What makes a house warm?

Keeping warm is about much more than just turning up the heating thermostat. 'Thermal Comfort' means how warm or cool you feel in your home. While we tend to think keeping warm just means maintaining a high air temperature by turning up the heating, 'thermal comfort' is affected by several factors – see Figure 1.

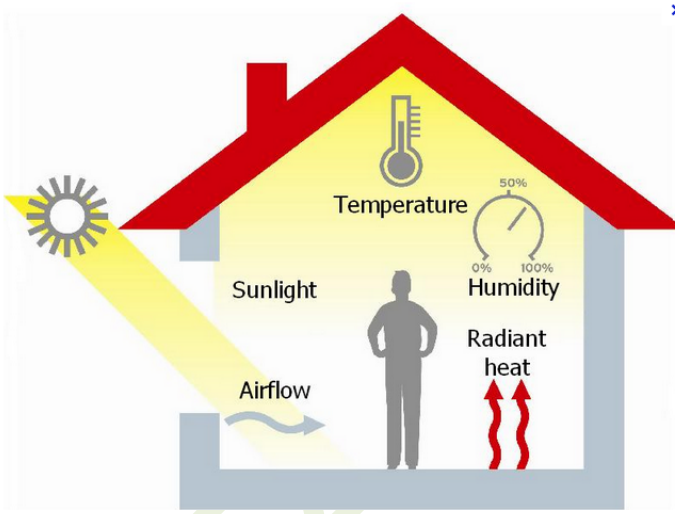

Figure 1 – Factors that affect thermal comfort
Image courtesy of http://therm-lighting.blogspot.co.uk/2015/02/q.html

The key factors are:

- Air temperature (controlled by the heating thermostat)
- Air movement (draughts make you feel colder)
- Radiant heat, or surface temperatures (colder surfaces make you feel colder, even if the air temperature is warm)
- Humidity (damp rooms are harder to heat)
- Sunlight (helps make rooms warmer)

- If a house has cold walls, damp rooms and is draughty, to feel warm you will need to have a higher air temperature than if your walls are warm, draught free and low humidity. Higher air temperature means turning up the heating thermostat, which means higher heating costs.

- Treating the causes of poor thermal comfort therefore cuts costs in two ways – firstly by dealing with the problem itself, and then in turn by allowing you to have a lower air temperature but still feel warm.

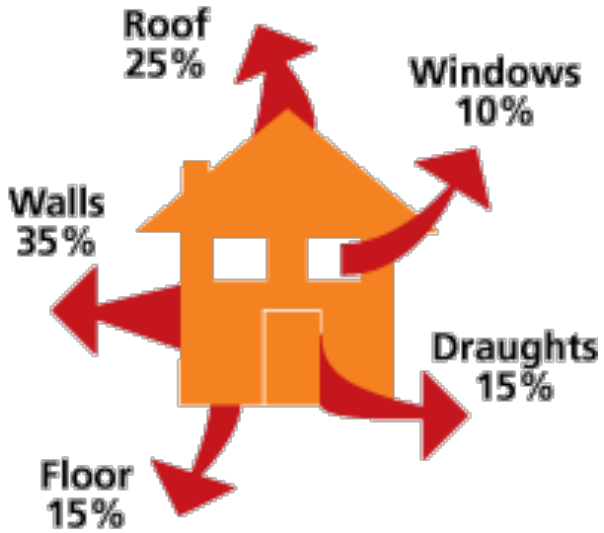

Figure 2 – Typical heat loss from an average house
Image courtesy of: http://www.ecoopenhouses.org/pages/features.html

- One of the biggest heat losses is through the roof, but this can easily be reduced by good quality loft insulation (see Factsheet no. 16, *Loft Insulation and Insulating Flat Roofs*).

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- Draughts are another key area that can be treated cheaply (see Factsheet no. 15, *Draught-proofing Your House*).

- Walls can be more difficult to treat. Modern homes have cavity walls and, if they were built after the mid 1990s, they should have cavity insulation as standard. Homes built before this could have cavity wall insulation added, unless they are older than around 1920 – these homes may still have a cavity, but it may not be appropriate for insulation, and should be checked by expert installers.

- Homes built pre-1900 often have solid walls. These are particularly bad at losing heat (see Factsheet no. 18, *Insulating Solid Walls* for potential treatments).

- In older houses floors are not usually insulated and this can be a difficult thing to do if it means taking up the whole floor. However, you might be able to put a new, well insulated layer on top, and most people can easily draught proof floors (see Factsheet nos. 19, *Insulating Suspended Timber Floors* and 20, *Insulating Solid Floors*).

- While results from the Household Energy Survey show that most households in the village have some double glazing, around half the properties still have at least some single glazed windows. These are significant sources of heat loss and condensation and, in some cases, planning regulations may make replacing these more difficult (see Factsheet no. 21, *Double-glazing and Heritage*).

- Whatever windows you have, make sure windows seals still work and they don't let draughts in when closed. It's also a good idea to close curtains or blinds at dusk for the night – this reduces heat loss substantially and helps keep your home warm.

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