

Update on Residential Lighting Measures for the 2019-2021 Energy Efficiency Plans

June 30, 2021

On October 31, 2018, The Berkshire Gas Company, Fitchburg Gas & Electric Light Company d/b/a Until, Liberty Utilities (New England Natural Gas Company) Corp. d/b/a Liberty, Massachusetts Electric Company, Nantucket Electric Company, Boston Gas Company and former Colonial Gas Company, each d/b/a National Grid, NSTAR Electric Company, NSTAR Gas Company and Eversource Gas Company of Massachusetts, each d/b/a Eversource Energy, and Cape Light Compact JPE (collectively, “Program Administrators” or “PAs”), filed for approval with the Department of Public Utilities (the “Department”) their 2019-2021 Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plans, which were docketed as D.P.U. 18-110 through D.P.U. 18-119 (“2019-2021 Plan”). The 2019-2021 Plan was developed and filed consistent with G.L. c. 25, §§ 19 and 21, as well as Department precedent. As part of the 2019-2021 Plan, the Program Administrators proposed to implement lighting energy efficiency measures as part of the core initiatives for Residential New Homes and Renovations, Residential Coordinated Delivery, and Residential Retail. See D.P.U. 18-110 through D.P.U. 18-119, Statewide Plan, Exh. 1, at 39-64. The Department approved the Program Administrators’ 2019-2021 Plan on January 29, 2019.

As the Program Administrators detailed in the 2019-2021 Plan, residential lighting was expected to diminish as a portion of the energy efficiency portfolio during the three-year term. See D.P.U. 18-110 through D.P.U. 18-119, Statewide Plan, Exh. 1, at 32. The claimable savings for residential lighting have been in rapid decline, in part due to the Program Administrators’ success, and in part due to additional market and regulatory factors. Id. As anticipated and previewed in the 2019-2021 Plan, the Program Administrators have identified that it is now time to transition away from the residential lighting market. Accordingly, the Program Administrators, in coordination with the Department of Energy Resources (“DOER”) and consultants for the Energy Efficiency Advisory Council (“EEAC” or “Council”), have developed a framework for exiting the residential lighting market by the end of this plan term (the end of calendar year 2021). This framework provides plans to cease offering incentives for residential lighting by the end of 2021, with more specific end dates for each bulb type, as further outlined below.¹ The framework set forth herein is consistent with the Green Communities Act and the 2019-2021 Plan because there are no longer cost-effective savings to be acquired from certain measures, and therefore it is a prudent to discontinue expending ratepayer dollars to provide incentives without attendant savings.

Pursuant to the Department’s directive in Investigation by the Department of Public Utilities on its own Motion into Updating its Energy Efficiency Guidelines, D.P.U. 20-150-A, at 19-20 (2021) (“Guidelines Order”), the Program Administrators are to submit a notice to the Department and Council at least 90 days prior to discontinuing a measure or offering included in the approved plan. However, the framework set forth herein was developed and determined among PAs, DOER, and the Council’s consultants prior to the issuance of the Guidelines Order, and

¹ This update is only related to market rate residential, not income eligible. Additionally, the PAs are still reviewing whether it is appropriate to continue offering lighting to renters and moderate income customers after 2021.

includes certain immediate end dates that have been communicated to market participants well in advance of the specified end dates and prior to the Guidelines Order. Additionally, the PAs and Council’s consultants have kept the Council apprised of changes in claimable lighting savings, and the Council itself has requested through its Council Priorities that PAs show a “demonstrated commitment to planning for a future beyond residential lighting.”² Accordingly, given the lack of cost-effective savings and collaboration undertaken to arrive at this framework, the PAs propose implementation of this framework in a manner consistent with the dates set forth herein. As stated in the Guidelines Order, the Program Administrators are responsible for reasonably and prudently implementing the plan and minimizing costs to ratepayers; the PAs believe that these changes are reasonable and prudent modifications that will minimize costs to ratepayers. Should the Department require a notice period to comply with the Guidelines Order, however, the PAs will take the necessary actions to support the measures and then cease support for these bulbs 90 days from the date of this letter, unless otherwise directed by the Department. Accordingly, for the reasons detailed below, please accept this update as notice of the Program Administrators’ intent to end incentives for residential lighting as outlined in the framework below.

