The key practical compliance issues for Section J

ENERGY EFFICIENCY ESSENTIALS FOR 2010: BCA SECTION J & MANDATORY DISCLOSURE
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Changes to Section J for classes 3-9 buildings

- target cost-benefit ratio of 1:2
- greenhouse savings found to be of the order of 20-30%

Objective
- greenhouse reduction not energy efficiency

DTS requirements
- J1 insulation levels and
- J1 compensation for lost ceiling insulation
- J1 rooflights
- J2 glazing and shading
- J3, J5, J6 minor changes
- J7 spa and pool heating – applies in Vic
- J8 energy metering
J1: Insulation levels
Roof and ceiling
- R3.0/3.2 → R3.2
- R3.8/3.2 → R3.7
- Alpine
- R4.3 → R4.8

Key areas of change BCA2009 - BCA2010 classes 3, 5-9 Volume 1

J1: Insulation levels
External envelope walls
- R1.7/1.8 → R2.8
- R1.9/1.8 → R2.8
- Alpine
- R2.8 → R3.8
J1: Insulation levels
Internal envelope walls

- R0.9 → none
- R1.4 → R2.5 Alpine
- R0.9 → R1.5
- R0.9 → R1.0
- Alpine

Floors suspended over an unenclosed space

- none/R1.5 → R2.0
- R2.5 → R3.5 Alpine
- R1.0/1.5 → R2.0
- R1.0/1.5 → R2.0
J1: rooflights

<table>
<thead>
<tr>
<th>Area of rooflight as a % of floor area served</th>
<th>Maximum U - value W/m².K</th>
<th>Maximum SHGC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1.5%</td>
<td>None → 8.5</td>
<td>None → 0.83</td>
</tr>
<tr>
<td>1.5 - 2.0%</td>
<td>5.0 → 8.5</td>
<td>0.75 → 0.83</td>
</tr>
<tr>
<td>2.0 - 3.0%</td>
<td>5.0 → 5.7</td>
<td>0.75 → 0.57</td>
</tr>
<tr>
<td>3.0 - 4.0%</td>
<td>5.0 → 4.3</td>
<td>0.50 → 0.43</td>
</tr>
<tr>
<td>4.0 - 5.0%</td>
<td>5.0 → 3.4</td>
<td>0.50 → 0.34</td>
</tr>
<tr>
<td>5.0 – 10%</td>
<td>2.5 → forbidden</td>
<td>0.25 → forbidden</td>
</tr>
</tbody>
</table>

Values in table are for a rooflight shaft index of <0.5

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J2: Glazing area reductions:
classes 4, 5, 6, 7, 8, 9a & 9b
Method 2

38%
51%
48%
51% Alpine
J2: Glazing area reductions:
classes 3 & 9c
Method 1 in BCA2009, Method 2 in BCA2010

- 45-65%
- 63-85%
- 58-71%
- 47% increase to 74% reduction Alpine

Values presented are indicative only and will vary depending on glazing chosen and "depth" of hotel room or aged care suites

J2: Glazing area reductions:
classes 5 & 7 shopfront
Method 2 in BCA2010

- No change
J2: Glazing allowance comparisons zone 6:

What percentage of glazed area is permitted on each façade?

Eight-sided building
- Ground floor: clear single glazed shopfronts
- Upper levels: non shopfronts, improved glass
- $U = 4.5$, $SHGC = 0.45$
J2: Glazing allowance comparisons zone 6:
BCA 2009
Ground floor: clear single glazed shopfronts,
U=6.5, SHGC=0.8

Key areas of change BCA2009 - BCA2010 windows Volume 1
E 26% SE 31% N 25% NE 22% S 37% SW 33% W 31% NW 28% north

J2: Glazing allowance comparisons zone 6:
BCA 2009
Classes 5 - 9, U=4.5, SHGC=0.45

