

# DESIGNING ENERGY SMART

Using energy efficiency principles when designing your home will help you live more comfortably and save money! An Energy Smart home takes advantage of the sun's free warmth and light, with simple design features to keep it warm and comfortable in winter, and cool in summer.

## CHOOSING A BLOCK

- Existing and planned blocks which have unobstructed solar access (especially in mid-winter when the sun angle is at its lowest) to the building envelope and private open space are best.

## CONSIDER YOUR CLIMATE

- Climate, geological and geographical conditions will influence the site plan and choice of building design and materials.

## INTERNAL PLANNING AND ROOM PLACEMENT

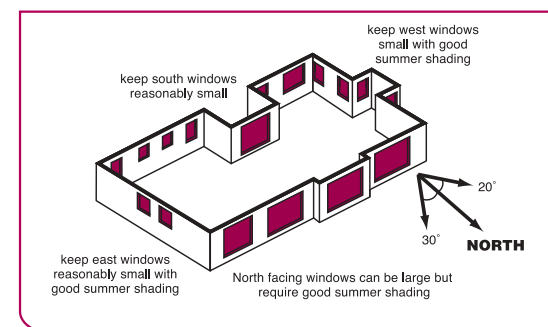
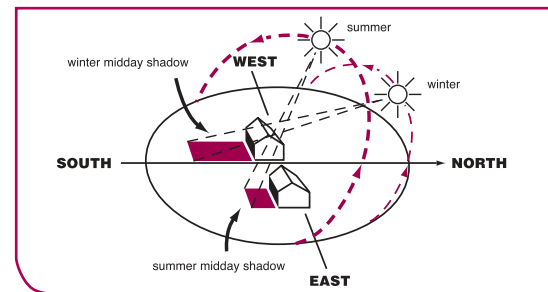
- Locate living areas, such as the family room, kitchen, lounge and dining room to the north of your home.
- Create zones by grouping rooms with similar uses together, separated by doorways.
- Avoid open plan living areas or high ceilings as these can lead to high heating costs. Maximum ceiling height should be 2.7 metres.

## BUILDING MATERIALS

- Concrete floors and masonry walls can stabilise internal temperatures with a north-facing window by providing thermal mass to absorb heat transfer throughout summer and winter.
- Lightweight materials, such as timber or plasterboard, used internally will allow rooms to heat up and cool down quickly (useful for rooms which require occasional heating) or in tropical climates where the house is cooled by opening doors and windows. These materials are also good for sloping sites, to reduce the need for cut and fill in slab-on-ground construction.

## WINDOW PLACEMENT AND SIZING

Cross ventilation from cooling summer breezes can be achieved by well positioned windows that can be opened. Double hung, casement or sliding windows, are more effective than awning units. Try to keep short, direct paths between windows.



## WINDOW PROTECTION

### Summer shading

External shading devices are a very effective way of keeping your house cool.

- North, east and west-facing windows should be shaded from the sun by vertical shading devices.
- North-facing windows can also be shaded by suitably designed eaves or pergolas that provide access for the winter sun, whilst providing shade from the summer sun.

### Winter protection

- Heat losses can be cut by using high performance windows, or close fitting drapes or blinds that trap a layer of insulating still air between them and the glass when closed. Pelmetts are usually required.

## INSULATION

Insulation is the single most effective item you can add to your home to improve its thermal efficiency. It will keep you up to 7°C cooler in summer and 10°C warmer in winter.

- Insulate in the roof, ceiling, walls and suspended floors to levels appropriate for climatic and geographic conditions.
- Use reflective foil (sarking) to minimise summer heat gain.
- Consider insulating slab edges in cold climates.

## HEATING SYSTEMS

- Having the flexibility to heat individual zones of the home with energy efficient heaters is the key to a comfortable, cost effective system.

## LIGHTING

- Make good use of natural light in living areas (particularly from north-facing windows). Light coloured walls and ceilings will help.
- Use compact fluorescent lights in living areas.
- Install separate switches for each light.

## HOT WATER

- Install an energy efficient solar, gas or heat pump hot water system as near as possible to the kitchen, bathroom and laundry.
- Insulate hot water pipes, use efficient appliances, AAA rated showerheads and other water saving devices.
- Consider using a gas boosted solar system. These systems will reduce Greenhouse emissions by over 75% when compared to a standard electric off-peak system and will cost less to run.

## LANDSCAPING

- Deciduous trees or native trees with a high canopy on the north side of the home allow the entry of sunlight in winter and provide shade in summer (take care to choose trees that will not block sun to, or drop leaf litter on solar collectors). Vegetation can be used to filter warm summer breezes.

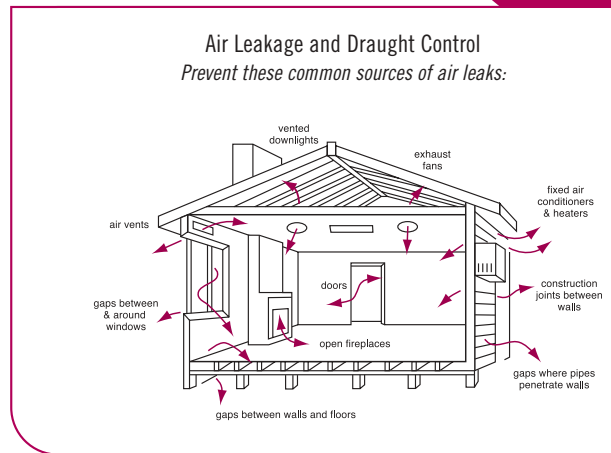
## HOUSE ENERGY RATING

Homes can be assessed for their rated thermal performance using a sophisticated computer program. The more Energy Smart the home, the higher the star rating, with 5 stars being the most energy efficient. HMB Accredited Assessors can assess your house plans and provide a certificate. To obtain a list of Accredited Assessors contact the House Energy Rating Management Body (HMB) on phone: 02 9385 5593, fax: 02 9385 4507 or web: [www.hmb.net.au](http://www.hmb.net.au).

## FURTHER INFORMATION

Telephone or visit the Energy Smart Information Centre, Monday to Friday 9am-5pm, for further information: Ph. 1300 138 638, Level 6, 45 Clarence Street, Sydney or visit [www.energysmart.com.au](http://www.energysmart.com.au)

The Energy Smart Information Centre is a free advisory service provided by the NSW Government. Energy experts can provide information on a wide range of topics.



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*The information in this brochure was derived from various sources and was believed to be correct when published. All information is advisory and provided in good faith.*