



Achieving Lasting Market Change

The importance of lighting quality and
the role of CEESM and ENERGY STAR[®]

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Presentation Agenda

- ▶ Brief background on CEE
- ▶ Partnership between CEE and ENERGY STAR
- ▶ The importance of lighting quality
- ▶ How CEE and ENERGY STAR support market transformation

CEE MISSION

As the Consortium for Energy Efficiency, United States and Canadian efficiency program administrators develop cutting-edge strategies to accelerate commercialization of energy efficient solutions to benefit gas and electric customers, utility systems, and the environment.

Program administrators formed CEE

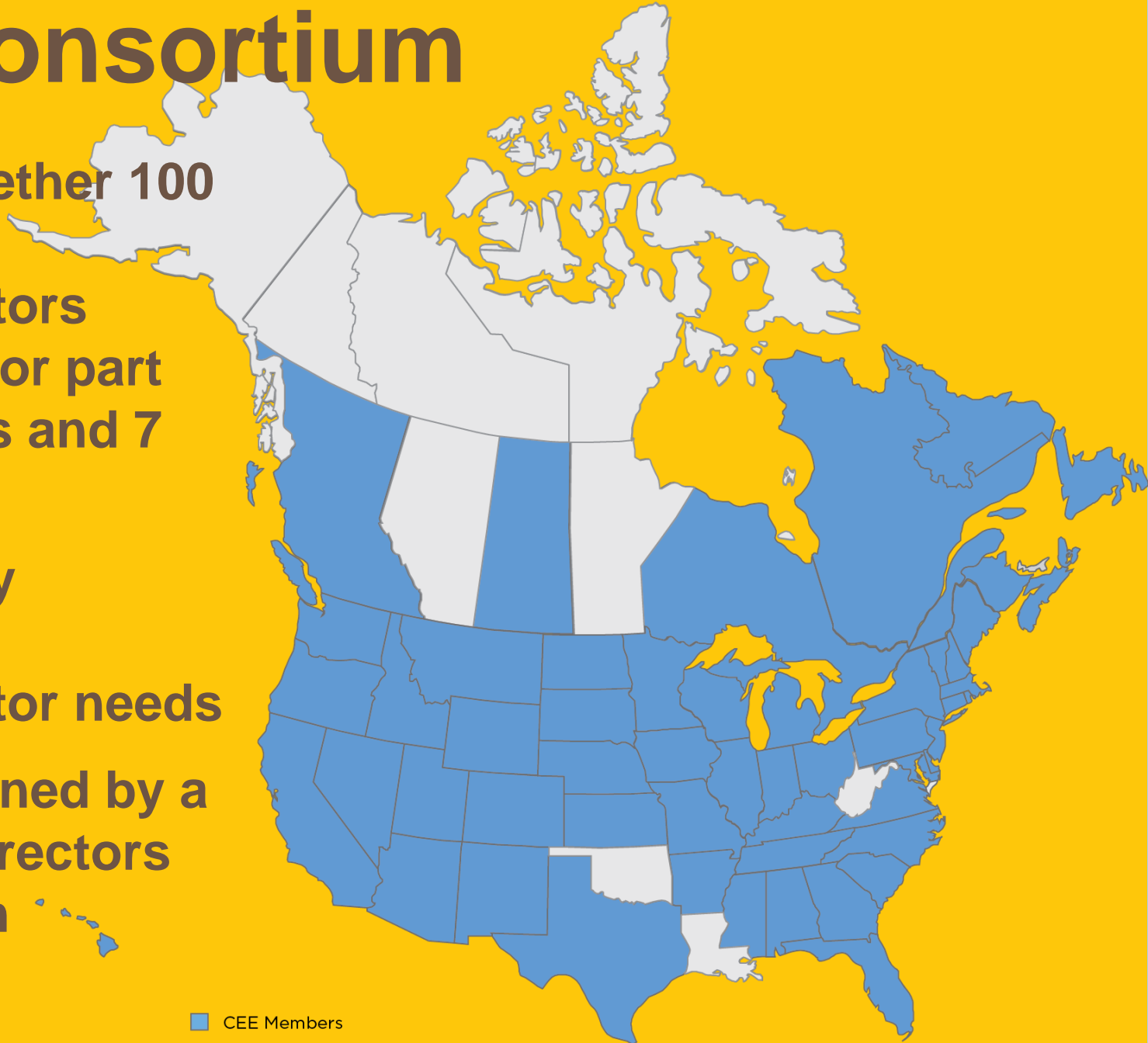
- ▶ To reach **binational markets**
- ▶ **Accelerate market uptake** of efficient products and services
- ▶ Which achieves **lasting public benefit** of energy efficiency



