



Australian Government

Department of Climate Change, Energy,
the Environment and Water



NatHERS Whole of Home Overview

Presenter(s): Michael Young

Date: 8 August 2023

[DCCEEW.gov.au](https://dcceew.gov.au)



Acknowledgement of Country

Our department recognises the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge First Nations Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture and pay respects to their Elders past, present and emerging.

Scope

In this webinar we will cover:

- Overview of Whole of Home
- Benefits of Whole of Home
- Appliances included in Whole of Home
- How to find energy efficiency information for appliances
- How a Whole of Home Assessment is Conducted
- Whole of Home Certificate
- How do I improve my Whole of Home Rating?
- Questions

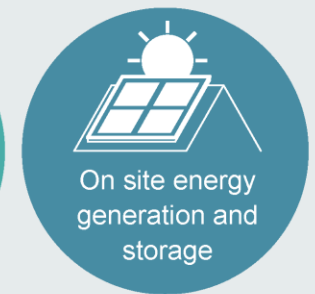
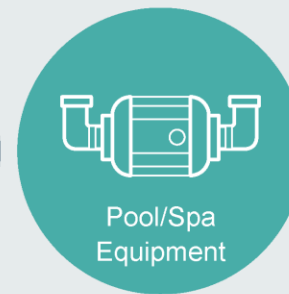
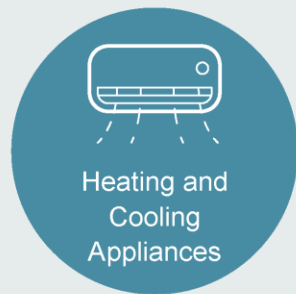
Disclaimer

This webinar DOES NOT cover any software or tool. Please speak with software developers to learn about the timings for the release of their Whole of Home product and for training in the use of that tool.

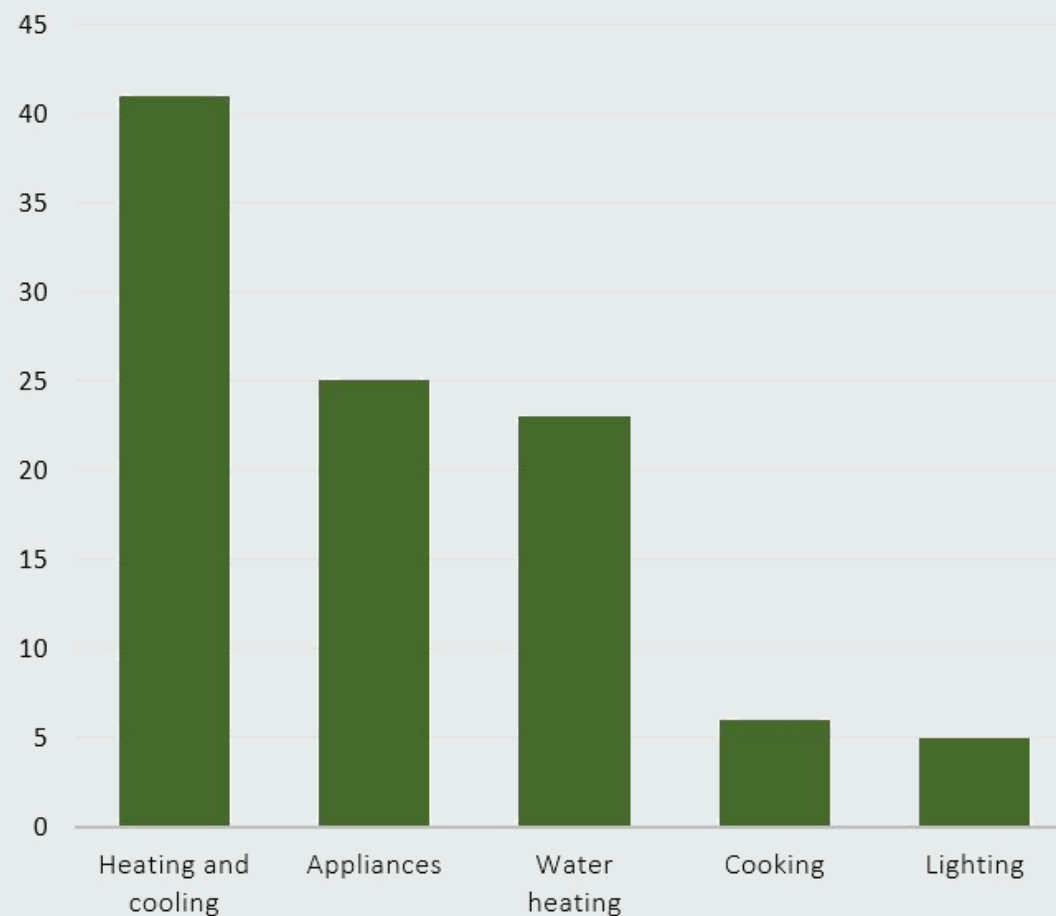


Overview of NatHERS Whole of Home





Energy Use



Energy Value

- Energy value is the net cost to society of energy use, including costs to the building user, the environment and energy networks
- It is a measure of the dwelling's energy performance
- Two main factors affect the energy value of any given unit of energy consumed:
 - Fuel type
 - Time of use

Energy Value

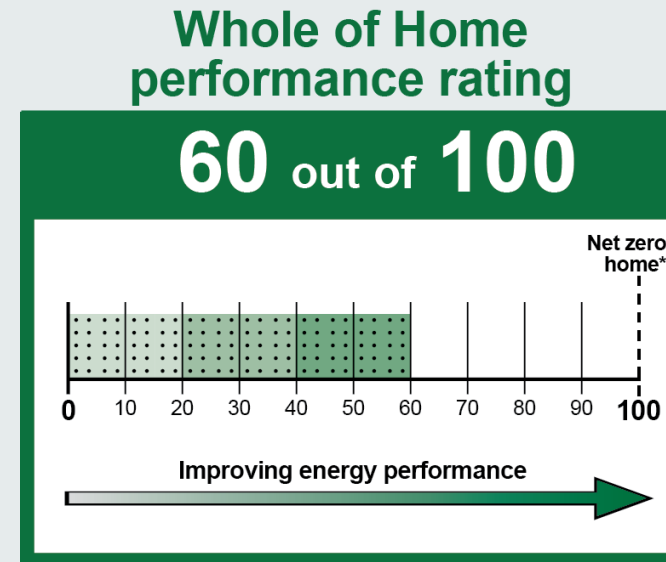
The **lower the energy value** of the modelled energy loads in the assessment, the **higher** the Whole of Home performance rating.