I. Background

A. LED Lighting: A Success Story

Few technologies have been as transformative in the energy space as the light-emitting diode (“LED”) light bulb. While only a few years ago, LED lighting was an emerging technology, beginning with the 2013-2015 Plan,³ and refined in the 2016-2018 Plan,⁴ the Program Administrators developed initiatives to drive the LED lighting revolution. LED bulbs use approximately 80 percent less energy than their inefficient counterparts.⁵ The Program Administrators quickly recognized this valuable opportunity for customers and pushed for rapid adoption through a multichannel approach, harnessing upstream and retail channels and direct-install opportunities across the portfolio while leveraging the power of mature programs to drive volume and pricing. This transformation of the lighting market with LED technology is a signature achievement of the prior plans’ design and implementation.

The 2019-2021 Plan’s Residential Lighting core initiative includes several components and entry points designed to educate consumers about the benefits of ENERGY STAR® qualified lighting products and to make these products more affordable and readily available. Upstream incentives and negotiated promotions for qualified products provide instant price reductions to the retail consumer. These price reductions make efficient lighting products more attractive and affordable to customers, which in turn increases the number of retail outlets willing to carry these products. As shown in the table below, with the help of the program incentives, the average price

² The Council’s 2020 EEAC Priorities requests: “Demonstrated commitment to planning for a future beyond residential lighting by evaluating impacts of 2019 program delivery enhancements, identifying additional program redesign, and initiating planning to develop a residential program that emphasizes non-lighting measures, expands cost-effective benefits to customers, and supports market transformation to deeper energy savings.” <https://ma-eeac.org/wp-content/uploads/DRAFT-2020-EEAC-Priorities-4.6.2020.pdf> at 4.

³ 2013-2015 Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan, docketed as D.P.U. 12-100 through D.P.U. 12-111 (“2013-2015 Plan”).

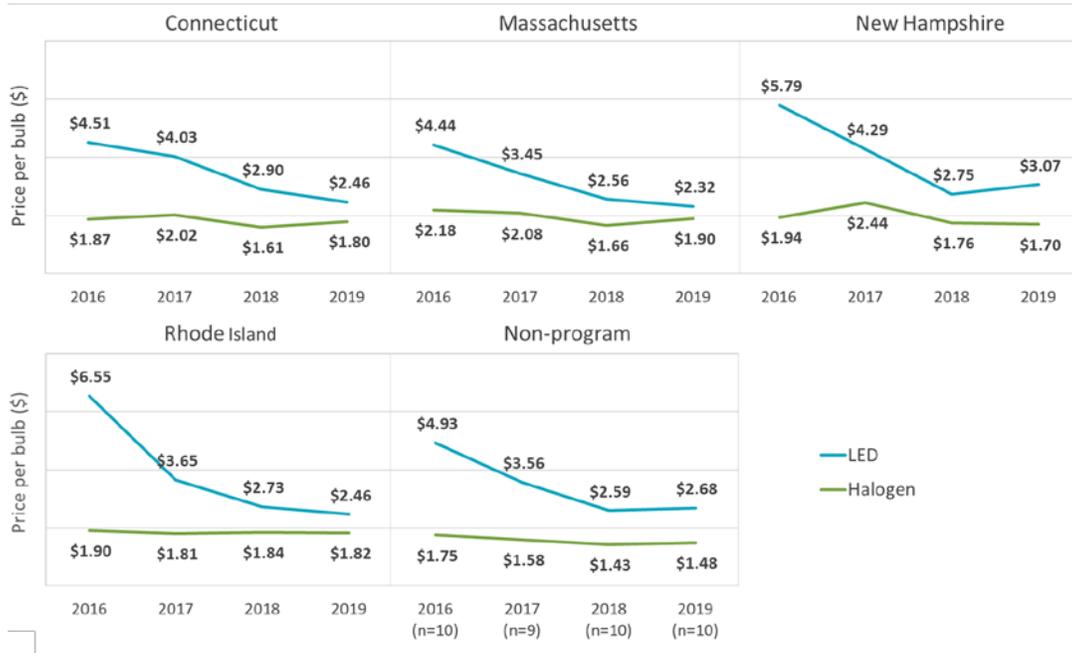
⁴ 2016-2018 Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan, docketed as D.P.U. 15-160 through D.P.U. 15-169 (“2016-2018 Plan”).