The Consortium

- Brings together 100 program administrators serving all or part of 46 states and 7 provinces
- Is driven by program administrator needs
- And governed by a board of directors drawn from members

 CEE Members



CEE Members Working Together

Program Administrators

Alabama Power
 Alliant Energy—Iowa
 Alliant Energy—Wisconsin
 Ameren Illinois
 Ameren Missouri
 Arizona Public Service
 Atmos Energy Corporation
 Austin Energy
 Avista Utilities
 Baltimore Gas & Electric Company
 BC Hydro
 Berkshire Gas
 Black Hills Energy—Col.
 Black Hills Energy—Iowa
 Bonneville Power Administration
 Cape Light Compact
 City of Palo Alto Utilities
 City Utilities of Springfield—Missouri
 Columbia Gas of Massachusetts
 Columbia Gas of Ohio
 Commonwealth Edison Company
 Connecticut Natural Gas
 Consolidated Edison Company
 Consumers Energy
 DC Sustainable Energy Utility
 DTE Energy
 Duke Energy
 Efficiency Maine

Efficiency Vermont
 Energy Trust of Oregon
 Eugene Water & Electric Board
 Eversource
 Focus on Energy—Wisconsin
 FortisBC
 Gaz Métro
 Georgia Power
 Great Plains Natural Gas
 Gulf Power
 Hawaii Energy Efficiency Program
 Hydro-Québec
 Idaho Power
 Iowa Energy Center
 Liberty Utilities
 Los Angeles Department of Water and Power
 Massachusetts Department of Energy Resources
 MidAmerican Energy
 Minnesota Department of Commerce
 Mississippi Power
 Montana-Dakota Utilities
 National Grid
 Natural Resources Canada
 NB Power
 Nebraska Public Power District
 New Hampshire Electric Co-Op
 New Jersey Natural Gas
 New Mexico Gas Company
 New York Power Authority

New York State Energy Research and Development Authority
 Newfoundland Power
 Nicor Gas
 Northern California Power Agency
 NV Energy
 Oncor
 Pacific Gas and Electric Company
 PECO
 Platte River Power Authority
 PNM
 Potomac Electric Power Company (Pepco)
 PSEG Long Island
 Public Service Electric & Gas
 Puget Sound Energy
 Questar Gas
 Rocky Mountain Power—Utah
 Rocky Mountain Power—Wyoming
 Sacramento Municipal Utility District
 Salt River Project
 San Diego Gas & Electric Company
 SaskPower
 Seattle City Light
 Snohomish County PUD
 South Jersey Gas
 Southern California Edison
 SoCalGas

Southern Company
 Southern Connecticut Gas
 Southern Minnesota Municipal Power Agency
 Southwest Gas
 Tacoma Power
 Tennessee Valley Authority
 Union Gas
 United Illuminating Company
 Unifil
 Vectren Corporation
 Vermont Department of Public Service
 Vermont Gas
 Xcel Energy

