



Building Commission

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Meeting the new energy efficiency requirements for residential buildings in the BCA 2012 Deemed-to-satisfy provisions

Meeting the energy efficiency requirements of the BCA 2012

There are various routes to compliance with the energy efficiency requirements in the BCA 2012 that come under two broad headings – Deemed-to-satisfy provisions and alternative solutions.

Deemed-to-satisfy (for Class 1 buildings)

Deemed-to-satisfy provisions (officially known as acceptable construction practice in the BCA), cover two compliance pathways:

1. Elemental provisions (known previously as deemed-to-satisfy or DTS); or
2. HERS and elemental provisions (a mixture of a rating done by an accredited assessor, and compliance with other relevant elemental provisions in the BCA)

Deemed-to-satisfy (for Class 2 and Class 4 parts of buildings)

There is only one compliance pathway for Class 2 and Class 4 parts of buildings that is a combination of HERS and elemental provisions.

Alternative solutions

Sometimes the deemed-to-satisfy provisions may be too rigid or do not work for certain building designs. In these cases the BCA allows compliance with an alternative solution. These compliance pathways give flexibility in compliance, enabling the use of innovative building solutions and materials. An alternative solution must be shown to meet the performance standards in the BCA by:

1. Verification method using a reference building (Part V2.6.2.2 in the BCA); and/or
2. Comparison with the deemed-to-satisfy provisions; and/or
3. Evidence of suitability; and/or
4. Expert Judgement.

This Advisory Note deals with the deemed-to-satisfy compliance pathway.

When can a building be labelled ‘6 Stars’?

Only buildings that achieve a 6 Star rating using NatHERS accredited software can claim to be ‘6 Star’. If a building has achieved compliance using any other method (e.g. elemental provisions, verification methods or other alternative solutions), then it cannot claim that it is a ‘6 star’ building. It can, however, state that it meets the energy efficiency requirements of the BCA.

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New Class 1 Buildings

Under the DTS provisions of the BCA, new Class 1 buildings are required to comply with the acceptable construction practice in Part 3.12. There are two options for compliance:

- 3.12.0 (i) - using National House Energy Rating (NatHERS) accredited software and the required parts of 3.12.1, 3.12.3 and 3.12.5; or
- 3.12.0 (ii) - Elemental DTS parts 3.12.1, 3.12.2, 3.12.3, 3.12.4 and 3.12.5.

Both these options must also comply with the WA Addition (located in Appendix A towards the end of the BCA). These options are detailed in *Table 1* below.

Table 1

Option 1 Using a software rating tool (3.12.0 (i))	Option 2 Using elemental provisions (3.12.0 (ii))
Comply with:	Comply with:
3.12.0.1 Heating and Cooling Loads (6 Star rating minimum - concessions apply for climate zones 1 and 2)	3.12.1 Building fabric
And	3.12.2 External glazing
3.12.1.1 Insulation installation requirements	3.12.3 Building sealing
3.12.1.2(c) Thermal breaks for a steel roof cladding to steel roof framing	3.12.4 Air movement
3.12.1.2(e) Compensating for ceiling insulation loss around exhaust fans, recessed downlights and flues	3.12.5 Services Note: The hot water system requirements replace the '5 Star Plus' provisions for hot water systems
3.12.1.4(b) Thermal breaks for lightweight cladding to steel wall framing	
3.12.1.5(c) Concrete slab on ground insulation required for in-slab heating or cooling	
3.12.1.5(d) Concrete slab on ground insulation specifications	
3.12.3 Building sealing and penetration sealing	
3.12.5 Services Note: The hot water system requirements replace the '5 Star Plus' provisions for hot water systems	WA Addition
WA 2.3.1 – Water Use Efficiency	WA 2.3.1 – Water Use Efficiency
WA 2.3.2 – Swimming Pool Covers and Blankets	WA 2.3.2 – Swimming Pool Covers and Blankets
WA 2.3.3 – Hot Water Use Efficiency	WA 2.3.3 – Hot Water Use Efficiency

New Class 2 buildings and Class 4 parts of a building

Class 2 and Class 4 parts of a building are required to meet the energy efficiency provisions set out in Section J of the BCA Volume 1. When using deemed-to-satisfy, there is only one pathway for compliance.

Class 2 buildings

Part J0.1 of the BCA Volume 1 sets out the deemed-to-satisfy provisions that a Class 2 building must comply with for energy efficiency. These requirements cover heating and cooling loads, air conditioning and ventilation, artificial lighting and power, hot water supply, swimming and spa pool plant and facilities for maintenance and monitoring.

For the heating and cooling loads of sole-occupancy units in a Class 2 building, provision J0.2 requires that the sole-occupancy units collectively achieve an average 6 star rating and individual sole occupancy units to achieve not less than a 5 star rating using a HERS tool that is accredited under the Nationwide House Energy Rating Scheme (NatHERS). In addition, there are a number of other provisions for general thermal construction, thermal break construction, compensation for loss of ceiling insulation, floor edge insulation and building sealing that the sole-occupancy units must also comply with. Common areas such as passageways, lobbies etc must comply with the relevant provision of Part J.

