



MEMORANDUM

To: Massachusetts Electric PAs and EEAC Consultants

From: Monica Nevius and Lauren Abraham, NMR

Cc: Lisa Wilson-Wright, David Barclay, and Lynn Hoefgen, NMR

Date: September 1, 2017

Re: Study RLPNC 16-11: Fourth quarterly lighting market scan

This fourth quarterly market scan memo for the RLPNC 16-11 study presents information published in the second quarter of 2017 on the U.S. residential lighting market. For reference, it also presents the information from three previous quarterly memos (i.e. Q3 2016 through Q1 2017). This memo is organized by topic, then by chronology, with the newest information presented first, framed in teal, followed by earlier information from previous memos. All sources are from documents published in 2015 or later and, with a few exceptions we note, based on research conducted in 2014 or later. The market scans focus on information gained from areas outside of Massachusetts.

Summary of Findings

This Q1 2017 market scan presents one new discussion of the effects of EISA 2020 (Effects of EISA) and three new sets of NTG estimates.

Suppliers interviewed for a CT LED NTG evaluation expect that EISA 2020 will cause LED sales to rise. (This is an expectation we have reported in previous market scans.) These suppliers also expect that ENERGY STAR 2.0 will stimulate LED sales while causing CFL sales to gradually decline, and that EISA 2020 will cause halogen sales to decline. The CT LED NTG evaluation also included market share predictions (Sales). With continued program support, suppliers expect that in 2021, LEDs will account for 61% of standard residential bulb sales and 53% of reflector residential bulb sales in CT. However, without continued program support, the suppliers expect LEDs would account for only 45% and 38% of standard and reflector residential bulb sales, respectively.

The three new sets of NTG estimates are for 2015 and 2016. The 2015 NTG estimates range from 0.21 to 0.46 for standard CFLs (CA), from 0.31 to 1.1 for specialty CFLs (CA),

and from 0.30 to 0.83 for LEDs (CA and CT). The 2016 NTG estimates range from 0.57 to 0.77 for LEDs (CT and WI).

Introduction

This market scan memo draws on recently produced,¹ publicly available research, reports, and evaluation results to provide insights into how program administrators and consumers across the nation are responding to changes in the lighting market. It addresses the following topics:

1. Where other program administrators think—and evaluation results suggest—the market is headed in terms of the implementation of EISA 2020 and response to CFLs no longer being ENERGY STAR qualified
2. Market share of various bulb types (e.g., by technology but also by ENERGY STAR status, EISA exemption)
3. Socket saturation and household penetration of various bulb types
4. Recent estimates of net-to-gross ratios for CFL and LED programs

Where the Market is Headed

EFFECTS OF EISA

Q2 2017

NMR released a draft Connecticut LED NTG evaluation in April of 2017. This included interviews with 16 lighting suppliers, conducted September through November 2016, about their expectations regarding EISA 2020 and ENERGY STAR 2.0. These lighting suppliers expected that EISA 2020 would usher in a decrease in halogen sales and increase in LED sales. They predicted that ENERGY STAR 2.0 coupled with EISA 2020 will greatly curtail CFL sales and significantly decrease CFL market share. This is because the specification excludes most CFLs, which has slowed manufacturers' production of them. They anticipated that ENERGY STAR 2.0 will stimulate LED sales. Some suppliers suggested LEDs and halogens will take the place of CFLs. Note that most supplier interviews were fielded prior to the 2016 election. Some interviewees indicated that their responses might change based upon the results of the election, as a Trump presidency would present a less optimistic future for LEDs. The Trump administration's proposed 2018 budget calls for a 100% cut to the ENERGY STAR program.²

¹ All publications were produced in 2015 or later. Estimates are based on data for 2014 or later. Some recent forecasts are based on data going back to 2009; these are noted.

² <http://aceee.org/blog/2017/05/making-america-inefficient-budget-s>

Q1 2017

The Bonneville Power Administration released a brief Lighting Market Intelligence Report covering residential and non-residential lighting in February 2017. The report presents infographics and findings based on retailer sales and shelf data, distributor sales data, interviews with key market actors, and secondary sources. It describes recent and upcoming changes to lighting standards and their anticipated effects on the residential lighting market.

ENERGY STAR 2.0 became effective in January 2017. It raised efficacy standards above those achievable by CFLs, thereby making CFLs ineligible for ENERGY STAR certification. The California Energy Commission (CEC) plans to implement standards in 2018 that are more stringent than ENERGY STAR 2.0, which may influence manufacturers' decisions about the products they produce. Absent any further action by DOE, EISA 2020 will increase efficacy standards to 45 lumens per watt in 2020. In addition, many of the bulbs that have been exempt from EISA standards, including reflectors and candelabra base lamps, will no longer be exempt in 2020. Since halogens are not capable of producing 45 lumens per watt, and some manufacturers have ceased producing CFLs, the Lighting Market Intelligence Report authors predict that LEDs may be the only real option available to consumers in 2020. The authors conclude that EISA 2020 as it is currently written will result in a transition to efficient lighting. However, they caution that the new administration and Congress may alter or eliminate EISA 2020, thereby diminishing its ability to transform the market.

