



NCC 2022 Energy Efficiency Volume 1

This webinar will start shortly to allow participants to join.



The VBA respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely. We pay our respects to their Elders past and present.

We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life.

We embrace the spirit of reconciliation, working towards equality of outcomes and an equal voice.

Welcome

Today you will hear from:



Shaun Breden

Technical Specialist
Technical and Regulation
VBA



Practitioner Education Series

As Victoria's Building and Plumbing Regulator, we **safeguard Victoria's future liveability, promoting safe, compliant buildings, built to last**

Our role is not to set policy, but to **support industry to understand and comply with the rules.**

Our Practitioner Education series **helps support the industry by providing practical insights, evidence-based strategies and useful resources.**

Housekeeping



Today's session is **recorded** and will be available on the VBA website



Questions can be submitted and voted on via the Q&A function. For any questions that we don't have time to answer in the session, the answers will be emailed to you after the webinar



We will be conducting **live polls** today, which will automatically appear on your screens



This webinar is scheduled to run for 60 minutes, but in some cases may run over time in order to cover all material

Webinar questions



We endeavour to answer as many of your questions as we can during the webinar.



However, due to the high volume of questions that we receive, we may not be able to answer your question during the webinar time.



Approximately two weeks after this webinar, you will receive an email with answers to all of the questions that were asked in this webinar.

We thank you for your patience.

Purpose of the webinar

Why is this webinar important?



To discuss compliance with NCC 2022 Energy Efficiency



To support ABCB's webinars on changes



To give a regulatory overview of NCC compliance



To address some common questions around NCC 2022 energy efficiency and compliance

Learning goals

After this webinar, you should be able to:



Have an improved bigger picture understanding of how to achieve NCC compliance for energy efficiency



Have an improved familiarity with the NCC energy efficiency changes

Today we will cover

Scope

NCC Volume 1

Class 2 – 9 buildings

Energy Efficiency provisions



Today we will cover

1. Energy efficiency NCC 2022 compliance overview
2. Performance requirements
3. Deemed-to-Satisfy (DtS)
4. Performance solutions
5. Governing requirements
6. Transitions from NCC 2019 - 2022

Energy efficiency NCC 2022 compliance overview



Objectives

- **reduce energy consumption and energy peak demand; and**
- reduce greenhouse gas emissions; and
- **improve occupant health and amenity.**

Functional Statements

- **reduce the energy consumption and energy peak demand** of key energy-using equipment; and
- **reduce the greenhouse gas emissions** that occur as a result of a building's energy consumption and energy source; and
- for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, **improve occupant health and amenity** by mitigating the impact of extreme hot and cold weather events and energy blackouts; and
- for other than in a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, **protect occupant health and amenity** by ensuring the building envelope assists in the maintenance of acceptable internal conditions while the building is occupied; and
- be able to **accommodate the future installation of distributed energy resources.**

A2G1 Compliance

- Governing requirements
- Performance requirements

Changes within both for energy efficiency

A2G1 Compliance [2019: A2.0, A2.1]

(1) Compliance with the NCC is achieved by complying with—

- the Governing Requirements of the NCC; and
- Performance Requirements*.

(2) *Performance Requirements* are satisfied by one of the following, as shown in Figure A2G1:

- Performance Solution*.
- Deemed-to-Satisfy Solution*.
- A combination of (a) and (b).

Figure A2G1: NCC compliance structure

```

    graph TD
      A[PERFORMANCE REQUIREMENTS] --> B[PERFORMANCE SOLUTION]
      A --> C[DEEMED-TO-SATISFY SOLUTION]
      B --- D[and/or] --- C
  
```

The diagram illustrates the structure of NCC compliance. It is organized into two levels: 'Compliance Level' and 'Compliance Solutions'. At the 'Compliance Level', there is a single box labeled 'PERFORMANCE REQUIREMENTS'. This box has two arrows pointing down to the 'Compliance Solutions' level. The arrows point to two boxes: 'PERFORMANCE SOLUTION' on the left and 'DEEMED-TO-SATISFY SOLUTION' on the right. These two boxes are connected by a horizontal line with the text 'and/or' in the center, indicating that either solution can satisfy the performance requirements.

Performance requirements



Changes to performance requirements from 2019 to 2022:

2019

JP1 Energy
use



2022

J1P1 Energy use
J1P2 Thermal performance...
J1P3 Energy usage...
J1P4 Renewable energy and electric vehicle (EV)
charging

Performance requirement	Application
J1P1	Class 2 common areas, class 3, 5-9
J1P2	Class 2 SOU and class 4
J1P3	Class 2 SOU and class 4
J1P4	Class 2-9

Key changes

- Class 2 SOU's and class 4 parts – quantified performance requirements
- Renewable energy and EV charging

