

This information has been kindly provided by Brian Haines – Director of Energy Lab.

As 7 Stars is substantially harder to achieve than 6 Stars due to the increase in performance not being linear from a cost perspective, we have put together a list of hints to help your designs achieve higher ratings therefore reducing unnecessary construction costs.

General Design Hints

- Engage your energy efficiency assessor early. Don't spend countless amounts of time and money all the while having your client fall in love with a design only to find out it cannot reach 7 Stars.
- Avoid potential town planning issues. There are no guarantees your plans will achieve compliance if design issues have not been addressed at sketch stage. Have your plans assessed early as it will save headaches down the track.
- Multiple design analysis may be required in order to develop the most energy efficiency design for any given block of land or location.
- Make sure your floor plan layout suits your land orientation, rearrange site layout and placement of living, bedrooms, utilities and alfresco areas if required. Reduce as many trafficable areas as possible within your design as they are negatively biased.
- Reduce your house size. This is by far the easiest way to achieve higher star ratings.
- Regular shaped houses are the most energy efficient. Stick with floorplans that are squares and rectangles to reduce excessive amounts of conditioned wall space adjoining atmosphere. Avoid floor overhangs and designs with complex geometry.
- Don't forget heating and cooling load compliance, critical design elements may need to be considered in order to reduce dependence on mechanical heating or cooling based on climate zone requirements.
- Thermal bridging needs to be considered for steel frame construction. Pay attention to thermal break material and placement. Mitigate these negative impacts with good design for the least amount of thermal bridging possible.
- Reduce window sizes. Try and keep your window to wall area ratio as close to 23% as possible. Larger windows are possible however they will come with an increase in construction complexity and cost, you don't want to be importing triple glazed windows from overseas.
- Dark window frame, wall and roof colours are preferable within NatHERS software, 0.1 to 0.3 Star gains are possible.
- Remove eaves and alfrescos, colder climates require more winter sun on average to reduce reliance on mechanical heating rather than a reduction in mechanical cooling loads. An alfresco and eaves could be causing a 0.5 Star negative impact.
- High performance windows are essential. Low U values below 3.0 are preferred and High SHGC values above 0.5 are also preferred. Thermally broken window frames are advantageous for higher results.
- Avoid large voids and raked ceilings as this leads to significant conditioning loss throughout the building.

Hints Specific for Warmer Climates

How to reduce cooling loads:

- Concrete slab on ground is best suited as the natural soil is a great heatsink for the ambient internal room temperature to escape.
- Ventilation is key, open up breeze paths wherever possible and increase window operabilities.
- In double storey designs, use fall protection compliant windows screens to allow your energy assessor to increase airflow to bedrooms.
- Light window frames, wall and roof colours are highly preferable within NatHERS software, 0.5 to 1.0 Star gains are possible.
- Eaves and alfrescos are essential in reducing the impacts of Solar Heat Gain. Increases as high as 1.0 Star are possible if orientation is considered wisely.
- Higher performance glazing is essential. Low U values are preferred to help insulate the windows however Low SHGC values below 0.45 are absolutely essential and the most critical aspect of windows in warm climates. Tinted glazing is also advantageous to further reduce SHGCs.
- Add ceiling fans wherever you can, especially in living rooms that have high traffic; not just bedrooms, as huge increases in star ratings are possible.
- Floor tiles can significantly increase Star ratings, avoid timber flooring and carpet with rubber underlays.
- Add reflective sarking to the roof to create a reflective air cavity in the ceiling space.
- Avoid large voids and raked ceilings as this leads to significant conditioning loss throughout the building.

Hints Specific for Colder Climates

How to reduce heating loads:

- Underslab insulation is critical, it is now compulsory in some cold climate zones. Huge gains can be achieved by decoupling the slab from the ground. The level of underslab insulation can be determined by your assessor as you may also be contending with cooling load compliance.
- High levels of insulation are critical, fit as much insulation as physically possible into walls, roof and floors. Look at rigid insulation options. Insulate the intermediate floor between levels in double storeys. Once again, your assessor will specify the perfect balance to achieve 7-stars + comply with heating and cooling loads.