Q4 2016

In the fourth quarter of 2016, NEEA released the 2015-2016 Northwest lighting market tracking study,³ which included interviews with lighting suppliers, including eleven manufacturers and five retailers. These interviews were conducted prior to the 2016 presidential election. The unexpected outcome of the election has since introduced considerable uncertainty into the lighting market. The new administration's perspective brings into question whether or not the EISA 2020 requirements will go into effect. Even if the requirements do not change, obtaining funding for enforcement before 2020 now seems very unlikely. The findings from the NEEA study should be considered with this in mind.

Nine of the eleven manufacturers and one of the five retailers interviewed for the NEEA study were aware of EISA 2020, which requires general purpose lamps to have a minimum efficacy of 45 lumens per watt. When asked how they expected EISA 2020 to affect the Northwest, one-half of the suppliers (8 of 16) predicted that it would drive consumers to choose LEDs. One-quarter (4) of the suppliers expected EISA 2020 to result in halogens either becoming more expensive or being phased out. Two predicted that less efficient CFLs would be phased out. Two suppliers declined to comment because of the uncertainty regarding whether Tier 2 of EISA will ultimately be enforced.

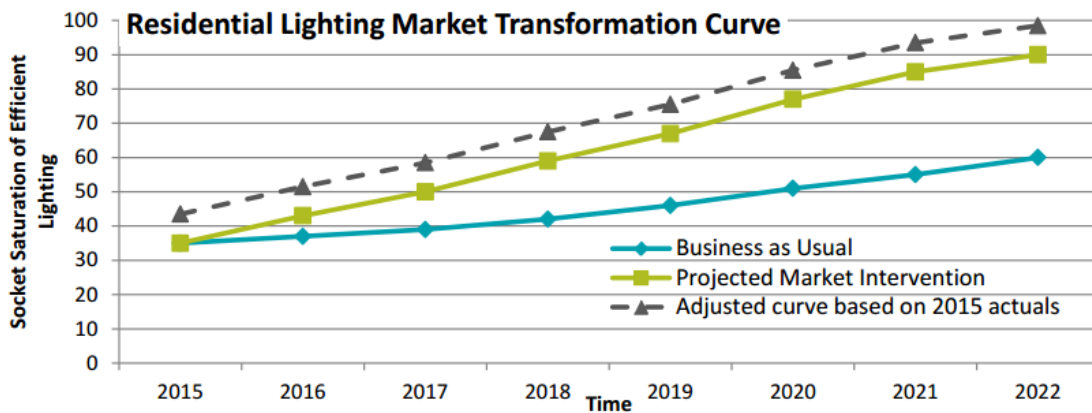
³ This study was completed before the 2016 US election and does not take into account any subsequent uncertainty about the future of the lighting market and standards.

SATURATION FORECASTS

Q3 2016

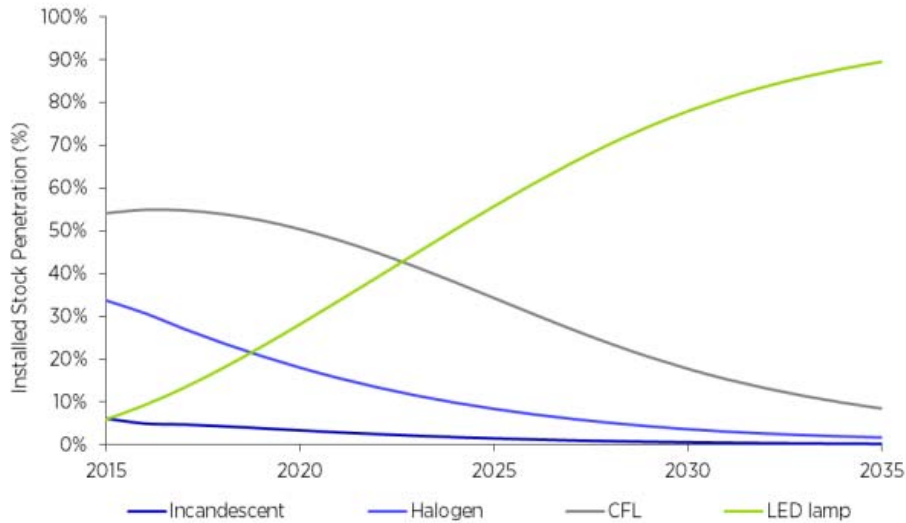
In July 2016, NEEP published a residential lighting brief containing an updated forecast of efficient lighting socket saturation for the Northeast and Mid-Atlantic. This analysis is based on 2015 socket saturation studies of Massachusetts, Maine and Connecticut. It forecasts efficient lighting socket saturation of 85% in 2020 and 98% in 2022, assuming programs continue to support efficient lighting through 2022 (Figure 1).