Class 4 part of a building

Part J0.1 of the BCA Volume 1 sets out the deemed-to-satisfy provisions that a Class 4 part of a building must comply with for energy efficiency. These requirements cover heating and cooling loads, air conditioning and ventilation, artificial lighting and power, hot water supply, swimming and spa pool plant and facilities for maintenance and monitoring.

For the heating and cooling loads of a Class 4 part of a building, provision J0.2 requires that the Class 4 part of a building achieve a minimum 6 star rating using a HERS tool that is accredited under the Nationwide House Energy Rating Scheme (NatHERS). In addition, there are a number of other provisions for general thermal construction, thermal break construction, compensation for loss of ceiling insulation, floor edge insulation and building sealing that must also be complied with.

A 6 star rating is not full compliance with the energy efficiency requirements

The new energy efficiency requirements for residential buildings have been referred to as '6 Star'. This has led to the misconception that a 6 star rating is the only requirement. However, as detailed above, there are additional requirements above and beyond the 6 star rating, as outlined in the BCA.

Only the registered building surveyor who signs the certificate of design compliance is qualified to determine if the plans meet the BCA requirements.

Detailed plans provided to the building surveyor.

Registered building surveyors (RBS) need to be satisfied that the plans and specifications meet the requirements of the BCA. Sufficient information must be provided on plans to enable the RBS to determine that the application complies with the BCA. This requires designers to provide detailed plans and specifications. For example, window schedules will require specific details. This can include glass type, frame type, U-values, SHGC values, orientation sector. A copy of the glazing calculator results should be submitted when following the elemental provisions pathway, but are not required when using NatHERS software for compliance.

The plans and specifications must clearly demonstrate full compliance. Ensuring the appropriate details are provided on the plans enables the RBS to confirm compliance is achieved in order to issue the certificate of design compliance. Where minor information is missing, or the plans and specifications show minor non-compliance, the RBS can mark up plans to ensure compliance and sign off on the marked up plans, with agreement of other interested parties, such as the builder and owner.

Building Commission check sheets

The Building Commission provided voluntary check sheets to aid compliance with the energy efficiency requirements for 5 Star, and 5 Star Plus. There is now a concern that these check sheets have become 'pseudo-regulation' for local governments, and also that the industry was using them to help design compliant buildings. This potentially undermines the primacy of the BCA and is not the intent of the check sheets.

For current BCA compliance, the Building Commission has developed two check sheets for use in climate zone 5 only (Perth, Geraldton, and much of the coastal south-west). One is designed for when using a rating tool and the other when entirely using elemental provisions. However, these do not replace the need to adhere to, and show compliance with, the BCA. The check sheets do not replace the BCA.

What ratings tools to use?

The Building Commission has a web page detailing the versions of NatHERS tools that are recommended for ratings undertaken in Western Australia for regulatory purposes under the BCA.

Go to www.buildingcommission.wa.gov.au/ratingtools

Artificial lighting

The BCA 2012 incorporates provisions for artificial lighting. It provides for the maximum power that will be consumed by the lights in a space including any lamps, ballasts, current regulators and control device in W/m². BCA Part 3.12.5.5 sets out the deemed-to-satisfy provisions for artificial lighting. More detailed information is available in Advisory Note AN020 - <http://www.buildingcommission.wa.gov.au/docs/advisory-notes/an020-artificial-lighting.pdf>

It is important to provide the RBS with sufficient information to demonstrate that 3.12.5.5 is complied with. Details of the lamp power density or illumination power density for a space should demonstrate that the maximum W/m² allowances have not been exceeded. The Australian Building Codes Board provide a lighting calculator, available at <http://www.abcb.gov.au/en/major-initiatives/energy-efficiency/lighting-calculator>

When using a NatHERS tool the provisions of 3.12.5.5 must still be addressed as they are not assessed by the rating tools. Refer to Volume 1 BCA J6.2 for similar provisions for Class 2 (SOUs) and class 4 parts of a building.

Hot water systems

The old '5 Star Plus' requirements, which were part of the appendix in BCA Volume 2, have been amended. The hot water system requirements in Western Australia must now meet the performance requirement P2.6.2, and can be met by using the elemental provisions outlined in section 3.12.5.6.

Water use

The BCA contains a Western Australian Addition which has additional requirements with regards to using water efficiently, and minimising water wastage. This includes the following acceptable construction practice.

- WA 2.3.1 – Water Use Efficiency; and
- WA 2.3.2 – Swimming Pool Covers and Blankets; and
- WA 2.3.3 – Hot Water Use Efficiency.



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NOTE: Reference to the BCA in this Advisory Note means Volumes One and Two of the National Construction Code series.