NCC 2022
Troubleshooting Q&As

25 September 2024

Version Register		
Date	**Version**	**Updates Log**
01 05 2024	1.0	Initial draft published. Includes unanswered questions from software demonstration webinars and NatHERS inbox.
14 05 2024	1.1	Additional Whole of Home questions added
11 06 2024	1.2	Additional Whole of Home added and Thermal question updated
25 09 2024	1.3	Additional Thermal Assessment general and insulation questions added

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1 WHOLE OF HOME ASSESSMENTS

1.1 GENERAL

Does Whole of Home adjust for the lower stringency in some jurisdictions?

No, the software rating tools do not adjust for alternative stringencies. Please refer to your jurisdiction's rules.

What if the appliances rating is worse than the default rating?

The rating inputs must reflect the design documentation even if they are lower than the NatHERS default setting.

What Whole of Home pass rating is proposed for each jurisdiction?

The minimum Whole of Home rating requirements are:

- 60 for houses (Class 1 buildings) and
- 50 for apartments (Class 2 sole-occupancy units and Class 4 parts of buildings).
- Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Do the optional credits available in Queensland (under the thermal rating, for a compliant outdoor living area), transfer to the Whole of Home rating?

No. The optional thermal credits available in Queensland cannot be transferred into/used in a NatHERS Whole of Home assessment. The thermal performance ratings generated by the NatHERS accredited tool form the basis for a NatHERS Whole of Home assessment. This means that if you generate a 6 or 6.5 star rating for regulatory purposes, there will potentially be a reduction in the Whole of Home rating. You can however implement options to increase your Whole of Home rating as outlined in the NatHERS Assessor Handbook, section 12.4

For the purposes of the NatHERS Whole of Home rating the actual thermal performance of the dwelling (star rating), as generated by the NatHERS accredited tool, is used. The optional credits available in Queensland are not accounted for.

1.2 HEATING AND COOLING

Do I model plug-in evaporative coolers and electric heaters?

No. NatHERS Whole of Home appliances must be fixed (i.e. installed) in the building.

The HVAC system I need to model doesn't have a star rating. How do I model this system?

In some situations a HVAC system is not required to carry an energy star rating (e.g. multi-heads, ducted systems etc). These systems are still required to be tested by GEMS and will have an AEER and ACOP number.

If the software has the functionality that allows you to enter the AEER and ACOP, it will calculate the star rating. The AEER and ACOP are available in the downloadable csv file on the Greenhouse & Energy Minimum Standards Regulator energy rating website. The use of manufacturer specified AEER and ACOP is not acceptable..

How do I model a hydronic system? Do I model these as default heating or none?

Currently NatHERS software cannot be used to model dwelling designs with hydronic heating.
We will be working in the coming months on clarifying the method for hydronic heating, and we hope to close this gap soon.

How do I know if the HVAC appliance has a 2013 or 2019 rating?

Refer to images of 2013 labels and 2019 labels in chapter 12 of the Assessor Handbook.

Will a dwelling that produces a higher MJ/m² than 7 Stars have a higher energy consumption in heating and cooling appliances and therefore lower Whole of Home rating?

The Whole of Home rating is calculated by combining many different indices. This means that the final rating does not just rely on one index like MJ/ m². Generally a higher thermal star rating will result in a better Whole of Home rating.

How does the Whole of Home rating interact with/impact on the Thermal rating?

The relationship between the NatHERS thermal rating and the Whole of Home performance rating means that increasing thermal performance will also increase the Whole of Home performance rating. This is because the heating and cooling energy requirements will be lower in a dwelling with a higher thermal star rating.

However, the Whole of Home score also considers the energy value of a dwelling to determine its performance and assign a rating. The 'energy value' is based on what is known as societal cost (this considers the emissions, cost to the user, energy networks, and the environment).

You can learn more about societal costs by reading chapter 3 of Whole of Home National Calculation Methods (nathers.gov.au).

1.3 Hot Water Systems

Do I need to demonstrate that the electric storage hot water system is an off-peak system?

Yes. Whole of Home can model both peak (continuous) and off-peak hot water systems. Assessors should refer to the relevant product literature regarding tariffs and corresponding capacities. This will indicate the system size which is suitable for off-peak use in a particular climate and occupancy e.g. a small electric storage unit may not be suitable for off-peak in a cool climate for 3 occupants.

Do STCs apply to solar and heat pump water heaters?

Yes. Both heat pump and solar hot water efficiency are based on the 10-year STC for the product. See the Clean Energy Regulator Registry.

1.4 LIGHTING

Are lights in garages/verandas/outdoor lighting/decorative lighting/security lights included in the floor area to calculate W/m2?

They are not. Lighting energy demand is based on the indoor space only excluding garage, sheds, and other outdoor lighting. The areas assessors enter when zoning the dwelling will be used in lighting calculations.

1.5 RENEWABLE ENERGY GENERATION AND STORAGE

With the introduction of the new Whole of Home rating, is it now necessary to add solar panels to achieve a pass in most climate zones?