Figure 1: Residential Socket Saturation Forecast for the Northeast



Source: http://www.neep.org/sites/default/files/resources/ResLightingBriefFinal_0.pdf

In September of 2016, the DOE published the seventh iteration of its *Energy Savings Forecast of Solid-State Lighting in General Illumination Applications*, which includes installed stock (i.e. saturation) forecasts for LED, incandescent, halogen, and CFL bulbs by sector and submarket. DOE estimates that as of 2015 US residential A-type saturation comprised approximately 54% CFL, 33% halogen, 7% incandescent, and 6% LED. (This estimate is based on data collected between 2009 and 2012. Given the fast-moving nature of the lighting market, a 2015 saturation estimate based on data from 2009-2012 may not be as accurate as other saturation estimates cited in this scan.) With these 2015 saturation estimates as a starting point, the study predicts a rise in LED saturation and a decline in CFL, incandescent, and halogen saturation in the residential A-type submarket between 2015 and 2035 (Figure 2). According to the study, by 2020 saturation in this submarket is projected at 50% CFL, 29% LED, 18% halogen, and 3% incandescent. By 2025, saturation in this submarket is projected at 56% LED, 34% CFL, 9% halogen, and 1% incandescent.

Figure 2: Residential A-Type Stock Forecast⁴

Source: <http://energy.gov/eere/ssl/ssl-forecast-report>

The DOE report presented separate saturation forecasts for the residential decorative, large directional, small directional, and linear fixture markets. The residential decorative and large directional forecasts show the same general trend as the A-type forecast, but with incandescent and halogen bulbs representing a larger proportion of saturation for a longer period of time.

SALES

Q2 2017

The 2017 Connecticut LED NTG evaluation presented 13 lighting suppliers' predictions of LED market share. Suppliers projected that with continued program support, LEDs would represent 61% of standard residential bulb sales and 53% of reflector residential bulb sales in 2021. However, without continued program support, the suppliers predicted that LEDs would represent only 45% and 38% of standard and reflector residential bulb sales, respectively. Note that most supplier interviews were fielded prior to the 2016 election. If asked today, it is likely that some suppliers would provide lower prospective LED market shares than reflected in Figure 3 and Figure 4.

⁴ Note: The DOE report and figures report *installed stock penetration* which is equivalent to saturation (percent of all sockets containing a particular bulb type).

Figure 3: Market Share Predictions for Standard Bulbs in CT

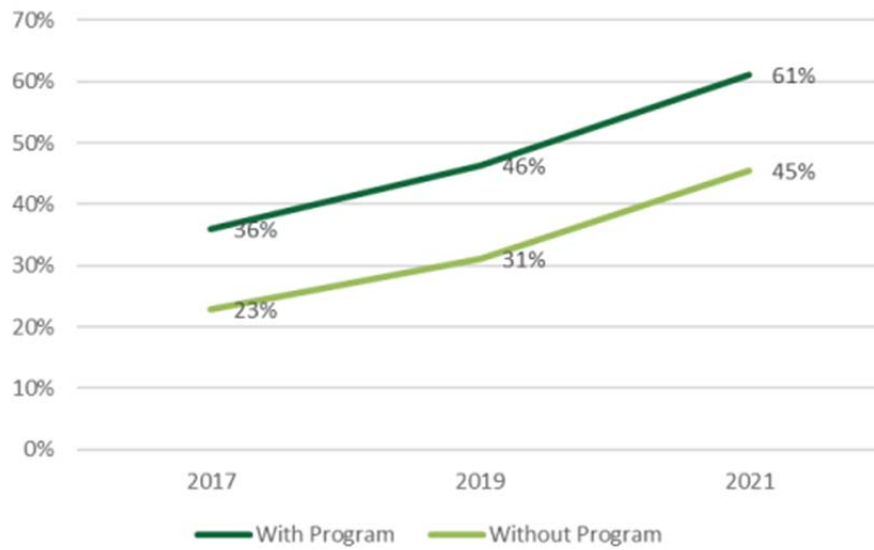
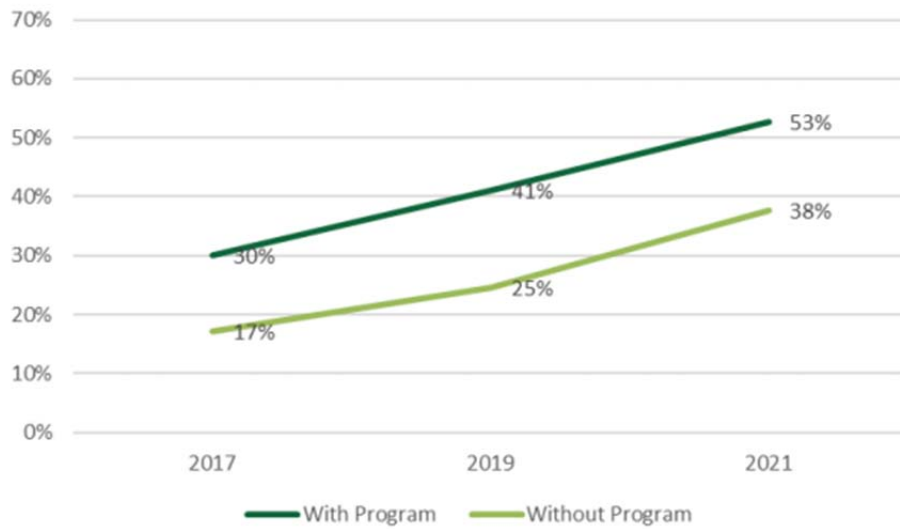


