

# **2013-2014 Energy Trust of Oregon Lighting Retail Store Shelf Survey Report**

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September 25, 2014

## 2013-2014 Energy Trust of Oregon Lighting Retail Store Shelf Survey Report

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# MEMO



**Date:** October 9, 2014  
**To:** Board of Directors  
**From:** Sarah Castor, Evaluation Sr. Project Manager  
Kate Scott, Sr. Residential Project Manager  
**Subject:** Staff Response to the 2014 Lighting Shelf Space Survey

The results of the 2014 Lighting Shelf Space Survey show that the Energy Independence and Security Act of 2007 (EISA) is generating shifts in lighting stocking practices of retailers, away from inefficient incandescent lamps. However, the reduction in stocking of incandescent bulbs is being filled by increased stocking of halogen bulbs (which only meet the minimum EISA standard), not by stocking more efficient CFL and LED bulbs. CFL stocking of both general purpose and specialty bulbs has remained almost the same as the previous year. In the absence of sales data for lighting technologies, the findings indicate that there is still an important role for retail incentives for CFLs and LEDs and Energy Trust plans to continue its current incentive offerings.

We are pleased to see that LEDs have gained some ground in stocking, even though they still account for a very small percent of all bulbs on shelves. More retailers are stocking LEDs, new LED models are appearing frequently and the quality and diversity of bulbs had improved significantly over the past few years. It was also interesting to note that LED A-lamp prices have declined notably from 2012 – likely due to economies of scale in production and more competition in the market – while prices for CFL A-lamps have increased compared to last year.

It was surprising this year to see an increase in the percent of Oregon retailers stocking less efficient T12 linear fluorescent lamps and a decrease in those stocking more efficient T8 lamps. The fact that the total quantity of such bulbs available in stores has decreased indicates that perhaps stores are selling through their stock. We will be interested to see how these figures change in the next shelf survey.

Energy Trust is working with NEEA to acquire retail lighting sales data by SKU from the Consortium for Retail Energy Efficiency Data, expected to be available sometime next year. In the meantime, we plan to once again piggyback on NEEA's lighting shelf space survey late in 2014 to obtain updated, representative information on lighting stocking practices in Oregon and further assess trends in the market.

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## 1 INTRODUCTION

DNV GL (formerly DNV KEMA and KEMA, Inc.) has conducted regional residential lighting market tracking efforts for the Northwest Energy Efficiency Alliance (NEEA) on roughly an annual basis since 2004. During this timeframe, DNV GL has periodically contracted with Energy Trust of Oregon to replicate some of this research in Oregon.

NEEA contracted with DNV GL during the third quarter of 2012 to conduct another Northwest residential lighting tracking study, which included comprehensive lighting retail store shelf inventories (shelf surveys). Energy Trust of Oregon representatives contacted the DNV GL project manager to request that we add additional sample sites in Oregon to support Oregon-specific analyses of shelf survey results. The DNV GL team thus included additional sample sites in Oregon for the 2012-2013 study period and again during the 2013-2014 study period.

This report presents the methodology used to collect the shelf survey data (including the sampling approach) as well as the results for Oregon stores compared to the Northwest as a whole (Idaho, Montana, Oregon, and Washington). Appendix A includes details on the sources cited in this report (a bibliography) and Appendix B includes the shelf survey data collection instrument. Appendix C includes data tables that demonstrate the number of sample points for report figures where this information is not included and Appendix D includes additional data tables with detailed information on the number of lamps, lamp models, wattage, and pricing across all store types for specific lamp technologies and styles by lumen bin among Oregon stores in the 2013-2014 sample.

## 2 METHODS

This section of the report provides details on research methods, beginning with an overview and concluding with a discussion of the sampling approach. Note that the methods utilized in producing this report are largely the same as used in developing the 2013 report on this topic for Energy Trust of Oregon.<sup>1</sup>

### 2.1 Overview

As part of the shelf survey effort conducted for NEEA, DNV GL field researchers conducted 96 complete inventories (shelf surveys) of Northwest retail stores that sell replacement lamps. Researchers conducted 76 of these shelf surveys throughout the Northwest under contract with NEEA and an additional 20 in Oregon under contract with Energy Trust of Oregon. Researchers conducted the shelf surveys in five retail store types throughout Idaho, Montana, Oregon and Washington during December 2013 and January 2014 for the 2013-2014 study and during December 2012 and January 2013 for the 2012-2013 study. In each store, researchers collected

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<sup>1</sup> See DNV KEMA 2013a for details.

detailed information on product characteristics and prices for all CFLs, light-emitting diode (LED) lamps, and incandescent lamps found stocked in retail stores. During the 2013-2014 and 2012-2013 data collection periods, researchers also gathered data on four-foot T8 and T12 linear fluorescent lamps.

During the 2013-2014 and 2012-2013 data collection periods, field researchers recorded these data using electronic collection tools developed for NEEA (see Appendix B). These data were compiled into one database for each period. The records in each database include key information regarding each store visited (such as the store type, store name, and store address) as well as information specific to each package of lamps in the store, including lamp technology, lamp style, base type, manufacturer, wattage, number of lamps in each package, and so on. Additionally, field staff recorded the number of packages, full price, discounted price (if relevant)<sup>2</sup>, and whether each package contained 3-way, dimmable, and/or Energy Star labeled lamps.

During all three study periods, field staff recorded these data across five retail store types throughout the Northwest region (Table 1). Definitions for the store type categories are as follows:

- **Wholesale Club.** Wholesale clubs are typically warehouse-style stores that stock a wide variety of grocery and household items at lower prices than typically available in most other retail channels. These chains typically require shoppers to carry membership cards. Examples of wholesale club stores include retail chains such as Costco and Sam's Club.
- **Do-It-Yourself (DIY).** DIY stores are home improvement stores that typically occupy warehouse-style spaces. The DIY store type includes chains such as The Home Depot, Lowe's and Pro Build.
- **Drug and Grocery.** Drug stores typically sell over-the-counter medications, first aid supplies, and prescription pharmaceuticals. Many drug stores also sell paper products, beverages, and a selection of grocery dry goods. Examples of drug store chains include Rite Aid, Walgreens, and Hi-School Pharmacy. Grocery stores typically sell perishable and non-perishable food items and stock a small selection of household goods such as paper products and cleaning supplies. This category includes produce markets and convenience stores. Examples of grocery store chains include Albertsons and Haggen.
- **Mass Merchandise.** Mass merchandisers typically stock a large assortment of goods, including clothing and housewares and sometimes food products and medications, at competitive prices. Examples of mass merchandise chains include K-Mart, Fred Meyer, and Wal-Mart.

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<sup>2</sup> Note that in some cases, retail store signage or lamp packages clearly indicated the presence of a discount and the discount amount – in these cases, field staff recorded both the full price and discounted price. It is possible, however, that some discounts were available with no signage or other materials in the stores to indicate the presence of such discounts. When no such information was present, field staff assumed there was no discount and recorded only one price (the full price) for each product.

- **Small Hardware.** Small hardware stores sell a variety of home repair, maintenance, and improvement products such as fasteners, tools, and plumbing and electrical supplies, and may stock cleaning products, paint, and lawn and garden products. Small hardware stores are similar to home improvement stores except hardware stores are typically much smaller. Examples include Ace Hardware and True Value Hardware.

As shown in the table, Oregon stores comprised 40 of the total 96 stores visited in each data collection period.

**Table 1**  
**Number of Completed Visits by Store Type, 2012-2013 and 2013-2014**

Store Type	Number of Store Visits*	
	Northwest Region	Oregon
Wholesale Club	6	4
Do-It-Yourself	13	7
Drug or Grocery	28	12
Mass Merchandise	22	7
Small Hardware	27	10
<b>Total Stores</b>	<b>96</b>	<b>40</b>

\*Note that the number of store visits was the same in each data collection period. Researchers visited the same stores in each period whenever possible.

## 2.2 Sampling

The sample frame for the lighting retailers was taken directly from the third Market Progress Evaluation Report (MPER3) of NEEA's Energy Star Consumer Products – Lighting Project<sup>3</sup>, the original source of which was the prior project implementation contractor's 2006 lighting retailer database.<sup>4</sup> DNV GL analysts stratified the sample by Rural Urban Continuum Code (RUCC) classification (urban versus rural); store type; and within store type, by store ownership type (national, regional or franchise chain versus independent store).<sup>5</sup> Table 2 shows the distribution of retailers in the sample frame and the distribution of completed shelf surveys for the Northwest region by strata for each of the three data collection periods.

<sup>3</sup> KEMA, Inc., 2007.

<sup>4</sup> PECEI, 2006.

<sup>5</sup> See KEMA, Inc., 2007 and DNV KEMA, 2013b for more details on these categories.

**Table 2**  
**Retailer Shelf Survey Sample Frame and Completes by Strata**  
**Northwest Region, 2012-2013 and 2013-2014**

Store Type	Store Ownership	Population Count	Population Percentage	Sample Count	Sample Percentage
Wholesale Club	National Chain	33	1%	6	6%
Do-It-Yourself	National Chain	155	6%	13	14%
Drug and Grocery	National Chain	728	29%	15	16%
	Regional Chain	305	12%	13	14%
Mass Merchandise	Independent	44	2%	3	3%
	National Chain	363	14%	16	17%
	Regional Chain	46	2%	3	3%
Small Hardware	Franchise	508	20%	13	14%
	Independent	282	11%	9	9%
	Regional Chain	84	3%	5	5%
<b>Total</b>		<b>2,548</b>	<b>100%</b>	<b>96</b>	<b>100%</b>

Note: Percentages may not total 100 percent due to rounding.

Table 3 shows the distribution of retailers in the sample frame as well as completed shelf surveys by strata within Oregon only, including the 20 store visits conducted for NEEA and the 20 oversample store visits conducted for Energy Trust (40 Oregon stores in total).

**Table 3**  
**Retailer Shelf Survey Sample Frame and Completes by Strata**  
**Oregon, 2012-2013, and 2013-2014**

Store Type	Store Ownership	Population Count	Population Percentage	Sample Count	Sample Percentage
Wholesale Club	National Chain	6	1%	4	10%
Do-It-Yourself	National Chain	45	7%	7	18%
Drug and Grocery	National Chain	220	32%	5	13%
	Regional Chain	88	13%	7	18%
Mass Merchandise	National Chain	125	18%	6	15%
	Regional Chain	13	2%	1	3%
Small Hardware	Franchise	94	14%	5	13%
	Independent	72	10%	4	10%
	Regional Chain	25	4%	1	3%
<b>Total</b>		<b>688</b>	<b>100%</b>	<b>40</b>	<b>100%</b>

Note: Percentages may not total 100 percent due to rounding.

Researchers calculated sample expansion weights by strata and applied them to each retailer in the sample such that the findings represent the population of lighting retailers in the region (and in Oregon, specifically) as approximated by Portland Energy Conservation Inc.'s (PECI) 2006 database.

Some results presented in the report are grouped by store category to highlight differences between these two major retail delivery channels. The “big box” store category includes wholesale club, large do-it-yourself (DIY), and mass merchandise stores. The “non-big box” category includes drug/grocery, and small hardware stores.

### **2.3 Methodology for Determining Lamp Model Diversity**

Field researchers gather data on the total number of unique lamp models available in each store. We analyzed lamp model diversity in terms of the average number of general purpose CFL, specialty CFL, LED, halogen, and incandescent lamp models available per store by store category between 2012 and 2013. We should note that the DNV GL team has modified its methodology for determining what constitutes a unique model number in light of the fact that shelf survey data have been collected electronically on tablet computers since the 2012-2013 shelf survey research phase (i.e., two consecutive study periods). Field researchers now use a barcode scanner to scan each unique package that they encounter in a given store. The unique barcode is then mapped to a reference database that includes previously encountered shelf survey data, including barcodes, model number, lamp technology type, base type, style, wattage, lumens, etc. If a scanned barcode matches a barcode in the reference database, key lamp specifications auto-populate into the tablet data collection tool. The field researchers must verify these lamp specifications (including the model number) to ensure that all the information is correct.

Prior to the 2012-2013 shelf survey phase, data were recorded on paper forms and later entered into a database. During these earlier phases of shelf survey research, model numbers were recorded, but barcodes were not. Establishing what constituted a unique model number proved to be a difficult challenge in analyzing shelf survey data. Field researchers sometimes recorded model number information in different ways, depending on how model number information was presented on different parts of a given lamp package. For instance, one side of a package might have a model number listed as BPCEC/CFL/RP/2PK, and another side of a package might present the model number in an abbreviated form such as BPCEC/CFL/RP or simply BPCEC/CFL. To further complicate matters, some manufacturers list numeric codes for unique lamp models, which are not barcodes. Moreover, there were points during the data collection process when human error could occur. For instance, a field researcher might transpose letters or numbers in collecting data on paper or an analyst doing data entry might misinterpret the handwriting of a field researcher and record a model number incorrectly. The DNV GL team has had processes in place to correct these errors, but even if human errors could be fully corrected, there might still be variation for a given model number, depending on a given manufacturer’s package labeling practices. DNV GL believes that this methodology for determining unique lamp models has resulted in a small over-representation in the actual number of unique lamp models encountered in the field.

Using barcodes instead of model numbers to determine the number of unique lamp models is a more accurate method for determining actual lamp model diversity. Since barcodes are scanned into the tablet data collections instrument, the opportunity for human error is virtually eliminated. Furthermore, with electronic data collection, data entry takes place in the field on site by the field researcher rather than several weeks later by a different analyst. Barcodes vary predictably by manufacturer, consist of a fixed set of numeric digits, and are therefore much easier to analyze.

This report will be the first to use barcodes for determining lamp model diversity, since this is the first time that there have been two consecutive years of electronic data collection.

### 3 RESULTS

Below we present results from the 2012-2013 and 2013-2014 Northwest lighting retail store shelf surveys organized into five major subsections:

- 3.1. Availability, which reviews the percentage of stores by store category that carry each lamp technology included in the analyses (CFLs, LED, incandescent, and halogen<sup>6</sup> lamps) and the proportion of lamps in each store type comprised by each of the five lamp technologies.
- 3.2. Diversity, which examines the average number of CFL, LED, incandescent, and halogen lamp models per store by style and wattage.
- 3.3. CFL Pricing, including average CFL price for products stocked on Northwest and Oregon retail store shelves, and also includes price ranges for general purpose and specialty CFLs<sup>7</sup> as well as more detailed CFL styles.
- 3.4. Linear Fluorescent Lamps, which includes results describing the availability and diversity of T8 and T12 linear fluorescent lamps.
- 3.5. Promotional Materials, which reviews the key messages included on these materials in Northwest stores, the types of materials present, the technologies promoted, and the positioning of materials in the stores.

Where possible, the report presents results for the state of Oregon and for the Northwest as a whole, and also compares results between the 2012-2013 and 2013-2014 data collection periods. For the sake of convenience, the report refers to results from the 2012-2013 period as 2012 results and results from the 2013-2014 period as 2013 results.

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<sup>6</sup> This is the first year that DNV GL has reported on halogen lamps in terms of availability and diversity. Field researchers also recorded information on halogen lamps during the 2012-2013 shelf surveys, but this information was not reported on in the 2013 report.

<sup>7</sup> Note that for the purposes of this report, the general purpose CFL category includes spiral CFLs and A-lamps and the specialty category includes all other CFL types.

### 3.1 Availability

Field researchers collected information on the types of lamps present in each of the stores they visited, enabling calculation of the percentage of stores carrying specific lamp technologies. Researchers also recorded detailed counts of the total number of packages for each lamp technology and style as well as the number of lamps per package, which enables calculation of the total number of lamps for each lamp technology in each store. These two elements—the percentage of stores stocking different lamp technologies and the share of total lamp stock comprised by each lamp technology—are measures of lamp availability. This section presents lamp availability results below for CFLs, LED, halogen, and incandescent lamps by store category and geography between 2012 and 2013.

#### 3.1.1 Percent of Stores Stocking Lamps

The sample frame for the shelf survey stores includes only stores that stock replacement lamps. The tables in this section provide details on the percentage of stores visited by DNV GL researchers in the 2012 and 2013 data collection periods that stocked each lamp technology (CFLs, LED, halogen, and incandescent lamps) by store category during the time of our shelf survey visits. To be included as a store that stocked a particular technology, each store must have one or more lamps in stock for that particular technology at the time of the shelf survey visits.<sup>8</sup> Below we present results by lamp style, technology and store category.

##### 3.1.1.1 Lamp Technology and Style

Figure 1 below shows the percentage of stores in Oregon and the Northwest region that stocked different lamp technologies—including LED lamps, general purpose CFLs, specialty CFLs, incandescent, and halogen lamps—at the time of the shelf survey visits in 2012 and 2013. As shown, the overwhelming majority of stores carried general purpose CFLs, specialty CFLs, incandescent, and halogen lamps in each year. Between 2012 and 2013, the overall percentage of stores carrying LED lamps increased in both Oregon and the Northwest region. The largest increases occurred in the percentage of non-big box stores carrying LED lamps in both geographic areas, where the percentage of Northwest stores carrying LED lamps increased from 59 percent in 2012 to 88 percent in 2013 and the percentage of Oregon stores increased from 69 percent to 79 percent in the same timeframe. These results suggest that LED lamps are becoming increasingly common in retail stores throughout the Northwest region (including Oregon).

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<sup>8</sup> This is a binary variable – a store either stocked a particular technology or did not – and does not reflect the volume of product stocked. We discuss product volume in Section 3.1.2 below.



**Figure 1**  
**Percentage of Stores Carrying Lamps by Lamp Technology and Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

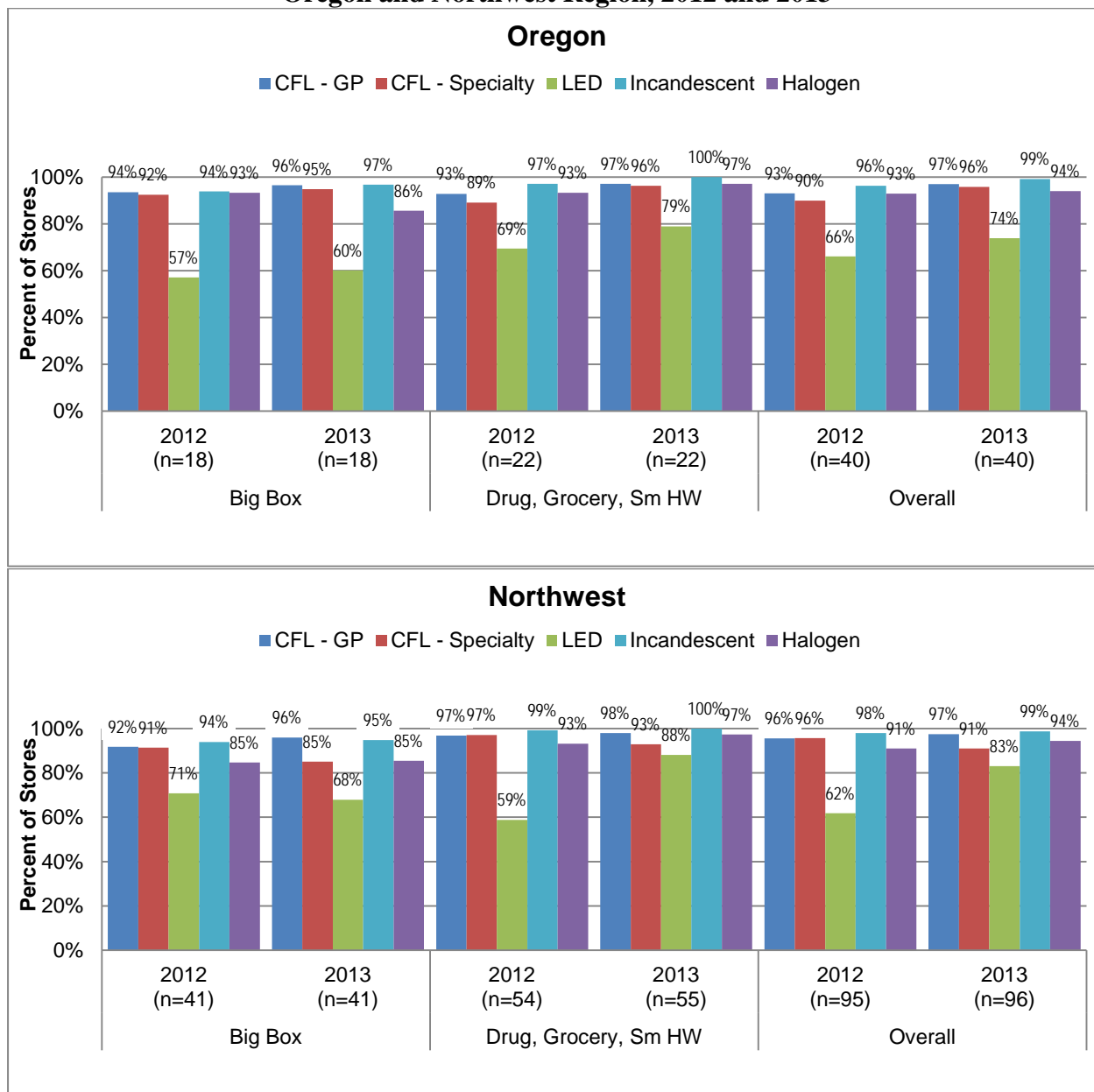


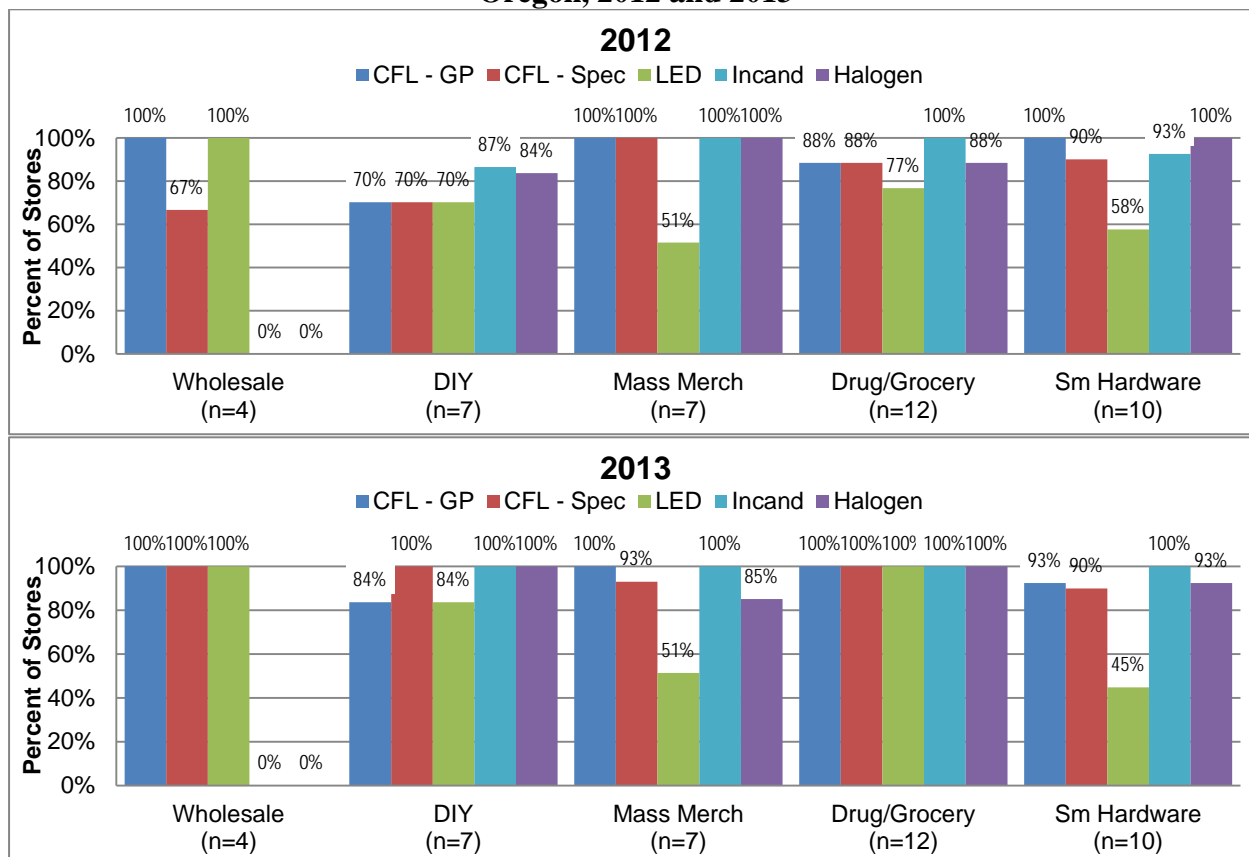
Figure 2 shows the percentage of stores in Oregon that carry CFL, LED, halogen and incandescent lamps broken down by type of store. Within all store types, the percentage of stores that carried incandescent lamps increased or remained the same between 2012 and 2013. In fact, in every store type except wholesale clubs, all Oregon stores carried incandescent lamps in 2013. No wholesale club stores carried any incandescent or halogen lamps in 2012 or 2013.

Changes with respect to the percentage of stores stocking general purpose and specialty CFLs varied from 2012 to 2013. All wholesale and mass merchandise stores stocked general purpose CFLs in both years, while the percentage of DIY and drug/grocery stores increased and the percentage of small hardware stores stocking general purpose CFLs decreased between years. The percentage of stores stocking specialty CFLs increased in wholesale, DIY, and drug/grocery stores between 2012 and 2013, while the percentage of mass merchandise stores stocking these lamps decreased during the same timeframe. There was no change in the percentage of stores stocking specialty CFLs in small hardware stores between years.

As seen with general purpose and specialty CFLs, trends in the percentage of stores stocking halogen lamps varied by store type. The percentage of DIY, drug/grocery, and small hardware stores stocking halogen lamps increased to 100 percent of stores in 2013 (from 84%, 88%, and 93%, respectively, in 2012), while the percentage of mass merchandise stores carrying these lamps decreased from 100 percent in 2012 to 85 percent in 2013.

Regarding the availability of LED lamps, the percentage of stores carrying these lamps increased or stayed the same in all store types except small hardware where the percentage of stores carrying LED lamps decreased from 58 percent to 45 percent between 2012 and 2013.

**Figure 2**  
**Percentage of Stores Carrying Lamps by Lamp Technology and Store Type**  
**Oregon, 2012 and 2013**



### 3.1.2 Percent of Lamps Stocked

This section presents details on the percentage of lamp stock comprised by each lamp technology in the stores visited by shelf survey researchers in 2012 and 2013. We present results by store category and technology as well as by technology and base type. For CFLs, we also present details regarding the percentage of lamp packages that are Energy Star versus non-Energy Star for general purpose and specialty CFLs by store category. Finally, this section discusses the percentage of incandescent lamps that met the efficacy standards associated with the Energy Independence and Security Act of 2007 (EISA) and those that did not within the specific lumen ranges affected by the legislation.

#### 3.1.2.1 Lamp Technology and Style

Figure 3 shows the percentage of lamps stocked across retail stores in Oregon and the Northwest region by lamp technology from 2012 to 2013. These data represent the percentage of total lamps (not lamp models or lamp packages) stocked across the stores. As shown, incandescent lamps

still dominated store stock in both Oregon and the Northwest region as of 2013. However, incandescent lamps' share of total lamp stock across all stores declined between 2012 and 2013. This decrease in the proportion of total lamps comprised by incandescent lamps was mostly absorbed by a corresponding increase in halogen lamps stocked in Oregon and the Northwest and across all store categories. The proportion of total lamps comprised by general purpose and specialty CFLs remained the same between years, overall, in the Northwest, but the proportion of lamp stock comprised by specialty CFLs declined slightly in Oregon. In both regions, the share of LED lamp stock doubled between years from 2 to 4 percent.

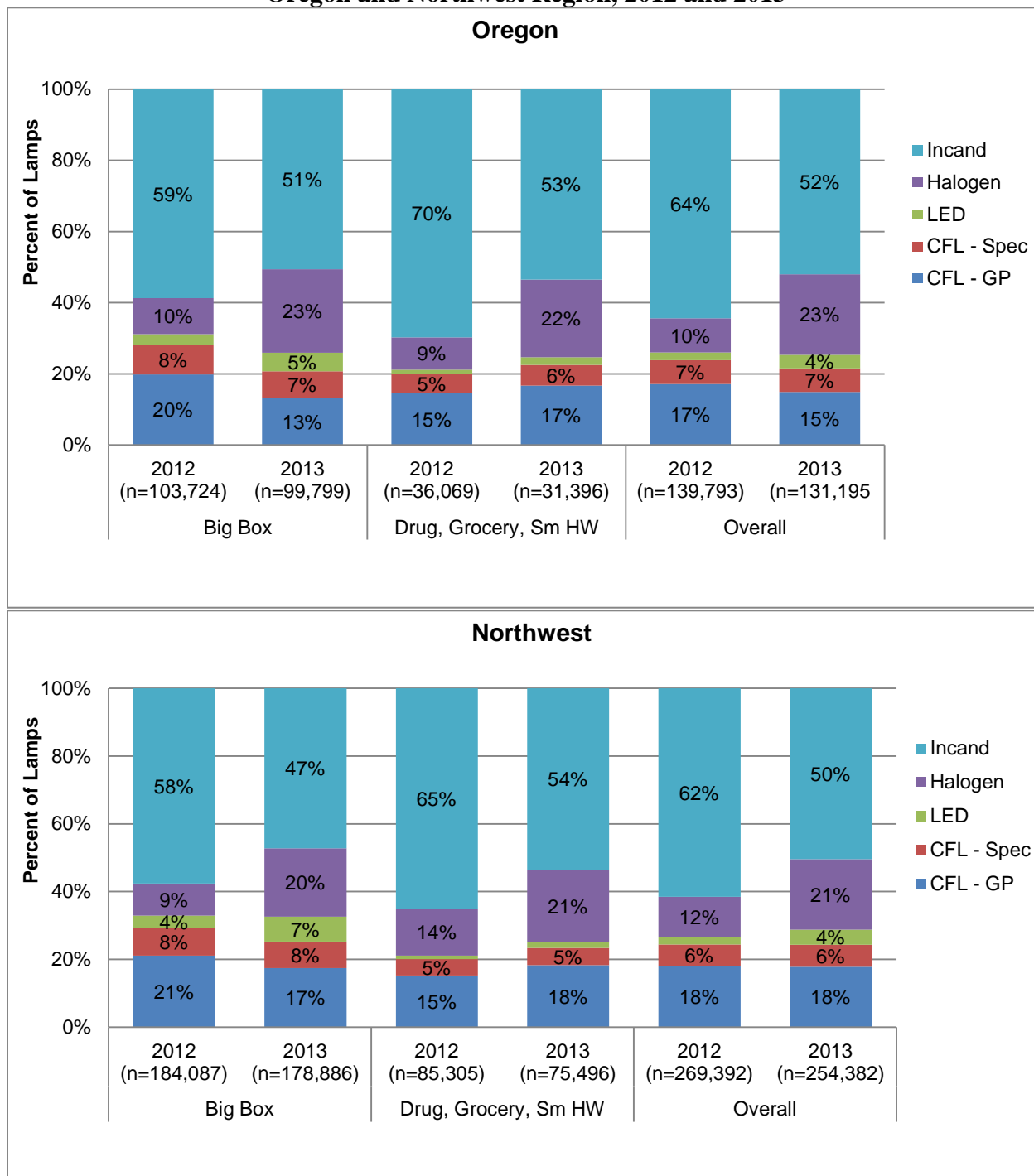
Results also suggest that the overall quantity of lamps stocked in retail stores declined between 2012 and 2013. These calculations are based on the absolute (un-weighted) quantity of lamps observed and counted by shelf survey researchers each year in 96 Northwest stores and 40 Oregon stores. The quantity of lamps stocked decreased by approximately 6 percent in both Oregon stores and stores in the Northwest region between 2012 and 2013.<sup>9</sup> This trend of a declining number of lamps stocked was much smaller between 2012 and 2013 than the decline in lamps stocked between 2011 and 2012 when lamp stock declined by 38 percent in Oregon stores and 35 percent in Northwest stores between 2011 and 2012. The quantity of incandescent lamps dropped by roughly one-fourth in Oregon and the Northwest as both halogen and LED lamps increased in quantity during that same time. The quantity of CFLs stocked declined by 20 percent in Oregon and 15 percent in the Northwest between 2012 and 2013. The increases in the absolute quantity of halogen and LED lamp stock were not enough to offset the declines in CFL and incandescent lamp stock. Thus, there was a decline in stock across all lamp technologies between 2012 and 2013, overall, in both regions.<sup>10</sup> It is likely that the decline in incandescent lamp quantities and increase in halogen lamp stock were driven by EISA regulations, but the reasons for declining stock among CFLs are less clear. It could be that consumers are buying fewer energy-efficient lamps over time, since these lamps last longer than less efficient lamps (such as incandescent lamps) and there is less of a need to replace energy-efficient lamps as frequently.

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<sup>9</sup> Where possible, we show absolute quantity of lamps (by store category, store type, or lamp technology) along the X axis of figures that show percentage share of total lamp stock. For further details on absolute quantity of lamps for 2012 and 2013, please see Appendix C -

<sup>10</sup> The quantity of lamps stocked in retail stores in California also declined between 2012 and 2013. In a comparison of 33 common stores in California, total lamp volume decreased by 24 percent between years. See DNV GL 2014, Section 4.2.2, for further details.

**Figure 3**  
**Percentage of Lamps Stocked by Lamp Technology and Store Category**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.

Figure 4 shows the breakdown of lamps stocked by store type within the stores sampled in Oregon. Halogen lamps increased as a proportion of all lamps stocked across all store types between the two years, while the proportion lamps comprised by incandescent lamps decreased. As mentioned above, wholesale clubs did not stock any incandescent lamps or halogen lamps in 2012 or 2013, and CFLs comprised three-quarters of lamps stocked at wholesale clubs in 2012 and 60 percent of lamps stocked in 2013. CFL share declined slightly between years in DIY and small hardware and increased in drug/grocery stores during the same timeframe. LED lamps continued to comprise relatively small proportions of total lamp stock in most store types, but more than doubled in share in wholesale club stores between 2012 and 2013 (from 17% to 40%). LED lamp share doubled from 4 percent of lamp stock in DIY stores in 2012 to 8 percent in 2013.

