

AUSTRALIAN BUILDING CODES BOARD

RESPONSE SHEET
BCA 2010 VOLUME ONE
PUBLIC COMMENT DRAFT

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Clause: J6.2 (a) (ii) Interior Artificial Lighting

Recommended change to draft: (ii) modify text and allow use of either LPD or IPD,

“when designing for the lamp power density (LPD) or Illumination power density (IPD), the power of the proposed installation must be used rather than nominal allowances for exposed batten / lamp holders and luminaires; and”

Comment/reason for change: Clarifies and allows use of either LPD or IPD method and requirements.

We note the wording for J6.2(a)(ii) is tricky as there are 2 stages of approval - one for the design and the second after construction. Stating "design" should allow use in the BCA.

Clause: J6.2 (a) (iii) (A) Interior Artificial Lighting

Recommended change to draft: (iii) A where fluorescent lamps are used they must—
(A) have an electronic ballast –

DELETE REQUIREMENT A.
(Retain requirement presently shown as B).

Comment/reason for change: This is both technology specific and a minimum energy performance MEPS requirement.

The BCA should remain performance based rather than technology specific.

Clause: J6.2 (b) (iii) (B) Interior Artificial Lighting –where there is track lighting

Recommended change to draft: Clause J6.2(b)(iii)(B) - Amend to read "Where there is adjustable position – flexible lighting such as trapeze lighting or rigid track lighting-".

Comment/reason for change: Improvement to capture wire supported (not rigid track) lighting

Clause: J6.2 c (iv)

Recommended change to 6.2 c (iv). A heater where the heater also emits light. This should not be exempt in this section. **Move to relevant safety section.**

Comment/reason for change:

Located in wrong section.

Also check items i) to vii) for exemption in all class buildings and other sections ie 6.3?

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Board Room and conference room. 10 W/m².

Comment/reason for change: Lighting Council member support the increase as quality lighting is difficult to achieve at 8W/m²..

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Separate Circulation Space and Corridor

Comment/reason for change: These have very different lighting requirements..

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Circulation Space 10 W/m².

Comment/reason for change: Members support the increase as these spaces are often associated with/near offices and should be lit to equal values.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Corridor 8 W/m².

Comment/reason for change: There has been considerable discussion over the value required for corridor lighting. These range from levels associated with zero occupancy, low level lighting task requirements, (find door) and the large control adjustment factors allowed and difficulty in obtaining small efficient luminaires that will adequately illuminate walls etc. Agreed the need for consistency with other areas and the use of other system components were important ie timers.

While functional use of timers is difficult in corridors they are considered to be good value in apartments. Recommend use of 0.7 as factor for timers in apartment buildings. Reinstate Specification J6 2. Lighting Timers.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: All Health-care situations to use 10 W/m² with 13W/m² allowed wherever cyanosis lamps are used. This includes childrens wards, patent care and examination rooms. .Perhaps use term "general ward".

Comment/reason for change: Lamps for the detection of the medical condition - Cyanosis are required in many areas of hospitals. These lamps have a significantly reduced lumen output compared to the equivalent fluorescent lamp with normal colour rendering. It will be extremely difficult to achieve adequate illumination with Cyanosis lamps if a limit of 7 or 10W/m² is applied.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Office lighting.

Comment/reason for change: There has been considerable discussion over the W/m² value required for office lighting. The consensus is that 9W/m² is too low a value to adequately illuminate a space without requiring the use of highly directional lighting that will provide light on a horizontal workplace but will also generate an overall space that will appear gloomy or cave like due to inadequate light on walls, other vertical surfaces and ceiling.

The Lighting Council Greenlight Australia strategy will provide a solution to this in the future using luminaire ratings, and preferably mandatory use of controls. It is proposed that this or similar methodology be adopted in future iterations of the building code.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Office lighting.<200 lux

Comment/reason for change: Delete category as it appears redundant. Alternatively define area and requirements for use with task lighting.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Retail space

Comment/reason for change: Reject 20W/m². Retain 25W/m². It will not be possible for retailers to get adequate vertical illumination levels with 20 W/m². until lighting technology ie low wattage metal halide and LED become more readily available and suitable for the application. Reduce value in future iterations of the code.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Service area, locker

Comment/reason for change: Support 5 W/m² as realistic value. 3 was too low.