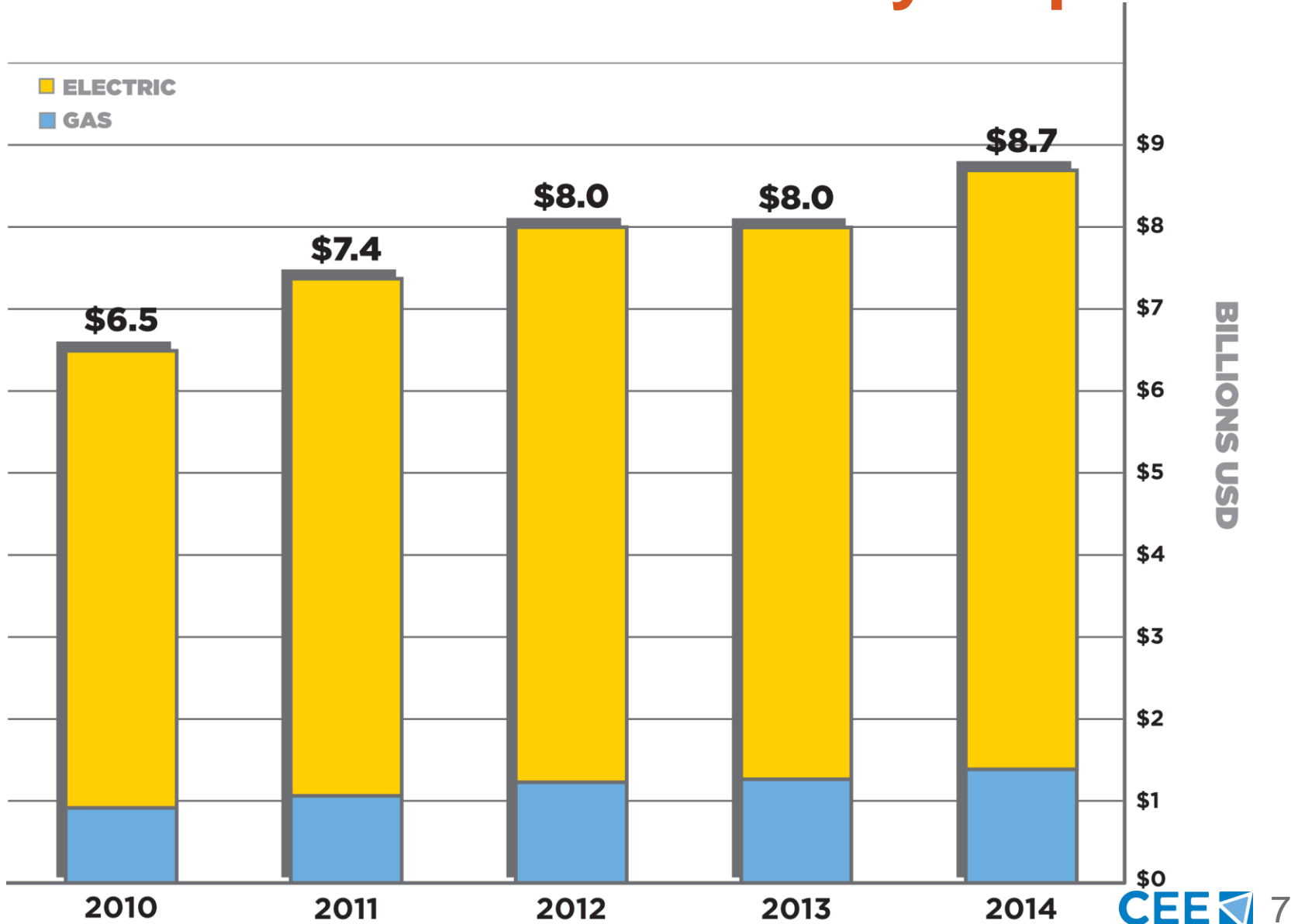
Federal Advisors

Natural Resources Canada
 US DOE
 US EPA

Efficiency Organizations National Laboratories

American Council for an Energy-Efficient Economy
 California Energy Commission
 California Institute for Energy and Environment
 Fraunhofer Center for Sustainable Energy Systems
 Lawrence Berkeley National Laboratory
 Massachusetts Department of Energy Resources
 National Renewable Energy Laboratory
 Natural Resources Defense Council
 New Buildings Institute
 Northeast Energy Efficiency Partnerships
 Northwest Energy Efficiency Alliance
 Oak Ridge National Laboratory
 Pacific Northwest National Laboratory
 Southwest Energy Efficiency Project

CEE 2015 Annual Industry Report



CEE and ENERGY STAR®

- ▶ In 1996, the CEE Board of Directors voted to adopt ENERGY STAR as the marketing platform for efficiency programs
- ▶ CEE members have built recognition for ENERGY STAR locally and are significant investors in the brand
- ▶ CEE conducts the ENERGY STAR Awareness Survey annually and has helped support responsible evolution of the program
- ▶ ENERGY STAR Guiding Principles are key to program design



