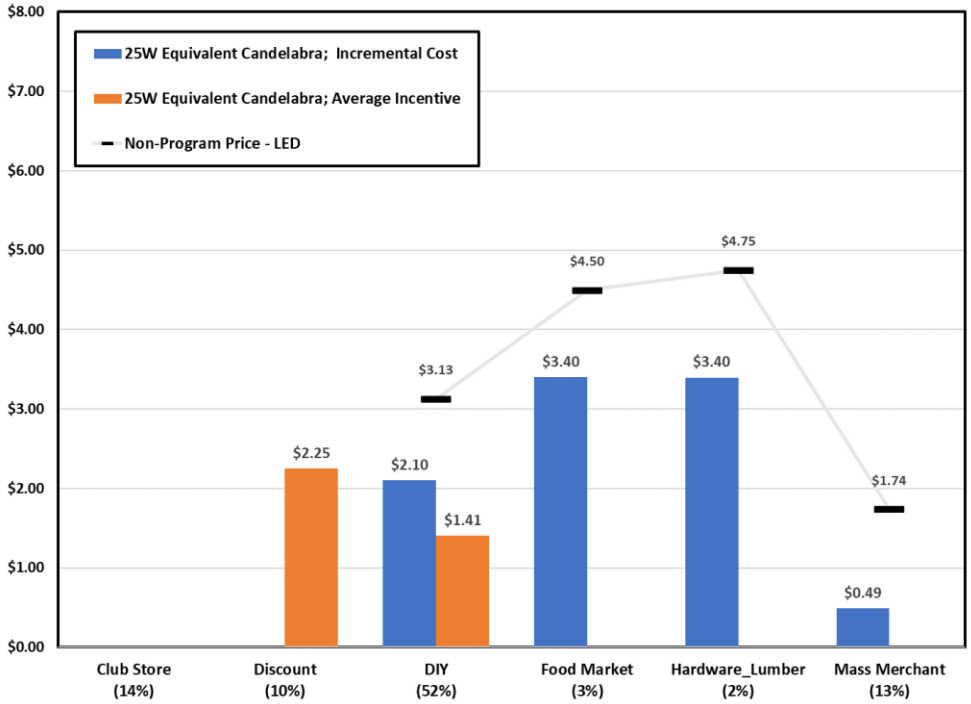
Figure 17: 100W Equivalent A-Line LED Bulbs



* Non-program price = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

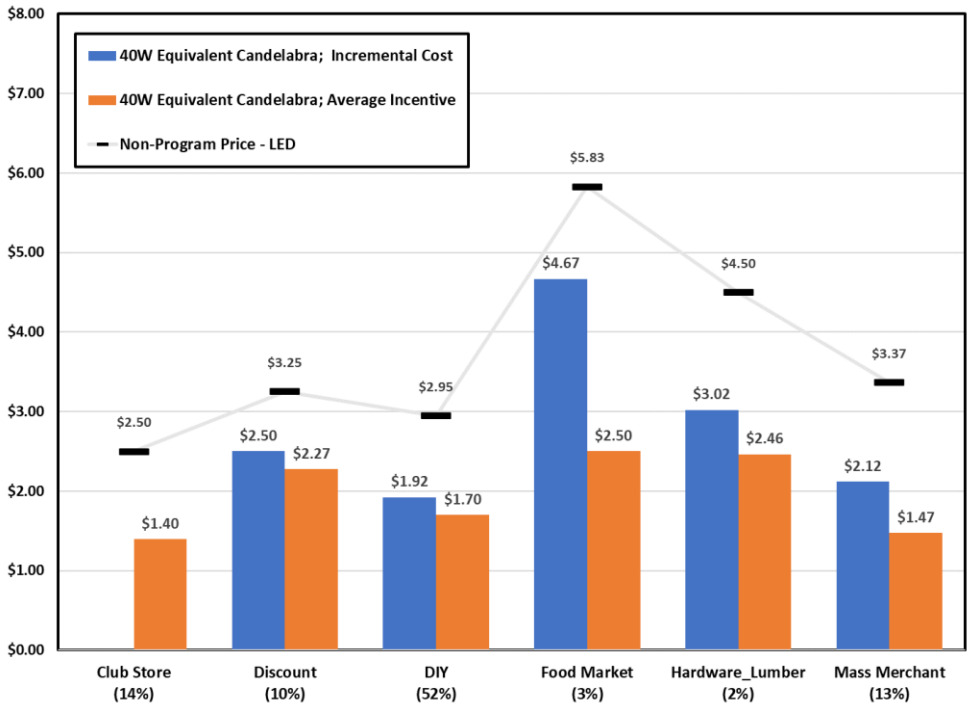
3.3.2 Candelabra Products

Figure 18: 25W Equivalent Candelabra LED Bulbs



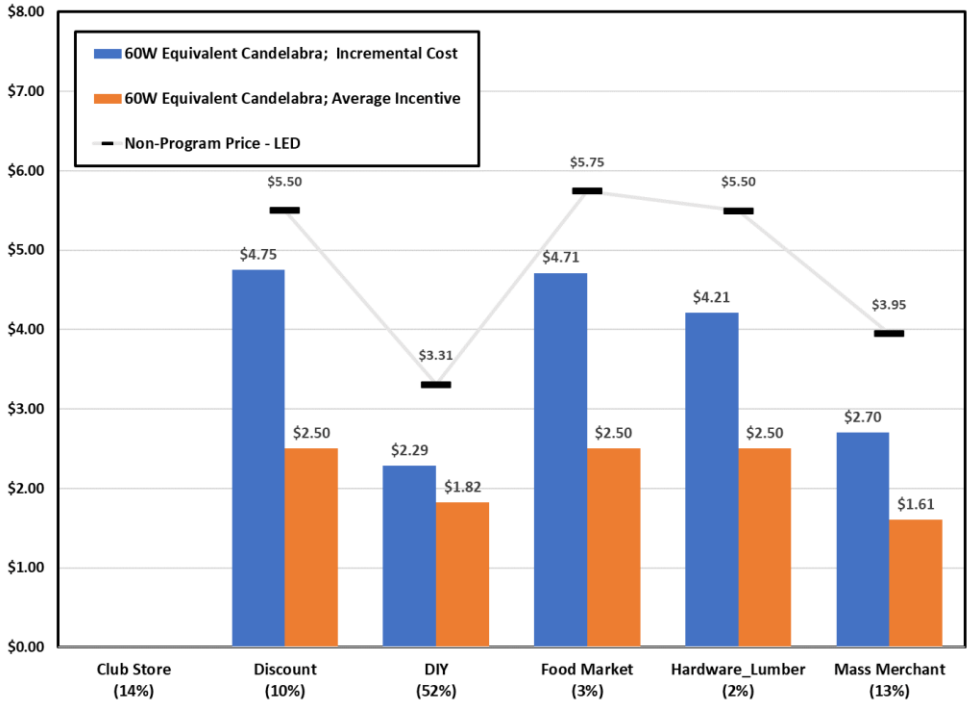
* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

Figure 19: 40W Equivalent Candelabra LED Bulbs



* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

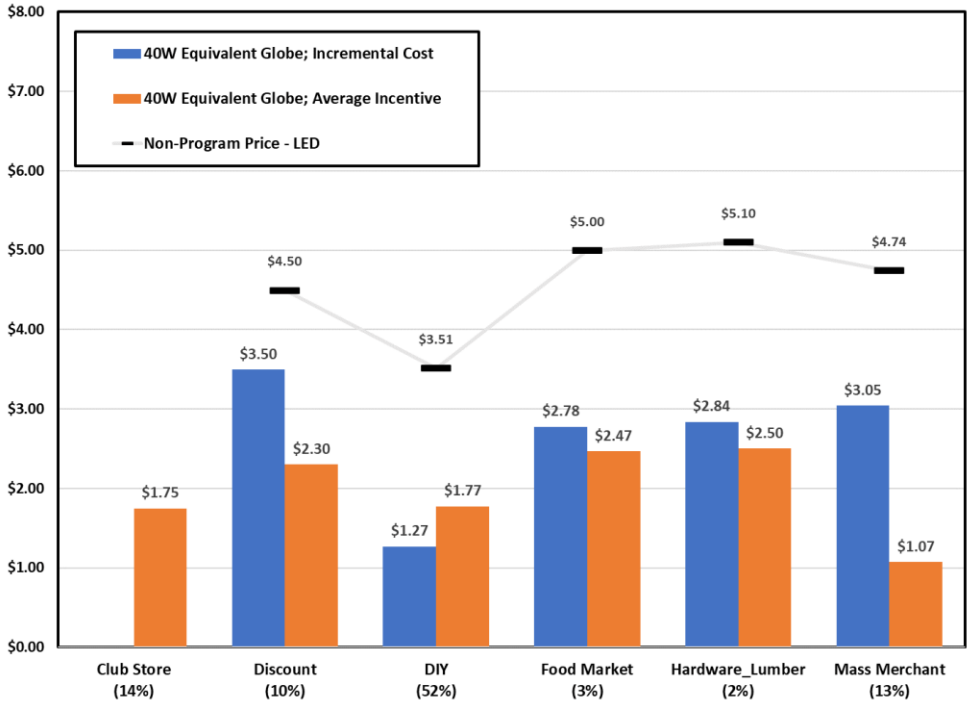
Figure 20: 60W Equivalent Candelabra LED Bulbs



