

Energy - Docket Optical System

From: rickmiller@rnm-eng.com
Sent: Thursday, January 08, 2015 11:06 AM
To: Energy - Docket Optical System
Cc: Lee, Simon@Energy
Subject: Docket # 2014-BSTD-01 Proposed Revisions to 2016 Title 24, Part 6
Attachments: RNM Letter to CEC 15-01-08 comments on Part 6.doc

In the attached letter are my suggested revisions to proposed 2016 Title 24 Part 6.

Please confirm receipt of this document.
Thank you,

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California Energy Commission

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TN # 7426H

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January 8, 2015

California Energy Commission
Dockets Unit
1516 Ninth Street, MS 4
Sacramento, CA 95814-5512

Re: Docket # 2014-BSTD-01 Proposed Revisions to 2016 Title 24, Part 6

I respectfully submit the following comments for revisions to the California Building Energy Efficiency Standards, California Code of Regulations, Title 24, Part 6.

1. SECTION 100.1

Current arrangement:

Some lighting definitions are not under the LIGHTING definitions category.

Comment:

Could not find the definition of “Commercial Fuel Station Sales Canopy” under the LIGHTING definitions or under Commercial Fuel Station.

Recommendation:

Change the major category of LIGHTING to LIGHTING (INDOOR).

Add a new major category LIGHTING (OUTDOOR).

Move “OUTDOOR LIGHTING”, “OUTDOOR AREAS” and “OUTDOOR LIGHTING ZONES” so that they fall under LIGHTING (OUTDOOR) definitions category.

2. SECTION 100.1

Current language:

“**Sales canopy** is a canopy specifically to cover and protect an outdoor sales area.”

Comment:

The term ‘sales canopy’ is not consistent with its usage in Section 130.2.

Recommendation:

“**Outdoor sales canopy** is a canopy specifically to cover and protect an outdoor sales area.”

3. SECTION 120.6(f)1

Current language:

“The light power density for the luminaires inside the elevator cab shall be no **less** than 0.6 watts per square foot.”

Comment:

Suggest that ‘no less than’ be changed to ‘no greater than’.

Recommendation:

“The light power density for the luminaires inside the elevator cab shall be no **greater** than 0.6 watts per square foot.”

4. SECTION 120.8(g)

Current language:

“Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the acceptance test requirements in Sections 120.5, ~~120.6~~, 130.4 and 140.9.”

Comment:

Section 120.6 - Mandatory Requirements For Covered Processes has many processes that would benefit from a commissioning functional performance tests.

Recommendation:

Retain Sec 120.6 in the scope of Sec 120.8(g).

5. SECTION 130.1(a)1

Current language:

“All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls.”

Comment:

The term ‘switch’ has been used for over 100 years. It implies a device that applies line voltage to a luminaire and interrupts the line current to a luminaire. Many modern lighting control systems use a low-voltage digital keypad to control lighting.

Recommendation:

Change language to “All luminaires shall be functionally controlled with manual ON and OFF lighting controls.”

6. SECTION 130.1(a)2C

Current language:

“If controlling dimmable luminaires, be a dimmer switch that allows manual ON and OFF functionality, and is capable of manually controlling lighting - - - ”

Comment:

The term ‘dimmer switch’ implies a line voltage phase-cut lighting controller. Many modern lighting control systems use a low-voltage digital keypad to control lighting via a digitally controlled ballast or a digitally controlled module that controls the ballast.

Recommendation:

Provide a definition of “dimmer switch”.

7. SECTION 130.1(b)3A

Current language:

~~“3. Each luminaire shall be controlled by at least of one of the following methods:~~ Dimmable luminaires shall also be controlled by a manual dimmer according to Section 130.1(a)2C.

A. Manual dimming meeting the applicable requirements of Section 130.1(a).”

Comment:

Sub paragraph (b)3A is a repeat of the basic paragraph (b)3

Recommendation:

Delete "A. Manual dimming meeting the applicable requirements of Section 130.1(a)."

8. SECTION 130.1(d)

Current language:

"(d)2Div. In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent.

"(d)3Biv. When primary sidelit zones receive illuminance levels greater than 150 percent of the illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero.