Figure 4: Market Share Predictions for Reflector Bulbs in CT



Q4 2016

In the first market scan memo, we presented the average of lighting suppliers’ estimates of their 2018 bulb sales by technology for the Northwest from the 2014-2015 Northwest lighting market tracking study. The 2015-2016 Northwest lighting market tracking study includes lighting suppliers’ estimates of their 2017 and 2019 bulb sales by technology. Table 1 shows estimates from the two studies. (The most recent information is in columns with light green headers). Recall when viewing these results, they were obtained from interviews prior to the election results or new administration. The more recent 2017 and 2019 average CFL estimates are both lower than the 2018 average CFL estimate, indicating that suppliers now expect that CFL sales will decline more quickly than they anticipated a year earlier. Similarly, the 2017 and 2019 average LED estimates are both

higher than the 2018 average LED estimate, indicating that suppliers expect that LED sales will increase more quickly than they anticipated one year earlier. Suppliers expect halogen incandescent sales will comprise roughly one-sixth of sales through 2019.

Table 1: Forecasted Percentage of Sales by Technology

| Lamp Technology | 2017 Average* | 2018 Average** | 2019 Average* |
|-----------------|---------------|----------------|---------------|
| CFL | 15% | 18% | 9% |
| LED | 54% | 41% | 60% |
| Incandescent | 17% | 16% | 14% |
| Halogen | 15% | 25% | 16% |

*Source: 2015-2016 Northwest Residential Lighting Long-Term Market Tracking Study, n=7. Corrected from original based on personal communication with Geoff Barker, DNV GL, January 12, 2017.

** Source: 2014-2015 Northwest Residential Lighting Long-Term Market Tracking Study, n=9.

Q3 2016

A 2014-2015 lighting market tracking study for the Northwest included interviews with sixteen lighting suppliers (including manufacturers and retailers) about their expectations for future CFL, incandescent, and LED sales. Almost all of the suppliers interviewed expect their sales of general purpose and specialty CFLs in the Northwest to decline through 2018. About one-quarter of these suppliers expect their CFL sales to diminish to zero over this timeframe. Six out of nine suppliers who manufacture or sell EISA-compliant incandescent lamps expected sales of EISA-compliant incandescents to increase through 2018. All thirteen suppliers who manufacture or sell LEDs expected LED sales to rise in this time. Table 2 displays the suppliers’ estimates of their bulb sales by technology in 2018. On average, the suppliers expected LEDs to represent the largest proportion of sales in the Northwest, followed by halogens, CFLs, and incandescents.

Table 2: Forecasted Percentage of Sales by Technology, 2018

| Lamp Technology | Average | Range |
|-----------------|---------|--------|
| CFL | 18% | 10-40% |
| LED | 41% | 20-85% |
| Incandescent | 16% | 0-35% |
| Halogen | 25% | 0-45% |

Note: Percentages may not total 100% due to rounding; n=9.

Source: <https://neea.org/docs/default-source/reports/northwest-residential-lighting-long-term-market-tracking-study.pdf?sfvrsn=4>

Recent Estimates

This section summarizes market share, socket saturation, and NTG findings published in reports for which the time period of study was 2014 and/or 2015. It also summarizes other, more qualitative findings from papers published in 2016.