* Non-program price = price before incentives. + 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

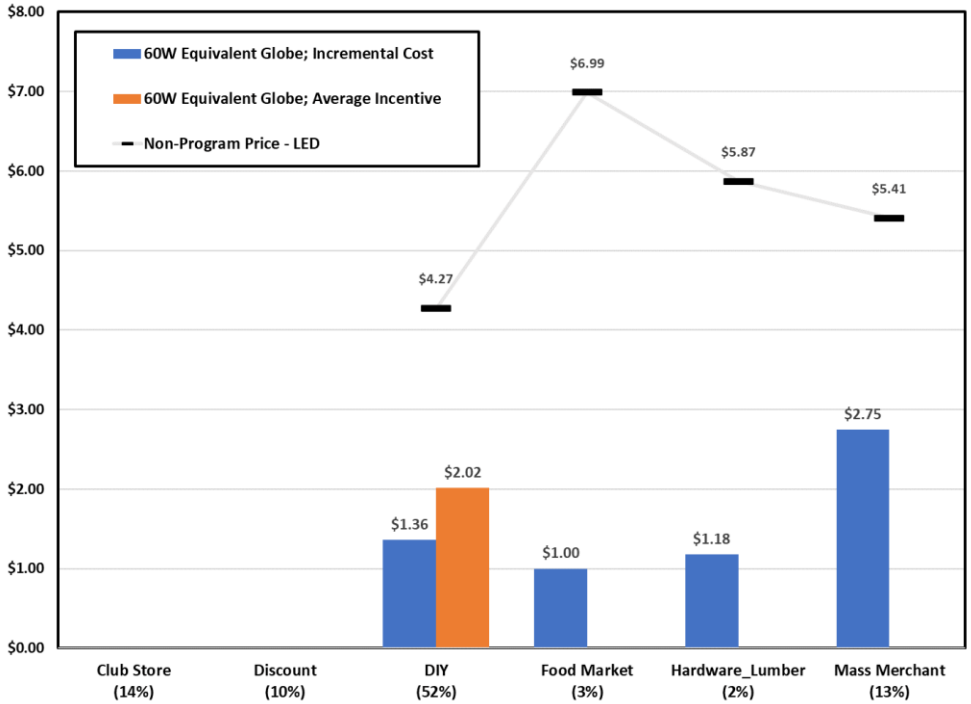
3.3.3 G25 Globe Products

Figure 21: 40W Equivalent G25 Globe LED Bulbs



* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

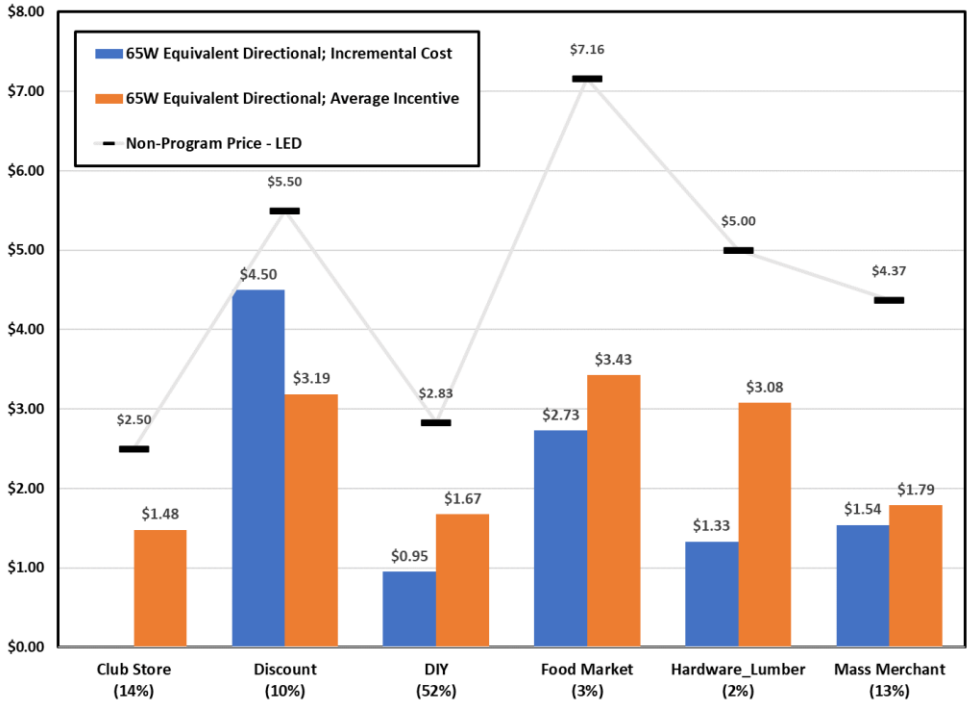
Figure 22: 60W Equivalent G25 Globe LED Bulbs



* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

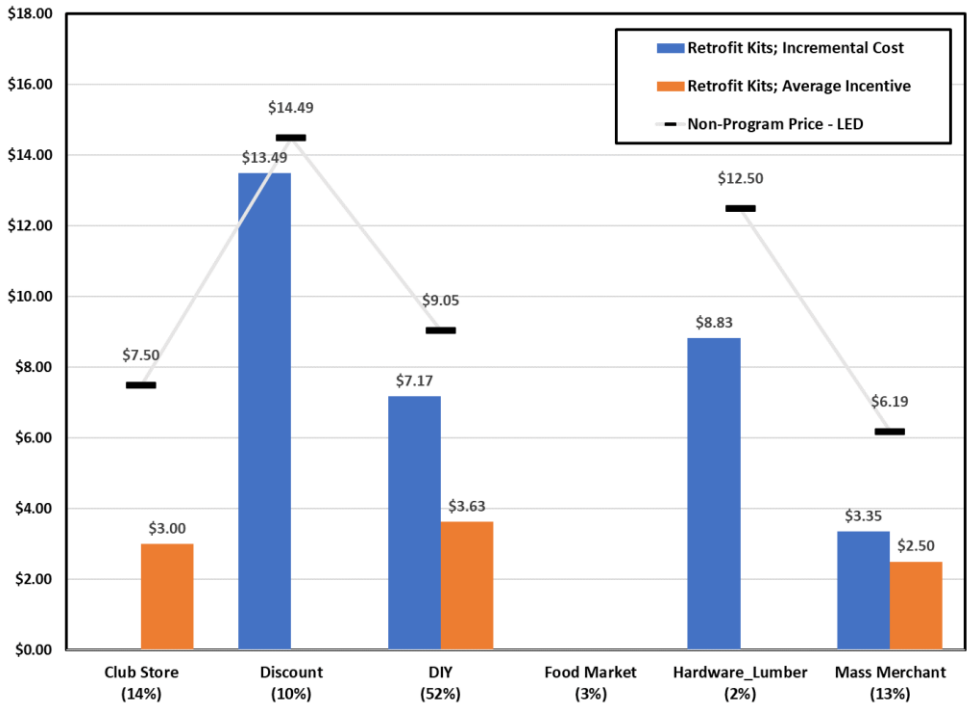
3.3.4 Directional Products

Figure 23: 65W Equivalent BR30 Directional LED Bulbs



* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

Figure 24: 65W Equivalent LED Retrofit Kits



* Non-program price = price before incentives. ⁺ 2019 incentive shares (%) are shown in x-axis labels.
# Incremental Cost = Non-program LED price - Baseline product price.

3.3.5 Incremental Cost and Program Incentives, All Products

Table 6 shows the incremental cost (IC) and average incentives (AI) for all products in each retail channel. The percentage of the incremental first cost covered by the program incentive (% AI/IC) indicates the strength of the program influence. Product and retail channel combinations where this percentage is below 50% are highlighted in YELLOW. Cases where the percentage is over 100%, indicating that the program incentives are covering more than the incremental first cost are highlighted in **RED**.