Table: J6.2a Maximum Illumination Power Density

Recommended change to draft: Toilet

Comment/reason for change: Recommend retain 5W/m² as adequate value

Table: J6.2a Maximum Illumination Power Density Note 1. a) to h)

Recommended change to draft: Delete list and express as a step function.

Comment/reason for change: Simplify table.

Table: J6.2b Illumination Power Density Adjustment Factor

Recommended change to draft: Add factor and conditions for use of lighting timers to table J6.2b.

Comment/reason for change: This recommendation stems from the considerable discussion over the value required for corridor lighting. Functional use of timers is difficult in corridors they are considered to be good value in apartments. Recommend use of 0.7 as factor for timers in apartment buildings.
Also reinstate Specification J6 2. Lighting Timers.

Table: J6.2b Illumination Power Density Adjustment Factor 3 C

Recommended change to draft: Delete circumference. Use perimeter

Comment/reason for change: Clarity.

Table: J6.2b Illumination Power Density Adjustment Factor

Recommended change to draft: Delete Room Size adjustment factors.

Comment/reason for change: This is now under the Room Aspect Ratio.

Table: J6.3 (a) Interior artificial lighting and power control

Recommended change to draft: Replace ... where individually operated by a switch .. to that of an "automated control device" in accordance to specification J6.

Comment/reason for change: The use of automated controls will significantly improve energy savings over those that can be achieved by manual intervention via a switch..

Clause: J6.3 (a) Interior artificial lighting and power control

Recommended change to draft: Add a clause stating that Class 5 to 9 buildings must be controlled by an "automated lighting control device" according to a newly added lighting controls hierarchy and application matrix that specifies lighting controls zone sizes, building class application and room by room application.

Comment/reason for change: To enforce the use of automated lighting controls such as:

- Motion Detectors
 - Photoelectric Cell Switching
 - Time Clock Switching
 - Daylight Dimming Systems
 - Lumen Maintenance Dimming Controls
 - Programmable Lighting Controls for Switching / Dimming
 - Programmable Building Management Systems (BMS) for Switching / Dimming
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Clause: J6.3 (c) An artificial lighting switch or other control device in (a) must—

Recommended change to draft: Add automated control device and change (ii) in regard to lighting zones/areas from 250m² to 100m² zones regardless of floor area.

Comment/reason for change: This will align Section J6.3 (ii) with that of Green Star Office Design Ene-4 Lighting Zoning which requires “the size of individually switched lighting zones does not exceed 100m² for 95% of the NLA” and be operable by presence sensing automated control device.

Clause: J6.3 (d) Artificial lighting in a building or *storey* of a building, other than a Class 2 or 3 building or a Class 4 part, of more than “250 m²” in *floor area* “**must**” be controlled by—

(i) a time switch in accordance with **Specification J6**; or
(ii) an occupant sensing device such as—

(A) a security key card reader; or
(B) a motion detector in accordance with **Specification J6**

Recommended change to draft: Change 250m² to 100 m².

Comment/reason for change: To enforce the use of automated lighting controls for all floor sizes.

Clause: J6.3 (e) Interior artificial lighting and power control

Recommended change to draft: Delete the word “switched” and replace with “dimmed on a separate lighting circuit that is controlled by an automatic daylight sensing device.”

Comment/reason for change: To enforce the use of automated day-lighting controls and to avoid harsh switching of lights near the windows.

Clause: J6.4 (a) (iii) Interior decorative and display lighting

Recommended change to draft: Delete “where the display lighting exceeds 7kW”

Comment/reason for change: In order to save energy all display lighting should be controlled by an automated time switch regardless of the connected load. Also Signage and display lighting within cabinets, display cases and shelving should be included in the BCA with limits set for light source minimum efficacy.

SECTION END.

SPECIFICATION J6

LIGHTING AND POWER CONTROL DEVICES

Clause: Specification J6 Lighting and Power Control Devices

Clause 2. Lighting Timers

Reinstate Clause 2.

Recommended change to draft: Functional use of timers is difficult in corridors they are considered to be good value in apartments. Recommend use of 0.7 as factor for timers in apartment buildings. Reinstate Specification J6 2. Lighting Timers.