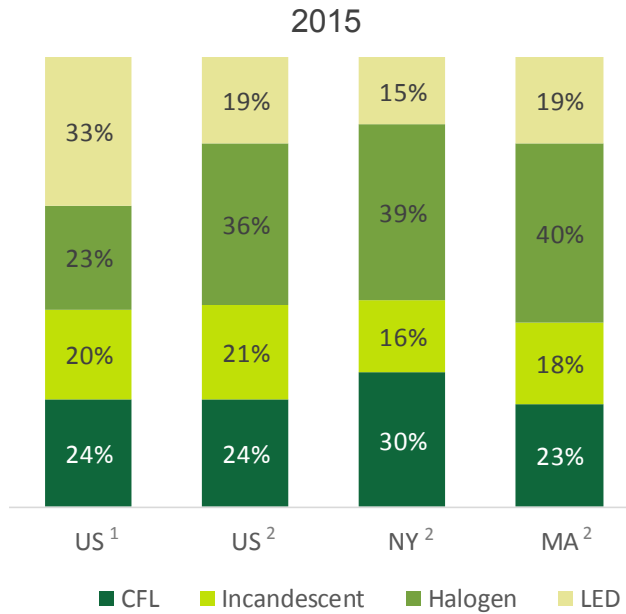
MARKET SHARE

Q1 2017

The second market scan memo contained only one 2015 market share estimate: a national market share estimate based on interviews with lighting suppliers from the 2015-2016 Northwest lighting market tracking study. The study did not mention the percentage of total sales represented by these lighting suppliers. We added three new 2015 market share estimates to Figure 5, including one national estimate, one for NY, and one for MA. These estimates are based on a consumer panel composed of individuals who scan the UPCs of their lighting purchases. The consumer panel data were purchased from the CREED initiative for RLPNC 16-5 Sales Data Analysis Tasks 1f and 2c.

A comparison of the two U.S. market share estimates in Figure 5 reveals that lighting supplier estimates and consumer panel sales align in terms of CFL and incandescent market share, but the two sources disagree with respect to LED and halogen market share. Specifically, consumer panel sales point to greater halogen market share (36%) than LED market share (19%), while lighting suppliers tend to estimate greater LED market share (33%) than halogen market share (23%). Plausible explanations for this divergence include the time lag between bulb manufacture and sale to residential consumers, and that the suppliers interviewed for the 2015-2016 Northwest Lighting Market Tracking Study may not have included key halogen manufacturers, may have overestimated their 2015 LED market share, or both. In any event, the RLPNC 16-5 Sales Data Analysis market share estimates, in which we have greater confidence, suggest that the market is farther away from transformation than the 2015-2016 Northwest lighting market tracking study implies.

Figure 5: 2015 Residential Lighting Market Share Estimates



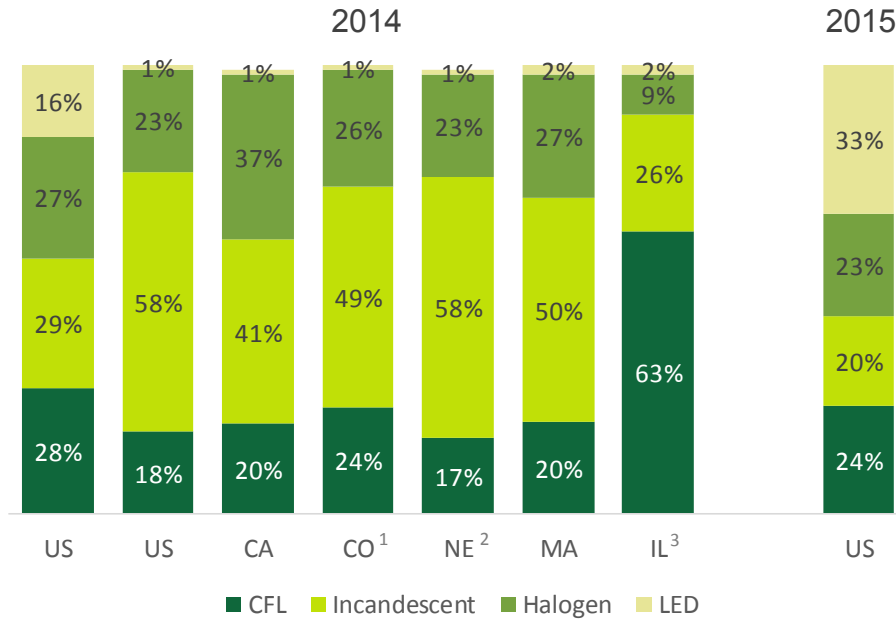
¹Source: 2015-2016 Northwest Lighting Market Tracking Study

²Source: RLPNC 16-5 Sales Data Analysis

Q4 2016

We identified one new market share estimate, also from the 2015-2016 Northwest lighting market tracking study, since the first market scan. The new data are lighting suppliers' estimates of their 2015 US market shares. The 2015 estimates are averages based on interviews with seven lighting suppliers. Figure 6 presents both the 2014 market share estimates included in the previous scan and the new 2015 market share. On average, the lighting suppliers interviewed for the study estimated their 2015 LED market share at double that of 2014 (33% versus 16%), and their incandescent market share at almost one-third less (from 29% to 20%). Their estimates of both their halogen and CFL market shares each decreased by about 14% (from 27% halogen and 28% CFL to 23% halogen and 24% CFL).