Reference Dwelling

The performance rating is calculated based on how the assessed dwelling performs compared with a reference dwelling

A score of 50 means that the dwelling design has the same performance as the reference dwelling



Reference Dwelling

The reference dwelling has the following characteristics:

7 Star
thermal
shell

3 Star
ducted
heat pump

5 Star
instantaneous
gas hot water

4W/m²
lighting
power
density

No
spa or **pool**

No **onsite**
energy
production
or storage

- Reverse-cycle air-conditioning
- For heating and cooling

Whole of Home software

- Assessors must use NatHERS-accredited software to obtain certification of a NatHERS assessment. The four accredited software tools are:



AccuRate



BERS Pro



FirstRate5



Hero

- All new assessments are to be undertaken using the latest version of the chosen software unless an exemption is provided by the relevant building authority.
- The software must be accredited for a Whole of Home assessment.

What you can't change

- For Whole of Home this includes:
 - The thermal shell elements
 - Same thermal shell must be used for the Star Rating and the Whole of Home rating
- Can still revisit the thermal shell performance, but a new whole of home simulation will be required for the certificate
- Occupant behaviour
- Efficiency of general plug loads



Benefits of Whole of Home

Benefits of Whole of Home

Expanding NatHERS to include Whole of Home helps:

Reduce
energy bills

Reduce
**carbon
emissions**

Improved
**thermal
comfort**

Design
beyond
**minimum
standards**

Achieve
zero energy
(and carbon)
ready home

Consumers

Industry and Consumers

Benefits of Whole of Home

- Support a range of different initiatives, such as the finance sector being able to use NatHERS to underpin their products
- Cater for potential future energy efficiency requirements in the National Construction Code

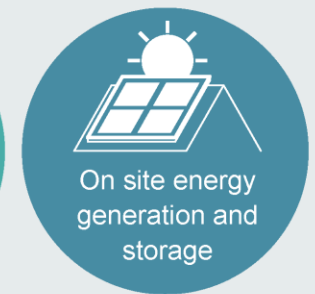
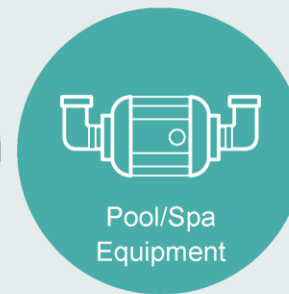
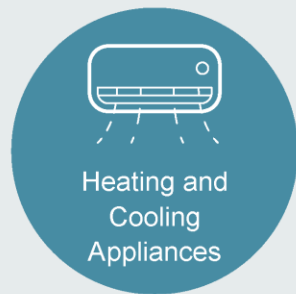
Benefits of expanding NatHERS

- Supports a variety of programs
- Delivers harmonised outputs
- Allows a choice of tools to be accredited that can suit different users
- Uses science and Australian data
- Requires assessors use the home energy rating tools in consistent ways
- Ensures consistent data
- National administrative processes
- Delivery by both government and commercial entities
- National governance

NATIONWIDE
HOUSE
ENERGY RATING SCHEME



Appliances included in Whole of Home



Heating appliances

The Whole of Home assessment tools will allow selection from the following heating appliances:



Correct sizing for the dwelling is very important

Cooling appliances

The Whole of Home assessment tools will allow selection from the following cooling appliances:



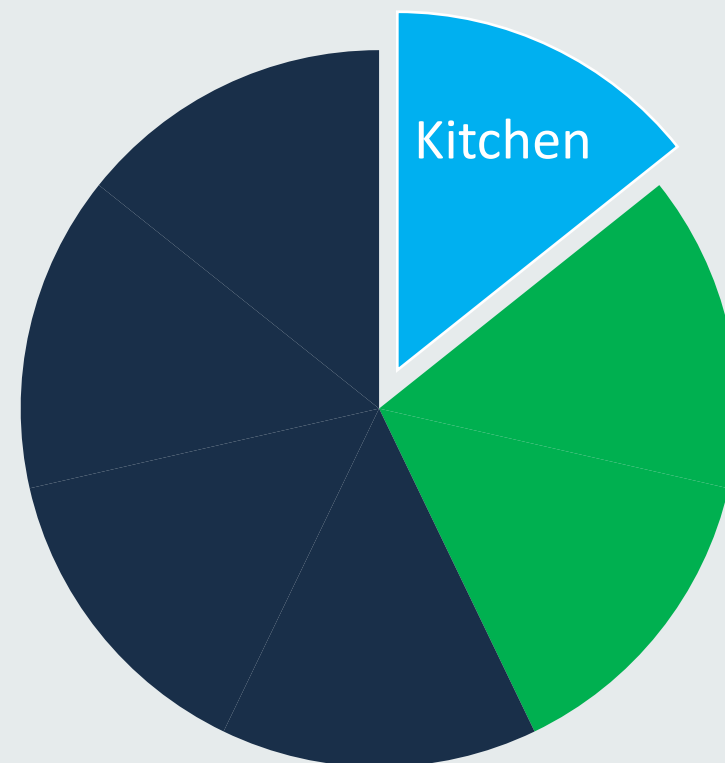
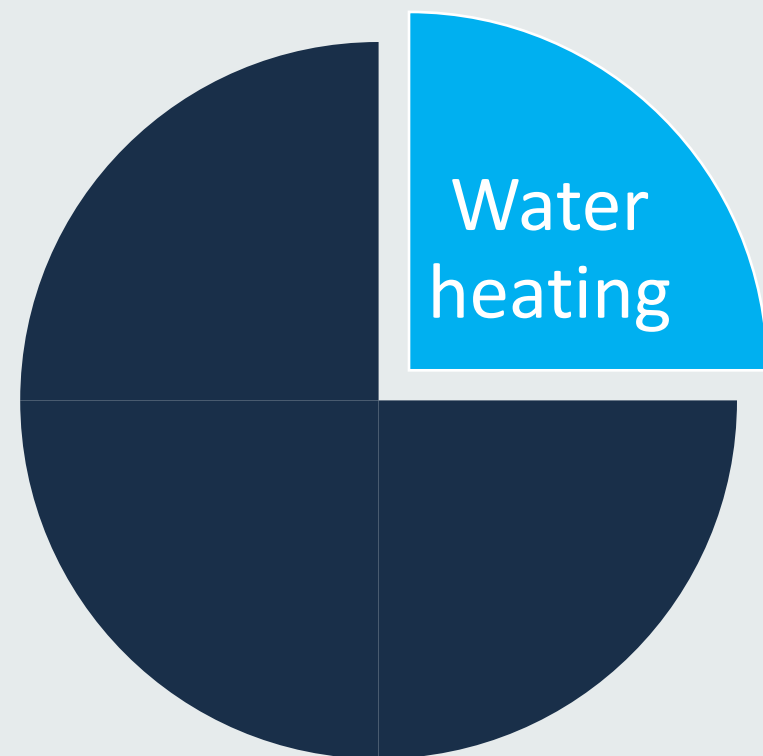
No delineation between reverse cycle and cooling-only air-conditioners