Comment:

The difference in syntax of these two sentences leads to potential confusion.

Recommendation:

Change language of these two paragraphs so that they have parallel syntax.

9. SECTION 130.1(d)2Div

Current language:

"In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent."

Comment:

To measure just the daylight contribution, it is necessary to turn off the electric lighting that is only in the daylit zone. Many lighting control designs include more luminaires in the on/off zone than there are luminaires in the controlled daylit zone, thus turning off all electric lights will result in a false measurement of the influence of just the controlled lighting.

Recommendation:

Change language to: "In areas served by lighting that is daylight controlled, when the **combined** illuminance ~~received from the daylight~~ is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent."

10. SECTION 130.1(d)3Biv

Current language:

"When primary sidelit zones receive illuminance levels greater than 150 percent of the illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero."

Comment:

The word 'illuminance' is used twice within the sentence and in each case the illuminance is referring to a different measurement.

Recommendation:

Change language to: “When primary sidelit zones receive **combined** illuminance levels greater than 150 percent of the **design** illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero.”

11. SECTION 130.1(d)1C

Current language:

130.1(d)1A. SECONDARY SIDELIT DAYLIT ZONE

Comment:

Mentioning secondary sidelit daylit zone in this section of indoor lighting controls that shall be installed implies that it is mandatory, even though there is no mention in (d)2 of controls for the luminaire in secondary sidelit daylit zone

Additional requirements for SECONDARY SIDELIT DAYLIT ZONE are in Section 140.6(d).

Recommendation:

Delete the SECONDARY SIDELIT DAYLIT ZONE description from 130.1(d)1 and move it to Sec 140.6(d).

–or–

In 130.1(d)2 add a subparagraph stating that controls for luminaires in the Secondary Sidelit Daylit Zone shall comply with the requirements of Sec 140.6(d) Automatic Daylighting Controls in Secondary Daylit Zones.

12. SECTION 130.1(d)1A,B,C

Current language:

“A. SKYLIT DAYLIT ZONE is the rough area **in plan view** under each skylight - - -“

“B. PRIMARY SIDELIT DAYLIT ZONE is the area **on a plan** directly adjacent to each vertical glazing - - -“

“C. SECONDARY SIDELIT DAYLIT ZONE is the area **on a plan** directly adjacent to each vertical glazing - - -“

Comment:

The zones are more than just on the plans. The zones are in the actual building.

Recommendation:

Revise the syntax in B and C to match that in A, i.e. **.in plan view** not **on a plan**.

13. SECTION 130.1(d)2Div

Current language:

“iii. For each space, the combined illuminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available.”

“iv. In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent.”

Comment:

Paragraph iii states “the combined illuminance from the controlled lighting and daylight” whereas paragraph iv states “the illuminance received from the daylight”. The measured values are not consistent.

Paragraph iii states “the illuminance from controlled lighting when no daylight is available.” whereas paragraph iv states “the design illuminance”. The measured values are not consistent.

The two clauses of each paragraph need to be consistent in order to properly commission and test the daylighting controls.

Recommendation:

Change language to “iv. In areas served by lighting that is daylight controlled, when **the combined illuminance from the controlled lighting and daylight** is greater than 150 percent of the **illuminance from controlled lighting when no daylight is available**, the general lighting power in that daylight zone shall be reduced by a minimum of 65 percent.”

14. SECTION 130.1(e)

Current language:

“Lighting power in **buildings** larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Response Signal; so that the **building’s total lighting power** can be lowered by a minimum of 15 percent below the total installed lighting power.”

Comment:

The **building’s total lighting power** must be reduced even if the project may be only one tenant in a multi-tenant building.

Recommendation:

Change language to “Lighting power in **a space** larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Response Signal; so that the **total lighting power of the space** can be lowered by a minimum of 15 percent below the total installed lighting power **of the space**.”

15. SECTION 130.1(e)

Current language:

“Spaces that are non-habitable shall not be used to comply with this requirement, and spaces with a lighting power density of less than 0.5 watts per square foot shall not be counted toward the building’s total lighting power.”

