

Tired of spending a mint on your heating and cooling bills?

Joanne and Michael Frerking have a better idea: homes in tune with the patterns of nature.

In this special edition of ECOZENE, our resident "green living" experts offer some surprisingly simple solutions to maintaining ideal year-round temps.

Passive Solar: The Art of Natural Heating and Cooling

Imagine a home that responds automatically to shifts in temperatures, opening itself to the warm winter rays of the sun and then closing up automatically at night. Imagine, also, a home that automatically shades and insulates itself from the harsh summer sun while still allowing cool, pleasant light to enter throughout the day. As evening approaches, this house opens up to expel the heat it's gained throughout the day and absorb the cool of the night.

This is a house that makes intelligent use of natural shifts in day-long and seasonal temperatures – opening the door to some elegantly simple heating and cooling solutions.

WARM IN THE WINTER; COOL IN THE SUMMER

This natural approach is called "passive heating and cooling" or "passive solar" because it involves a response to the surrounding environment – rather than an active "re-invention" of climate within the home. The benefits of this natural approach, both for home-owners and the earth itself, are manifold.

1. Passive heating and cooling minimizes or, in some cases, even eliminates the use of furnaces and air-conditioners, there by removing or decreasing our dependence on these noisy and often expensive technologies.
2. Passive heating and cooling removes the drafts – and dust! – often introduced into our living space by the movement of forced air.
3. Passive heating and cooling helps to eliminate the CO2 emissions released into the air by the burning of fossil fuels. This helps to reduce the effects of global warming.
4. Passive heating and cooling (unlike the electricity that keeps our air-conditioners and furnaces running) doesn't require massive amounts of water to generate. In the high desert, this reduction in water usage makes good environmental sense.
5. Passive heating and cooling helps us to reconnect to our surrounding environment and nature in general by directly relating indoor and outdoor space.

Clearly, then, it makes a difference how informed we are about how our homes relate to the sun and the natural world outside. But how exactly can we take advantage of this passive solar process in our lives?

ON THE PATH TO THE NATURALLY HEATED & COOLED HOME

Obviously, the best way to utilize passive heating and cooling is to build your home with these basic principles in mind. But just because your home was built on more conventional terms doesn't mean you can't take advantage of passive heating and cooling.

In fact, when it comes down to it, ALL homes are naturally heated and cooled. . . it's just that some work better than others. The key is basically how to augment the process that is already occurring in your home. **Let's begin with some natural approaches to keeping warm during the winter months.**

1. Maximize your home's capture of heat during the day by installing window treatments that minimize the loss of heat gained during the day through insulation.
2. Notice where you have things planted outside. Deciduous trees are an excellent south-side addition, as they block sunlight during the summer but allow it to pass through during the winter.
3. Take a look at your insulation situation. Calling in a professional for advice regarding the amount of insulation in your home – as well as air infiltration problems and leaky ductwork – can result in a reduction of energy bills by nearly %30.
4. If possible, install the type of floors that can "store" heat from direct and diffuse sunlight – such as tile or concrete. This will result in a reservoir of heat literally "underfoot" during winter months.

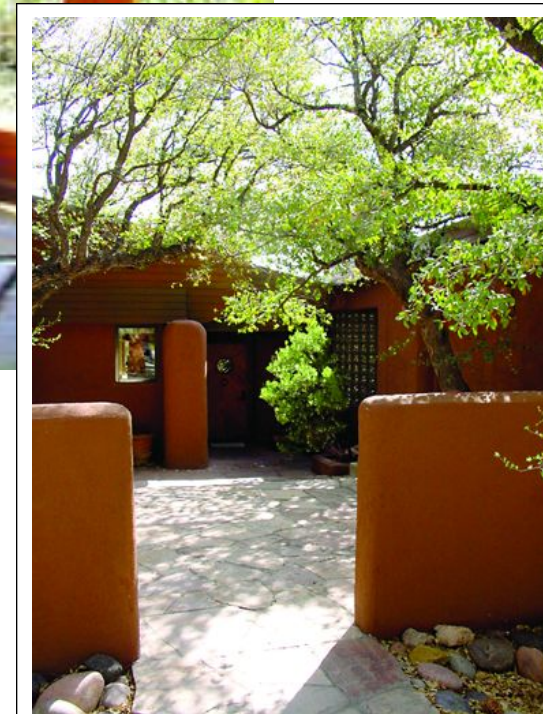
With regard to keeping cool in the summer –

1. For south-facing windows, install awnings and overhangs that help to block the intense heat of the summer sun.
2. Create covered patios and courtyards using lattices or building structures. These indoor/out door living spaces help to cool the summer air at the entrance(s) to your home, thereby reducing the amount of heat that has a chance to enter. Installing a fountain will also help, via the natural evaporative cooling process.
3. Insulation requirements work equally well in trap ping cool in the summer as they do storing heat in the winter – as tiles or concrete floors that absorb the cool of summer nights.



Passive heating and cooling, then, is a way that we can understand and use nature's patterns in our homes – as well as help to nurture and strengthen a personal connection between ourselves and the natural world.

Let the power of the sun warm the winter chill – and the cool of mountain nights take the bite out of summer heat. ☺



EcoZene is a collaboration of Northern AZ. Zene Magazine & Architect, Michael Frerking. Send comments to: michael@michaelfrerking.com (www.michaelfrerking.com).