

# Comfort Zone, Inc.

## Cooling your home naturally

Keeping cool indoors when it is hot outdoors is a problem. The sun beating down on our homes causes indoor temperatures to rise to uncomfortable levels. The following are some common sense suggestions and low-cost retrofit options to help you "keep your cool"- and save electricity.

The most effective method to cool your home is to keep the heat from building up in the first place. The primary source of heat buildup is sunlight absorbed by your house through the roof, walls, and windows. Secondary sources are heat-generating appliances in the home and air leakage.

Specific methods to prevent heat gain include:

- ❖ Reflecting heat away from your house
- ❖ Blocking the heat
- ❖ Removing built-up heat
- ❖ Reducing or eliminating heat-generating sources in your home.

## Reflecting Heat Away

**Walls** - Dull, dark-colored home exteriors absorb 70% to 90% of the radiant energy from the sun that strikes the home's surfaces. Some of this absorbed energy is then transferred into your home by way of conduction, resulting in heat gain. In contrast, light-colored surfaces effectively reflect most of the heat away from your home.

**Roofs** - About a third of the unwanted heat that builds up in your home comes in through the roof. One good solution is to apply a reflective coating to your existing roof. Two standard roofing coatings are available at your local hardware store or lumberyard. They have both waterproof and reflective properties and are marketed primarily for mobile homes and recreational vehicles.

**Radiant barrier** - A radiant barrier is simply a sheet of aluminum foil with a paper backing. When installed correctly, a radiant barrier can reduce heat gains through your ceiling by about 25%. It does not matter which way the shiny surface faces - up or down. But you must install it on the underside of your roof - not horizontally over the ceiling. and the barrier must face an airspace. Staple the foil to the bottom or side of the rafters, draping it from rafter to rafter. Do not worry about tight fit or small tears in the fabric; radiant transfer is not affected by air movement. The staples should be no more than 2 to 3 inches (5 to 8 centimeters) apart to prevent air circulation from loosening or detaching the radiant barrier. Use a caulking gun to apply a thin bead of construction adhesive to the rafters along the seams of the foil barrier. This will make the installation permanent.

**Windows** - Roughly 40% of the unwanted heat that builds up in your home comes in through windows. Reflective window coatings are one way to reflect heat away from your home. Besides keeping your house cooler, these reflective coatings cut glare and reduce fading of furniture, draperies, and carpeting. Sun-control films are best for warmer climates because they can reflect as much as 80% of the incoming sunlight. Many of these films are tinted, however, and tend to reduce light transmission as much as they reduce heat, thereby darkening the room. Investigate the different film options carefully to select the film that best meets your needs. **Note:** do not place reflective coatings on south-facing windows if you want to take advantage of heat gain during the winter.

## Blocking the Heat

**Landscaping** - Landscaping is a natural and beautiful way to shade your home and block the sun. Shading your home can reduce indoor temperatures by as much as 20°F (11 °C). A well-placed tree, bush, or vine can deliver effective shade and add to the aesthetic value of your property. When designing your landscaping, use plants native to your area that survive with minimal care. Trees that lose their leaves in the fall (i.e., deciduous) help cut cooling energy costs the most. When selectively placed around a house, they provide excellent protection from the summer sun and permit winter sunlight to reach and warm your house.

**Insulation & weatherization** - insulating, weather stripping, and caulking help seal and protect your house against the summer heat in addition to keeping out the winter cold. The attic is a good place to start insulating because it is a major source of heat gain. Adequately insulating the attic protects the upper floors of a house. Recommended attic insulation levels depend on where you live and the type of heating system you use. Wall insulation is not as important for cooling as attic insulation because outdoor temperatures are not as hot as attic temperatures. Also, floor insulation has little or no effect on cooling. Outside air can infiltrate your home around poorly sealed doors, windows, electrical outlets, and through openings in foundations and exterior walls. Thorough caulking and weather stripping will control most of these air leaks.

**Shading** - Roughly 40% of the unwanted heat that builds up in your home comes in through windows. Both exterior and interior shades control heat gain. Exterior shades are generally more effective than interior shades because they block sunlight before it enters windows. When deciding which devices to use and where to use them, consider whether you are willing to open and close them daily or just put them up for the hottest season. You also want to know how they will affect ventilation. A properly installed awning can reduce heat gain up to 65% on southern windows and 77% on eastern windows. A light-colored awning does double duty by also reflecting sunlight. Maintaining a gap between the top of the awning and the side of the house helps vent accumulated heat from under a solid- surface awning. Although interior shading is not as effective as exterior shading, it is worthwhile if none of the previously mentioned techniques are possible. Draperies and curtains made of tightly woven, light-colored, opaque fabrics reflect more of the sun's rays than they let through. The tighter the curtain is against the wall around the window, the better it will prevent heat gain. Venetian blinds, although not as effective as draperies, can be adjusted to let in some light and air while reflecting the sun's heat.

## Removing Built-Up Heat

Nothing feels better on a hot day than a cool breeze. Encouraging cool air to enter your house forces warm air out, keeping your house comfortably cool. However, this strategy only works when the inside temperature is higher than the outside temperature. The climate you live in determines the best ventilation strategy. In areas with cool nights and very hot days, let the night air in to cool your house. In climates with day time breezes, open windows on the side from where the breeze is coming and on the opposite side of the house. Keep interior doors open to encourage whole house ventilation. If your location lacks consistent breezes, create them by opening the windows at the lowest and highest points in your house. This natural "thermosiphoning" or "chimney" effect can be taken a step further by adding a clerestory or a vented skylight. In hot, humid climates where temperature swings

between day and night are common, ventilate when humidity is not excessive.

Ventilating your attic greatly reduces the amount of accumulated heat, which eventually works its way into the main part of your house. Ventilated attics are about 30°F (16°C) cooler than unventilated attics. Properly sized and placed louvers and roof vents help prevent moisture buildup and overheating in your attic.

## Reducing Heat Generating Sources

Often-overlooked sources of interior heat gain are lights and household appliances, such as ovens, dishwashers, and dryers. Because most of the energy that incandescent lamps use is given off as heat, use them only when necessary. Take advantage of daylight to illuminate your house, and consider switching to compact fluorescent lamps. These use about 75% less energy than incandescent lamps, and emit 90% less heat for the same amount of light. .

New, energy efficient appliances generate less heat and use less energy. Many household appliances generate a lot of heat. When possible, use them in the morning or late evening when you can better tolerate the extra heat. Consider cooking on an outside barbecue grill or use a microwave oven, which does not generate as much heat and uses less energy than a gas or electric range.

Washers, dryers, dishwashers, and water heaters also generate large amounts of heat and humidity. To gain the most benefit, seal off your laundry room and water heater from the rest of the house. New, energy efficient appliances generate less heat and use less energy. When it is time to purchase new appliances, make sure they are energy efficient. All refrigerators, dishwashers, and dryers display an energy guide label indicating the annual estimated cost for operating the appliance or a standardized energy efficiency ratio. Compare appliances and buy the most efficient models for your needs.

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