Comment:

The statement “lighting power density of less than 0.5 watts per square foot” provides confusion with 140.6(c) where only Parking Garage Areas have an LPD of less than 0.5.

Recommendation:

Change language to “Spaces that are non-habitable shall not be used to comply with this requirement, and spaces with a **design** lighting power density of less than 0.5 watts per square foot **shall not be used to comply with this requirement**.”

16. SECTION 130.1(e)

Current language:

“Spaces that are non-habitable shall not be used to comply with this requirement, and spaces with a lighting power density of less than 0.5 watts per square foot shall not be counted toward the building’s total lighting power.”

Comment:

This sentence requires a unique recalculation of a buildings area and design lighting power.

Non-habitable spaces are general a small percentage of an overall building, and hence do not have a significant influence on the overall demand response effect.

In buildings where the majority of space has a design lighting power density of less than 0.5 watts per square foot, then this area should not be counted toward the 10,000 sf.

Recommendation:

Delete this sentence in its entirety.

17. Table 130.1-A

Current language:

“Linear fluorescent and U-bent fluorescent >13 watts. - Four distinct power steps – Stepped dimming; or Continuous dimming; or Switching alternate lamps in each luminaire, having a minimum of 4 lamps per luminaire, illuminating the same area and in the same manner.”

Comment:

Two 2-step dim ballasts cost more than one continuous dimming ballast, and a four step controller costs more than a continuous controller.

A luminaire with a minimum of four lamps and a minimum of four ballasts costs more than a luminaire with continuous dimming.

Recommendation:

Delete the four distinct power steps and replace it with continuous dimming.

Change the language to “Continuous dimming 10-100 percent” or “Continuous dimming 20-100 percent”.

18. SECTION 130.2(a)

Current language:

“All outdoor incandescent luminaires rated over 100 watts, determined in accordance with Section 130.0(c)2, shall be controlled by a motion sensor.”

Comment:

A greater number of luminaires would be covered by the motion sensor requirement if the threshold were lowered.

Recommendation:

Provide a definition of “All outdoor incandescent luminaires **rated 100 watts or greater**, determined in accordance with Section 130.0(c)2, shall be controlled by a motion sensor.”

19. SECTION 130.2(b)

Current language:

“(b) Luminaire Cutoff Requirements.”

Comment:

Cutoff luminaire is not included in Section 100.1 Definitions.

Recommendation:

Provide a definition for “cutoff luminaire”

20. SECTION 130.2(b)

Current language:

“All outdoor luminaires rated for use with lamps greater than 150 lamp watts, determined in accordance with Section 130.0(c), shall comply with Backlight, Uplight, and Glare (collectively referred to as "BUG" in accordance with IES TM-15-11, Addendum A) requirements as follows:”

Comment:

The Uplight and Glare criterion in Tables 130.2-A and 130.2-B are based on lumens. Therefore the basic criteria should also be based on lumens and not watts, or even better would be to delete the opening criteria.

Recommendation:

~~“All outdoor luminaires rated for use with lamps greater than 150 lamp watts, determined in accordance with Section 130.0(c), shall comply with Backlight, Uplight, and Glare (collectively referred to as "BUG" in accordance with IES TM-15-11, Addendum A) requirements as follows:”~~

21. SECTION 130.2(c)1

Current language:

“All installed outdoor lighting shall be controlled by a photocontrol or astronomical time-switch control that automatically turns OFF the outdoor lighting when daylight is available.”

Comment:

The term ‘when daylight is available’ is vague and not quantifiable.

Recommendation:

Provide a definition for “when daylight is available”.

22. SECTION 130.2(c)2

Current language:

“All installed outdoor lighting shall be circuited and independently controlled from other electrical loads by a photocontrol or an astronomical time-switch control.”

Comment:

It is not the intent of this section to describe how outdoor lighting is circuited.

Recommendation:

~~“All installed outdoor lighting shall be circuited and independently controlled from other electrical loads by a photocontrol or an astronomical time-switch control.”~~

23. SECTION 130.2(c)1 and 2

Recommendation:

Interchange (c)1 and (c)2 so that independent control is first and the type of control is second.