Table 6. Incremental Cost and Program Incentive Levels by Retail Channel

	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
LED Product	Incr. Cost (IC)	Avg. Incent. (AI)	% AI/IC	Incr. Cost (IC)	Avg. Incent. (AI)	% AI/IC	Incr. Cost (IC)	Avg. Incent. (AI)	% AI/IC	Incr. Cost (IC)	Avg. Incent. (AI)	% AI/IC	Incr. Cost (IC)	Avg. Incent. (AI)	% AI/IC
60W Equivalent A-Line	$3.81	$1.59	42%	$1.19	$1.12	95%	$2.12	$1.90	89%	**$1.25**	**$1.82**	**146%**	$1.55	$1.30	84%
75W Equivalent A-Line		$1.91		$2.96	$1.70	57%	$5.03			$4.34	$1.70	39%	$4.29	$1.03	24%
100W Equivalent A-Line	$4.00	$2.27	57%	$3.66	$1.81	50%	$7.11	$1.92	27%	$5.12	$1.79	35%	$5.62	$1.58	28%
25W Equivalent Candelabra		$2.25		$2.10	$1.41	67%	$3.40			$3.40			**$0.49**	**$1.02**	**208%**
40W Equivalent Candelabra	$2.50	$2.27	91%	$1.92	$1.70	88%	$4.67	$2.50	54%	$3.02	$2.46	82%	$2.12	$1.47	70%
60W Equivalent Candelabra	$4.75	$2.50	53%	$2.29	$1.82	80%	$4.71	$2.50	53%	$4.21	$2.50	59%	$2.70	$1.61	60%
25W Equivalent Globe							$2.50			$2.07			$0.96		
40W Equivalent Globe	$3.50	$2.30	66%	**$1.27**	**$1.77**	**140%**	$2.78	$2.47	89%	$2.84	$2.50	88%	$3.05	$1.07	35%
60W Equivalent Globe				**$1.36**	**$2.02**	**148%**	$1.00			$1.18			$2.75		
Retrofit Kits	$13.49			$7.17	$3.63	51%				$8.83			$3.35	$2.50	75%
65W Equivalent Directional	$4.50	$3.19	71%	**$0.95**	**$1.67**	**176%**	**$2.73**	**$3.43**	**125%**	**$1.33**	**$3.08**	**231%**	**$1.54**	**$1.79**	**116%**

Key Findings for Average Incentive Levels Compared to Incremental First Costs:

- Incentives are nearly equal to or exceed (as in the case of Hardware/Lumber) the incremental first cost for 60W equivalent A-Line bulbs (55% of 2019 program sales) across all retail channels except Discount retailers.
- Incentive levels *exceed* the incremental first cost for 65W equivalent BR30 Directional bulbs (11% of 2019 program sales) in *all* retail channels except Discount where the incremental first cost is highest.
- Incentives are lower in Discount retailers than in Food Market and Hardware/Lumber retailers for several product types (60W A-Lines, 40W Candelabras, 40W G25 Globes) despite the commonly larger incremental first costs in the Discount channel.
- Incentives as a fraction of incremental first cost are lower in the Mass Merchant than DIY channels for several product types (all A-Lines, 40W and 60W Candelabras, 40W G25 Globes, and 65W BR30 Directional).
- Factors beyond the first cost appear to affect the purchase of the popular 60W equiv. A-Line bulbs. Although incentives are equal to or exceed the incremental first cost, LEDs constitute only about ½ (53%) of A-Line bulb sales.[8] This could indicate that there is some unaddressed barrier/challenge beyond first cost preventing LEDs from achieving overwhelming market share.

[8] NMR Group, 2020. "R1963a: Short Term Residential Lighting Report." Prepared for CT EEB. https://www.energizect.com/sites/default/files/R1963%20Short-term%20Lighting%20Report%202020%2007%2014%20REVIEW%20DRAFT_v1_2.docx.

3.4 PROGRESSION OF FEDERAL STANDARDS

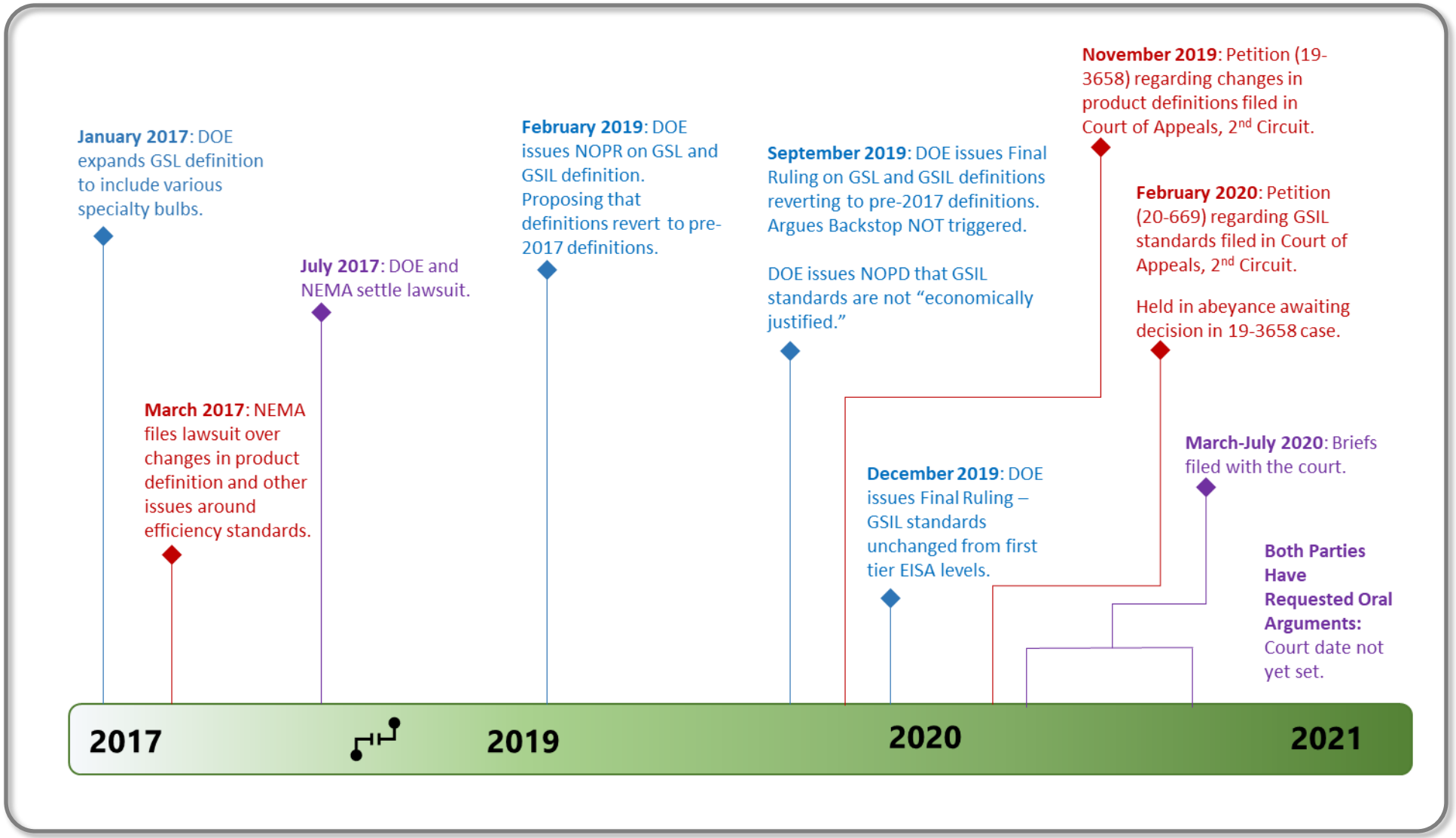
Over the past two years, there have been two major developments in the DOE rulemaking process that have significant implication for the kinds of light bulbs that will continue to be available for purchase in the U.S. market (see Figure 25 for timeline of events).

First, in February 2019, DOE published a Notice of Proposed Rulemaking (NOPR) "proposing to withdraw the revised definitions of general service lamp (GSL), general service incandescent lamp (GSIL) and other supplemental definitions, that were to go into effect on January 1, 2020." DOE received comments and held public hearings on this issue and finalized the rule on September 5, 2019. The effect of the ruling was to revert back to the definitions for GSL and GSIL in place prior to January 19, 2017.

Second, effective December 27, 2019, DOE determined that standards for GSIL were not "economically justified", and therefore, would not be updated. This allows the continued sale of all baseline incandescent/halogen products that were inventoried in this research.

Two reactionary petitions have been filed in the U.S. Court of Appeals for the Second Circuit in response to these DOE rules. The first petition (which itself is the combination of two petitions – one from a group of U.S. states and another from a group of environmental organizations) challenges DOE's withdraw of the revised definitions of GSL and GSIL put into place in January 2017. The second petition, also filed in the U.S. Court of Appeals for the Second Circuit, involves the NRDC along with several other public interest environmental groups and challenges DOE's determination not to update GSIL standards. This second petition is being held in abeyance by the court while it decides the first petition. As of June 15, 2020, arguments have been filed by both parties in the first petition. Although there is no deadline set for a ruling in the petition, it is not expected to be resolved until late in 2020. For the next year or two, baseline product availability will remain unchanged in the U.S. market based on the federal standards.