Cooling appliances

- The tool allows each cooling appliance to be allocated to **one** or **multiple** rooms or zones of the home.
- Evaporative coolers can only be selected for use in appropriate NatHERS climate zones.



Water heating appliances



Water heating appliances

Whole of Home assessment tools will include the following water heating appliances:



Water heating appliances

The choice may also be limited by available energy sources:

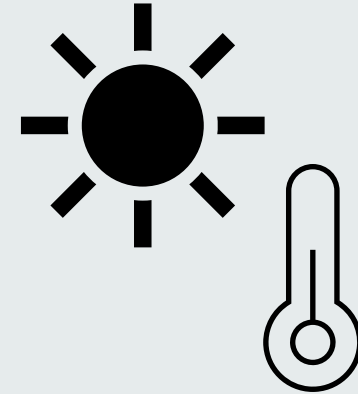
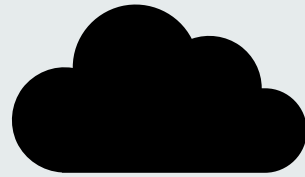
- Solar access and adequate north facing roof space must be available if a solar hot water system is to be installed.
- Natural gas is not available in some areas.



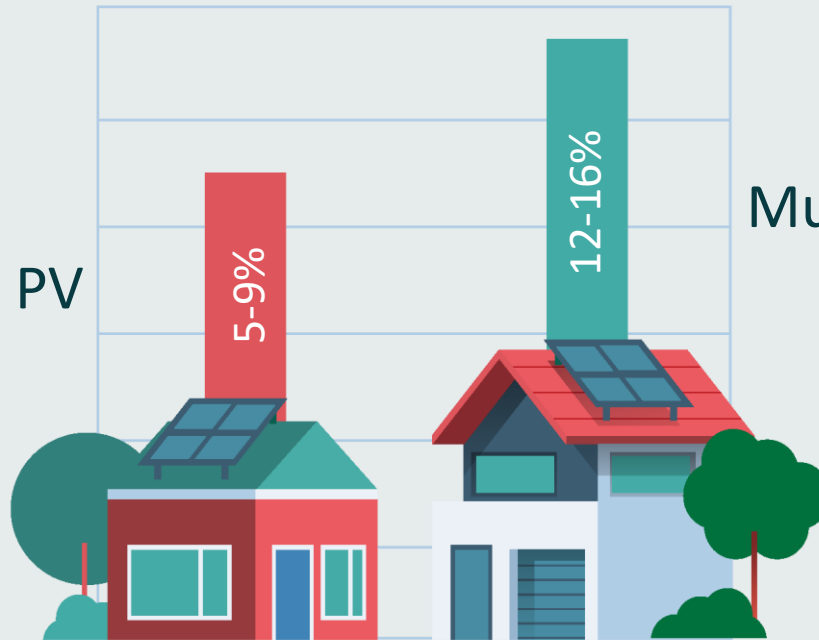
Lighting

- Energy consumption for artificial lighting is calculated automatically by the software - based on the floor area of the building and a standard assumption for lighting efficiency and use.
- Assumes that the building complies with any lighting provisions in the construction code.
- A NatHERS certificate is not proof that the design has met the minimum lighting provisions in the NCC.
- NatHERS tools are not 'lighting calculators' and cannot be used to determine lux levels in the building.
- A new home or renovation must meet the energy consumption requirements of the NCC.

Onsite Energy Generation and Storage



Amorphous silicon & thin film PV



Multi & mono crystalline cells

Onsite Energy Generation and Storage

- A 1.5 kilowatt system would provide about 25% of the electricity needs for a family of four with average energy consumption.
- Whole-of-Home assessment tools include solar PV and a battery option based on the Victorian Zero Net Carbon method.
- A shading factor is built into the model to account for overshadowing objects:
 - no shading,
 - medium shading
 - high shading

Onsite Energy Generation and Storage

The assessment requires:

- slope of the panels,
- the size of the system,
- the direction the system faces and,
- the time zone to be inputted.



Swimming Pool and Spas Pumps

- Filtration is 70 – 90% of pool electricity use
- Pool pumps can also perform other functions:
 - running spa jets,
 - water features, or
 - high-pressure cleaning systems.
- Pool volume or surface area is entered into the tool



Swimming Pool and Spas Pumps

Pool pump options in Whole of Home are:

- Single Speed
- Dual-speed
- Multi-speed

There are three pool cleaning pump options available:

- Pressure Cleaner with Main Filtration Pump
 - Pressure Cleaner with Booster Pump
 - Robotic system
-
- A standard assumption of pump efficiency is applied.

Cooking appliances

Cooktop:

- Gas
- Electric
- Induction

Oven:

- Electric
- Gas





How to find energy efficiency information for appliances

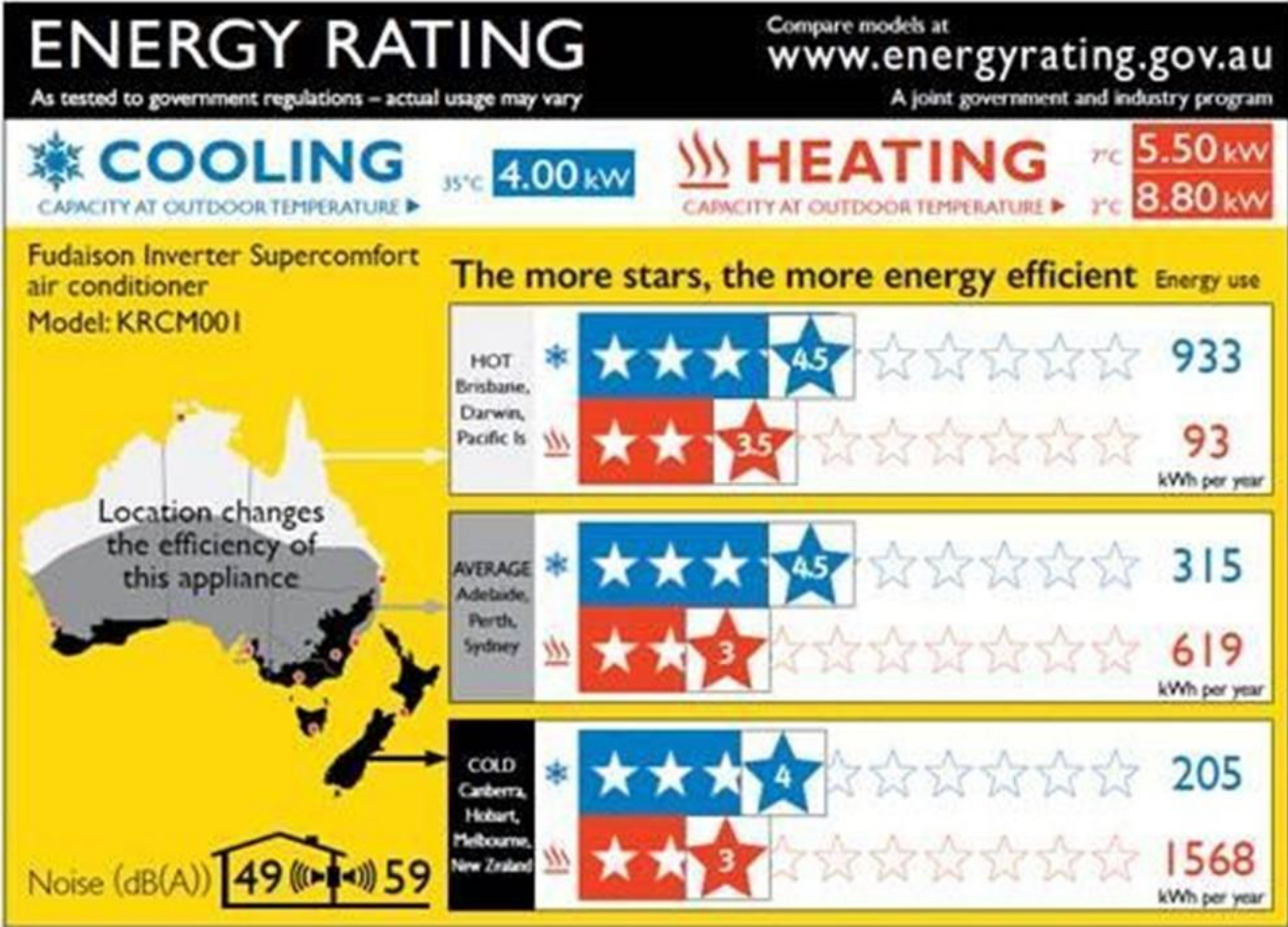
Appliance energy labels

The Energy Rating Label shows the **energy efficiency** and **energy consumption** of rated products allowing comparison of running costs over the life of the product.