⁵ Comparing 8w LED vs. a 43w halogen or 60w incandescent.

per LED bulb in Massachusetts has, over the short three-year span of 2016 to 2019, decreased by nearly 50 percent, making it comparable to the cost of less efficient halogen alternatives.

Average Price per Bulb, 2016-2019⁶

(Source: LightTracker FCD – All Retail Channels)

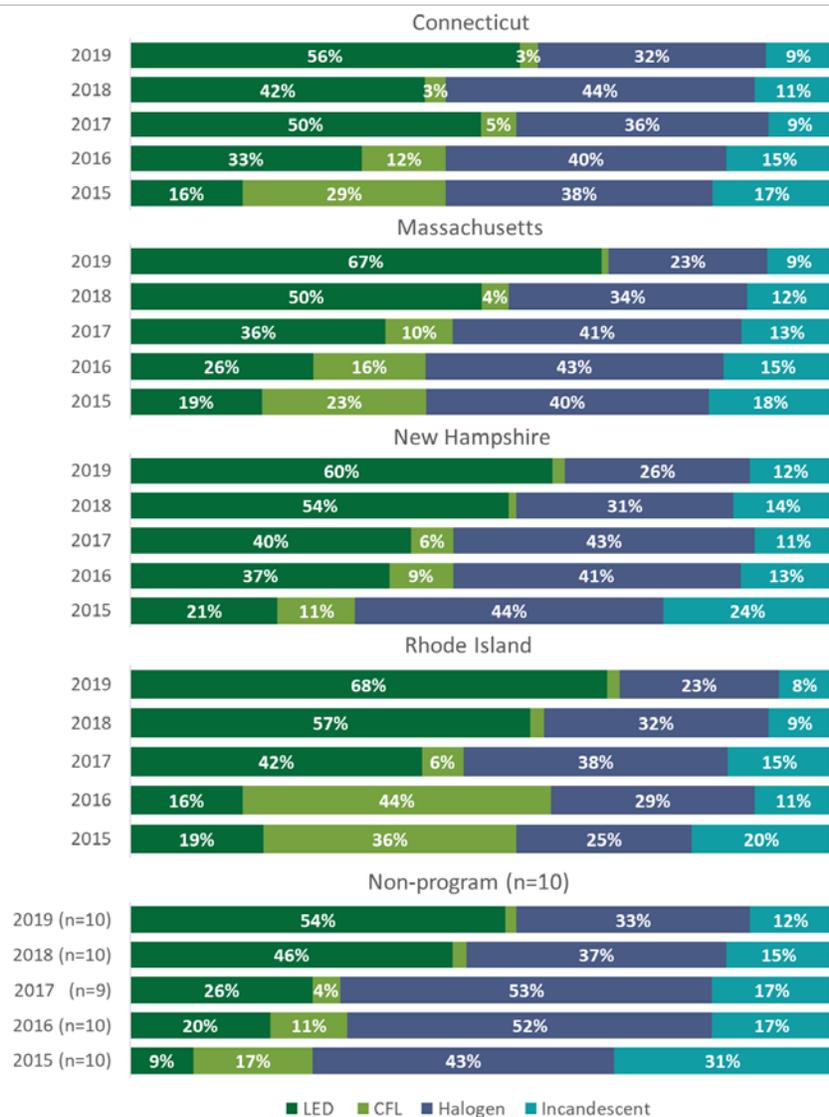


The result of this incentive offering has been a resounding success. The PAs’ robust efforts directly contributed to the tremendous growth in the LED market, which increased in Massachusetts from just two percent in 2014 to 67 percent by 2019 (compared to only 54 percent market share in states that do not incentivize efficient lighting).

