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Wattstopper Legrand - comments on Title 24 Part 6 draft 15 day language

Additional submitted attachment is included below.

July 28th, 2022

California Energy Commission
Commissioner Andrew McAllister
1516 Ninth Street
Sacramento, CA 95814-5512

RE: [Docket No. 21-BSTD-01](#) – 2022 Title 24 Part 6 15 Day Language

Legrand, especially its California based Wattstopper lighting control brand, appreciates the opportunity to submit comments on the California Energy Commission's draft 15 Day Language for the 2022 Title 24 Standard. We continue to be grateful for the significant work of all proposal teams, commission staff, commission consultants and other contributors to improve the energy efficiency and clarity of the Title 24 lighting and lighting control related sections.

We are grateful that the CEC has already made edits to the code language based on previous comments offered by ourselves and others, and realize that since this is the last opportunity for public comment, we'll focus our attention on just four sections of the code.

§100.1 – Definitions

Common Living Area
Common Service Areas
Common Use Areas

We see that these three terms have been deleted from the previous 45 day language. Since these terms are used in the new Multifamily sections of the code, we ask that they be returned with their definitions in Section 100.1 to ensure there is no confusion as to what Multifamily spaces these terms apply to.

§110.12 – Demand Response

We remember well the excitement around the 2013 Title 24 because of the significant steps that were taken that year. Plug Load and CL-CATT requirements were added, but what was particularly impactful on the Nonresidential lighting side were a pair of requirements that none of the other major codes had required – Dimming (of LED loads) and Demand Response. Dimming set the foundation for the future, as it represented an “enabling technology” for lighting. Without dimming, daylighting would have had to be done in steps and there would little opportunity for features like Partial Off, High End Trim, and Demand Response. We believe the investment, indeed the risk, the CEC took on in 2013 to require dimming for LED fixtures has paid off more handsomely than anything else ever implemented on the nonresidential lighting requirements, with the additional benefit of increased supply of dimmable LED fixtures for the entire US. California's actions in Title 24 2013 truly benefited the entire country.

We bring this up because Demand Response, the other requirement that we believe qualifies as an enabling technology, is unfortunately losing steam because of technology advances (resulting

in lower lighting power densities) but more importantly, changes being made in the code. Granted, Demand Response was included in the 2008 Title 24, but it was limited to only for retail establishments over 50,000 ft². It was the 2013 Code that put Demand Response on the map since this capability was required for all non-residential projects larger than 10,000 ft².

Presenting on the Code back then, we made sure to let our audience know that the folks writing the code had made sure that this would not be a difficult requirement to meet. While the capability of a 15% reduction would be required to prove the site was DR Ready, that 15% could be met by designers choosing to implement Demand Response in only the spaces where it made sense. The code stated that “spaces with a lighting power density of less than .5 watts per square foot shall not be counted toward the building’s total lighting power” (note the language called out total lighting, and not general lighting). Also, if a project had 15,000 ft² of space that was evenly split between open offices and individual offices, the designer could require Demand Response to only be implemented in the open office areas if that area’s reduction would be equivalent to a 15% power reduction of the adjusted total lighting power, allowing costs to be minimized.

Unfortunately, since the introduction of 2013 Demand Response requirement, changes in the code language and in technology have impacted DR so it’s less likely to be implemented in future projects. Originally the .5 W/ft² requirement only impacted the calculation of the total lighting power. Later on, the code would be adjusted so spaces of less than .5 W/ft² (again lighting, and not general lighting) would also be exempt from the calculation to determine if the project was over 10,000 ft².

We’ve reviewed a .pdf of the CASE study supporting the addition of Demand Response in the 2013 Code at title24stakeholders.com (available at <https://title24stakeholders.com/wp-content/uploads/2020/01/T24-2013-Final-CASE-Report-Demand-Responsive-Lighting-Controls.pdf>) and it’s our supposition that the CASE Study was recommending that all lighting be included, and not just general lighting. Search the study for the word “general”, and it only appears in relationship to daylighting (which the code calls out only applies to general lighting), and in phrases with the word “if”. One example from page 5: “In that scenario the demand responsive lighting controls must be capable of temporarily limiting lighting power to no more than 85% of permanently installed lighting power of the enclosed space. If general lighting is reduced, it must be done so in accordance with Section 131(b). This can be accomplished with the use of relays and additional wire to control branches of bi level lighting.”

The reason for background about Demand Response in Title 24 is that we fear the 2022 15 day language further weakens Demand Response at a time where California desperately needs its buildings to be able to respond immediately to demand signals from their grid operators. The new language states:

Demand Responsive Lighting Controls. Buildings with nonresidential lighting systems having a total installed lighting power of 4,000 watts or greater that is subject to the requirements of Section 130.1(b), shall install controls that are capable of automatically reducing lighting power in response to a Demand Response Signal.