Figure 25: Timeline of Events in DOE Rulemaking for General Service and General Service Incandescent Lamps



APPENDIX A – Listing of Sample Locations

Table 7. Sample Locations for Product Availability and Pricing Study

ID	Tier	Company	Retailer Type	Retailer Name	Address	City	State	Zip	HTR
2970	Tier 2	Eversource	Club Store	Costco	284 Flanders Road	EAST LYME	CT	06333	No
2125	Tier 2	Eversource	Club Store	Costco	779 Connecticut Ave	NORWALK	CT	06850	No
2015	Tier 2	UI	Club Store	Costco	1718 Boston Post Rd	MILFORD	CT	06460	No
1720	Tier 3	Eversource	Discount	Dollar Tree	83B Stony Hill Road	BETHEL	CT	06801	Yes
1913	Tier 3	Eversource	Discount	Dollar Tree	706 Long Hill Rd	GROTON	CT	06340	Yes
1871	Tier 3	Eversource	Discount	Goodwill	53 Palomba Drive	ENFIELD	CT	06082	Yes
1728	Tier 3	Eversource	Discount	Habitat For Humanity Restore	500 Cottage Grove Road	BLOOMFIELD	CT	06002	Yes
1723	Tier 2	Eversource	Discount	Ocean State Job Lot	20 Mountain Ave	BLOOMFIELD	CT	06002	Yes
2823	Tier 2	Eversource	Discount	Ocean State Job Lot	331 West Street	LITCHFIELD	CT	06759	Yes
2444	Tier 3	Eversource	Food Market	Adams Better Valu Market	4 N. Canterbury Road	CANTERBURY	CT	06331	No
2622	Tier 5	Eversource	Food Market	Big Y	234 Tolland Turnpike	MANCHESTER	CT	06042	No
2020	Tier 3	UI	Food Market	New Town Market	48 Naugatuck Ave	MILFORD	CT	06460	No
2195	Tier 5	Eversource	Food Market	Stop & Shop	498 Bushy Hill Rd	SIMSBURY	CT	06070	No
2011	Tier 5	UI	Food Market	Stop & Shop	1360 E Town Rd	MILFORD	CT	06460	No
1776	Tier 3	Eversource	Hardware/Lumber	CA Lindell & Lumber	59 Church St	CANAAN	CT	06018	No
2097	Tier 3	UI	Hardware/Lumber	Country Paint & Hardware	2410 Foxon Rd	NORTH BRANFORD	CT	06471	No
1958	Tier 4	Eversource	Hardware/Lumber	Holdridge True Value Hardware	749 Colonel Ledyard Hwy	LEDYARD	CT	06339	No
1739	Tier 3	Eversource	Hardware/Lumber	Ring's End Lumber	25 E Industrial Rd	BRANFORD	CT	06405	No
2886	Tier 4	Eversource	Hardware/Lumber	Westport True Value Hardware	616 Post Road East	WESTPORT	CT	06880	No
1934	Tier 3	Eversource	Lighting Showroom	Connecticut Lighting Center	160 Brainard Rd	HARTFORD	CT	06114	No
2211	Tier 3	Eversource	Lighting Showroom	Connecticut Lighting Center	50 Graham Place	SOUTHINGTON	CT	06489	No
2285	Tier 1	Eversource	National Retailers	Home Depot	1932 Norwich-New London	UNCASVILLE	CT	06382	No
1984	Tier 1	Eversource	National Retailers	Home Depot	80 Buckland Hills Dr	MANCHESTER	CT	06042	No
1750	Tier 1	UI	National Retailers	Home Depot	656 Reservoir Ave	BRIDGEPORT	CT	06606	No
2342	Tier 2	Eversource	National Retailers	Lowe's	167 Waterford Pkwy North	WATERFORD	CT	06385	No
1819	Tier 2	Eversource	National Retailers	Lowe's	67 Eagle Rd	DANBURY	CT	06810	No
2019	Tier 2	UI	National Retailers	Lowe's	311 Old Gate Lane	MILFORD	CT	06460	No
2266	Tier 2	Eversource	National Retailers	Target	1922 E Main St	TORRINGTON	CT	06790	No
2085	Tier 2	Eversource	National Retailers	Target	3265 Berlin Turnpike	NEWINGTON	CT	06111	No
2103	Tier 2	UI	National Retailers	Target	200 Universal Dr N	NORTH HAVEN	CT	06473	No
2123	Tier 2	Eversource	National Retailers	Walmart	650 Main Ave	NORWALK	CT	06851	No
2124	Tier 2	Eversource	National Retailers	Walmart	680 Connecticut Ave	NORWALK	CT	06850	No
2012	Tier 2	UI	National Retailers	Walmart	1365 Boston Post Rd	MILFORD	CT	06460	No

APPENDIX B – SKU Selection Methodology Example

As discussed in the Data Collection Methodology section, a single model/SKU was selected to be inventoried at each location for each of 25 key product types.

In some cases (e.g. often in Discount stores), there was only one SKU to select within each product type. In others (e.g. DIY, Mass Merchant), there were multiple options within product types – different brands, different package sizes, different color temperatures.

Certain consumer preference characteristics such as color temperature do not affect product efficiency or pricing. As such, these were chosen arbitrarily in this study. For example, wherever possible, soft white (≈2700K) products were inventoried. Other characteristics such as brand and package size *DO* have an impact on product pricing. Where choices needed to be made between competing SKUs with these price varying characteristics, a SKU was selected based on the price information available. Two guidelines were used in these cases to make the selection: 1) the availability of non-program pricing on the shelf at the time of data collection and 2) the lowest non-program price per bulb.

The result of this selection process was to inventory products that *favorably* represent the product type without the program adjusted pricing influence. This ensured that the research gathered market data that accurately addressed the research goal of assessing the future opportunity to promote residential lighting products.

Consider the selection process for a SKU to represent the dimmable 60W equivalent A-Line LEDs in a Lowe's location in Waterford, CT. Figure 26 shows the general-purpose lighting bay at the location. The baseline first tier EISA complaint halogen products were on the top shelf at this location. The basic, non-dimmable LEDs were on the bottom shelf. The dimmable LEDs of various wattage equivalencies, model type, and color temperature occupied the remainder of the bay. In this location, GE products were the dominant brand available.

Within the dimmable 60W equivalent A-Line LED product type, there were three main decision points: 1) Model Line, 2) color temperature, and 3) package size.

1) **Model Line.** There were 4 main model lines to choose from: Classic, Relax, Refresh, and Reveal. The Classic line was chosen because it is the least expensive before program incentives.
2) **Color Temperature.** As stated previously, soft white color temperature was chosen arbitrarily since it does not affect pricing or efficiency level.
3) **Package Size.** Here is where things get a little more complicated. There are 2 GE Classic, soft white packages on the shelf that contain the same exact product model. An 8-pack, non-program package (GE model: LED10DA19/827; 93122485) is selling for $18.98 ($2.3725/bulb) and a 4-pack program bulb (GE model: LED10DA19/827; 93122484) that has a non-program price of $9.98 ($2.495/bulb) and a program price of $4.98 ($1.245/bulb). (See Figures 27 and 28 for pricing details).

The 8-pack non-program bulb was selected for inventory because its non-program price was slightly lower than the 4-pack configuration of the same bulb ($2.3725/bulb compared to $2.495/bulb).

This SKU most *favorably* represents the Dimmable 60W equivalent A-Line LED product type.

Some Further Detail on Pricing Signs. Figure 29 shows three examples of the kinds of pricing sign configurations that were found at the retail locations visited.

- The first panel shows a non-program bulb pricing sign. The only pricing information available on this sign is the non-program price of the package.
- The second panel illustrates a "was/now" program pricing label that is added to the retailer pricing sign for a program bulb package. This "was/now" pricing indicates the non-program price of the package and the retailer pricing sign shows the program adjusted pricing that the customer pays.
- The third panel illustrates a program pricing sticker that designates program funding to reduce the price of the product but does not indicate what the non-program price of the product was (before incentives).
- There are also "was/now" *retailer* pricing signs that indicate when a product has been reduced in price and these are sometimes used to show program discounts.

Figure 26. General Purpose Light Bulb Bay, Lowe's, Waterford, CT

Figure 27. 60W Dimmable LEDs – LEFT Half of Shelf, Lowe's, Waterford, CT

SELECTED SKU

Figure 28. 60W Dimmable LEDs – RIGHT Half of Shelf, Lowe's, Waterford, CT

SAME PRODUCT, 4-PK

Figure 29. Pricing Sign Examples – , Lowe's, Waterford, CT

NON-PROGRAM LED

PROGRAM LED w/
WAS/NOW PRICE SIGN

PROGRAM LED w/o
WAS/NOW PRICE SIGN

R1963b: On-Site Data Collection Instrument

SCS ANALYTICS energize CONNECTICUT

Retailer: _____ Date: _____

Location: _____ Time IN: _____

Company ID: _____ Time OUT: _____

Technology	Shape	Equiv. Wattage	Dimmable?	Manuf.	Brand	Model Number	SKU/Item #	Bulbs per pack	Watts	Light Output	Color Temp	Regular Price	Program Adj. Price	Front Facing (in X in)	ES Labeled?	NOTES:
LED	A-Line	60	Yes											x		
		75												x		
		100												x		
		60	No											x		
		75												x		
		100												x		
Incandescent/ Halogen	A-Line	60	Yes											x		
		75												x		
		100												x		
LED	Globe	25	Yes											x		
		40												x		
		60												x		
Incandescent/ Halogen	Globe	25	Yes											x		
		40												x		
		60												x		
LED	Candelabra	25	Yes											x		
		40												x		
		60												x		
Incandescent/ Halogen	Candelabra	25	Yes											x		
		40												x		
		60												x		
LED	BR30 Reflector	65	Yes											x		
LED	BR30 Reflector	65	No											x		
LED	5/6 Retrofit Kit	75	Yes											x		
LED	5/6 Retrofit Kit	75	No											x		
Incandescent/ Halogen	BR30 Reflector	65	Yes											x		

Visit Notes: _____

_____

_____

APPENDIX D – Additional Pricing Information

This Appendix provides additional information on two specific pricing issues:

1) Program adjusted pricing for LEDs
2) Non-program pricing comparison between dimmable and non-dimmable A-Line LEDs.