⁶ This chart does not include private label bulbs sold at specific retailers, so the prices reported here are likely somewhat higher than actual prices.

Market Share by Bulb Technology, 2015-2019⁷

(Source: LightTracker FCD – All Retail Channels)



Similarly, the market share data provided above shows that customers in Massachusetts have benefited not only by having access to efficient lighting, but also in terms of overall system benefits. LED bulbs have contributed to the residential sector of Massachusetts saving as much as five percent of annual energy use over the last several years.⁸

B. Recent Evaluation Data Analysis

⁷ Massachusetts and Rhode Island market shares are not adjusted for known program sales.
⁸ <https://www.masssavedata.com/Public/SalesAndSavings>

As with any disruptive technology, eventually the technology is no longer the disruptor, and instead becomes standard practice. The Program Administrators recognize that evaluation data indicates that LEDs now represent the majority of retail lighting throughout the United States, even in regions that have never received program funding. Further, as shown from the data above, there has been robust deployment of LEDs in Massachusetts during the past five years.

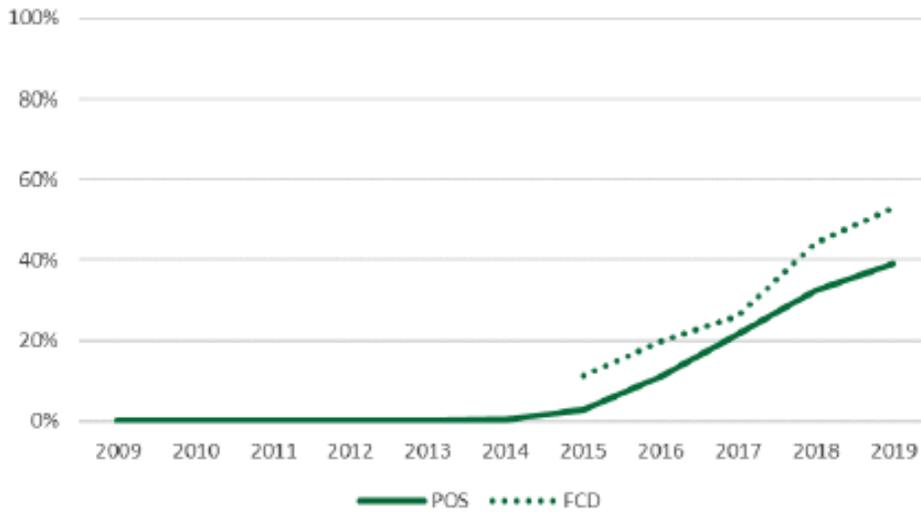
Residential lighting has been extensively studied over the last decade in Massachusetts, with evaluation techniques that include on-site visits to homes, customer surveys, supplier interviews, and analysis of sales data across the country. The Regional Lighting Sales Data Analysis conducted by NMR Group, Inc. has been of particular value in determining how quickly the lighting market is transforming to LEDs. In particular, this evaluation looks closely at the market share of LED bulbs in non-program states (states in which there are no incentives for the purchase of LEDs). These market shares are viewed as a proxy for what the market share of LEDs would be in Massachusetts in the absence of the PAs' programs.⁹ The most recent version of this sales data study was completed in December 2020 using sales data from 2019 ("2019 Sales Data Analysis").¹⁰ The 2019 Sales Data Analysis showed high and growing market shares for LEDs across all bulb shapes in non-program states, as seen in Figures 2 and 3 below, which appear on page 5 of the 2019 Sales Data Analysis.

⁹ While this does not account for differences in demographics or cultural valuations of efficiency, nor does it account for the influence of Massachusetts and other regional efficiency programs on sales in nonprogram states, it is nevertheless a useful indicator.