Application within a Class 2 building



J1P4 renewable energy and EV charging

Individual SOU's
J1P2 thermal performance
J1P3 energy usage

Common Areas
J1P1 energy use

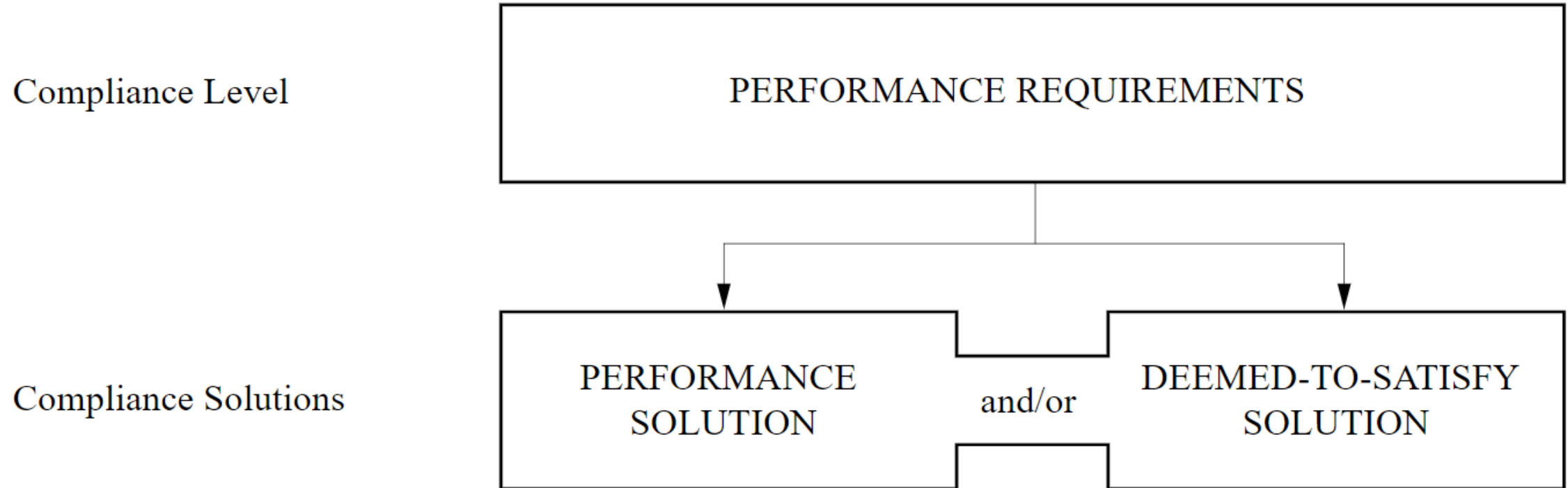
Application within a Class 5 building



J1P4 renewable
energy and EV
charging

J1P1 energy use

Figure A2G1 NCC compliance structure



Quick quiz

Performance Requirements J1P2 and J1P3 do not apply to a class 3 SOU within a hotel.

True

False



Quick quiz

Performance Requirements J1P2 and J1P3 do not apply to a class 3 SOU within a hotel.

True



Deemed-to-satisfy (DtS)



What does DtS compliance look like?

J2D1

- DtS provisions

J2D2 Application

- Links to performance requirements
- Specifies clauses

J2D2

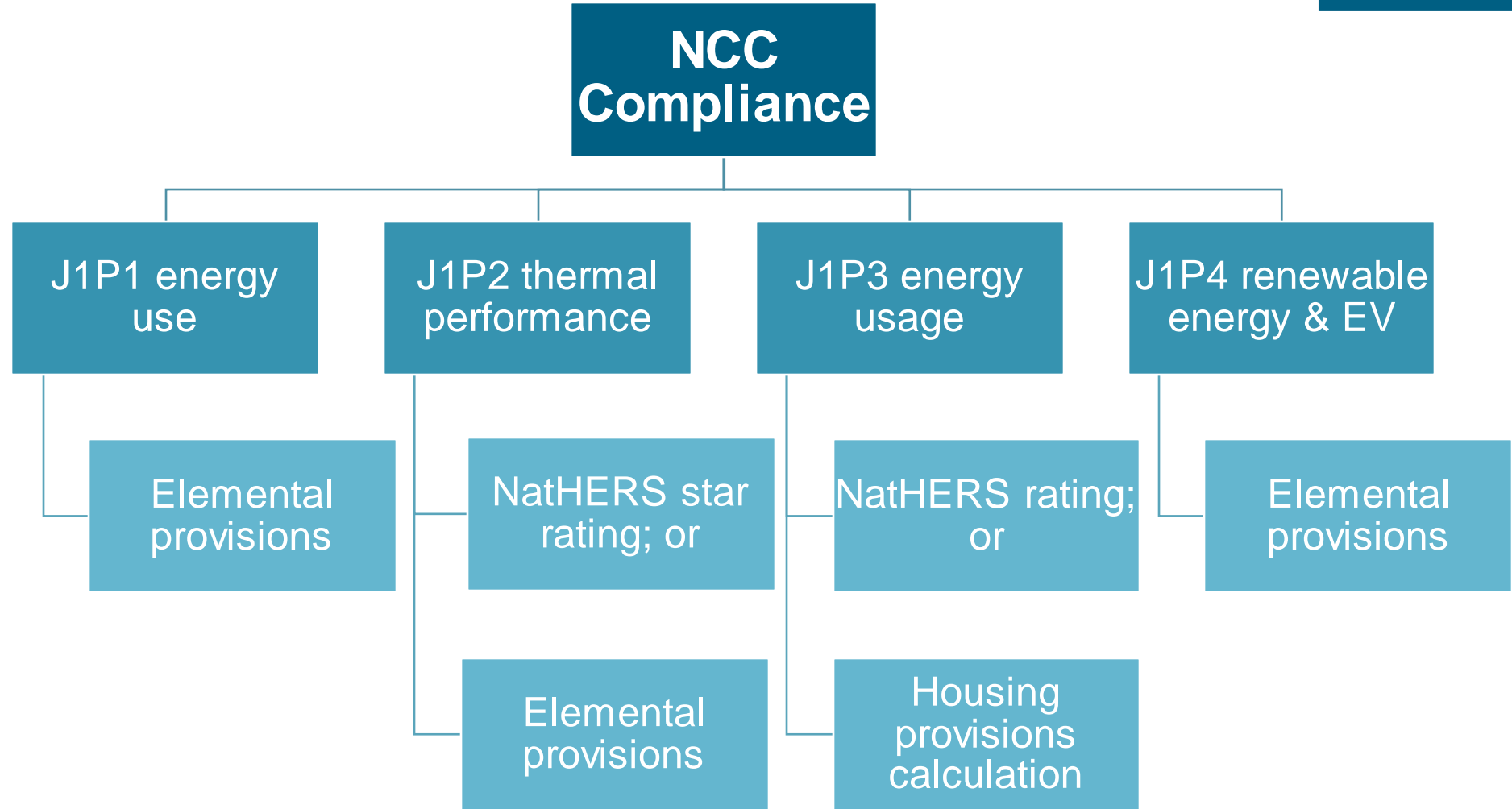
Application of Section J

[2019: J0.1]

- (1) For a Class 2 to 9 building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, *Performance Requirement J1P1* is satisfied by complying with—
 - (a) Part J4, for the building *fabric*; and
 - (b) Part J5, for building sealing; and
 - (c) Part J6, for *air-conditioning* and ventilation; and
 - (d) Part J7, for artificial lighting and power; and
 - (e) Part J8, for heated water supply and *swimming pool* and spa pool plant; and
 - (f) J9D3, for facilities for energy monitoring.
- (2) For a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, *Performance Requirement J1P2* is satisfied by complying with—
 - (a) J3D3, using *house energy rating software*; or
 - (b) the following—
 - (i) J3D4, for ceiling fans; and
 - (ii) J3D5, J3D6, J4D3, J4D7(3), J4D7(4) and Part J5, for general thermal construction; and
 - (iii) J3D7, for roofs; and
 - (iv) J3D8 and J3D11 to J3D13, or J3D9, for walls and *glazing*; and
 - (v) J3D10, for floors.
- (3) For a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, *Performance Requirement J1P3* is satisfied by complying with—
 - (a) for the net equivalent energy usage—
 - (i) J3D14, for a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building with a total floor area not greater than 500 m²; or
 - (ii) J3D15, using *house energy rating software*; and
 - (b) Part J6, for *air-conditioning* and ventilation; and
 - (c) Part J7, for artificial lighting and power.
- (4) For a Class 2 to 9 building, *Performance Requirement J1P4* is satisfied by complying with J9D4 and J9D5.