Comment/reason for change: This recommendation stems from the considerable discussion over the value required for corridor lighting. These range from levels associated with zero occupancy, low level lighting task requirements, (find door) and the large control adjustment factors allowed and difficulty in obtaining small efficient luminaires that will adequately illuminate walls etc. Agreed the need for consistency with other areas and the use of other system components were important ie timers.

Clause: Specification J6 Lighting and Power Control Devices Clause

3. Time switch (b) (i)

(b) A time switch for internal lighting must be capable of— (i) limiting the period the system is switched on to 2 hours beyond the time for which the **building** is occupied; and

Recommended change to draft: Change the word **building** to **floor**. – **Also reduce 2 hours to 1 hour.**

Comment/reason for change: With the current wording the lighting on all floors of a multi storey building will remain turned on with only one occupant on one floor of the building.

Clause: Specification J6 Lighting and Power Control Devices Clause 4. Motion Detectors (a) (i)

Recommended change to draft: In addition to infra-red, ultrasonic, or microwave, make allowable computerised control management software that operates as presence detection via the workstation PC.

Comment/reason for change: Individual control has been shown to improve worker productivity, reduce technology rejection, improve system acceptance and energy savings.

Clause: Specification J6 Lighting and Power Control Devices Clause 4. Motion Detectors (b) (iii) (A)

Recommended change to draft: Change the maximum control area size from 500m² to not more than 100m² for a single sensor.

Comment/reason for change: 500m² is too large an area to control with a single motion detector.

Clause: Specification J6.5 Artificial lighting around the perimeter of a building.

Recommended change to draft: Apply Section J6.5 (a)(i)(ii) to “J6.3 Interior artificial lighting and power control”.

Comment/reason for change: Improve control requirements for perimeter lighting

Section F4.4 Artificial Lighting –

Recommended change to draft:

Section F4.4 lighting must always be provided for stairways, passageways and ramps – egress lighting.

Comment/reason for change: lighting in such egress areas to be operated only by automated lighting control in the form of a presence sensor, be it ultrasonic, PIR or otherwise. In the case of Fire Stairs, a Reed switch working in combination with a motion detector shall be used.

Section I2.

Lighting Council Australia make the following comments.

BCA – SECTION I2.

Lighting Council Australia maintains Section I2 is the often forgotten component of the BCA especially in relation to achieving Energy Efficiency outcomes. This is despite the note under Performance Requirement IP2.1. “*A building’s services must continue to perform to a standard of energy efficiency no less than that which they were originally required to achieve*”.

Section I2.2 Components of services also notes that all building services and their respective components/technologies must be maintained to perform as per their original standard.

Actions to improve Section I2:

Define what measuring and reporting methodology is required to record and show system maintenance compliance. That is, what actions recorded via a log book or similar has been taken or put in place to ensure system maintenance is undertaken in accordance with objective I2.2.

Vendor specific technology and its application is one method but what is required is widespread adoption of the mandatory maintenance processes for Class 2 to 9 buildings and provision of documentation - maintenance records as proof. An example is the manual or computerised log book system to record life safety testing of emergency lighting. Suggested maintenance cycles would vary according to technology/services, but for lighting controls and luminaires, at least 12 months after initial installation and then bi-annually thereafter is suggested. Alternatively maintenance could be designed to align with any lamp replacement and/or lumen depreciation maintenance programme.

CIBSE Commissioning Codes:

The ABCB should consider implementing a commissioning code something similar to the UK CIBSE Code/guidelines for the commissioning of building services as part of Section I2. This would ensure building lighting and other control systems operate in accordance to, “... a standard not less than they were originally required to achieve” (BCA Volume One, Section I2.2).

Building code compliance and certification of commissioning procedures for building services is not new. Specifically UK CIBSE Code M and for lighting systems Code L.

Refer to:

Part L, L1 (Conservation of Fuel and Power), commissioning, UK building code.

In summary it is a requirement to:

- Provide documentation in the form of a log book to record results of commissioning tests and adjustments.
- Part L - 2006 has made it a requirement to provide a certificate via an independent authority (suggest independent commissioning authority) confirming that all building services have been effectively commissioned.
- CIBSE Commissioning Code M is the approved procedure for commissioning of building services