Our understanding of the phrase “subject to the requirements of Section 130.1(b)” would have two effects:

1. Section 130.1(b) only pertains to General Lighting, therefore all other interior lighting in the building would be exempt from any demand response requirements.
2. Section 130.1(b) includes an exemption not only for spaces with a lighting power density of .5 W/ft² but also any space less than 100 ft².

The underlined phrase above, especially when combined with item number 1, will significantly reduce the number of projects constructed that will be Demand Response ready. At a time of

great need for the ability to safeguard our electrical grid because of climate change, we fear this is a step backward that we can ill afford.

We wish to finish with the following suggested changes. This will not get us back to the initial language of the 2013 code, but at least it will not exacerbate the situation further....

Edit the above quoted paragraph so instead it reads:

Demand Responsive Lighting Controls. Buildings with nonresidential lighting systems having a total installed lighting power of 4,000 watts or greater ~~that is subject to the requirements of Section 130.1(b)~~, shall install controls that are capable of automatically reducing lighting power in response to a Demand Response Signal.

And return an edited version of the previous Exception 1 to 110.12(c) to the code that would state:

Spaces with a lighting power density of 0.5 watts per square foot or less are not required to install demand responsive controls and do not count toward the 4,000 watt ~~40,000 square-foot~~ threshold.

We hope that the CEC understands why we've taken the time to provide the above information... we sincerely believe that lives will be at risk in our state if we do not have the infrastructure in the built environment to immediately respond to a overstressed electrical system.

§130.1(d) – EXCEPTIONS 3-5 to Daylighting §130.1(d)1

We have found it difficult for designers to understand this code language, mainly because it's not clear if the word "and" is being used to indicate a list of areas in the code or is being used as "added to" in the mathematical sense. *Exception 3* states:

EXCEPTION 3 to Section 130.1(d): Rooms where the combined total installed wattage of the general lighting in the skylit and primary sidelit zones is less than 120 watts are not required to have daylighting controls for those zones. Rooms where the total installed wattage of the general lighting in the secondary sidelit zones is less than 120 watts are not required to have daylighting controls for that zone.

The use of the word "total" in the above paragraph seems to indicate the wattage for any skylit and primary sidelit zones in a space should be added together to see whether that total is more than 120 watts.

We have reviewed the original CASE report at title24stakeholders.com (available at https://title24stakeholders.com/wp-content/uploads/2020/01/2013_CASE-Report_Nonresidential-Daylighting.pdf) and it's clear that the report was not trying to tie together primary sidelit and skylight zones. If you follow the examples, the report was stating that if there was 120W of lighting in the primary sidelit daylighting controls should be required, or if there was 120W of lighting in the skylit zones daylighting controls should be required (see page 67) since each case was tested separately. This is logical, since there's no effective way to measure the amount of daylighting in both the primary sidelit and skylit zones with a single photosensor. Proper daylighting practice would require a sensor in the primary sidelit zone and a separate sensor in the skylit zone.

We believe Exemption 3 to Section 130.1(d) should be re-worded so the original intent of the CASE report is captured, which was that rooms in which the installed general lighting power in the skylit daylit zone is less than 120 watts do not require automatic daylighting controls in that daylit zone, and rooms in which the installed general lighting power in the primary sidelit daylit zone is less than 120 watts do not require automatic daylighting controls in that daylit zone.

Since Secondary Sidelit zones are now included in Section 130.1(d), we believe it would be easier to understand if the language in the Exemption was re-written for clarity to read:

Daylighting controls are not required in the three potential individual daylit zones in a room (Primary, Secondary, or Skylit) if that individual zone has less than 120 watts of general lighting.

§140.10 – PRESCRIPTIVE REQUIREMENTS FOR PHOTOVOLTAIC AND BATTERY STORAGE SYSTEMS

After reviewing the language in this code just today, we believe this entire section is not being properly referenced in the 15 day language.

In TABLE 100.0-A APPLICATION OF STANDARDS, it appears this Section has been incorrectly called out in the Prescriptive column as 141.10 instead of 140.10.

Additionally, in Section 140.2 – Prescriptive Approach, the code states:

To comply using the prescriptive approach, a building shall be designed with and shall have constructed and installed systems and components meeting the applicable requirements of Sections 140.3 through 140.9.

Note that in the above paragraph Section 140.10 is not included. Our recommendation is that the line be edited to read:

To comply using the prescriptive approach, a building shall be designed with and shall have constructed and installed systems and components meeting the applicable requirements of Sections 140.3 through 140.10.

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

Respectfully Submitted,



Charles Knuffke
Wattstopper Systems VP & Evangelist
BUILDING CONTROL SYSTEMS

Legrand, North and Central America
cell: 415.515.6004
email: charles.knuffke@legrand.us
www.legrand.us/wattstopper

cc: Payam Bozorgchami payam.bozorgchami@energy.ca.gov
Peter Strait peter.strait@energy.ca.gov
Simon Lee simon.lee@energy.ca.gov
Thao Chau thao.chau@energy.ca.gov
Harold Jepsen harold.jepsen@legrand.us