

## DOCKETED

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## **Wattstopper Legrand Comments on 2019 Title 24 45 Day Language**

Wattstopper / Legrand Comments on the 2019 Title 24 45 Day Language

*Additional submitted attachment is included below.*

February 20, 2018

California Energy Commission  
Commissioner Andrew McAllister  
Docket No. 17-BTSD-02  
Docket Unit: MS-4  
1516 Ninth Street  
Sacramento, CA 95814-5512

**RE: Docket No. 17-BTSD-02 – Wattstopper / Legrand Comments on 2019 Title 24 Part 6 “45 Day Language” Draft**

Legrand, especially its California based Wattstopper lighting control brand, appreciates this opportunity to submit comments on the 45 Day Language of the 2019 Title 24 Standard. We gratefully acknowledge the significant work put forward by all proposal teams, commission staff, commission consultants and other contributors to improve the energy efficiency and applicability of the Title 24 lighting and lighting control related sections. The below comments in some cases repeat and revise those we provided previously to the CEC last year regarding the Draft Express Terms version.

**Title 24 Part 6 General Comment**

In the Express Terms Draft there were instances where the language has been improved, but others where code language has been removed from one paragraph and moved around making it harder to understand the overall intent. We appreciate that in the 45 Day Language version, the language has often been reset making it easier to understand the goal of the code. The only issue we still have is when exceptions for a section appear at the very end of the section instead of under the first paragraphs, as seen in Exceptions 1 and 2 (covering Healthcare facilities and Egress Lighting) in section 130.1(c).

**Section 100.0(a) - Scope**

In Section 100.0(a), with the addition of the “I” occupancy types, we’re pleased that the code now includes exemptions for I-3 (Prisons) and I-4 type facilities, which wasn’t listed previously in the Express Term Language.

**Section 110.9 – Mandatory Requirements for Lighting Controls**

We’re aware of the considerable effort expended by the Commission in the past to move the mandatory control language in Title 24 to Title 20. Because of that we do not fully understand why the language is being copied back into Title 24. We would like to hear a clear explanation of the benefit of having language in both Title 20 and Title 24, especially since the two codes are not aligned on their revision schedules.

That said, we appreciate that the requirement for occupancy sensors to go off after a time delay of 20 minutes or less is back in the 45 Day Language and is now the same for hotel rooms per 130.1(c)8.

### **Section 110.12 – Demand Response**

As the chief author of the letter provided to the California Energy Commission from the California Energy Alliance (CEA) regarding demand responsive controls, we applaud the decision to specifically name OpenADR2.0a or 2.0b as the protocol used to instigate a DR action, **although to future proof the code, adding the phrase “or later versions” would be warranted.** We strongly believe clear direction and application of demand responsive controls will be a significant asset to stable and resilient power in California. This change will ensure that lighting controls installed to meet this code section will easily be able to respond to signals from the state Investor Owned Utilities (IOUs) without additional cost, therefore providing much greater value to the building owner than currently installed systems provide.

However, we believe that the language in 110.12(a) 1 & 2 is still confusing. The OpenADR does need to be received by the building, but with current technology we question whether that signal needs to actually go to the building or to whether it can be received at some other location. We also believe that the second paragraph should be changed so any communication protocol can be used to communicate from the device receiving the signal to all the Demand Response Lighting Controls in the building. Several other commonly used protocols are missing (Bluetooth and 6LoWPAN for instance, as well as key manufacturer’s proprietary solutions), and this serves to just confuse and limit the market. We’re also concerned by the comment made at an OpenADR presentation that none of the current cloud based solutions used today would meet the code as written – this is a clear indication that the language should be reconsidered and broadened.

Lastly, we do hope that the CEA will make clear that Demand Response Lighting Controls should be able to Lower or Raise the lighting power level, as it was made clear last year that either of these scenarios might need to be used to ensure that the CA Power Grid remains stable.

### **Section 130.1(a) - Area Control**

Area Controls ensure that occupants always have control of their lighting. The suggestions in this section are especially important since we believe they strengthen this foundational element.

#### **EXCEPTION to Section 130.1(a)1 and 2**

We have heard from specifiers that the Exceptions to Section 130.1(a)1 and 2 should not be restricted to just the listed space types. Designers should be allowed to take advantage of these exceptions for any space they consider appropriate. For Section 130.1(a)2 for instance there are other space types where remotely mounted and annunciated lighting controls could be beneficially applied (libraries, warehouse aisles, exercise gyms, lobbies, child care facilities, locker rooms, dressing rooms, etc...). We recommend that the Energy Commission **remove the specific list of spaces in this language and allow the use of remote annunciated area control devices wherever specifiers determine** they are appropriate based on their understanding of the safety and security requirements of the space.

