



Industry Bulletin 140

National Construction Code 2019 Volume Two: Complying with energy efficiency requirements

This bulletin is intended for practitioners, energy efficiency assessors and permit authorities to provide a summary of the residential energy efficiency requirements that are applicable in Western Australia from 1 May 2021.

Please note, industry bulletins are intended for guidance only. As such this information does not replace or override the National Construction Code (NCC) and its application in accordance with the *Building Act 2011* and Building Regulations 2012.

Changes in 2019 for NCC Volume Two were generally made to improve the interpretation and application of the provisions. Changes include:

- strengthening of the reference building Verification Method V2.6.2.2;
- a new Verification Method V2.6.2.3 for building envelope sealing; and
- clarifying building sealing requirements under the Deemed-to-Satisfy (DTS) Provisions.

Separate heating and cooling load limits to supplement the Nationwide House Energy Rating Scheme (NatHERS) star rating compliance pathway were also introduced. However, regulation 15C of the Building Regulations 2012 in Western Australia deletes the requirements for the heating and cooling load limits that are specified in 3.12.0.1 of NCC Volume Two.

Therefore a building following the NatHERS energy “star” rating compliance pathway does not need to meet the separate heating and cooling loads under those DTS provisions.

For the development of NCC 2019, the Australian Building Codes Board (ABCB) made changes to address concerns that the previous Verification Method V2.6.2.2 was too flexible, possibly resulting in dwelling performance substantially below other compliance options.

Accordingly, the verification method has been strengthened in NCC 2019. Energy efficiency assessments submitted for building permit approval must demonstrate compliance with both Performance Requirements P2.6.1 Building and P2.6.2 Services found in Part 2.6 of NCC Volume Two.

These NCC Performance Requirements can be met by following prescriptive DTS provisions under Part 3.12 and/or developing a Performance Solution.

May 2021

P2.6.1: Energy efficiency – building compliance requirements

The overarching requirement of P2.6.1 is that the house must have certain features providing the required level of thermal performance in order to facilitate the efficient use of energy. There are various pathways for complying with Performance Requirement P2.6.1 of the NCC which include:

1. following prescriptive elemental provisions;
2. using NatHERS accredited house energy rating software to achieve a star rating with certain elemental provisions;
3. using Verification Method V2.6.2.2, Verification using a reference building (VURB); or
4. any other Performance Solution.

Note – every option must be supported by suitable evidence and/or adequate documentation to demonstrate that appropriate levels of compliance have been achieved. ABCB resources include:

[Energy Efficiency NCC Volume Two Handbook](#)

[Evidence of suitability Handbook](#)

Elemental provisions

Elemental energy efficiency assessments must address all of the provisions from Parts 3.12.1 to 3.12.4.

Note – the ABCB has developed a new glazing calculator for use with NCC 2019 to determine DTS compliance with Part 3.12.2 External glazing. The previous glazing calculator should not be used for NCC 2019 DTS solutions. Current versions of the calculator spreadsheet tools can be found under the resources tab on the [ABCB website](#).

NatHERS energy rating

When the energy rating approach is used, a building needs to achieve the specified NCC energy star rating by using one of the four NatHERS accredited computer software tools identified at www.nathers.gov.au/nathers-accredited-software.

The design assessment must also comply with additional provisions listed in clause 3.12.0(a)(i) which includes:

- 3.12.1.1, for building fabric thermal insulation;
- 3.12.1.2(c) and 3.12.1.4(d), for thermal breaks;
- 3.12.1.5(c) and 3.12.1.5(d), for floor edge insulation; and
- 3.12.3 (Building Sealing).

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 performance solutions), then it cannot claim that it has achieved a star rating.

Performance Solutions

If a proposed building design varies from the DTS provisions, a Performance Solution can be developed. A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of the following Assessment Methods:

- a) Evidence of Suitability in accordance with NCC Part A5;
- b) Verification Method which for P2.6.1 includes V2.6.2.2 VURB;
- c) other Verification Method that shows compliance with the Performance Requirements to the satisfaction of the certifying building surveyor;
- d) Expert Judgement; and
- e) comparison with the DTS Provisions.

VURB

The Verification Method V2.6.2.2, Verification Using a Reference Building (VURB), is a computer modelling Performance Solution option that directly satisfies the Performance Requirement P2.6.1, however it does not satisfy P2.6.2 which must also be met in order to fully satisfy the energy efficiency Performance Requirements.

Practitioners are reminded that specifications for the VURB in NCC 2019 have been amended to prohibit the use of house energy rating software.

Specified mandatory modeling criteria have been included to standardise the reference building outcomes and better align them with the 6 star NatHERS outcomes.