**Figure 4**  
**Percentage of Lamps Stocked by Lamp Technology and Store Type**  
**Oregon, 2012 and 2013**

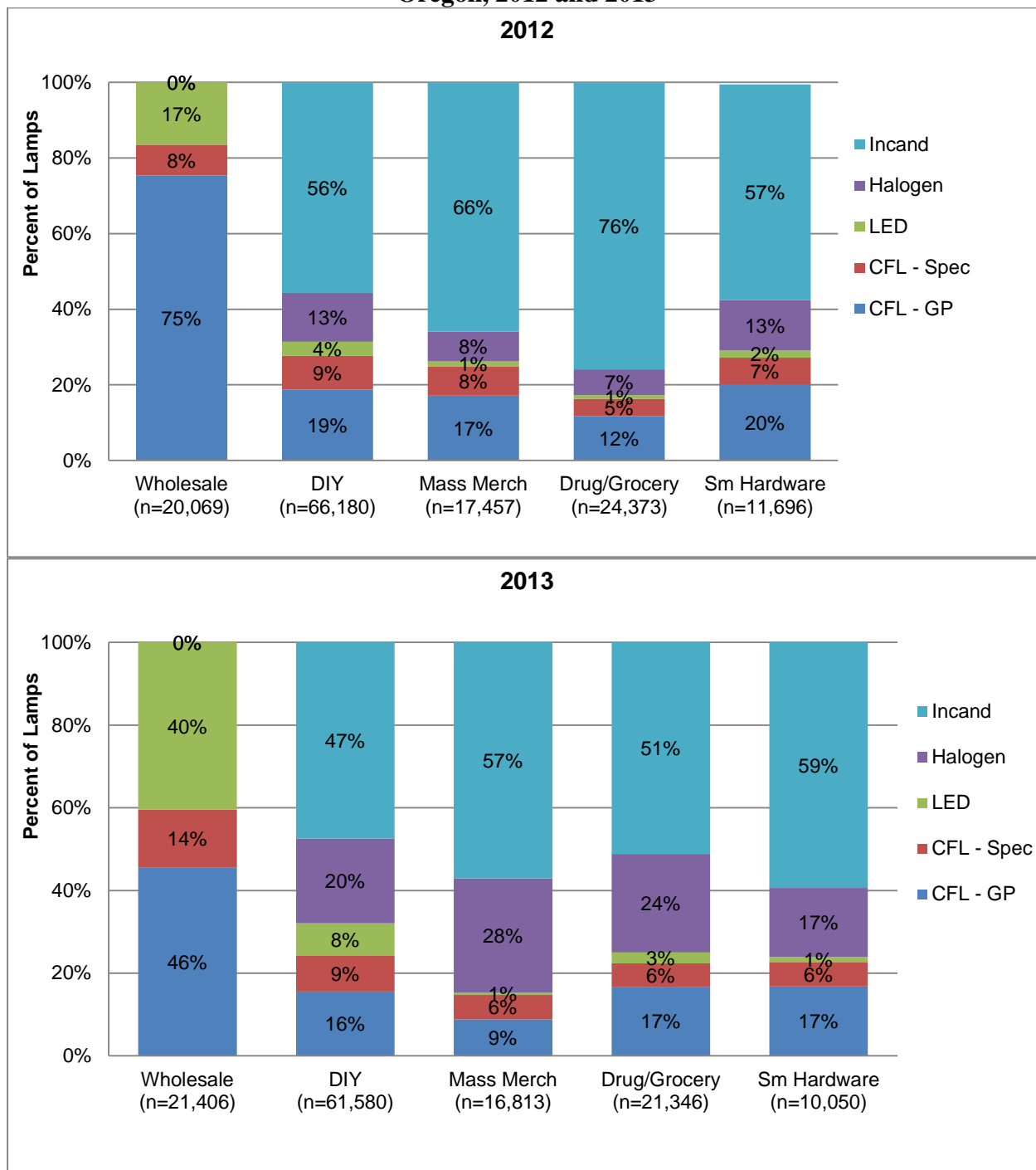
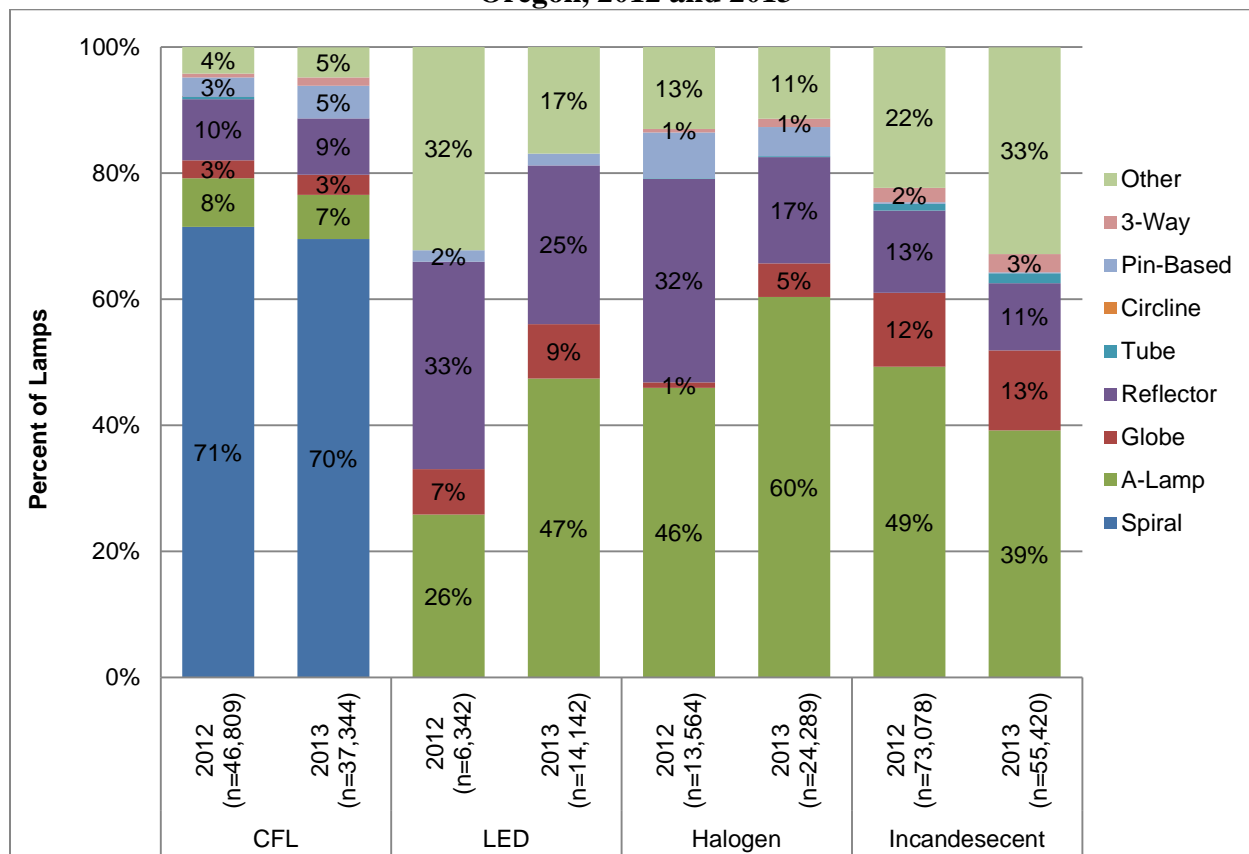


Figure 5 shows the percentage of CFL, LED, halogen, and incandescent lamps stocked in Oregon retail stores in 2012 and 2013 by lamp style. For LED lamps, the proportion of total stock comprised by both A-lamps and globe lamps increased between years. The proportion of LED stock comprised by A-lamps grew to nearly half of all lamps in 2013. For halogen lamps, the proportion of stock comprised by A-lamps increased to 60 percent. Meanwhile, the percentage of incandescent stock comprised by A-lamps declined from 49 percent to 39 percent between 2012 and 2013, likely as a result of decreasing availability of these lamp types due to EISA standards. For CFLs, the spiral style continued to comprise the vast majority of stock at approximately 70 percent.

Also noteworthy in Figure 5 is that the overall quantity of lamp stock observed in Oregon retail stores declined for CFLs and incandescent lamps (by and 20% and 24%, respectively), while the quantity of LED lamps increased by nearly 125 percent and the quantity of halogen lamps increased by approximately 80 percent. The overall quantity of LED lamps was still only 11 percent of all lamp stock observed in Oregon in 2013. As mentioned above, the increases in LED and halogen lamp stock were not enough to offset the declines in CFL and incandescent stock. Thus, stock across all lamp technologies declined in Oregon stores overall.



**Figure 5**  
**Percentage of Lamps Stocked by Lamp Technology and Lamp Style**  
**Oregon, 2012 and 2013**

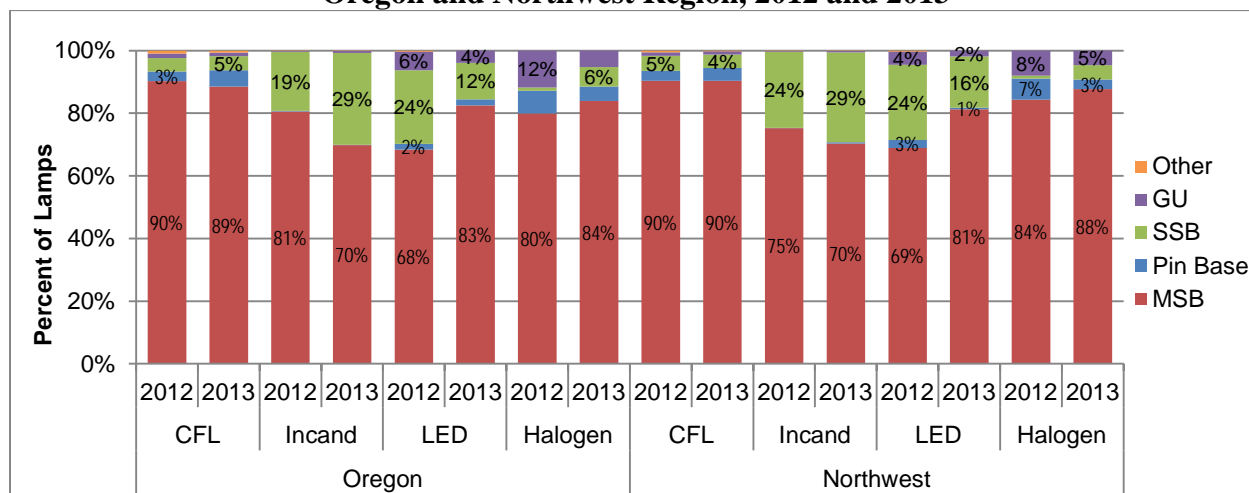


Note: Percentages may not total 100 percent due to rounding.

### 3.1.2.2 Base Type

Figure 6 below shows the percentage of lamps observed by field staff in Oregon and the Northwest region by technology by base type. Base types include medium screw base (MSB), small screw base (SSB), pin base, GU base (e.g., GU-24), and all other screw base lamps (primarily large screw base lamps). MSB lamps comprised the vast majority of lamp stock for each of the four technologies. The biggest changes with respect to the proportion of MSB lamps stocked occurred among LED lamps which saw an increase in the share of MSB LED lamps stocked between 2012 and 2013 in both Oregon and the Northwest. Meanwhile, the opposite trend occurred with MSB incandescent lamps, which experienced a decline in share between 2012 and 2013 in Oregon and the Northwest (possibly as a result of EISA’s phasing out many traditional MSB incandescent lamps). MSB lamps dominated CFL and halogen lamp inventory in the Northwest and in Oregon in 2012 and in 2013 and changed little between years.

**Figure 6**  
**Percentage of Lamps Stocked by Lamp Technology and Base Type**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 13 for number of lamps.

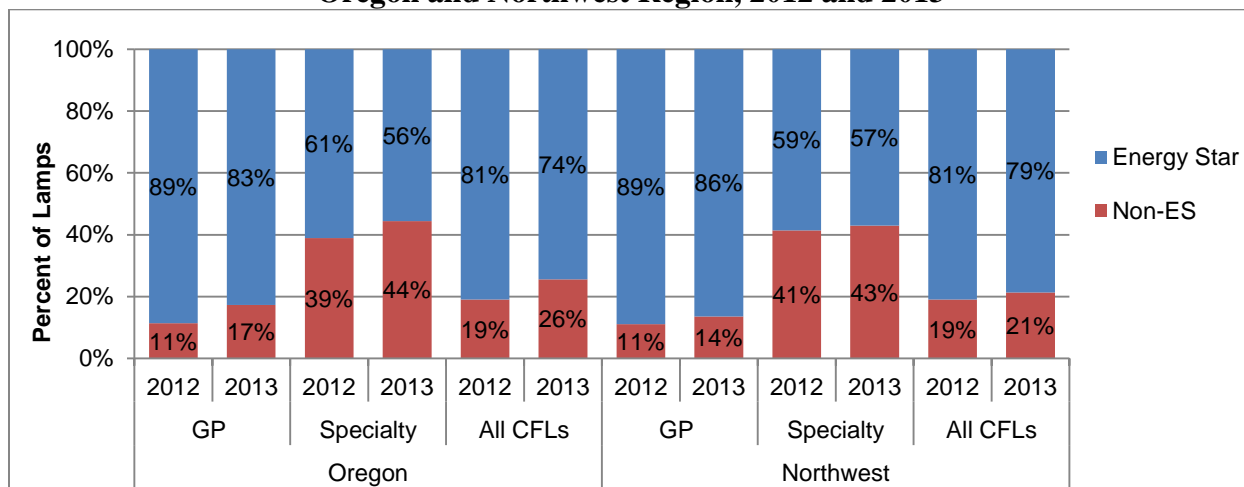
### 3.1.2.3 Energy Star and Non-Energy Star

Below, the report discusses the percentage of lamps (CFLs and LEDs) stocked in Oregon and the Northwest that did and did not bear the Energy Star label on their packages.

#### CFLs

Figure 7 shows the percentage of lamps that bore the Energy Star label versus those that did not for general purpose, specialty and all CFLs in Oregon and the Northwest region in 2012 and 2013. The proportion of CFLs with the Energy Star label in both Oregon and the Northwest region decreased between 2012 and 2013. The proportion of Energy Star CFLs (general purpose and specialty CFLs combined) in Oregon stores declined from 81 percent to 74 percent and the proportion in Northwest stores remained largely unchanged, declining from 81 to 79 percent between years. This decline in the proportion of Energy Star CFLs occurred for both general purpose and specialty CFLs between years in both Oregon and the Northwest. The reasons for this decline in the proportion of Energy Star rated CFLs in both regions are unclear.

**Figure 7**  
**Percentage of CFLs Stocked by Lamp Type and Energy Star Designation**  
**Oregon and Northwest Region, 2012 and 2013**

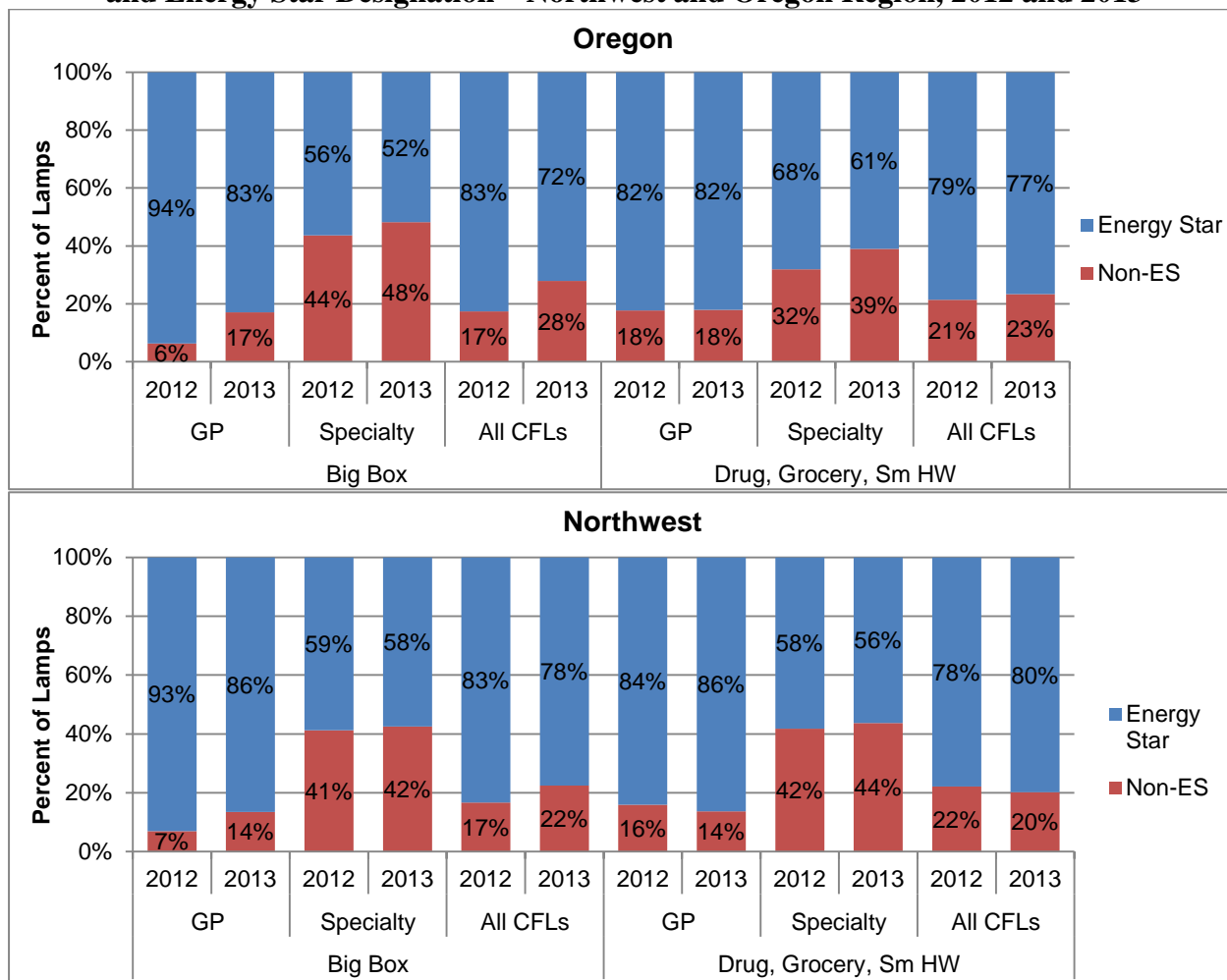


Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C,

Table 14 for number of lamps.

Figure 8 shows the percentage of Energy Star and non-Energy Star CFLs in Oregon and the Northwest region in big box and non-big box stores in 2012 and 2013. The percentage of Energy Star rated general purpose and specialty CFLs declined between 2012 and 2013 in big box stores in Oregon and the Northwest. The trends were less clear in non-big box stores. In Oregon non-big box stores, the percentage of Energy Star rated specialty CFLs and all CFLs combined declined (the percentage of Energy Star general purpose CFLs in Oregon remained the same between years). In non-big box stores in the Northwest region, the percentage of Energy Star general purpose CFLs increased between years, while the percentage of specialty CFLs rated Energy Star decreased.

**Figure 8**  
**Percentage of CFLs Stocked by Lamp Type, Store Category**  
**and Energy Star Designation – Northwest and Oregon Region, 2012 and 2013**

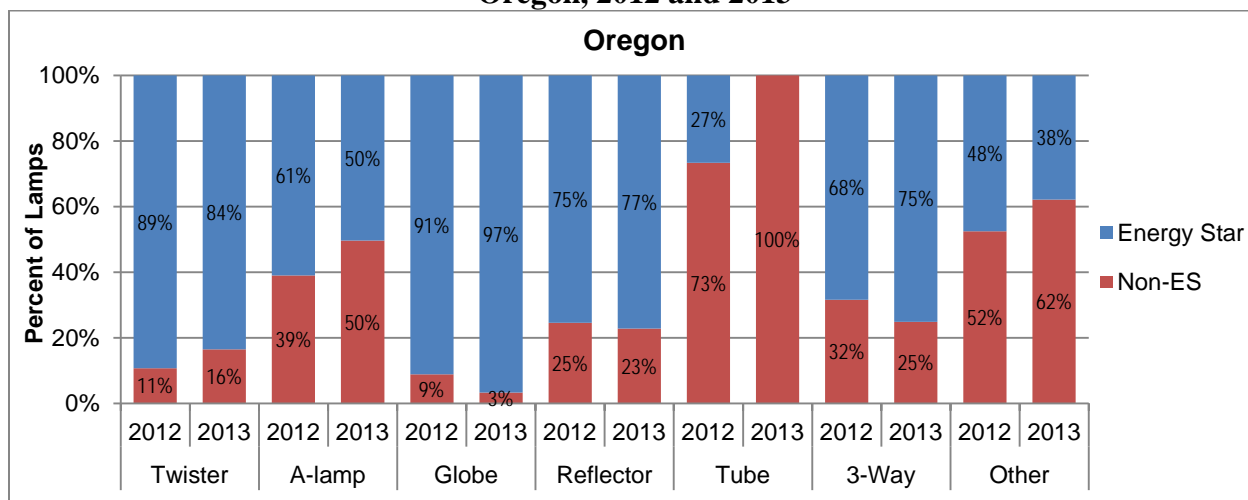


Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 15 for number of lamps.

Figure 9 examines results in more detail for Oregon, showing the percentage of CFLs that are Energy Star qualifying versus non-qualifying in 2012 and 2013 by lamp style. Results suggest that in 2012 and 2013, a greater percentage of the twister and globe-style lamps stocked in Oregon qualified for Energy Star than any other lamp style. Among CFL styles for which Energy Star standards exist, tube-style lamps had the lowest percentage of lamps stocked in Oregon in 2013 that qualified for Energy Star at 0 percent (down from 27% in 2012). The percentage of CFL A-lamps that were Energy Star qualified also declined from 61 percent to only 50 percent between years. “Other” lamps are comprised by bug lights as well as torpedo, candelabra, and bullet style CFLs. We should note that we have excluded circline and pin-based styles from this

analysis since there were no circline or pin-based CFLs that qualified for Energy Star in 2012 and 2013 (because Energy Star standards do not exist for these lamp styles).

**Figure 9**  
**Percentage of CFLs Stocked by Detailed Lamp Style and Energy Star Designation**  
**Oregon, 2012 and 2013**

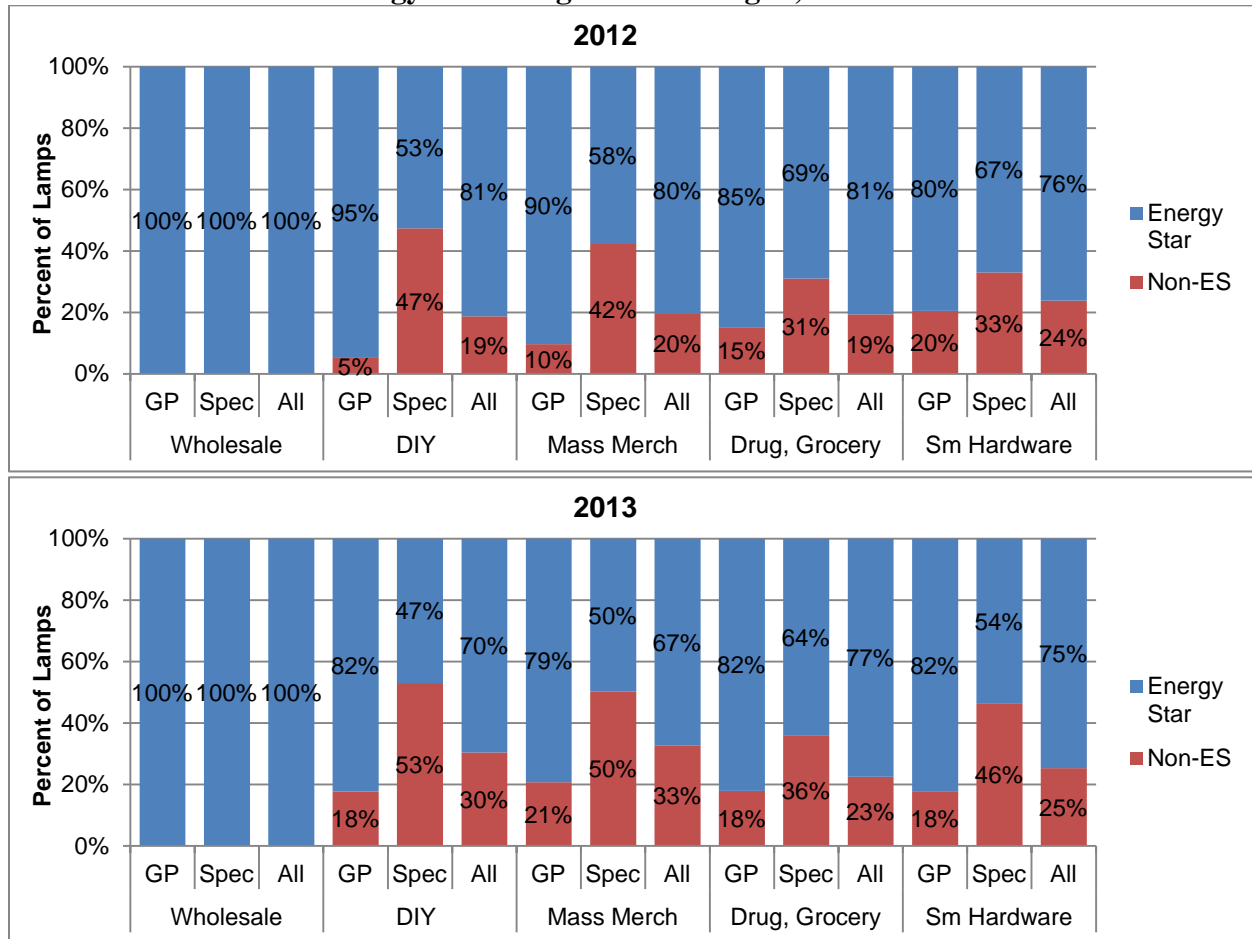


Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C,

Table 16 for number of lamps.

Figure 10 shows the percentage of Energy Star versus non-Energy Star lamps for general purpose and specialty CFLs within each of five store types in Oregon during 2012 and 2013. Overall, DIY and mass merchandise stores had the greatest decline in the proportion of CFLs comprised by Energy Star-rated lamps, both general purpose and specialty, between 2012 and 2013. DIY stores also had a noticeable decline in the proportion of CFLs comprised by Energy Star-rated lamps. One hundred percent of CFLs in wholesale clubs bore the Energy Star label in both years, which corroborates information gathered from supplier interviews in past evaluations for NEEA. Thus, the increase in non-Energy Star lamps in the big box channel in Oregon shown in Figure 8 above was driven by changes in Energy Star stocking patterns in DIY and mass merchandise stores exclusively.

**Figure 10**  
**Percentage of CFLs Stocked by Lamp Type, Store Type**  
**and Energy Star Designation – Oregon, 2012 and 2013**

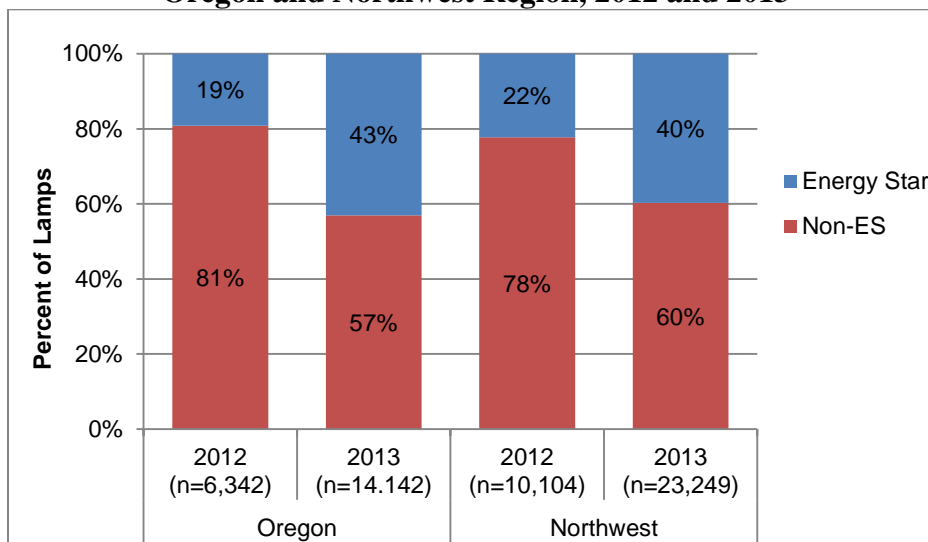


Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 17 for number of lamps.

### LED Lamps

Figure 11 shows the percentage of Energy Star versus non-Energy Star LED lamps in Oregon and the Northwest region in 2012 and 2013. Results were similar between Oregon and the Northwest in both years. As shown, the percentage of Energy Star-labeled LED lamps roughly doubled in both geographies between 2012 and 2013 (from 19 to 43% in Oregon and from 22 to 40% in the Northwest).

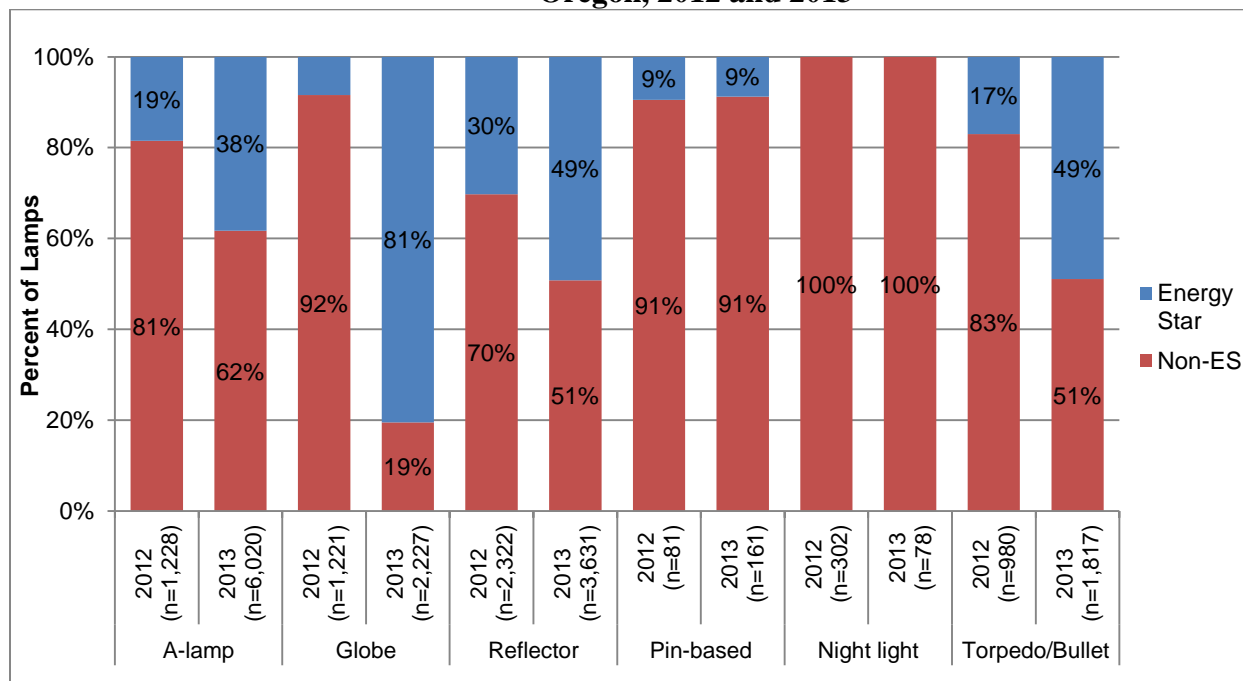
**Figure 11**  
**Percentage of LED Lamps Stocked by Energy Star Designation**  
**Oregon and Northwest Region, 2012 and 2013**



When Oregon results are examined more closely by LED lamp style for 2012 and 2013 (Figure 12), results suggest an increase in the percentage of Energy Star qualifying lamps between years across all styles except night lights and pin-based lamps, for which the percentage of qualifying lamps in Oregon stores was unchanged between 2012 and 2013. Globe lamps had the highest proportion of Energy Star qualifying LED lamps in Oregon in 2013 at just over four-fifths of total LED stock in Oregon, while pin-based lamps were among the lowest in terms of the proportion that qualified for Energy Star (only 9% of pin-based LED lamps were Energy Star qualifying).



**Figure 12**  
**Percentage of LED Lamps Stocked by Lamp Style and Energy Star Designation**  
**Oregon, 2012 and 2013**



### 3.1.2.4 EISA-Qualifying Lamps

The U.S. Congress passed the Energy Independence and Security Act (EISA) in 2007.<sup>11</sup> EISA requires that general purpose incandescent lamps meet minimum efficacy standards that traditional general purpose incandescent lamps<sup>12</sup> cannot meet, effectively pushing the most inefficient lamps out of the market. As shown in Table 4, the EISA standards phased in gradually; on January 1, 2012, the legislation prohibited the manufacture and importation of general purpose incandescent lamps above 72 watts with light output in the 1490 to 2600 lumen range (referred to as “high brightness” throughout this report), beginning the phase-out of many traditional 100 watt incandescent lamps. After this date, it was illegal to manufacture or import lamps that did not

<sup>11</sup> H.R. 6--110th Congress, 2007.

<sup>12</sup> The sections of this report referring to general purpose incandescent lamps (or “MSB incandescent a-lamps”) utilize the EISA definition of a general purpose incandescent lamp, which states that this term refers to “a standard incandescent or halogen type lamp that – 1) is intended for general service applications; 2) has a medium screw base; has a lumen range of not less than 310 lumens and not more than 2,600 lumens; and 4) is capable of being operated at a voltage range at least partially within 110 and 130 volts” (H.R. 6--110th Congress, 2007). EISA also includes separate efficiency standards for reflector and modified spectrum lamps as well as a list of lamp types that are excluded from regulation. This report focuses on general purpose lamps only, excluding reflector, modified spectrum, and other EISA exemptions.

meet the standard, but retailers are allowed to sell through their existing stock. As of January 1, 2014, standards for all four wattage and lumen categories were in effect.

**Table 4**  
**Summary of EISA Efficiency Standards**

EISA Effective Dates	Incandescent Lamp Wattage (Watts)	Typical Incandescent Light Output (Lumens)	Typical Incandescent Efficacy (Lumens/Watt)	EISA Replacement Wattage (Watts)	EISA Light Output Ranges (Lumens)	EISA Minimum Efficacy Ranges (Lumens/Watt)
1/1/2012	100 W	1690 lm	17 lm/W	72 W	1490-2600 lm	21-36 lm/W
1/1/2013	75 W	1170 lm	16 lm/W	53 W	1050-1489 lm	20-28 lm/W
1/1/2014	60 W	840 lm	14 lm/W	43 W	750-1049 lm	17-24 lm/W
1/1/2014	40 W	490 lm	12 lm/W	29 W	310-749 lm	11-26 lm/W

Source: U.S. EPA, 2011.