Guiding Principles Critical for Program Support

ENERGY STAR
Guiding
Principles

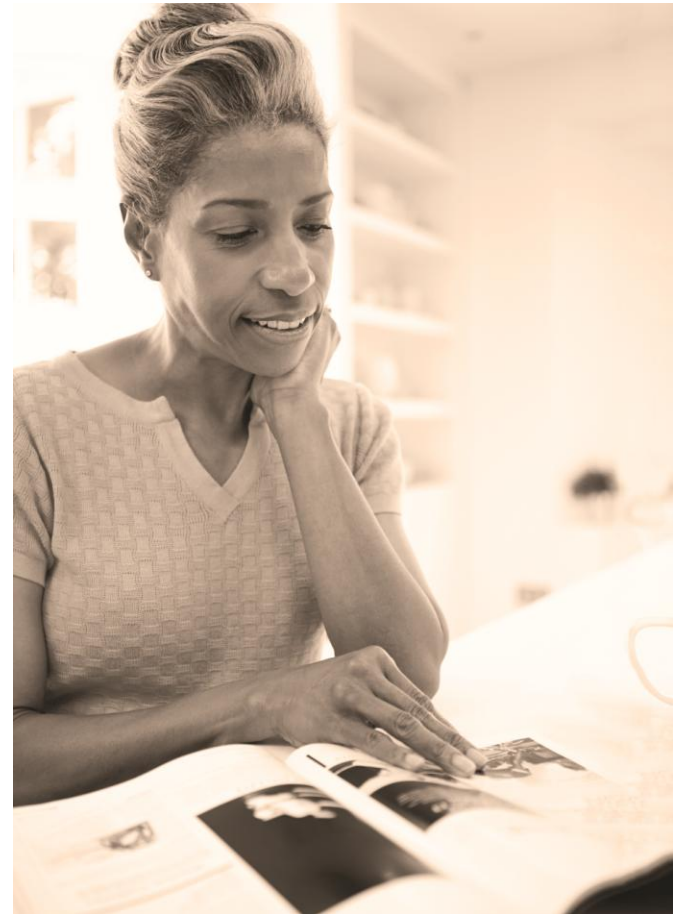


Ratepayer Funded
Efficiency Program
Objectives

- Significant energy savings can be realized on a national basis
- **Product performance can be enhanced or maintained with increased energy efficiency**
- **Purchasers recover their investment in increased energy efficiency within a reasonable period of time**