Part 5.5 of the [ABCB Energy Efficiency NCC Volume Two 2019 Handbook](#) has some examples showing how to use the VURB pathway.

Other Performance Solutions

For some time, the ABCB and the Department of Mines, Industry Regulation and Safety's Building and Energy Division (Building and Energy), have been encouraging practitioners to follow [a four step process when developing Performance Solutions](#).

The development of Performance Solutions to address the energy efficiency provisions of the NCC should be consistent with this process which includes:

- Preparing a performance-based design brief (PBDB).
- Analysis as per the Assessment Methods agreed to in the PBDB.
- Evaluation of the analysis against the criteria agreed to in the PBDB.
- Generation of a report including the specifics as noted in the NCC and in accordance with the expectations of the PBDB.

Key to the process is the development of the PBDB which is to be carried out in consultation with all the relevant stakeholders.

The onus is on the professional(s) carrying out the Performance Solution to provide sufficient documentation, evidence and validation to the certifying building surveyor that the solution complies with the relevant performance requirements.

It is important to involve the building surveyor early in the design stage as they can provide valuable guidance and interpretation on the NCC for the specific project.

A building surveyor should:

- scrutinise the information and details provided for the Performance Solution;
- fully understand the proposal/design; and
- be satisfied on compliance with the NCC before signing a certificate of design compliance.

[Further information regarding the use of Performance and compliance with the NCC is provided on the ABCB website.](#)

This includes a [Performance Solution scenario](#) to assist building practitioners in formulating Performance Solutions concerning single storey house energy efficiency.

P2.6.2: Energy efficiency – services compliance requirements

P2.6.2 is a separate Performance Requirement with an overarching requirement that the building's domestic services must have features that facilitate the efficient use of energy and minimise greenhouse gas emissions of the energy used for heating.

The elemental provisions, NatHERS energy rating DTS solutions and the VURB Performance Solution are only for meeting compliance with Performance Requirement P2.6.1.

Part 3.12.5 provides DTS provisions for complying with P2.6.2.

NCC WA Additions – Water use

As well as energy efficiency requirements, NCC Volume Two also contains Western Australia additions for water use. This includes the following DTS provisions:

- WA 2.3.1 – Water use efficiency;
- WA 2.3.2 – Swimming pool covers and blankets; and
- WA 2.3.3 – Heated water use efficiency.

Use of renewable energy as part of Performance Solution

Building and Energy has become aware that some practitioners may be attempting to trade the thermal performance of a new house with the adoption of renewable energy sources such as PV panels.

They may also be attempting to trade Performance Solution P2.6.2 for services with the requirements in P2.6.1 for buildings.

The performance requirement P2.6.1 sets out the minimum requirements and relates only to facilitating the efficient use of energy for artificial heating and cooling appropriate to various listed matters.

Importantly the energy source is not an appropriate matter for the performance requirement P2.6.1.

It is therefore inappropriate to take into account a renewable source of energy when determining compliance with P2.6.1.

While the source of energy is a consideration for determining compliance with the performance requirement P2.6.2 for domestic services, the performance requirements P2.6.1 and P2.6.2 are independent from each other and must be evaluated accordingly.

It is not appropriate to trade-off between the two requirements.

Check sheets

Check sheets may be useful for building surveyors to ensure they have sufficient information, however they should not become a pseudo requirement or relied upon as a compliance report.

Therefore check sheets are no longer produced by Building and Energy.

This does not prevent building surveyors or industry developing their own check sheet to reflect NCC 2019 requirements.

Ultimately, the building surveyor needs to assess compliance against the relevant provisions of the NCC.

They should only sign the certificate of design compliance when satisfied the information provided clearly demonstrates compliance for the particular pathway, and not solely rely on a statement from an energy assessor or ticks in a check sheet.

Using DTS or Performance Solutions

A summary of using the DTS options and Verification Method for meeting energy efficiency requirements for a Class 1 building is provided in the following tables (on pages 6 and 7 of this bulletin).

Table 1 - Summary of options for meeting Part 3.12 DTS energy efficiency requirements

The table below summarises the two DTS options for meeting Performance Requirement P2.6.1. The table also identifies that Performance Requirement P2.6.2 and the WA Additions for water use must also be complied with.