The percentages in this section of the report focus only on MSB incandescent A-lamps (including halogen technologies). This section excludes non-incandescent technologies from the analyses so as not to skew the overall results (because nearly all general purpose CFLs and LED lamps meet EISA standards). The report classifies lamps that meet the EISA efficiency standards at the times field staff conducted shelf surveys as “Meets EISA Standard.” All other MSB incandescent A-lamps within these lumen ranges fall into the “Does Not Meet EISA” category. This report section categorizes the lumen ranges presented in Table 4 above as follows:

- **High Brightness.** This incandescent/halogen lamp category refers to medium screw-base (MSB) incandescent A-lamps with light output between 1490 and 2600 lumens, equivalent to the light output of many traditional 100 watt incandescent lamps. Lamps in this lumen range that meet the EISA standard have wattages of 72 or below. Lamps in this lumen range that do not meet the standard exceed 72 watts. The phase-out for lamps in this brightness category began on January 1, 2012.
- **Medium High Brightness.** This lamp category refers to MSB incandescent A-lamps with light output between 1050 and 1489 lumens, equivalent to the light output of many traditional 75 watt incandescent lamps. Lamps in this lumen range that meet the EISA standard have wattages of 53 or below. Lamps in this lumen range that do not meet the standard exceed 53 watts. The phase-out for lamps in this brightness category began on January 1, 2013.
- **Medium Low Brightness.** This category refers to MSB incandescent A-lamps with light output between 750 and 1049 lumens, equivalent to the light output of many traditional 60 watt incandescent lamps. Lamps in this lumen range that meet the EISA standard have wattages of 43 or below. Lamps in this lumen range that do not meet the standard exceed 43 watts. The phase-out for lamps in this brightness category began on January 1, 2014.
- **Low Brightness.** This lamp category refers to MSB incandescent A-lamps with light output between 310 and 749 lumens, equivalent to the light output of many traditional 40 watt incandescent lamps. Lamps in this lumen range that meet the EISA standard

wattages of 29 or below. Lamps in this lumen range that do not meet the standard exceed 29 watts. The phase-out for lamps in this brightness category began at the same time as for lamps in the Medium Low Brightness category (on January 1, 2014).

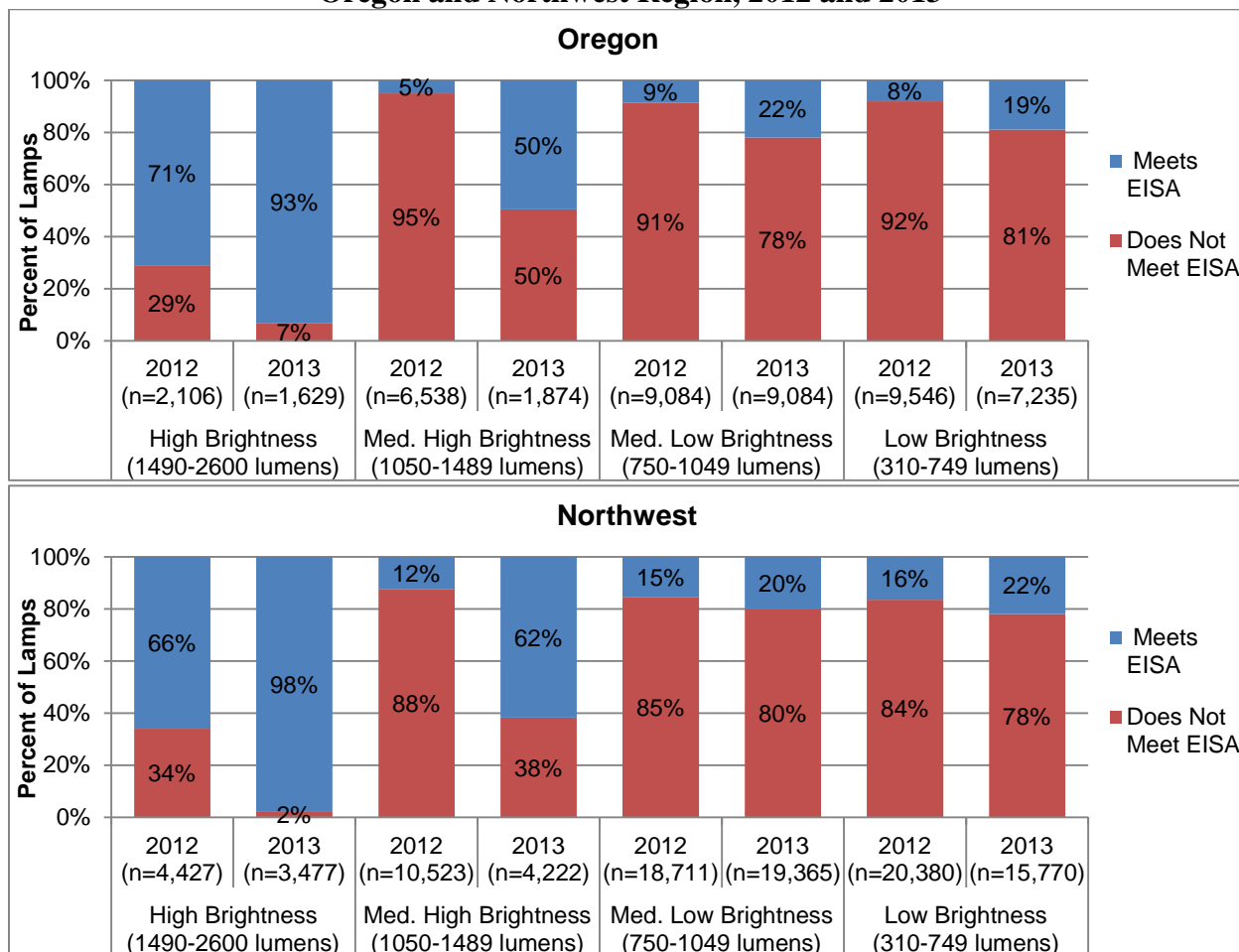
During the lighting retailer shelf surveys, field researchers gathered information that enables classification of all MSB incandescent A-lamps as either meeting or not meeting the EISA standard relevant to their lumen output. This report presents results for lamps at all four lumen bins affected by EISA, starting with those affected by the first phase (as of January 1, 2012).

### **All Lumen Bins**

Figure 13 shows the percentage of MSB incandescent A-lamps in each EISA lumen bin that met and did not meet the relevant standards at the time of the shelf survey visits in 2012 and 2013.

As shown in the figure, the proportion of MSB incandescent A-lamps that met the EISA standards at the time of the 2013 shelf survey visits was noticeably greater in both Oregon and the Northwest region than in 2012, suggesting that retail stores are selling through their stock MSB incandescent A-lamps that do not comply with EISA standards. Non-qualifying lamps in the high brightness lumen range are nearly non-existent throughout the Northwest and a majority of lamps in the medium-high brightness lumen bin were EISA qualifying lamps in 2013. Non-qualifying lamps in the medium low and low lumen bins still represented a majority of MSB incandescent A-lamp stock in those lumen ranges at the time of the 2013-2014 shelf surveys. These results suggest that the availability of lamps in the two lower lumen bins will likely decrease over time as demonstrated by lamps in the two higher lumen bins.

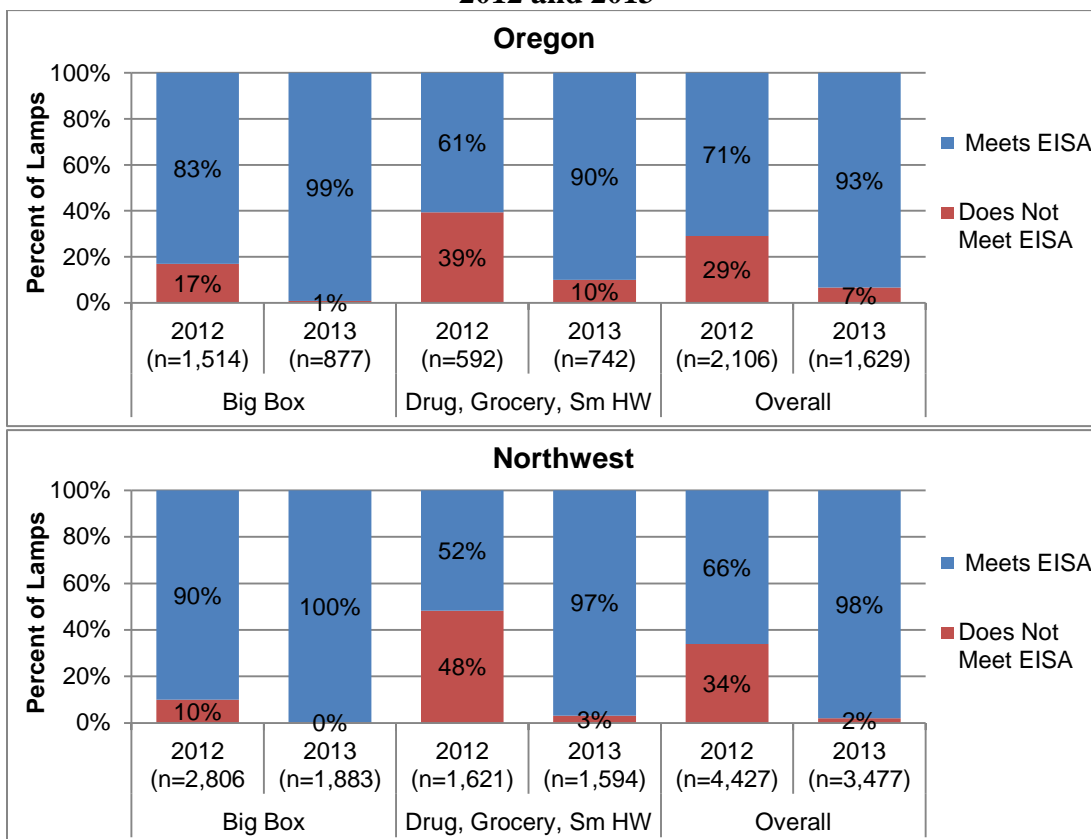
**Figure 13**  
**Percentage of MSB Incandescent A-Lamps That Meet the EISA Standard by Lumen Bin**  
**Oregon and Northwest Region, 2012 and 2013**



**High Brightness**

Figure 14 below shows the percentage of high brightness (1490–2600 lumens) MSB incandescent A-lamps in Oregon and the Northwest region that met the EISA standard that went into effect on January 1, 2012 and those that did not. Field researchers conducted the 2013-2014 shelf surveys roughly two years after the standard for lamps in this lumen range went into effect. As shown, the percentage of lamps that met the standard increased between 2012 and 2013 in both store categories in Oregon and in the Northwest, but a greater percentage of lamps in the high brightness lumen bin met the standard in big box stores in both years than in non-big box stores, both in Oregon and the Northwest.

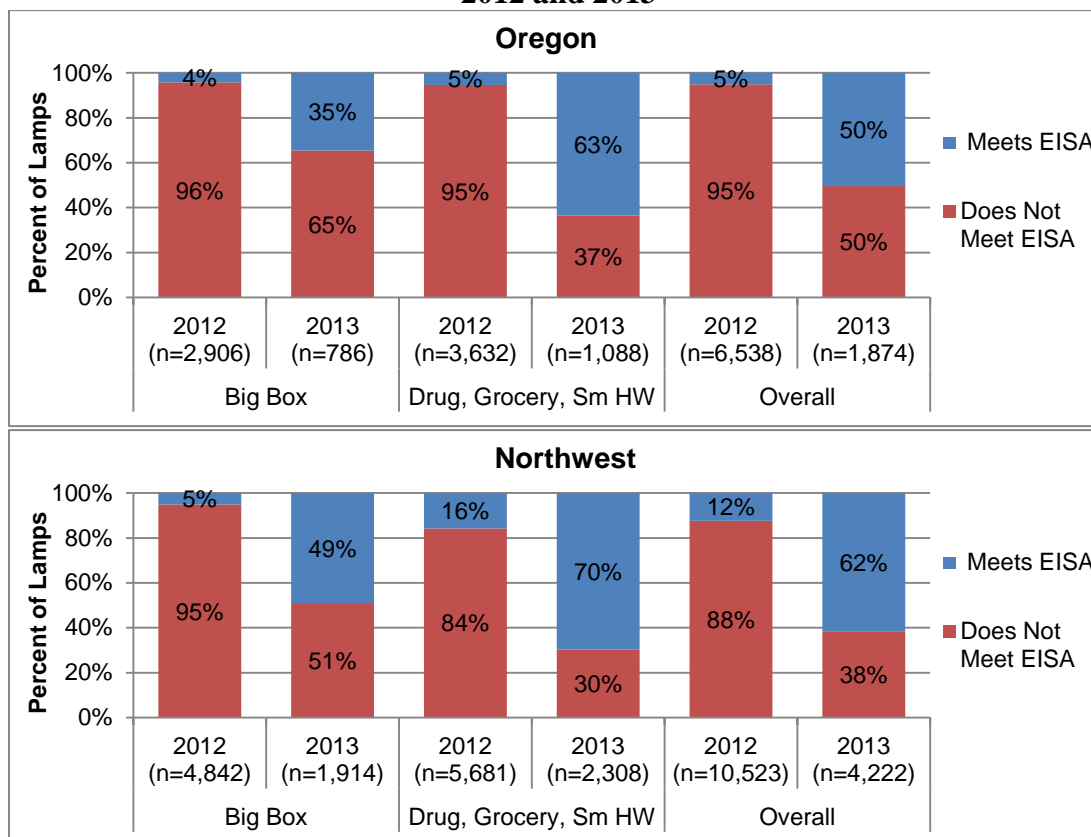
**Figure 14**  
**Percentage of High Brightness MSB Incandescent A-Lamps (1490–2600 lumens)**  
**That Meet EISA Standards by Store Category – Oregon and Northwest Region,**  
**2012 and 2013**



### Medium-High Brightness

Figure 15 below shows the percentage of medium-high brightness (1050–1489 lumens) MSB incandescent A-lamps in Oregon and the Northwest region that met the EISA standard that went into effect on January 1, 2013 and those that did not. Researchers collected the 2013-2014 data roughly one year after the standard for lamps in this lumen range went into effect. As shown, the percentage of lamps that met the standard increased rather dramatically, overall and in both store categories, between 2012 and 2013 in Oregon and in the Northwest, but a greater percentage of lamps in this lumen bin met the standard in non-big box stores in both years than in big box stores, both in Oregon and the Northwest (unlike the trend seen above for high brightness lamps; see Figure 14 above).

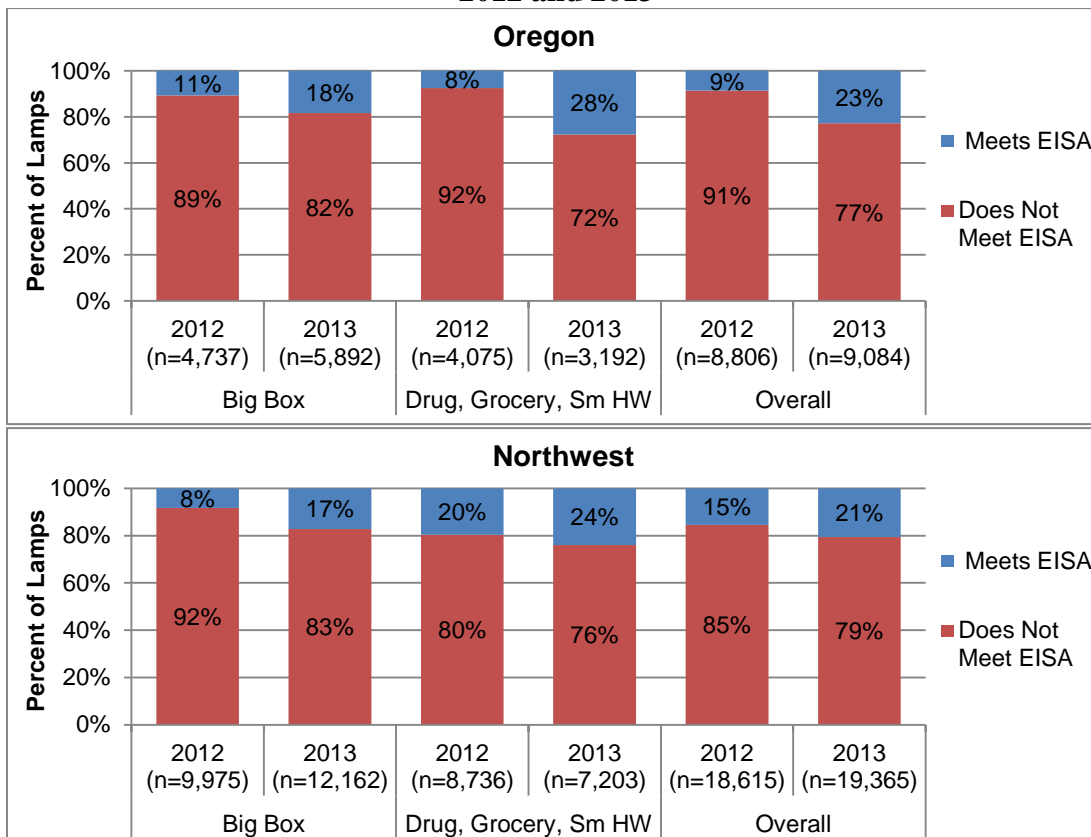
**Figure 15**  
**Percentage of Medium-High Brightness MSB Incandescent A-Lamps (1050–1489 lumens)**  
**That Meet EISA Standards by Store Category – Oregon and Northwest Region,**  
**2012 and 2013**



### Medium-Low Brightness

Figure 14 below shows the percentage of medium-low brightness (750–1049 lumens) MSB incandescent A-lamps in Oregon and the Northwest region that met the EISA standard that went into effect on January 1, 2014 and those that did not. Field researchers conducted the 2013-2014 shelf surveys at the time that the standard for lamps in this lumen range went into effect on January 1, 2014 (thus, field researchers were in stores before and after the new regulations went into effect). As shown, the percentage of lamps that met the standard increased modestly between 2012 and 2013 in both store categories and overall in Oregon and in the Northwest, but a greater percentage of MSB A-lamps in the medium-low brightness lumen bin met the standard in non-big box stores in both years than in big box stores, both in Oregon and the Northwest.

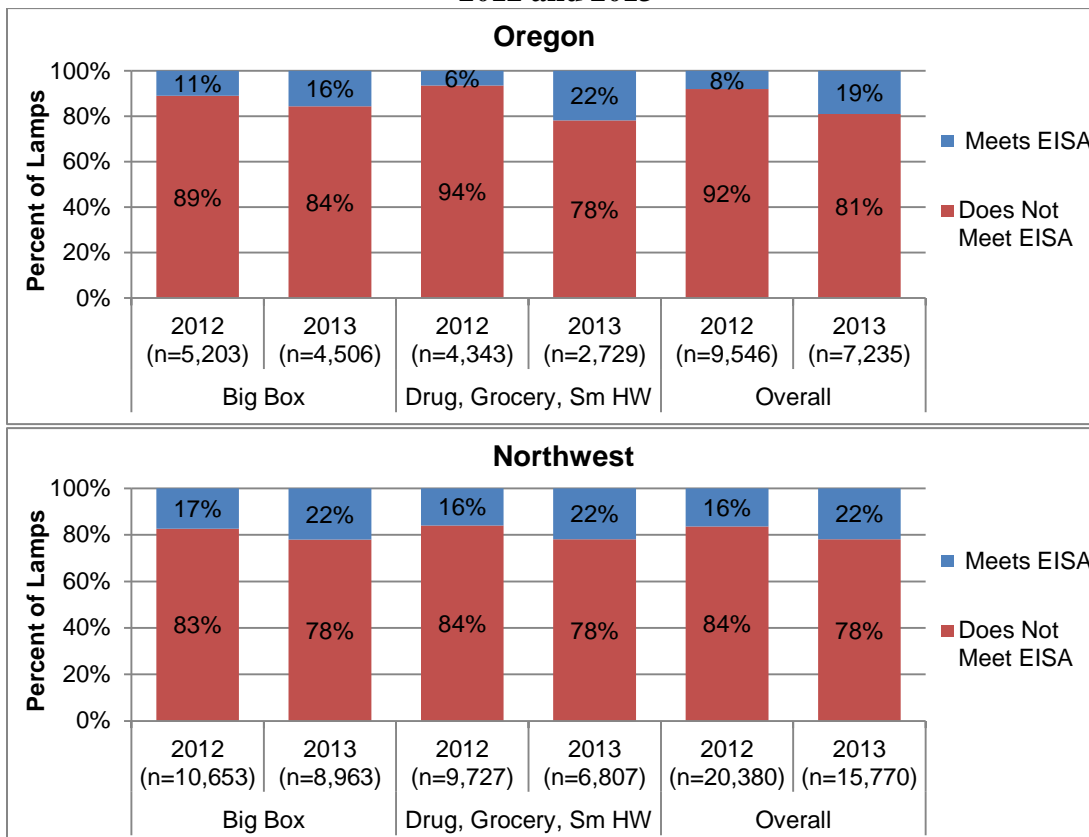
**Figure 16**  
**Percentage of Medium-Low Brightness MSB Incandescent A-Lamps (750–1049 lumens)**  
**That Meet EISA Standards by Store Category – Oregon and Northwest Region,**  
**2012 and 2013**



**Low Brightness**

Figure 17 below shows the percentage of low brightness (310–749 lumens) MSB incandescent A-lamps in Oregon and the Northwest region that met the EISA standard that went into effect on January 1, 2014 and those that did not. As with the medium brightness lamps described above, field researchers conducted the 2013-2014 shelf surveys at the time that the standard for lamps in this lumen range went into effect on January 1, 2014. As shown, the percentage of lamps that met the standard increased between 2012 and 2013 in both store categories and overall in Oregon and in the Northwest, but a greater percentage of lamps in the low brightness lumen bin met the standard in non-big box stores in both years than in big box stores, both in Oregon and the Northwest.

**Figure 17**  
**Percentage of Low Brightness MSB Incandescent A-Lamps (310–749 lumens)**  
**That Meet EISA Standards by Store Category – Oregon and Northwest Region,**  
**2012 and 2013**



### 3.2 Diversity

The sections below discuss diversity in terms of the average number of general purpose CFL, specialty CFL, LED, halogen, and incandescent lamp models available per store by store category between 2012 and 2013. This section also presents details regarding the percentage of lamps within wattage bins specific to each of the four technologies.

#### 3.2.1 Lamp Technology and Style

Figure 18 shows product diversity (in terms of the average number of lamp models stocked per store) by technology and store category for Oregon and the Northwest in 2012 and 2013. In both time periods, diversity was greatest among incandescent lamps across both store categories in both Oregon and the Northwest region as a whole. Of note is the fact that incandescent lamp



diversity declined between 2012 and 2013 in the Northwest, declining by an average of 6 models per store overall (and 10 models per store in big box stores), while halogen lamp diversity increased by 8 models per store, overall, in the same time period. While incandescent lamp model diversity also declined in Oregon big box stores, the average number of lamp models remained the same across all stores between 2012 and 2013. Halogen lamp diversity increased by 9 models per store overall in Oregon. Changes in general purpose and specialty CFL lamp model diversity as well as LED lamp model diversity were minimal in both Oregon and Northwest stores between 2012 and 2013. The average number of LED lamp models increased in Oregon stores overall from 4 to 6; this increase was driven by an increase in LED lamp model diversity in non-big box stores.

**Figure 18**  
**Average Number of Lamp Models per Store by Lamp Technology and Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

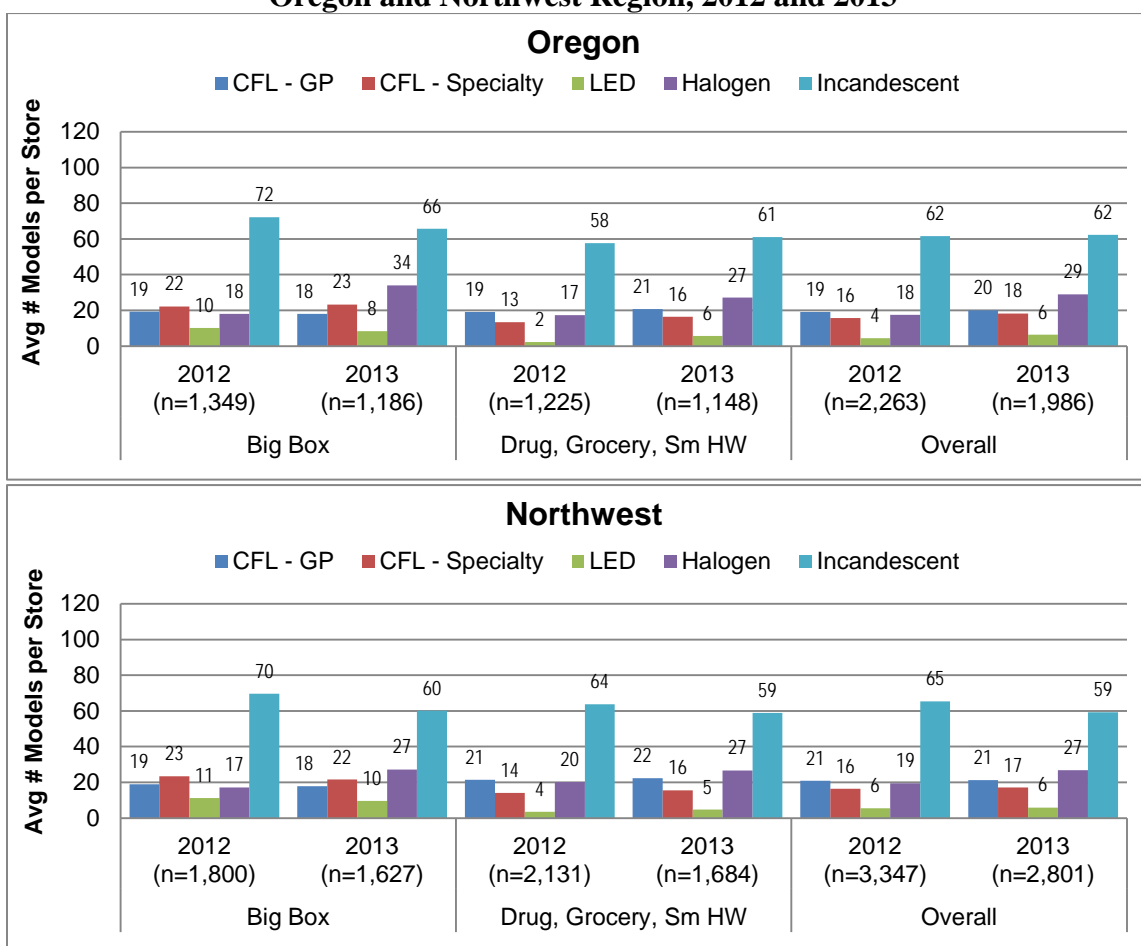


Figure 19 shows the average number of lamp models per store in Oregon by store type for 2012 and 2013. In DIY stores and drug and grocery stores, lamp diversity increased, on average per store, for all lamp technologies between 2012 and 2013. The opposite trend was apparent in small hardware stores where model number diversity decreased for all lamp technologies, except for LED lamps, during that same timeframe. In mass merchandise stores, average model number diversity decreased for all lamp technologies except halogen lamps between 2012 and 2013.

In wholesale clubs, model diversity decreased or stayed the same for all lamp technologies except for LED lamps. The average number of LED lamp models stocked in DIY stores increased by three models per store, on average, between 2012 and 2013, while the average number of LED lamp models stocked in mass merchandise stores decreased by four models per store. With respect to CFL lamp model diversity, the average number of general purpose and specialty CFL models per store increased in DIY and drug and grocery stores, but decreased in hardware stores between 2012 and 2013. Halogen lamps showed a relatively consistent trend with the average number of halogen lamp models per store increasing in all store types except small hardware between 2012 and 2013.

**Figure 19**  
**Average Number of Lamp Models per Store by Lamp Technology and Store Type**  
**Oregon, 2012 and 2013**

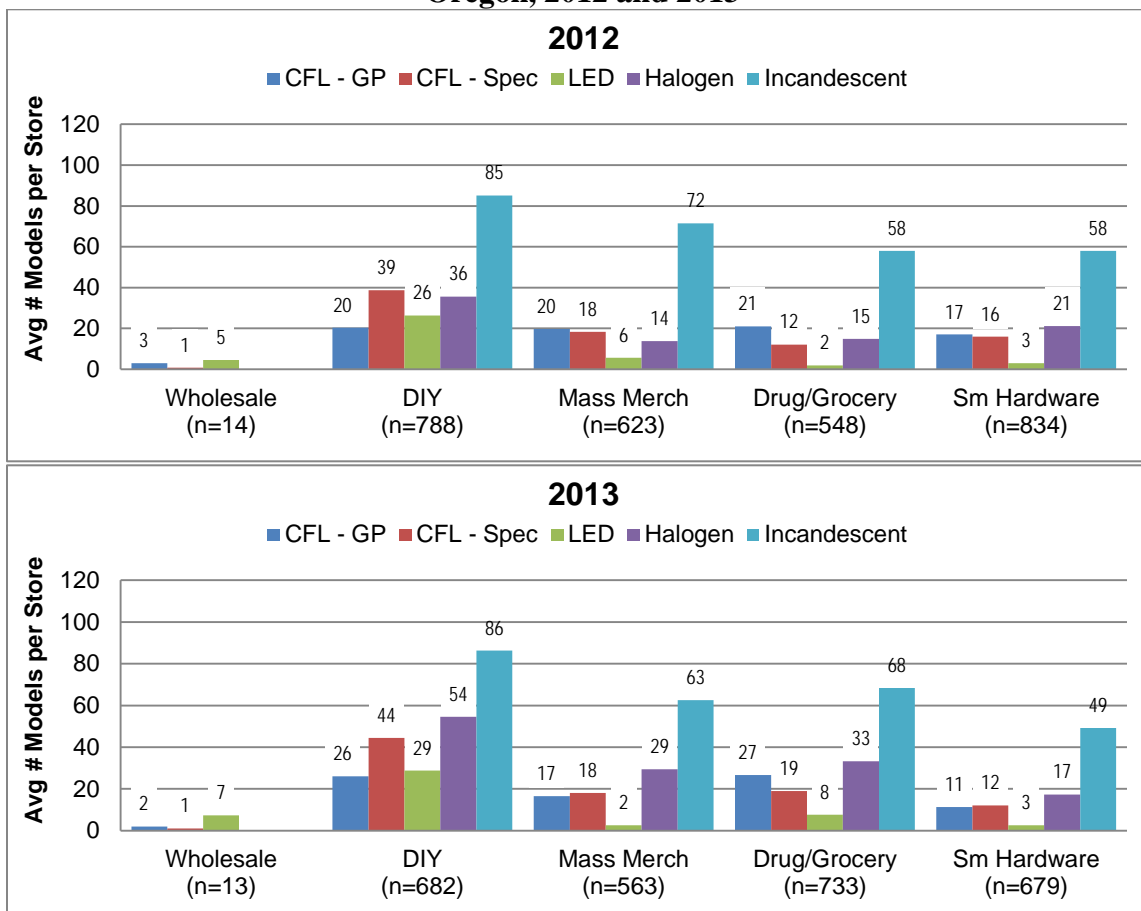
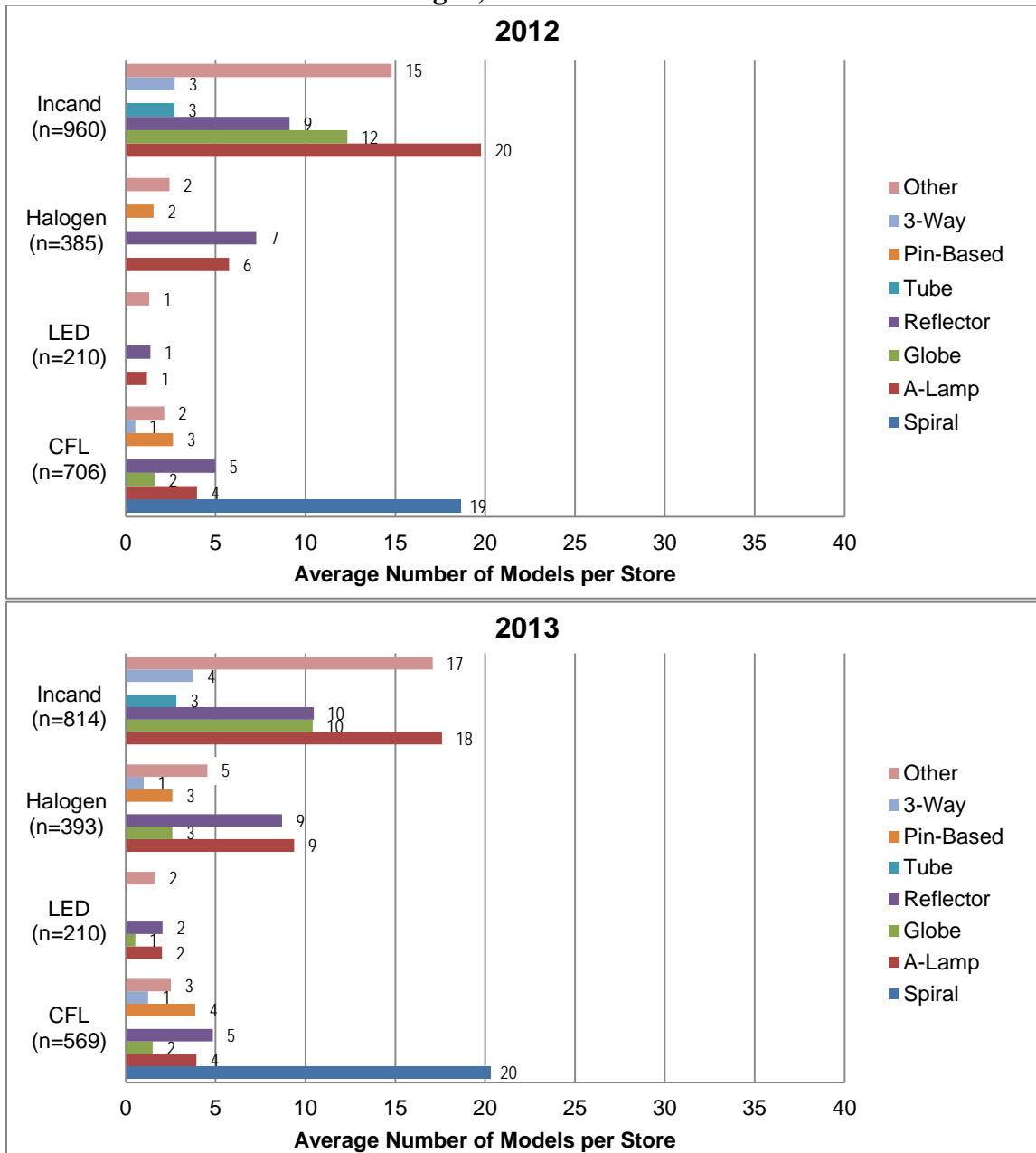


Figure 20 shows the average number of lamp models per store in Oregon by lamp technology and style in 2012 and 2013. The most noteworthy changes in lamp model diversity in this timeframe occurred among incandescent and halogen lamps, particularly in A-lamp and globe styles. Incandescent A-lamp model diversity declined between years (from 20 to 18 models per store), while halogen A-lamp models increased from 6 to 9 models per store. These results likely reflect EISA’s influence on the market (as many traditional incandescent lamps are phased out and EISA-qualifying halogen lamps are introduced).