24. SECTION 130.2(c)3B

Current language:

“Shall be capable of automatically reducing the lighting power of each luminaire by at least 40 percent but not exceeding 90 percent, or provide continuous dimming through a range that includes 40 percent through 90 percent, and“

Comment:

Continuous dimming is capable of providing “at least 40 percent but not exceeding 90 percent”, hence continuous dimming does not need to be mentioned in the second half of the sentence.

Recommendation:

Change language to “ Shall be capable of automatically reducing the lighting power of each luminaire by at least 40 percent but not exceeding 90 percent, ~~or provide continuous dimming through a range that includes 40 percent through 90 percent, and”~~”

25. EXCEPTION 5 to Section 130.2(c)3

Current language:

Exempts lighting for Commercial Fuel Station Sales Canopies from the 24ft mounting motion sensor partial off requirements.

Comment:

Commercial fueling stations are not in continuous use all night long. Energy saving is available by requiring partial off for this application.

Recommendation:

Delete the exemption for Commercial Fuel Station Sales Canopies from the 24ft mounting motion sensor partial off requirements.

26. SECTION 130.2 (c)5D

Current language:

“Outdoor wall mounted luminaires having a bilaterally symmetric distribution as described in the IES Handbook (typically referred to as "wall packs") where the bottom of the luminaire is mounted 24 feet or less above the ground shall comply with the applicable requirements in Section 130.2(c)3. ”

Comment:

Wall pack luminaires are generally used for area lighting or security lighting and not generally used for façade, ornamental or dining lighting.

Recommendation:

Move this paragraph from 130.2(c)5D to 130.2(c)6.

-or-

Delete this paragraph because ‘wall packs’ are already covered under 130.2(c).

27. TABLE 130.2-A and TABLE 130.2-B

Comment:

How does one know which Outdoor Lighting Zone applies to their project?

Recommendation:

Indicate that the definitions of the Lighting Zones can be found in Part 1, Section 10-114.

28. TABLE 130.2-A and TABLE 130.2-B

Comment:

These two tables are used together in selecting luminaires.

Recommendation:

Locate Tables 130.2-A and 130.2-B on the same page.

29. EXCEPTION to Section 130.3(a)2B

Current language:

Exception applies to "Outdoor signs in tunnels and large covered areas that are intended to be illuminated both day and night."

Comment:

Large covered area is vague.

Recommendation:

Define and quantify "large covered areas".

30. SECTION 130.4(a)1

Current language:

"Certifies that all of the lighting acceptance testing necessary to meet the requirements of Part 6 are included on the plans and specifications;"

Comment:

The requirement that acceptance testing be included on the plans and specifications is the responsibility of the design professional, not that of the acceptance tester.

The design professional indicates the required acceptance test in form NRCC-LTI-01-E and certifies the form under penalty of perjury.

The CLCATT does not decide which acceptance tests are to be performed.

Recommendation:

Delete paragraph 130.4(a)1 in its entirety.

31. SECTION 130.4(a)

Current language:

The list of testing covers Section 130.1 paragraphs 130.1(c), 130.1(d) and 130.1(e)

Comment:

There are no specific tests for area on/off controls or for multi-level (dimming) controls.

Recommendation:

Add paragraphs 130.1(a) and 130.1(b) to the list of testing.

32. SECTION 130.5(a)

Current language:

~~“(a) Service Metering.”~~

Comment:

Retain the paragraph designator “(a)”

Recommendation:

Change language to “(a) Service Metering.”

33. SECTION 130.5(b)1

Current language:

“Up to 10 percent of the load for each load type of TABLE 130.5-B shall be allowed to be from other electrical load; or”

Comment:

Make the final word agree in tense.

Recommendation:

Change language to: “Up to 10 percent of the load for each load type of TABLE 130.5-B shall be allowed to be from other electrical loads; or”

34. SECTION 130.5(b)3

Current language:

“Buildings for which a complete metering and measurement system is provided that at a minimum measures and reports the loads called for in TABLE 130.5-B”

Comment:

The sentence syntax is awkward and the metering requirements are not given.

Recommendation:

Change language to ““Buildings for which a complete metering and measurement system is provided shall at a minimum measure and report the loads called for in TABLE 130.5-B. The electrical usage shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The metering system shall be capable of maintaining all data collected for a minimum of 36 months.”