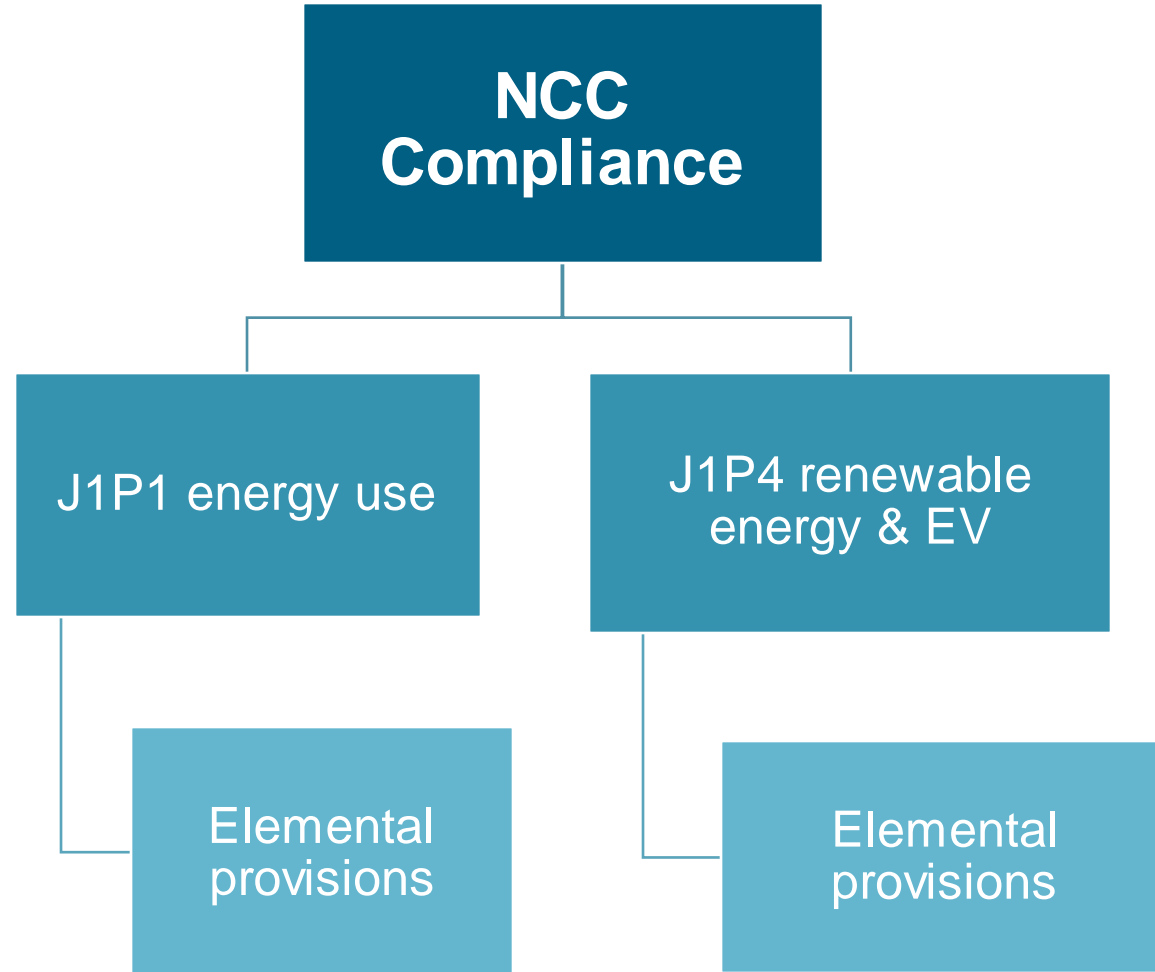
Class 2:

DtS solutions are available for all performance requirements



Class 5:

DtS solutions are available for all performance requirements





**Class 2
Building
Example**

Application within a Class 2 building



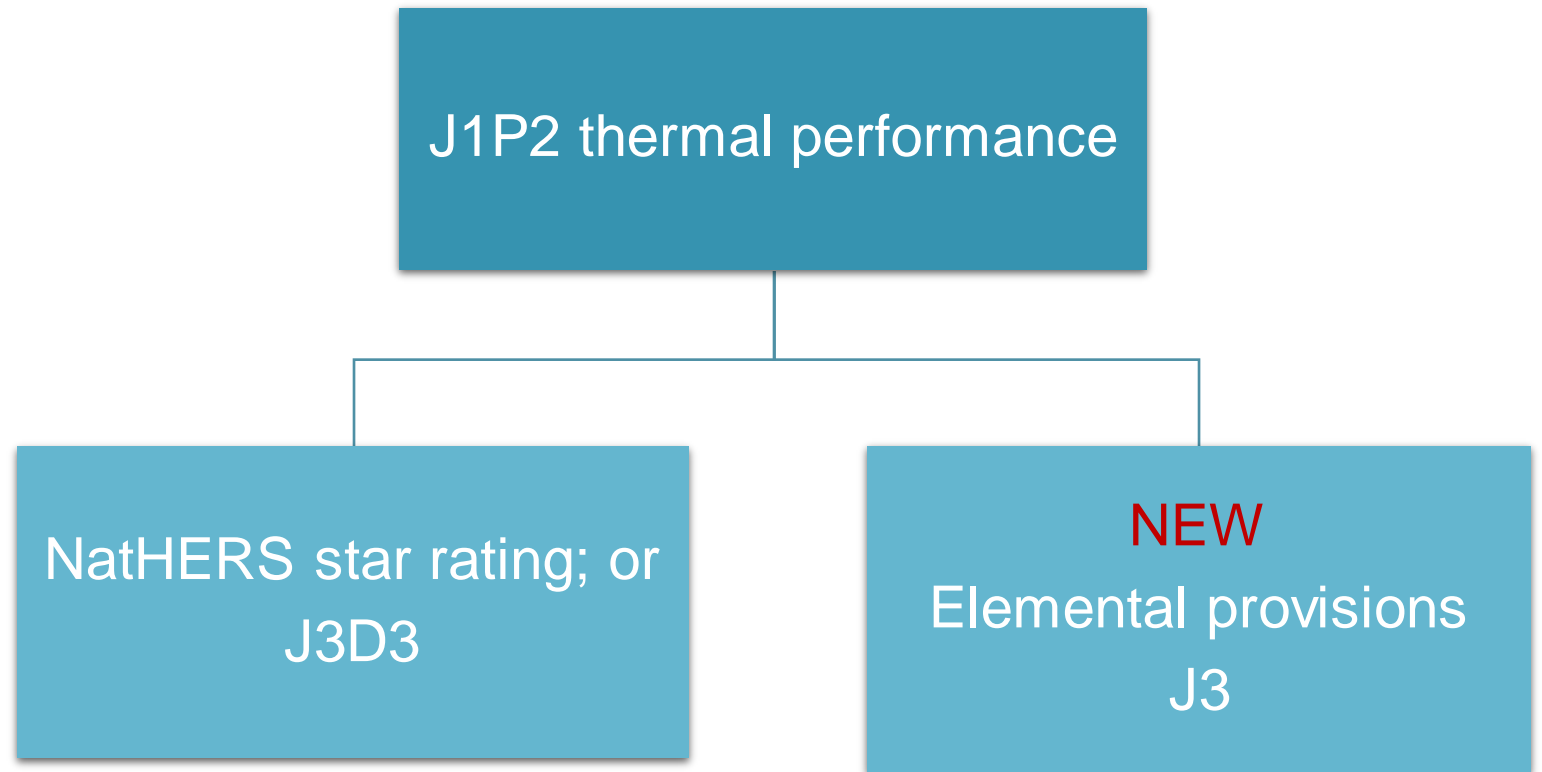
J1P4 renewable energy and EV charging

Individual SOU's
J1P2 thermal performance
J1P3 energy usage

Common Areas
J1P1 energy use

J1P2 thermal performance DtS

Class 2
each SOU



J1P2 NatHERS DtS pathway

Comply with:

- J3D3
- Using *house energy rating software*

Specifics:

- Increases average star rating from 6 to 7 stars
- Individually not less than 6 stars
- Heating and cooling load limits revised (ABCB standard)



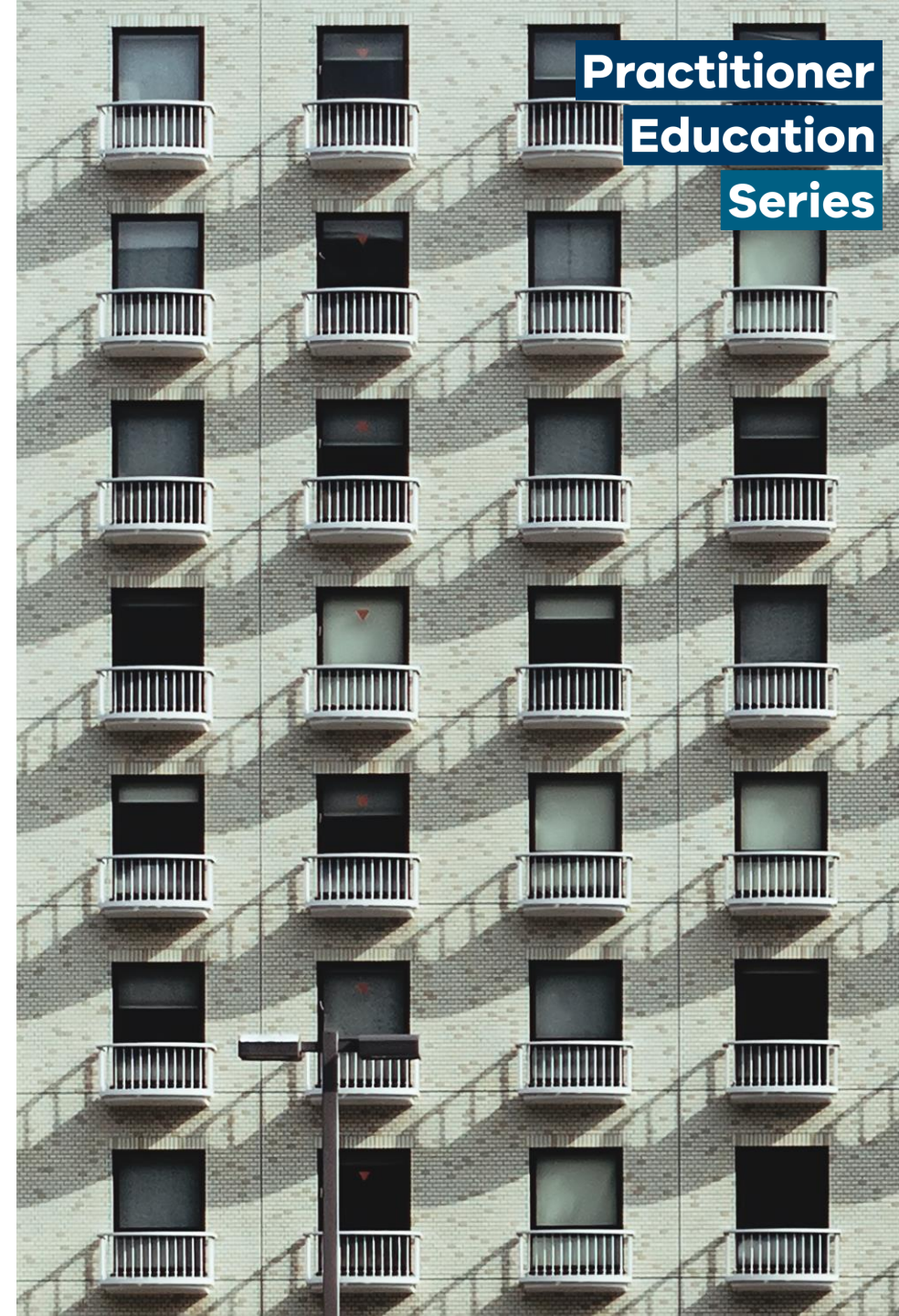
NatHERS
website



J1P2 NatHERS DtS pathway

Additional DtS provisions under J3D3

- Thermal breaks
- Ceiling insulation compensation
- General thermal construction
- Floor edge
- Building sealing