With respect to incandescent globe lamp model diversity, there was a decline in the number of lamp models per store from 12 to 10 between 2012 and 2013; during the same timeframe, the number of halogen globe lamp models per store increased from 6 to 9. Lamp model diversity also increased among halogen reflector lamps between years (from 7 per store to 9). These changes in

lamp model diversity among incandescent and halogen lamps, particularly among A-lamps, were likely driven by the phasing in of EISA standards.

**Figure 20**  
**Average Number of Lamp Models per Store by Lamp Technology and Lamp Style**  
**Oregon, 2012 and 2013**



### 3.2.2 Lamp Wattage

The following section provides details regarding the percentage of lamps in each store within wattage bins specific to each of the four lamp technologies by store category.

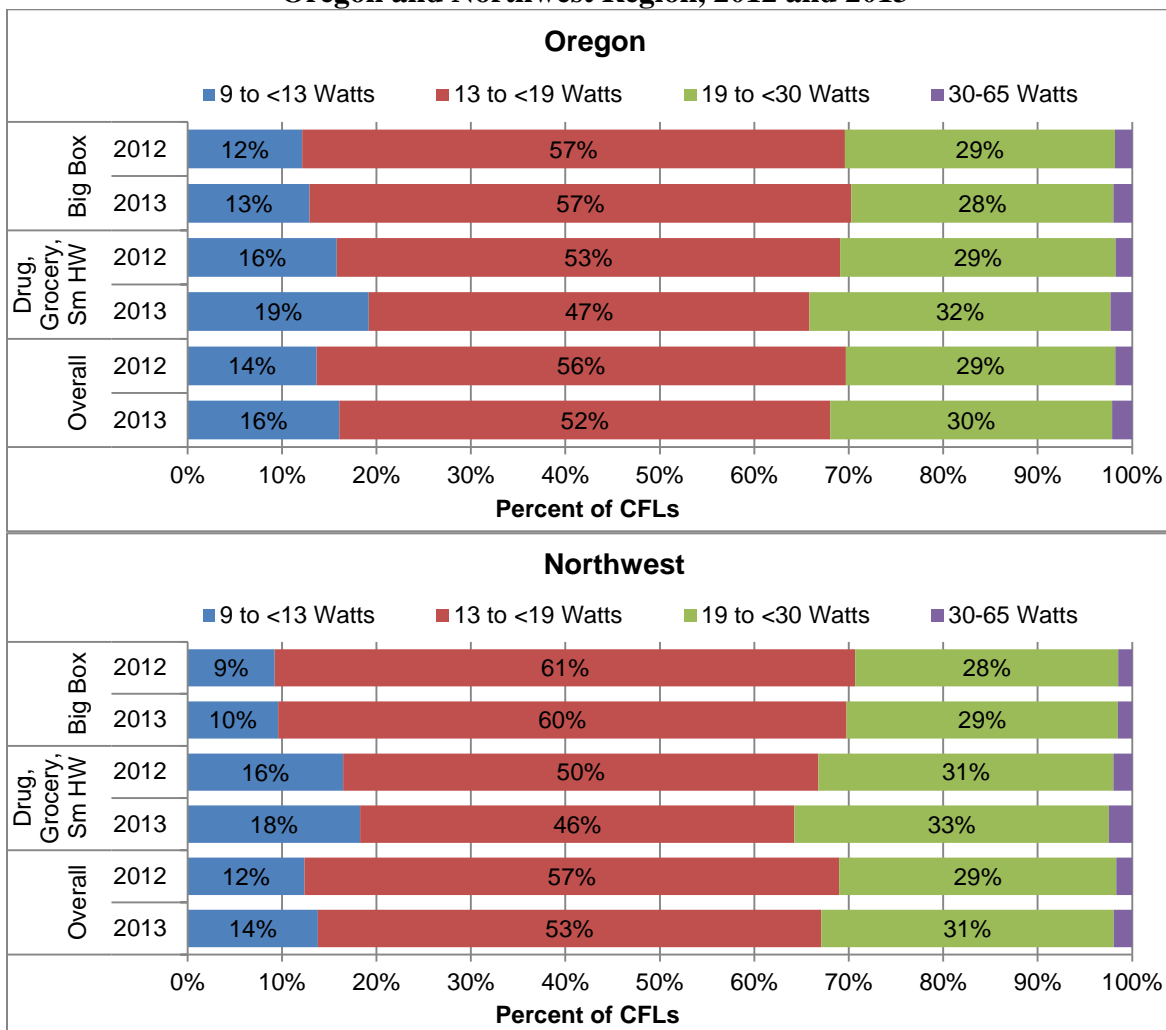
#### 3.2.2.1 CFLs

Figure 21 shows the percentage of CFLs stocked in big box stores and drug, grocery, and small hardware stores in Oregon and the Northwest region in four CFL wattage categories in 2012 and 2013. These categories (and their rough equivalents among traditional incandescent lamps) include:

- 9 to less than 13 watt CFL (roughly equivalent to a traditional 40 watt incandescent lamp);
- 13 to less than 19 watt CFL (60 watt traditional incandescent lamp);
- 19 to less than 30 watt CFL (75 watt traditional incandescent lamp); and
- 30 to 65 watt CFL (100 watt traditional incandescent lamp).

The greatest share in terms of the percentage of CFLs stocked was in the 13W to less than 19W range in both 2012 and 2013. However, the share of CFLs in the 13W to less than 19W range decreased slightly overall in both Oregon and the Northwest between 2012 and 2013. This was met with a corresponding increase in the share of CFLs stocked overall in the 9W to less than 13W and 19W to less than 30W ranges in both Oregon and Northwest stores. The 30W to 65W range had the smallest share of total CFLs stocked in 2012 and 2013 in all store categories and in both regions.

**Figure 21**  
**Percentage of CFLs by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 18 for number of lamps.

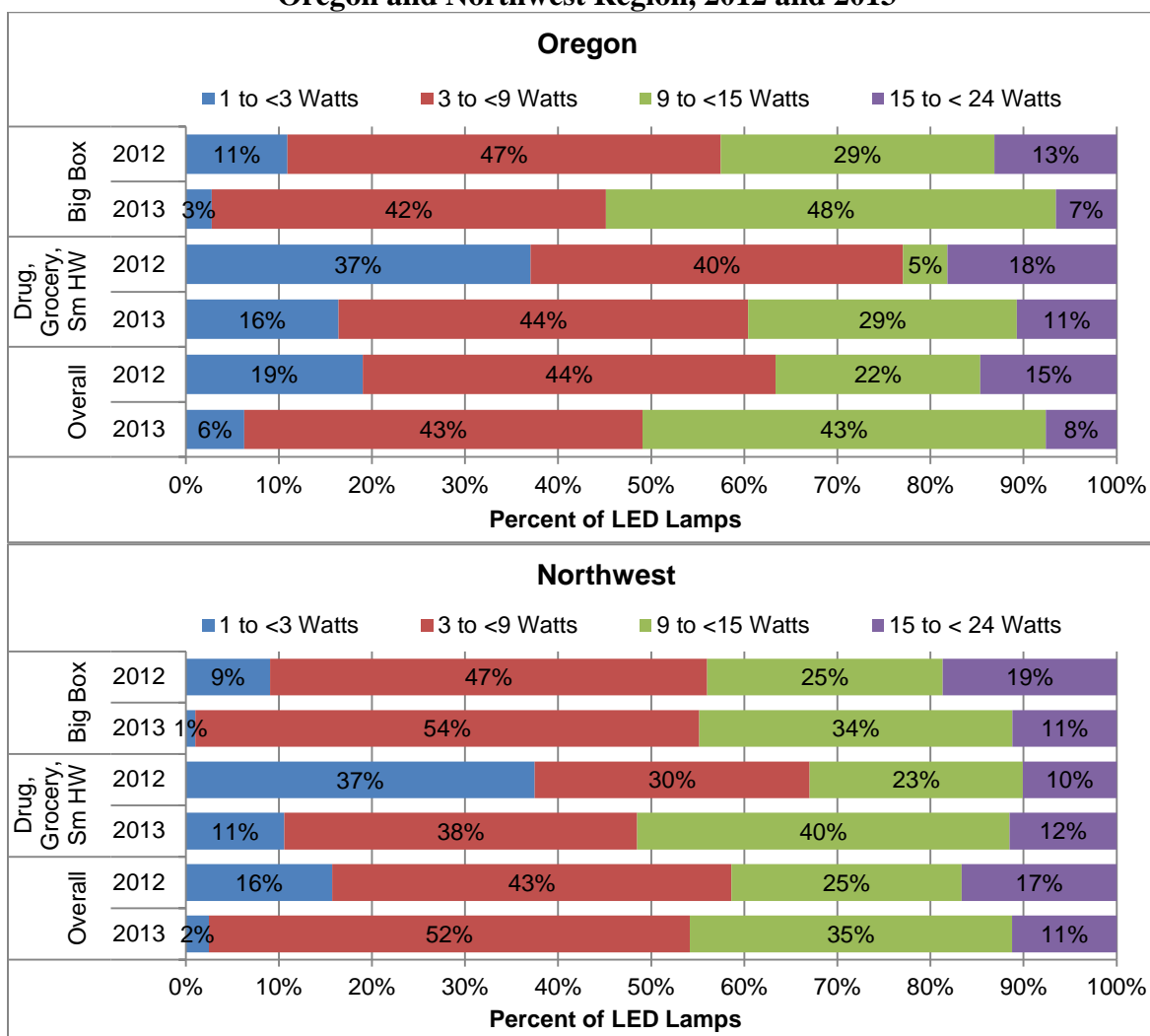
### 3.2.2.2 LED Lamps

Figure 22 shows the percentage of LED lamps stocked in stores in Oregon and the Northwest region. LED lamps were grouped into four wattage bins:

- 1 to less than 3 watt LED (roughly equivalent to 40 watt traditional incandescent lamp);
- 3 to less than 9 watt LED (60 watt traditional incandescent lamp);
- 9 to less than 15 watt LED (75 watt traditional incandescent lamp); and
- 15 to less than 24 watt LED (100 watt traditional incandescent lamp).

In 2012 and 2013, the 3W to less than 9W category had the largest share of LED lamps compared to the other three wattage categories. However, LED lamps in Oregon stores in the 9W to less than 15W range had roughly the same share of total LED stock as lamps in the 3W to 9W category in 2013 (stock in both categories had a 43% share). The share of LED stock in the 9 to less than 15W category grew between 2012 and 2013 in both store categories and overall in Oregon and the Northwest stores. This trend did not carry over into the 15 to less than 24W category, however; the share of lamps in this wattage bin declined in both store categories and overall in Oregon stores and declined in big box stores and overall in the Northwest between 2012 and 2013.

**Figure 22**  
**Percentage of LED Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 19 for number of lamps.

### 3.2.2.3 Incandescent Lamps

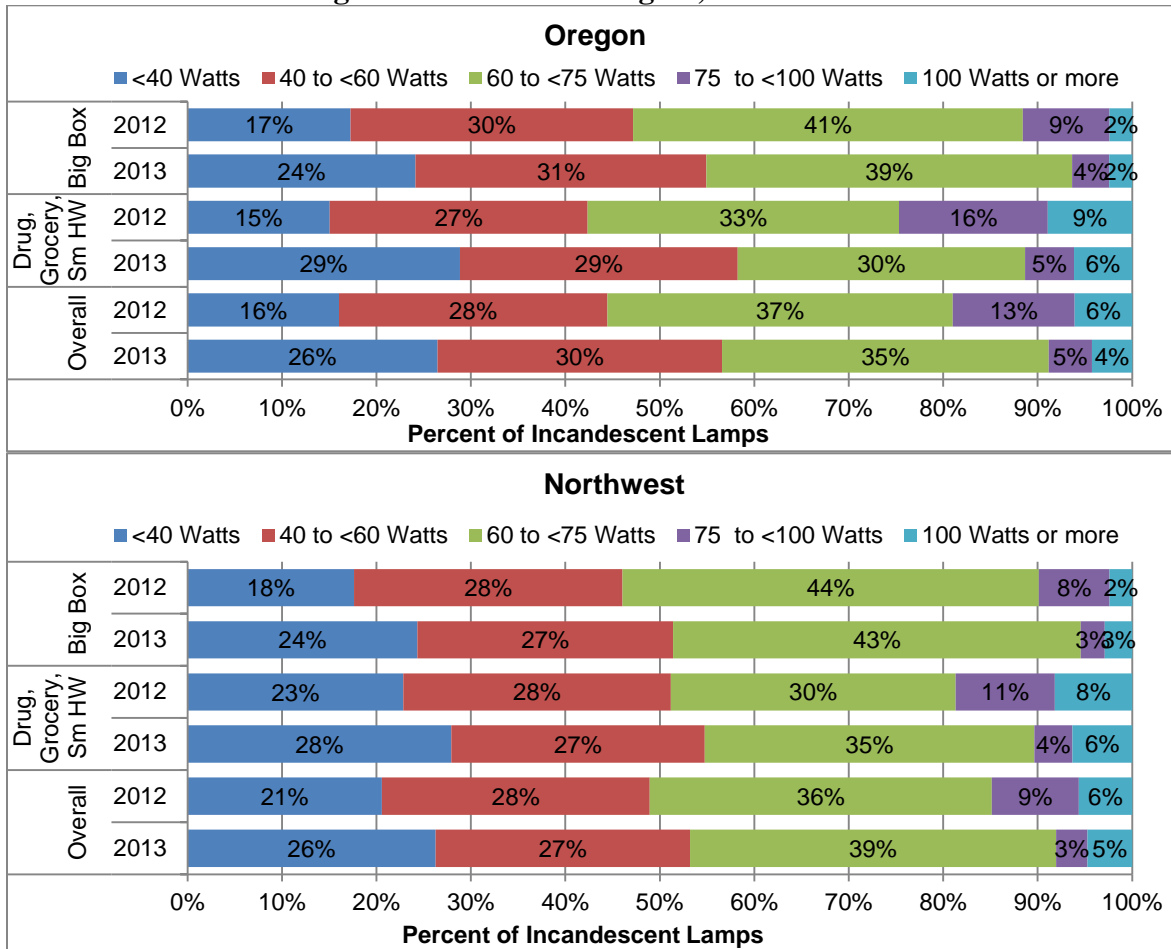
Figure 23 shows the percentage of incandescent lamps in each store category in each of five wattage categories:

- less than 40 watts;
- 40 to less than 60 watts;
- 60 to less than 75 watts;
- 75 to less than 100 watts; and
- 100 watts or more.

The figure shows results across all stores and by store category for Oregon and the Northwest region between 2012 and 2013. The 60W to less than 75W category had the largest proportion of incandescent lamp stock in Oregon and the Northwest in 2012 and 2013. The share of 75W to 100W and 100W or greater lamps declined overall between 2012 and 2013 in Oregon and the Northwest. The decline in share for both wattage categories is likely a result of EISA regulations.



**Figure 23**  
**Percentage of Incandescent Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 20 for number of lamps.

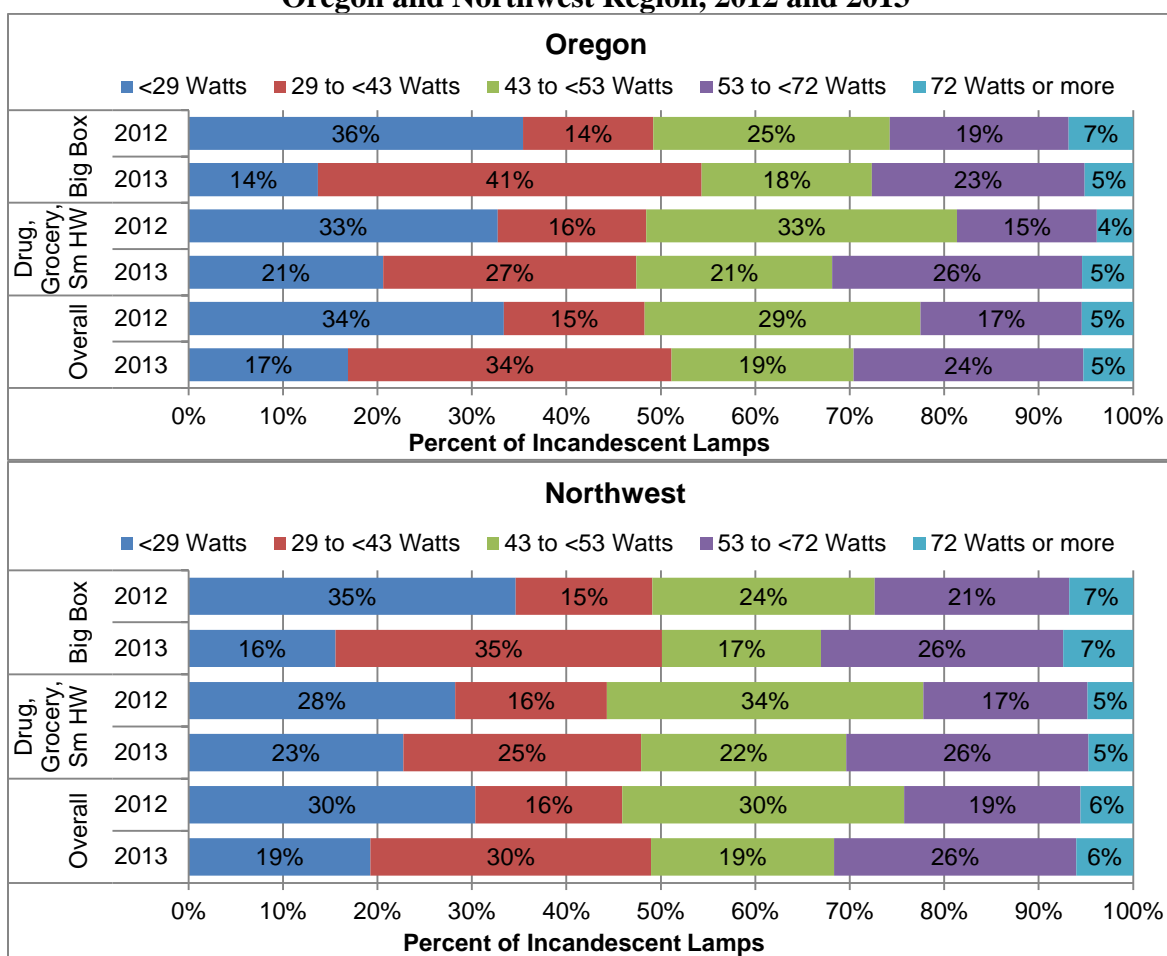
### 3.2.2.4 Halogen Lamps

Figure 24 shows the percentage of halogen lamps in each store category in each of five wattage categories:

- less than 29 watts;
- 29 to less than 43 watts;
- 43 to less than 53 watts;
- 53 to less than 72 watts; and
- 72 watts or more.

The figure shows results across all stores and by store category for Oregon and the Northwest region between 2012 and 2013. Overall, the proportion of both 29W to less than 43W lamps and 53W to less than 72W lamps increased in both regions, while the proportion of 43W to less than 53W lamps decreased. The increase in the share of halogen lamps in the 53W to less than 72W category is likely a result of EISA standards that went into effect one year earlier (January 1, 2013).

**Figure 24**  
**Percentage of Halogen Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 20 for number of lamps.

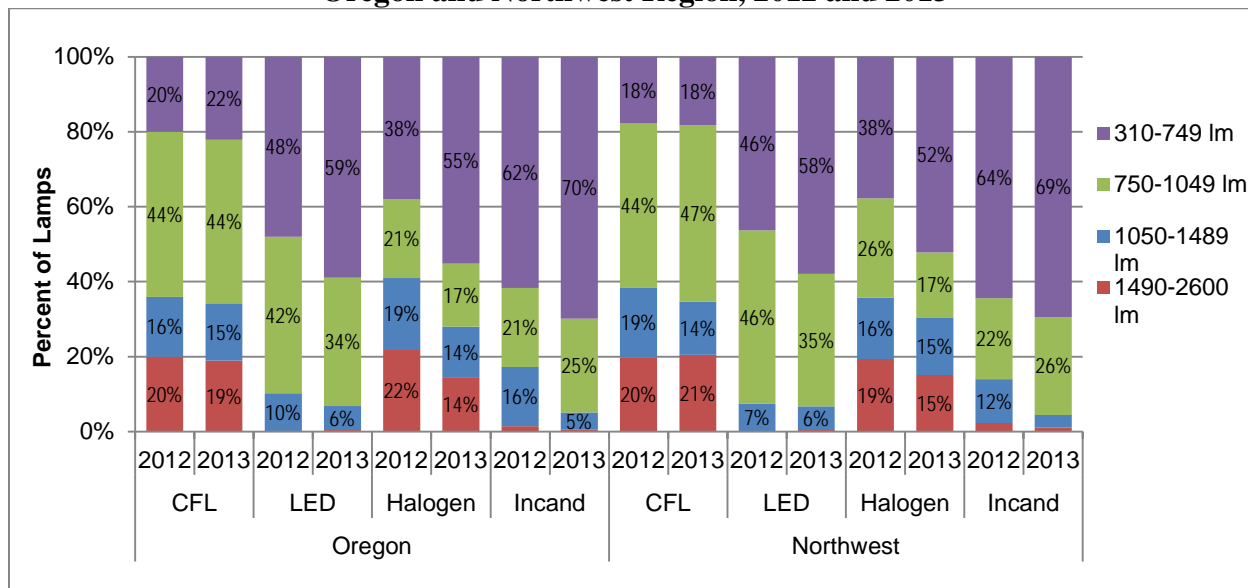
### 3.3 Lumens

The figures below show the percentage of total CFLs, LED, halogen, and incandescent lamps stocked in Oregon and Northwest retail stores by lumen bin. These lumen bins align with those in

the EISA legislation as described in Section 3.1.2.4 above. Appendix D includes tables with detailed information on the number of lamps, lamp models, wattage, and pricing across both store categories for all four lamp technologies for specific lamp shapes (e.g., MSB A-lamp, MR16 lamps) by lumen bin among Oregon stores in the 2013 sample.

While the distribution of lamps across lumen bins remained fairly static for CFLs between 2012 and 2013 in both Oregon and the Northwest region, the distribution of halogen, incandescent and LED lamps changed more dramatically (Figure 25). The share of halogen lamps stocked in the lowest lumen bin increased from less than 40 percent of all halogen lamp stock in 2012 to more than half of all halogen lamp stock in 2013 in both Oregon and the Northwest. It is possible that this increase in halogen lamps stocked in the lowest lumen bin was driven by the anticipation of the EISA phase-out of 40W lamps (which began on January 1, 2014). As with halogen lamps, incandescent lamps in the lowest lumen bin also comprised the largest share of total incandescent lamp stock in 2012 and 2013, growing to 62 percent of lamps stocked in Oregon and 69 percent of lamps stocked in the Northwest. As with halogen and incandescent lamps, LED lamps in the lowest lumen bin comprised a majority share of LED lamp stock in Oregon and the Northwest stores in 2013. Also noteworthy is a decrease in share of incandescent lamps in the 1050-1489 lumen bin from 12 percent of lamp stock in 2012 to 3 percent in 2013; this change is likely a result of the EISA-driven phase-out of traditional 75 watt incandescent lamps.

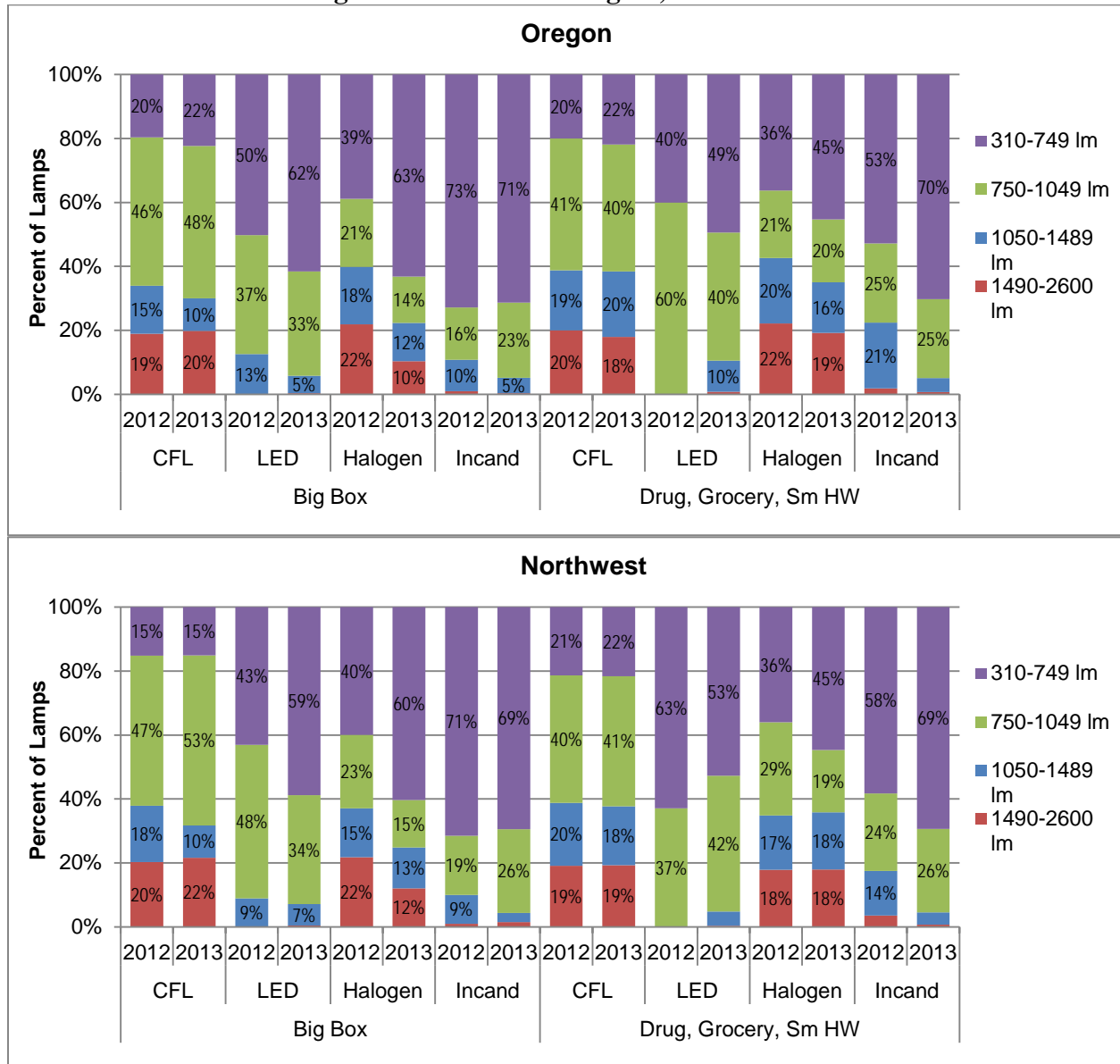
**Figure 25**  
**Percentage of Lamps Stocked by Lamp Technology and Lumen Bin**  
**Oregon and Northwest Region, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C, Table 22 for number of lamps.

Figure 26 shows the percentage of lamps stocked in big box and non-big box stores by technology and lumen bin. As seen overall (see Figure 25 above), incandescent, halogen, and LED lamps in the lowest lumen bin comprised the largest share of lamps for each technology in big box and non-big box stores in 2013. Lamp share in the lowest bin increased between 2012 and 2013 for halogen in Oregon and Northwest big box and non-big box stores. LED lamp share in the lowest lumen bin increased in big box and non-big box stores in Oregon between 2012 and 2013, but only increased in big box stores in the Northwest during the same timeframe. The distribution of CFL lamps remained relatively static between years for both store categories in Oregon and the Northwest.

**Figure 26**  
**Percentage of Lamps Stocked by Lamp Technology, Store Category and Lumen Bin**  
**Oregon and Northwest Region, 2012 and 2013**



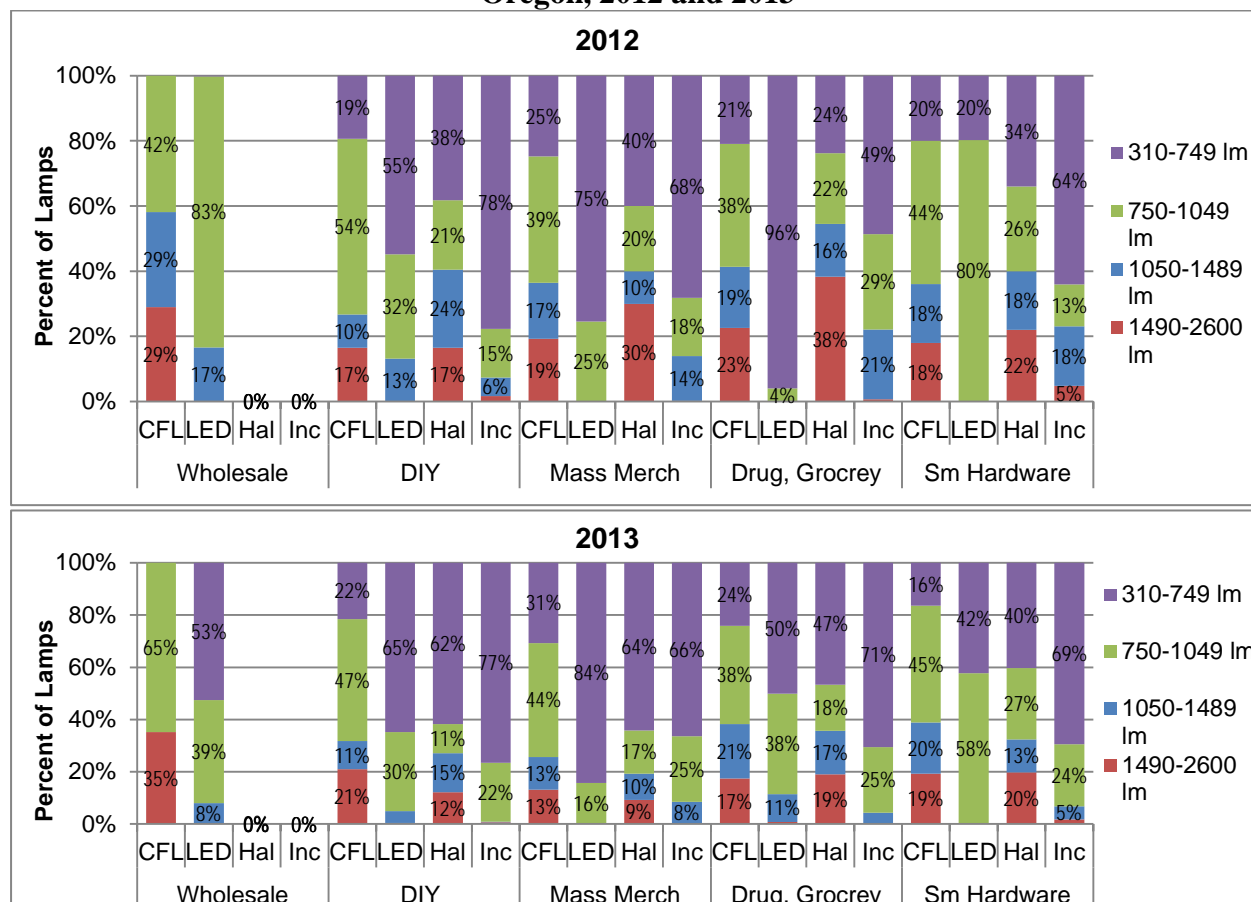
Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C,

Table 23 number of lamps.

Figure 27 shows the distribution of CFL, LED, halogen, and incandescent lamps by lumen bin and store type in Oregon during 2012 and 2013. In 2012, wholesale stores in Oregon did not

stock any LED lamps in the lowest lumen bin (310-749 lm) or highest lumen bin (1490-2600 lm), but in 2013 wholesale clubs stocked LED lamps in all lumen bins except the highest lumen bin. There was also an increase in the share of LED lamps in the lowest lumen bin in DIY stores and mass merchandise stores between 2012 and 2013, but a decrease in share of these lamps in drug and grocery as well as small hardware stores during the same timeframe. The share of incandescent lamp stock declined rather dramatically in the 1050-1489 lumen bin in drug and grocery stores as well as small hardware stores between 2012 and 2013, likely as a result of EISA regulations.

**Figure 27**  
**Percentage of Lamps Stocked by Lamp Technology, Store Type and Lumen Bin**  
**Oregon, 2012 and 2013**



Note: Percentages may not total 100 percent due to rounding.  
 Refer to Appendix C,

Table 24 for number of lamps.

