

# MaxLite®

A NEW WAVE OF LIGHT



## IMPACTS OF LATEST UPDATES TO TITLE 20 ON LIGHT SOURCES & LUMINAIRES – NOVEMBER 17, 2017

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## IMPACTS OF LATEST UPDATES TO TITLE 20

- **California Title 20 appliance efficiency regulations**
  - What is Title 20?
  - Which products will be newly regulated in 2018
  - Overview of new regulations
  - Enforcement and effective dates
  - T20 vs JA8 requirements(T24)
  - Additional resources
  - Questions



## WHAT IS CALIFORNIA TITLE 20?

Title 20 is California's appliance efficiency regulations. The updates are spelled out in the 318 page document: "2016 Appliance Efficiency Regulations" (published Jan. 2017)

Manufacturers must certify regulated products to the California Energy Commission prior to being sold or offered for sale in the state of California

Failure to certify products can result in fines of up to \$2,500 per non-compliant item.

Title 20 has no set schedule for updates, and is not updated according to a regular cycle. However, the T20 document is updated roughly every year to ensure that changes to the Federal standards are incorporated.

On Jan. 27, 2016 CEC voted to approve significant changes to lighting products that will become effective January 1, 2018.

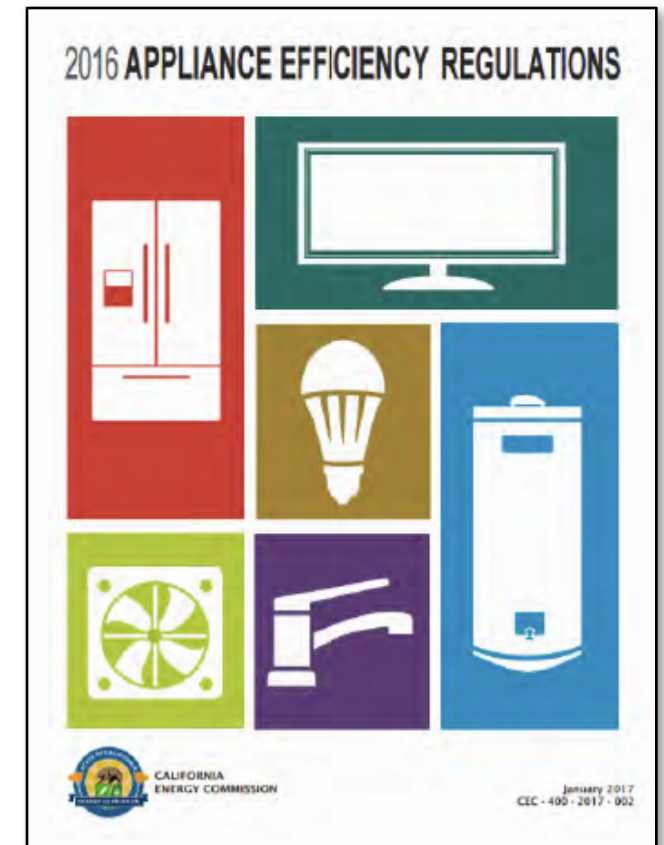


## APPLIANCES REGULATED UNDER TITLE 20 2016

### 23 product categories covered under Title 20 2016:

- Refrigerators, freezers
- Air Conditioners
- Central Air Conditioners
- Spot Air Conditioners, Ceiling Fans, **Ceiling Fan Light Kits**, Residential Exhaust Fans
- Gas space heaters
- Water Heaters
- Gas pool heaters
- Plumbing fittings
- Plumbing fixtures
- **Fluorescent lamp ballasts**
- **Lamps**
- Emergency lighting, exit signs, lighting controls
- Traffic signal lamps
- **Luminaires, portable luminaires, GU24 adaptors**
- Dishwashers
- Clothes washers
- Clothes dryers
- Cooking products, Food Service equipment
- Electric motors
- Low voltage transformers
- Power Supplies
- Televisions, Consumer A/V equipment
- Battery charger systems

All state-regulated appliances are required to be certified and registered in CEC database





## SIGNIFICANT LIGHTING PRODUCT SECTIONS OF TITLE 20 2016

### Title 20 2016 document includes:

- **1602** Definitions
- **1604(k)** Test Methods for Lamps
- **1605.1** Federal and State Standards for Federally-Regulated Appliances
  - Copied verbatim from federal standards covered by Department of Energy
- **1605.3** State Standards for Non-Federally-Regulated Appliances

Lighting products covered in both sections (Federal and State-regulated) are required to be certified and registered in CEC database