Figure 6: 2014⁵ and 2015 Residential Lighting Market Share Estimates



¹ Xcel Energy territory within CO; includes Denver.
² Northeast and Mid-Atlantic states.
³ Ameren territory within IL; includes southern 2/3 of IL.

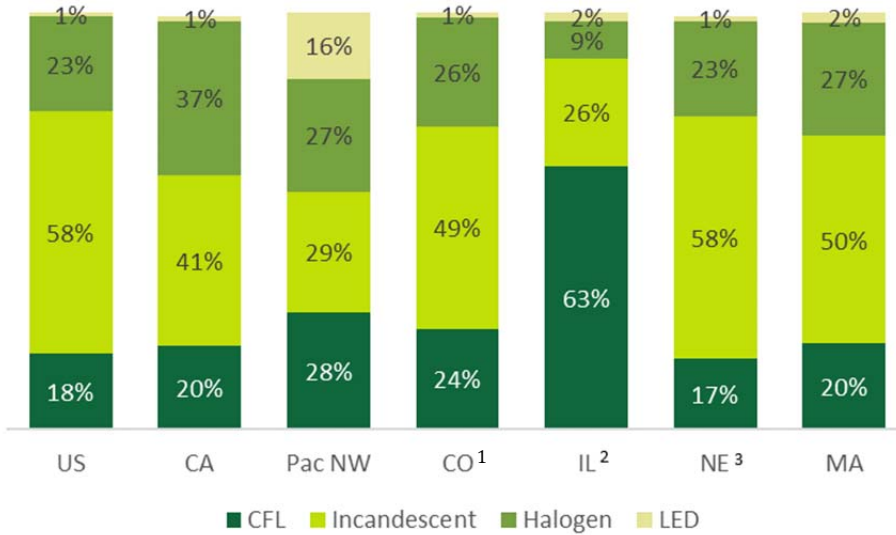
Q3 2016

Figure 7 displays 2014 market share estimates for the US and a number of regions, including California, Massachusetts, the Pacific Northwest, a portion of Colorado, a portion of Illinois, and the Northeast.⁶ The US, California, Colorado, Northeast, and Massachusetts estimates are based on LightTracker bulb sales data, which include market channels accounting for approximately 15-30% of lamp sales and are for multiple base types and bulb shapes. (The reports for other states did not specify whether the estimates were only for A-shape or screw-base bulbs, or included other bases and bulb shapes.) The Pacific Northwest estimates are based on interviews with nine lighting suppliers. The Illinois estimates were derived from in-store interviews with 1,001 customers. (Note that none of these estimates are based on consumer self-reports, which are particularly subject to recall error and bias.)

⁵ Figure 3 in the October 2016 scan mislabeled the first 2014 market share estimate shown above as being for the Pacific Northwest. The estimate is actually for the entire US, as is the new 2015 estimate.

⁶ Most of these studies looked only at incandescent, CFL, halogen, and LED bulb types; however, the US, CO, and MA studies also included other bulb types. In order to allow for a more accurate comparison, we removed the other bulb types from the US and CO estimates and adjusted the incandescent, CFL, halogen, and LED estimates to add to 100% in Figure 6.

Figure 7: 2014 Residential Lighting Market Share Estimates



¹ Xcel Energy territory within CO; includes Denver.
² Ameren territory within IL; includes southern 2/3 of IL.
³ Northeast and Mid-Atlantic states.

ENERGY STAR CERTIFICATION

Q1 2017

Lighting sales data purchased from the CREED initiative for RLPNC 16-5 Sales Data Analysis Tasks 1f and 2c allowed us to estimate the proportion of 2015 CFL and LED sales that were ENERGY STAR certified in the U.S., NY, and MA. Unlike the consumer panel data mentioned earlier, these data represent actual bulb sales as reported by retailers who agree to take part in the data collection efforts. Therefore, it is important to keep in mind that the percentages presented in Table 3 exclude sales from retailers who did not agree to take part in the data collection efforts, including hardware, home improvement, lighting specialty, and some membership retailers.

In the second market scan, we reported that lighting suppliers interviewed for the 2015-2016 Northwest lighting market tracking study estimated that the proportion of their LED sales that were ENERGY STAR-certified ranged from 35% to 98%. As shown in Table 3, the RLPNC 16-5 Sales Data Analysis found that just 28% of LEDs sold in 2015 through grocery, drug, dollar, discount, and mass merchandiser channels were ENERGY STAR-certified. This divergence can be explained by the same factors described above for the divergence in market share estimates.