- Energy efficiency can be achieved through one or more technologies such that qualifying products are broadly available and offered by more than one manufacturer
- Product energy consumption and performance can be measured and verified with testing
- Labeling would effectively differentiate products and be visible for purchasers

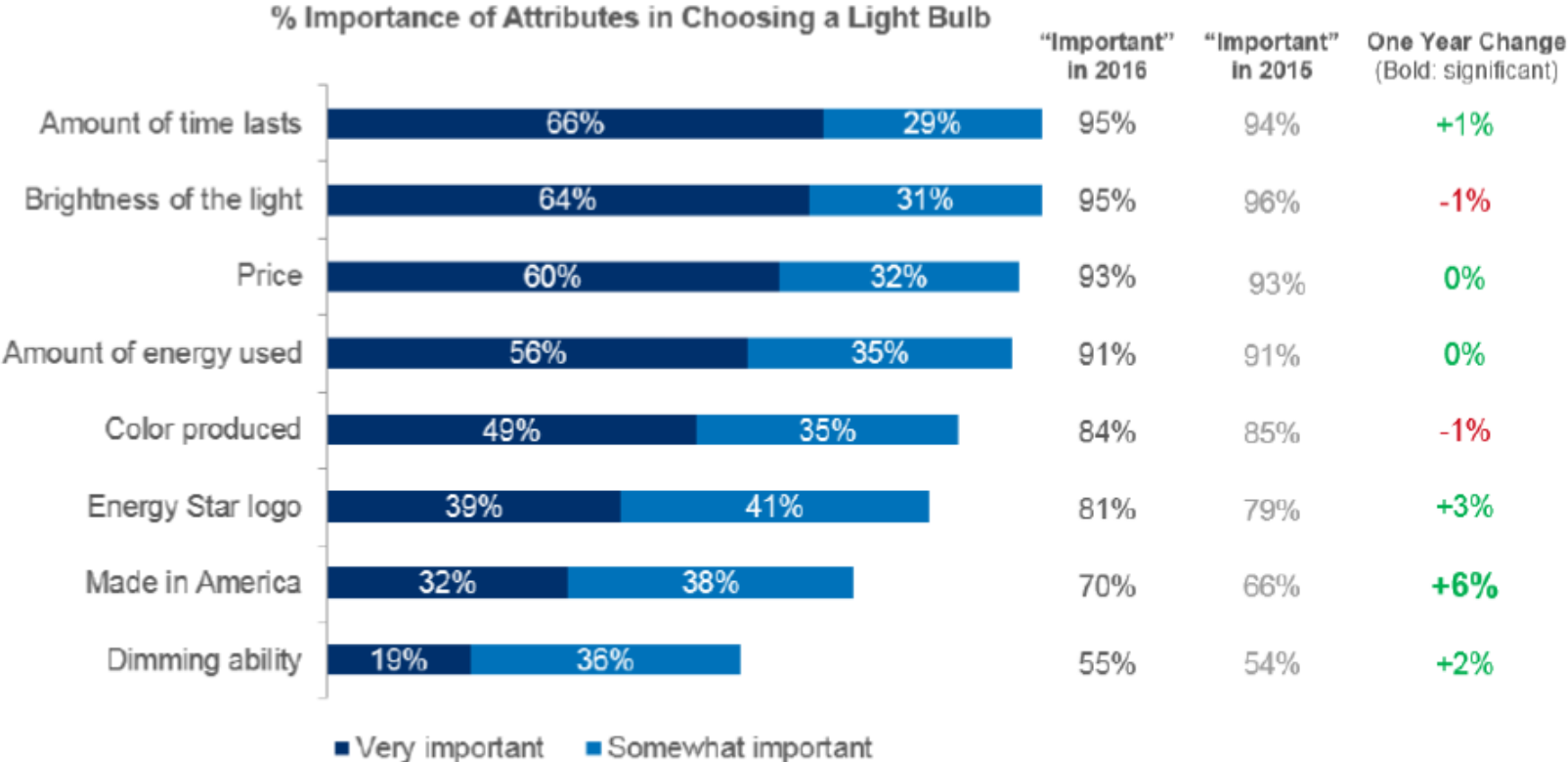
Why is Lighting Quality Important?