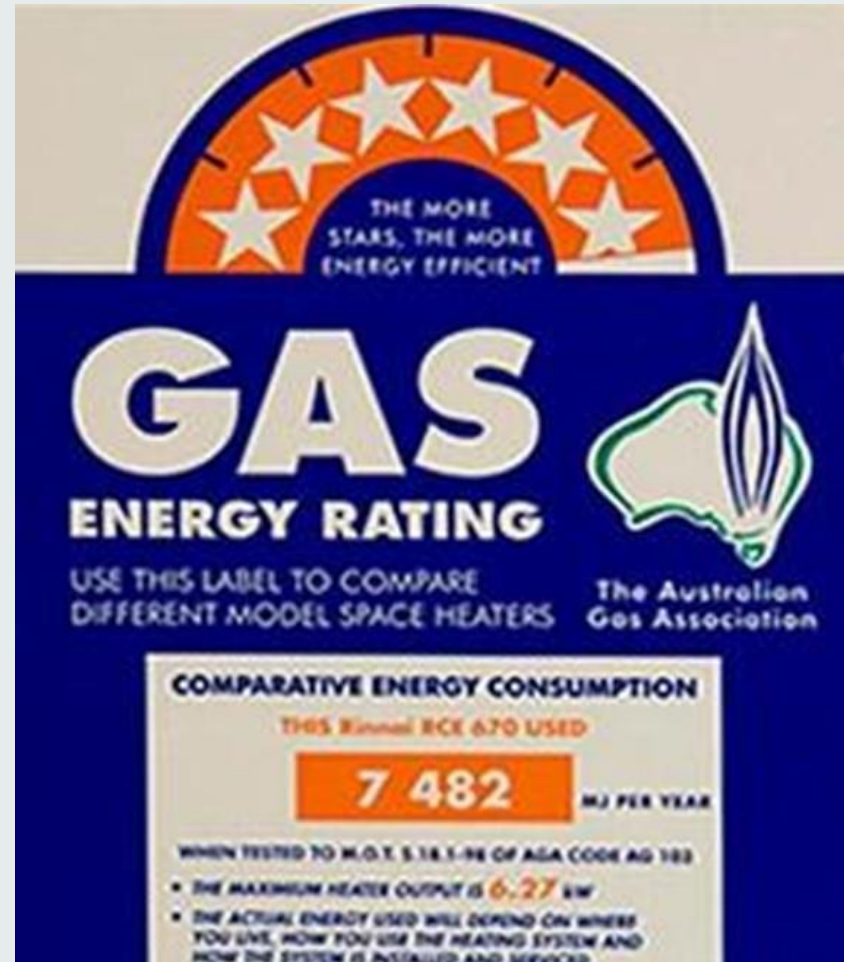
Energy rated appliances



Energy rated appliances



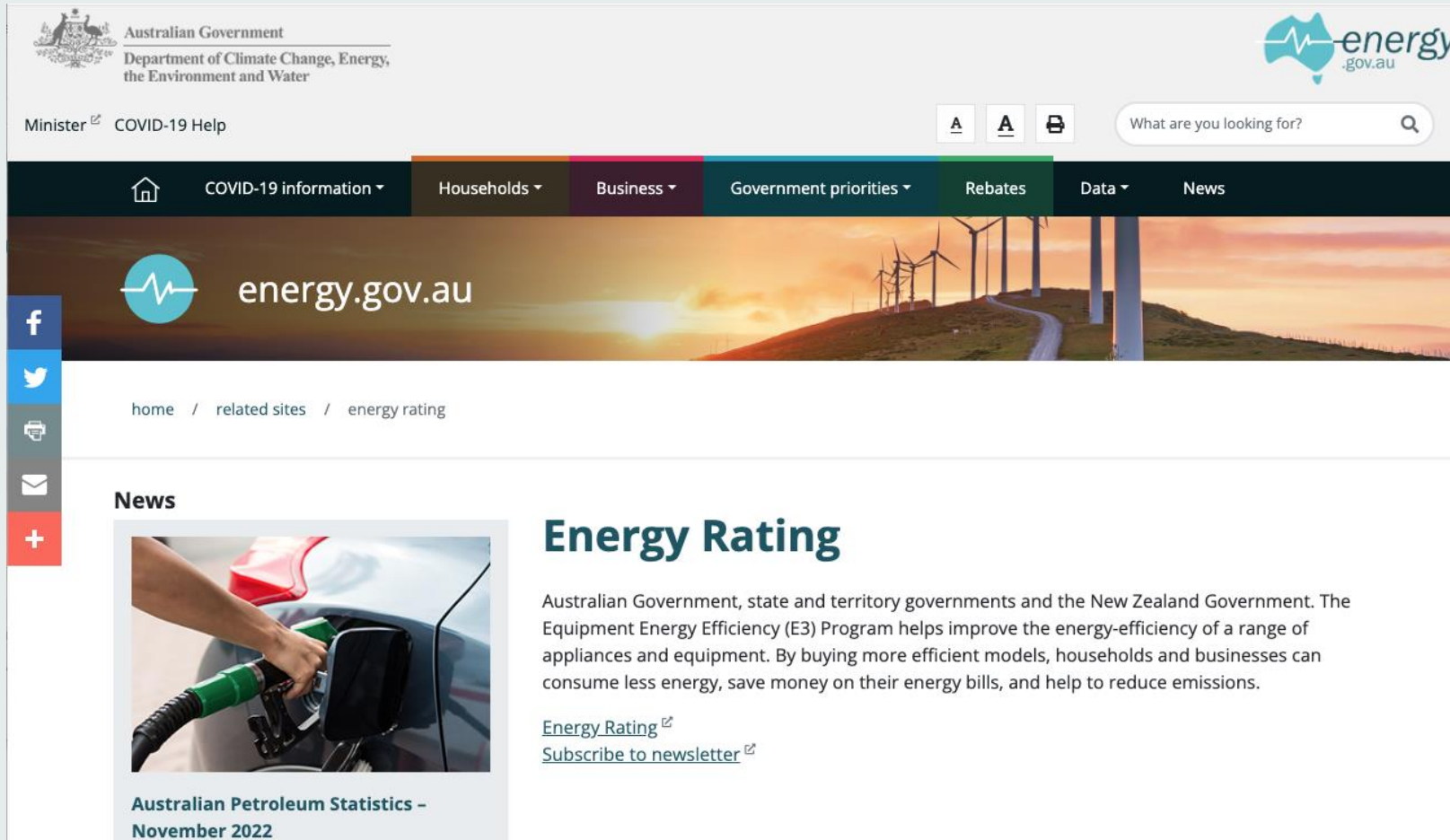
Natural gas appliances



Energy rating

- The Equipment Energy Efficiency (E3) Program helps improve the energy-efficiency of a range of appliances and equipment.
- By buying more efficient models, households and businesses can:
 - consume less energy,
 - save money on their energy bills, and
 - help to reduce emissions.

Where to find Appliance Energy Rating



The screenshot shows the homepage of the Australian Government's energy.gov.au website. The header includes the Australian Government logo, the Department of Climate Change, Energy, the Environment and Water, and the energy.gov.au logo. A search bar is present with the text "What are you looking for?". A navigation menu includes links for COVID-19 information, Households, Business, Government priorities, Rebates, Data, and News. The main banner features a sunset over wind turbines with the energy.gov.au logo. Below the banner, a breadcrumb trail reads "home / related sites / energy rating". The "News" section is titled "Energy Rating" and includes a sub-header "Energy Rating" and a paragraph describing the Equipment Energy Efficiency (E3) Program. A link to "Energy Rating" and a link to "Subscribe to newsletter" are provided. A sidebar on the left contains social media icons for Facebook, Twitter, and a plus sign for more options.

Australian Government
Department of Climate Change, Energy,
the Environment and Water

Minister [COVID-19 Help](#)

What are you looking for?

home / related sites / energy rating

Energy Rating

Australian Government, state and territory governments and the New Zealand Government. The Equipment Energy Efficiency (E3) Program helps improve the energy-efficiency of a range of appliances and equipment. By buying more efficient models, households and businesses can consume less energy, save money on their energy bills, and help to reduce emissions.

[Energy Rating](#)

[Subscribe to newsletter](#)

Australian Petroleum Statistics – November 2022

www.energy.gov.au/energy-rating

https://reg.energyrating.gov.au/comparator/product_types/



How a Whole of Home Assessment is conducted

NatHERS assessment

- The NatHERS Whole of Home assessment builds on the existing NatHERS thermal assessment that is used to verify compliance with the energy efficiency performance requirements of the NCC.
- From 1 October 2023, there will be two energy efficiency performance requirements for residential buildings under the NCC:
 - the thermal performance and,
 - the energy usage performance.
- A NatHERS assessment will verify compliance with both of these requirements:
 - The thermal assessment and star rating will address thermal performance.
 - The Whole of Home performance rating will address energy usage.

