

R1963b: Short Term Residential Lighting Analysis

Product Availability and Pricing
Legislative Impact on Residential Lighting Opportunity

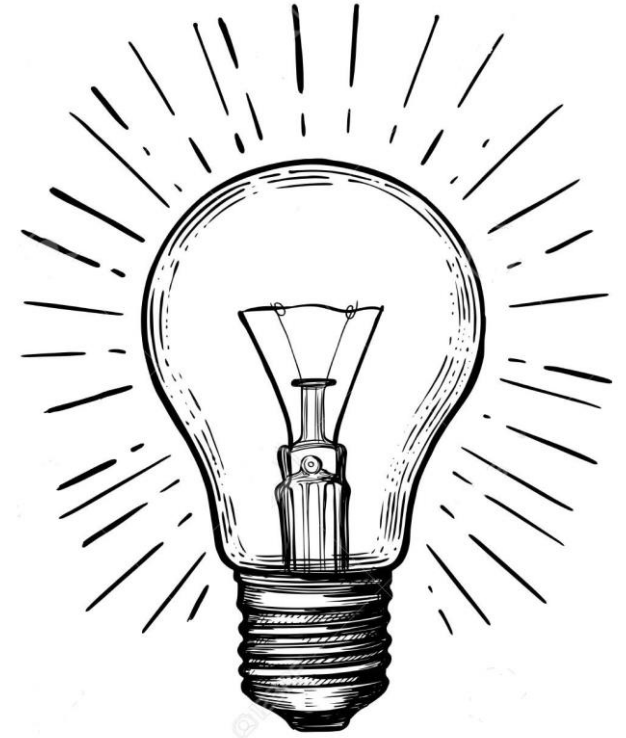
Seth Craigo-Snell
11/3/20



R1963b – Goals & Outcomes

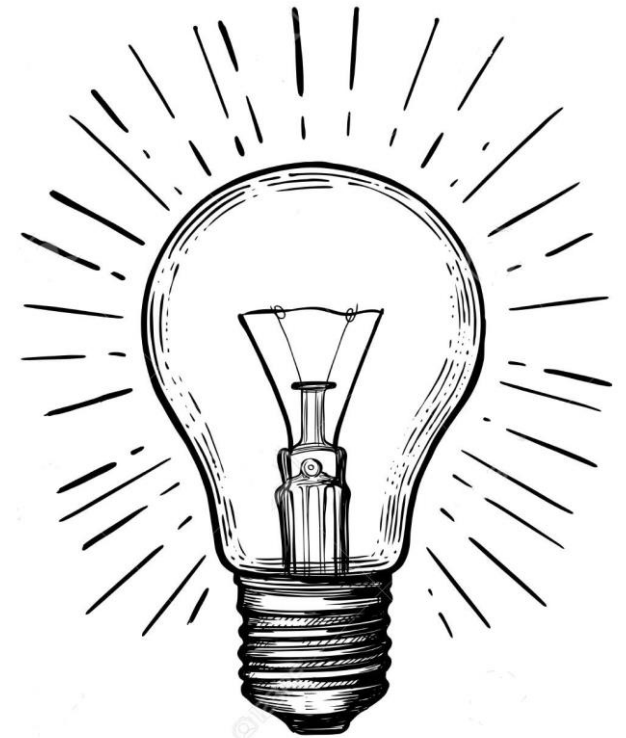
- **Characterize market conditions for Residential Lighting**
- **Assess how changes in conservation standards impact the remaining opportunity for Residential Lighting**
- **Recommend modifications to promotional strategies based on market conditions**

- *Companion study (R1963a) by NMR.*



R1963b – High-Level Findings

- **There is still opportunity to promote efficient LED lighting in the residential sector in CT**
 - LEDs and baseline halogen/incandescent bulbs are widely available in the CT market
 - Nearly all LEDs are still more expensive (before program incentives) than baseline counterparts
 - Two rulings by the DOE and the timing of subsequent lawsuits filed against the DOE make it extremely likely that baseline halogen/incandescent bulbs will continue to be widely available in the CT market for at least the next two years.
- **Adjustments are needed to refine promotion strategies.**



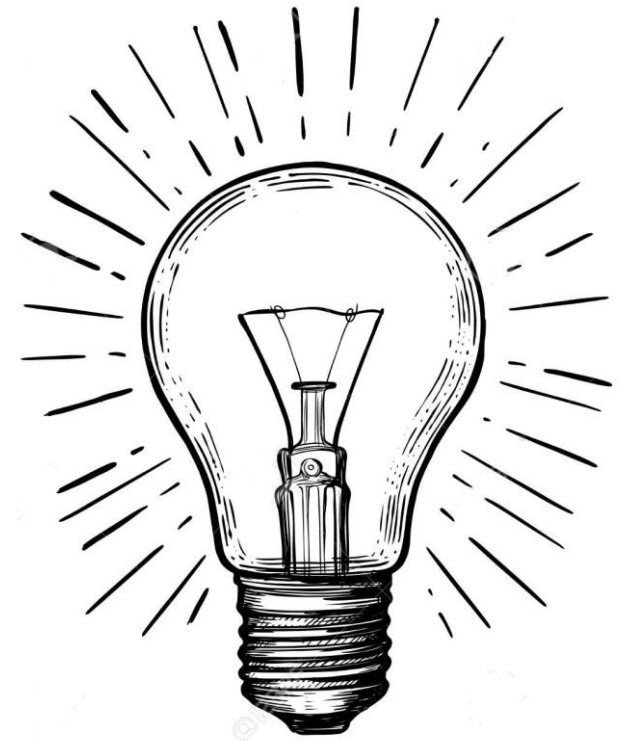
R1963b – Project Activities

Product Availability and Pricing Study

- **Establish availability of products**
 - New kind of shelf survey, not exhaustive shelf inventory
 - Single SKU inventoried within each category
 - Standard and key specialty products
 - Representative of market conditions - consumer's perspective
- **Pricing Information**
 - Efficient LEDs
 - Dimmable and Non-Dimmable
 - Baseline halogen/incandescent products