- ▶ Lighting is a key feature of our indoor environment. It directly impacts our vision, productivity, safety, health, comfort, and well being
- ▶ Historically, consumers have expected the level of performance experienced with incandescents



For Any Bulb, Longevity And Brightness Are Key

As was the case in 2015, a bulb’s longevity and brightness is more likely than any other attribute to be very important to consumers. The biggest change from last year is the importance of origin: the share of consumers who say it’s very important to be made in America jumped from 25% to 32%.



Q5. How important are each of the following attributes to you when you choose a light bulb? (n=1000)

A Look at the Current Market

LEDs Continue to Gain Popularity...

NEARLY 70%

of consumer have purchased at least one LED in their lifetime

48%

have purchased at least one LED in the last 12 months



39% of consumers plan on buying LEDs next time they need bulbs



38%

of consumers have switched to LEDs since the phase-out



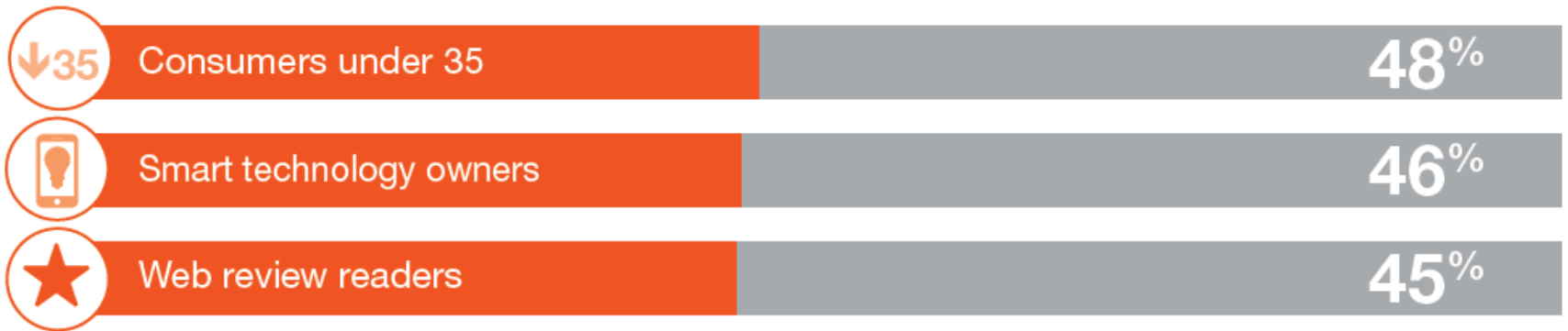
27%

more consumers compared to last year

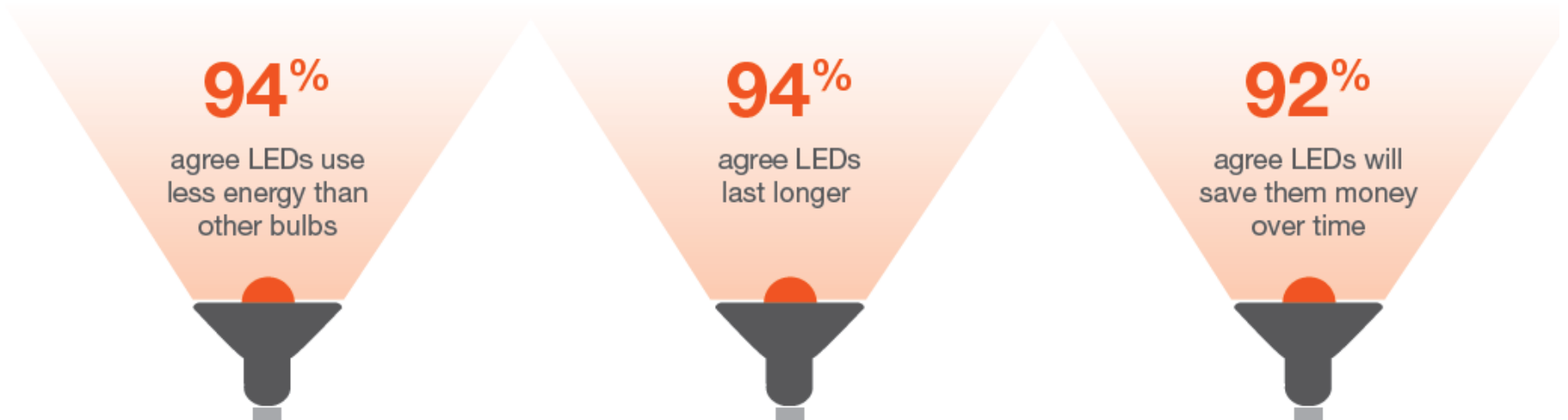


LEDs are now the #1 replacement option

Who's **switching to LEDs** in the wake of the phase-out?



Americans are **seeing the light** when it comes to LEDs



*Results from the 8th Annual SYLVANIA Socket Survey

Let's Strive for Lasting Market Change



Strategy for Market Transformation

◀ Elements of the CEE Residential Lighting Initiative Strategy



Ensure a positive consumer experience with efficient products by identifying those that provide high light quality



Partner with industry players to provide incentives to ensure that high quality products are widely available at reasonable price points

Ensuring a Positive Consumer Experience

- ▶ ENERGY STAR® Lamp & Luminaire Criteria
- ▶ CEE Specification for Integral Replacement Lamps
- ▶ *Lighting for Tomorrow* Competition



CEE
CONSUMER ELECTRICITY EFFICIENCY

CEE RESIDENTIAL LIGHTING INITIATIVE
Specification for Integral Replacement Lamps Sold at Retail
(Terms of Usage below)
Effective January 14, 2015

Integral replacement lamps qualifying for the CEE Tiers must first meet the current ENERGY STAR® Lamp Criteria. In addition, the CEE Tiers below define criteria that are equal to or more stringent than ENERGY STAR for specific metrics.

	Initial Efficacy	Correlated Color Temperature	Color Rendering Index	Power Factor	Dimmable*
CEE Tier 1					
Omnidirectional	≥ 65 lm/W	≤ 5000 K	≥ 80	≥ 0.7	No
Directional	≥ 52 lm/W	≤ 5000 K	≥ 80	≥ 0.7	No
Decorative	≥ 52 lm/W	≤ 5000 K	≥ 80	≥ 0.7	No