35. SECTION 130.5(c)

Current language:

“The conductors for feeders and branch circuits combined shall be sized for a maximum of 5 percent voltage drop total.”

Comment:

The sentence syntax is awkward. The sentence should be harmonized with that from the California Electrical Code.

Recommendation:

Change language to “The maximum total voltage drop on both feeders and branch circuits to the farthest outlet shall not exceed 5 percent.”

36. SECTION 130.5(d)4 and 5

Current language:

“4. If an automatic time-switch control, other than an occupant sensing control, is installed comply with Section 130.5(d)1, - - - - ”

“5. If an automatic time-switch control, other than an occupant sensing control, is installed comply with Section 130.5(d)1, - - - - ”

Comment:

Insert the missing word “to”.

Recommendation:

Change language to:

“4. If an automatic time-switch control, other than an occupant sensing control, is installed **to** comply with Section 130.5(d)1, - - - - ”

“5. If an automatic time-switch control, other than an occupant sensing control, is installed **to** comply with Section 130.5(d)1, - - - - ”

37. SECTION 130.5(d)7

Current language:

“7. Countdown timer switch shall not be used to comply with the requirements of Section 130.5(d)1;and”

Comment:

Provide clarification.

Recommendation:

Clarify whether a countdown timer switch could be used to comply with Section 130.5(d)4 for the two hour override control.

38. SECTION 130.5(e)

Current language:

“Demand responsive controls and equipment.”

Comment:

Demand responsive controls is a lighting control function, not an electrical power distribution system characteristic.

Recommendation:

Move this paragraph to Section 130.1(e).

39. SECTION 130.5(f)

Current language:

“Energy Management Control System”

Comment:

Energy Management Control System is a lighting control function or a temperature control function, not an electrical power distribution system characteristic.

Recommendation:

Move paragraphs (f)1A, B and C to Section 130.1.

Move paragraph (f) 2 to Section 120.2

40. TABLE 130.5-A and TABLE 130.5-B

Comment:

These two tables are used together in designing an electrical power distribution system.

Recommendation:

Locate Tables 130.5-A and 130.5-B on the same page.

41. SECTION 140.6

Current language:

This section uses the terms “actual wattage” and “actual design wattage”.

This section uses the terms “Actual Indoor Lighting Power Density”, “actual indoor Lighting Power Density”, and “actual Lighting Power Density”.

This section uses the terms “Allowed Indoor Lighting Power Density”, “allowed Indoor Lighting Power Density”, “allowed indoor Lighting Power Density”, “allowed Lighting Power Density”, “allowed lighting power”, and “Allowed General Lighting Power Density”.

Comment:

The inclusion or deletion of adjectives when meaning the same thing can be confusing.

The variation of capitalization can be confusing.

A consistent use of terms leads to a better understanding of the Code.

Recommendation:

Be consistent in the use of:

“Actual Indoor Lighting Power”

“Allowed Indoor Lighting Power”

“Allowed Indoor Lighting Power Density”

42. SECTION 140.6

Current language:

“i. The Calculation of Actual Indoor Lighting Power Density”

“ii. The Calculation of Allowed Indoor Lighting Power Density”

Comment:

There is general inconsistent use of Lighting Power Density and Lighting Power.

Lighting Power Density is not calculated, it is a lookup value from the tables.

‘Allowed Lighting Power’ in watts is the calculated product of ‘Allowed Lighting Power Density’ in watts per square foot times ‘Actual Area’ in square feet.

Recommendation:

Change language to “i. The Calculation of Actual Indoor Lighting Power”

Change language to “ii. The Calculation of Allowed Indoor Lighting Power”

43. SECTION 140.6(a)

Current language:

“(a) Calculation of Actual Indoor Lighting Power Density. The actual indoor Lighting Power Density of all proposed building areas is the total watts of all planned permanent and portable lighting systems in all areas of the proposed building;”

Comment:

There is general inconsistent use of Lighting Power Density and Lighting Power.