## LIGHTING PRODUCTS REGULATED UNDER TITLE 20 2016

### Federally-Regulated Lighting Products (1605.1)

Fluorescent Lamp Ballasts
General Service Fluorescent Lamps
Incandescent Reflector Lamps
Medium Base CFLs
General Service Inc Lamps and Intermediate Base Inc Lamps
Candelabra Base Inc Lamps and Intermediate Base INC Lamps
Emergency Lighting and Self-Contained Lighting Controls
Traffic Signal Modules and Traffic Signal Lamps
Torchieres
Metal Halide Lamp Fixtures

### State-Regulated Lighting Products (1605.3)

<b>Non-Federally-Regulated</b>
Dimming Fluorescent Lamp Ballasts
State-Regulated Inc Reflector Lamps
<b>State-Regulated LED Lamps, State-Regulated General Service Inc Lamps, State-Regulated General Service Lamps, and State-Regulated Modified Spectrum Inc Lamps</b>
<b>State-Regulated Small Diameter Directional Lamps</b>
GU24 Base Lamps
Illuminated Exit Signs
Self-Contained Lighting Controls
Metal Halide Luminaires
Under-Cabinet Luminaires (commercial office only)
<b>Portable Luminaires</b>
GU24 Adaptors

## NEW LAMP REGULATIONS UNDER TITLE 20 2016

Starting in 2018, California has new state regulations for the following lamp types:

- **State-Regulated General Service Lamps (GSLs)**
  - INC, CFL, LED lamps used for applications traditionally served by general service INC lamps
  - Does not include INC reflector lamps, fluorescent tubes
- **State-Regulated LED lamps (SLEDs)**
  - LED lamps with E12, E17, E26, GU24 base
  - Includes downlight retrofits with bases above
  - Output  $\leq 2600\text{lm}$
  - CCT = 2200K to 7000K
- **State-regulated Small Diameter Directional Lamps (SDDLs)**
  - 12V, 24V, 120V INC, CFL, LED lamps with Dia.  $\leq 2.25''$
  - Pin Base or E26 Base
  - Output  $\leq 850\text{lm}$
  - Wattage  $\leq 75\text{W}$
  - Rated Life  $> 300\text{hrs}$



## NEW LAMPS REGULATIONS UNDER TITLE 20 2016



### State-regulated General Service Lamps (GSLs) manufactured on/after **January 1, 2018**

- Requirements for GSLs have been in place in 2011. Increased requirements in 2018.
- State-regulated GSL is identical to definition of a federally-regulated GSL (T20 Section 1602)
- INC, CFL, LED lamps used for applications traditionally served by general service INC lamps
- Does not include INC reflector lamps, fluorescent tubes

Effective date	Min. Rated Lifetime	Min. Efficacy	Min. CRI
January 1, 2018	1,000 hours	45 lm/w	80CRI (non-modified spectrum) 75 CRI (modified spectrum)

GSLs are required to be certified and registered in CEC database



## NEW LAMPS REGULATIONS UNDER TITLE 20 2016

**State-regulated LED lamps** (SLEDs) manufactured on/after **January 1, 2018** with output  $\geq 150\text{lm}$  (E12 base) or  $\geq 200\text{lm}$  (other bases)

- CRI  $\geq 82$ 
  - R1 through R8 values  $\geq 72$
- PF  $\geq 0.7$
- Rated Life  $\geq 10,000$  hrs
- Minimum efficacy compliance score per table K-14 below

SLEDs are defined as:

- LED lamps with E12, E17, E26, GU24 base
- Includes downlight retrofits with bases above
- Output  $\leq 2600\text{lm}$
- CCT = 2200K to 7000K



Effective date	Min. Compl Score	Min. Efficacy
January 1, 2018	282	68 lm/w
July 1, 2019	297	80 lm/w

Example:

$68 \text{ lm/w} + (2.3 \times 90 \text{ CRI}) \Rightarrow 275 \text{ compl score}$  **FAIL**

$75 \text{ lm/w} + (2.3 \times 90 \text{ CRI}) \Rightarrow 282 \text{ compl score}$  **PASS**

Starting January 1, 2018, state-regulated LED lamps will be required to be certified and registered in CEC database

## NEW LAMP REGULATIONS UNDER TITLE 20 2016



**State-regulated Small Diameter Directional Lamps (SDDLs)**  
 manufactured on/after **January 1, 2018**

Min. Rated Life	Min. Efficacy
25,000 hours	80 lm/w or 70 lm/w + Compliance Score $\geq$ 165 [Compliance Score = Efficacy + CRI]

- SDDLs are defined as:
- 12V, 24V, 120V INC, CFL, LED lamps with Dia.  $\leq$  2.25"
  - Pin Base or E26 Base
  - Output  $\leq$  850lm
  - Wattage  $\leq$  75W
  - Rated Life  $>$  300hrs

Example:

- 70 lm/w + 90 CRI  $\Rightarrow$  160 compliance score **FAIL**
- 75 lm/w + 90 CRI  $\Rightarrow$  165 compliance score **PASS**

Note: These new requirements will eliminate most INC and halogen MR11, MR16, GU10, R/Par16 lamps in favor of LED

## PORTABLE LUMINAIRE REQUIREMENTS UNDER TITLE 20 2016

(for all luminaires manufactured on/after Jan. 1, 2010)

Requirements (must meet at least one):

1. Dedicated fluorescent lamp socket connected to high freq. electronic ballast within the portable luminaire
2. Be equipped with GU24 socket and NOT rated for use with INC lamps
3. Be an LED luminaire or portable luminaire with an LED Light Engine with integral heat sink and comply with table N-2

**Table N-2** Requirements for portable luminaires with LED Light Engines

Criteria	Requirement
Light Output	200 lm
Min. LED Luminaire efficacy	29 lm/w
Min. LED Light Engine efficacy	40 lm/w
Correlated Color Temp (CCT)	2700K to 5000K
Min. Color Rendering Index (CRI)	75 CRI
Power Factor <small>(for luminaires labeled or sold for residential use)</small>	0.7 PF



## PORTABLE LUMINAIRE REQUIREMENTS UNDER TITLE 20 2016

(for all luminaires manufactured on/after Jan. 1, 2010)

Requirements (must meet at least one):



4. Be equipped with E12, E17, or E26 base and ...
  - Pre-packaged and sold together with one screw-base CFL or LED lamp for each socket
    - CFL or LED lamp must be compatible with luminaire controls
    - CFLs must meet ENERGY STAR lamp efficacy of Dec. 31, 2008
      - (50 to 65 lm/w)
    - **LED lamps must meet min. requirements of current T20**
5. Be equipped with one or more single-ended non-screw base halogen lamp sockets (line or low voltage), dimmer control or hi/low controls, and be rated for a max of 100W

**\*Note:**

- Exceptions for art work luminaires and portable wall mount adjustable luminaires with max 24" articulated arm.
- Portable luminaires with internal power supplies must have zero standby power when luminaire is off



## IMPACT ON PORTABLE LUMINAIRES WITH “BULB-IN-BOX”

Item	Luminaire Requirements	Lamp Requirements Today	Lamp Requirements Jan 1, 2018
<p>Portable Luminaire with E26 <b>CFL</b></p> 	<p>Luminaire must be registered with state</p>	<p>CFL must meet Federal and State Requirements. Registered with both DOE and CEC</p>	<p>CFL must meet Federal and State Requirements. Registered with both DOE and CEC.</p>
<p>Portable Luminaire with E26 <b>LED lamp</b></p> 	<p>Luminaire must be registered with state</p>	<p>None required (no Federal or State regulation)</p>	<p>LED lamp must meet State Requirements. Registered with CEC.</p>

Note: Nothing changes for Portable Luminaires shipped with CFLs, but if shipped with LED the lamp must meet new regulations



## TITLE 20 LABELING REQUIREMENTS

(T20 2016, Section 1607)

Applicable to all regulated appliances:

- Manufacturer's name, brand name, or trademark
- Model Number
- Date of Manufacture
  - Indicating year, month, or smaller (week) increment
  - If the date code is not readily understandable to the layperson, the manufacturer shall immediately, on request, provide the code to CEC

For Lamps:

- Information described above shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit, on the unit's packaging, or, where the unit is contained in a group of several units in a single package, on the packaging of the group.



Note: Since enforcement of T20 is per date of manufacture, date codes are critical

# HOW TO FIND AND LIST T20 CERTIFIED PRODUCTS

- Design products according to energy and performance requirements
- Test products according to required test methods in a CEC approved laboratory
- Certify products to the California Energy Commission
  - Verify performance and markings
  - Data submittal templates:  
<http://www.energy.ca.gov/appliances/forms/>
  - List products on the [Modernized Appliance Efficiency Database](#) (MAEDBS)
- List of certified products can be found online on the MAEDBS using PUBLIC SEARCH feature

Help | Back To Login

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SEARCH

### Quick Search

To begin your search enter model criteria and click search. Use the additional fields if necessary. The quick search also allows search results to be narrowed to currently approved models or to search historical models.

To search historical models, please set the status to archived which can be found on the appliance status tab.

Questions can be directed to [Appliances@energy.ca.gov](mailto:Appliances@energy.ca.gov) or to the Appliances Hotline, toll free at (888) 838-1467 or outside California (916) 651-7100. [Search Instructions](#) are also available.