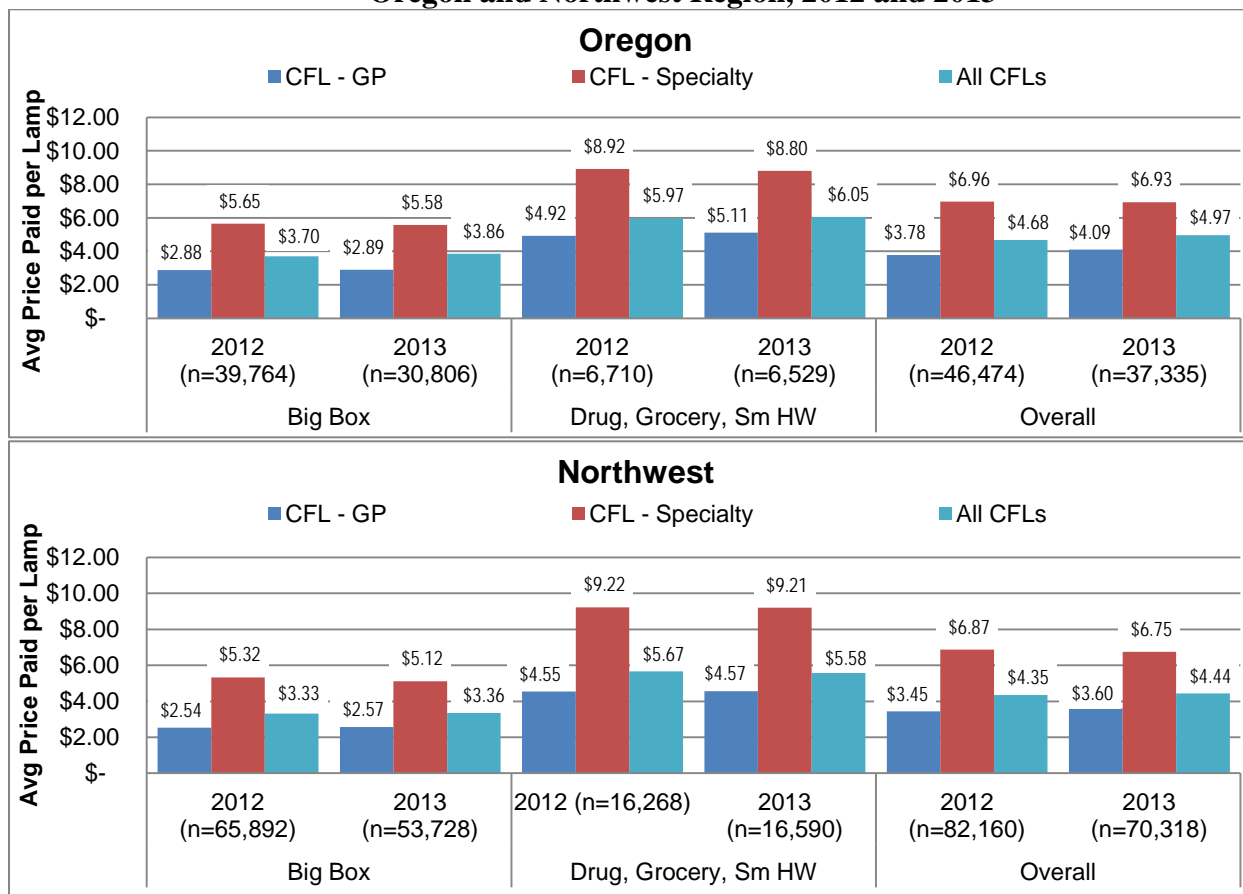
### 3.4 CFL Pricing

Field staff collected detailed pricing information for every lamp observed on retail store shelves, including price (before and after utility program discounts or other discounts, when applicable) and number of lamps per package. To calculate the average price per CFL, analysts calculated the price per CFL for each lamp model observed in each store and then multiplied the price by the total number of lamps observed for each CFL model. We then applied sample expansion weights to the results for each store in which field staff observed a given CFL model. The summed prices for each CFL record were then aggregated together by CFL type (general purpose, specialty, and all CFLs) and split into different store categories (big box, non-big box, and overall) and regions (Oregon and the Northwest) and divided by the total weighted lamp count in each of the three CFL type categories. The results of these calculations are the weighted average shelf price per CFL for retail stores in Oregon and the Northwest by store category and CFL type.

#### 3.4.1 Average CFL Shelf Price

This section provides details on the average shelf price for CFLs. Figure 28 shows the average shelf prices for CFLs in Oregon and the Northwest during 2012 and 2013 by store category and CFL type. In 2013, the average shelf price for CFLs (including both general purpose and specialty CFLs) increased from 2012 shelf prices by 6 percent in Oregon overall (by \$0.29 per lamp, on average) and by 2 percent in the Northwest overall (by \$0.09 per lamp, on average). An increase in the price of general purpose CFLs drove the overall price increases for CFLs: in Oregon, general purpose CFLs increased by 8 percent overall (by \$0.31 per lamp, on average), and in the Northwest, general purpose CFLs increased by 5 percent overall (by \$0.16 per lamp, on average). Also noteworthy is the difference between the average price (overall) for a general purpose CFL in 2013 in Oregon and the Northwest; the average price for a general purpose CFL in Oregon in 2013 was \$4.09 compared to \$3.60 in the Northwest, which is nearly \$0.50 higher per lamp, on average, in Oregon. While the average price among all CFLs and general purpose CFLs increased overall in Oregon and the Northwest between 2012 and 2013, the average price of specialty CFLs declined slightly in Oregon (by 1%) and in the Northwest (by 2%). The trends observed for average CFL prices (all CFLs, general purpose CFLs, and specialty CFLs) overall also occurred in big box and non-big box stores, with only one exception; the average price of CFLs (general purpose and specialty combined) declined in non-big box stores in the Northwest by 2 percent (\$0.09 per lamp).

**Figure 28**  
**Average Shelf Price per Lamp by Store Category and CFL Type**  
**Oregon and Northwest Region, 2012 and 2013**



### 3.5 Linear Fluorescent Lamps

In 2012 and 2013, field researchers gathered data on 4-foot linear fluorescent lamps—including both T8 and T12 technologies—during the lighting retail store shelf surveys. T12 lamps are one and a half inches in diameter and T8 lamps are one inch in diameter; 4-foot T8 and T12 lamps are among the most commonly used linear fluorescent lamps in residential applications (particularly in multi-family settings). The sections below present results on linear fluorescent lamp availability (in terms of the percentage of stores in Oregon and the Northwest region carrying these lamps and the percentage of total linear fluorescent lamps comprised by T8 and T12 lamps) and diversity (in terms of the average number of linear fluorescent lamps stocked per store).

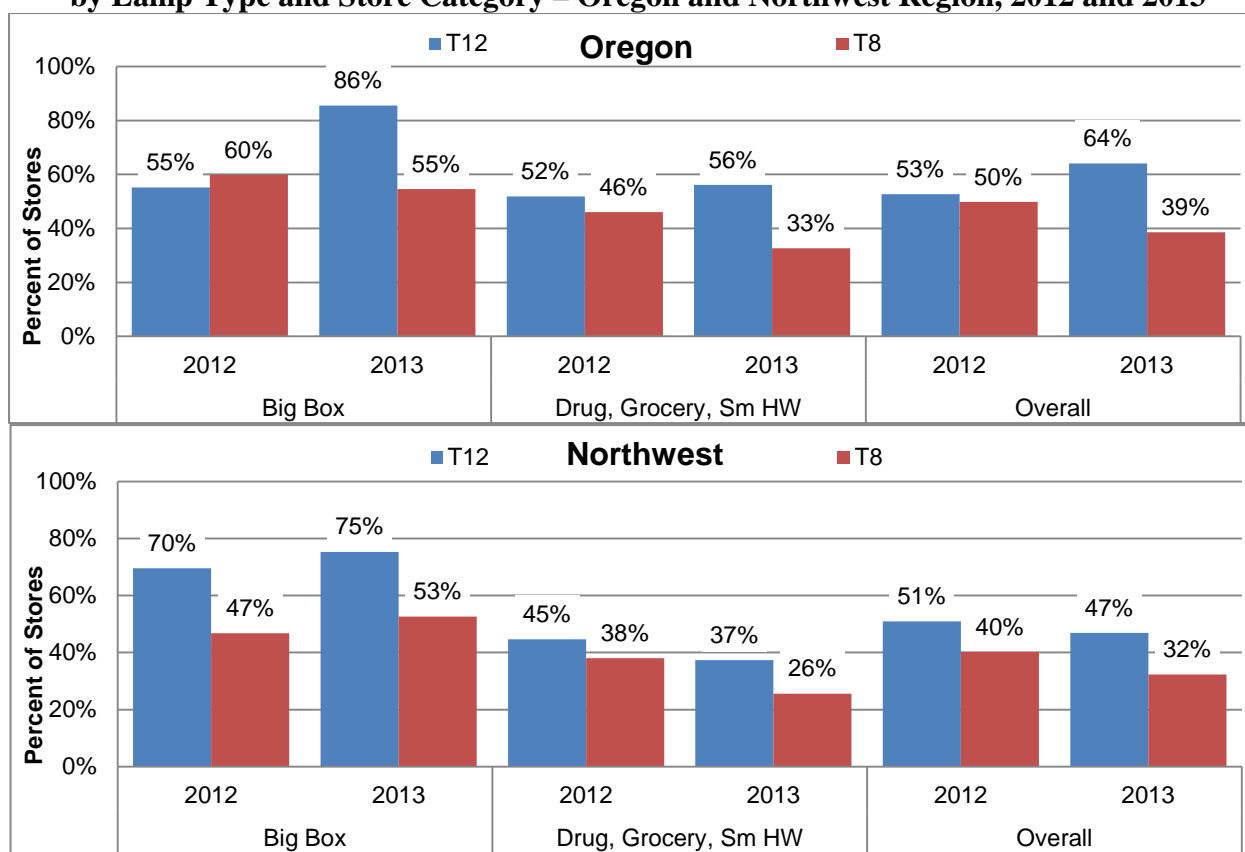
#### 3.5.1 Percent of Stores Stocking Linear Fluorescent Lamps

Figure 29 below shows the percentage of stores in Oregon and the Northwest region that carried linear fluorescent lamps in 2012 and 2013. The percentage of stores stocking T12 and T8 lamps



declined from 2012 to 2013 in the Northwest. The trends in Oregon were somewhat different with the percentage of stores in Oregon stocking T12 lamps increasing, while the percentage of Oregon stores stocking T8 lamps declined during the same timeframe. A higher percentage of big boxes stores stocked T12 and T8 lamps than non-big box stores in 2012 and 2013 in both Oregon stores and stores in the Northwest. The percentage of stores stocking T12 lamps increased in big box stores between 2012 and 2013 in both Oregon and the Northwest,<sup>13</sup> while the percentage of stores carrying T8 lamps increased in Northwest big box stores, but declined in Oregon big box stores. The percentage of stores stocking of T12 and T8 lamps decreased in non-big box stores in the Northwest between years, but the percentage of stores stocking T12 lamps increased in Oregon stores during the same timeframe.

**Figure 29**  
**Percentage of Stores Carrying Linear Fluorescent Lamps**  
**by Lamp Type and Store Category – Oregon and Northwest Region, 2012 and 2013**



Refer to Appendix C, Table 25 for number of stores.

<sup>13</sup> The reasons for a larger percentage of big stores stocking T12 lamps in 2013 compared to 2012 are unclear. It may be that these stores are attempting to sell through existing T12 stock as federal standards mandating higher efficiency standards for T8 and T12 lamps take effect, but we have no evidence to prove or disprove this hypothesis. When the new standards take effect, it is likely that only energy-efficient T8 lamps will be stocked and T12 lamps will be phased out. See Section 3.5.4 for further details on the federal standards affecting these lamps.

### 3.5.1.1 By Wattage Bin

To understand linear fluorescent lamp availability in Oregon in more detail, we examined wattage data for four-foot T12 and T8 lamps to identify possible wattage groupings (or “bins”).

#### T12 Lamps

For T12 lamps, field staff recorded details on more than 4,000 lamps at four different wattages ranging from 32 to 60 (

Table 5) in 2013. As shown, 40 watt lamps comprised 85 percent of all T12 lamps in the inventory. During the 2012/2013 shelf surveys, field researchers observed over 6,300 T12 lamps in nine different wattages. To support further analyses of T12 lamps in 2012 and 2013, we collapsed these wattages into four bins:

- less than 34 watts;
- 34 watts;
- 40 watts; and
- greater than or equal to 60 watts.

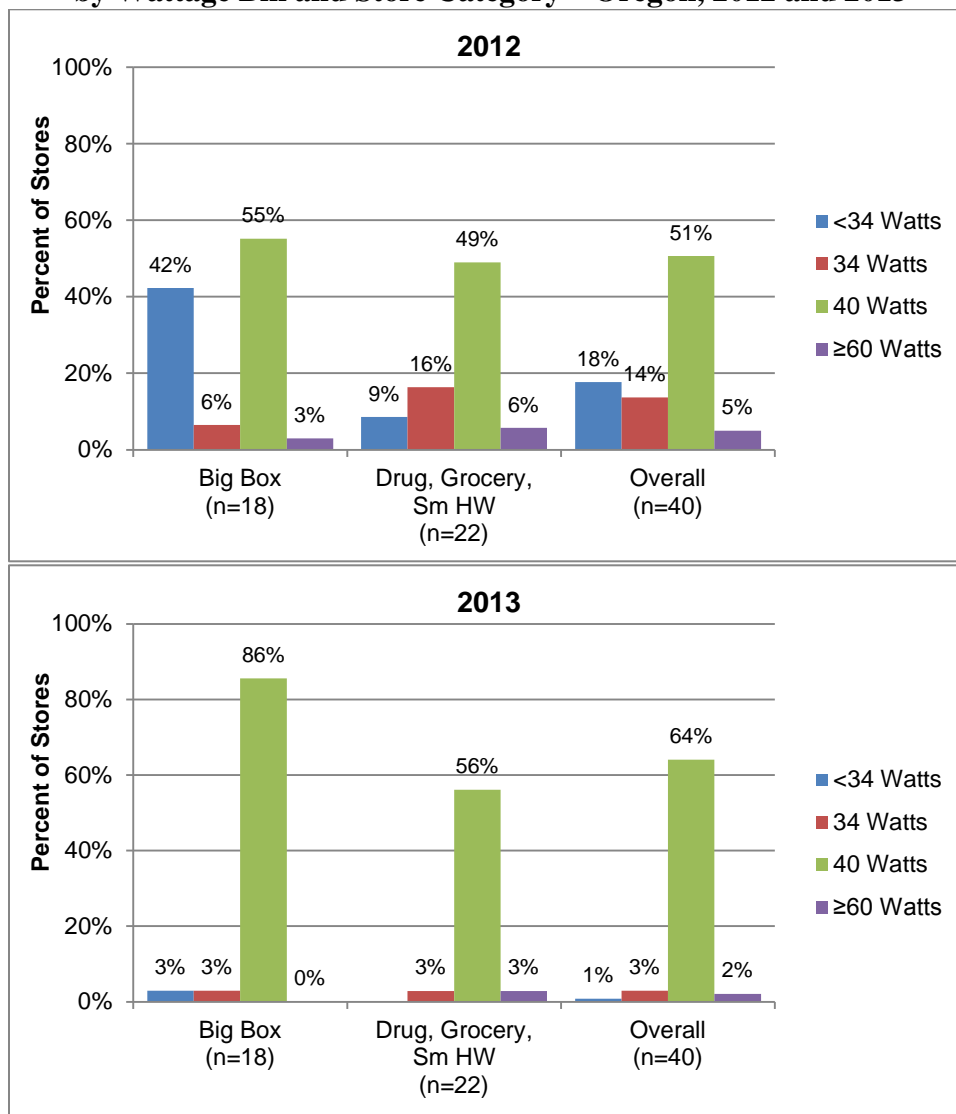
The bins included only the wattages for T12 linear fluorescent lamps recorded by field staff during the 2013 shelf surveys in Oregon. There were no T12 linear fluorescent lamps observed in stores between 34 and 40 watts and between 40 and 60 watts in both 2012 and 2013.

**Table 5**  
**Distribution of Linear Fluorescent T12 Lamps by Wattage – Oregon, 2013**

Wattage	T12 Lamps	
	n	%
32	96	2%
34	491	12%
40	3,432	85%
60	9	<1%
<b>Total</b>	<b>4,028</b>	<b>100%</b>

We examined the percentage of Oregon stores that stocked T12 lamps in 2012 and 2013 using the four wattage bins described. As shown in Figure 30, T12 lamps in the 40 watt category dominated T12 stock in both 2012 and 2013. Furthermore, T12 stock increased from over half of all stock in 2012 to nearly two-thirds of stock in 2013 overall. This increase in the share of 40 watt T12 stock was largely driven by an increase in the stock of 40 watt T12 stock in big box stores (from 55% to 86%), and was at the expense of T12 lamps in the less than 34 watt category which fell from 42 percent share of lamp stock to a 3 percent share between 2012 and 2013.

**Figure 30**  
**Percentage of Stores Carrying Linear Fluorescent T12 Lamps**  
**by Wattage Bin and Store Category – Oregon, 2012 and 2013**



**T8 Lamps**

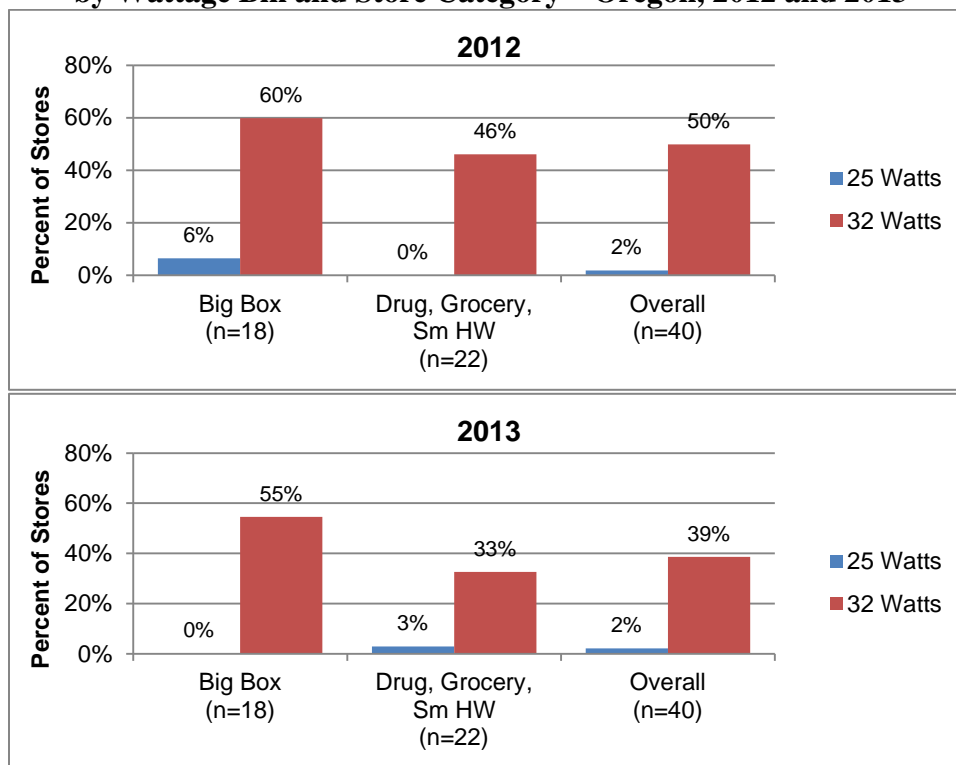
For four-foot linear fluorescent T8s, field staff recorded details on more than 2,455 lamps. All of these lamps were either 25 or 32 watt lamps, with the vast majority at 32 watts (nearly 100%; see Table 6). Field staff recorded a total of only four T8 lamps that were 25 watts during the 2013 Oregon shelf surveys. Given that only two wattage levels are reflected in the data, it was not necessary to collapse these into smaller wattage bins to support additional analyses of T8 lamps.

**Table 6**  
**Distribution of Linear Fluorescent T8 Lamps by Wattage – Oregon, 2013**

Wattage	T8 Lamps	
	n	%
25	4	<1%
32	2,451	100%
<b>Total</b>	<b>2,455</b>	<b>100%</b>

For both 25 and 32 watt four-foot linear fluorescent T8 lamps, Figure 31 shows the percentage of Oregon stores that stocked these lamp types during the 2012 and 2013 shelf survey visits. As shown, 50 percent of Oregon stores overall (including both big box and non-big box stores) stocked 32 watt T8 lamps in 2012, but only 39 percent of Oregon stores stocked 32 watt T8 lamps in 2013. The percentage of stores stocking 32 watt T8 lamps declined in both big box and non-big box stores between years. T8 lamps in the 25 watt category were present in only 2 percent of stores in Oregon in 2012 and 2013. In 2012, researchers observed 25 watt T8 lamps only in big box stores, whereas in 2013, these lamps were only in non-big box stores.

**Figure 31**  
**Percentage of Stores Carrying Linear Fluorescent T8 Lamps by Wattage Bin and Store Category – Oregon, 2012 and 2013**



### **3.5.1.2 By Lumen Bin**

As with wattage, the DNV GL team created lumen bins for four-foot linear fluorescent T12 and T8 lamps to support more detailed analyses of 2012 and 2013 Oregon shelf survey results.

#### **T12 Lamps**

For T12 lamps, field staff recorded information on lumen output for approximately 83 percent of the lamps observed in Oregon during the 2013 shelf surveys; this information was not available for the other 17 percent of lamps.

Table 7 shows the distribution of these lamps by lumen output for the lamps for which this information was available. As shown, field staff inventoried T12 lamps at 15 different lumen levels, with more than half at 2600 lumens or greater. To support further analyses of T12 lamps by lumen bin, we collapsed these 15 lumen levels into four bins:

- less than or equal to 2200 lumens;
- 2250 to 2550 lumens;
- 2600 lumens; and
- greater than or equal to 2601 lumens.

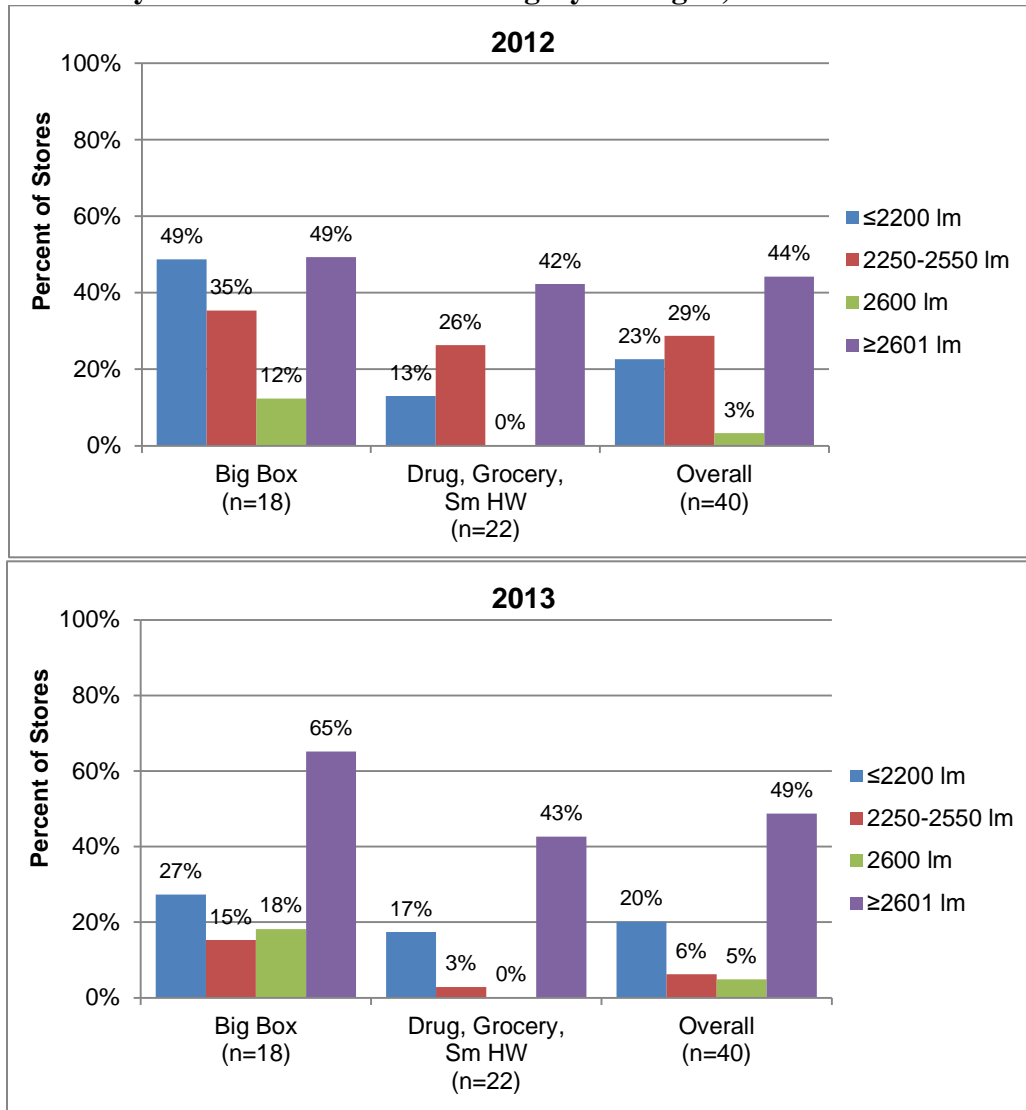
Note that while these lumen bins are mutually-exclusive (i.e., there is no overlap among bins), they are not all-encompassing; there are “gaps” between these bins. For example, the lumen bins exclude lamps between 2551 and 2599 lumens. This is by design, as field staff recorded no T12 lamps with lumen output outside of these bins during the 2012 or 2013 shelf surveys (Table 7). For further details regarding the distribution of T12 lamps in Oregon stores by wattage and lumens, see Appendix C, Table 26.

**Table 7**  
**Distribution of Linear Fluorescent T12 Lamps by Lumens – Oregon, 2013**

Lumens	T12 Lamps	
	n	%
No Lumens Listed	681	17%
1600	6	<1%
1900	26	1%
2150	20	<1%
2180	100	2%
2200	8	<1%
2250	1	<1%
2325	262	7%
2500	226	6%
2550	388	10%
2600	1323	33%
2900	846	21%
3000	116	3%
3150	17	<1%
3300	4	<1%
3400	4	<1%
<b>Total</b>	<b>4,028</b>	<b>100%</b>

We examined the percentage of Oregon stores that stocked T12 lamps in 2012 and 2013 using the four lumen bins mentioned above (Figure 32). As shown, 44 percent of all Oregon stores carried lamps in the highest lumen bin (greater than or equal to 2601 lumens) during 2012. This trend was similar in 2013 with nearly half of Oregon stores, overall, stocking T12 lamps in the highest lumen bin. The percentage of big box stores that stocked T12 lamps in the highest lumen bin grew from 49 percent of big box stores in Oregon in 2012 to nearly two-thirds of big box stores in 2013. While the percentage of stores carrying T12 lamps in the highest lumen bin increased in big box stores, non-big box stores, and overall between 2012 and 2013, the percentage of Oregon big box stores and Oregon stores overall stocking T12 lamps in the lowest lumen bin declined during the same timeframe.

**Figure 32**  
**Percentage of Stores Carrying Linear Fluorescent T12 Lamps**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**



### T8 Lamps

Ninety-four percent of the four-foot linear fluorescent T8 lamps recorded by field researchers in Oregon during 2013 shelf surveys had information available on lumen output.



Table 16 shows the distribution of these lamps by lumen output. As shown, only 6 percent of the T8 lamps inventoried by field staff had light output less than 2600 lumens. Ninety-four percent of T8 lamps were in the 2600 to 2950 lumen range. To support further analyses of T8 lamps by lumens, we collapsed the 10 levels of lumen output into 5 bins:

- less than or equal to 2500 lumens;
- 2600 lumens;
- 2700-2750 lumens;
- 2800 lumens; and
- greater than 2800 lumens.

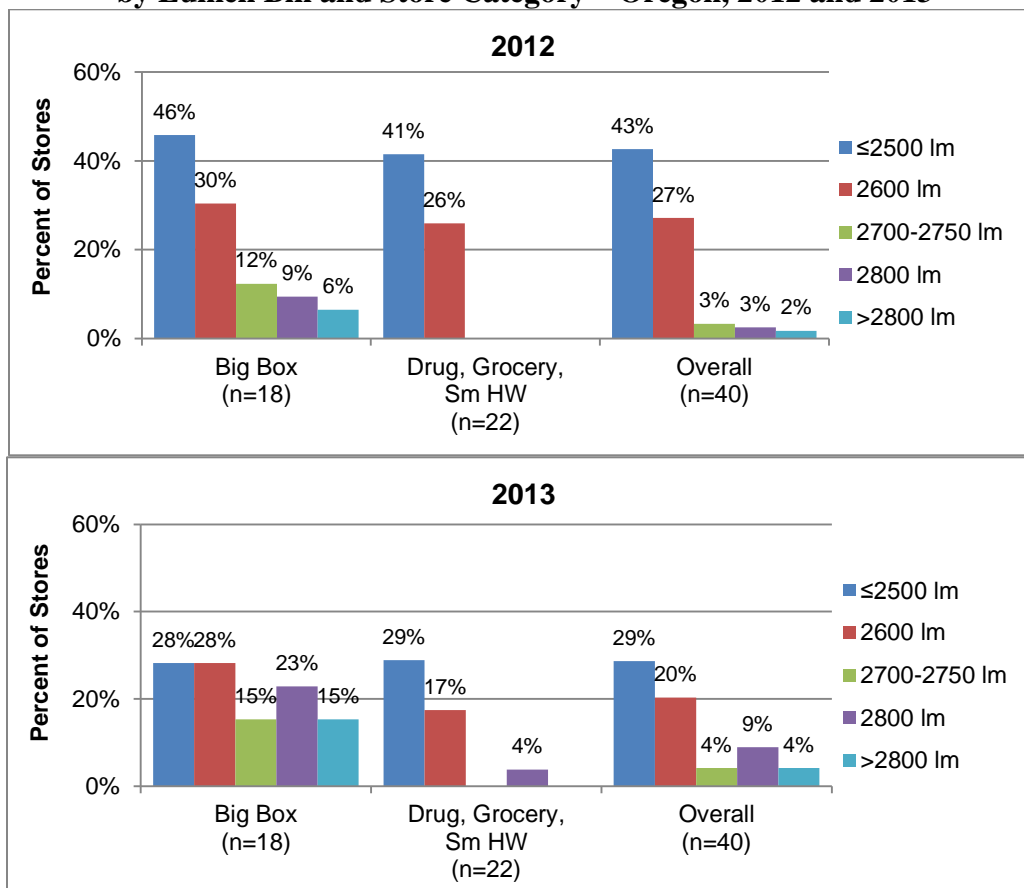
Again, note that the lumen bins are mutually-exclusive but not all-encompassing (i.e., they are limited to the range of lumen outputs recorded by field staff as part of the 2012 and 2013 shelf surveys in Oregon). For further details regarding the distribution of T8 lamps in Oregon stores by wattage and lumens, see Appendix C, Table 27.

**Table 8**  
**Distribution of Linear Fluorescent T8 Lamps by Lumens – Oregon, 2013**

Lumens	T8 Lamps	
	n	%
No Lumens Listed	141	<1%
1400	9	<1%
1800	14	<1%
2500	132	5%
2600	162	7%
2700	17	1%
2750	664	27%
2800	974	40%
2850	128	5%
2950	214	9%
<b>Total</b>	<b>2,455</b>	<b>100%</b>

Using the lumen bins described above for four-foot linear fluorescent T8 lamps, Figure 33 shows that T8 lamps in the lowest bin were stocked in the highest percentage of stores in Oregon overall in both 2012 and 2013 (43% and 29% of all stores, respectively). The percentage of stores stocking T8 lamps in the lowest lumen bin declined, however, in big box stores, non-big box stores, and overall between years. With respect to other noteworthy changes, the percentage of stores stocking T8 lamps in the 2600 lumen bin also declined between 2012 and 2013 (from 27% to 20% overall), while the percentage of stores stocking T8 lamps in the 2800 lumen bin grew during the same timeframe (from 3% to 9% overall).

**Figure 33**  
**Percentage of Stores Carrying Linear Fluorescent T8 Lamps**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**



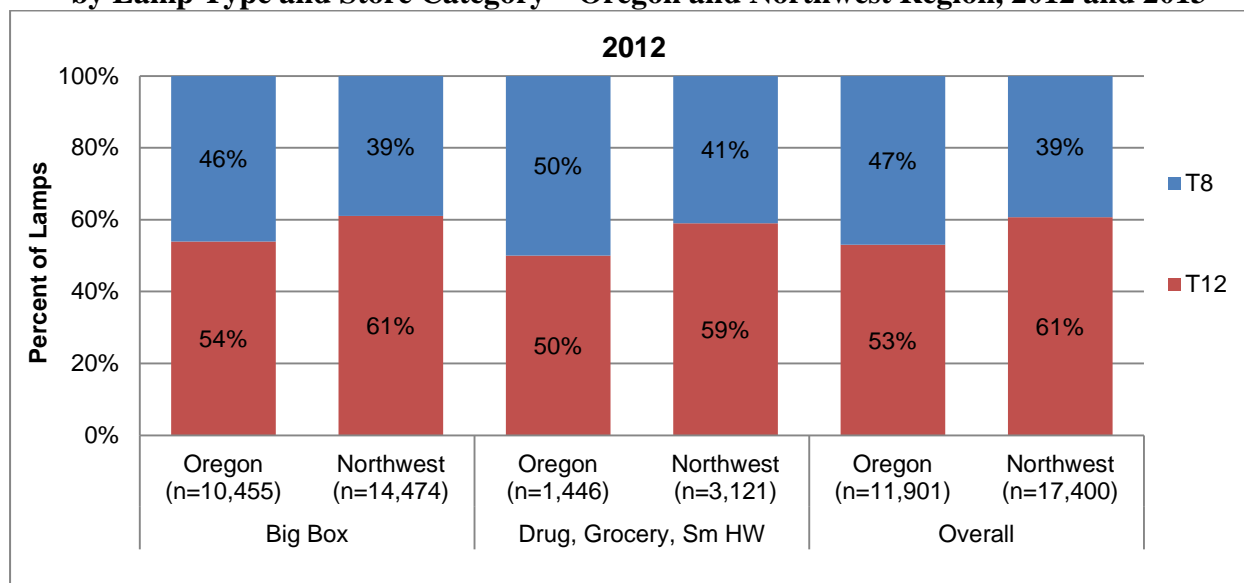
### 3.5.2 Percent of Linear Fluorescent Lamps Stocked

Note that the absolute quantity of T8 and T12 lamps declined by 44 percent in Oregon and 34 percent in the Northwest between 2012 and 2013, so it is possible that the stock of T8 and T12 lamps that do not meet the new federal efficiency standards is dwindling.