Legislative Impact on Residential Lighting Opportunity

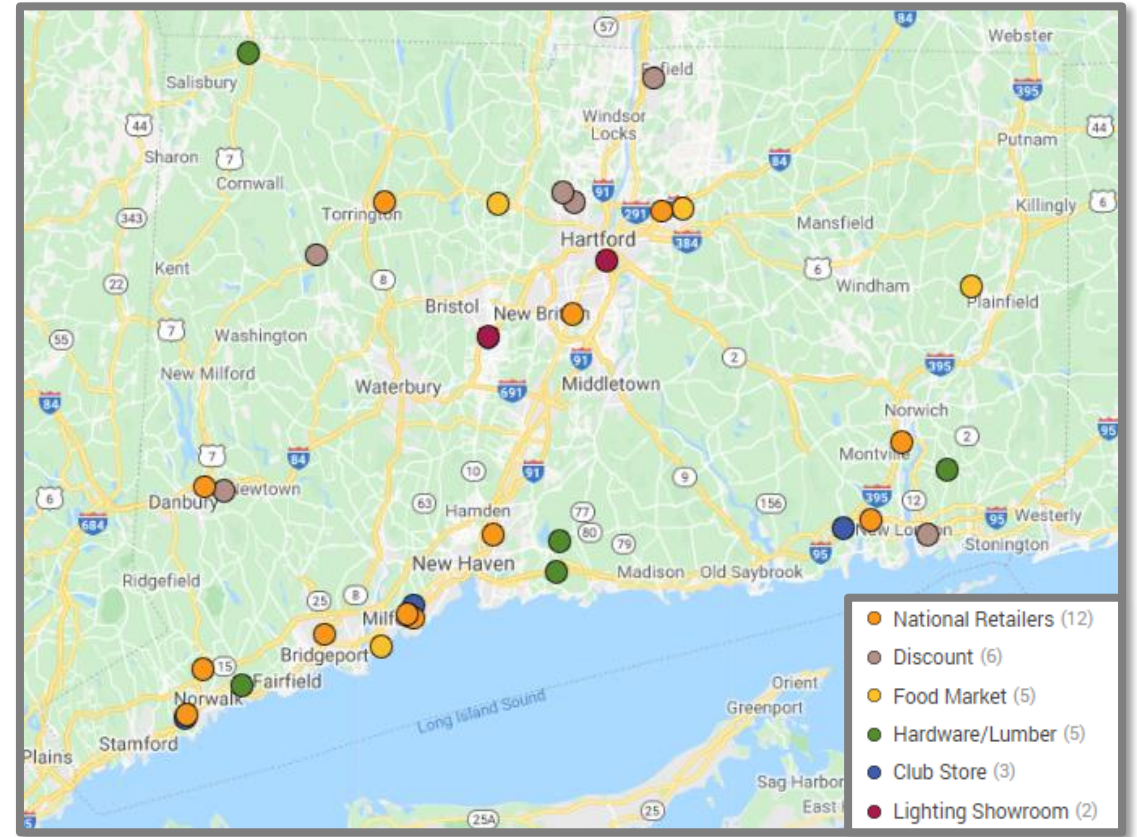
- **DOE Rulemaking**
- **Progression of Lawsuits Against DOE**



Product Availability and Pricing Study – Sample Design

PROGRAM DATA	Retailer Type	# of Locations	TOTAL	Bulbs/Location	% Total
	Club Store	15	405,261	27,017	14.5%
	Discount	166	336,127	2,025	12.0%
	Drug Store	188	38,848	207	1.4%
	Food Market	135	74,810	554	2.7%
	Hardware/Lumber	81	80,997	1,000	2.9%
	Lighting Showroom	3	68,107	22,702	2.4%
	Miscellaneous	28	40,802	1,457	1.5%
	National Retailers	73	1,744,746	23,901	62.5%
	TOTAL	690	2,789,698		100.0%

SAMPLE	Retailer Type	Sample	% Sample
	Club Store	3	9%
	Discount	6	18%
	Drug Store/Food Market	5	15%
	Hardware/Lumber	5	15%
	Lighting Showroom	2	6%
	National Retailers	12	36%
	Total	33	100%



Product Availability and Pricing Study – Key Product Types

General Purpose A-Line Bulbs

LED Dimmable (100, 75, 60 watt equiv.)

LED Non-Dimmable (100, 75, 60 watt equiv.)

EC Halogen (100, 75, 60 watt equiv.)

G25 Globe Bulbs

LED (60, 40, 25 watt equiv.)

Halogen/Incandescent (60, 40, 25 watt equiv.)

Candelabra Base Bulbs

LED (60, 40, 25 watt equiv.)

Incandescent (60, 40, 25 watt equiv.)

Directional Bulbs

LED Dimmable BR30 (65 watt equiv.)

LED Non-Dimmable BR30 (65 watt equiv.)

LED Retrofit Kits (65/75 watt equiv.)

Incandescent (65 watt equiv.)

Product Availability and Pricing Study – SKU Selection

Which SKU?

Favorably Representative

60W Equiv. Dimmable A-Line LEDs

Consumer Choice Factors:

- Brand
- Model Line (e.g. Classic, Refresh, Relax, and Reveal)
- Color Temperature
- Package Size

Selected: 8-pk GE Classic bulb; non-program pricing available and slightly lower per bulb than the 4-pk GE Classic.



Lowe's; Waterford, CT



NON-DIMMABLE LEDs
SCS ANALYTICS

RESULTS:

Product Availability

Product Availability

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%

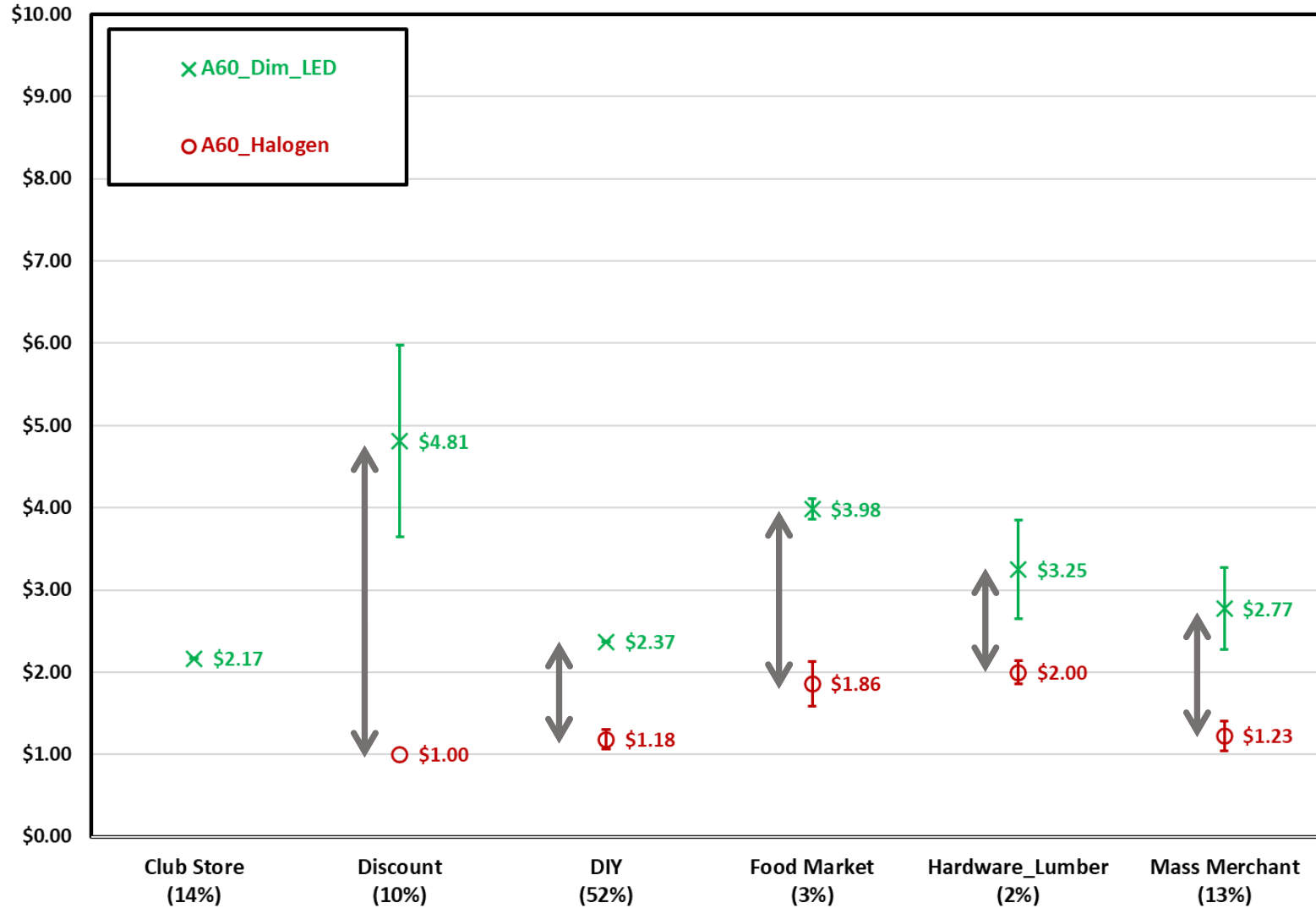
Select Results on Product Availability

- LED products are widely available in all retail channels.
- Baseline incandescent and halogen products are widely available.
- 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.

RESULTS:

Non-Program Pricing

Non-Program Pricing



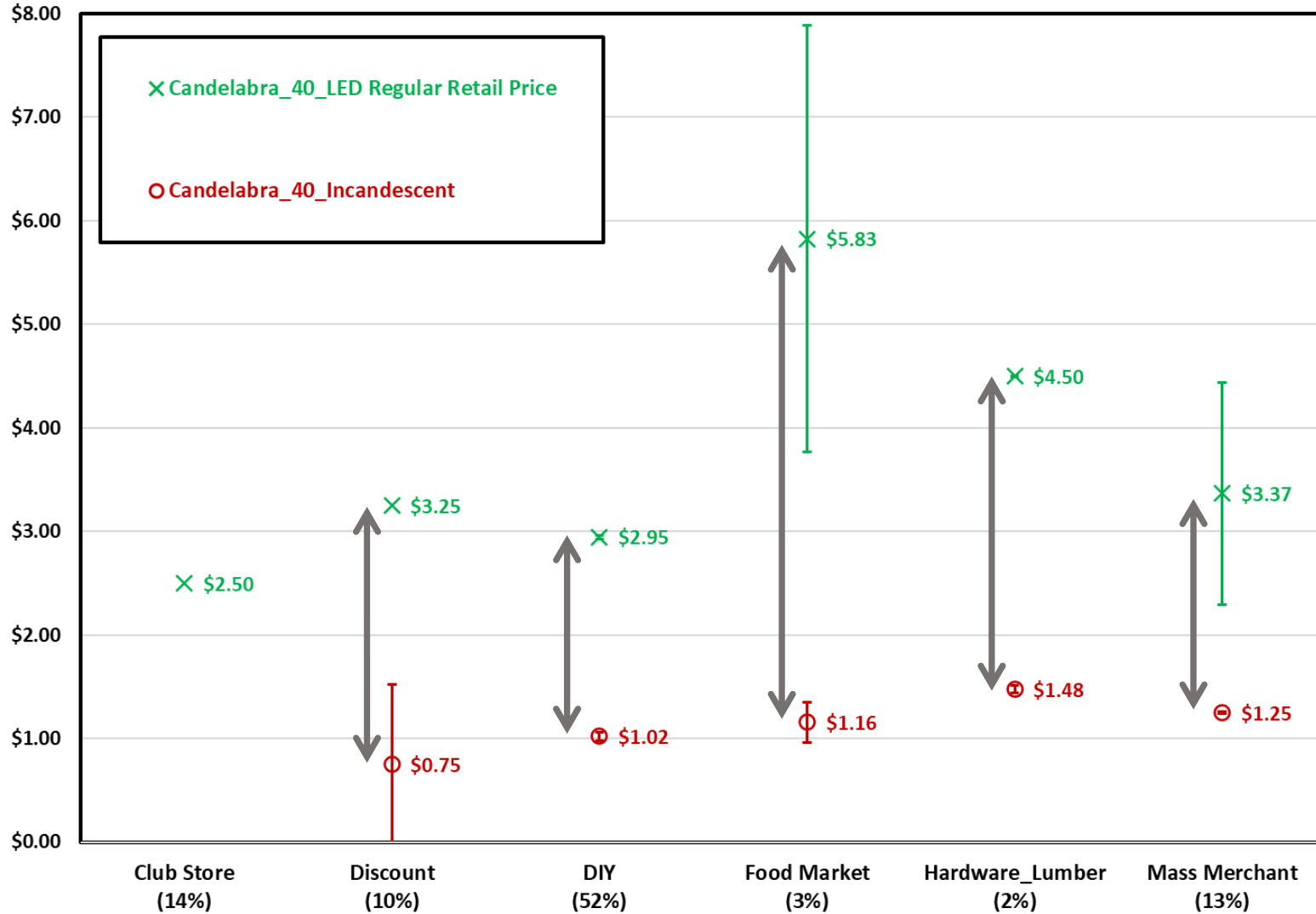
60W Equiv. Dimmable A-Line



* Non-program pricing = price before incentives.