¹⁰ 2019 Regional Lighting Sales Data Analysis (MA20R22-E), *NMR Group, Inc.* available at https://ma-eeac.org/wp-content/uploads/MA20R22-E-LtgSalesDataAnalysis_FINAL_2020.12.02.pdf

Figure 2: Non-program LED Market Share, 2009-2019^{1,2}

(Source: LightTracker FCD – All Retail Channels, POS)

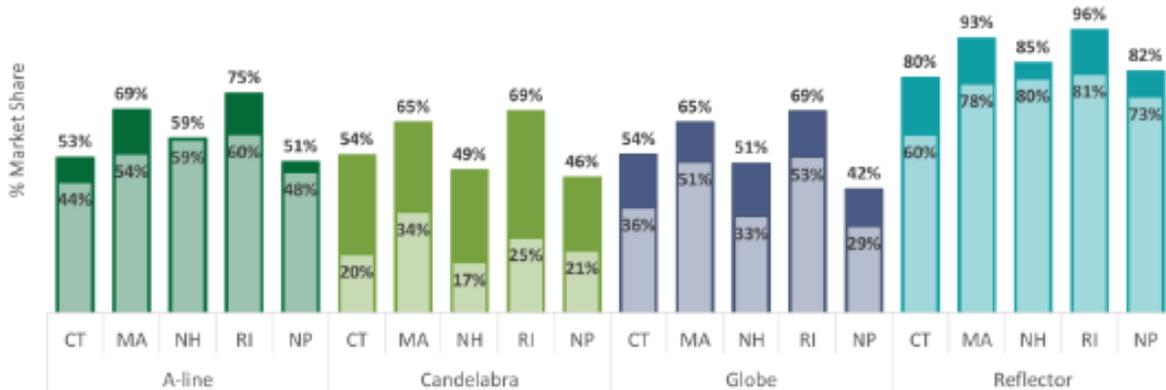


¹ POS includes discount, dollar, drug, grocery, mass merchandise, and some membership stores. POS data are not affected by CREED’s adjustment for known program sales.

² For consistent comparison across years, non-program states are restricted to Alabama, Delaware, Kansas, Kentucky, Mississippi, Nebraska, Tennessee, and Virginia for all years shown. Therefore, the market shares for non-program states in the figure above differ slightly from market shares for the full list of current non-program states, such as those reported in Figure 11.

Figure 3: Massachusetts, New Hampshire, and Comparison Areas LED Market Share by Bulb Shape, 2018-2019^{1,2}

(Source: LightTracker FCD – All Retail Channels)



¹ 2018 market share = lighter shade, 2019 market share = darker shade; NP = Non-program areas

² Massachusetts and Rhode Island market shares are adjusted for known program sales; unadjusted shares are not available.

In addition to the 2019 Sales Data Analysis, the evaluation team also considered potential federal policy changes that will impact the residential lighting market. The election of President Biden will likely lead to the enforcement of the lighting standards contained in the Energy Independence and Security Act (“EISA”) of 2007, which directed the Department of Energy to undertake a rulemaking to determine an appropriate efficacy standard for General Service Lighting, to be completed by January 1, 2017. EISA included a “backstop” provision, in the event that that rulemaking failed to be completed, that created a minimum efficacy level for light bulbs of 45 lumens/watt – a level of efficacy that can only be achieved by LEDs and CFLs – effective January 1, 2020. Following the election of President Trump in 2016, the Environmental Protection Agency made a determination that the “backstop” provision contained within the law had not been triggered and therefore incandescent and halogen bulbs could continue to be sold beyond January 1, 2020.¹¹ While there are several lawsuits still in the courts regarding determinations made by the Trump Administration in connection with EISA, the PAs anticipate that the Biden Administration will implement yet another set of regulations, likely to be even stronger in requiring minimum efficacies for light bulbs.¹²

Careful consideration of the 2019 Sales Data Analysis, review of the trending analysis for the deployment of LEDs in Massachusetts for the past five years, and the likely federal regulatory changes detailed above, led the Program Administrators’ evaluation teams, in consultation with the EEAC’s evaluation consultant, to determine that incentives for residential lighting should be phased out during the current three-year plan term.