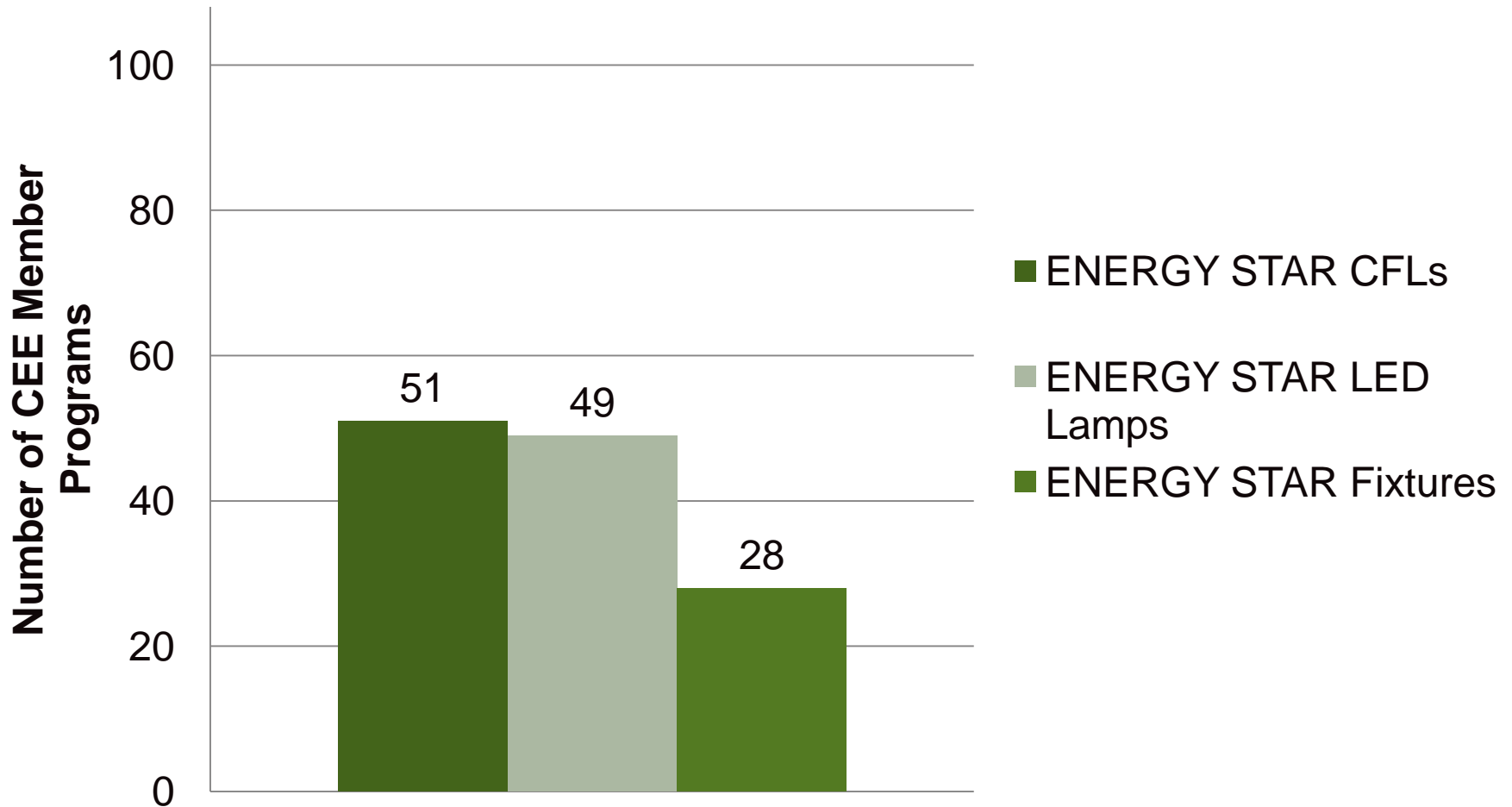


ENERGY STAR



- ▶ The ENERGY STAR lighting specifications are designed to address quality
 - EPA has developed detailed criteria and guidance
 - They cover all key performance attributes
 - Third-party certification and verification
- ▶ Currently, CEE members are committed to supporting ENERGY STAR lighting products

