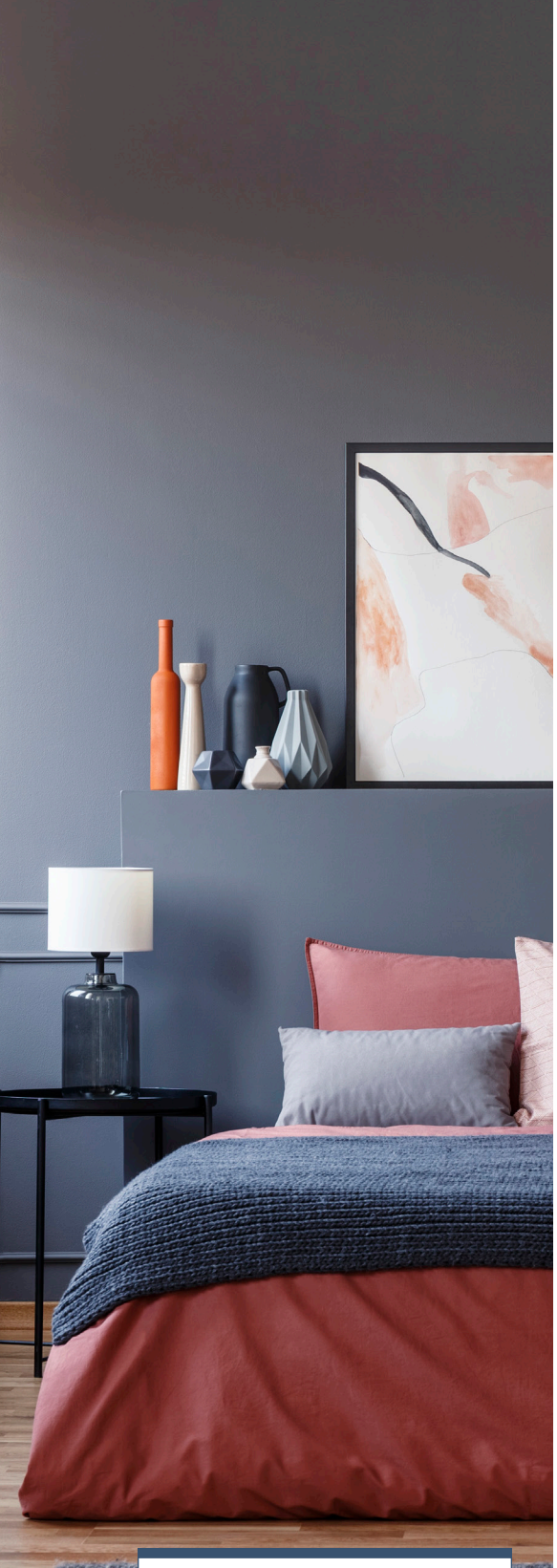

DEFINING STATE REGULATED LED LAMPS

The Appliance Efficiency Regulations define state regulated LED lamps as products that emit 2,600 lumens or less; have a CCT between 2,200K and 7,000K; have a Duv between -0.012 and 0.012 in the 1976 color space; and be equipped with an E12, E17, E26 or GU-24 base. Requirements do not apply to lamps that are less than 150 lumens with an E12 base, or to lamps that are less than 200 lumens with an E17, E26 or GU-24 base.

WHAT'S NEW IN THE 2019 CODE?

RESIDENTIAL LIGHTING

Changes to mandatory lighting requirements in California's 2019 Building Energy Efficiency Standards

California's new residential Building Energy Efficiency Standards (Energy Standards) are effective starting January 1, 2020. The 2019 Energy Standards focus on several key areas to improve the energy efficiency of newly constructed buildings, additions and alterations to existing buildings. The most significant residential efficiency improvements address photovoltaic systems, walls, gas furnaces and lighting. Single-family homes built under the 2019 Energy Standards will use about 7 percent less energy due to energy efficiency measures as compared to homes built under the 2016 Energy Standards. Once rooftop solar electricity generation is factored in, homes built under the 2019 Energy Standards will use an estimated 53 percent less energy than those under the 2016 Energy Standards. This will reduce greenhouse gas emissions by an estimated 700,000 metric tons over three years, equivalent to removing 115,000 fossil-fueled cars off the road.

MAJOR CHANGES

NEW LIGHT SOURCE CATEGORIES ADDED

Step lights and path lights are now included in the same category as night lights. Light sources integral to drawers, cabinets and linen closets are now regulated by the Energy Standards. If these light sources are greater than 5 watts or emit more than 150 lumens, then they must comply with the high efficacy requirements of **Table 150.0-A** and be controlled by a vacancy sensor. Otherwise, the light sources are exempt. Additionally, light sources in drawers, cabinets and linen closets must be equipped with controls that automatically turn the light off when the drawer, cabinet or linen closet is closed.

MARKING UPDATE

Light sources meeting the new 2019 JA8 performance requirements must mark the light source itself with 'JA8-2019,' or 'JA8-2019-E' for products that have also passed the ENERGY STAR® Product Specification Version 2.1 Elevated Temperature Life Test and/or Rated Life Test. Products with 2016-compliant markings are still allowed for use through the end of the 2019 code cycle.

COLOR QUALITY

JA8 now aligns with the **Appliance Efficiency Regulations (Title 20)** for color rendering index (CRI) requirements of state regulated LED lamps. In addition, the 2019 JA8 now requires that all light sources be capable of providing a correlated color temperature (CCT) of 4,000 Kelvin or less.