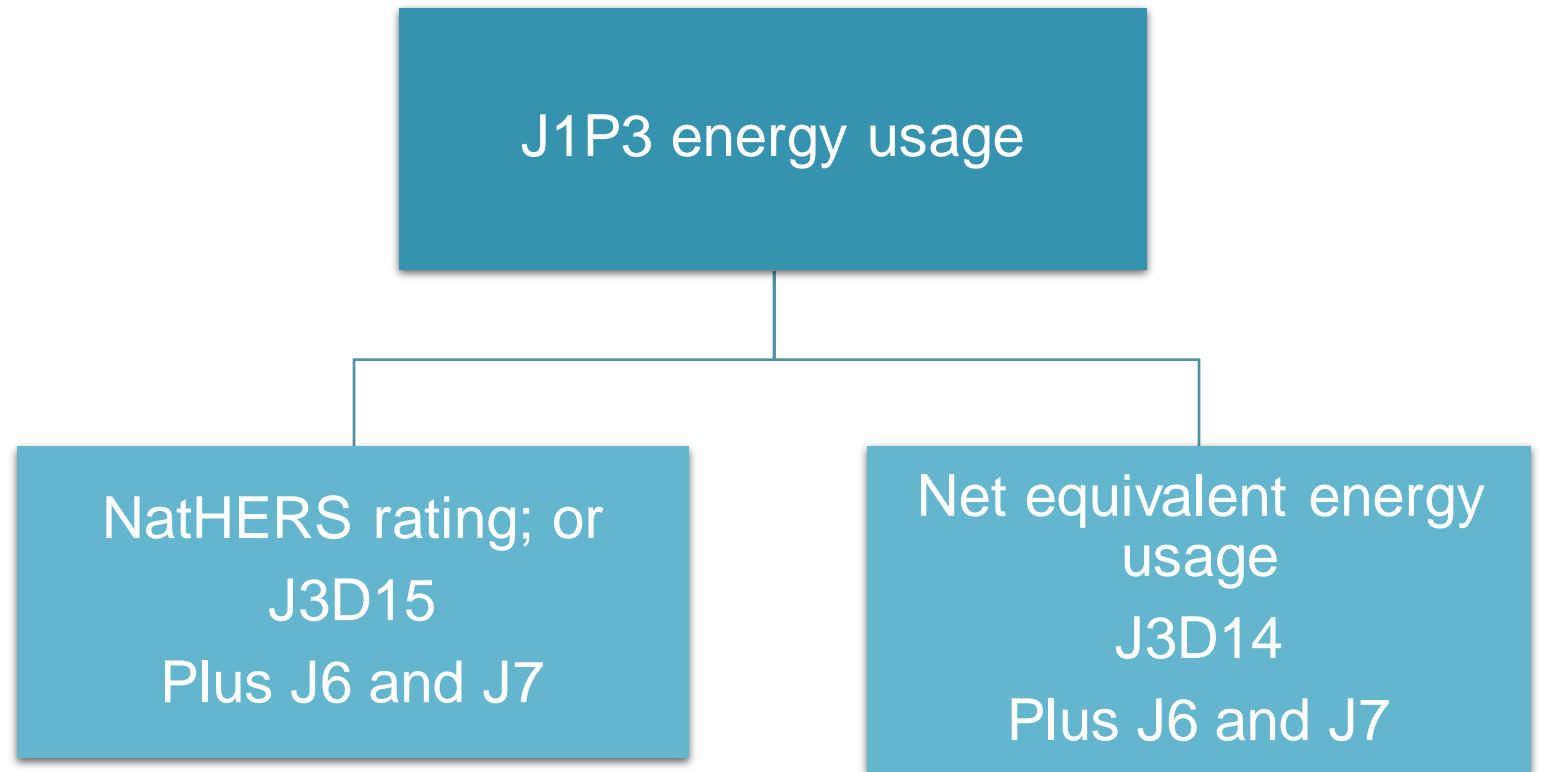
Elemental provisions under Part J3

- Building fabric
- Glazing
- Building sealing
- Thermal breaks

Alternative to NatHERS

**NEW for NCC
2022**

Class 2
Each SOU



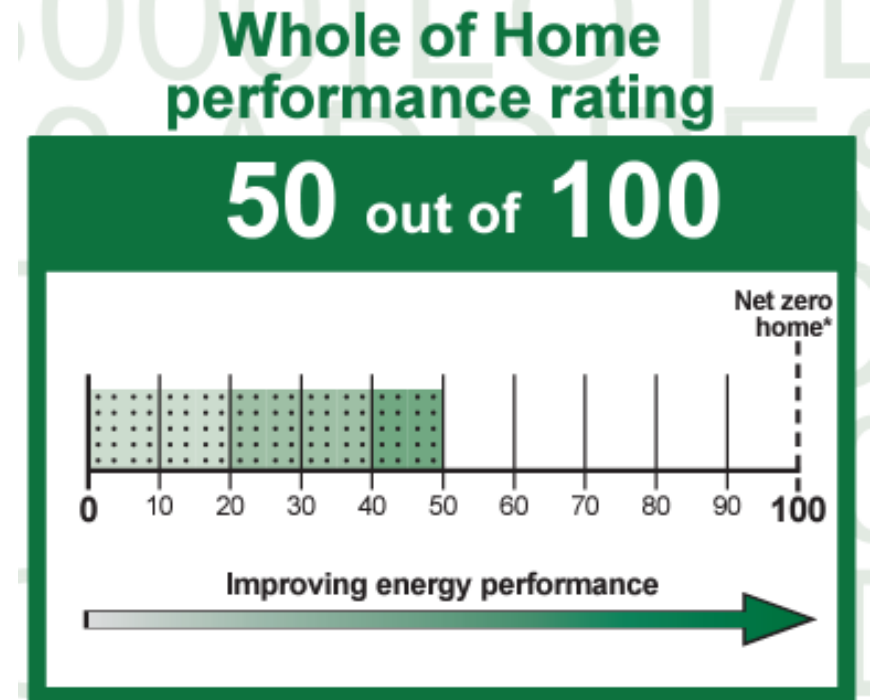
J1P3 NatHERS DtS pathway – NEW to 2022

Comply with:

- J3D15
- Using *house energy rating software*
- Whole-of-home rating not less than 50

NCC volume differences:

- Volume 1: rating of 50
- Volume 2: rating of 60



Example report
NatHERS website



J1P3 NatHERS DtS pathway

Whole-of-home rating includes:

- Heating and cooling appliances
- Hot water
- Lighting
- Pool and spa equipment
- On site energy generation



J1P3 NatHERS DtS pathway

Question: What about centralised services, can I still use NatHERS?

