

Principles of Solar Passive Design

- [Solar Principle #1](#)
Orient the house properly with respect to the sun's relationship to the site. Use a compass to find true south, and then by careful observation, site the house so that it can utilise the sun's rays from the east, south and west during as much of the hot season as possible.
- [Solar Principle #2](#)
Design on a 12-month basis. When designing a solar home, carefully plan to accommodate and benefit from the sun's shifting patterns during the year and other natural, seasonal cycles.
- [Solar Principle #3](#)
Provide effective thermal mass to store free solar heat in the daytime for nighttime use.
- [Solar Principle #4](#)
Insulate thoroughly and use well-sealed vapour barriers. Contemporary standards for wall and roof insulation are very compatible with solar design.
- [Solar Principle #5](#)
Utilise windows as solar collectors and cooling devices. Vertical, south-facing glass is especially effective for collecting solar heat in the winter, and these windows will let in much less heat in summer, since the sun's angle is more horizontal in winter and steeper in summer.
- [Solar Principle #6](#)
Do not over-glaze. Incorporate windows to provide plenty of daylight and to permit access to cooling breezes for cross-ventilation, but do not make the common mistake of assuming that solar design requires extraordinary allocations of wall space to glass. An over-glazed building will overheat.
- [Solar Principle #7](#)
Avoid over sizing the backup heating system or air conditioner. Size the conventional backup systems to suit the small, day-to-day heating and cooling needs of the home.
- [Solar Principle #8](#)
Provide fresh air to the home without compromising thermal integrity. This air exchange should occur through intended openings (such as exterior-wall fans) in both the kitchen and bathroom, rather than through leakage around poorly sealed doors and windows.
- [Solar Principle #9](#)
Use the same materials you would use for a conventional home, but in ways that maximise energy efficiency and solar gain. The carefully designed and constructed solar home need not cost any more to build than a comparably sized non-solar conventional home.
- [Solar Principle #10](#)
Remember that the principles of solar design are compatible with diverse styles or architecture and building techniques. Solar homes need not look weird, nor do they require complicated, expensive, and hard-to-maintain gadgetry to function well and be comfortable round the year.