* 2019 incentive shares (%) are shown in x-axis labels.

Non-Program Pricing



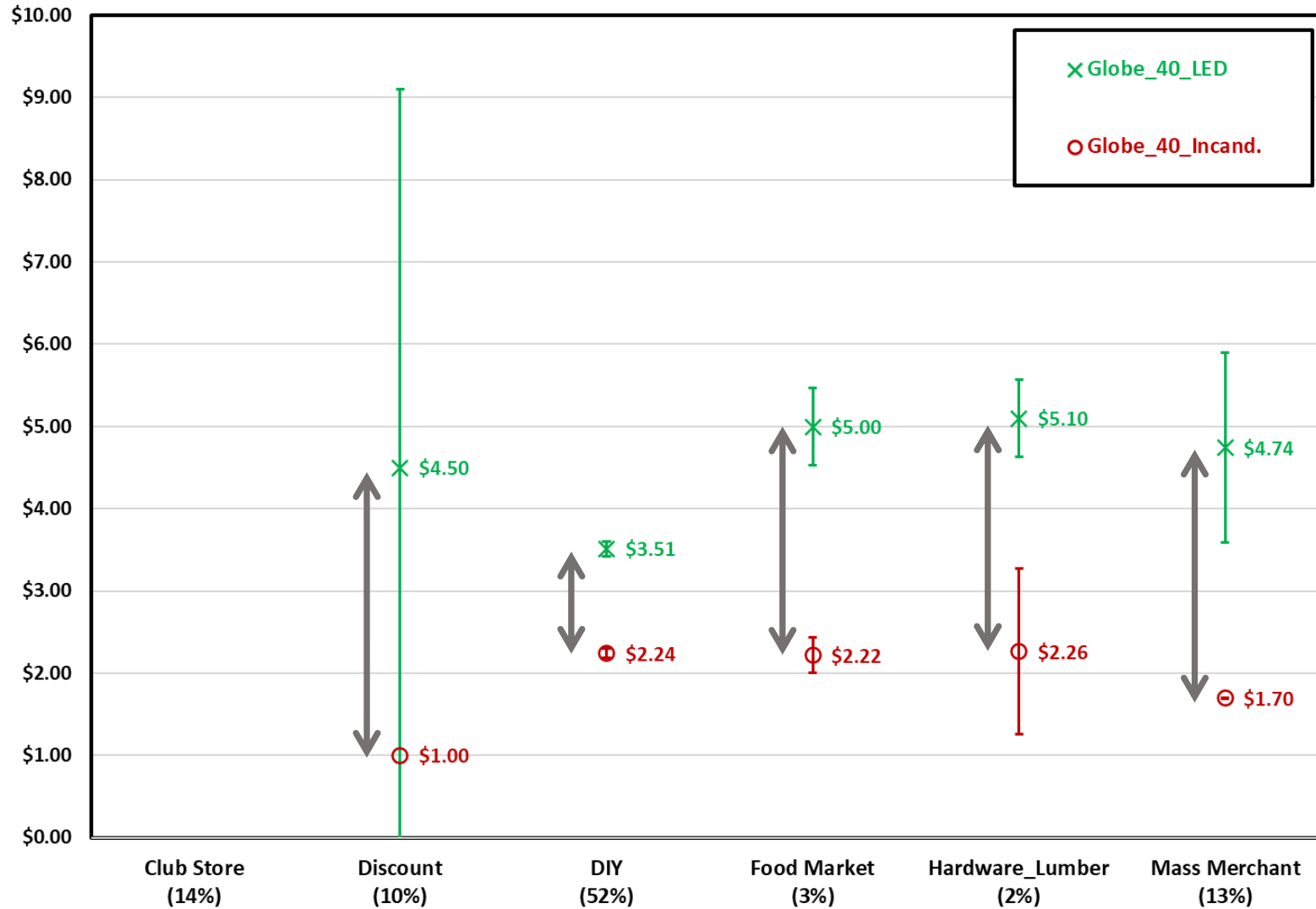
40W Equiv. Candelabra



* Non-program pricing = price before incentives.

* 2019 incentive shares (%) are shown in x-axis labels.