II. Framework for Exiting the Residential Lighting Market

As each bulb shape displays unique adoption curves, the PAs conducted bulb shape-specific analyses of the market and developed individual exit strategies by bulb shape. Support for residential lighting has or will be discontinued as described below. Again, this exit strategy was developed in consultation with DOER and the Council’s consultants.

The PAs intend to continue to offer direct installation of lighting measures in the market rate Residential Coordinated Delivery program through December 31, 2021 in order to deliver on site energy savings to participating customers by actively removing inefficient bulbs that are still in service on site. This approach should mitigate customer confusion, allow contractors to work through inventory, and avoid customer time spent discussing with an energy specialist why some inefficient bulbs can be replaced, but others cannot be replaced. With respect to Residential New Construction, PAs discontinued incentives for the installation of lighting measures low-rise projects after December 31, 2020. This change was made because Massachusetts updated the energy codes in 2020 and LEDs are now code in New Construction; thus, the PAs cannot offer LEDs in Residential New Construction.

As noted above, the determinations set forth in this update were made prior to the issuance of the Guidelines Order. Should the Department require the 90-day notice period established under

¹¹ <https://www.epa.gov/cfl/how-energy-independence-and-security-act-2007-affects-light-bulbs>

¹² Indeed, President Biden has already issued an executive order indicating such action: <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/>

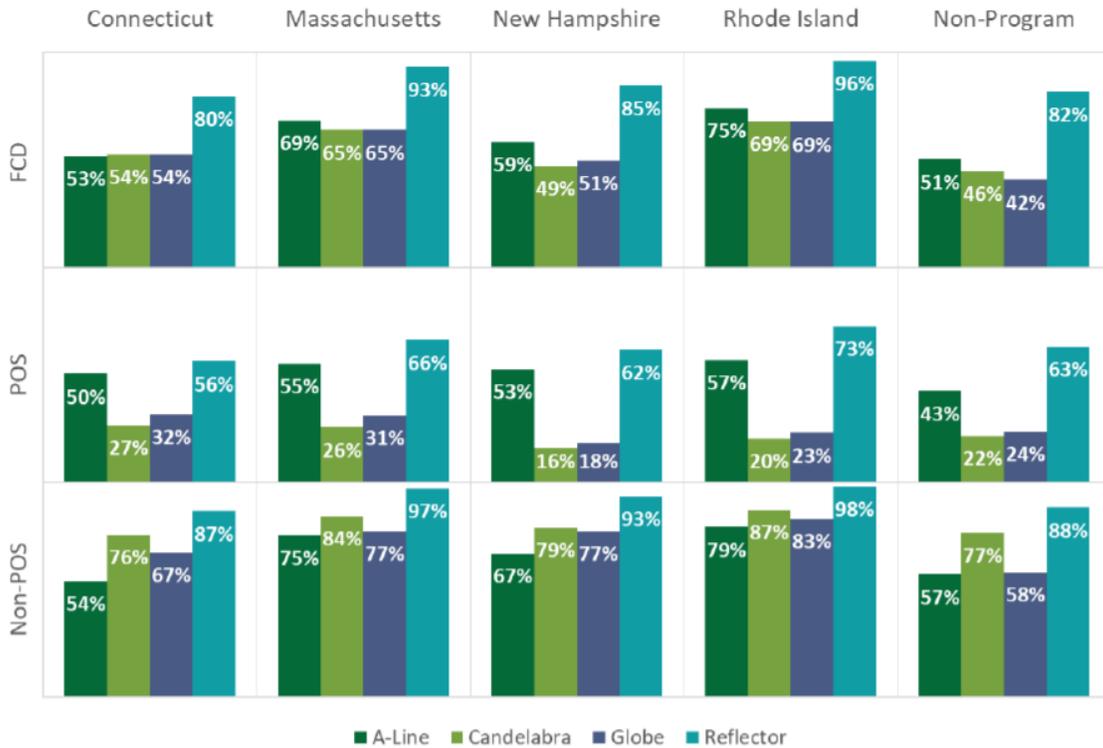
the Guidelines Order, the PAs will take necessary actions to support the measures, and then cease support for these bulbs 90 days from the date of this letter, unless otherwise directed by the Department.