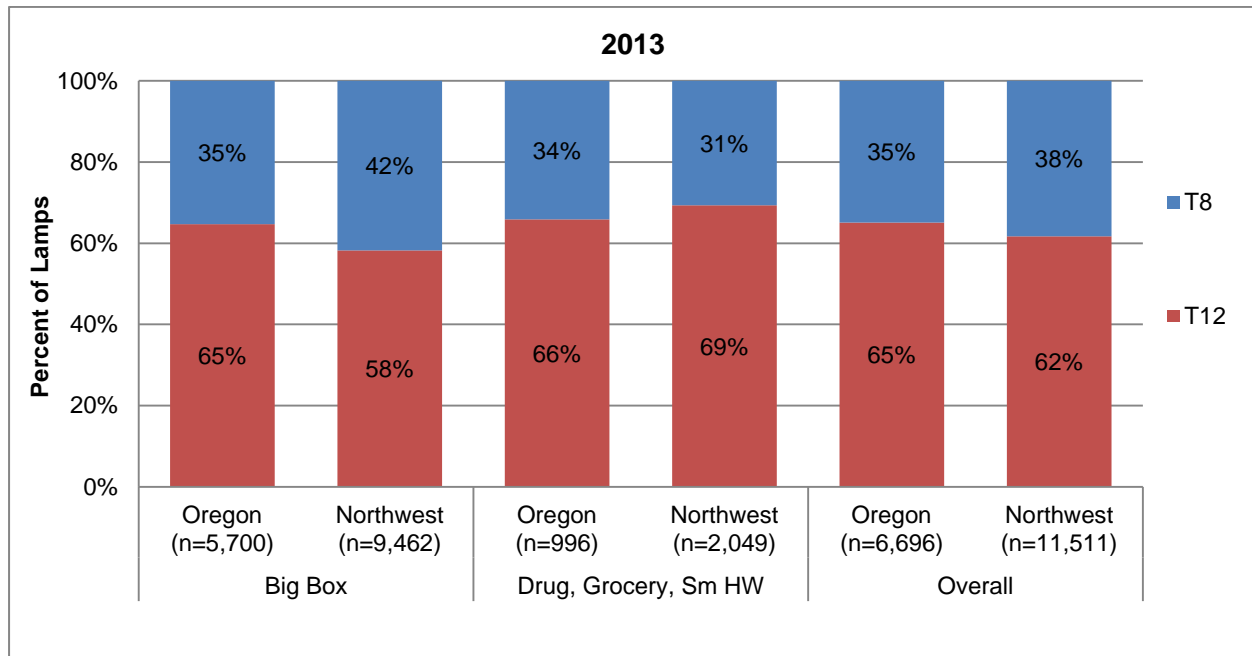
Figure 34 demonstrates the share of overall linear fluorescent lamp stock comprised by T8 and T12 lamps in big box stores and drug, grocery, and small hardware stores in Oregon and the Northwest region in 2012 and 2013. In Oregon, T12 lamps comprised 53 percent of the 4-foot linear fluorescent lamps stocked in 2012 and 65 percent in 2013. The share of T12 and T8 lamps remained essentially unchanged during the same timeframe across all stores in the Northwest (61% of linear fluorescent lamps stock in 2012 and 62% in 2013). In 2013, T12 lamps comprised the majority of linear fluorescent lamps stock in big box and non-big box stores in both Oregon and the Northwest. As mentioned above (see footnote 13 on p. 47), the increased share of T12

lamps in Oregon may be due to the impact of new federal efficiency standards on the stock of T8 and T12 lamps (see Section 3.5.4 below for details). It is possible that manufacturers and retailers are attempting to sell through their existing stock of less efficient T8 and T12 lamps, but we have no evidence to prove or disprove this hypothesis. Furthermore, it is likely that after the standards take full effect, only newer energy-efficient T8 lamps will be stocked, and T12 lamps will effectively be phased out. Note that the absolute quantity of T8 and T12 lamps declined by 44 percent in Oregon and 34 percent in the Northwest between 2012 and 2013, so it is possible that the stock of T8 and T12 lamps that do not meet the new federal efficiency standards is dwindling.

**Figure 34**  
**Percentage of Linear Fluorescent Lamps Stocked**  
**by Lamp Type and Store Category – Oregon and Northwest Region, 2012 and 2013**



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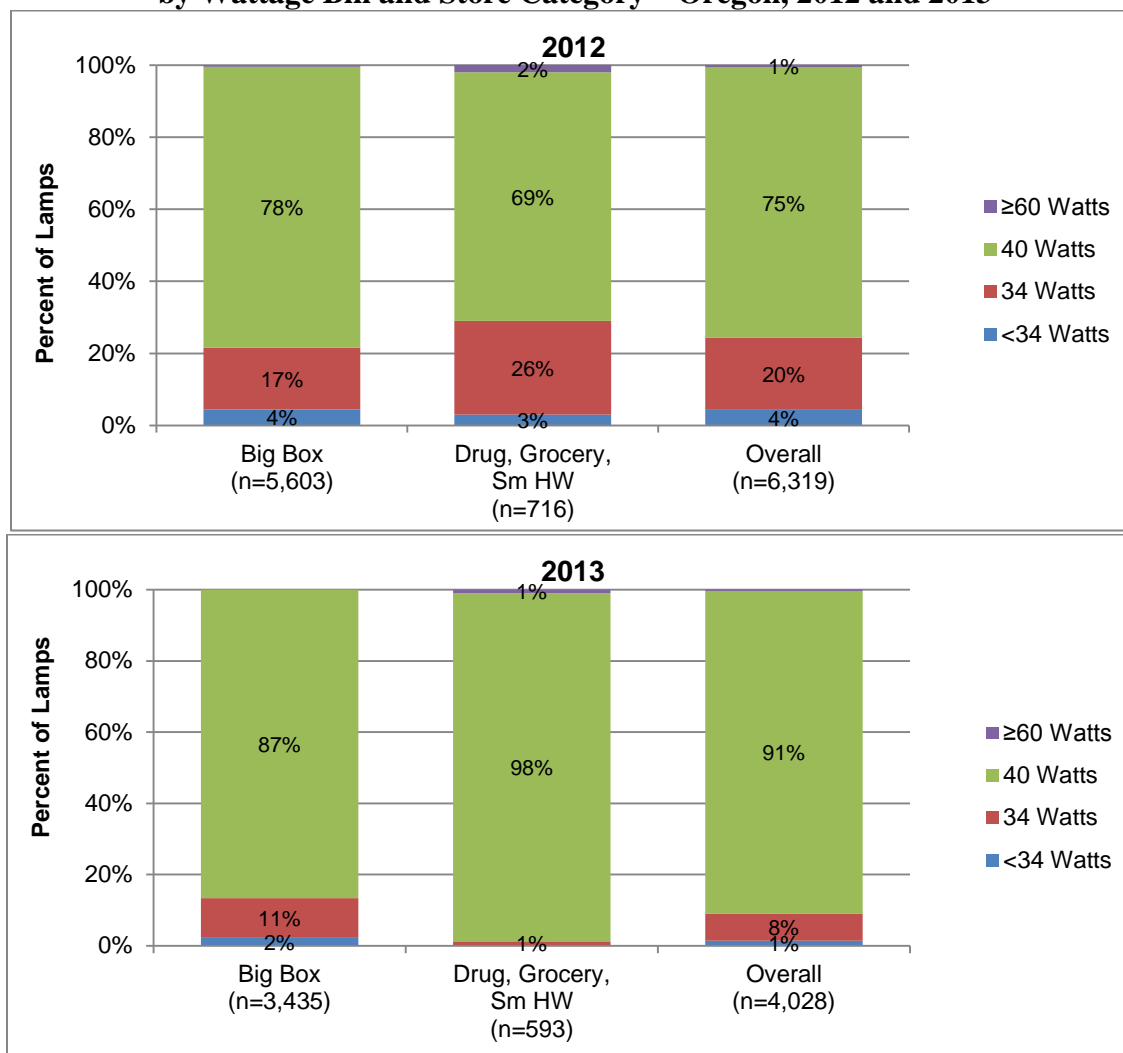
**3.5.2.1 By Wattage Bin**

**T12 Lamps**

We examined the distribution of four-foot linear fluorescent T12 lamps stocked in Oregon stores during the 2012 and 2013 shelf survey visits using the wattage bins described in Section 3.5.1.1 above. As shown in

**Figure 35**, three-quarters of the T12 lamps stocked in Oregon retail stores were 40 watt lamps in 2012. The share of T12 lamps in the 40 watt category grew to over 90 percent of total T12 lamp stock overall in Oregon in 2013. The increase in the proportion of 40 watt T12 lamps was largely at the expense of T12 lamps in the 34 watt category, which saw its share drop from 20 percent of stores overall in 2012 to 8 percent in 2013.

**Figure 35**  
**Percentage of Linear Fluorescent T12 Lamps Stocked**  
**by Wattage Bin and Store Category – Oregon, 2012 and 2013**



### T8 Lamps

We examined the distribution of four-foot linear fluorescent T8 lamps stocked in Oregon stores during the 2012 and 2013 shelf survey visits using the wattage bins described in Section 3.5.1.1 above. Nearly all of the T8 lamps stocked in Oregon retail stores during the 2012 and 2013 shelf

survey visits were 32 watt lamps. Only 1 percent of T8 lamp stock in big box stores was in the 25 watt category in 2012, and 1 percent of lamp stock in non-big box stores was in the 25 watt category in 2013.

### **3.5.2.2 By Lumen Bin**

#### **T12 Lamps**

We examined the distribution of T12 lamps stocked in Oregon stores using the lumen bins described in Section 3.5.1.2 above. Figure 36 suggests that T12 lamp stock was evenly distributed across the four lumen bins in Oregon stores overall in 2012, but stock shifted toward the highest lumen bin (greater than or equal to 2601 lumens) in 2013 with the majority of T12 stock being in the highest lumen bin across all stores. This shift in T12 lamp stock toward the highest lumen bin was driven by increases in the number of T12 lamp stock in this lumen category in both big box (35% of total T12 stock) and non-big box stores (94% of total T12 stock) in 2013. There was also a noticeable shift in the share of T12 lamp stock in the lowest lumen bin (less than or equal to 2200 lumens), which declined between 2012 and 2013 from 21 percent to 5 percent of total lamp T12 lamp stock. This change was primarily driven by a decline in stocking of T12 lamps in this lumen bin in big box stores in 2013.

**Figure 36**  
**Percentage of Linear Fluorescent T12 Lamps Stocked**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**



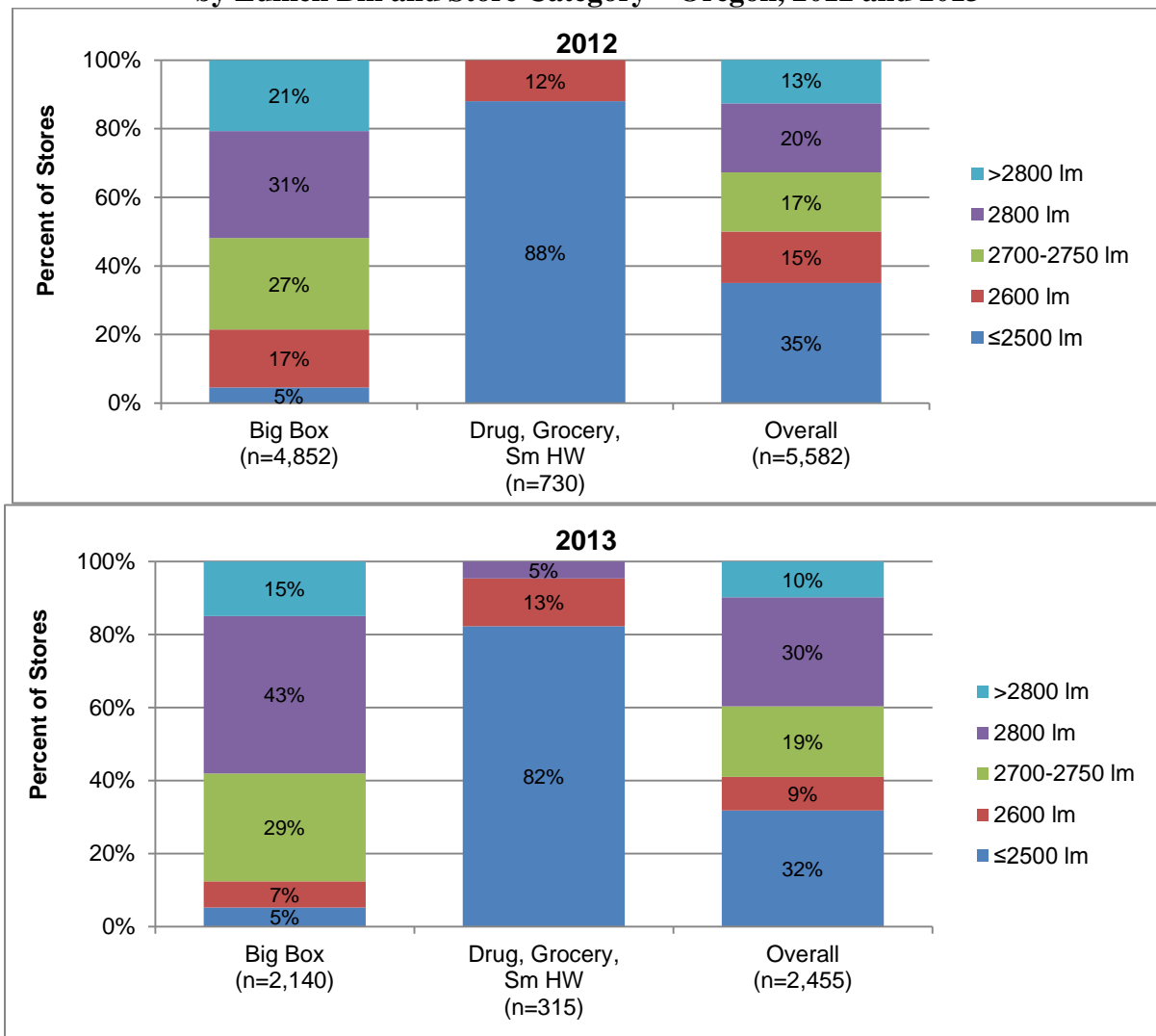
**T8 Lamps**

Using the lumen bins described in Section 3.5.1.2 above, we examined the distribution of T8 lamps stocked in Oregon during the 2012 and 2013 shelf survey visits. Figure 37 shows that, while the largest share of T8 lamp stock was in the lowest lumen bin (less than or equal to 2500 lumens) across all stores in 2012 and 2013, the share of T8 lamp stock increased in the 2800 lumen bin during the same timeframe from 20 percent to 30 percent. This change overall was



driven by an increase in the share of T8 lamp stock in the 2800 lumen bin in big box stores in 2013 (from 31% to 43%). The share of lamp stock in the 2600 lumen category declined overall and in big box stores between 2012 and 2013.

**Figure 37**  
**Percentage of Linear Fluorescent T8 Lamps Stocked**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**

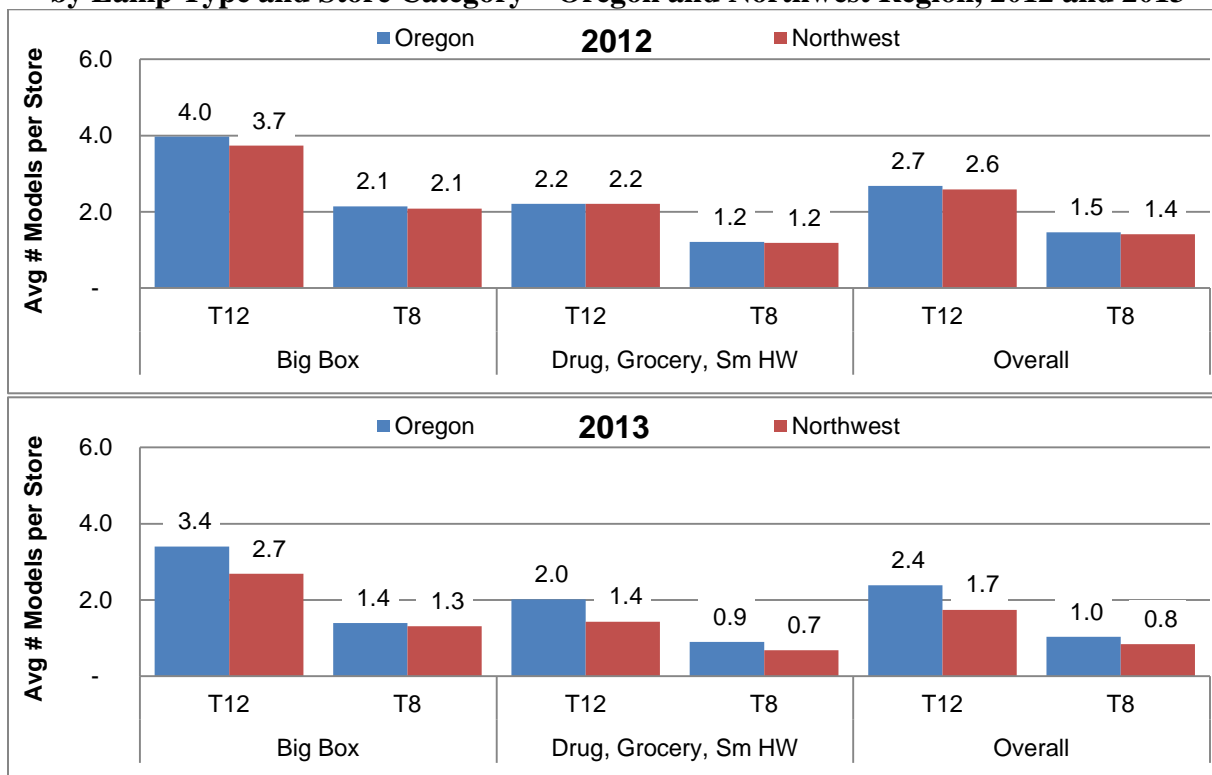


**3.5.3 Average Number of Linear Fluorescent Models per Store**

Figure 38 below presents details on linear fluorescent lamp diversity in terms of the average number of lamp models stocked per store in Oregon and the Northwest region as a whole in 2012 and 2013. Overall, lamp model diversity declined for T8 and T12 lamps in Oregon and

Northwest stores between 2012 and 2013. The average number of T12 lamp models per store declined from 2.7 to 2.4 in Oregon and from 2.6 to 1.7 in the Northwest. The decline in T8 and T12 lamp model diversity occurred across the board in big box and non-big box stores in both regions between years.

**Figure 38**  
**Average Number of Linear Fluorescent Lamp Models per Store**  
**by Lamp Type and Store Category – Oregon and Northwest Region, 2012 and 2013**



Refer to Appendix C,

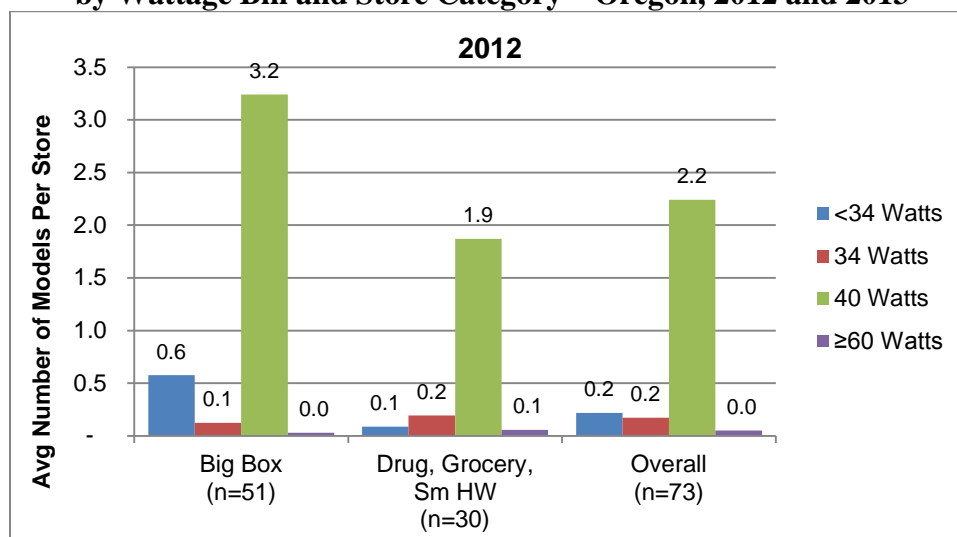
**Table 28**, for number of lamp models.

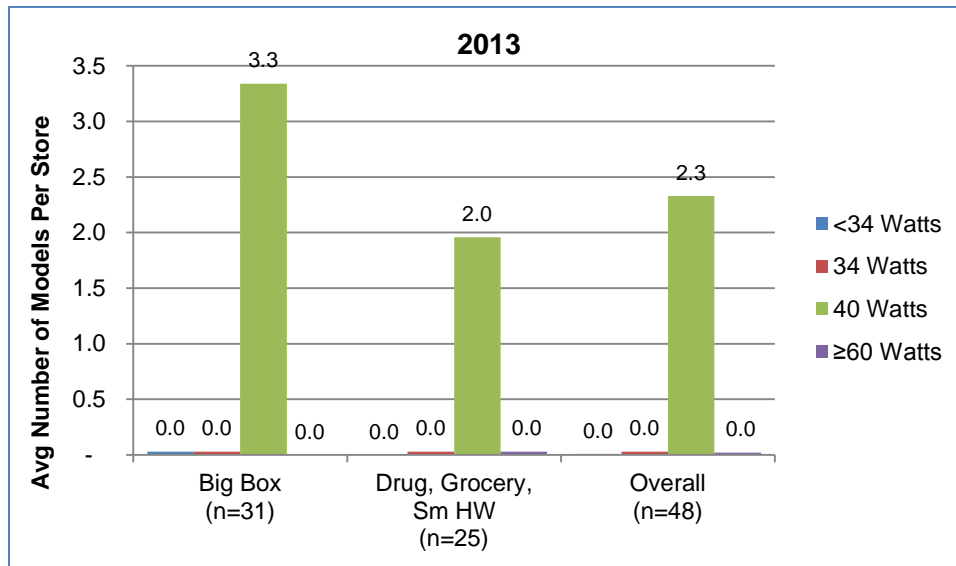
### 3.5.3.1 By Wattage Bin

#### T12 Lamps

Using the wattage bins described above for four-foot linear fluorescent T12 lamps, Figure 39 shows that in both store categories, Oregon retail stores stocked a greater diversity of T12 lamp models in the 40 watt category than in other wattage bins, averaging 2.2 models per store overall in 2012 and 2.3 models per store overall in 2013. There was almost no lamp model diversity in the other three wattage categories with an average of 0 or a small fraction above 0 lamp models per store in 2013.

**Figure 39**  
Average Number of Linear Fluorescent T12 Lamp Models per Store by Wattage Bin and Store Category – Oregon, 2012 and 2013



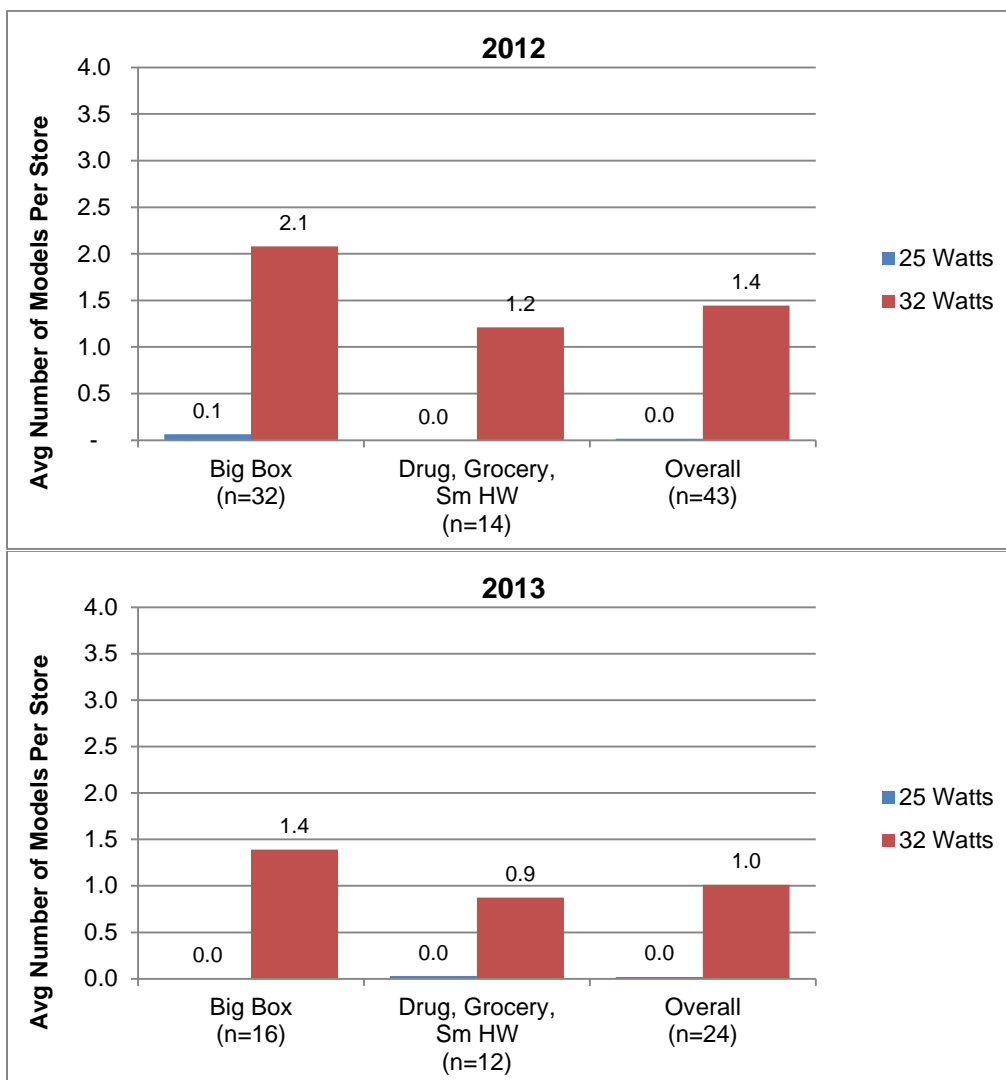


### T8 Lamps

For four-foot linear fluorescent T8 lamps, Figure 40 shows the average number of T8 models per store in the 25 and 32 watt categories in Oregon stores in 2012 and 2013. As shown in the figure, lamp model diversity for 32 watt T8 lamps declined between 2012 and 2013 overall as well as in big box and non-big box stores. There were 1.4 T8 lamp models per store, overall in 2012 and 1.0 lamp models per store overall in 2013 in the 32 watt category. Lamp model diversity for T8 lamps in the 25 watt category was almost non-existent in both 2012 and 2013, with an average number of lamp models per store at or near 0.

**Figure 40**  
**Average Number of Linear Fluorescent T8 Lamp Models per Store**  
**by Wattage Bin and Store Category – Oregon, 2012 and 2013**

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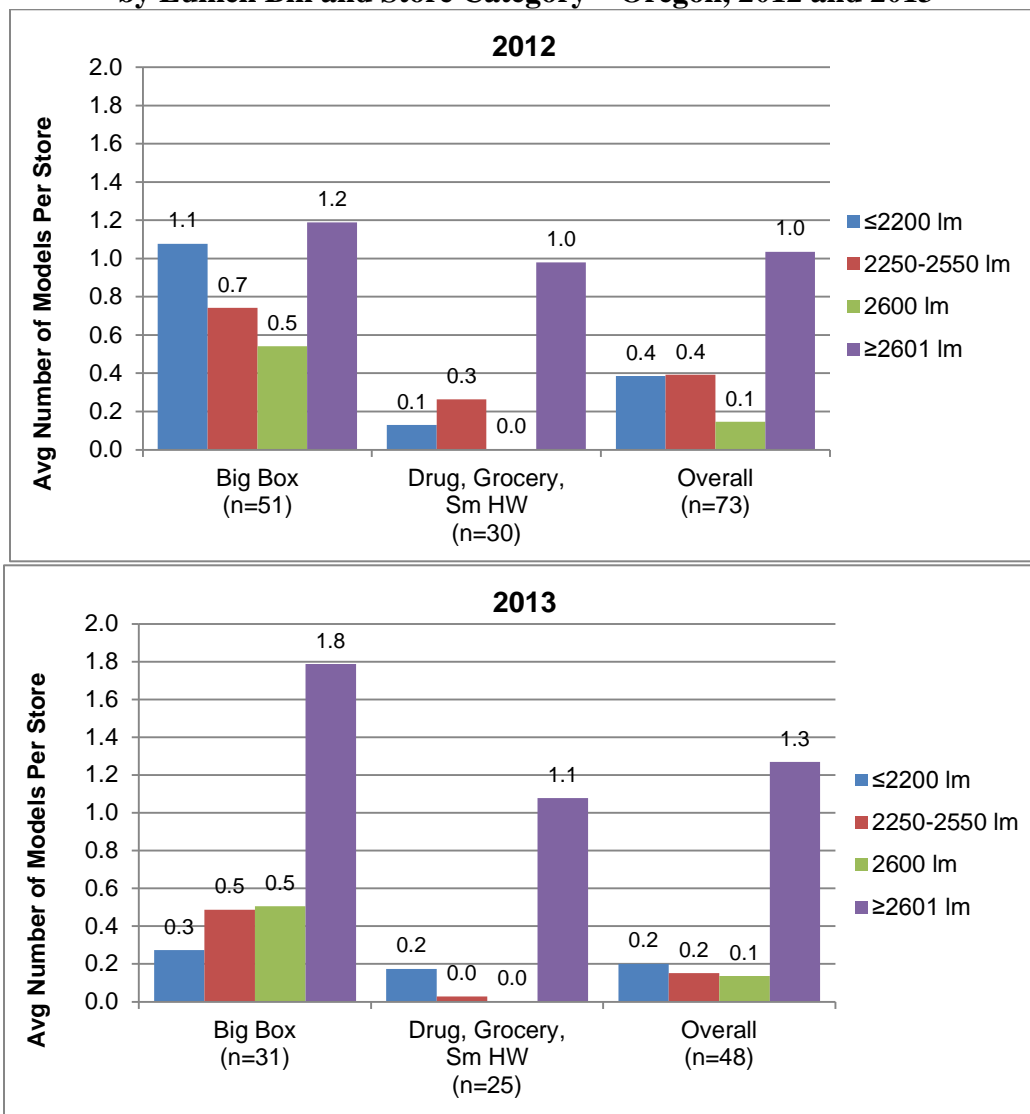


### 3.5.3.2 By Lumen Bin

#### T12 Lamps

We examined the distribution of T12 lamps stocked in Oregon stores using the lumen bins described in Section 3.5.1.2 above. Figure 41 shows an increase in lamp model diversity between 2012 and 2013 in the highest lumen bin (greater than or equal to 2601 lumens) in big box stores, non-big box stores, and overall. Lamp model diversity declined overall in the lowest lumen category (less than or equal to 2200 lumens) and in the 2250-2550 lumen category and remained the same in the 2600 lumen bin between years.

**Figure 41**  
**Average Number of Linear Fluorescent T12 Lamp Models per Store**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**

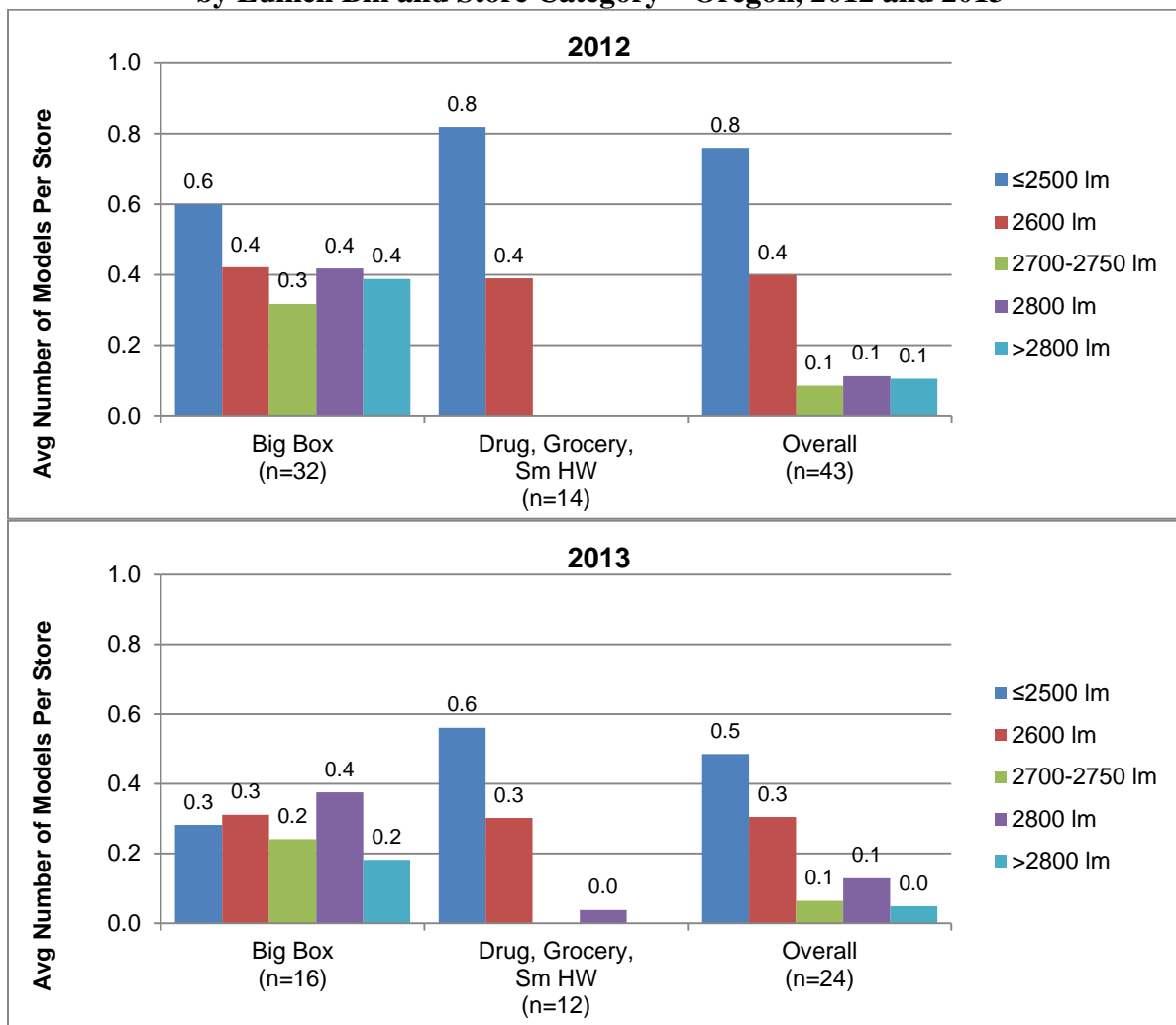


### T8 Lamps

Using these lumen bins described in Section 3.5.1.2 above, we examined the distribution of T8 lamps stocked in Oregon during the 2012 and 2013 shelf survey visits. As shown in Figure 42, Oregon lamp model diversity declined overall in the lowest lumen bin (less than or equal to 2500 lumens), the 2600 lumen bin, and in the highest lumen bin (greater than 2800 lumens) between

years, while the average number of lamp models per store remained the same, overall, for the 2700-2750 and 2800 lumens categories.