Non-Program Pricing



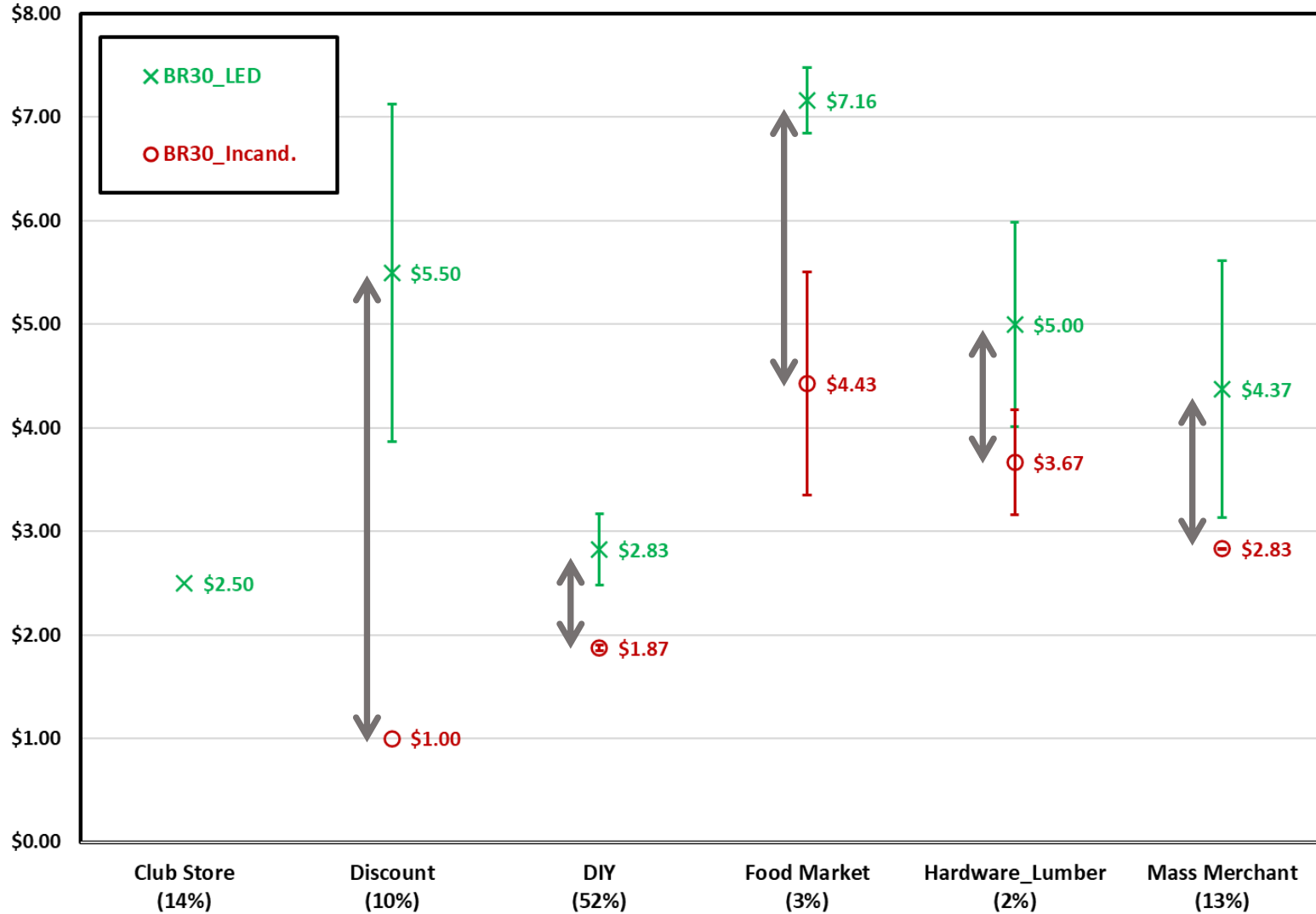
40W Equiv. G25 Globe



* Non-program pricing = price before incentives.

* 2019 incentive shares (%) are shown in x-axis labels.

Non-Program Pricing



65W Equiv. BR30 Directional



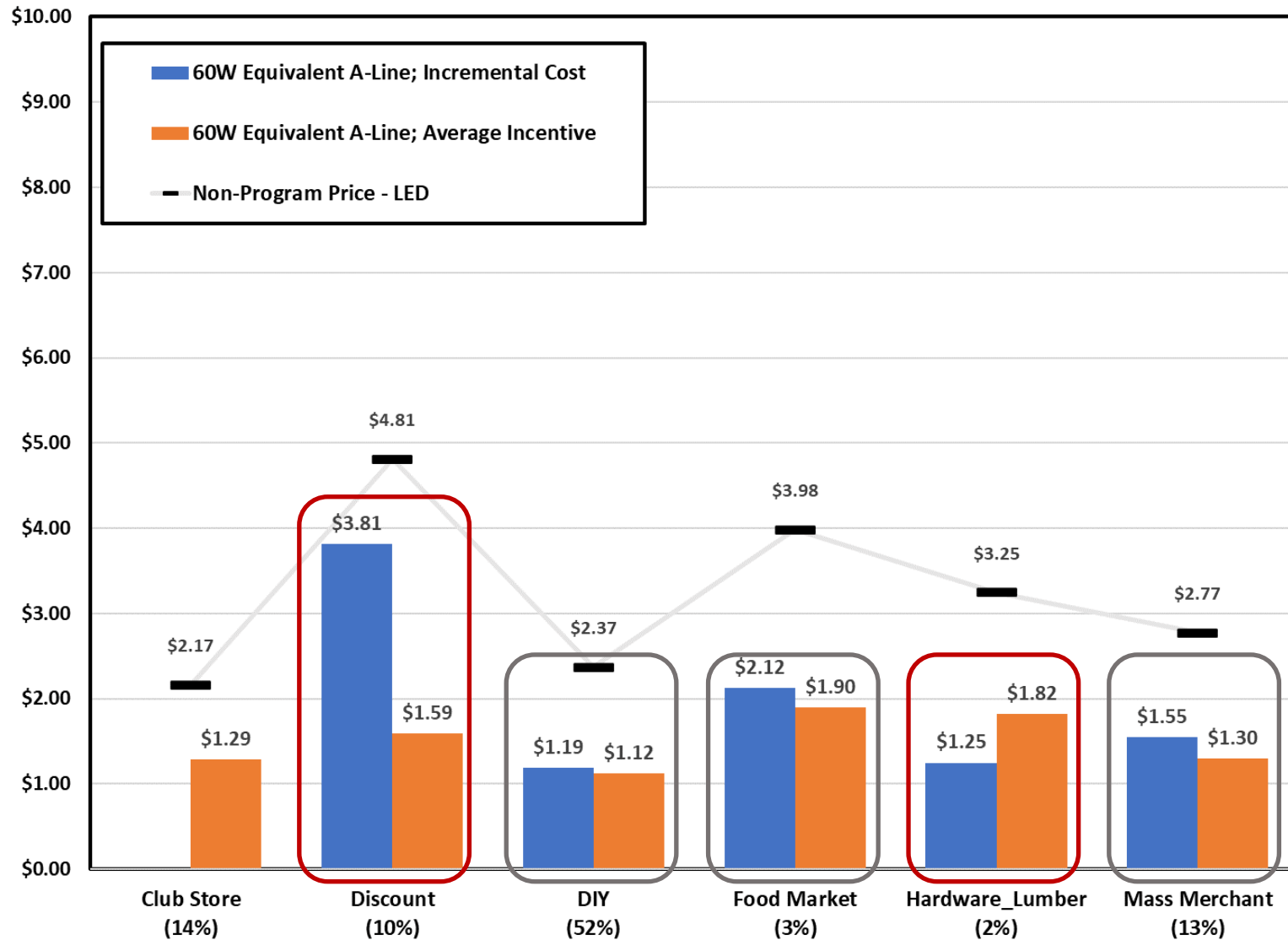
* Non-program pricing = price before incentives.

+ 2019 incentive shares (%) are shown in x-axis labels.