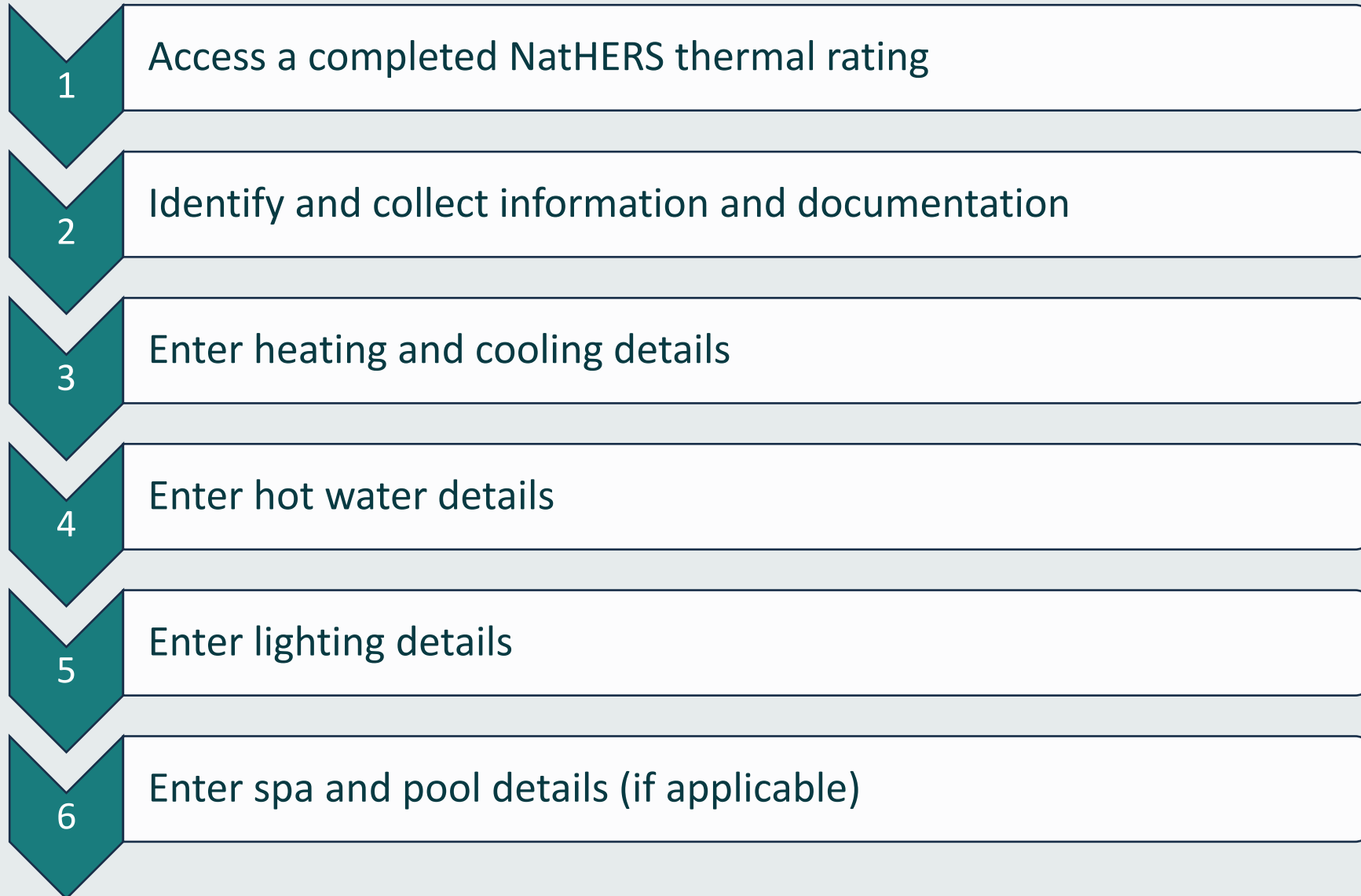
Other options

There are other options for demonstrating compliance with the NCC energy efficiency provisions:

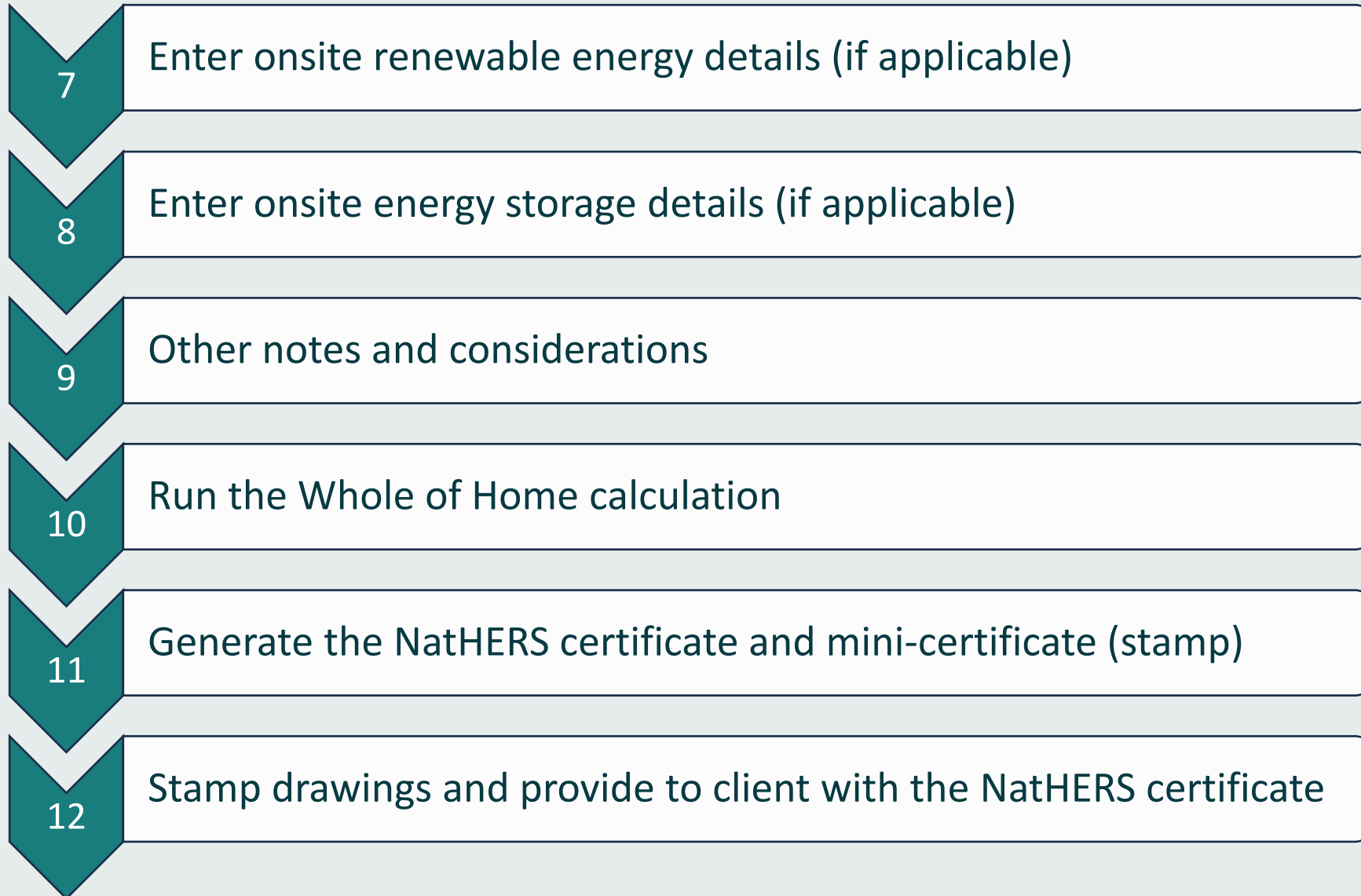
- an elemental method is also available in the NCC
- In New South Wales, the BASIX tool is used in place of the NatHERS Whole of Home



