

## KEEPING COOL AT HOME

### Part One

Deep down, I believe, true Sacramentans are proud of the heat here. They love to refer to it as *dry heat*, even though deep down we know that when it's 110 degrees, it's just plain hot! In fact, the heat is just one of a handful of characteristics, including trees, history and our two rivers that make this city unique.

There is no denying the comfort of air conditioning on a night when the temperature never goes below 80 degrees, or a day when it soars well above 100. Many of us make valiant attempts to minimize the use of refrigerated air. It's not just to save money on utilities, either. There is a certain self-satisfaction in knowing that we've been clever enough to beat the heat, much as our ancestors did in the unimaginable days before Freon was in widespread use. As an Architect specializing in residential work, as well as a homeowner who likes to use my wits to beat the heat, there is a collection of approaches that can allow you to do the same.

**1.Keep the sun out.** Solar radiation is by far the greatest source of heat energy pouring into our homes on a summer day. Drawing drapes or blinds can help a great deal, but bear in mind that since they're on the inside, most of the heat gain is already in the room by the time they do their job. It is much more effective to block the sun before it ever hits the glass. You can do this with "shade screens," an open weave fabric that allow light and visibility while blocking up to 75% of the sun's heat. Even more effective is landscaping--selecting trees to block the sun, using deciduous ones where the sun's warmth in the winter is desirable.

**2.Compartmentalize.** Keeping interior doors closed can provide a benefit by letting rooms with West or South exposures heat up, while protecting other rooms in the house. It is also important to close windows

that were left open for night ventilation. Usually, "closing" windows by 8 a.m. and opening after 8 p.m. works well.

**3.Ventilate.** Installing and using a whole house fan is one of the most cost effective techniques at our disposal. The very best fans are direct drive with at least 3 speeds. The low speed should be low enough to provide a quiet, soft ventilation that can be left on all night. At high, while the fan will emit an earth shattering roar, it will quickly flush warm air out of the attic and draw in cool, night-time air. It is important to distinguish a *whole house fan* (which takes air from an open window across the room and exhausts it through the attic while flushing out the air in the attic), from an *attic fan* (which draws air from one portion of an attic and exhausts it out another portion of an attic). Studies have shown that motor driven attic fans are generally not cost effective, often consuming more energy than is offset by their reduction of air temperature in the attic. Passive ventilation in an attic using turbines (but please keep them out of view from the street!) or simple louvers are much more cost effective. A whole house fan should generally have at least 30 inches clearance above them and plenty of passive attic ventilation, i.e. louvers or vents, which allow the escape of warm air. Don't try to operate your whole house fan without opening windows: you could pull combustion gases into your house from furnaces or appliances, and even reverse the draft of air down a chimney with the powerful suction force. Don't bother with the whole house fan if the outside temperature is above 85 degrees or so.

**4.Thermal Mass.** Most of us who live in pre-1950's homes know the benefit of real plaster on the walls. Our homes stay cooler in the summer because of the thermal mass of all that plaster. Wallboard does not provide the same benefits because it is much

thinner and more lightweight. The way thermal mass works is that it stores heat or cold in the changing temperature of the material itself, acting as a sort of "flywheel" resisting change. When you ventilate a house overnight with 65 degree night air, the walls eventually reach 65 degrees. The next day it takes a lot of heat energy to raise those walls back up in temperature, keeping you comfortable meanwhile by a radiant cooling effect.

Hopefully, these approaches will help you "keep cool" in Sacramento!

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