CEE Members Promoting ENERGY STAR Lighting Specifications in 2016



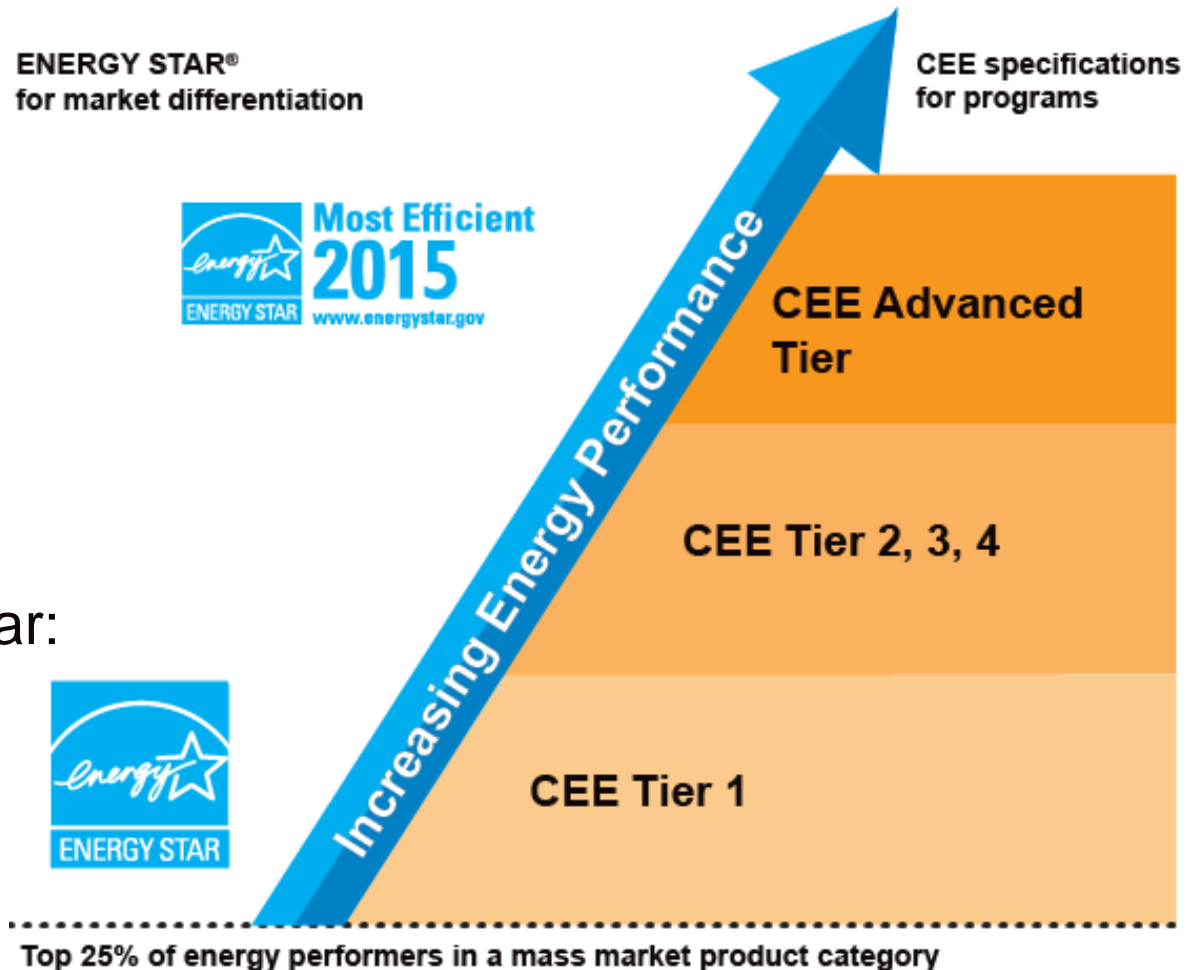
*Based on preliminary data from the CEE 2016 Residential Lighting Program Summary

CEE Spec for Integral Replacement Lamps Sold at Retail

CEE members have developed a spec to identify and enable program promotion of the top performing ENERGY STAR lamps in the market

CEE tiered performance requirements raise the bar:

- Efficacy
- Color
- Lifetime
- Power factor
- Dimming



Draft 2017 CEE Integral Lamp Spec

	Initial Efficacy (lm/W) CRI≥80	Initial Efficacy (lm/W) CRI≥90	Correlated Color Temperature (K)	Rated Life (hours)	Power Factor	Dimming*
Tier 1						
Omnidirectional	≥ 80	≥ 70	≤ 6500	≥15,000	< 10W, ≥ 0.6, ≥ 10W, ≥ 0.7	Not required
Directional	≥ 70	≥ 61	≤ 6500	≥25,000	≥ 0.7	Not required
Decorative	≥ 65	≥ 65	≤ 6500	≥15,000	≥ 0.7	Not required
Tier 2						
Omnidirectional	≥ 95	≥ 80	≤ 5000	≥25,000	≥ 0.7	≤20%
Directional	≥ 85	≥ 70	≤ 5000	≥25,000	≥ 0.7	≤20%
Decorative	≥ 80	≥ 70	≤ 5000	≥15,000	≥ 0.7	≤20%
Advanced Tier						
Omnidirectional		≥ 90	≤ 5000	≥25,000	≥ 0.9	≤10%
Directional		≥ 80	≤ 5000	≥25,000	≥ 0.9	≤10%
Decorative		≥ 80	≤ 5000	≥25,000	≥ 0.9	≤10%

CEE Lamp Specification Objectives

- ▼ By recognizing the highest performing lamps in the market, this specification aims to:
 - Provide a consistent platform for lighting programs to claim greater energy savings
 - Enable manufacturers to differentiate and create a market for their highest performing lamps
 - Support a positive consumer experience with efficient light sources and drive market demand
 - Encourage the lighting industry's investment in the performance and quality attributes that programs wish to support

LIGHTING *for* tomorrow

Comfort. Beauty. Lifestyle.



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