

## DOCKETED

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*Comment Received From: Lutron Electronics Co., Inc.*

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**On 2019 Building Energy Efficiency Standards Express Terms**

*Additional submitted attachment is included below.*

October 13, 2017

Submitted via email: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Mr. Andrew McAllister  
Commissioner  
California Energy Commission  
1516 Ninth Street  
Sacramento, California 95814

Re: Docket No. 17-BSTD-01 2019

**Lutron Electronics Co., Inc. Comments on the 2019 Building Energy Efficiency Standards Express Terms**

Dear Commissioner McAllister,

Thank you for the opportunity to review and provide comments on the pre-rulemaking provisions for the 2019 Title 24 Part 6. These comments are submitted on behalf of Lutron Electronics Co., Inc.

As you may know, Lutron was founded in 1961 and is headquartered in Coopersburg, Pennsylvania. From dimmers for the home, to lighting management systems for entire buildings, the company offers more than 17,000 energy-saving products, sold in more than 100 countries around the world. In the U.S. alone, Lutron products save an estimated 10 billion kWh of electricity, or approximately \$1 billion in utility costs per year. The company's early inventions— including the first solid-state dimmer invented by Lutron's founder, Joel Spira—are now at the Smithsonian's National Museum of American History in Washington, DC.

Please find our detailed comments below. We look forward to working with you further on this important project. Please contact Michael Jouaneh at 610-282-5350 or [mjouaneh@lutron.com](mailto:mjouaneh@lutron.com) if you have questions or would like more information on these comments. Thanks again for your consideration.

Respectfully submitted,



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The comments and suggested edits to the proposed 2019 Title 24 Part 6 Express Terms are shown below:

**Chapter 2-110**

**Section 110.9 Mandatory Requirements for Lighting Controls**

- 1. Title 20 lighting controls requirements for self-contained lighting controls have been moved into section 110.9 of Title 24.**

Lutron comments: We support this change provided that the requirements are removed from Title 20 so that there are no inconsistencies. Also, note that occupancy sensor timeout settings for 20 minutes have been removed. This is a rollback in stringency from the 2016 Standard. So, we would like to see this language be brought back into 2019:

All Occupant Sensing Control types shall be programmed to turn OFF all or part of the lighting no longer than 20 minutes after the space is vacated of occupants, except as specified by Section 130.1(c)8.

**Section 110.12 Mandatory Requirements for Demand Management**

- 2. Demand responsive controls and equipment 110.12(a) and Demand Responsive Lighting Controls 110.12(c).**

Lutron comments: Support with these suggested changes.

- "OpenADR 2.0a or newer" should be compliant instead of specifying version 2.0a or 2.0b. In other words, when OpenADR 3.0 comes out, VENs that support 3.0 should be acceptable for compliance.
- Most lighting systems currently don't have OpenADR natively as part of the system. The language should explicitly state that a device must be installed on the premises that can receive an OpenADR signal and can communicate with the lighting system using any protocol. The lighting system itself should not be required to have OpenADR embedded into the system.
- Most importantly, after receiving the ADR signal, the lighting power should be changed from the then current lighting power consumption. That is, if the lights are already at 85% of total installed power, they should be further reduced. The total percentage change would be negotiated between utilities and their customers. Lastly, to ensure energy savings, during a demand response event, lighting levels should not be able to be raised to a higher level than indicated for by the ADR signal. Lighting can go to a lower level but not a higher one during the DR event.

**Chapter 4-130**

**3. Section 130.0(c). Luminaire classification and power.**

Lutron comments: The express terms language is confusing primarily because of trying to use the same provision for both fluorescent and LED luminaires. It's not clear how to account for the wattage of separable LED downlights, LED troffers, or modular LED fixtures. Below are suggested changes to rectify this along with other clarifications.

1. 130.0(c)1A and 1B: Strike the word "replamping" as it doesn't apply to LED lighting. So, they should read as follows:
  1. A. The maximum ~~replamping~~ rated wattage of a luminaire shall be listed on a permanent, preprinted, factory-installed label, as specified by UL 1574, 1598, 2108, or 8750, as applicable; and
  2. B. The factory-installed maximum ~~replamping~~ rated wattage label shall not consist of peel-off or peel-down layers or other methods that allow the rated wattage to be changed after the luminaire has been shipped from the manufacturer.
2. 130.0(c)3: Replace with the language below. This is for fluorescent luminaires.
  - o The wattage of fluorescent luminaires with permanently installed or remotely installed ballasts shall be the operating input wattage of the rated lamp/ballast combination published in ballast manufacturer's catalogs based on independent testing lab reports as specified by UL 1598 and labeled per 130.0(c)1.
3. 130.0(c)4: Replace with the language below. This is for LED luminaires.
  - o The wattage of solid state lighting (SSL) luminaires shall be the maximum input wattage of the luminaire labeled per 130.0(c)1 and as specified by UL 1598, UL 8750, UL-2108, or LM-79.
4. 130.0(c)5: Replace with the language below. This provision is for modular lighting that allows for addition or relocation luminaires. Keep the rest of the express terms language for A, B, and C after this proposed language.
  - o For modular lighting systems that allow the addition or relocation of luminaires without altering the wiring of the system, including but not limited to modular LED undercabinet lighting, SSL products that are not reliant on luminaires (e.g. tape lights), and line-voltage lighting track and plug-in busway, the wattage of such systems shall be determined by one of the following methods based on the component that limits the current available to lighting added to the system:

**4. Section 130.1(c)1F Automatic Shut-OFF Controls. For controls having an automatic time switch function, provide the ability to operate in manual-ON mode.**

Lutron comments: Partial-on should be an option in addition to manual-on. Studies (e.g. <http://lightingcontrolsassociation.org/2009/04/09/cltc-study-demonstrates-major-energy-savings-for-bilevel-occupancy-sensors/>) have shown partial-on saves more than manual-on as occupants were satisfied with partial lighting levels. Also, similar requirements should apply to occupancy sensor controls in addition to time switch controls. Lastly, the provision should list the spaces where this applies. So, please replace 130.1(c)F with the suggested language:

**F. Manual-on or partial-on control. Automatic shutoff controls in the following spaces shall have be set to operate the lighting in either manual-on mode or partial-on mode that automatically turns lighting on to not more than 50 percent power.**

1. Classrooms/Lecture Hall/Training Rooms
2. Conference/Meeting/Multipurpose Rooms
3. Open Offices
4. Private Offices
5. Warehouses

Exception: Spaces where manual-on or partial-on operation would endanger the safety or security of the room or building occupants.

**5. Section 130.1(f) Control Interactions.**

Lutron comments: To ensure energy savings, during a demand response event, lighting levels should not be able to be raised to a higher level than indicated for by the ADR signal. Lighting can go to a lower level but not a higher one during the DR event. So, please change item number 4 as follows:

- o 4. The multilevel control shall be permitted to the demand responsive control to increase or decrease the lighting level during a demand response event even lower than the requested level and to return it to the original level set by the multilevel control after the event.

**Chapter 6-141**

**6. Section 141.0(b)2Piv Electrical Power Distribution Systems. Circuit Controls for 120-Volt Receptacles and Controlled Receptacles.**

Lutron comments: To increase energy savings and align with ASHRAE 90.1, modify this provision such that if new receptacles are added in the spaces listed in 130.5(d), then the new receptacles in the space must comply with the requirements of 130.5(d). Suggested language below:

- iv. Circuit Controls for 120-Volt Receptacles and Controlled Receptacles. For entirely new or complete replacement of electrical power distribution systems, the entire system shall meet the applicable requirements of Section 130.5(d). For existing space renovations, in office areas, lobbies, conference rooms, kitchen areas in office spaces, copy rooms, and hotel/motel guestrooms, newly installed receptacles shall comply with 130.5(d).

Exception: Spaces that install just one new receptacle.

**Chapter 7-150**

**7. Section 150.0(k)1B General Lighting. All general lighting in habitable spaces shall be dimmable and capable of providing a correlated color temperature of 3500K or less.**

Lutron comments: While we support that the lighting shall be dimmable, the new term “general lighting” has introduced a substantive change to the language without documentation to support this change. What’s more is that the language has introduced ambiguity into the Standard which has causes an unintended rollback in stringency at a time when residential net zero energy goals are near. For instance, in the 2016 Standard a JA8 compliant chandelier in the dining room or foyer would need to be controlled with a dimmer or vacancy sensor. But in the proposed 2019 language, a project may claim that the chandelier is decorative, even though it provides the only illumination for the room, and therefore there would be no requirement for the energy-saving lighting control. Some may argue that all lighting in a home is decorative and therefore no controls are required. We know this rollback in stringency is not what the Commission intended by adding this provision. So, we suggest that the Commission do one of the following:

- 6. Our preferred solutions is to keep the existing 2016 language without changes. There is no ambiguity as to when lighting controls are required in the 2016 language. If that is not acceptable, then we suggest the follow change to fix the language so these untended consequences don’t occur:
  - ~~General~~ **Permanently Installed Lighting.** All ~~general~~ permanently installed lighting in habitable spaces shall be dimmable and capable of providing a correlated color temperature of 3500K or less.

**8. Section 150.0(k)2A Interior Lighting Switching Devices and Controls.**

Lutron comments: Add NEMA 77 for dimmers here to be consistent with the updated JA8 language. Suggested language below:

- All forward phase cut dimmers used with LED light sources shall comply with NEMA SSL 7A and NEMA 77.

**9. Section 150.0(k)2C Interior Lighting Switching Devices and Controls. General lighting in habitable spaces shall have readily accessible controls that allow the lighting to be dimmed.**

Lutron comments: This language may allow for lighting to be controlled with an app without the need for a wall control. Since mobile phones and tablets are not always accessible, we suggest that a wall-mounted control be installed. This can be a wired or wireless control provided it is affixed to the room or near the room so that occupants always have a way to control the lights even when their phone is not available. Proposed changes below:

- Permanently installed General lighting in habitable spaces shall have readily accessible wall-mounted controls that allow the lighting to be dimmed.

**10. Section 150.0(k)3 Residential Outdoor Lighting.**

Lutron comments: The Commission is missing a large energy saving opportunity by not requiring lighting controls for permanent hard-wired outdoor lighting that is not attached to a building. There are some larger homes that have extensive landscape lighting that should be controlled. Especially if the Commission is serious about achieving net zero energy residential buildings by 2020. Suggested change to 150(k)3A below:

- For single-family residential buildings, permanently installed outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, shall meet the requirement in item i and the requirements in either item ii or item iii:

**Joint Appendix 10**

Lutron comments: We would prefer that NEMA 77 replace JA10 altogether since NEMA 77 introduces significantly improved flicker metrics developed and supported by the lighting and lighting control industries. The recommended Pst, SVM, and jitter metrics more adequately address visible flicker, stroboscopic effects, and dimmer interactions and cover frequencies through 2000Hz.