

Unit of Competency CPPHES4002

Advise clients on thermal performance of residential buildings

Application

This unit specifies the skills and knowledge required to explain the factors that contribute to the thermal performance of residential buildings when providing advice to clients as part of a home sustainability or Nationwide House Energy Rating Scheme (NatHERS) assessment. It includes explaining the heat transfer process, factors that impact thermal comfort, how climatic conditions, building design and materials influence thermal performance, and the principles of passive design.

This unit is for individuals who work independently as home sustainability or NatHERS assessors who use specialised knowledge to assess and make recommendations for improving the thermal performance of residential buildings. It involves completing routine and non-routine tasks and dealing with predictable and sometimes unpredictable problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Prerequisite Unit

None.

Competency Field

Home Sustainability.

Elements and Performance Criteria

1. Advise client on relationship between building thermal performance and energy use.	1.1 Explain the concept of building thermal performance. 1.2 Identify and communicate the impact of building materials on thermal performance of buildings. 1.3 Explain the relationship between building thermal performance, heating and cooling and energy consumption. 1.4 Explain the main uses of energy in buildings and the proportion attributed to heating and cooling. 1.5 Explain the environmental and social impacts of energy use. 1.6 Check client understanding of building thermal performance and energy use and respond to questions to clarify advice.
2. Advise client on the heat transfer process in residential buildings.	2.1 Explain the process of heat transfer in residential buildings. 2.2 Explain the meanings of key terms used to describe heat transfer. 2.3 Explain the ways in which residential buildings lose and gain heat. 2.4 Check client understanding of the heat transfer process and respond to questions to clarify advice.
3. Advise client on factors that impact thermal comfort.	3.1 Explain thermal comfort and its use in building thermal performance assessments. 3.2 Explain the physical factors that influence thermal comfort.

	3.3	Explain the methods for determining building occupant requirements for thermal comfort.
	3.4	Check client understanding of factors that impact on thermal comfort and respond to questions to clarify advice.
4. Advise client on the influence of climatic conditions on building thermal performance.	4.1	Identify major Australian climate zones and explain their key characteristics associated with thermal performance.
	4.2	Explain the types and uses of climate data in carrying out thermal performance assessments.
	4.3	Explain the impact of local climatic conditions on building thermal performance.
	4.4	Explain ways of improving thermal performance appropriate to the relevant climate zone.
	4.5	Check client understanding of how climatic conditions influence thermal performance of residential buildings and respond to questions to clarify advice.
5. Advise client on the principles of passive design.	5.1	Explain the principles of passive design.
	5.2	Explain the application of passive design principles to planned and existing residential buildings.
	5.3	Explain factors that diminish the thermal performance of buildings.
	5.4	Check client understanding of the principles of passive design and respond to questions to clarify advice.

Foundation Skills

Candidates require:

- oral communication skills to use clear explanations, active listening and questioning skills to convey and clarify industry concepts and terminology
- numeracy skills to interpret climate data and apply correct units of measurement when describing power and energy to clients
- technology skills to access and transmit electronic information when providing client advice.

Unit Mapping Information

Supersedes and equivalent to CPPHSA4019A Inform clients about thermal performance of residential buildings.

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPHES4002

Advise clients on thermal performance of residential buildings

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by providing accurate oral and written advice to three different clients on the thermal performance of residential buildings involving three different building designs and climate zones.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- Australian climate zones, characteristics and data used in thermal performance assessments:
 - diurnal temperature range
 - humidity
 - irradiance
 - minimum and maximum temperature
 - solar geometry
 - wind speed and direction
- building elements included in thermal performance assessments
- definition of thermal comfort:
 - factors influencing thermal comfort
 - models of thermal comfort
 - role of thermal comfort in building thermal performance assessments
 - thermal sensitivity of individuals
- environmental and social impacts of energy use:
 - climate change
 - energy cost
 - energy security
 - global warming
 - greenhouse gas emissions
 - operational costs
 - resource depletion
- impact of climate on thermal performance of residential buildings
- industry terminology for energy use associated with thermal performance of buildings
- passive building design principles
- process of heat transfer in residential buildings:
 - key terms used to describe heat transfer
 - impact on heating and cooling
 - mechanisms: radiation, convection and conduction
 - modelling
 - U and R-values of building materials
 - R-values of wall constructions
- principles of thermal performance:

- factors that diminish and enhance the thermal performance of residential buildings
- impact of local climatic conditions on building thermal performance
- relationship between building thermal performance, heating and cooling and energy consumption.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Candidates must have access to:

- relevant codes, standards and regulations associated with building thermal performance assessments
- computer equipment and software suitable for sourcing and transmitting information on the thermal performance of buildings to allow achievement of the performance evidence
- technical reference library and/or (online) access to current technical publications on:
 - passive building design
 - thermal performance of building materials
 - building thermal performance
 - manufacturers' product information on building products and materials.

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