Option 1 Energy rating (3.12.0(a)(i)) Comply with:	Option 2 Elemental provisions (3.12.0(a)(ii)) Comply with:
Performance Requirements P2.6.1 – Building	
(A) 3.12.0.1 for heating and cooling loads; [A minimum 6 star rating using NatHERS, concessions apply for climate zones 1 and 2. In addition, where relevant, the elemental provisions indicated below need to be complied with. Note: Separate heating and cooling load limits do not apply in Western Australia]	(A) Part 3.12.1 for the building fabric;
(B) 3.12.1.1, for building fabric thermal insulation;	(B) Part 3.12.2 for the external glazing and shading;
(C) 3.12.1.2(c) and 3.12.1.4(d), for thermal breaks;	(C) Part 3.12.3 for building sealing; and
(D) 3.12.1.2(e) for compensating for a loss of ceiling insulation, other than where the house energy rating software used can automatically compensate for a loss of ceiling insulation;	(D) Part 3.12.4 for air movement.
(E) 3.12.1.5(c) and 3.12.5(d), for floor edge insulation; and	
(F) Part 3.12.3 for building sealing.	
Performance Requirements P2.6.2 – Domestic services	
Follow Deemed-to-Satisfy Provisions in Part 3.12.5 or develop a Performance Solution.	
WA additions – Water Use WA 2.2 Performance provisions	
Follow Deemed-to-Satisfy Provisions for: <ul style="list-style-type: none"> • WA 2.3.1 Water use efficiency; • WA 2.3.2 Swimming pool covers and blankets; and • WA 2.3.3 Heated water use efficiency. Or develop a Performance Solution.	

Table 2 - Summary of meeting energy efficiency requirements by a Performance Solution using Verification Method V2.6.2.2.

The table below summarises the Verification Method provided in the NCC for meeting Performance Requirement P2.6.1. The table also identifies that Performance Requirement P2.6.2 and the WA Additions for water use must also be complied with.

Verification using a reference building (V2.6.2.2) – Comply with:
Performance Requirements P2.6.1 – Building
<p>(a) Compliance is verified when a proposed building is:</p> <ul style="list-style-type: none"> (i) Compared to a reference building, using a calculation method other than NatHERS software has a heating and a cooling load equal to or less than that of the reference building if in climate zones 3, 4, 5 and 6 (or cooling load equal to or less than that of the reference building for Climate Zone 1); and (ii) Complies with: <ul style="list-style-type: none"> (A) 3.12.1.1, for building fabric thermal insulation; (B) 3.12.1.2(c) and 3.12.1.4(d), for thermal breaks; (C) 3.12.1.2(e) for compensating for a loss of ceiling insulation; (D) 3.12.1.5(c) and 3.12.5(d), for floor edge insulation; and (E) Part 3.12.3 or V2.6.2.3 for building sealing.
<p>(b) The heating and cooling loads in (a) must be calculated for the reference building using:</p> <ul style="list-style-type: none"> (i) Internal heat gains from appliances and equipment of 5W/m² averaged for 24 hours per day, 7 days per week; (ii) An infiltration value of 0.6 air changes per hour; and (iii) The modelling criteria in Table V2.6.2.2
<p>(c) The heating and cooling load for the proposed building and the reference building must be determined using the same items listed in V2.6.2.2(c).</p>
<p>(d) The calculation method used must comply with ANSI/ASHRAE Standard 140 and be capable of assessing the heating and cooling load by modelling the items listed in V2.6.2.2(d).</p>
<p>(e) Climatic data employed in the calculation method must be based on hourly recorded values and be representative of a typical year for the proposed location.</p>
<p>Note: further explanatory information is provided in V2.6.2.2 and some examples of using the Verification Method in Perth and Albany can be found in the ABCB Energy efficiency NCC Volume Two handbook</p>
Performance Requirements P2.6.2 – Domestic services
<p>Follow Deemed-to-Satisfy Provisions in Part 3.12.5 or develop a Performance Solution.</p>
WA additions – Water Use WA 2.2 Performance provisions
<p>Follow Deemed-to-Satisfy Provisions for:</p> <ul style="list-style-type: none"> • WA 2.3.1 Water use efficiency; • WA 2.3.2 Swimming pool covers and blankets; and • WA 2.3.3 Heated water use efficiency. <p>Or develop a Performance Solution.</p>

Disclaimer – The information contained in this fact sheet is provided as general information and a guide only. It should not be relied upon as legal advice or as an accurate statement of the relevant legislation provisions.
If you are uncertain as to your legal obligations, you should obtain independent legal advice.

**Building and Energy | Department of Mines,
Industry Regulation and Safety
1300 489 099**

8.30am – 4.30pm
Level 1 Mason Bird Building
303 Sevenoaks Street (entrance Grose Avenue)
Cannington Western Australia 6107
M: Locked Bag 100, East Perth WA 6892
W: www.dmirs.wa.gov.au/building-and-energy
E: be.info@dmirs.wa.gov.au

Regional Offices

Goldfields/Esperance	(08) 9021 9494
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North-West	(08) 9185 0900
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