



2016 Pre-Rulemaking Building Energy Efficiency Standards Workshop, November 3, 2014

California Energy Commission <b>DOCKETED</b> 14-BSTD-01
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SUBCHAPTER 7 - LOW-RISE RESIDENTIAL BUILDINGS  
Section 150.0(k)

Mandatory Requirements for Residential Lighting



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SUBCHAPTER 7 - LOW-RISE RESIDENTIAL BUILDINGS – MANDATORY FEATURES AND DEVICES – Res Lighting  
Section 150.0(k) – Substantial changes to this Section including reorganization, greatly simplifying language, and clarifications. Substantive changes are as follows:

Luminaire Requirements – 150.0(k)1G

1. All luminaires installed in residential dwellings must be high efficacy
2. Screw base luminaires – other than downlights - considered high efficacy, if source meets JA8 requirements
3. Downlights must have dedicated sources (quick connect, Zhaga, etc) to be considered high efficacy
4. All LED sources and screw base sources must meet the JA8 requirements
5. All phase cut dimmers shall comply with NEMA SSL 7A

Controls - 150.0(k)2J

1. Bathrooms, Garages, Laundry Rooms, and Utility Rooms, at least one luminaire in each of these spaces shall be controlled by a vacancy sensor
2. Dimmers or vacancy sensors must control all luminaires required to have light sources compliant with Reference Joint Appendix JA8, except in hallways and closets less than 70 square feet

Outdoor Lighting – 150.0(k)3 – clarified the language to state that for motion sensor, photocontrol, and astronomical time clocks, bypass controls that override to ON shall not be allowed unless the override automatically return the photocontrol and automatic time switch control to its normal operation within 6 hours.



TABLE 150.0-A CLASSIFICATION OF HIGH EFFICACY LIGHT SOURCES

<p><b>High Efficacy Light Sources</b></p> <p>Luminaires installed with only the lighting technologies in this table shall be classified as high efficacy</p>	
<p>Light sources in this column other than those installed in recessed luminaires are classified as high efficacy and are <b>not</b> required to comply with Reference Joint Appendix JA8</p>	<p>Light sources in this column shall be certified to the Commission as High Efficacy Light Sources in accordance with Reference Joint Appendix JA8 and be marked as meeting JA8.</p>
<ol style="list-style-type: none"> <li>1. Pin-based linear or compact fluorescent light sources using electronic ballasts.</li> <li>2. Pulse-start metal halide.</li> <li>3. High pressure sodium.</li> <li>4. GU-24 sockets containing light sources other than LEDs.<sup>a,b</sup></li> <li>5. Luminaires with hardwired high frequency generator and induction lamp.</li> </ol>	<ol style="list-style-type: none"> <li>6. All light sources in recessed luminaires. Note that recessed luminaires shall not have screw bases regardless of lamp type as described in Section 150.0(k)1C.</li> <li>7. GU-24 sockets containing LED light sources.</li> <li>8. Any light source not otherwise listed in this table and certified to the Commission as complying with Joint Appendix 8.</li> </ol>
<p>Notes:</p> <ol style="list-style-type: none"> <li>a. GU-24 sockets containing light sources such as compact fluorescent lamps and induction lamps.</li> <li>b. California Title 20 Section 1605(k)3 does not allow incandescent sources to have a GU-24 base.</li> </ol>	



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Appendix JA8 – Qualification Requirements for Residential Luminaires Using High Quality & Efficacy Light Sources

- Summary List:

1. Covers all LED sources as well as all other sources not included in Table 150.0-A, including all screw base sources that are to be used as high efficacy sources
2. The light source including the ballast/driver must be certified to the Commission
3. Light source efficacy must be equal or greater than 45 l/w
4. Power factor of at least 0.90
5. CCT of 3000K or less within 0.0033 DUV, except for GU-24 base – outdoor lighting is excepted
6. CRI of at least 90 and R9 (red) of at least 50
7. Dimmable down to 10%
8. LED sources controlled by phase cut dimmers must meet NEMA standard SSL 7A as Type 1 or Type 2 products
9. Light source in combination with specified control shall provide "reduced flicker operation" when tested at 100% and 20% of full light output, as having percent amplitude modulation (percent flicker) less than 30% at frequencies less than 200Hz
10. Light source shall not emit noise above 24dBA measured at 1 meter at 100% and 20% output
11. Start time less than 0.5 seconds
12. Lumen Maintenance – 86.7% light output at 6,000 hours



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13. Minimum rated life of 15,000 hours
14. Recessed and Enclosed Fixture Light Sources: Elevated Temperature Light Output Ratio and Lumen Maintenance
15. Light source not integral to the luminaire in recessed luminaires or in totally enclosed luminaires shall meet all of the elevated temperature requirements
16. Labeling - Maximum rated input wattage, total luminous flux, CCT, and CRI of the light source must be listed on a permanent, factory-installed label on the light source, or light source housing. Product must contain marking indicating "CA T-24 JA8 compliant" and also contain a marking that indicates the date of manufacture in the following format