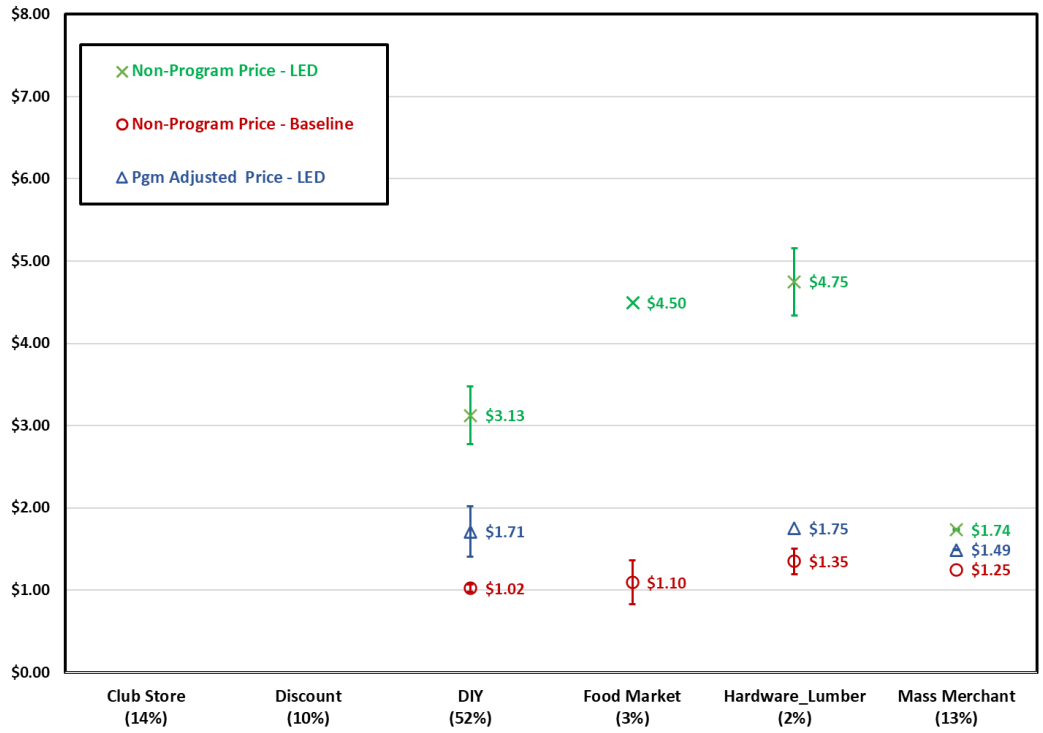
Program Adjusted Pricing

Program adjusted pricing (after incentives) is available for slightly more than ½ of the observations (146 of 272) in this research. As described in previous sections on the SKU selection process, not all LEDs inventoried in this study were products promoted through the Energize CT program. This was a result of the larger research goal of establishing accurate non-program pricing indicative of market conditions without the program's influence.

Program tracking data were investigated to establish program adjusted prices for each of the product/retail channel combinations. Unfortunately, the program tracking data could not reliably be used to generate these values. All values in the data field (CUSCOST) in the UI tracking information were "0". In the Eversource tracking data, 22% of records had negative values for the total cost to the customer (TOTAL_CUSTOMER_COST). This field was a calculated value in the tracking data (TOTAL_CUSTOMER_COST = MATERIAL_COST – INSTALLED_UNIT_INCENTIVE).

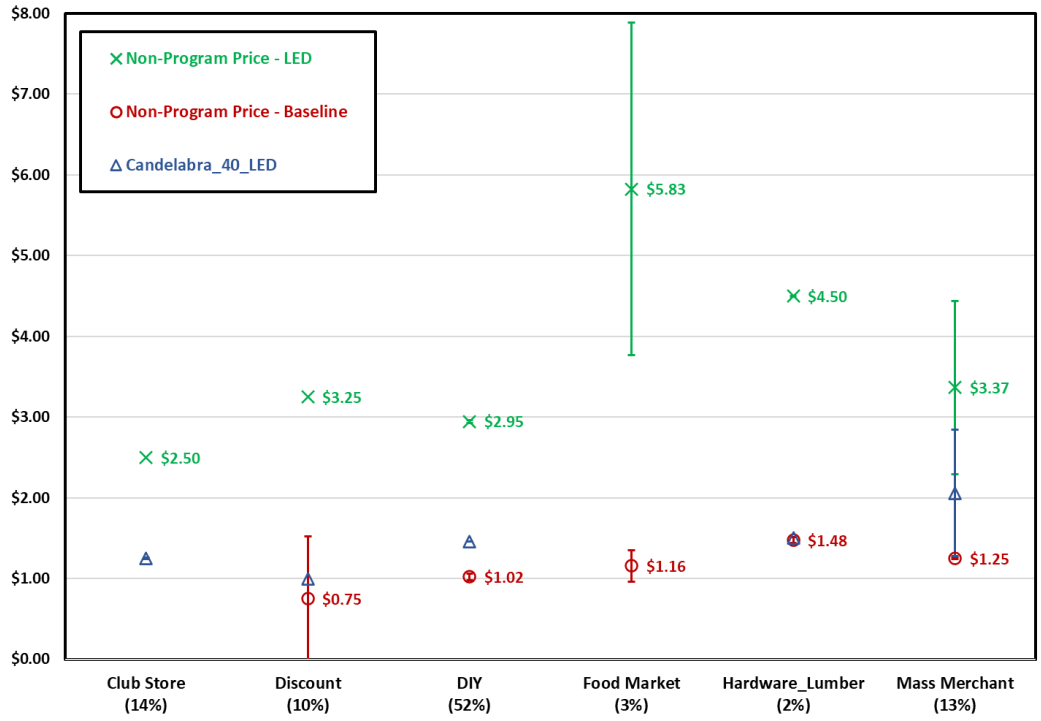
The program adjusted pricing values in the following figures show the program adjusted pricing information collected in this study, albeit from a limited set of observations.

Figure 30: Program and Non-Program Pricing: 25W Equivalent Candelabra Bulbs[+]



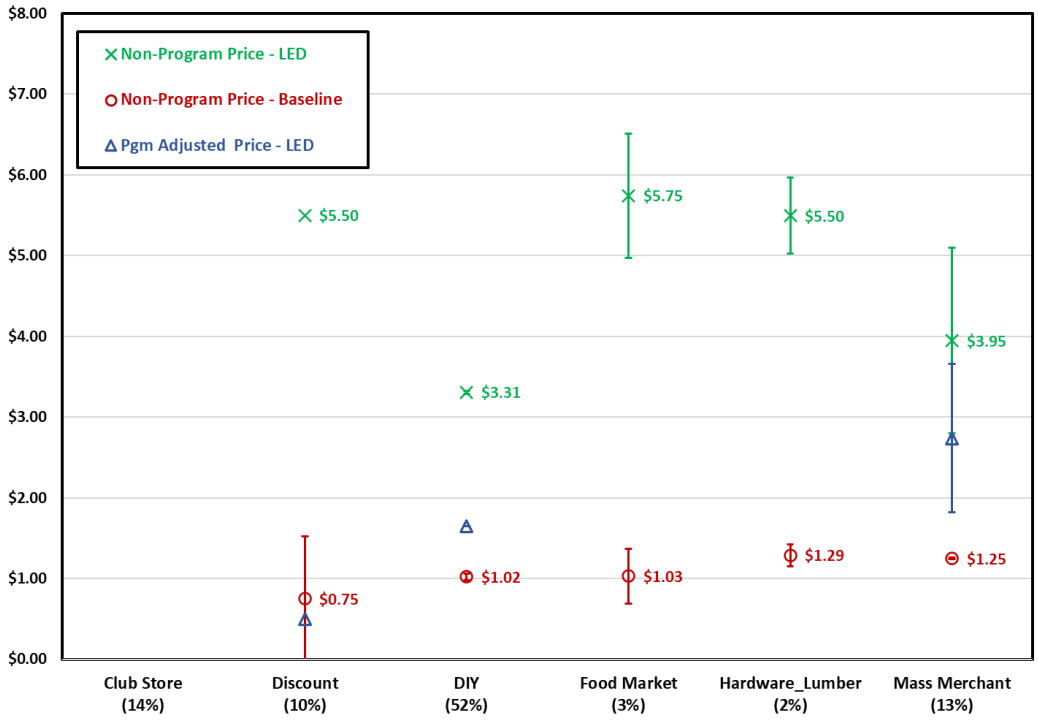
[+] Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 31: Program and Non-Program Pricing: 40W Equivalent Candelabra Bulbs[+]