Key areas of change BCA2009 - BCA2010 windows Volume 1
E 44% SE 45% N 45% NE 41% S 48% SW 45% W 47% NW 47% north
**J2: Glazing allowance comparisons zone 6:**

**BCA 2010 Classes 5 - 9**

*U*=4.5, *SHGC*=0.45

- **E** 23%
- **SE** 23%
- **N** 24%
- **NE** 21%
- **S** 25%
- **SW** 24%
- **W** 25%
- **NW** 25%

**Shopfronts: No change in 2010**

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**J2: Glazing allowance comparisons zone 6:**

**BCA 2010 Classes 3 and 9c**

*U*=4.5, *SHGC*=0.45

- **E** 18%
- **SE** 19%
- **N** 18%
- **NE** 16%
- **S** 19%
- **SW** 18%
- **W** 19%
- **NW** 19%

**Shopfronts: No change in 2010**
J2: new Method 2 glazing calculator

Stringency options:
- Class 3 and 9c
- Display shopfront
- Other

Implications for design process

- BCA 2009 DTS glazing was difficult for some design concepts, particularly shopfronts
- BCA 2010 DTS glazing is far more stringent, triggering energy modelled solutions (JV3 compliance route)
- DO NOT develop architectural concept designs without an understanding of the new stringency
Implications for design process

- A façade design that departs the deemed-to-satisfy glazing/shading design will not necessarily comply through a JV3 modelled solution.

- Previously the now-deleted JV2 stated value method offered a “get out of jail” loophole for many projects. JV3 is not like this.

- JV3 sets a minimum stringency for building envelope energy efficiency

- Building envelope energy efficiency is not negotiable and cannot be offset by inclusion of renewable energy or energy efficient building services

JV3 Reference Building Method Refresher

The proposed building envelope must be as energy efficient or better than that of the reference building.

PROPOSED BUILDING
- Proposed Building Envelope
- Proposed Services
- Schedules of actual building operation provided >2,500 hours

REFERENCE BUILDING
- DTS Building Envelope
- DTS Services
- Schedule of actual building operation provided >2,500 hours

PROPOSED BUILDING
- Proposed Building Envelope
- DTS Services
- Schedule of actual building operation provided >2,500 hours
## Implications for design process

<table>
<thead>
<tr>
<th>2006-9 process</th>
<th>Inefficient 2010 process</th>
<th>Efficient 2010 process</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Architect develops concept with total design freedom to use large external glazing areas</td>
<td>• Architect develops concept with total design freedom to use large external glazing areas</td>
<td>• Architect develops concept and DTS check of glazing and rooflights is conducted. If it fails energy modellers advice sought</td>
</tr>
<tr>
<td>• After townplanning approval deemed-to-satisfy check of glazing and rooflights</td>
<td>• After townplanning approval deemed-to-satisfy check of glazing and rooflights fails</td>
<td>• When confident of compliance, concept is submitted for townplanning approval</td>
</tr>
<tr>
<td>• Where these fail to meet DTS, energy modeller engaged to advise on glazing required</td>
<td>• Modeler engaged and proposes total façade redesign</td>
<td>During documentation DTS check or JV3 modelling conducted to confirm compliance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Architect reworks design and resubmits for townplanning</td>
</tr>
</tbody>
</table>

## Resources

**BCA 2010 ABCB information seminars**
Melbourne, 29 & 30 April 9:30am-12:30pm

**BCA 2010 J5 HVAC services AIRAH information seminar**
Melbourne, 29 April 1:30-5:00pm
[www.airah.org.au](http://www.airah.org.au)

**New BCA 2010 Method 2 glazing calculator**
Introduction to Building Science Group

Dr Mirek Piechowski  
Team leader  
LEED AP

Dr Eddy Rusly

Michael Shaw  
NABERS Assessor  
Green star AP

Ross McCarthy

Anila Weerakkody  
LEED AP

Nick Kovess

Adrian Rowe

www.meinhardtgroup.com