RESULTS:

Incremental Costs vs. Program Incentives

Incremental Cost vs. Program Incentives



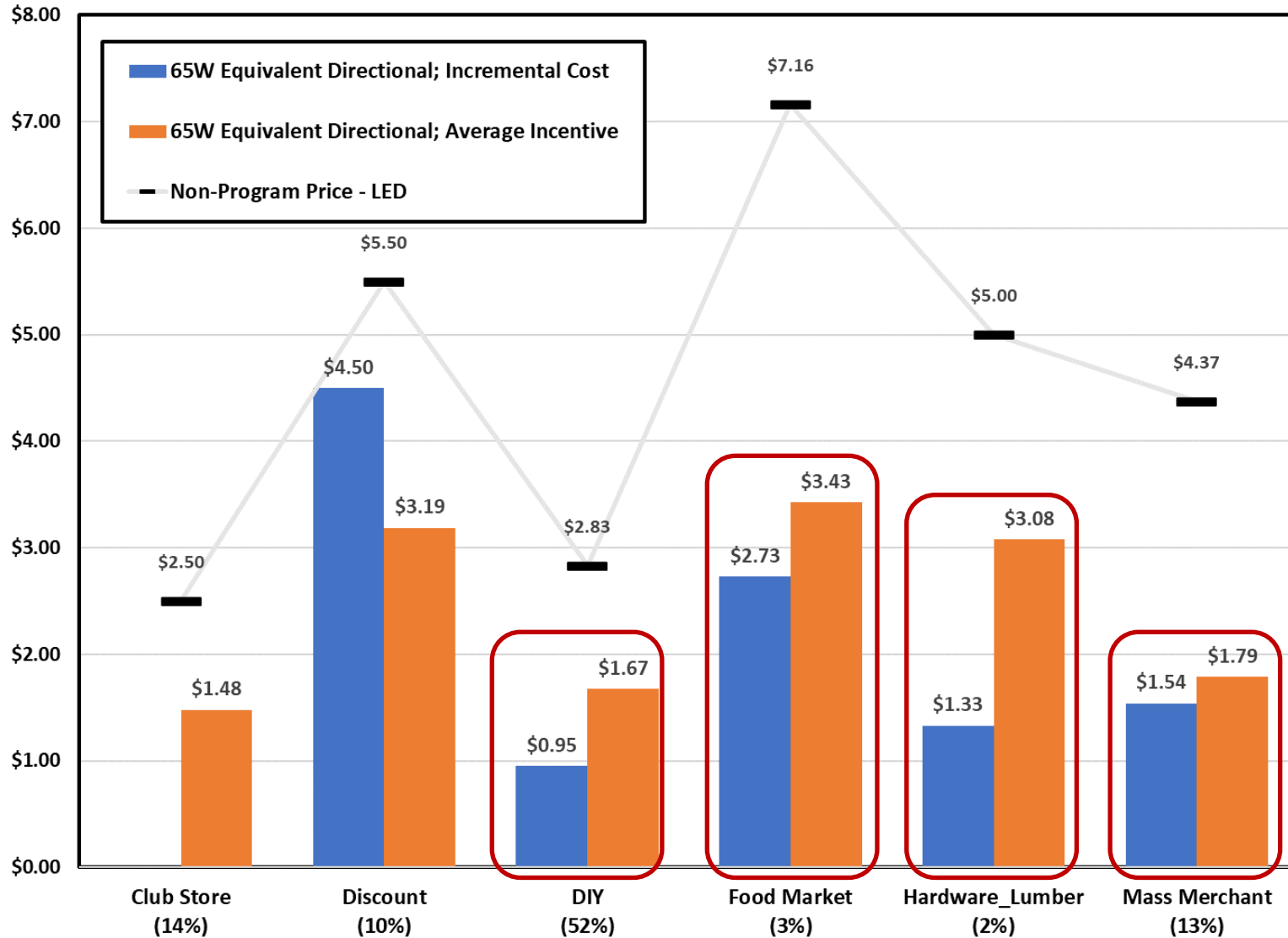
60W Equiv. Dimmable A-Line



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

Incremental Cost = Non-program LED price - Baseline product price.

Incremental Cost vs. Program Incentives



65W Equiv. BR30 Directional



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

Incremental Cost = Non-program LED price - Baseline product price.

Incremental Cost vs. Program Incentives

LED Product	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
	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%

Incr. Cost (IC) = Non-program LED price - Baseline product price. + Avg. Incent. (AI) = 2019 sales weighted average incentive level by product and retail channel.

Incremental Cost vs. Program Incentives

LED Product	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
	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%

Incr. Cost (IC) = Non-program LED price - Baseline product price. + Avg. Incent. (AI) = 2019 sales weighted average incentive level by product and retail channel.

\$#.## Average Incentive EXCEEDS Incremental First Cost

Incremental Cost vs. Program Incentives

LED Product	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
	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%

Incr. Cost (IC) = Non-program LED price - Baseline product price. + Avg. Incent. (AI) = 2019 sales weighted average incentive level by product and retail channel.

\$#.## Average Incentive less than 50% of Incremental First Cost

Incremental Cost vs. Program Incentives

LED Product	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
	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%

Incr. Cost (IC) = Non-program LED price - Baseline product price. + Avg. Incent. (AI) = 2019 sales weighted average incentive level by product and retail channel.

\$#.## Average Incentive less than 50% of Incremental First Cost

\$#.## Average Incentive 50% - 55% of Incremental First Cost

Incremental Cost vs. Program Incentives

LED Product	Discount			DIY			Food Market			Hardware/Lumber			Mass Merchant		
	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%

Incr. Cost (IC) = Non-program LED price - Baseline product price. + Avg. Incent. (AI) = 2019 sales weighted average incentive level by product and retail channel.

\$#.## Average Incentive EXCEEDS Incremental First Cost

\$#.## Average Incentive less than 50% of Incremental First Cost

\$#.## Average Incentive 50% - 55% of Incremental First Cost



Recommendations and Future Research

Program Recommendations

1) Review and refine the incentive strategies:

- 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.
- b. For Discount retailers, ensure that incentives are aggressive compared to the other retailers in the program.

2) Discontinue promotion of products at Club Stores.

3) Reduce incentives from products where the current levels *exceed* the incremental first cost between LEDs and baseline products.