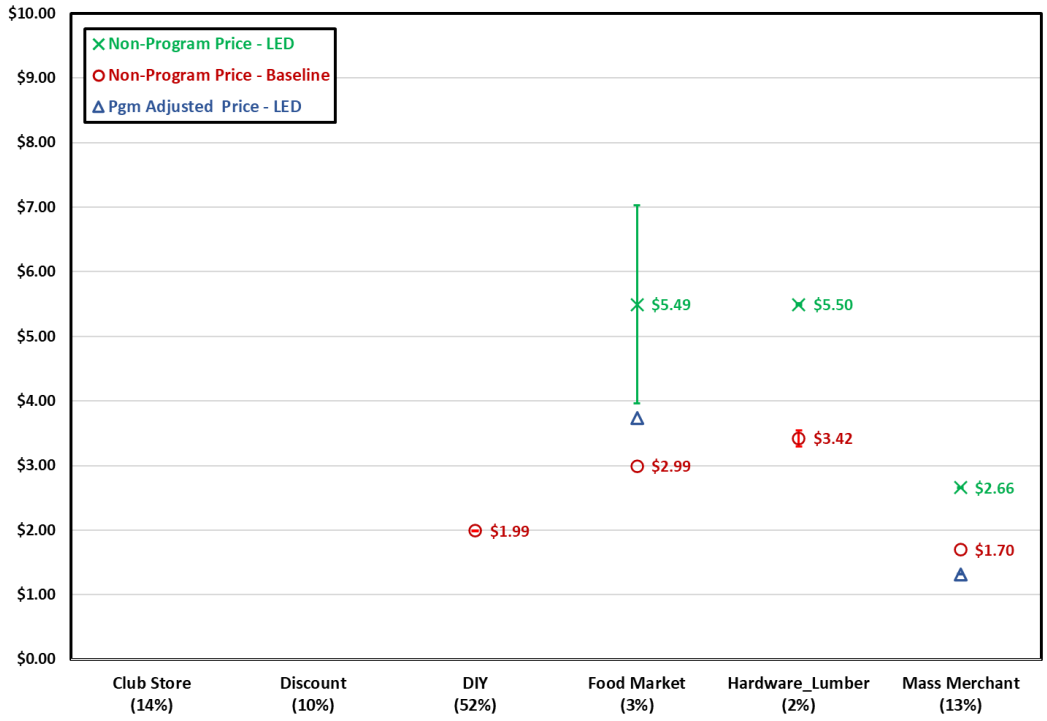
[+] Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 32: Program and Non-Program Pricing: 60W Equivalent Candelabra Bulbs+



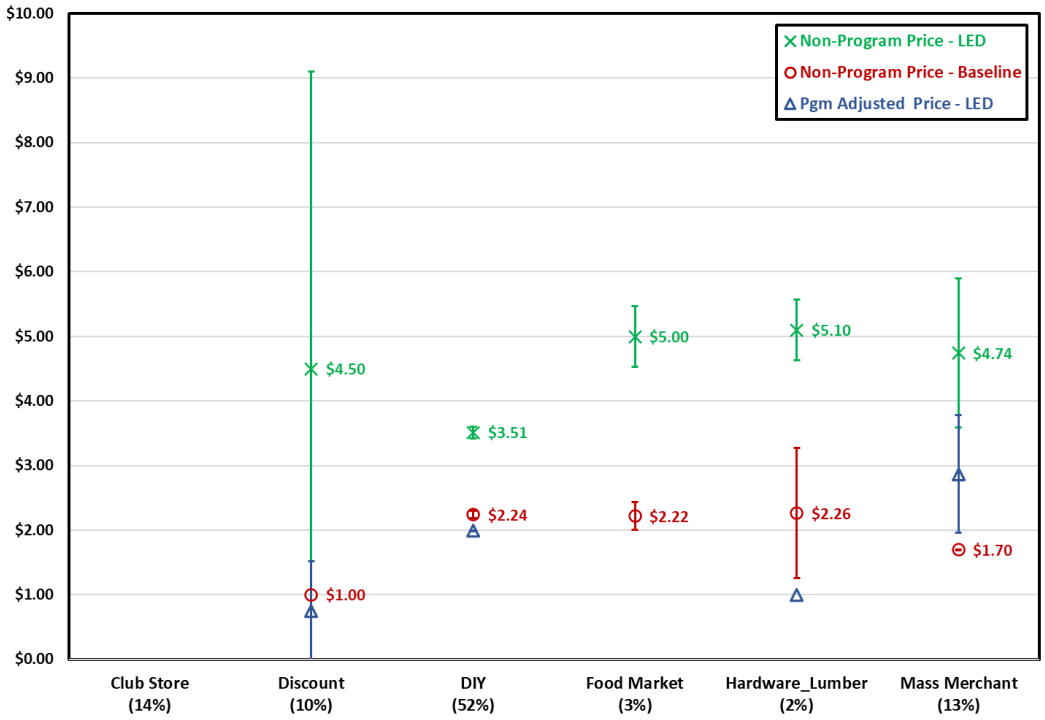
+ Program adjusted pricing values were based on a range of 1 to 5 observations per data point.

Figure 33: Program and Non-Program Pricing: 25W Equivalent G25 Globe Bulbs+



+ Program adjusted pricing values were based on a range of 1 to 3 observations per data point.

Figure 34: Program and Non-Program Pricing: 40W Equivalent G25 Globe Bulbs+

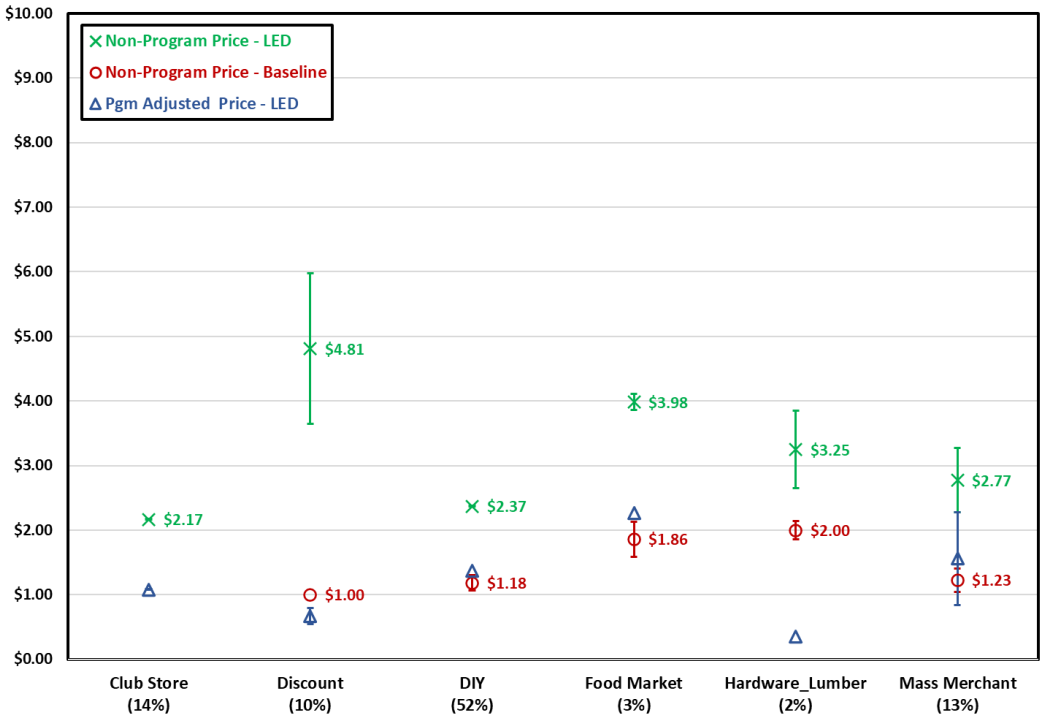


+ Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 35: Program and Non-Program Pricing: 60W Equivalent G25 Globe Bulbs+

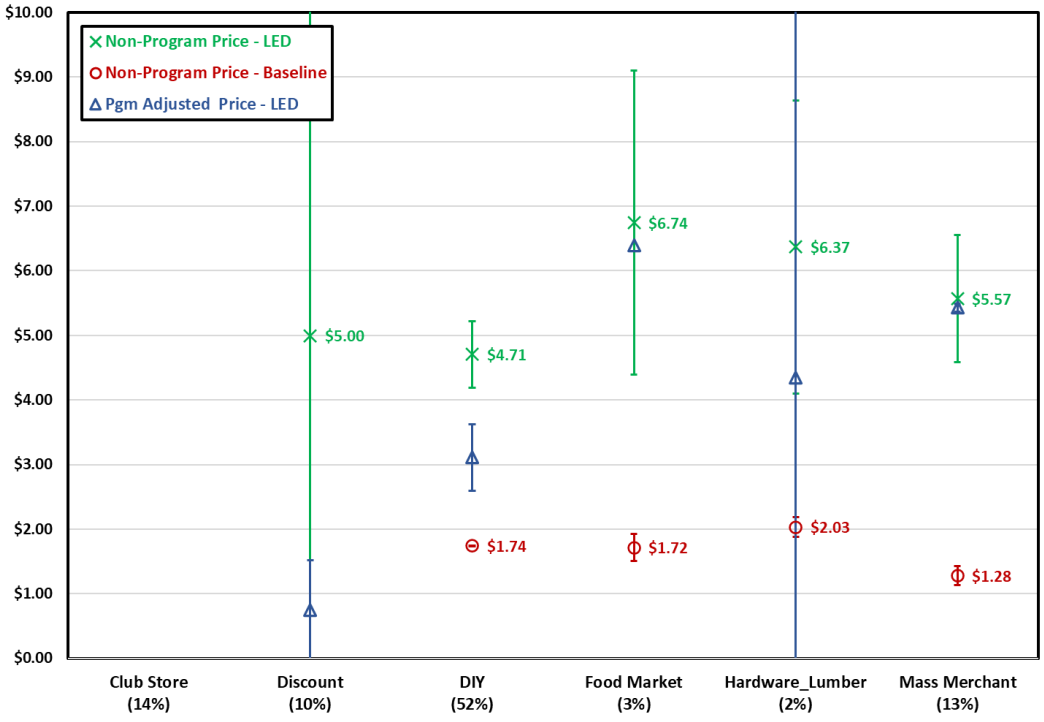
+ Program adjusted pricing values were based on a range of 1 to 3 observations per data point.