Model Number  Appliance Type  Company  Brand  Appliance Status

Select Category: Lighting Products Select Appliance Type: Portable Luminaire

Search Results 30009 record(s) found

Export To:

Note: Although there may be lab charges for testing, there is no charge to list products as certified on MAEDBS

## TITLE 20 ENFORCEMENT

(T20 2016, Section 1608-1609)

- Title 20 enforcement is by the California Energy Commission (CEC)
  - Periodic testing and verification may be performed by CEC
- It is illegal to sell or offer for sell in the state any regulated product that is not certified to the CEC and listed in the MAEDBS
  - Includes online retailers shipping into the state
- Any person including a **retailer, manufacturer, contractor, importer or distributor** that sells or offers for sell a regulated appliance that is not listed may be subject to civil penalties for each unit sold or offered for sale
- Four violations under T20:
  - Failure to certify, does not meet standard, failure to mark, providing false information
- Civil penalties can be assessed **up to \$2,500 for each violation** (per unit sold)



## EFFECTIVE DATES AND ENFORCEMENT

- New regulations do not affect products being sold that were manufactured prior to the effective date
- Enforcement is determined by **manufacturing date code on the product**
- If the product has a manufacturing date code prior to the applicable effective date of the appliance regulations, it can continue to be sold in the state even it is does not meet the regulations



## JA8 COMPLIANT LAMPS VS T20 LAMPS IN 2018

	JA8 Compliant Lamps	Title 20 Certified Lamps	
Dimming Required	Yes	No	
Product-specific requirements	Applies to all JA8 compliant light sources	<u>State-Regulated LED Lamps (SLEDs)</u>	<u>Small-Diameter Directional Lamps (SDDLs)</u>
Efficacy	≥ 45 lm/w	≥ 68 lm/w* (*Also must have min. Compliance Score of 282. Compliance Score = efficacy + (2.3xCRI). In July 2019, min. efficacy and score increases to 80 lm/w and 297 respectively)	≥ 80 lm/w or ≥ 70 lm/w* (*Min. efficacy of 70 lm/w allowed with min. Compliance Score ≥ 165. Compliance Score = Efficacy + CRI)
Rated Lifetime	≥ 15,000 hours	≥ 10,000 hours	≥ 25,000 hrs
Lifetime Testing prior to cert.	3,000 hours	0 hrs (estimations allowed)	0 hrs (estimations allowed)
Color Rendering (CRI)	≥ 90CRI + R9 ≥ 50	≥ 82CRI + R1 through R8 ≥ 72	No specific CRI required if efficacy at least 80 lm/w, but note Compliance Score must be met if efficacy < 80lm/w
CCT (Color Temp)	≤ 4000K (Inseperable SSL luminaires and GU24 LED lamps) ≤ 3000K (lamps)	Any CCT allowed	
Reduced Flicker requirements	< 30% flicker rate for freq less than 200Hz at 100% and 20% of light output (tested per JA10)	Reduced flicker operation required if lamp is claimed to be dimmable  < 30% flicker rate for freq less than 200Hz at 100% and 20% of light output (tested per JA10)	Not Required
Product Labeling	Marked "JA8-2016" or "JA8-2016-E" (elevated temp test/enclosed rated)	Must include date code, manufacturer name, model number	



## JA8 COMPLIANT LAMPS VS T20 LAMPS IN 2018

JA8 compliant lamps, since requiring more stringent specifications, may all meet T20 requirements in 2018, but they may not. The lamps will not only need to be registered in JA8 database, but also will need to be registered in the CEC database under State-Regulated LED lamps in 2018.

2016 Title 24, Part 6  
Reference Joint Appendix JA8

- + Focuses on performance and lighting quality to increase consumer retention of high efficacy lighting
- + Technology-neutral specification

Title 20 Appliance Efficiency  
Regulations for LEDs

- + Does not cover as many quality metrics as JA8, and some quality requirements are not as stringent as JA8

Note: T20 requires labs performing tests to be approved by California Energy Commission, T24 does not

## TITLE 20 RESOURCES FOR ADDITIONAL INFORMATION



- For more info on California Title 20
  - <http://www.energy.ca.gov/appliances/>
- T20 Compliance Assistance:
  - [Appliances@energy.ca.gov](mailto:Appliances@energy.ca.gov)
  - (888)838-1467 or outside CA (916)651-7100
- FAQ on State-Regulated Lamps
  - [http://www.energy.ca.gov/appliances/documents/state-regulated\\_lamps\\_FAQ.html](http://www.energy.ca.gov/appliances/documents/state-regulated_lamps_FAQ.html)

# THANKS FOR ATTENDING!

## QUESTIONS/ANSWERS

Thank you everyone for your attention! Please feel free to use this opportunity to ask any questions you may have about MaxLite or the products and information shown during this presentation.

FOR MORE INFORMATION PLEASE CONTACT:

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