#### **Section 130.1(a)4 (proposed)**

We wish the commission would again list occupancy sensors as an area control device, as was included in earlier versions of the code (up until 2008). Occupancy sensors offer ideal control in public restrooms and warehouse aisle applications. This change would eliminate the issue of having switches in spaces where they are rarely, if ever, used – we’ve never heard of a warehouse owner that finds it beneficial to install a switch in every aisle when their users are driving fork lifts. They already have occupancy sensors installed in the aisles, and the lights come full on automatically. In public restrooms, key switches are often installed but never used because of the risk of someone coming in and not getting the lights on.

### **Section 130.1(b) – Multilevel**

Believe there may be an issue between the language in the code text, and text in Table 130.1-A. In the code, there is an exemption for restrooms (EXEMPTION 2 to Section 130.1(b)), but in Table 130.1-A restrooms are not listed at all. Similarly, there's an issue in this section in that classrooms (previously Exception 1 to Section 130.1(b)) has been removed entirely from the language of the code, but classrooms are still listed in Table 130.1-A as an exception requiring one step between 30-70 percent of full power. **Exemptions in the Table should also be listed in the code.**

Would be interested in understanding why areas that were required to have Partial or Full Off by Occupancy Sensors are required to have a step between 20-60% full power in Table 130.1-A instead of the 30-70% range normally called out.

### **Section 130.1(c) – Automatic Shut Off Controls.**

We consider this section to be particularly important, because for some types of Alterations only the Area Control and Automatic Shut Off Controls are required. Shutting off lights when they're not needed is a key element in every Energy Code, and we appreciate that several paragraphs in this section have reverted back to the previous code language compared to the Express Terms Language.

#### **Section 130.1(c)1 – Exemption 4**

While we applaud the fact that the code recognizes that turning off lighting in a space like an electrical closet is dangerous and should be avoided, we do wish the CEC would consider adding a phrase similar to what's used in some of the other codes like "or any space where an automatic shut off might endanger the occupants". Have always felt it unfair the code protects someone working in an electrical closet, but not those in a mechanical room working under a chiller, or in an elevator pit.

#### **Section 130.1(c)2 – Countdown Timers**

We continue to strongly recommend that **countdown timers be allowed as an acceptable automatic shut-off control method for closets and small to medium storage spaces (at least up to 250 sqft)** to allow builders and owners a cost-efficient choice for automatic shut-off control in these areas. Most storage space facilities used these devices previously in their units, and it never made sense to prohibit their use for this application.

#### **Section 130.1(c)3 – Manual On for Scheduling**

We've seen an email from the CEC that states that this section of the code will include language for a Manual On setting for some timeclock controlled spaces. We believe that depending on the language in this change, it has the potential to save a significant amount of energy across the state. We'll reserve our comments on this till we can review the planned code language changes.

#### **SECTION 130.1(c)5 – Occupancy Sensors**

Thank you for adding restrooms to the list of spaces required to use occupancy sensors, as it is well documented that they are an ideal space for occupancy sensor control.

#### **SECTION 130.1(c)5 – Vacancy Sensor**

We're pleased that much in this section has reverted back to the previous code language. Our only request is to please use "Manual On" and not "Vacancy" as the proper description in the non-residential code since "Vacancy Sensors" includes unique requirements in Title 20 due to their original use in the residential code that could be problematic in non-residential spaces.

#### **EXCEPTION 1 to SECTION 130.1(c) – Healthcare facilities**

The definition section lists HEALTHCARE FACILITY as any building or portion thereof licensed pursuant to California Health and Safety Code Division 2, Chapter 1, §1204 or Chapter 2, §1250.

Do not understand why all spaces inside a healthcare facility would be exempt from the entire automatic shutoff section. While it's quite reasonable that any space where a medical procedure is taking place would be exempted, spaces such as filing areas, offices, storage areas, lobbies, etc... should have to follow the shutoff requirements of the code. **We believe this section should be re-written to identify which specific spaces in Healthcare facilities do or do not require shut off controls.**

#### **SECTION 130.1(d) – Automatic Daylighting Controls**

Previously there was a note in this section that made clear that modular walls were not to be considered permanent structures, which helped people who looked at the code avoid a design issue with their projects. Thought it was helpful for folks reviewing the code, so it would be beneficial to leave that line in.

Seeing as how there is now a new 1500 hour calculation exemption for Skylights, would suggest that language should be developed to also allow an exemption for Primary Sidelit and Secondary Sidelit spaces since they too can be in places without adequate daylighting, and cause frustration with both owners and CLCATT who are trying to verify their installations.