Figure 36: Program and Non-Program Pricing: 60W Equivalent A-Line Bulbs[+]



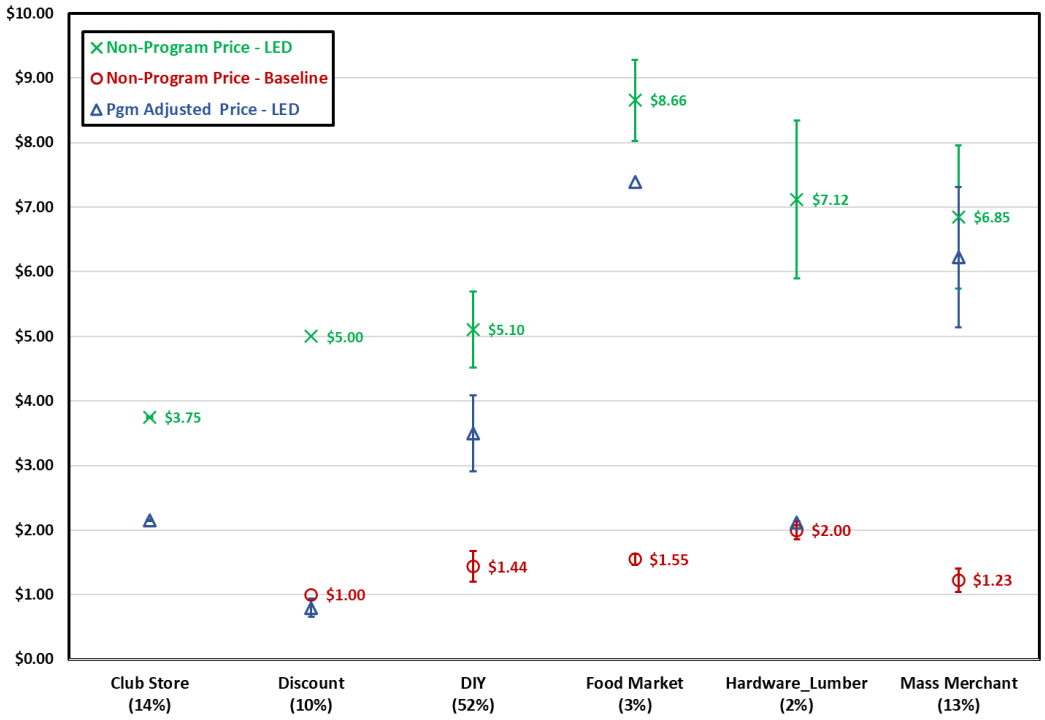
[+] Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 37: Program and Non-Program Pricing: 75W Equivalent A-Line Bulbs[+]



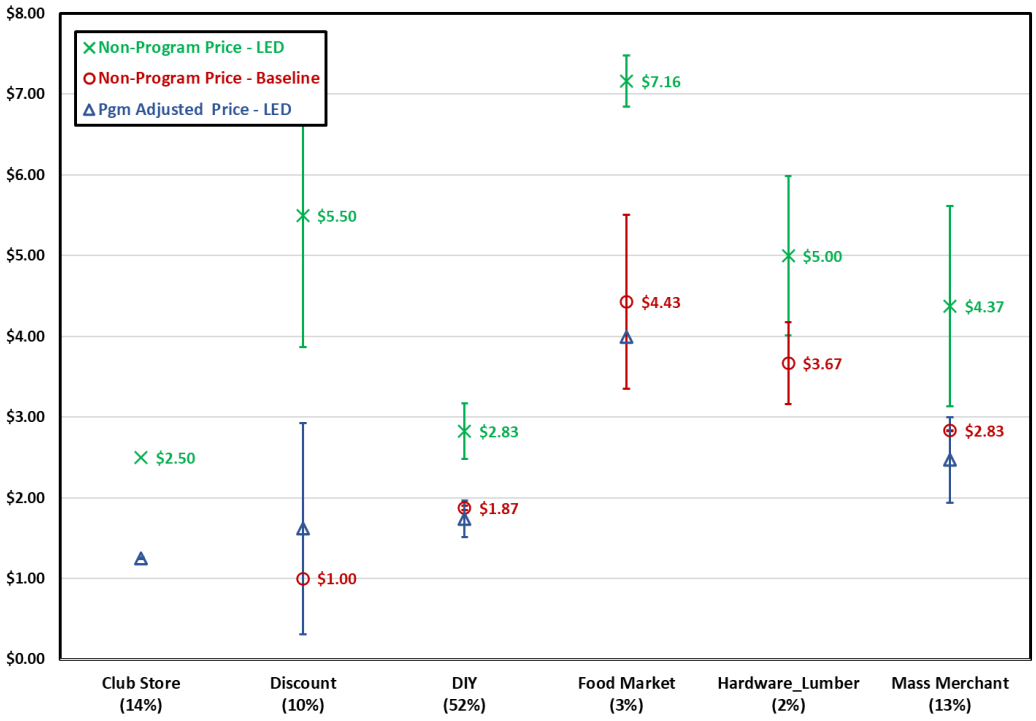
[+] Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 38: Program and Non-Program Pricing: 100W Equivalent A-Line Bulbs+



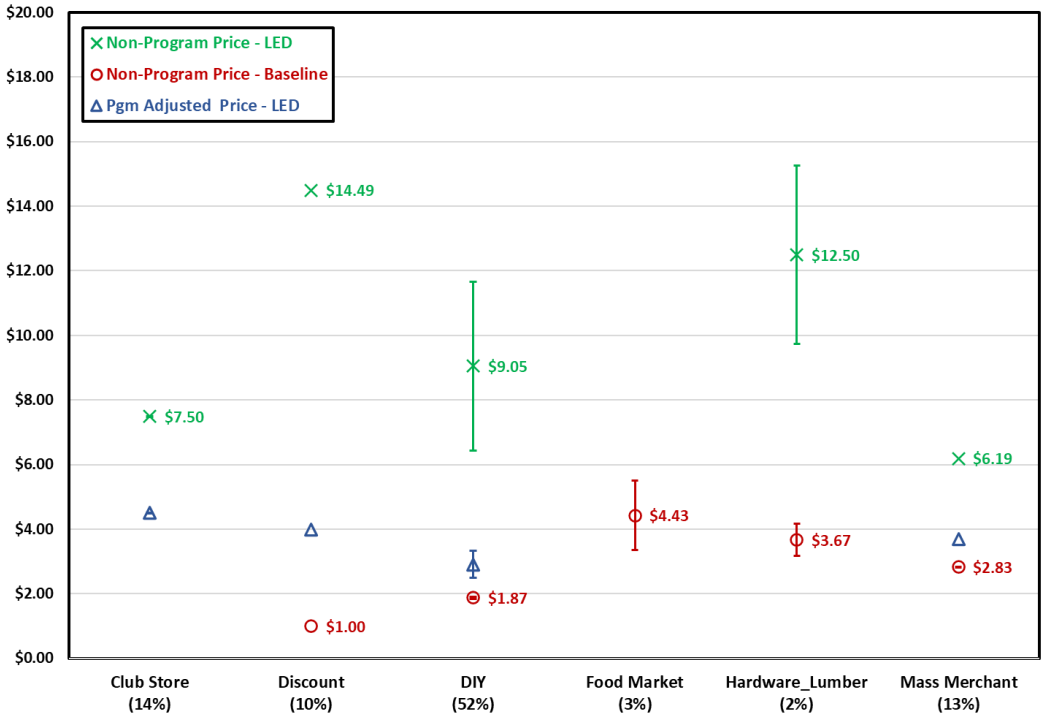
+ Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 39: Program and Non-Program Pricing: 65W Equivalent BR30 Directional Bulbs+



+ Program adjusted pricing values were based on a range of 1 to 6 observations per data point.