**Figure 42**  
**Average Number of Linear Fluorescent T8 Lamp Models per Store**  
**by Lumen Bin and Store Category – Oregon, 2012 and 2013**



### 3.5.4 Linear Fluorescent Lamps and New Efficiency Standards

Another component of the EISA legislation passed in 2007 (see Section 3.1.2.4 above) was a directive requiring the U.S. Department of Energy (DOE) to establish minimum efficiency standards for common linear fluorescent lamps (including 4-foot T8 and T12 lamps). DOE established new rules for T8 and T12 lamps in 2009, which ultimately went into effect on July 14, 2012. Table 9 below shows how the standards impact T8 and T12 linear fluorescent lamps.

All T8 and T12 lamps greater than or equal to 25 watts and less than or equal to a color temperature of 7,000 are affected by these new standards, which require a minimum efficacy of 88 or 89 lumens per watt, depending on the color temperature of the lamp.<sup>14</sup>

**Table 9**  
**Four Foot T8 and T12 Standards Set by the DOE (Effective July 2012)**

Effective Dates	Affected Wattage Ranges	Color Temperature Ranges	Required Minimum Lumens per Watt
7/14/2012	≥25W	≤4,500K	89
7/14/2012	≥25W	>4,500K and ≤ 7,000K	88

We analyzed the percentage of T8 and T12 linear fluorescent lamps that met the DOE standards in 2012 and 2013 observed in Oregon and the Northwest stores. Field researchers did not observe any T12 lamps that met the standard in 2012 and 2013 (i.e., all lamps that met the standard were T8 lamps). Table 10 shows the number and percentage of T8 and T12 lamps observed during 2012/2013 and 2013/2014 shelf surveys that met the DOE standards. Only 10 percent of linear fluorescent lamps (among all T8 and T12 lamps observed) met the standard in Oregon stores in 2012, and 6 percent of lamps met the standard in Oregon stores in 2013. An even smaller percentage of lamps met the standard in Northwest stores with 8 percent of lamps meeting the standard in 2012 and 4 percent of lamps meeting the standard in 2013.<sup>15</sup> Among T8 lamps observed in Oregon, 22 percent met the standard in 2012 compared to 15 percent in 2013. Nineteen percent of T8 lamps observed in the Northwest met the standard in 2012 compared to only 9 percent in 2013.

**Table 10**  
**Number and Percentage of T8 and T12 Lamp Stock That Met DOE Efficacy Standards – Oregon and Northwest Region, 2012 and 2013**

Lamp Types	Oregon				Northwest			
	2012		2013		2012		2013	
	n	%	n	%	n	%	n	%

<sup>14</sup> Horner and Horner (2012).

<sup>15</sup> This decline in the percentage of linear fluorescent lamps meeting the new DOE standards may have been due to a temporary suspension of the regulations. For further details, see: <http://www.energy.gov/eere/femp/fluorescent-tube-lamps>.



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T8 Lamps Meeting Standard	1,106	22%	342	15%	1,275	19%	348	9%
T8 Lamps Not Meeting Standard	3,944	78%	1,889	85%	5,305	81%	3,651	91%
Total T8 Lamps	5,050	100%	2,231	100%	6,580	100%	3,999	100%
T12 Lamps Meeting Standard	0	0%	0	0%	0	0%	0	0%
T12 Lamps Not Meeting Standard	5,717	100%	3,181	100%	8,769	100%	5,599	100%
Total T12 Lamps	5,717	100%	3,181	100%	8,769	100%	5,599	100%
<b>Total Lamps Meeting Standard</b>	<b>1,106</b>	<b>10%</b>	<b>342</b>	<b>6%</b>	<b>1,275</b>	<b>8%</b>	<b>348</b>	<b>4%</b>
<b>Total Lamps Not Meeting Standard</b>	<b>9,661</b>	<b>90%</b>	<b>5,070</b>	<b>94%</b>	<b>14,074</b>	<b>92%</b>	<b>9,250</b>	<b>96%</b>
<b>Total Lamps</b>	<b>10,767</b>	<b>100%</b>	<b>5,412</b>	<b>100%</b>	<b>15,349</b>	<b>100%</b>	<b>9,598</b>	<b>100%</b>

### 3.6 Lighting Control Systems

Field researchers gathered details on dimmer controls observed in lighting aisles as well as wirelessly controllable LED lamps during the 2013 shelf survey visits.<sup>16</sup> These data enable analyses on the percentage of stores that stock dimmer controls and wirelessly controllable LED lamps in the lighting aisle in Oregon and the Northwest region as a whole.

#### 3.6.1 Percentage of Stores Stocking Dimmer Switches in the Lighting Aisle

Table 11 shows the percent of stores in Oregon and the Northwest region that stocked dimmer controls in the lighting aisle in 2013. Very few stores stocked dimmer control switches in the lighting aisle in 2013, with only 5 percent of Oregon stores, overall, and 6 percent of Northwest retail stores, overall, stocking dimmer controls in the lighting aisle.

**Table 11**  
**Percentage of Overall Stores Stocking Dimmer Controls in the Lighting Aisle – Oregon and Northwest Region, 2013**

Stocking Practice	Oregon	Northwest
Dimmer Switches in Lighting Aisle	5%	6%
No Dimmer Switches in Lighting Aisle	95%	94%
Total	100%	100%
n (number of stores)	40	96

When analyzed further by big box (wholesale, DIY, and mass merchandise) and non-big box (drug, grocery, and small hardware) stores, 18 percent of Oregon big box stores and 22 percent of Northwest big box stores carried dimmer control switches in the lighting aisle. Only one percent of non-big box stores in the Northwest stocked dimmer controls; there were no observations of dimmer controls in the lighting aisle in Oregon non-big box stores.

<sup>16</sup> Wirelessly controllable LED lamps typically allow users to control LED lamps via a smart phone device.

### 3.6.2 Percentage of Stores Stocking Controllable LED Lamps in the Lighting Aisle

Table 12 shows the percent of stores in Oregon and the Northwest region that stocked wirelessly controllable LED lamps in the lighting aisle in 2013. As with dimmer controls, very few stores stocked wirelessly controllable LED lamps in the lighting aisle in 2013, with only 5 percent of Oregon stores, overall, and 4 percent of Northwest retail stores, overall, stocking wirelessly controllable LED lamps.

**Table 12**  
**Percentage of Overall Stores Stocking Wirelessly Controllable LED Lamps in the Lighting Aisle – Oregon and Northwest Region, 2013**

Stocking Practice	Oregon	Northwest
Wirelessly Controllable LED Lamps in Lighting Aisle	5%	4%
No Wirelessly Controllable LED Lamps in Lighting Aisle	95%	96%
Total	100%	100%
n (number of stores)	40	96

When analyzed further by big box and non-big box stores, 12 percent of Oregon big box stores and 15 percent of Northwest big box stores carried wirelessly controllable LED lamps in the lighting aisle. Only 3 percent of non-big box stores in Oregon and 1 percent of Northwest non-big box stores stocked wirelessly controllable LED lamps in the lighting aisle.

## 3.7 Promotional Materials

During the 2012 and 2013 shelf survey visits, field researchers gathered details on promotional materials or displays regarding replacement lamps. Promotional materials include signs on shelves or walls (usually in the lighting aisle) that advertise a specific lamp technology or technologies, brochures promoting lighting products, and demonstrations or displays of one or more technologies.<sup>17</sup> Field researchers gathered information regarding the key messages included on the materials, the types of promotional materials, and positioning of the materials in Northwest retail stores. Data collected in the field also enable analyses of promotional materials by the type of lamp promoted and store category. We provide more details on these topics below with comparisons between stores in Oregon and in the Northwest region as a whole.

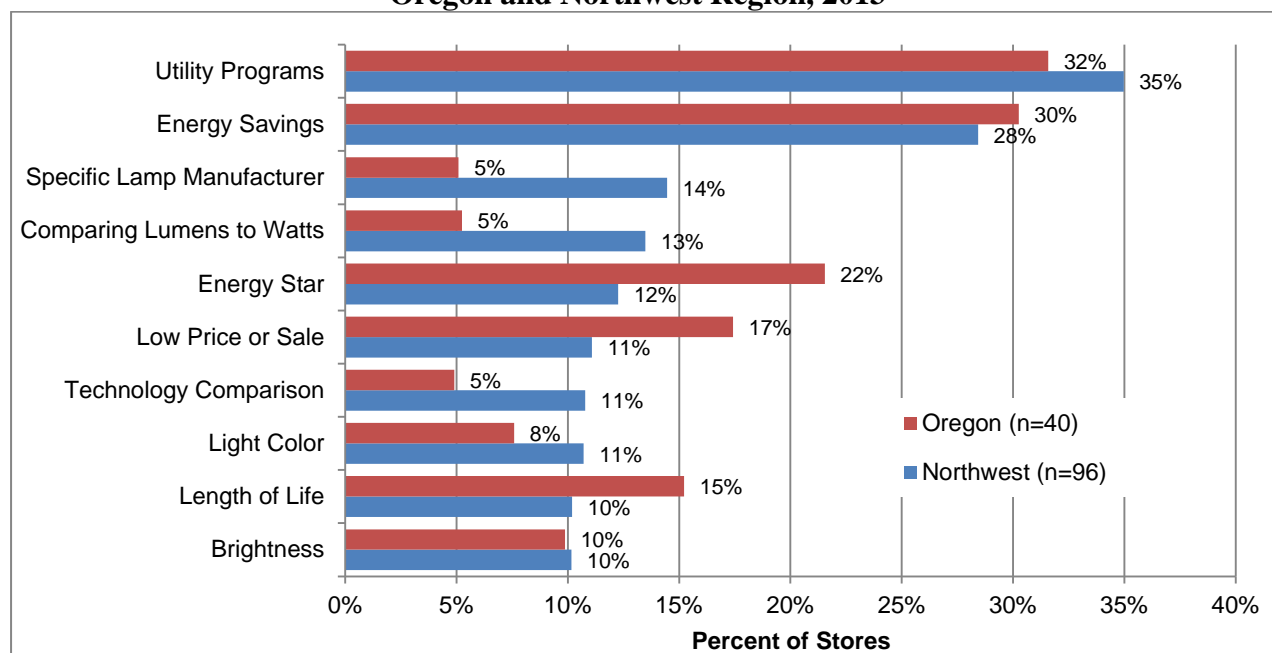
### 3.7.1 Messages

The most common messages conveyed in lighting promotional materials in stores in Oregon and the Northwest 2013 were energy savings and utility promotions (Figure 43). The percentages of

<sup>17</sup> Signs that only include the price of a given lamp package are not considered a promotional material.

Oregon and Northwest stores displaying messages related to energy savings or utility promotions were similar in 2013. Some differences were apparent between regions for less commonly displayed messages; fourteen percent of stores in the Northwest had materials promoting a specific lamp manufacturer while only 5 percent of stores in Oregon had this type of message. A higher percentage of stores in Oregon had displays promoting Energy Star lighting products compared to stores in the Northwest (22% compared to 12%). There were no noteworthy changes in key messages between 2012 and 2013.

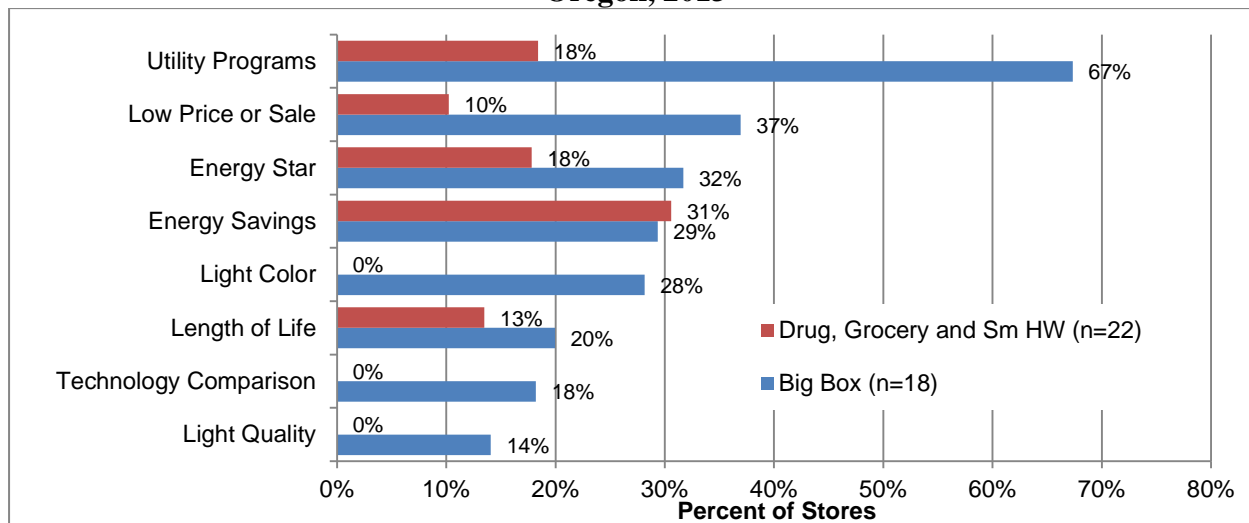
**Figure 43**  
**Percent of Stores with Lighting Promotional Materials by Message**  
**Oregon and Northwest Region, 2013**



When promotional messages in Oregon are further examined by store category (Figure 44), results suggest that roughly two-thirds of big box stores displayed promotional materials regarding utility programs and 37 percent of big box stores displayed promotional materials regarding low price or a sale in 2013. Almost universally, there was a higher percentage of big box stores displaying the key messages listed below than non-big box stores; the only exception to this trend was stores displaying messages related to energy savings (31% of non-big box stores displayed this message compared to 29% of big box stores).

Also of note is an increase in the percentage of stores having displays that promoted utility programs in big box stores (from 31% in 2012 to 67% in 2013) and a decline in the percentage of non-big box stores with displays promoting utility program (from 26% in 2012 to 18% in 2013).

**Figure 44**  
**Percent of Stores with Lighting Promotional Materials by Message and Store Category**  
**Oregon, 2013**



### 3.7.2 Promotional Material Types and Positioning

Sixty-nine percent of Northwest retail stores and 58 percent of stores in Oregon displayed one or more promotional materials regarding replacement lamps during the time of the 2013 shelf survey visits (compared to 54% of Northwest stores and 74% of Oregon stores in 2012).

All of the Northwest and Oregon retail stores that displayed promotional materials used wall or shelf signage in both 2012 and 2013. Sixty-three percent of all Northwest stores and 58 percent of all Oregon retail stores positioned their promotional materials in the lighting aisle, while a small percentage of Northwest and Oregon stores positioned promotional materials on end-cap displays (8% and 15%, respectively). Five percent of Northwest stores had promotional materials at or near the front of the store and 1 percent had materials near the cash register (there were no stores observed in Oregon with promotional materials in these locations).

### 3.7.3 Technologies Promoted

Figure 45 shows the percentage of stores in Oregon and the Northwest region that displayed lighting promotional materials by lamp technology in 2013. Overall, a greater percentage of stores in the Northwest displayed promotional materials for any lamp technology (69%) than stores in Oregon (58%) in 2013. Materials in both regions focused on primarily on CFLs, with 67 percent of stores in the Northwest and 58 percent of Oregon stores displaying CFL promotional materials. However, while only a third of stores in the Northwest had promotional materials regarding LED lamps, more than half of Oregon stores had promotional materials on LED lamps

in 2013. The percentage of stores promoting energy-efficient incandescent and traditional incandescent lamps was similar in the Northwest and Oregon.

Noteworthy changes from 2012 to 2013 are increases in the percentage of stores promoting LED lamps in both Oregon (51% in 2013 compared to 19% in 2012) and the Northwest (35% in 2013 compared to 14% in 2012). There was also an increase in the percentage of Northwest stores promoting CFLs (from 47% in 2012 to 67% in 2013), but a decline in percentage of Oregon stores promoting CFLs (from 65% in 2012 to 58% in 2013).

**Figure 45**  
**Percent of Stores with Lighting Promotional Materials by Lamp Technology Promoted**  
**Oregon and Northwest Region, 2013**

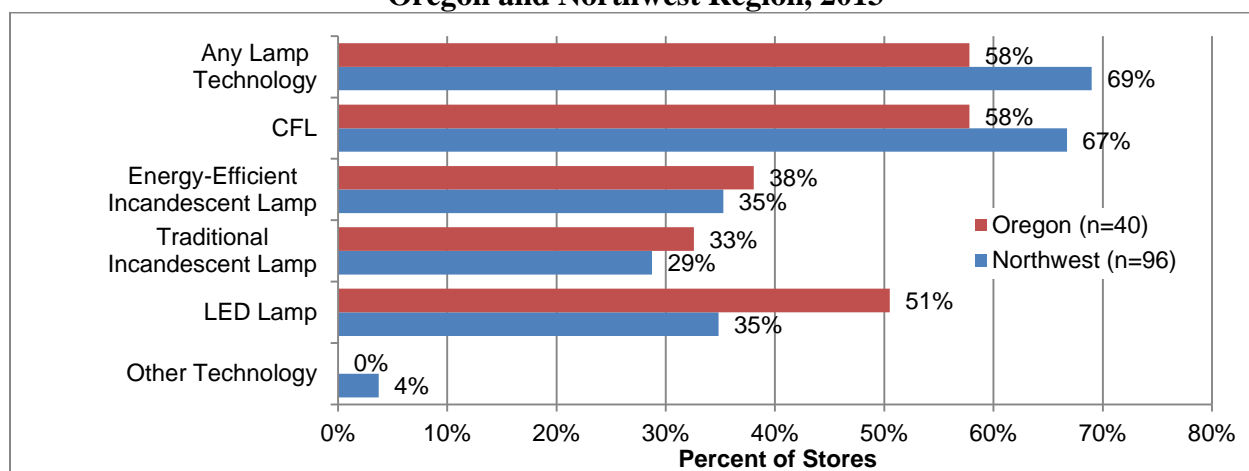
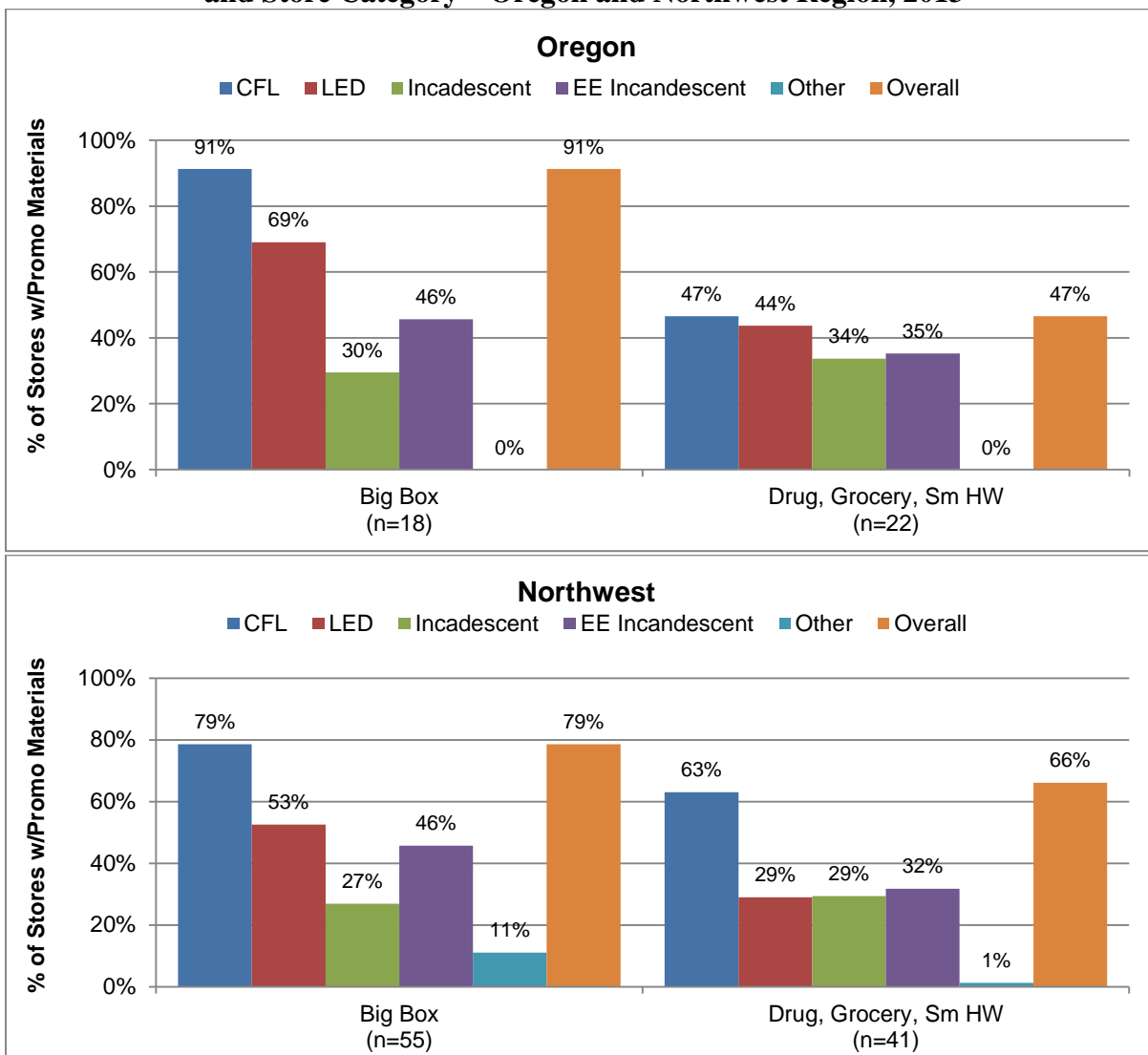


Figure 46 shows the percentage of stores that displayed materials promoting different lighting technologies in Oregon and the Northwest region in 2013 by store category. Generally, a higher percentage of big box stores promoted lamps (across all lamp technologies) than non-big box stores in Oregon and the Northwest; the differences between store categories were starker in Oregon with 91 percent of all big box stores and only 46 percent of non-big box stores displaying lighting promotional materials (compared to 79% and 66%, respectively, in the Northwest). There was a higher percentage of Oregon big box stores promoting CFLs (91%) and LED lamps (69%) than Northwest big box stores (79% and 53%, respectively).

With respect to differences between 2012 and 2013, there was an increase in the percentage of Oregon and Northwest big box stores promoting CFLs in 2013 (from 71% in 2012 to 91% in 2013 in Oregon, and from 48% to 79% in the Northwest). There were similar trends in both regions for other lamp technologies, with an increase in the percentage of big box stores promoting LED, energy-efficient incandescent, and traditional incandescent lamps in 2013 over 2012.

**Figure 46**  
**Percent of Stores with Lighting Promotional Materials by Lamp Technology Promoted and Store Category – Oregon and Northwest Region, 2013**



#### 4 SUMMARY OF FINDINGS

Below, we summarize findings regarding the availability and diversity of general purpose CFLs, specialty CFLs, LED lamps, halogen lamps, incandescent lamps, and four-foot T8 and T12 linear fluorescent lamps found in retail stores throughout Oregon and the Northwest during the 2012/2013 and 2013/2014 shelf surveys. We also summarize findings regarding pricing for

general purpose and specialty CFLs, availability of select lighting control systems, and promotional materials present in Oregon and Northwest retail stores.

**Percentage of Stores Stocking Lamps.** The percentage of stores stocking LED lamps increased in both Oregon and the Northwest region between 2012 and 2013; this increase was greater in the Northwest than in Oregon. Aside from a slight increase in the percentage of stores stocking halogen lamps, there were no noteworthy changes in the percentage of stores carrying other lamp technologies in the same timeframe. Among linear fluorescent lamps, more stores in Oregon stocked T12 and T8 lamps than stores in the Northwest region in 2013 (this was also the case in 2012). The percentage of stores in the Northwest stocking T12 and T8 lamps declined between 2012 and 2013. While the percentage of Oregon stores stocking T8 lamps declined during the same timeframe, the percentage of Oregon stores stocking T12 lamps increased between years.

**Share of Lamp Stock – Incandescent Lamps.** Incandescent lamp stocking declined in Oregon and the Northwest between 2012 and 2013 both in terms of the percentage of total lamp stock comprised by incandescent lamps and the absolute quantity of lamps stocked. The quantity of incandescent lamps dropped by roughly one-fourth between 2012 and 2013, and wholesale clubs stocked no incandescent lamps in either year. The decline in incandescent lamp share and the quantity of lamp stock was likely a result of the continued phase-in of EISA standards.

**Share of Lamp Stock – Halogen Lamps.** Halogen lamp share in Oregon and the Northwest increased between 2012 and 2013 both in terms of the percentage of total lamp stock comprised by halogen lamps and the absolute quantity of lamps stocked. The quantity of halogen lamps increased by more than 80 percent in Oregon stores and by nearly two-thirds in stores in the Northwest between 2012 and 2013. As was the case with incandescent lamps, wholesale clubs stocked no halogen lamps in either year. The increase in halogen lamp share and quantity of lamp stock was likely a result of EISA standards coming into effect.

**Share of Lamp Stock – CFLs.** The share of CFL stock declined slightly in Oregon between 2012 and 2013 and remained the same in the Northwest between years. The quantity of CFLs stocked dropped by roughly one-fifth in Oregon and by 15 percent in the Northwest between 2012 and 2013.

**Share of Lamp Stock – LED lamps.** The overall share of LED lamps stocked doubled between 2012 and 2013 in Oregon and the Northwest, but the proportion of LED lamps stock among all technologies continues to be relatively low (4% in both regions in 2013). The majority of this change can be attributed to an increase in stocking of LED A-lamps. The absolute quantity of LED lamps stocked increased by approximately 125 percent in Oregon and more than 130 percent in the Northwest and.

**Share of Linear Fluorescent Lamp Stock.** In Oregon, the share of total T8 and T12 four-foot linear fluorescent lamp stock comprised by T12 lamps was over 60 percent and roughly two-thirds of all T8 and T12 lamps stocked in the Northwest in 2013. The proportion of linear



fluorescent lamp stock comprised by T12 lamps grew between 2012 and 2013 in Oregon, but remained nearly the same in the Northwest between years.

**Energy Star Qualifying Lamps.** Energy Star qualifying general purpose and specialty CFLs as a share of total CFLs declined overall between 2012 and 2013 both in Oregon (from 81% to 74% among all CFLs) and the Northwest (from 81% to 79% among all CFLs). The decline in the share of Energy Star qualifying lamps for general purpose and specialty CFLs (and all CFLs) occurred in big box stores in both Oregon and the Northwest. The share of specialty CFLs that were Energy Star qualifying also declined in non-big box stores in Oregon and the Northwest between years. The share of Energy Star general purpose CFLs and all CFLs increased slightly in non-big box stores in the Northwest between years. The proportion of Energy Star qualifying LED lamps effectively doubled in Oregon and the Northwest between 2012 and 2013.

**EISA Qualifying Lamps.** The proportion of MSB incandescent A-lamps that met the EISA standards at the time of the 2013 shelf survey visits was significantly greater in both Oregon and the Northwest region than in 2012. EISA standards took effect for lamps in the high brightness bin (roughly equivalent to traditional 100 watt incandescent A-lamps) on January 1, 2012, and the percentage of lamps that met the standard in this lumen bin was somewhat higher in the Northwest than in Oregon in 2013 (98% qualifying in the Northwest versus 93% in Oregon). In the medium high brightness bin (roughly equivalent to traditional 75 watt incandescent A-lamps), EISA standards took effect on January 1, 2013 (approximately one year prior to the 2012/2013) shelf surveys). More than 60 percent of MSB incandescent A-lamps in the Northwest and half of MSB incandescent A-lamps in Oregon met the standard for these lamps in 2013; this was a dramatic increase from 2012 when only a small fraction of lamps met the standard in both regions. EISA standards went into effect for medium low brightness and low brightness MSB incandescent A-lamps on January 1, 2014; field researchers were in stores conducting shelf surveys before and after this date. The proportion of lamps meeting this standard increased in both lumen bins in Oregon and the Northwest between years, but still remains relatively low with roughly one-fifth to one-quarter of lamps in both lumen bins and both regions meeting the standard.

**Linear Fluorescent Lamps Meeting 2012 DOE Efficiency Standards.** There were no T12 lamps observed in stores in the Northwest and Oregon that met new efficiency standards set forth by the DOE in 2012. There was only a small percentage of T8 lamps that met the new standards in 2012 and 2013 in both regions. Interestingly, the percentage of linear fluorescent lamps that met the standard declined in Oregon (from 8% to 4%) and in the Northwest (from 10% to 6%) between years.

#### 4.1 Diversity

**Average Number of Lamp Models Stocked per Store – CFLs, LED, Halogen, and Incandescent Lamps.** By this metric, diversity was greatest among incandescent lamps across all



store types in Oregon and in the Northwest both in 2012 and 2013. Lamp model diversity increased the most between 2012 and 2013 among halogen lamps across all stores (and in both big box and non-big box stores) in Oregon and the Northwest; the average number of halogen lamp models per store increased by 11 models per store in Oregon and 8 models per store in the Northwest. The average number of models per store decreased between years for incandescent lamps overall in the Northwest (which dropped by roughly 6 models per store), but the average number of incandescent lamp models per store remained the same in Oregon across all stores during the same timeframe. In Oregon, the average number of LED lamp models increased overall between 2012 and 2013 (from 4 to 6 models per store), while the average number of LED lamp models per store in the Northwest remained the same overall between years. There were minimal changes with respect to lamp model diversity among general purpose and specialty CFLs between 2012 and 2013.

**Average Number of Linear Fluorescent Lamps per Store.** The average number of lamp models per store declined for T8 and T12 lamps in Oregon and Northwest stores between 2012 and 2013. The average number of T8 lamp models per store declined from 1.5 to 1.0 in Oregon and 1.4 to 0.8 in the Northwest, while the average number of T12 lamp models per store declined from 2.7 to 2.4 in Oregon and from 2.6 to 1.7 in the Northwest. The decline in T8 and T12 lamp model diversity occurred across the board in big box and non-big box stores in both regions between years.

**Lamp Stock by Wattage -- CFLs.** The greatest share in terms of the percentage of CFLs stocked was in the 13W to less than 19W range in both Oregon and the Northwest in 2012 and 2013. However, the share of CFLs in the 13W to less than 19W range decreased overall in Oregon and the Northwest between 2012 and 2013. There was a corresponding increase in the share of CFLs stocked overall in the 9W to less than 13W and the 19W to less than 30W ranges in both regions between years. The 30W to 65W range had the smallest share of total CFLs stocked in 2012 and 2013 in big box and non-big box stores and in both regions.

**Lamp Stock by Wattage – LED Lamps.** A plurality of LED lamps stocked was in the 3W to less than 9W category in Oregon and Northwest stores in 2012 and 2013. However, LED lamps in Oregon stores in the 9W to less than 15W range had roughly the same share of total LED stock as lamps in the 3W to 9W category in 2013 (stock in both categories had a 43% share). The share of LED stock in the 9W to less than 15W category grew between 2012 and 2013 in both store categories and overall in Oregon and the Northwest stores. This trend did not carry over into the 15W to less than 24W category, however; the share of lamps in this wattage bin declined in both store categories and overall in Oregon stores and declined in big box stores and overall in the Northwest between 2012 and 2013.

**Lamp Stock by Wattage – Incandescent Lamps.** The largest share of incandescent lamps stock was in the 60W to less than 75W category in Oregon and the Northwest stores (overall and in both store categories) in 2012 and 2013. The share of 75W to 100W and 100W or greater lamps

declined overall between 2012 and 2013 in Oregon and the Northwest. The decline in share for these wattage categories was likely a result of EISA regulations.

**Lamp Stock by Wattage – Halogen Lamps.** The proportion of 29W to less than 43W lamps and 53W to less than 72W lamps increased in big box and non-big box stores in both Oregon and the Northwest, while the share of 43W to less than 53W lamps decreased. The increase in the share of halogen lamps in the 53W to less than 72W category is likely a result of EISA standards that went into effect one year earlier (January 1, 2013).

**Lamp Stock by Lumens – CFLs, Incandescent Lamps, and LED Lamps.** The distribution of lamp stock in four lumen categories (310-749 lumens; 750-1049 lumens; 1050-1489 lumens; 1490-2600 lumens) changed the most for halogen, incandescent, and LED lamp stock in Oregon and the Northwest between 2012 and 2013. A majority of LED, halogen, and incandescent lamps were stocked in the lowest lumen bin (310-749 lumens) in Oregon and the Northwest in 2013, while lamp share in the 710-1049 lumen bin declined for LED and halogen lamps in Oregon and the Northwest between years. The distribution of CFL stock remained relatively static in Oregon and the Northwest between years.

## 4.2 CFL Pricing

**Average Shelf Price.** In 2013, the average shelf price for a CFL in Oregon was \$4.97, \$0.53 higher per lamp, on average, than in the Northwest (\$4.44). The average shelf price for a CFL increased by 6 percent in Oregon from 2012 to 2013 and by 2 percent in the Northwest; this increase was driven by an 8 percent increase in the price of a general purpose CFL in Oregon (increasing from \$3.78 per lamp in 2012 to \$4.09 per lamp in 2013) and a 5 percent increase in the price of a general purpose CFL in the Northwest (increasing from \$3.45 per lamp in 2012 to \$3.60 per CFL in 2013). The price for a specialty CFL declined by 1 percent in Oregon (\$6.93 per CFL in 2013) and 2 percent in the Northwest (\$6.75 per CFL in 2013). In both regions, the average price per lamp for general purpose and specialty CFLs was much lower in big box stores than in non-big box stores in both regions and in both years.

## 4.3 Lighting Control Systems

Field researchers gathered details on dimmer controls observed in lighting aisles as well as wirelessly controllable LED lamps during the 2013 shelf survey visits. Very few stores stocked dimmer control switches in the lighting aisle in 2013, with only 5 percent of Oregon stores, overall, and 6 percent of Northwest retail stores, overall, stocking dimmer controls in the lighting aisle. This was also the case in terms of the percentage of stores carrying wirelessly controllable LED lamps, where 5 percent of Oregon stores and 6 percent of stores in the Northwest carried these lamps.

#### 4.4 Promotional Materials

Nearly 60 percent of Oregon stores displayed one or more promotional materials related to replacement lamps in 2013 compared to nearly 70 percent of Northwest stores. The percentage of Oregon stores stocking promotional materials was down in 2013 compared to 2012 (74% of Oregon stores had promotional materials in 2012), while the percentage of stores across the Northwest displaying promotional materials was up in 2013 compared to 2012 (54% of Northwest stores had promotional materials in 2012).

**Promotional Messages.** The most common messages conveyed in the lighting promotional materials shown in stores in Oregon and the Northwest in 2013 related to energy/money savings and utility promotions (these were also the most common messages in 2012). A slightly higher percentage of stores in the Northwest had promotional messages related to utility programs than Oregon stores, while a slightly higher percentage of Oregon stores had messages related to energy savings than Northwest stores. Other messages related to low pricing, Energy Star, comparing lumens to watts, cross-technology comparisons, light color, brightness, and rated life.