A. Reflector Bulbs

The 2019 Sales Data Analysis also showed that the market share for reflector bulbs in non-program states is extremely high, at 82 percent in 2019, up from 73 percent in 2018. The market share in Massachusetts during that same period was at 93 percent (see Figure 3, above). On that basis, the PAs, in consultation with DOER and the Council’s consultants, concluded that the program incentives are therefore creating some “lift” – that is, convincing some customers to purchase LEDs who otherwise would not have – but that in much of the market, incentives are no longer warranted. The PAs hypothesized that the channels in which LED shares are likely to be lagging are those considered “Hard to Reach” (“HTR”). While the PAs do not have direct data on the sales in the HTR stores, these stores overlap closely with a category of stores in the report referred to as “point-of-sale” (“POS”), which includes grocery, dollar, drug, discount, and mass merchandiser retailers. As shown in Figure 16 below, which is taken from the 2019 Sales Data Analysis at 32, the sales data reflects that POS market shares for LEDs lag that of home improvement and club stores.

Figure 16: 2019 Massachusetts, New Hampshire, and Comparison Areas LED Market Share by Bulb Shape and Subset¹

(Source: LightTracker FCD – All Retail Channels, POS, non-POS)



¹ FCD includes all retail channels. The POS subchannel includes discount, dollar, drug, grocery, mass merchandise, and some membership stores, whereas the Non-POS subchannel includes hardware, home improvement, and the remaining membership stores. Massachusetts and Rhode Island market shares are adjusted for known program sales in FCD and Non-POS data. POS data are not affected by CREED’s adjustment for known program sales.

Reflector Bulbs Exit Strategy: The PAs ceased support for reflector bulbs in non-HTR channels ceased after December 31, 2020. Consistent with that approach, and based on the information contained in the 2019 Sales Data Analysis, support for these bulbs in HTR channels will be discontinued after June 30, 2021.

B. A-Line Bulbs

Over half of bulbs sold in non-program states are now LEDs, with a market share of 51 percent in 2019, up from 48 percent in 2018. Additionally, the market share of A-lines in Massachusetts is well over the majority of sales and has been growing at a rapid pace, sitting at 69 percent in 2019, up 15 percentage points from 2018 (which was at 54 percent), which was itself up 13 percentage point from 2017 (31 percent). This increase has been driven largely by non-POS channels, where Massachusetts market share was at 75 percent in 2019 (see Figure 16, above).

A-Line Bulbs Exit Strategy: Based on the information provided in the 2019 Sales Data Analysis, and consistent with discussions between the PAs, DOER, and the Council’s consultants, support for A-line bulbs in all market channels will be discontinued after June 30, 2021.

C. Specialty Bulbs

Specialty bulbs, such as globes and candelabras, have a lower starting point for market share. Despite seeing very high year-over-year growth, with candelabra bulbs jumping 25 percentage points, a relative increase of 119 percent (see Figure 3, above), LEDs remain below 50 percent market share for specialty bulbs in non-program states.

Specialty Bulbs Exit Strategy: Although specialty market shares are increasing rapidly, the lower market share in non-program states supports a strategy of providing incentives for specialty bulbs through December 31, 2021 in all market channels.

III. Conclusion

In consideration of the data points discussed herein, the PAs plan to complete the transition away from the midstream market rate residential lighting market by the end of 2021. The PAs are continuing discussions with relevant stakeholders, including DOER and the Council's consultants, regarding the possible retention of support for renters and moderate income customers after 2021.