- In development by NatHERS
- Guidance information released
- Compliance with the NatHERS scheme is the threshold

Does not affect the use of NatHERS for J1P2 thermal performance (7 star)



J1P3 energy usage DtS manual calculation

Net equivalent energy usage

J3D14 manual calculation



- Calculation (a) use must not exceed calculation (b)
- Limited to floor area not greater than 500m²
- ABCB calculator available for use

Application within a Class 2 building



J1P4 renewable energy and EV charging

Individual SOU's
J1P2 thermal performance
J1P3 energy usage

Common Areas
J1P1 energy use

J1P1 Energy use DtS

**Class 2
Common
areas**

J1P1 energy use

DtS provisions
J4 – J8
J3D3

Required DtS provisions for common areas:

- J4 building fabric
- J5 building sealing
- J6 Air-conditioning and ventilation
- J7 Artificial lighting and power
- J8 heated water supply and swimming pool and spa pool plant
- J9D3 facilities for energy monitoring

**Does not
include class 2
SOU's or class 4
parts**

Application within a Class 2 building



J1P4 renewable energy and EV charging

Individual SOU's
J1P2 thermal performance
J1P3 energy usage

Common Areas
J1P1 energy use

Renewable energy and EV charging – J1P4

Class 2-9
building

J1P4 renewable energy and EV
charging

DtS provisions
J9D4 and J9D5

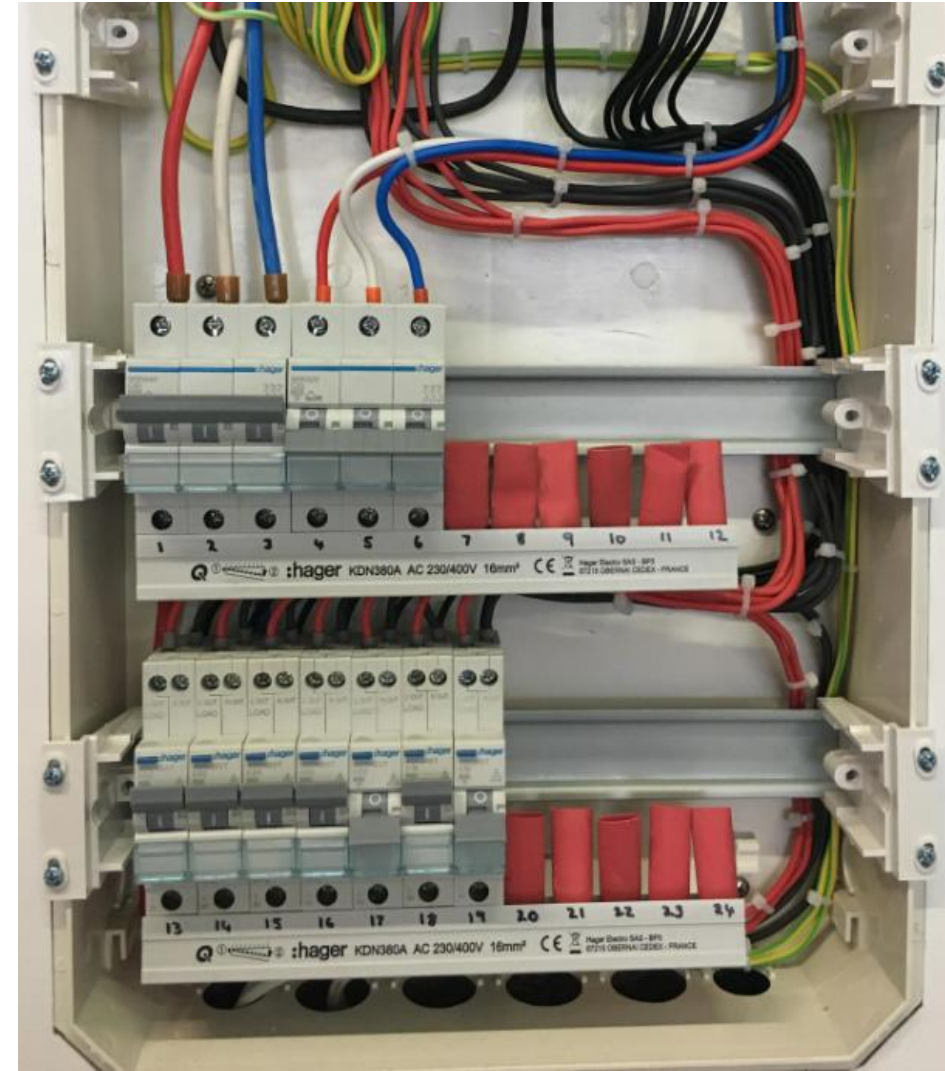
J9D4 Facilities for EV charging equipment

Provisions to provide ease of retrofit for electric vehicle charging equipment.

- Electrical distribution boards for EV charging
- Labelled for EV charging equipment
- Charging control system to manage total building demand
- 36mm width of DIN rail per circuit for future installation

J9D4 does not apply to a stand-alone class 7a

Image reference: 2022, Reddit; electricians,
https://www.reddit.com/r/electricians/comments/vysnov/small_office_3phase_distribution_board_australia/
, accessed 19.06.2023



J9D4 Facilities for EV charging equipment

EV charging - future work

- Further work nationally to understand any other unintended risks with EV
- Does not alter the energy efficiency compliance requirements



ABCB Electric vehicles in
buildings advisory notice



J9D5 Facilities for solar photovoltaic (PV) and battery systems

Provisions to provide ease of retrofit

Main electrical switchboard:

- Contain 2 empty three-phase circuit breaker slots and 4 DIN rail spaces
- Be labeled for future PV/ battery system use
- Sized to accommodate solar PV panels (20% of roof area)



At least 20% of the roof area left clear for the installation of solar PV panels

Exemptions:

- PVs already installed
- equivalent generation capacity on site
- roof area is shaded
- roof area of 55m² or less
- 50% used as a terrace, carpark, roof garden, roof light etc

Solar PV Structural provisions – Part B

- Performance requirement **B1P1** – 0.15kPa roof load for class 7b
- DtS **B1D3** - 0.15kPa roof load for class 7b

Important:

- Facilitates ease of retrofit in class 7b
- Does not alter structural assessment for installation
- Does not alter Act/ Regulation mechanisms

Quick quiz

EV charging stations are required to be installed in buildings for a compliant DtS solution.