Recommendation:

Change language to “(a) Calculation of Actual Indoor Lighting Power Density. The actual indoor Lighting Power Density of all proposed building areas is the total watts of all planned permanent and portable lighting systems in all areas of the proposed building;”

44. SECTION 140.6(c)2E

Current language:

“E. If at the time of permitting for a newly constructed building, a tenant is not identified for a multi-tenant area, a maximum of 0.6 watts per square foot shall be allowed for the lighting in each area in which a tenant has not been identified. The area shall be classified as Unleased Tenant Area.”

Comment:

This is one of very few LPDs that is given within the text of Section 140.6. All the other LPDs are given within the body of a table.

Recommendation:

Change language to “E. If at the time of permitting for a newly constructed building, a tenant is not identified for a multi-tenant area, the area shall be classified as Unleased Tenant Area. The Lighting Power Density value in TABLE 140.6-C for Unleased Tenant Area shall be allowed for the lighting in each area in which a tenant has not been identified.”

45. SECTION 140.6(c)2Gv

Current language:

“v. The additional lighting power allowances shall not be used when using the Complete Building Method, or when the Tailored Method is used for any area in the building; and”

Comment:

Use parallel sentence construction.

Recommendation:

Change language to:

“v. The additional lighting power allowances shall not be used when using the Complete Building Method, or when **using** the Tailored Method ~~is used~~ for any area in the building; and”

-or-

“v. The additional lighting power allowances shall not be used when ~~using~~ the Complete Building Method **is used**, or when the Tailored Method is used for any area in the building; and”

46. SECTION 140.6(c)2Gvii

Current language:

“vii. In addition to all other additional lighting power allowed under Sections 140.6(c)2Gi through vi, up to 1.5 watts per square foot of additional lighting power shall be allowed in a

videoconferencing studio, as defined in Section 100.1, provided the following conditions are met:"

Comment:

This is one of very few LPDs that is given within the text of Section 140.6. All the other LPDs are given within the body of a table.

The 1.5 watts per square foot of additional lighting power for videoconferencing studio is already given in Table 140.6-C Footnote 8, and the footnotes is already referenced in paragraph (c)2G.

Recommendation:

Change language to "vii. In addition to all other additional lighting power allowed under Sections 140.6(c)2Gi through vi, additional lighting power shall be allowed in a videoconferencing studio, provided the following conditions are met:"

47. SECTION 140.6(c)2Gviib

Current language:

"b. The Videoconferencing Studio is a room with permanently installed videoconferencing cameras, audio equipment, and playback equipment for both audio-based and video-based two-way communication between local and remote sites;"

Comment:

Paragraph "b" is a word-for-word copy of the definition given in Section 100.1, and hence it is not necessary to be repeated.

Recommendation:

Change language to "b. The Videoconferencing Studio shall be as defined in Section 100.1."

48. SECTION 140.6(d)

Current language:

(d) Automatic Daylighting Controls in Secondary Daylit Zones. All luminaires providing general lighting that is in, or partially in a Secondary Sidelit Daylit Zone as defined in Section 130.1(d)1C, and that is not in a Primary Sidelit Daylit Zone shall:

1. Be controlled independently from all other luminaires by automatic daylighting controls that meet the applicable requirements of Section 110.9; and
2. Be controlled in accordance with the applicable requirements in Section 130.1(d)2; and
3. All Secondary Sidelit Daylit Zones shall be shown on the plans submitted to the enforcing agency.

EXCEPTION 1 to Section 140.6(d): Luminaires in Secondary Sidelit Daylit Zone(s) in areas where the total wattage of general lighting is less than 120 Watts.

EXCEPTION 2 to Section 140.6(d): Luminaires in parking garages complying with Section 130.1(d)3.

Comment:

Primary Sidelit Daylit Zones are defined and described in Section 130.1(d) along with their controls, whereas, Secondary Daylit Zones are defined and described in Section 130.1(d) and the required controls for Secondary Daylit Zones are described in Section 140.6(d).

This separation of the definition and controls for Secondary Daylit Zones is confusing and has the potential of leading to noncompliance.

Recommendation:

Delete Secondary Daylit Zones from Section 140.6(d), and move Secondary Daylit Zones to Section 130.1(d).