**Types and Positioning of Promotional Materials.** All of the stores displaying promotional materials in the Northwest and Oregon in 2013 displayed wall or shelf signs (as was the case in 2012); only a small fraction used brochures or ceiling signs. Sixty-three percent of all Northwest stores and 58 percent of all Oregon retail stores positioned their promotional materials in the lighting aisle, while a small percentage of Northwest and Oregon stores had promotional materials positioned on end-cap displays. An even smaller percentage of Northwest stores had promotional materials near the front of the store or near the cash register, while there were no stores observed in Oregon with promotional materials in the front of the store or near the cash register.

**Technologies Promoted.** Throughout the region, materials focused primarily on CFLs in 2013 (this was also the case in 2012). Nearly 60 percent of Oregon stores and approximately two-thirds of stores in the Northwest displayed CFL promotional materials. More than half of Oregon stores and more than a third of Northwest stores had promotional materials related to LED lamps. More than a third of stores in the Northwest and Oregon displayed materials regarding energy-efficient incandescent lamps. About a third of Oregon stores and less than a third of stores in the Northwest had promotional materials related to traditional incandescent lamps.

**APPENDIX A - REFERENCES**

- DNV GL, 2014. California Residential Replacement Lamp Market Characterization Study. Prepared for the California Public Utilities Commission, Energy Division 2010–2012 EM&V Work Order 13 – Residential Lighting Process Evaluation and Market Characterization.
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- \_\_\_\_\_, 2007. Consumer Products Market Progress Evaluation Report 3 (MPER3): Final Report. Prepared for the Northwest Energy Efficiency Alliance (NEEA). July 24, 2007.
- Horner, Pam, and Horner, Bob, 2012. “Capturing the Lighting Edge.” August 13, 2012. Accessed at [http://www.lrc.rpi.edu/education/outreacheducation/pdf/CLE4/AM\\_FedStateLegislation.pdf](http://www.lrc.rpi.edu/education/outreacheducation/pdf/CLE4/AM_FedStateLegislation.pdf)
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- Portland Energy Conservation, Inc. (PECI), 2006. Compact Fluorescent Product Sales Data, Report for October – December, 2005. Prepared for NEEA, n.d.
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**APPENDIX B - LIGHTING RETAIL STORE SHELF SURVEY INSTRUMENT**

**ENERGY TRUST OREGON  
LIGHTING TRACKING STUDY: LIGHTING SHELF INVENTORY**

**CONTACT INFORMATION**

PLEASE FILL IN THIS SECTION USING THE INFORMATION CONTAINED IN THE SAMPLE DATABASE

Field researcher name:	Store address:
Date:	Store city:
Store name:	Store state:
Store type:	Store zip code:

**LIGHTING SIGNAGE & PROMOTIONAL MATERIALS**

- A1. Are there any materials present promoting lighting? **[DO NOT INCLUDE MESSAGES ON LIGHTING PACKAGES OR SIMPLE PRICING INFORMATION ON SHELVES].**
- 1 Yes
  - 2 No

**[REPEAT A2 THROUGH A3E FOR EACH PROMOTIONAL SIGN OR DISPLAY IN STORE]**

- A2. **[IF PROMOTIONAL MATERIALS PRESENT]** Which lighting technologies are being promoted? **[MARK ALL THAT APPLY].**
- 1 CFLs
  - 2 LEDs
  - 3 Energy Efficient Incandescents (e.g., EISA-compliant halogens)
  - 4 Traditional Incandescents (e.g., incandescent not compliant with EISA regulations)
  - 5 Other lighting technology **[PLEASE SPECIFY]:** \_\_\_\_\_

- A3a. **[IF PROMOTIONAL MATERIALS PRESENT]** What type of sign is present?
- 1 Sign on shelf/wall
  - 2 Sign hung from ceiling
  - 3 Brochures
  - 4 Floor sticker/cling
  - 5 Other **[PLEASE SPECIFY]:** \_\_\_\_\_

- A3b. **[IF PROMOTIONAL MATERIALS PRESENT]** Where is the promotional material located?
- 1 In the lighting aisle(s)
  - 2 Near the cash register
  - 3 In front of the store/near store entrance
  - 4 On an endcap

5 Other location [PLEASE SPECIFY]: \_\_\_\_\_

A3c. **[IF PROMOTIONAL MATERIALS PRESENT] Does the sign or display refer to a specific bulb model or models?**

- 1 Yes
- 2 No

A3d. **[IF A3C=YES] Please list the manufacturer, model number(s), base type, and style of the bulb.**

\_\_\_\_\_

A3e. **[IF PROMOTIONAL MATERIALS PRESENT] Summary of Key Messages in Sign or Display:**

\_\_\_\_\_

\_\_\_\_\_

A4a. **Are there dimmer switches in the same aisle/location as the light bulbs?**

- 1 Yes
- 2 No

A4b. **[IF DIMMER SWITCHES PRESENT] Please describe any signage and key messages associated with the dimmer switches:**

\_\_\_\_\_

\_\_\_\_\_

A5a. **Are there any LED bulbs present that can be controlled wirelessly? These may or may not have wireless controllers or remote controls in the package with the bulbs. Examples include HUE (Philips), Connected (TCP), and Insteon LED bulbs.**

- 1 Yes
- 2 No

A5b. **[IF WIRELESS LEDS PRESENT] Please list product manufacturer, brand name, bulb style (e.g., A-lamp, Spotlight, Globe, etc.):**











\_\_\_\_\_

\_\_\_\_\_

**BULB CODES (TECHNOLOGY TYPE, BASE TYPE, AND STYLE CODES)**





<b>Technology Type Codes</b>	<b>Base Type Codes</b>
------------------------------	------------------------

Technology Type	Code	Base Type Codes	Code
CFL	CF	Medium Screw	M
Incandescent	I	Pin	P
Halogen	H	GU-Type	G
LED	L	Candelabra/Intermediate	C
Cold Cathode	CC	Large Screw Base	L
Fluorescent Tube	FL	Candelabra with Medium Screw Adaptor	C/M
Other	OT	Other	OT

Bulb Style Codes*					
Bulb Style	Code	Image	Bulb Style	Code	Image
Spiral/Twister	TW		Spotlight/Reflector/Flood	See below	See spotlight/reflector/flood codes in table below.
Globe (e.g., for bathroom vanity fixtures)	GL		Circline	CI	
A-lamp (shaped like standard incandescent)	AL		Tube Style	TU	
Torpedo/Bullet	TO		Night Light	NL	
Linear 4 ft. T8 Fluorescent Tube	T8		Linear 4 ft. T12 Fluorescent Tube	T12	
Bug Light	BU		Other/Unknown	OT	Record style code, if indicated on package.

\*See LED Style Code Table below for further details and information on LED bulb styles.

Spotlight/Reflector/Flood Bulb Style Codes					
Bulb Style	Code	Image	Bulb Style	Code	Image

BR25	B25		PAR16	P16	
BR30	B30		PAR20	P20	
BR40	B40		PAR30	P30	
R20	R20		PAR38	P38	
R30	R30		MR16	M16	
R40	R40		Other	OT	

LED Style Codes			
Bulb Style	Code	Bulb Style	Code
A15, A19, A21, A23	AL	G16½, G25, G40, P25, PS35	GL
B10½, B13, BA9, BA9½, F10, F15, F20	TO	T 4½, T5, T6, T8, T10	TU
C7, C9	NL	C7	NL
BR25, BR30, BR40, R20, R30, R40, PAR15, PAR20, PAR30S, PAR30L, PAR38	See spot-light codes table above	Other LED Bulb Style (record style code on package, if known)	OT



# Bulb Inventory

Inventory all replacement CFLs, incandescents, halogens, LEDs, 4 ft. T8 and T12 fluorescent tubes, and cold cathodes.

Use as many pages as necessary.

For 3-way, dimmable, ENERGY STAR, and rough service incandescent columns: X if applicable.

**IF ONLY ONE PRICE SHOWN:** Try to determine whether it's a discounted price/sale price or if it's a full-priced bulb. If sale price, record value in "Discounted price." If full price, record value in "Original Price."

Manufacturer/Brand	Technology Type (See Technology Codes table above)	Base Type (See Base Codes table above)	Bulb Style (See Style Codes table above)	Barcode	Quantity in Pack	# of Packages	Package Location [Aisle=A; Endcap=E; Pallet=P; Fenceline=F; Other=OT]	Full/Original Price (If <u>discounted</u> , record price <i>before</i> discount. If <u>not discounted</u> , record product price here)	Discounted Price (If on sale/discounted)	Discount Provider (if discounted) [R=Retailer; U=Utility; M=Manufacturer; O=Other; DK= don't know]	Color Name [Soft White=SW; Warm White=WW; Cool White=CW; Bright White=BW; Daylight=D; Enhanced Spectrum=ES; Colored= CR; Other=OT]	Lumens	Wattage	3-way?	Dimmable?	Energy Star?	Rough service incandescent?
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
														<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**APPENDIX C - NUMBER OF SAMPLE POINTS FOR KEY FIGURES**

**Table 13  
Number of Lamps Stocked by Lamp Technology  
Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Lamp Technology	Year	
			2012	2013
Oregon	Big Box	CFL	39,764	30,814
		Incandescent	47,834	38,029
		Halogen	10,251	17,486
		LED	5,875	13,470
	Non-Big Box	CFL	7,045	6,530
		Incandescent	25,244	17,391
		Halogen	3,313	6,803
		LED	916	1,304
Northwest	Big Box	CFL	65,892	53,737
		Incandescent	91,566	72,140
		Halogen	17,441	31,064
		LED	9,188	21,945
	Non-Big Box	CFL	16,856	16,610
		Incandescent	56,494	41,651
		Halogen	11,039	15,931
		LED	916	1,304

**Table 14  
Number of CFLs Stocked by Lamp Type  
Oregon and Northwest Region, 2012 and 2013**

Geography	Lamp Technology	Year	
		2012	2013
Oregon	General Purpose CFLs	35,674	26,050
	Specialty CFLs	11,135	11,294
	All CFLs	46,809	37,344
Northwest	General Purpose CFLs	62,569	50,770
	Specialty CFLs	20,179	19,577
	All CFLs	82,748	70,347

**Table 15**  
**Number of CFLs Stocked by Lamp Type and Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Lamp Technology	Year	
			2012	2013
Oregon	Big Box	General Purpose CFLs	30,611	21,323
		Specialty CFLs	9,153	9,491
		All CFLs	39,764	30,814
	Non-Big Box	General Purpose CFLs	5,063	4,727
		Specialty CFLs	1,982	1,803
		All CFLs	7,045	6,530
Northwest	Big Box	General Purpose CFLs	50,074	38,142
		Specialty CFLs	15,818	15,595
		All CFLs	65,892	53,737
	Non-Big Box	General Purpose CFLs	12,495	12,628
		Specialty CFLs	4,361	3,982
		All CFLs	16,856	16,610

**Table 16**  
**Number of CFLs Stocked by Detailed Lamp Style**  
**Oregon, 2012 and 2013**

Style	Year	n
Twister	2012	36,439
	2013	26,393
A-lamp	2012	1,965
	2013	1,734
Globe	2012	880
	2013	822
Reflector	2012	4,876
	2013	5,430
Tube	2012	38
	2013	9
Pin Based	2012	1,111
	2013	1,479
3-Way	2012	202
	2013	281
Other	2012	1,293
	2013	1,196

**Table 17**  
**Number of CFLs Stocked by Lamp Type and Store Type**  
**Oregon, 2012 and 2013**

Store Category	Lamp Technology	Year	
		2012	2013
Wholesale Club	General Purpose CFLs	15,156	9,866
	Specialty CFLs	1,760	3,004
	All CFLs	16,916	12,870
Do-It-Yourself (DIY)	General Purpose CFLs	12,261	9,540
	Specialty CFLs	5,910	5,312
	All CFLs	18,171	14,852
Mass Merchandise	General Purpose CFLs	3,194	1,917
	Specialty CFLs	1,483	1,175
	All CFLs	4,677	3,092
Drug, Grocery	General Purpose CFLs	2,904	3,144
	Specialty CFLs	1,131	1,197
	All CFLs	4,035	4,341
Small Hardware	General Purpose CFLs	2,159	1,583
	Specialty CFLs	851	606
	All CFLs	3,010	2,189

**Table 18**  
**Number of CFLs by Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Year	
		2012	2013
Oregon	Big Box	39,764	30,814
	Non-Big Box	7,045	6,530
	Overall	46,809	37,344
Northwest	Big Box	65,892	53,737
	Non-Big Box	16,856	16,610
	Overall	82,748	70,347

**Table 19**  
**Number of LED Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Year	
		2012	2013
Oregon	Big Box	5,875	13,470
	Non-Big Box	467	672
	Overall	6,342	14,142
Northwest	Big Box	9,188	21,945
	Non-Big Box	916	1,304
	Overall	10,104	23,249

**Table 20**  
**Number of Incandescent Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Year	
		2012	2013
Oregon	Big Box	47,834	38,029
	Non-Big Box	25,244	17,391
	Overall	73,078	55,420
Northwest	Big Box	91,566	72,140
	Non-Big Box	56,494	41,651
	Overall	148,060	113,791

**Table 21**  
**Number of Halogen Lamps by Store Category and Wattage Category**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Year	
		2012	2013
Oregon	Big Box	10,251	17,486
	Non-Big Box	3,313	6,803
	Overall	13,564	24,289
Northwest	Big Box	17,441	31,064
	Non-Big Box	11,039	15,931
	Overall	28,480	46,995

**Table 22**  
**Number of Lamps Stocked by Lamp Technology and Lumen Bin**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Lamp Technology	Year	Lumen Bin			
			1490-2600 lm	1050-1489 lm	750-1049 lm	310-749 lm
Oregon	CFL	2012	16,682	15,390	36,252	10,698
		2013	16,237	6,635	34,129	9,805
	Halogen	2012	4,746	4,180	5,693	9,219
		2013	5446	5,799	6,163	21,858
	Incandescent	2012	1,472	10,628	18,150	60,773
		2013	673	1,863	16,715	46,587
	LED	2012	-	648	2927	1,902
		2013	40	1221	6,919	10,484
Northwest	CFL	2012	9,669	8,703	20,949	5,856
		2013	8,686	3,061	18,604	5,248
	Halogen	2012	2,195	2,331	2,277	4,111
		2013	2,641	2,841	2,928	11,578
	Incandescent	2012	799	6,455	9,084	33,031
		2013	220	960	7,808	24,276
	LED	2012	-	470	1,870	1,175
		2013	21	824	4,252	6,592

**Table 23**  
**Number of Lamps Stocked by Lamp Technology, Store Category and Lumen Bin**  
**Oregon and Northwest Region, 2012 and 2013**

Geography	Store Category	Lamp Technology	Year	Lumen Bin			
				1490- 2600lm	1050- 1489lm	750- 1049lm	310-749lm
Oregon	Big Box	CFL	2012	13,769	12,180	29,949	7,532
			2013	13,309	3,767	27,852	6,521
		Halogen	2012	3165	2602	3126	5,813
			2013	3180	3604	3,609	15,876
		Incandescent	2012	704	5232	9918	42,510
			2013	534	740	10,660	31,223
		LED	2012	-	648	2,826	1,719
			2013	38	1,177	6,581	10,086

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Geography	Store Category	Lamp Technology	Year	Lumen Bin			
				1490-2600lm	1050-1489lm	750-1049lm	310-749lm
Oregon	Non-Big Box	CFL	2012	2,913	3,210	6,303	3,166
			2013	2,928	2,868	6,277	3,284
		Halogen	2012	1,581	1,578	2,567	3,406
			2013	2,266	2,195	2,554	5,982
		Incandescent	2012	768	5396	8232	18263
			2013	139	1123	6055	15364
		LED	2012	-	-	101	183
			2013	2	44	338	398
Northwest	Big Box	CFL	2012	8,340	7,421	18,236	4,617
			2013	7,588	1,843	16,213	3,986
		Halogen	2012	1,646	1,771	1,728	3,136
			2013	1,655	2,022	1,809	9,173
		Incandescent	2012	466	2917	4746	24,371
			2013	141	372	5,240	17,945
		LED	2012	-	470	1,802	1,098
			2013	19	789	4,101	6,393
	Non-Big Box	CFL	2012	1,329	1,282	2,713	1,239
			2013	1,098	1,218	2,391	1,262
		Halogen	2012	549	560	549	975
			2013	986	819	1,119	2,405
		Incandescent	2012	333	3538	4338	8660
			2013	79	588	2568	6331
		LED	2012	-	-	68	77
			2013	2	35	151	199



**Table 24**  
**Number of Lamps Stocked by Lamp Technology, Store Type and Lumen Bin**  
**Oregon, 2012 and 2013**

Year	Store Type	Lamp Technology	Lumen Bin			
			1490-2600lm	1050-1489lm	750-1049lm	310-749lm
2012	Wholesale	CFL	4,672	4,824	7,420	-
		Club				
	Club	Halogen	-	-	-	-
		Incandescent	-	-	-	-
		LED	-	215	1164	4
	Do-It-Yourself (DIY)	CFL	2,852	1,771	9,264	3,331
		Halogen	1,107	1,630	1,429	2,545
		Incandescent	445	1,452	3,733	19,691
		LED	-	255	626	1055
	Mass Merchandise	CFL	826	733	1,402	769
		Halogen	310	324	230	552
		Incandescent	121	2,806	3,645	5,939
		LED	-	-	1	45
	Drug, Grocery	CFL	816	826	1,552	1,286
		Halogen	539	141	299	591
		Incandescent	21	1,465	1,013	4,680
		LED	-	-	12	39
	Small Hardware	CFL	503	549	1,311	470
		Halogen	239	236	319	423
		Incandescent	212	732	693	2,721
LED		-	-	67	32	
2013	Wholesale	CFL	4,326	-	8,544	-
		Club				
	Club	Halogen	-	-	-	-
		Incandescent	-	-	-	-
		LED	-	596	2815	3622
	Do-It-Yourself (DIY)	CFL	2,926	1,487	6,492	2,984
		Halogen	1,281	1,580	1,179	6,492
		Incandescent	134	47	4,177	14,221
		LED	19	193	1280	2739

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Year	Store Type	Lumen Bin				
		Lamp Technology	1490-2600lm	1050-1489lm	750-1049lm	310-749lm
2013	Mass Merchandise	CFL	665	792	1,576	941
		Halogen	692	654	696	1,833
		Incandescent	12	400	1,856	4,466
		LED	2	35	121	177
	Drug, Grocery	CFL	336	356	1,177	1,002
		Halogen	374	442	630	2,681
		Incandescent	7	325	1,063	3,724
		LED	-	-	6	32
	Small Hardware	CFL	433	426	815	321
		Halogen	294	165	423	572
		Incandescent	67	188	712	1,865
		LED	-	-	30	22

**Table 25**  
**Number of Stores Carrying Linear Fluorescent Lamps by Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

Year	Store Category	Geography	
		Oregon	Northwest
2012	Big Box	10	27
	Non-Big Box	14	28
	Overall	24	55
2013	Big Box	13	29
	Non-Big Box	14	27
	Overall	27	56

**Table 26**  
**Distribution of Linear Fluorescent T12 Lamps by Wattage and Lumens – Oregon, 2012 and 2013**

T12 Lamps					
Watts	Lumens	2012		2013	
		n	%	n	%
15	785	3	<1%	-	-
20	-	5	<1%	-	-
	1025	7	<1%	-	-
	1275	3	<1%	-	-
25	-	43	1%	-	-
	1860	32	1%	-	-
30	2400	14	<1%	-	-
32	2600	-	-	96	2%
	2800	48	1%	-	-
34	-	133	2%	491	12%
	200	60	1%	-	-
	1925	940	15%	-	-
	2650	60	1%	-	-
40	-	216	3%	181	4%
	1600	-	-	6	<1%
	1900	40	1%	26	1%
	2100	124	2%	-	-
	2150	-	-	20	<1%
	2180	10	<1%	100	2%
	2200	38	1%	8	<1%
	2250	46	1%	1	<1%
	2325	836	13%	262	7%
	2500	556	9%	226	6%
	2550	184	3%	388	10%
	2600	1,986	32%	1,227	30%
	2900	474	8%	846	21%
	3000	-	-	116	3%
	3050	27	<1%	-	-
3150	109	2%	17	<1%	
3200	206	3%	-	-	

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T12 Lamps					
Watts	Lumens	2012		2013	
		n	%	n	%
40	3300	4	<1%	4	<1%
	3400	61	1%	4	<1%
60	-	46	1%	9	<1%
120	-	5	<1%	-	-
<b>Total</b>		<b>6,316</b>	<b>100%</b>	<b>4,028</b>	<b>100%</b>

**Table 27**  
**Distribution of Linear Fluorescent T8 Lamps by Wattage and Lumens – Oregon, 2012 and 2013**

T8 Lamps					
Watts	Lumens	2012		2013	
		n	%	n	%
25	-	-	-	4	<1%
	2400	60	1%	-	-
32	-	501	9%	137	6%
	1400	-	-	9	<1%
	1800	-	-	14	1%
	2300	19	<1%	-	-
	2475	12	<1%	-	-
	2500	148	3%	132	5%
	2600	888	16%	162	7%
	2700	498	9%	17	1%
	2750	842	15%	664	27%
	2800	1,568	28%	974	40%
	2850	742	13%	128	5%
2950	304	5%	214	9%	
<b>Total</b>		<b>5,582</b>	<b>100%</b>	<b>2,455</b>	<b>100%</b>

**Table 28**  
**Number of Linear Fluorescent Lamps Stocked by Lamp Type and Store Category**  
**Oregon and Northwest Region, 2012 and 2013**

Year	Store Category	Lamp Type	Geography	
			Oregon	Northwest
2012	Big Box	T12	5,603	8,276
		T8	4,852	6,174
	Non-Big Box	T12	716	1,739
		T8	730	1,211
	Overall	T12	6,319	10,015
		T8	5,582	7,385
2013	Big Box	T12	3,435	5,530
		T8	2,140	3,780
	Non-Big Box	T12	593	1,264
		T8	315	675
	Overall	T12	4,028	6,794
		T8	2,455	4,455

## APPENDIX D - DETAILED TABLES BY LAMP STYLE AND TECHNOLOGY

### D.1 Medium Screw Base (MSB) A-Lamps

**Table 29**  
**MSB A-Lamp Characteristics by Lumen Bin**  
**Oregon, 2013**

Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Prices		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>1490-2600 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	21	3	0.1	21	19	22	1,627	1,600	1,680	\$35.94	\$29.98	\$41.99
Incandescent	123	5	0.2	123	100	150	1,783	1,530	2,205	\$2.37	\$1.12	\$4.97
Halogen	1,636	19	1.7	76	72	200	1,505	1,490	2,395	\$2.09	\$0.60	\$8.29
<b>1050-1489 lumens</b>												
CFL	126	5	0.7	20	20	20	1,082	1,050	1,100	\$9.83	\$5.72	\$13.29
LED	133	8	0.2	15	14	17	1,109	1,100	1,200	\$24.40	\$19.97	\$35.97
Incandescent	853	6	0.6	77	75	100	1,168	1,070	1,260	\$0.70	\$0.42	\$7.49
Halogen	1,740	20	1.5	59	53	100	1,081	1,050	1,280	\$2.25	\$0.75	\$6.50

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Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Prices		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>750-1049 lumens</b>												
CFL	790	22	1.2	15	14	20	808	750	1,045	\$6.06	\$1.94	\$13.29
LED	2,515	21	0.7	11	9	14	817	800	880	\$12.79	\$7.97	\$39.99
Incandescent	7,390	31	1.8	61	57	100	826	750	1,000	\$0.69	\$0.37	\$6.99
Halogen	2,224	24	1.8	46	43	75	768	750	890	\$2.04	\$0.45	\$6.50
<b>310-749 lumens</b>												
CFL	630	19	1.5	11	9	15	529	400	740	\$7.15	\$1.94	\$13.29
LED	3,103	24	0.6	8	6	9	464	410	500	\$6.83	\$3.66	\$59.99
Incandescent	6,161	58	4.9	46	40	75	491	310	740	\$1.09	\$0.37	\$9.97
Halogen	7,370	38	4.1	48	28	60	528	310	680	\$1.84	\$0.45	\$6.50
<b>0-309 lumens</b>												
CFL	14	1	0.0	7	7	7	300	300	300	\$5.99	\$5.99	\$5.99
LED	102	7	0.2	4	2	5	213	80	300	\$10.01	\$4.99	\$19.99
Incandescent	1,661	13	1.9	21	15	60	160	100	285	\$1.39	\$0.48	\$8.97
Halogen	138	3	0.2	39	29	40	262	260	295	\$3.27	\$2.44	\$4.00

## D.2 MSB Globe Lamps

**Table 30**  
**MSB Globe Lamp Characteristics by Lumen Bin**  
**Oregon, 2013**

Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>1490-2600 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	0	0	0.0	-	-	-	-	-	-	-	-	-
Incandescent	17	1	0.0	150	150	150	1,935	1,935	1,935	\$4.08	\$4.08	\$4.08
Halogen	0	0	0.0	-	-	-	-	-	-	-	-	-
<b>1050-1489 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	0	0	0.0	-	-	-	-	-	-	-	-	-
Incandescent	101	4	0.4	100	100	100	1,221	1,050	1,260	\$5.41	\$4.08	\$7.99
Halogen	0	0	0.0	-	-	-	-	-	-	-	-	-
<b>750-1049 lumens</b>												
CFL	338	6	0.4	14	14	15	800	800	800	\$5.62	\$1.44	\$11.89
LED	0	0	0.0	-	-	-	-	-	-	-	-	-
Incandescent	0	0	0.0	-	-	-	-	-	-	-	-	-
Halogen	25	1	0.0	60	60	60	960	960	960	\$4.40	\$3.98	\$4.99



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Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>310-749 lumens</b>												
CFL	442	16	0.9	11	9	12	499	340	600	\$6.22	\$1.44	\$18.89
LED	2,160	4	0.1	8	5	8	489	330	510	\$7.14	\$6.66	\$19.97
Incandescent	3,151	43	4.3	48	40	60	462	310	720	\$2.25	\$0.90	\$7.95
Halogen	245	5	0.6	54	40	60	472	450	520	\$4.22	\$2.29	\$6.99
<b>0-309 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	48	9	0.2	2	2	5	111	60	300	\$12.60	\$8.50	\$19.99
Incandescent	864	15	1.3	26	25	40	174	130	300	\$1.95	\$1.22	\$2.99
Halogen	637	6	1.2	39	25	40	255	150	295	\$3.29	\$1.94	\$6.29

**D.3 MSB Reflector Lamps**

**Table 31  
MSB Reflector Lamp Characteristics by Lumen Bin  
Oregon, 2013**

Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>1490-2600 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	0	0	0.0	-	-	-	-	-	-	-	-	-
Incandescent	13	1	0.0	250	250	250	2,000	2,000	2,000	\$5.98	\$5.98	\$5.98
Halogen	852	17	1.5	85	70	120	1,730	1,500	1,900	\$11.51	\$4.44	\$23.99
<b>1050-1489 lumens</b>												
CFL	439	20	1.3	24	23	26	1,254	1,080	1,300	\$9.67	\$4.49	\$21.99
LED	688	9	0.2	18	17	23	1,094	1,050	1,400	\$24.38	\$13.99	\$49.97
Incandescent	0	0	0.0	-	-	-	-	-	-	-	-	-
Halogen	1,091	25	1.3	66	60	90	1,206	1,070	1,380	\$8.28	\$2.47	\$18.49
<b>750-1049 lumens</b>												
CFL	3,387	16	1.0	16	15	20	778	750	950	\$5.08	\$0.87	\$19.99
LED	1,737	29	0.6	14	12	20	794	750	1,035	\$20.06	\$10.79	\$48.95
Incandescent	254	6	0.8	65	16	90	756	750	800	\$5.47	\$3.20	\$8.99
Halogen	517	16	1.2	51	48	75	888	840	1,030	\$12.72	\$5.49	\$24.99

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Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>310-749 lumens</b>												
CFL	1,557	33	2.4	14	11	16	581	340	720	\$7.15	\$2.08	\$21.98
LED	1,166	32	1.0	9	6	13	539	320	730	\$18.50	\$9.97	\$54.99
Incandescent	5,171	67	4.6	62	40	250	562	310	725	\$4.17	\$0.97	\$18.69
Halogen	2,474	67	3.7	50	35	65	494	310	740	\$8.28	\$3.16	\$15.16
<b>0-309 lumens</b>												
CFL	0	0	0.0	-	-	-	-	-	-	-	-	-
LED	30	6	0.2	6	4	7	229	100	300	\$29.52	\$17.99	\$34.99
Incandescent	672	17	1.3	37	25	50	245	175	300	\$5.04	\$2.50	\$7.49
Halogen	155	3	0.7	38	35	45	264	250	270	\$12.04	\$6.98	\$14.49

**D.4 Small Screw Base (SSB) Candelabra/Bullet Lamps**

**Table 32  
SSB Candelabra/Bullet Lamp Characteristics by Lumen Bin  
Oregon, 2013\***

Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>310-749 lumens</b>												
CFL	461	8	0.5	11	7	24	482	350	720	\$4.43	\$0.96	\$8.99
LED	15	1	0.1	5	5	5	330	330	330	\$9.97	\$9.97	\$9.97
Incandescent	4,260	26	2.1	51	40	60	493	320	660	\$1.00	\$0.50	\$2.75
Halogen	434	4	0.6	57	40	60	494	485	540	\$2.42	\$1.24	\$4.50
<b>0-309 lumens</b>												
CFL	275	4	0.1	7	7	7	293	250	300	\$4.20	\$3.99	\$5.98
LED	1,696	11	0.5	3	2	5	206	60	300	\$10.85	\$5.88	\$17.99
Incandescent	2,851	35	2.4	28	15	40	195	65	300	\$1.22	\$0.45	\$4.48
Halogen	327	4	0.8	35	25	40	229	150	300	\$2.73	\$1.24	\$5.97

\* Note: No SSB Candelabra/Bullet Lamps in the sample in higher lumen bins.

**D.5 MR Lamps**

**Table 33  
MR16 Lamp Characteristics by Lumen Bin  
Oregon, 2013\***

Lumen Bin/Lamp Technology	Total # Lamps (across all stores)	Total # Unique Models (across all stores)	Avg # Unique Models per Store	Wattage			Lumens			Shelf Price		
				Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
<b>750-1049 lumens</b>												
LED	0	0	0.0	-	-	-	-	-	-	-	-	-
Incandescent	0	0	0.0	-	-	-	-	-	-	-	-	-
Halogen	108	4	0.2	53	50	75	825	780	850	\$5.82	\$3.18	\$7.99
<b>310-749 lumens</b>												
LED	99	4	0.1	8	6	10	433	320	525	\$24.59	\$19.97	\$29.97
Incandescent	74	3	0.2	50	50	50	430	405	500	\$3.60	\$2.66	\$6.50
Halogen	866	22	1.2	50	35	75	455	330	725	\$6.45	\$3.32	\$17.49
<b>0-309 lumens</b>												
LED	219	10	0.4	4	1	6	193	45	300	\$19.69	\$11.47	\$29.99
Incandescent	77	3	0.2	34	20	50	199	160	303	\$3.21	\$2.66	\$7.99
Halogen	335	12	0.6	23	20	45	210	80	274	\$7.62	\$3.32	\$10.97

\* Note: No MR16 Lamps in the sample in higher lumen bins.

**D.6 Key Lamp Characteristics Summary**

**Table 34  
MSB A-Lamp, MSB Globe, MSB Reflector, SSB Candelabra, and MR16 Lamp Characteristics by Lumen Bin  
Oregon, 2013**

Lumen Bin/Lamp Technology	MSB A-lamps			MSB Globe			MSB Reflector			SSB Candelabra			MR16 Lamps		
	Total # of lamps (across all stores)	Wattage (avg)	Shelf price (avg)	Total # of lamps (across all stores)	Wattage (avg)	Shelf price (avg)	Total # of lamps (across all stores)	Wattage (avg)	Shelf price (avg)	Total # of lamps (across all stores)	Wattage (avg)	Shelf price (avg)	Total # of lamps (across all stores)	Wattage (avg)	Shelf price (avg)
<b>1490-2600 lumens</b>															
CFL	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
LED	21	21	\$35.94	0	-	-	0	-	-	0	-	-	0	-	-
Incandescent	123	123	\$2.37	17	150	\$4.08	13	250	\$5.98	0	-	-	0	-	-
Halogen	1,636	76	\$2.09	0	-	-	852	85	\$11.51	0	-	-	0	-	-
<b>1050-1489 lumens</b>															
CFL	126	20	\$9.83	0	-	-	439	24	\$9.67	0	-	-	0	-	-
LED	133	15	\$24.40	0	-	-	688	18	\$24.38	0	-	-	0	-	-
Incandescent	853	77	\$0.70	101	100	\$5.41	0	-	-	0	-	-	0	-	-
Halogen	1,740	59	\$2.25	0	-	-	1,091	66	\$8.28	0	-	-	0	-	-
<b>750-1049 lumens</b>															
CFL	790	15	\$6.06	338	14	\$5.62	3,387	16	\$5.08	0	-	-	0	-	-
LED	2,515	11	\$12.79	0	-	-	1,737	14	\$20.06	0	-	-	0	-	-
Incandescent	7,390	61	\$0.69	0	-	-	254	65	\$5.47	0	-	-	0	-	-
Halogen	2,224	46	\$2.04	25	60	\$4.40	517	51	\$12.72	0	-	-	108	53	\$5.82
<b>310-749 lumens</b>															
CFL	630	11	\$7.15	442	11	\$6.22	1,557	14	\$7.15	461	11	\$4.43	0	-	-
LED	3,103	8	\$6.83	2,160	8	\$7.14	1,166	9	\$18.50	15	5	\$9.97	99	8	\$24.59
Incandescent	6,161	46	\$1.09	3,151	48	\$2.25	5,171	62	\$4.17	4,260	51	\$1.00	74	50	\$3.60
Halogen	7,370	48	\$1.84	245	54	\$4.22	2,474	50	\$8.28	434	57	\$2.42	866	50	\$6.45
<b>0-310 lumens</b>															
CFL	14	7	\$5.99	0	-	-	0	-	-	275	7	\$4.20	0	-	-
LED	102	4	\$10.01	48	2	\$12.60	30	6	\$29.52	1,696	3	\$10.85	219	4	\$19.69
Incandescent	1,661	21	\$1.39	864	26	\$1.95	672	37	\$5.04	2,851	28	\$1.22	77	34	\$3.21
Halogen	138	39	\$3.27	637	39	\$3.29	155	38	\$12.04	327	35	\$2.73	335	23	\$7.62