#### **SECTION 130.1(d)3A – Automatic Daylighting Controls in multilevel control spaces**

This section references 130.1(c) as the multilevel requirement, should that have been 130.1(b)? If not, this section is confusing.

#### **SECTION 130.1(d) – Exemption 2 Overhangs**

There are no definitions for Overhang Rise in Section 100.1, and it looks like Overhang projection will be deleted. Both of these are needed, especially the Rise since it's unclear where the measurement is made from – bottom of window, finished floor, etc...

#### **SECTION 130.1(d) – Exemption 3**

This section in the 45 Day Language and the previous code has been confusing. Anything that could be done to make it clear what the 120 Watts applies to would be appreciated. By using the word "Combined" it seems to indicate that you add both zones together, but the original CASE study was that automatic daylighting controls would be required in the Skylit zone only if it was greater than 120 Watts, and in the Primary zone only if it was greater than 120 Watts.

Additionally, it's extremely difficult to control different cardinal directions (N, S, E, W) of lighting in a space with a single photocell. The above really should make clear that if there are two or more primary zones in different cardinal directions, each direction's lighting load should be calculated independently. One of the chief reasons daylighting controls are disabled is due to a single sensor being used to control different zones of Primary Lighting.

#### **SECTION 130.1(f) – Controls Coordination**

The only major issue we've seen regarding coordination of the different 130.1 sections has been the question of whether a manual control device can override daylighting control above its settings. **Would would actually recommend that this entire section should be eliminated, and section 130.1(d) be amended to include a description of an allowed override of max 2 hours.**

For instance, in practice when the general lights are dimmable **the manual override control is the multilevel lighting control (dimmer), and it's also the shutoff override and if there's sufficient lighting wattage in a daylight zone the dimmer is also the daylighting interface. Specifiers don't design** separate interface devices for each mandatory lighting section of the code, you have just a dimmer doing quadruple duty. But the Controls Coordination section treats each sections interface devices and the control devices separately, which is extremely confusing.

With these seven paragraphs, the CEC will create confusion in the specification community rather than resolution.

Another worrisome example is line 3 which states that the multilevel lighting control should allow the daylighting control to increase or decrease. In actuality, the multilevel control device should set a max electric lighting level and the daylighting control device should then be able to reduce the electric light level based on daylight but should not exceed the electric level set by the multilevel control device. To do so would allow the daylighting controls to waste energy. The wording makes it seem like the multilevel control doesn't cap the daylight level, which it should.

**Because of how confusing this section is Wattstopper again suggests deleting this section, and instead adding language to the daylighting section to allow a max 2 hour override by the daylighting system.** If this is not possible, we would welcome the opportunity to review the section with the CEC in detail, using example installations in California, and point out the issues with the language and come up with simpler language.

### **SECTION 130.2 – Outdoor Lighting Controls and Equipment Proposal**

Given the CEC's concern about linking to a different code (the justification for copying product requirements in Title 20 to Title 24 Section 110.9), we are confused by the decision that this section chose to link to Title 24, Part 11, Section 5.106.8 regarding BUG standard. We applaud the decision to do so here, and wonder why it's a problem to link to Title 20 for product features in 110.9?

Having attended the CASE review meeting at the CEC on June 22, 2017, we were surprised by how few of the discussed exterior changes made it into the code – in some cases we saw this as beneficial (a few changes seemed to be overly complicated). However, there are several items we wish to draw attention to:

1) The line "All installed outdoor lighting shall be independently controlled from other electrical loads by an automatic scheduling control" has been eliminated by the code. We believe this is a mistake - ensuring that lighting is separately controlled from other loads is good practice and should continue to be included in the code. **We recommend adding back a line similar to "All installed outdoor lighting shall be independently controlled from other electrical loads by required automatic lighting controls".**

2) Assigning a 2 hour override for exterior lights is questionable, since unlike an interior space where there is a mandate to include a manual override device, not every exterior switchleg has an override switch.

3) We question why the maximum wattage zone size limits for luminaires controlled by motion sensing that were previously included in the code are no longer in the code. This change would allow a single sensor detection event in one area of a parking lot or site to turn ON all luminaires in the entire area. This is not an energy efficient control solution.

CASE Report #2019-NR-LIGHT3-F proposed:

*The maximum wattage that can be controlled together by a motion sensing control is dropped from 1,500 Watts to 600 Watts to reflect lower wattage densities required to light outdoor applications.*

Yet the 45-day express terms removed the maximum wattage zoning requirement altogether. Staff Supplement TN222437 to CASE Report #2019-NR-LIGHT3-F, provided no explanation why the 600W CASE Report proposal was not adopted, nor why the existing 1500W maximum was removed from the code language. The CEC should include a maximum wattage zone requirement for controlling outdoor lighting luminaires by motion sensing to maintain energy efficiency, and per the CASE Report, use a maximum allowed 600 watts.