True

False



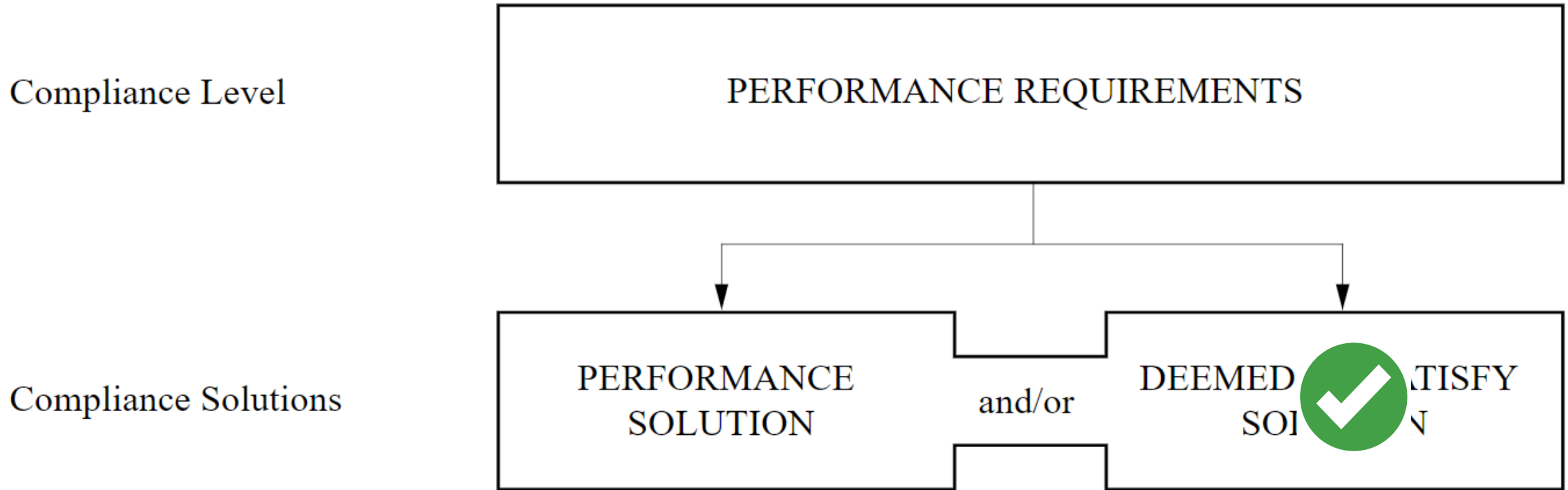
Quick quiz

EV charging stations are required to be installed in buildings for a compliant DtS solution.

False - The provisions allow for ease of retrofit for electric vehicle charging equipment, but do not mandate the installation under J9D4



Figure A2G1 NCC compliance structure

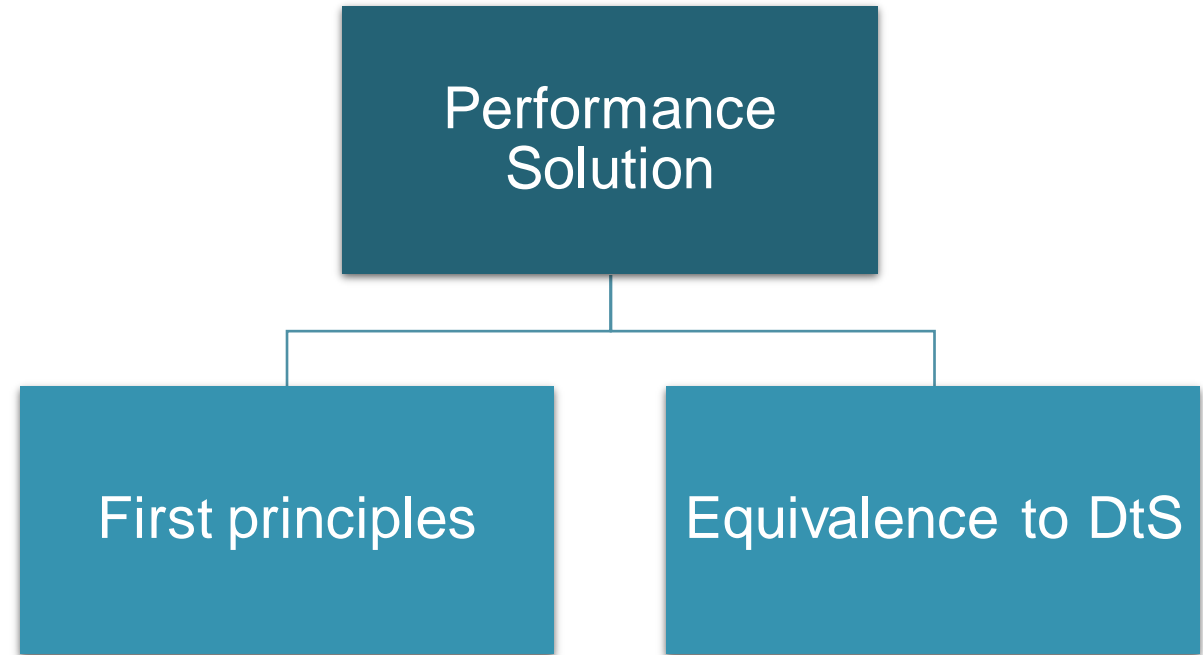


Performance solutions



Process specified under A2G2 remains the same (A2.2 in NCC 2019), and is achieved through:

- Direct against performance requirement
- At least equivalent to DtS





Quantified outcomes should be very similar regardless of the method used to satisfy the Performance Requirements



First principles approach

Quantify directly against:

- J1P1 Energy use – hourly regulated energy consumption
- J1P2 Thermal Performance – using Specification 44
- J1P3 Energy Usage – using GEMS determinations and lighting power density

J1P4 renewable energy and EV charging - qualitative

Equivalence to DtS

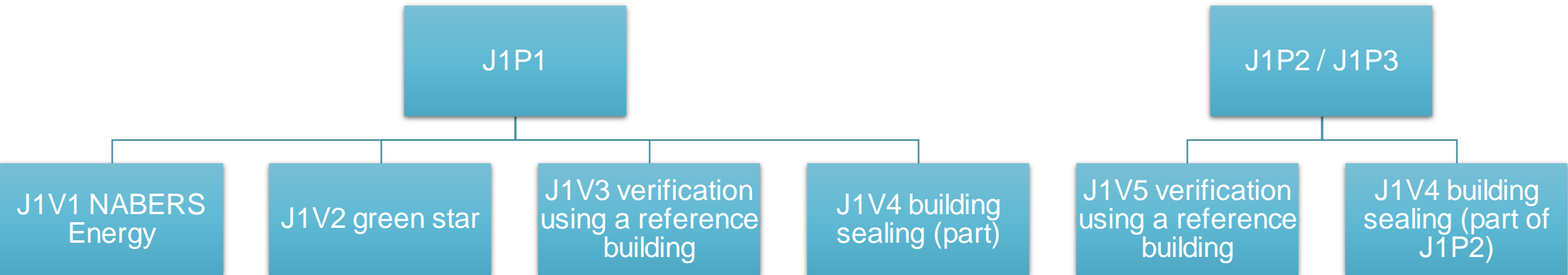
Relies on calculating equivalence to DtS Provisions

- Many ways to achieve
- Verification Methods available

NEW: Verification using a Reference Building (VURB) J1V5

- For a class 2 SOU

Verification Methods



Q

Common question: There are limited DtS elemental provisions for the reference building, can I still use J1V5 in most situations?

A

Yes. J1V5 clarifies the process of establishing a hypothetical building to determine heating and cooling loads. Specifications 33 & 45 must be read carefully, as it sets out what aspects of the reference building and proposed building need to be the same.