49. EXCEPTION 2 to Section 140.6(d):

Current language:

"Luminaires in parking garages complying with Section 130.1(d)3."

Comment:

This exception seems to imply that Secondary Daylit Zones do not apply to parking garages.

Recommendation:

Clarify the language.

50. Table 140.6-A

Current language:

~~"1. Partial-ON Occupant Sensing Control"~~

Comment:

This PAF from 2013 Title 24 provided viable working solution that should be retained in the 2016 Title 24.

Recommendation:

Retain "1. Partial-ON Occupant Sensing Control" and change it's PAF from 0.20 to 0.10.

51. Table 140.6-A

Current language:

~~"3. Dimming System- Manual Dimming- Multiscene Programmable"~~

Comment:

Multiscene programmable dimming systems in Hotels/motels, restaurants, auditoriums, theaters provide real energy savings and therefore should receive a PAF. It could be required that none of the programmed scene exceed 80% or 90% of the total connected lighting power, and that the scenes be acceptance tested by a CLCATT. Manual dimming is easy to override and not provide energy savings and it should be deleted from the PAF table.

Recommendation:

Retain "3. Dimming System- Multiscene Programmable", and retain it's PAF at 0.20 or change it's PAF from 0.20 to 0.10.

52. Table 140.6-A

Current language:

~~"5. Combined Manual Dimming plus Partial-ON Occupant Sensing Control"~~

Comment:

This PAF from 2013 Title 24 provided viable working solution that should be retained in the 2016 Title 24.

Recommendation:

Retain “5. Combined Manual Dimming plus Partial- ON Occupant Sensing Control” and change it’s PAF from 0.25 to 0.15.

53. Table 140.6-B

Current language:

“COMPLETE BUILDING METHOD LIGHTING POWER DENSITY VALUES”

Comment:

Insert a hyphen between METHOD LIGHTING to make the title consistent with Table 140.6-C

Recommendation:

“COMPLETE BUILDING METHOD – LIGHTING POWER DENSITY VALUES”

54. TABLES 140.6-B and 140.6-C

Current language:

The header to the LPD values in Table 140.6-B reads “ALLOWED LIGHTING POWER DENSITY (WATTS PER SQUARE FOOT)”, whereas the header to the LPD values in Table 140.6-C reads “ALLOWED LIGHTING POWER (W/ft²)”

Comment:

The header in Table 140.6-C lacks the word “DENSITY”.

The expressed units of measure should be consistent.

Recommendation:

The header to the LPD values in Table 140.6-C should read “ALLOWED LIGHTING POWER DENSITY (W/ft²)”

55. TABLE 140.6-C

Current language:

Table 140.6-C is split between two pages.

Comment:

Table 140.6-C is difficult to use because it is split between two pages with the column headers on one page and portions of the columns on the next page without headers.

Recommendation:

Locate the body of Table 140.6-C all on one page. The footnotes to Table 140.6-C may be located on the next page taking care not to split the footnotes between different pages.

56. TABLE 140.6-C

Current language:

Some of the LPD values are given as two significant digits, and some are given as three significant digits.

Comment:

Use consistent nomenclature.

Recommendation:

Change 1.40 to 1.4

Change 0.7 to 0.70

Change 0.9 to 0.90

57. TABLE 140.6-C

Current language:

There is no entry in the table for “Unleased Tenant Area”

Comment:

There is language in Sec 140.6(c)2E that gives the LPD for “Unleased Tenant Area”

Recommendation:

Add **Unleased Tenant Area** at **0.60** w/sf to the body of Table 140.6-C.

58. Table 140.6-D

Current language:

“TAILORED METHOD LIGHTING POWER ALLOWANCES”

Comment:

Insert a hyphen between METHOD LIGHTING to make the title consistent with Table 140.6-C

Recommendation:

“TAILORED METHOD – LIGHTING POWER DENSITY VALUES”

59. TABLE 140.6-D

Current language:

Header to Column 5 reads “Allowed Ornamental/Special Effect Lighting”

Comment:

The values in Column 5 need a unit of measure.

Recommendation:

Change language to “Allowed Ornamental/Special Effect Lighting Power Density (W/ft²)”

Thank you for your consideration of these comments.

Respectfully submitted,



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