NOTE: *This guide is not intended to be used in lieu of California's Energy Standards, and it is not a substitute for the Energy Standards itself. Please visit* **www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency** *to download the official 2019 Energy Standards, Reference Appendices and the Residential Compliance Manual.*

UPDATED LIGHTING REQUIREMENTS

NEW LIGHT SOURCE CATEGORIES

STEP LIGHTS & PATH LIGHTS

Step lights and path lights are now regulated under the Energy Standards. They are included in the same category as night lights.

These three light source types must adhere to the 2019 high efficacy requirements defined in **Table 150.0-A** and be controlled by vacancy sensors if they are greater than 5 watts or emit more than 150 lumens. Otherwise, the light source is exempt.

LIGHT SOURCES IN DRAWERS, CABINETS & LINEN CLOSETS

A new category has been added for light sources integral to drawers, cabinets and linen closets. If the light source is greater than 5 watts, emits more than 150 lumens and is not equipped with controls that automatically turn the light source off when the drawer, cabinet or linen closet is closed, it must adhere to the high efficacy performance requirements defined in **Table 150.0-A** and be controlled by vacancy sensors. If the light source is 5 watts or less, emits no more than 150 lumens and is equipped with controls that automatically turn the light source off when the drawer, cabinet or linen closet is closed, it is exempt from **Table 150.0-A** requirements and does not need to be paired with a sensor. Closets less than 70 square feet are always exempt from the sensor and dimming control requirements.

INTERIOR SWITCHING DEVICES & CONTROLS

Clarifying language has been added for interior light switching devices and controls. All light sources must have readily accessible, wall-mounted controls that allow the lighting to be manually turned on and off, except for ceiling fans with integrated lighting, which can be controlled by a remote control. When occupancy sensors are installed, they must be configured for manual-ON operation. Also, undercabinet lighting must be switched separately from overhead lighting.

MULTIFAMILY RESIDENTIAL BUILDINGS

In low-rise multifamily residential buildings where the total interior common area is more than 20 percent of the floor area, the permanently installed lighting for the interior common areas must adhere to the nonresidential requirements. In high-rise residential buildings, all common areas must meet the nonresidential lighting and controlled receptacle requirements. Detailed updates for nonresidential requirements are provided in the **'What's New in Nonresidential Lighting for 2019?'** document.

ALTERATIONS

For alterations, clarifying language has been added addressing existing screw-base sockets. If a screw-base socket is present in a ceiling-recessed luminaire, it does not have to be removed as part of the alteration. Instead, if the socket is kept, the alteration must use a JA8 compliant light source.

JA8 COMPLIANT LAMPS & LUMINAIRES

The 2019 JA8 efficacy requirements now state that the luminous efficacy of the light source at full output be equal to or greater than the highest of:

1. Appliance Efficiency Regulations (Title 20) requirements for the lamp type
2. Federal appliance efficiency standard for the lamp type, or
3. 45 lumens per watt.

The 2019 JA8 CRI requirements are now aligned with the Appliance Efficiency Regulations for state regulated LED lamps. The Appliance Efficiency Regulations require that regulated lamps have an average CRI (R_a) of 82 or greater, with individual color scores of 72 or greater for R1, R2, R3, R4, R5, R6, R7 and R8. For lamp types not regulated by the Appliance Efficiency Regulations, the CRI requirement under JA8 remains at 90 or greater for R_a and 50 or greater for R9. A detailed explanation of the CRI metrics (R_a and R1–R14 values) are provided in the **2019 Residential Lighting Guide**.

2019 JA8 requirements now state that all light sources must be capable of providing a nominal CCT of 4,000K or less. Light sources may provide variable CCT so long as one setting provides a level meeting JA8 requirements.

JA8 requires a marking of 'JA8-2019' to indicate compliance with the 2019 JA8 requirements. If the light source is installed in California and used in an enclosed luminaire, it must pass the Elevated Temperature Life Test or Rated Life Test specified in the **'ENERGY STAR® Product Specification for Luminaires Version 2.1'** and be marked with 'JA8-2019-E.' It is important to note that the most recent version of the ENERGY STAR® test methods have also been updated to simplify the process for manufacturers and testing laboratories.

Products certified to JA8-2016/JA8-2016-E do not need to be retested/recertified to remain compliant with JA8-2019/ JA8-2019-E. These products may be marked with JA8-2019/ JA8-2019-E. Additionally, products marked with JA8-2016/ JA8-2016-E may be installed in 2019 permitted construction.

To learn more about Title 20 and JA8-regulated lighting, please see **EnergyCodeAce's fact sheet about key differences and overlap between Title 20 and JA8 for residential lighting**.

THE CALIFORNIA LIGHTING TECHNOLOGY CENTER *was established in 2003 by the California Energy Commission in collaboration with the U.S. Department of Energy and the National Electrical Manufacturers Association. Part of the Department of Design at the University of California, Davis, CLTC is dedicated to accelerating the development and deployment of energy-efficient lighting and daylighting technologies.*

Developed and provided by the California Statewide Codes & Standards Program, **ENERGY CODE ACE** *offers free training, tools and resources for those who need to understand and meet the requirements of the Energy Standards and Appliance Efficiency Regulations. The program aims to advance the adoption and effective implementation of energy efficiency measures and building practices to lock in long-term energy savings. For more information, visit* **energycodeace.com**.

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