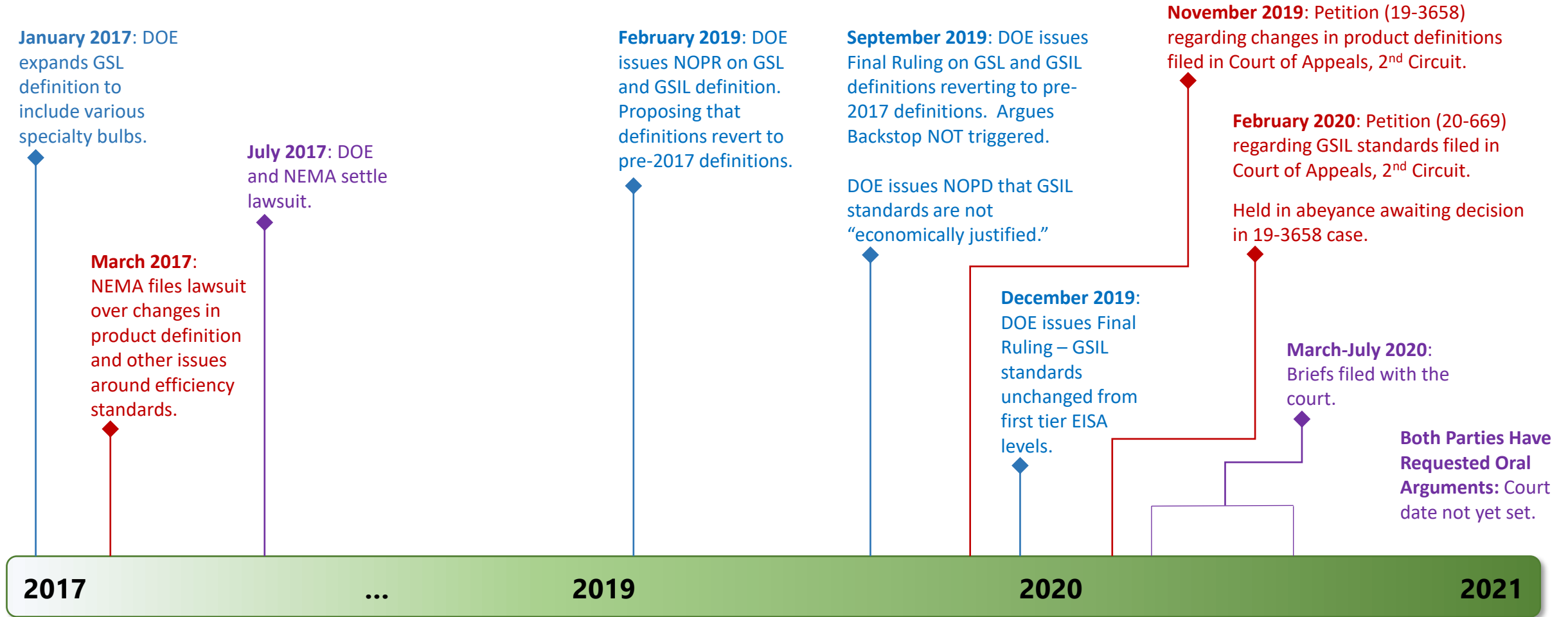
4) Program Tracking Data:

- 1) Product subtype and equivalent wattage need to be added.
- 2) Non-program price and the program adjusted price updated/accurate.

5) Further detailed recommendations by product type and retail channel are in the report.

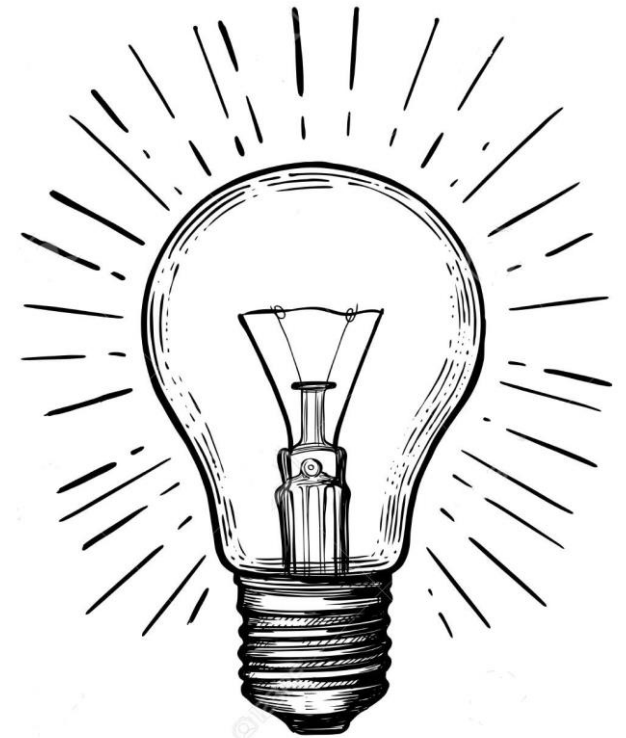
Federal Standards for Light Bulbs

Legislative Impact on Residential Lighting Opportunity



Summary

- **Valuable new approach to shelf survey work**
- **Actionable program planning information**
- **Residential Lighting opportunity remains, but with important changes to approaches**



Future Research

Some minor changes to the sample design.

- Reduce number of locations for National Retailers
- Increase number of locations in other retail channels (e.g. Discount, Food, Hardware/Lumber)
- Explicitly include Drug Stores
- Include other HTR retailers

Shift emphasis from market conditions toward program evaluation goals

- 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
 - 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 check inventory to ascertain the prevalence and effectiveness of program point-of-purchase material