Figure 40: Program and Non-Program Pricing: 65W Equivalent Retrofit Kit Bulbs[+]



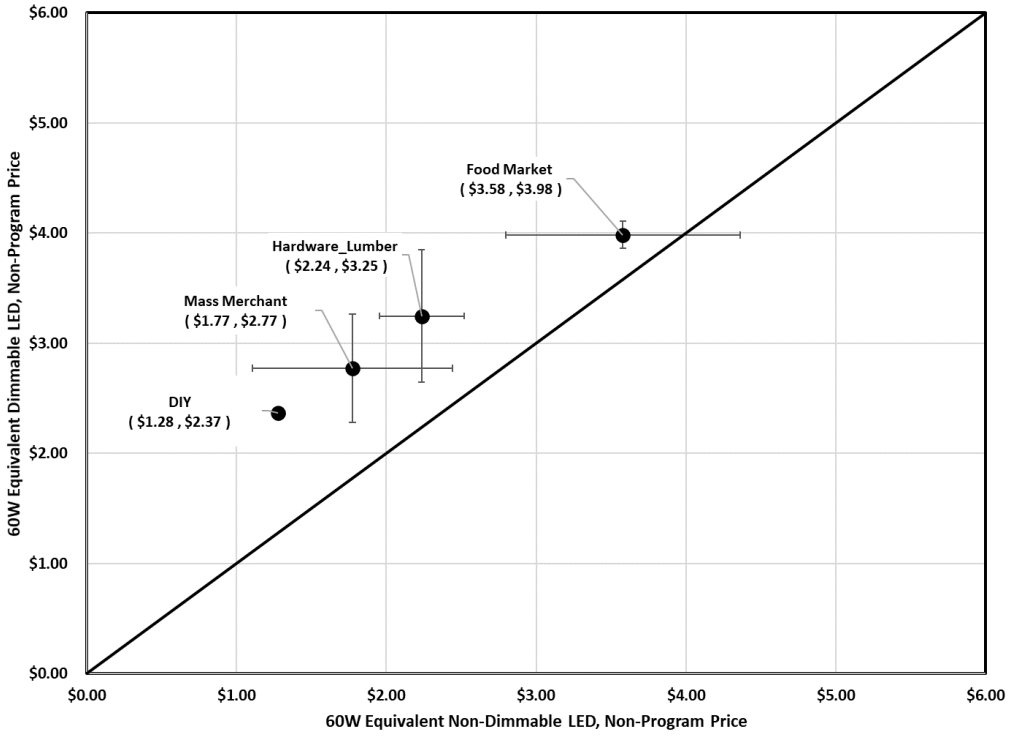
[+] Program adjusted pricing values were based on a range of 1 to 4 observations per data point.

Dimmable vs. Non-Dimmable LED Pricing

Both dimmable and non-dimmable A-Line LEDs are available in the CT market. The current ENERGY STAR specification allows for non-dimmable products so long as they are clearly labeled. Otherwise, non-dimmable LEDs need to meet the same criteria as dimmable LEDs. The following figures show the non-program pricing for non-dimmable vs. dimmable A-Line LEDs for the retail channels where products were available at the various brightness levels. Error bars on the charts represent 80% confidence intervals and the 1:1 line provides the needed guidance to judge statistically significant differences in pricing between the two.

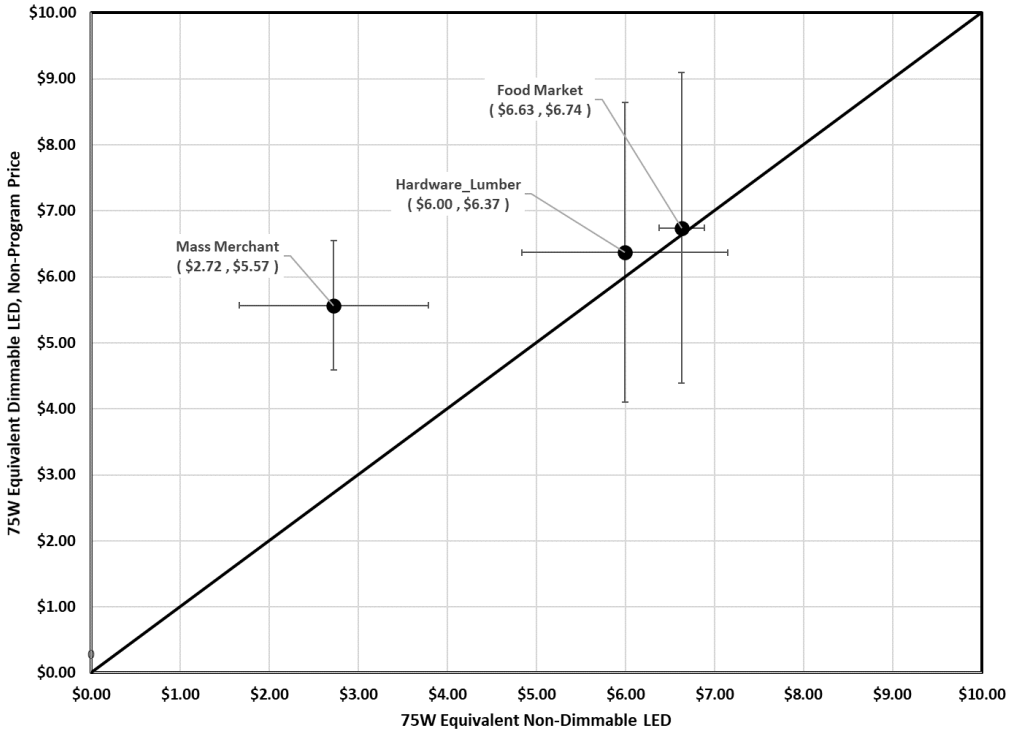
For example, Figure 40 shows the non-program pricing for dimmable and non-dimmable 60W equivalent A-Line bulbs. In three of the four retail channels (DIY, Mass Merchant, and Hardware/Lumber) the dimmable LEDs are significantly more expensive before incentives than their non-dimmable counterparts. In Food Markets there a similar difference in prices, but the result is not significant at the 80% level.

Figure 41: Non-Program Pricing: Non-Dimmable vs. Dimmable 60W Equiv. A-Line Bulbs*



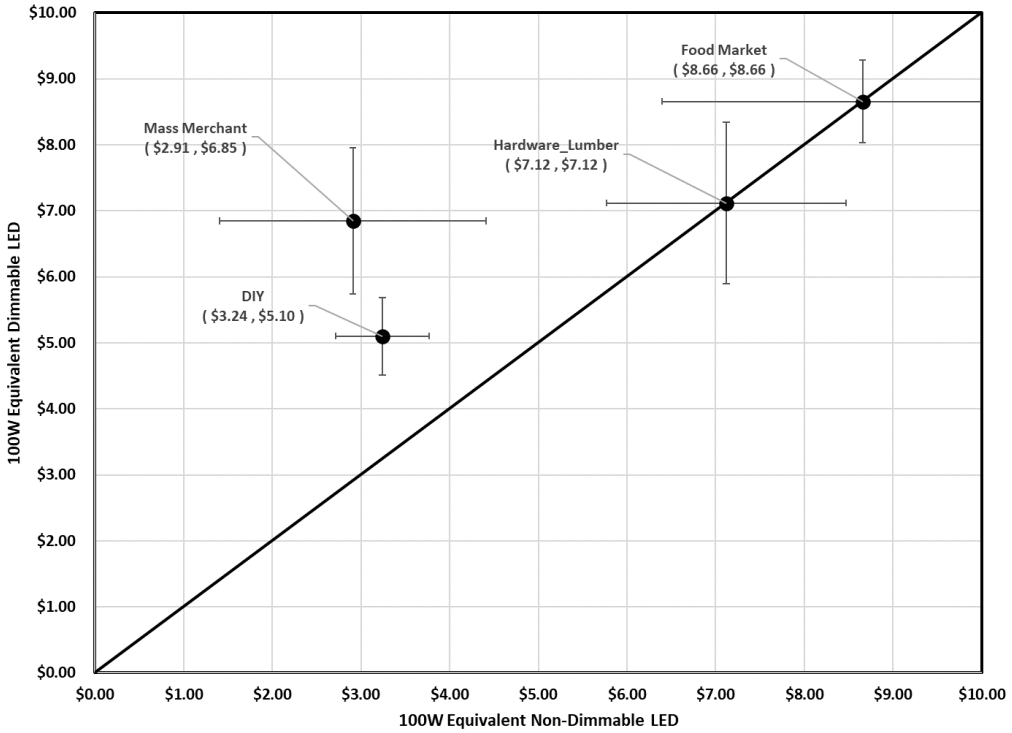
* Non-program pricing = price before incentives.

Figure 42: Non-Program Pricing: Non-Dimmable vs. Dimmable 75W Equiv. A-Line Bulbs*



* Non-program pricing = price before incentives.

Figure 43: Non-Program Pricing: Non-Dimmable vs. Dimmable 100W Equiv. A-Line Bulbs*



* Non-program pricing = price before incentives.