The assessment process



The assessment process continued





Whole of Home Certificate

Generated on {date} using {software and version}

Generated on {date} using {software and version}

Property

Address	[00 Street, Suburb, State/Territory, Postcode]
LotIDP	[number]
NCC class*	[number]
No. of Bores	[number]
Type	[new/renewal/extension]

Plans

Main plan [plan number, version & date]
Prepared by [name of preparer of plans]

Construction and environment

Assessed floor area (m ²) ^a	Exposure type (exposure)
Conditioned ^b	000.0
Unconditioned ^b	0.0
Total	0.0
Garage	0.0



Accredited assessor

Name	[assessor name]
Business name	[business name]
Email	[email address]
Phone	[phone number]
Accreditation No.	[accreditation number]
Assessor Accrediting Organisation	
[name of Assessor Accrediting Organisation]	
Declaration of Interest	[declaration]

NCC Requirements

BCA provisions	[Volume 1/Volume 2]
interterritory variation	[Yes/No]

National Construction Code (NCC) requirements

To be confirmed by NCD

[Add note: The whole of Home performance rating used for compliance with the NCC requirements is the rating including any on-site renewable energy generation.]

[The NCC's requirements for NHERS-rated houses are detailed in 3.12.0(a)(ii) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J3.2 and J3 to J3 of the NCC volume One.

In HCC 2010, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and separately through the NHERFS assessment. Requirements are additional to the NHERFS assessment that must also be addressed include, but are not limited to: insulation installation methods, the maltraded, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NHERFS Heating and Cooling Load Limits (Australian Building Codes Board standard) are available at www.abcb.gov.au. Goals and territory variations and additions to the HCC may also apply.

Thermal performance
star rating

7.0

**The movie stars
the world's greatest
theater company**

**NATIONWIDE
HOUSE**
ENERGY RATING SCHEME

107.9 MJ/m²

Predicted annual energy load for heating and cooling based on standard occupancy assumption.

For more information on
your dwelling's value, visit
www.hartmann.com

Thermal performance (MJ/m²)

Limits taken from AISC Standard (XXXXX)

	Heating	Cooling
Modelled	0000.0	0000.0
Local limits	0000.0	0000.0

Features determining load limits for Class 1

Floor type (lowest conditioned area)	Type
HCC climate zone 1 or 2	[Y/N/A]
Outdoor living area	[Y/N/A]
Outdoor living area ceiling fan	[Y/N/A]

Whole of Home performance rating

60 out of 100



Verification

To verify this certificate,
scan the QR code or visit
Hstar-dev.
azurewebsites.net/QR/
Generate7pMialCPHJ1
When using either link,
ensure you are visiting
hstar-dev.azurewebsites.net



Page 1 of 10



Thermal Shell



Whole of Home

Nationwide House Energy Rating Scheme®
NatHERS® Certificate No. #000000000-00

Generated on [date] using [software and version]
[other boilerplate text other boilerplate text other boilerplate text other
boilerplate text other boilerplate text other boilerplate text]

Address	[00 Street, Suburb, State/Territory, Postcode]
Lot/DP	[number]
NCC class*	[number]
Floor/all Floors	[dwelling entrance floor] of [total no. of floors] floors
Type	[new/renovation/existing]

Main plan [plan number, version & date]
Prepared by [name of preparer of plans]

Assessed floor area (m²)*		Exposure type
Conditioned*	000.0	[exposure]
Unconditioned*	0.0	NatHERS climate zone
Total	0.0	[number, town/suburb]
Garage	0.0	



Assessor Accrediting Organisation
[name of Assessor Accrediting Organisation]

Declaration of interest [declaration]

BCA provisions	[Volume 1/Volume 2]
State/Territory variation	[Yes/No]

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses NCC vol. 1:115 of NCC Volume One.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

* Refer to glossary.
Generated on [date] using [software] for [address]

7.0
The more stars
the more energy efficient

107.9 MJ/m²

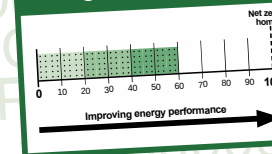
For more information on
your dwelling's rating see:
www.nathers.gov.au

Limits taken from ABCB Standard 2022.1

	Heating	Cooling
Modelled	0000.0	0000.0
Load limits	0000.0	0000.0

	[Type]
Floor type (lowest conditioned area)	[Y/N/NA]
NCC climate zone 1 or 2	[Y/N/NA]
Outdoor living area	[Y/N/NA]
Outdoor living area ceiling fan	[Y/N/NA]

60 out of 100



To verify this certificate, scan the QR code or visit [Hstar-dev.azurewebsites.net/QR/Generate?p=M1alcPqJ.]

When using either link, ensure you are visiting hstar-dev.azurewebsites.net





About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the *ABCB NatHERS heating and cooling load limits Standard 2022.1* for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable



Predicted onsite renewable energy impact

Your Whole of Home energy use* rating excluding onsite renewable energy generation is [00] out of 100.

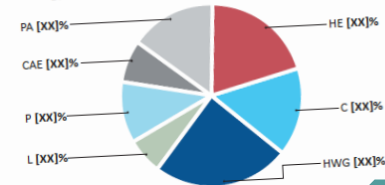
This home's annual greenhouse gas emissions: [0000]kg CO₂e (with solar)
[0000]kg CO₂e (without solar)

Predicted annual electricity use: [0000] kWh
Exported to the grid: [00]%
Used by the home: [00]%

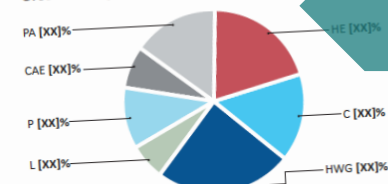
Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar.