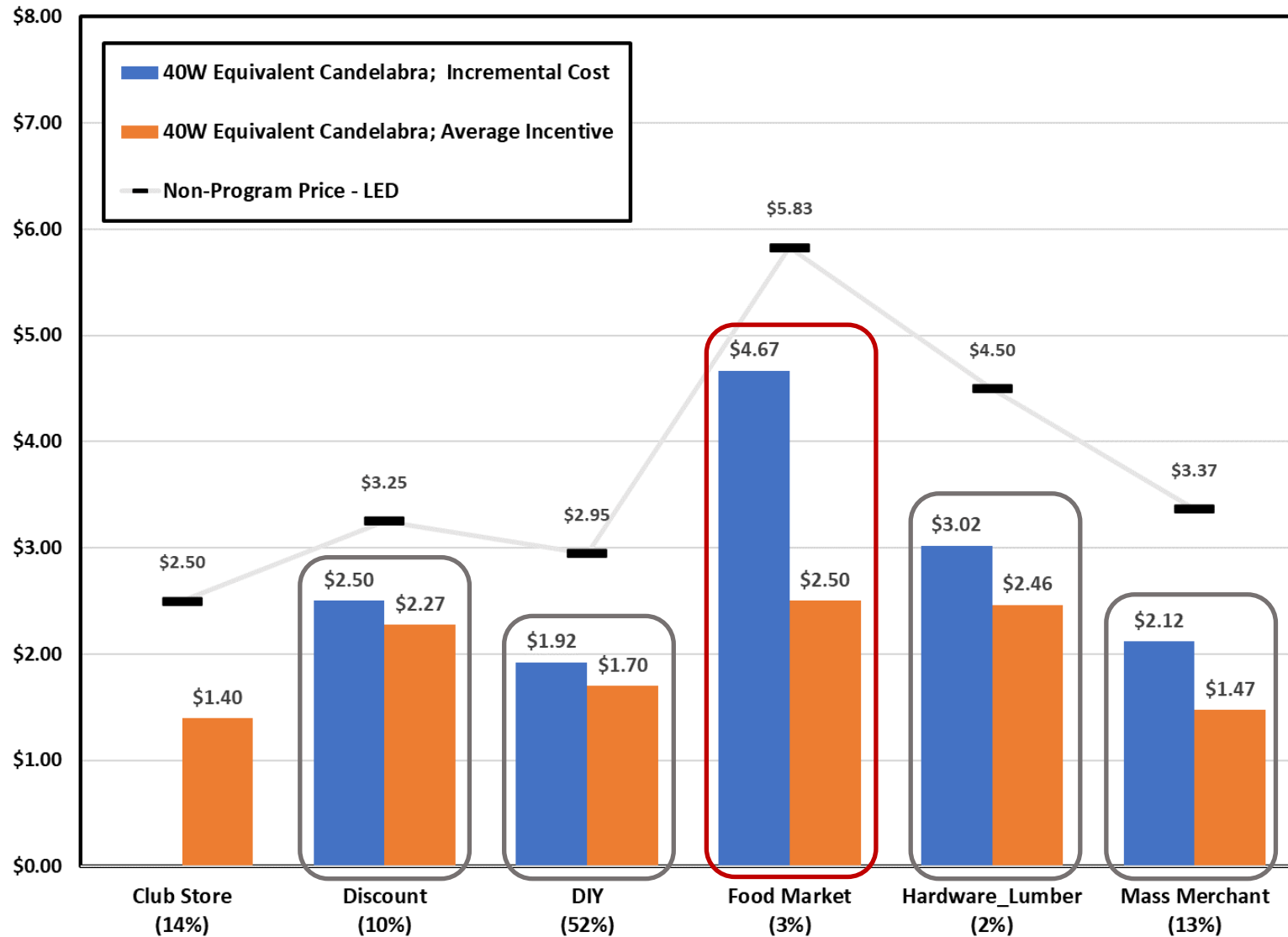
Questions?

Thank you.
Seth Craigo-Snell
203.494.5600



SCS ANALYTICS

Incremental Cost vs. Program Incentives



40W Equiv. Candelabra

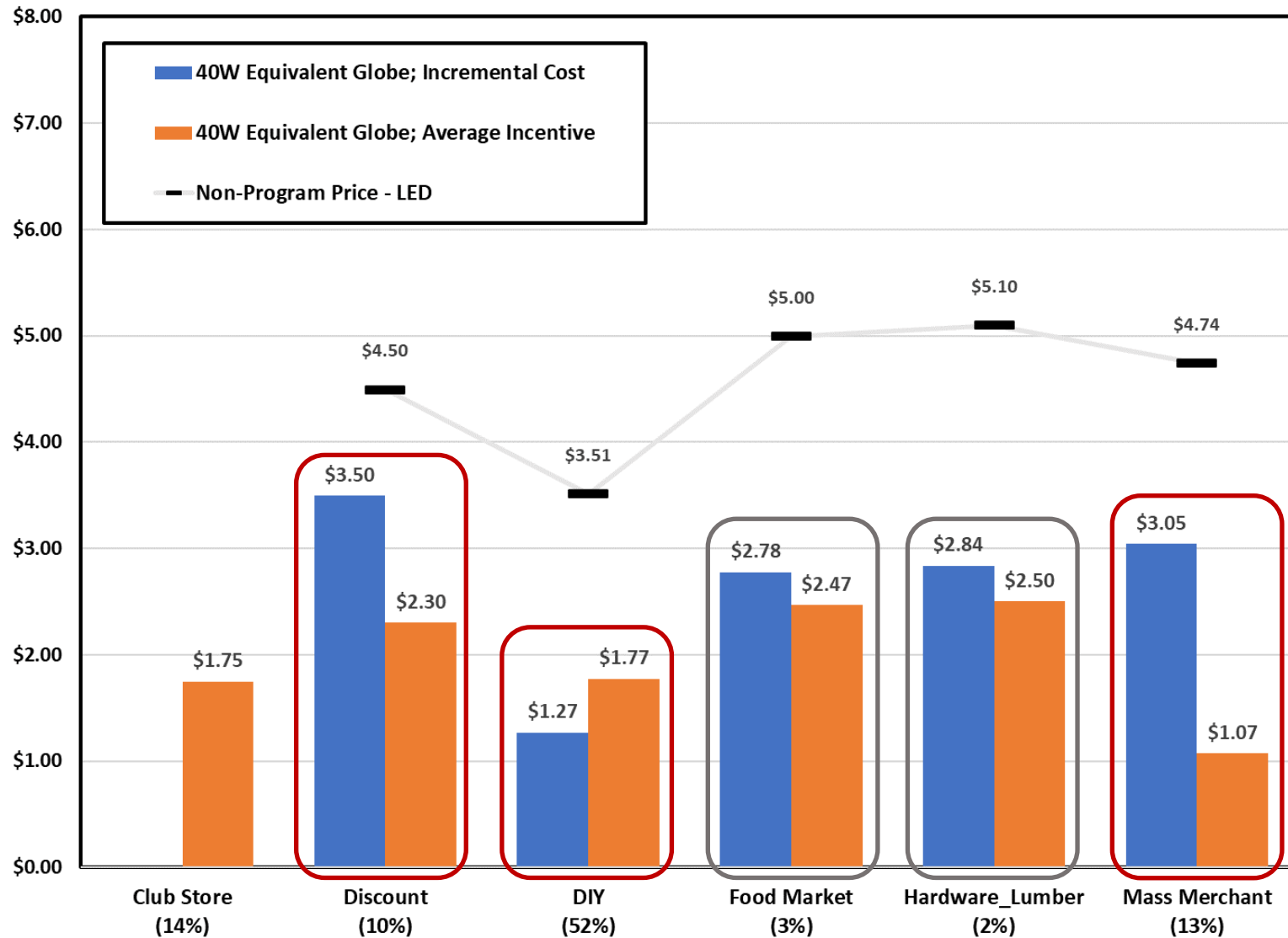


SCS ANALYTICS

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

Incremental Cost = Non-program LED price - Baseline product price.

Incremental Cost vs. Program Incentives



40W Equiv. G25 Globe



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

Incremental Cost = Non-program LED price - Baseline product price.