Table 3: 2015 ENERGY STAR Market Share Estimates, ENERGY STAR-Certified Bulbs Only

| | US ₁ | US ₂ | NY ₂ | MA ₂ |
|-----|-----------------|-----------------|-----------------|-----------------|
| CFL | -- | 84% | 84% | 79% |
| LED | 35-98% | 28% | 19% | 28% |

¹ Source: interviews with lighting suppliers, 2015-2016 Northwest lighting market tracking study

² Source: RLPNC 16-5 Sales Data Analysis

Q4 2016

The 2015-2016 Northwest lighting market tracking study also includes lighting suppliers' estimates of the proportion of their LED sales that were ENERGY STAR certified. (This is the first of the studies we have reviewed that asks about this.) Four suppliers stated that they only sold ENERGY STAR LEDs in 2015. Among the twelve suppliers that sold both ENERGY STAR and non-ENERGY STAR LEDs in 2015, the proportion of their LED sales that were ENERGY STAR certified ranged from 35% to 98%.

SOCKET SATURATION

Q3 2016

Table 4 displays 2014 and 2015 socket saturation estimates for the Northeast, portions of Illinois and Colorado, Connecticut, and Massachusetts.

Table 4: 2014 and 2015 Socket Saturation Estimates

| Type | 2014 | | | 2015 | | | | 2014-15 |
|--------------|-----------------|-----------------|-----|-----------------|-----|-----|-----|---------|
| | IL ¹ | NE ² | MA | CO ³ | CT | WI | MA | Range |
| Incandescent | 49% | 48% | 45% | 31% | 33% | 46% | 43% | 31-49% |
| CFL | 38% | 31% | 33% | 31% | 35% | 31% | 32% | 31-38% |
| Halogen | 2% | 9% | 6% | 26% | 6% | 6% | 6% | 2-26% |
| LED | 1% | 3% | 3% | 7% | 10% | 5% | 6% | 1-10% |
| Other | 8% | 10% | 13% | 6% | 16% | 12% | 13% | 6-16% |

¹ Ameren territory within IL; includes southern 2/3 of IL.

² Northeast and Mid-Atlantic states.

³ Xcel Energy territory within CO; includes Denver.

NTG

Q2 2017

Since the third market scan, we have identified three new studies with NTG estimates: 2016 NTG estimates for LEDs in CT and WI, 2015 NTG estimates for LEDs in CT, and 2015 NTG estimates for CFLs and LEDs in CA. The 2017 Connecticut LED NTG evaluation presented retrospective (2015 and 2016) and prospective (2017 through 2020) NTG estimates for LEDs for the Connecticut program. The study relied on three empirical

approaches (supplier interviews, sales data modeling, and demand elasticity modeling), which fed into a consensus panel process. The panel was composed of lighting suppliers and took place during January and February 2017. The study recommended NTG ratios of 0.63 in 2015 (Table 6) and 0.57 in 2016 (Table 5) for standard and specialty LEDs. In addition, it recommended separate LED NTG ratios for hard-to-reach customers, including 0.83 in 2015 (Table 6) and 0.77 in 2016 (Table 5). The prospective NTG ratios presented in the study decrease each year, declining to 0.33 for non-hard-to-reach customers and 0.53 for hard-to-reach customers in 2020.

A report on a 2016 upstream lighting program in WI found a NTG ratio of 0.72 for LEDs. This ratio includes free ridership, participant spillover, and nonparticipant spillover (Table 5). This ratio is also a triangulation of the results from three net savings methods. These methods include demand elasticity modelling, national sales data modeling, and surveys with seven corporate retailers and manufacturers. The WI upstream lighting program stopped supporting CFLs in early 2016.

The final source of NTG data was from a study for the 2015 CA upstream residential lighting program. Consumer surveys, supplier interviews, shopper intercept surveys, and a lamp choice model fed into the analysis. The NTG ratio was calculated by multiplying two factors: NTGRq and NTGRu. The NTGRq is “the share of program-discounted lamps that customers would not have purchased in the absence of the program,” and the NTGRu⁷ is “the ratio of energy savings that the program achieved in the market, compared to the energy savings that the program achieved by efficient lamps that IOU customers replaced in homes.” NTG ratios for standard CFLs ranged from 0.21 to 0.46 by IOU, while NTG ratios for specialty CFLs ranged from 0.31 to 1.1 (Table 6). NTG ratios for standard LEDs ranged from 0.30 to 0.33, while NTG ratios for reflector LEDs ranged from 0.38 to 0.52.

Table 5: 2016 NTG Estimates

| Region | Retail Channel | Standard CFL | Specialty CFL | Standard LED | Specialty LED | Overall |
|--------|-------------------|--------------|---------------|--------------|---------------|---------|
| CT | Non-hard-to-reach | | | 0.57 | | |
| CT | Hard-to-reach | | | 0.77 | | |
| WI | All | | | 0.72 | | |

⁷ NTGRu accounts for the fact that the bulbs that were displaced by program bulbs were generally more efficient than the bulbs that customers were replacing with program bulbs.