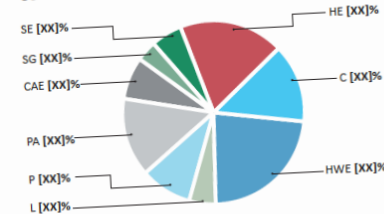
Energy use:



Greenhouse gas emissions:



Cost:



Graph Key:

Colour:	Codes:	Name:	Fuel type:
Red	HE	Heating	electric
Dark Red	HG	Heating	gas
Light Blue	HW	Heating	wood
Blue	C	Cooling	electric
Dark Blue	HWE	Hot water	electric
Light Green	HWG	Hot water	gas
Light Grey	L	Lights	electric
Dark Grey	P	Pool/Spa equipment	electric
Medium Grey	PA	Plug-in appliances	electric
Dark Grey	CAE	Cooking appliances	electric
Dark Grey	CAG	Cooking appliances	gas
Dark Grey	SG	Supply charge	electric
Dark Green	SE	Supply charge	electric

2022 Certificate examples (November 2022)

[#000000000-00] NatHERS Certificate

0.0 Star rating and 00 Whole of Home rating as of [Date]



Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Genuine certificate check

Does this Certificate match the one available at the web address or QR code verification link on the front page?

Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?

Thermal performance check

Windows and glazed doors

Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?

Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?

External walls

Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?

Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?

Floor

Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?

Ceiling penetrations*

Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?

Ceiling

Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?

Roof

Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?

Apartment entrance doors (NCC Class 2 assessments only)

Does the 'External Door Schedule' show apartment entrance doors? Please note that an 'external door' between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.

Exposure*

Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

Heating and cooling load limits*

Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NATHERS heating and cooling load limits for the appropriate climate zone?

* Refer to glossary.
Generated on [date] using [software] for [address]

2022 Certificate examples (November 2022)

[#000000000-00] NatHERS Certificate

0.0 Star rating and 00 Whole of Home rating as of [Date]



Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m² is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
Ducted refrigerative air conditioning (heat pump)	Kitchen/Dining/Living	Electric	00	00
Ducted refrigerative air conditioning (heat pump)	Bedroom 1	Electric	00	00
Ducted refrigerative air conditioning (heat pump)	Bedroom 2	Electric	00	00
Ducted refrigerative air conditioning (heat pump)	Bedroom 3	Electric	00	00

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
Ducted reverse cycle air-conditioner (heat pump)	Kitchen/Dining/Living	Electric	00	00
Ducted reverse cycle air-conditioner (heat pump)	Bedroom 1	Electric	00	00
Ducted reverse cycle air-conditioner (heat pump)	Bedroom 2	Electric	00	00
Ducted reverse cycle air-conditioner (heat pump)	Bedroom 3	Electric	00	00

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Substitution tolerance ranges		Assessed daily load
			Zone 3 STC lower limit	Zone 3 STC upper limit	
Gas instantaneous	Gas	0 star	N/A		120L
Gas boosted solar thermal	Solar-gas	30 STCs Zone 4	22	31 (Medium)	120L

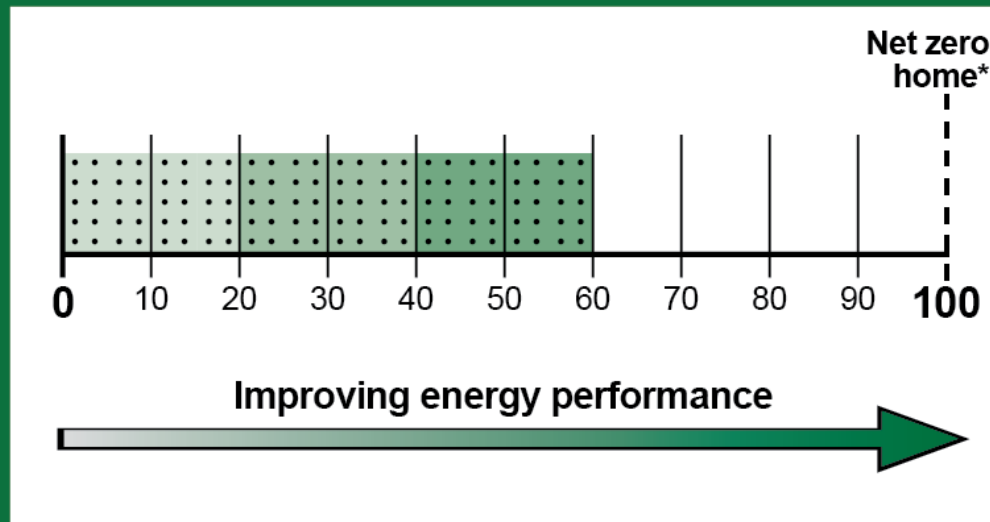
Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
Single speed pressure cleaner with main filtration pump	Electric	00	00

Whole of Home Performance Rating

Whole of Home
performance rating

60 out of **100**





How do I improve my Whole of Home Rating?

How to improve the Whole of Home Rating

- Go beyond a 7-star thermal shell
- Use higher star rating appliances
- Select different appliance
- Use multiple non-ducted systems instead of single ducted system
- Switching between fuels and technologies
- Load shifting
- Adding solar PV, or re-orienting solar PV to generate more energy during afternoon and evening peaks
- Adding batteries

Summary

In this webinar we have covered:

- Overview of Whole of Home
- Benefits of Whole of Home
- Appliances included in Whole of Home
- How to find energy efficiency information for appliances
- How a Whole of Home Assessment is Conducted
- Whole of Home Certificate
- How do I improve my Whole of Home Rating?

Complete the Quiz

Access and complete the quiz at:

<https://transformed-pty-ltd-short-courses.thinkific.com/courses/nathers-whole-of-home-overview>

You will need to register and on successful completion you will be sent your certificate.



Whole of Home OVERVIEW Webinar and Quiz



Webinar Modules

Once the live webinars have been completed, they will be edited and uploaded into this platform.



Quiz

Successfully complete the quiz to receive your Add your certificate title



Certificate

Take your certificate to accreditation body to claim CPD hours or points.



Questions?
