How to Remodel Your House for Passive Solar Gain

By jsenechal

This can save you energy and money, make your home light and function better over time. Updating a house can mean better heating profiles and you can do this passively with a little planning and forethought. You just need sunlight that falls on the house for part of the day.

1. Almost any house can be remodeled to benefit from the heat and light of the sun. Know that a few simple tricks can update your house to the higher standards suitable for our times. Older houses were built with little regard for energy usage, since it was cheap. Now we must use less fuels. We can do that by taking advantage of abundant free streaming sunlight to power our homes.

2. From the inside of your house, consider the south wall. What windows can be enlarged without inhibiting the function of the room? Use new double pane or triple pane windows with Low-E coatings. Increase window sizes up to 10% of the square footage of the room. If the room has high mass, such as cement floors or stone fireplace, you can increase the windows to 15% of the square footage of the room. Beware of too much glass (glazing) which can overheat the room. And pay attention to summer shading. The roof overhang should be enough to block sunlight from entering the windows in hot weather. Large windows can open a room, make it feel larger. A room with a view enhances the pleasure. Nice landscaping outside can help too.

3. Windows on the east side of the house can bring in much sunlight in the mornings. In cold climates that might be wonderful, but in hot climates morning sun might be uncomfortable, and overheat quickly. Size all eastern windows to match your room and your climate.

   West facing windows overheat often in all climates. When the day is already warm, and the sun is shining horizontally into your house, windows are undesirable. Size west facing windows smaller or shade them with awnings, carport, trees, etc.

   North facing walls lose heat, so they should be insulated well. Windows should be minimized unless there is a view.

4. Insulation should be maximized whenever you have the opportunity. Save the energy you paid for already instead of buying more. Air sealing is part of insulating. A leaky house might lose its' heated air in 30 minutes, while a tight house might lose its' heated air in 4 hours.

   Windows are weak insulators. Using windows for passive solar heat gain works on the south side when they bring in more heat than they leak out. North facing windows never bring in heat; east and west facing windows can bring in too much heat, which becomes a problem in the summer.

5. Natural daylight can brighten any home. Dark spaces like interior hallways, bathrooms, staircases, and basements can be brightened by light pipes, skylights, or clerestory windows. Light pipes tunnel sunlight through roofs and attics. They can be effective even in closets, where UV is unwelcome. Light pipes block the full force of sunlight with a diffuser on the ceiling. And they are easier to install and to waterproof than skylights.