Please remember...



Any performance solution needs to be appropriately documented and show how compliance is achieved



Performance Requirements cannot be merged together, and must be independently satisfied

Quick quiz

Performance Solutions using the VURB

Are verification methods the only performance solution option to comply with the performance requirements?

Yes

No



Quick quiz

Performance Solutions using the VURB

Are verification methods the only performance solution option to comply with the performance requirements?

No – verification methods are an assessment method option for performance solutions and are not the only option available. However they do offer a very robust process

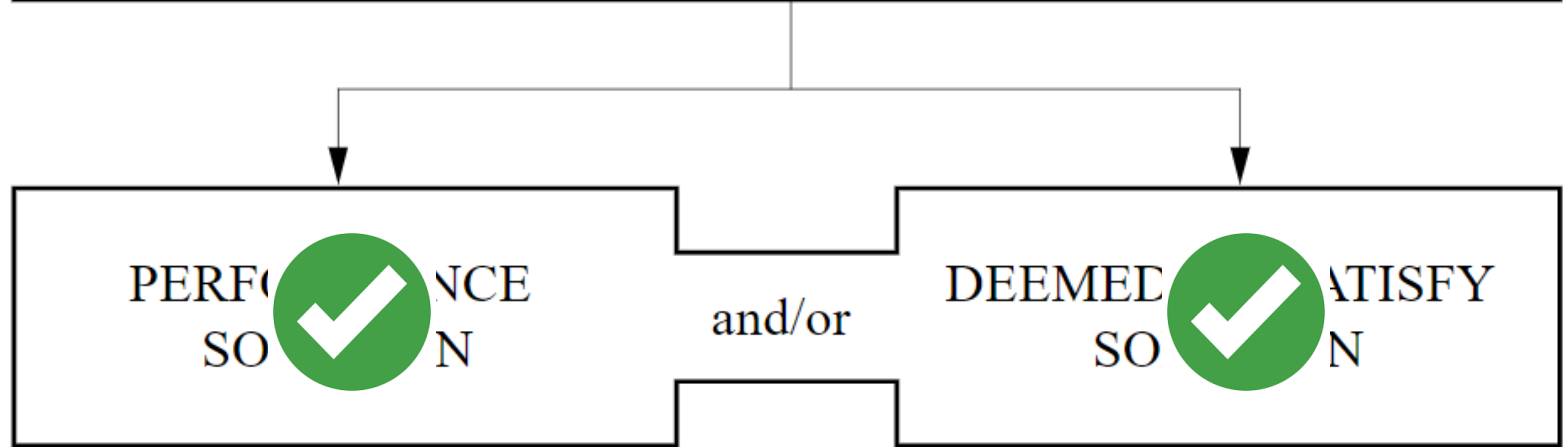


Figure A2G1 NCC compliance structure

Compliance Level



Compliance Solutions



Governing Requirements



A5G9 – NatHERS Evidence of Suitability

Evidence of Suitability change:

- Certificate must be issued in accordance with the NatHERS scheme

Note:

- Assessment method for Performance and DtS solutions
- Applicable to NatHERS pathways only
- Not applicable to the verification methods (different software)

Is a NatHERS accredited assessor required under the evidence of suitability change?

No - compliance with NatHERS rules for certificates is different to assessor accreditation

However, there are more checks needed for non-accredited certificates

- Practice Note EE-03 provides further detail



A5G9 does not mandate the use of a NatHERS accredited assessor



PN EE-03
New Residential
Buildings



Transitions from NCC 2019- 2022



Transition timeline



1 May 2023 Optional uptake



1 May 2024 Mandatory



Beyond 1 May 2024
Section 10 of the Building Act may apply

Section 10 (2) of the Building Act 1993:

A building regulation, or an amendment to a building regulation, does not apply to the carrying out of building work if the relevant building surveyor is satisfied, and certifies in writing, that substantial progress was made on the design of the building before the building regulation or amendment commenced.

- Minister Guidelines MG-13 provides detailed guidance
- A building surveyor has discretion in applying Section 10
- It is not a 'given' in every scenario



Minister guidelines
MG-13



Notes - additional mandatory instructions

Notes

From 1 May 2023 to 30 September 2023 Section J of NCC 2019 Volume One Amendment 1 may apply instead of Section J of NCC 2022 Volume One. From 1 October 2023 Section J of NCC 2022 Volume One applies.

- Applies to NCC parts only (e.g. Part J)
- Whole part must be used
- Subject to modification with extended transition time

Example:

A compliant assessment during transition relied on:

- Part J of NCC 2019 for **energy efficiency**; and
- Part F8 of NCC 2022 for **condensation management**

NCC compliance:

- Stringency increase for NCC compliance
- NCC compliance mechanism unchanged (i.e. A2G1 Compliance)

Regulation 233 – Building Regulations 2018

- Consent to partial compliance unchanged by NCC 2022



Q

Common question: Can the VBA issue a practice note with additional regulations to assist with...

A

Practice notes are for guidance purposes, giving industry additional information on compliance. These don't create regulations

Quick quiz

1. The NatHERS whole of home rating is the same (i.e. 50 out of 100) for both class 1 buildings and class 2 SOUs

True

False

2. The verification methods are one way of satisfying a particular performance requirement via a performance solution

True

False

3. In a class 2 building, a NatHERS star rating is one of the number of ways to demonstrate compliance

True

False

4. Solar PVs must be installed on every class 2-9 building

True

False



Quick quiz

1. The NatHERS whole of home rating is the same (i.e. 50 out of 100) for both class 1 buildings and class 2 SOUs

False

2. The verification methods are one way of satisfying a particular performance requirement via a performance solution

True

3. In a class 2 building, a NatHERS star rating is one of the number of ways to demonstrate compliance

True

4. Solar PVs must be installed on every class 2-9 building

False



Conclusion

Practitioner

Education

Series



Today we have covered:

- An overview of Energy Efficiency compliance within NCC 2022



After today's session, you should be able to:

- Have a clearer understanding of the Energy Efficiency changes of NCC 2022
- Have an improved bigger picture understanding of how to achieve NCC compliance for energy efficiency

Q & A



Pre-submitted questions

1. What do building surveyors need to focus on when assessing for DtS compliance?
2. Is condensation a result of increased energy efficiency?
3. How will the changes effect alterations and additions?
4. Is there more information on the insulation requirements for wall and roof systems?



Thank you!

After this webinar:

Later today

We'd love to get your feedback!
You'll receive an email with a quick survey later today
You'll receive your attendance certificate via email.

In approximately 2 weeks

You'll receive an email with the answers to all of today's questions that we didn't get to, as well as those that we did