Table 6: 2015 NTG Estimates

| Region | Retail Channel | Standard CFL | Specialty CFL | Standard LED | Specialty LED | Overall |
|-----------------|-------------------|--------------------|---|--------------------|--------------------|--------------------|
| CA ¹ | All | | 1.1 (A-lamp) 0.31 (>30 W) | 0.30 | 0.39 (reflector) | |
| CA ² | All | | 0.69 (A-lamp) 1.07 (reflector) 0.81 (>30 W) | 0.33 | 0.38 (reflector) | |
| CA ³ | All | 0.21 | 1.01 (A-lamp) 0.81 (reflector) 0.57 (>30 W) | 0.33 | 0.52 (reflector) | |
| CT | Non-hard-to-reach | | | | 0.63 | |
| CT | Hard-to-reach | | | | 0.83 | |
| IL ⁴ | All | 0.63 | | | 0.69 | 0.64 |
| IL ⁵ | All | 0.54 | | | 0.58 | |
| PA ⁶ | All | | | | 0.61 ¹⁰ | |
| PA ⁷ | All | 0.40 ¹¹ | | 0.66 ¹¹ | 0.62 ¹¹ | |
| PA ⁸ | All | | | | | 0.68 ¹² |
| NM ⁹ | All | | | | | 0.65 ¹³ |
| WI | All | | | | | 0.95 ¹⁴ |

¹ PG&E service territory.

² SCE service territory.

³ SDG&E service territory.

⁴ Ameren service territory; includes southern 2/3 of IL.

⁵ ComEd service territory; includes northern 1/3 of IL.

⁶ PPL service territory in PA.

⁷ PECO service territory in PA; includes Philadelphia.

⁸ FirstEnergy Service Territory in PA.

⁹ Public Service Company of New Mexico territory; includes Albuquerque.

¹⁰ Based on demand elasticity model; includes free ridership but not spillover.

¹¹ Based on store intercept surveys; includes both free ridership and spillover.

¹² Based on interviews with corporate retail chain representatives; includes free ridership but not spillover.

¹³ Based on store intercept surveys; includes free ridership but not spillover.

¹⁴ Free ridership based on demand elasticity model; spillover based on saturation model.

Q1 2017

We have identified two new NTG estimates since the second market scan, both from 2015-2016 upstream lighting programs in Illinois. Evaluators estimated NTG ratios of 0.63 for standard CFLs and 0.69 for LEDs for the Ameren service territory in IL, and 0.54 for standard CFLs and 0.58 for LEDs for the ComEd service territory in IL. These NTG estimates were derived from in-store customer intercept interviews and include both free ridership and spillover. Note that spillover estimates derived from customer intercepts may

be limited in what they capture, in that they usually focus on shoppers purchasing program bulbs and typically represent sales in specific channels during specific time periods.

Q3 2016

Lighting programs generally support some combination of standard CFLs, specialty CFLs, and LEDs. Evaluations of these programs may estimate NTG values for each bulb type, a combination of bulb types, and/or the program overall. It should be noted that there can be significant differences in programs that can make some of the NTG not completely comparable. For example, the MA program may have a greater target on grocery or other hard-to-reach store categories. Table 7 displays lighting program NTG estimates for 2014.

Table 7: 2014 NTG Estimates

| Region | Retail Channel | Standard CFL | Specialty CFL | LED | Overall |
|---------------------|-------------------------|--------------|---------------|------|---------|
| CA | Discount | 0.84 | | 0.69 | |
| CA | Drug | 0.63 | | | |
| CA | Grocery—chain | 0.12 | | 1.00 | |
| CA | Grocery— independent | 1.00 | | 1.00 | |
| CA | Hardware | 0.54 | | 0.56 | |
| CA | Home Improvement | 0.53 | | 0.44 | |
| CA | Mass Merchandise | 0.59 | | | |
| CA | Membership Club | 0.41 | | 0.65 | |
| CO ¹ | All | 0.79 | | 0.91 | |
| MO ² | All | 1.01 | 0.84 | 0.96 | 0.99 |
| IL (N) ³ | All | 0.64 | 0.43 | 0.73 | |
| IL (S) ⁴ | All | 0.63 | 0.72 | | 0.64 |
| WI | All | 0.53 | | | |
| MA | All | .62 | | .95 | |

¹ Xcel Energy territory within CO; includes Denver.

² Ameren territory within MO; includes St Louis.

³ ComEd territory within IL; includes northern 1/3 of IL.

⁴ Ameren territory within IL; includes southern 2/3 of IL.

OTHER

Q3 2016

Several papers presented at the 2016 ACEEE Summer Study on Energy Efficiency in Buildings provide qualitative findings on the residential lighting market. A comparison of CFL and LED market acceptance found that LEDs are gaining market acceptance more rapidly than CFLs did. Additionally, an analysis of market tracking studies in the Pacific Northwest and California found that in regions that discontinued CFL program support, CFL market share has decreased while halogen market share has increased—even as prices of screw-base LED replacements for A-type incandescent bulbs have dropped.

Sources

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