Each design scenario and assessment are different, but we expect in some cases, high efficiency heating and cooling and hot water appliances, or solar hot water, or rooftop solar PV will be required to reach a 60 out of 100 Whole of Home rating.

Speaking generally, solar PV will make reaching a rating of 60 (or more) easier, as will including a battery. In other situations, for example where a pool is included, it will be more challenging to reach this score.

We are currently preparing case studies to provide more specific information and examples which will be uploaded to the NatHERS website and published via the NatHERS newsletter soon.

1.6 RENOVATIONS

How do I apply NatHERS Whole of Home to a renovation project?

As requirements vary between jurisdictions assessors should contact the local building regulatory body who can provide specific guidance for each state or territory.

Below are some helpful links and more information:

- **ACT** has excluded renovations from Whole of Home. *See ACT H6P2 Energy usage — application for alterations to existing buildings included in* Building (ACT Appendix to the Building Code) Determination 2023 (No 3).
- **Victoria** has released updated guidance. See pages 11-12 of *EE-04 Alterations to existing Class 1 buildings* in Practice Notes: Categories E-F (vba.vic.gov.au).
- Assessors should contact building regulation agencies for advice and guidance on Whole of Home requirements for renovations in **Queensland**, **South Australia**, and **Western Australia**
- **NSW** has not adopted Whole of Home ratings but instead continues to use BASIX. Currently, both the **Northern Territory** and **Tasmania** have not adopted Whole of Home ratings.

Do I need to do anything differently when using Whole of Home software for a renovation project?

No, from a software perspective, performing a Whole of Home assessment on a renovation is no different to a new home design.

2 THERMAL ASSESSMENTS

2.1 GENERAL

Why am I getting a different star rating for the same heating and cooling loads, depending on whether I use a software version for NCC 2019 or NCC 2022?

The change in rating for the same heating and cooling load is due to the updated climate files and the consequent re-star banding for NCC 2022.

During re-star banding care was taken to ensure that the overall national effect would be a zero change to ratings. However there can be small differences at the climate zone level. The significance of the difference will depend on the climate zone.

How are decisions made about when technical elements of NatHERS are reviewed and/or updated? How does this feed into the National Construction Code?

We acknowledge that there is always room for improvement in NatHERS software and we strive to enhance the program to best support the design and construction of high-performing Australian homes. We are committed to improving the ongoing accuracy and effectiveness of the scheme.

Decisions on prioritising aspects of the scheme for review and improvement are made with key NatHERS stakeholders, including the jurisdictions who partly fund the scheme. The valued members of our Technical Advisory Committee (TAC) also consider which elements should be prioritised for review and updated within the scheme.

Proposed changes to NatHERS may need to occur as part of/or within the National Construction Code (NCC) Residential Building cycle, this is dictated by the ABCB Protocol for the development of National Construction Code referenced documents Nationwide House Energy Rating Scheme (NatHERS) Supplement.

There are some inaccuracies with the current area correction factor, that impact very small spaces, when will these be addressed?

We are proposing to review the area correction factor as part of the National Construction Code (NCC) 2028 consultation. This work will focus on small spaces, including granny flats, tiny homes, and studio apartments. CSIRO will lead this work in consultation with NatHERS stakeholders.

What research is being considered or undertaken on providing a measure of thermal comfort?

CSIRO has partnered with five universities to develop a national climate-adaptive thermal comfort model. It is investigating how thermal comfort modelling could be achieved using NatHERS software.
NatHERS is also looking at including air infiltration specifications into its software following the recent CSIRO study on air infiltration in new dwellings. See the full CSIRO report here.

What is NatHERS doing to address as-built verification?

Accurate, as-built verification of an energy performance gap (i.e., the difference between modelled energy performance and measured energy performance), continues to be a challenge for many countries, including Australia.

CSIRO is participating in the upcoming International Energy Agency's 'Energy in Buildings and Communities Program' (IEA EBC) Annex 94. This research is considering planning, construction and management processes

to reduce the performance gap, as well as investigating low tech, affordable technology to help support the widespread testing of dwellings.

Further, NatHERS and CSIRO have embarked on a large apartment monitoring study to evaluate the use of NatHERS assumptions in modelling Class 2 sole occupancy units. This work is expected to yield early results in late 2026.

2.2 INSULATION

How are soil conductivity and diffusivity impacting the effectiveness of under slab insultation?

It is understood that changes to assumed soil conductivity and diffusivity will impact results in NatHERS. Current advice based on CSIRO guidance concludes that values in NatHERS are an appropriate average. This research is ongoing, gaps in knowledge of water table depth is currently a barrier to better understanding of the impacts in a manner which could be incorporated by NatHERS. View this paper for more information.

How do gaps in under slab insulation, due to footings, influence the thermal performance of the dwelling?

CSIRO is conducting slab-on-ground modelling to improve our understanding of thermal losses to the ground due to gaps in insulation. CSIRO will consult with NatHERS on this research which will include detailed transient 3D simulations of footings gaps and their potential impacts. Changes to the slab model can result in excessive simulation processing time and so model precision must be balanced against the practicality of implementation.