4) Regarding Exemption 3 where trees block motion, wouldn't those same trees block light from the fixtures? Don't think this line should have been included in the code.

#### **EXEMPTION 2 to Section 130.5(d) - Plug Load Control**

Similar to the issue with EXCEPTION 6 to SECTION 130.1(c), we do not understand why ALL spaces in Healthcare facilities would be exempt from this requirement. When someone reviews the list of spaces that require plug load (Offices areas, lobbies, conference rooms, kitchens in office areas, and copy rooms) it seems that having plug load in these spaces would not endanger the safety of any person in the facility. **Would suggest removing this exemption in entirety.**

#### **Section 140.6(a)2 – Power Adjustment Factors**

Don't understand why there is a now a PAF allowed for Clerestories, since those have been treated similar to any other vertical glazing which produces a Primary Sidelit zone and possibly a Secondary Sidelit zone in a space.

#### **Section 140.6(a)4B – Tunable Luminaires**

Applaud the CEC for coming up with a simple method of adjusting the wattage of a tunable luminaires (.75x max wattage for tunable luminaires), and listing a minimum CCT range. Not positive this will be the best way to handle variable wattage likely in a tunable luminaire, but it appears to be a good faith first step.

#### **Section 141.0(b)2F – New Lighting Systems**

Do not understand why 130.5(d) is not included in the list of sections that must be followed. This basically ensures that a tenant in a core and shell building never has to add Plug Load Control once their space is built out. **The CEC should add 130.5(d) to the list of sections listed in this line of the code.**

#### **Section 141.0(b)2I – Altered Lighting Systems**

Applaud the CEC attempting to make this section more understandable, as during all the occasions we've educated people on the Energy Code, this section has always garnered the most questions. Believe the list of the three possible space changes (i, ii, or iii) offers simplicity that hasn't been there previously. Especially thankful at the use of "luminaire-for-luminaire alteration" in the third space option (and in Exemption 6), since this makes it clear that this option cannot be used during a typical tenant improvement where the lighting layout is completely changed.

#### **Section 141.0(b)2Piv – Electrical Power Distribution Systems Plug Load**

We continue to believe that allowing a complete exemption for Plug Load Controls in Alteration is a huge mistake. As technological advancements provide ever lower lighting wattages, plug loads now represent a significant overall portion of every building's electrical load. Additionally, manufacturers have responded to plug load requirements by providing a range of different solutions for all spaces – most specifically for retrofit and alteration applications. These products include time of day scheduling in relay panels, to plug load control modules that can be controlled by the same occupancy sensors that control the lighting, to controllable plug load solutions with built in time clocks, or controllable receptacles that can communicate wirelessly from other sensors. Plug Loads are required under the ASHRAE 90.1 Code, and we do not understand California's reticence to react to the lost energy savings when plug loads controls installed in a tenant improvement will not cost any more than plug loads installed in a new project. Note that the language in Section 130.5(d) which this refers to is "Circuit Controls for 120-Volt Receptacles and Controlled Receptacles", and the paragraph does not refer to power distribution systems.

The CEC could rectify this situation by the two following steps:



1) Change the line in the code to read as shown, or replace the proposed word “circuit” with “receptacle”:

**Circuit Controls for 120-Volt Receptacles and Controlled Receptacles.** For entirely new or complete replacement of electrical branch circuits ~~power distribution systems~~, the branch circuit ~~entire system~~ shall meet the applicable requirements of Section 130.5(d).

2) Provide an exemption for some small number of newly installed receptacles, perhaps 20.

If there is any discussion point in this letter where the CEC finds our concerns or proposals unclear, we hope that you'll consider contacting us for clarifications. We've certainly enjoyed the opportunities we've had in the past to discuss the Energy Code language by phone, email, and in person, and hope to continue that positive relationship for many years to come.

Respectfully Submitted,

A handwritten signature in black ink that reads 'C. Knuffke'.

Charles Knuffke  
Wattstopper Systems VP & Evangelist  
BUILDING CONTROL SYSTEMS

Legrand, North and Central America  
cell: 415.515.6004  
email: [charles.knuffke@legrand.us](mailto:charles.knuffke@legrand.us)  
[www.legrand.us](http://www.legrand.us)

Vantage | Wattstopper | Qmotion | Solarfective

cc: Payam Bozorgchami via [payam.bozorgchami@energy.ca.gov](mailto:payam.bozorgchami@energy.ca.gov)