



COOL YOUR ROOF WITH WHITE TO SAVE MONEY AND THE ENVIRONMENT

By Melissa Segrest, Green Right Now

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Everything old is new again. Even roofs.

Anyone who is well traveled knows that white roofs have topped homes and buildings in the Middle East and countries around the Mediterranean for centuries. Virtually every city in tropical climates have white, or light-colored roofs. Even the pharaohs, 5,000 years ago, made the tops of their temples white.

Residents of global hot spots know that white reflects heat and makes a building cooler. It's so simple and obvious, but it's been almost overlooked by new energy-saving technologies.

Now, however, research asserts that there is another reason to have a white roof: it dramatically reduces global warming.



Hashen Akbari and other scientists presented their research last fall at the annual climate change conference in California. The scientists from the Lawrence Berkeley National Laboratory found a number of significant impacts of light, or white, roofs (as well as pavement).

- Cool roofs, pavements and shade trees would save energy to the tune of more than \$50 billion a year.
- White roofs and light pavement directly cool the globe by reflecting the sun's rays rather than absorbing them.
- White, reflective roofs in the world's urban areas (which generate more heat than less concentrated areas) could offset approximately one and a half years of carbon emissions.
- Lighter colored roofs could allow urban areas to reflect 10 percent of the sun's heat.
- If roofs and pavement in urban areas were white, the effect could slow climate change by more than 10 years.
- White roofs can lower the roof temperature by as much as 100 degrees Fahrenheit.



Roofs make up about 25 percent of the surface of cities, and pavement covers another 35 percent, according to a report in the *Los Angeles Times*. Arthur Rosenfeld, California's energy commissioner and well-known advocate for energy-saving measures, said that a national push for white roofs could reduce cooling costs by about \$1 billion. Houses with white roofs, he asserted, can stay

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30 percent cooler in the summer. Others say the savings would be closer to 20 percent.

Several states have already started to push white or light-colored roofs. Four years ago, California made it law that all new flat roofs be white. In July, the state will demand that any new roofs that slope (including homes) be light or white. Georgia and Florida, among others, offer incentives for white roofs.

Roofing manufacturers and providers have responded to the call for lighter-colored roofs, although the general public has been less enthusiastic. Darker colored shingles and tiles are still more popular, and more the norm across the country, so going white isn't always an easy sell.

A council made up of 18 roofing companies is working to make more people - in and out of the roofing industry — aware of the benefits of solar reflective coatings. The group operates under the auspices of a national roof coatings association. They focus exclusively on acrylic or “elastomeric” roof coatings, as opposed to shingles or tile. The coatings are applied to an existing roof, protecting the roof and reducing electricity bills. The acrylic product is the consistency of a heavy paint, the council says. They have rated numerous roofing products for potential shoppers.

The national Environmental Protection Agency also has recommendations and information about white roofs, and lists roofing products from 221 manufacturers with the EPA's Energy Star label. They also offer a “roof savings calculator” to help you determine how much money you can save with a white roof. The Berkeley Lab has teamed with another national lab and roofing makers to develop new “cool colored” roof products, according to Architecture Week.

Researcher Akbari estimates that in the Western U.S., the vast majority of roof shingles are dark. Even though lighter gray roofs are better (reflecting about 25 percent of the sun's rays), white tiles, metal or polymers can reflect 70 percent of the heat, Akbari said.

Now the labs are working to create more “cool” colors (including brown, green and red) that reflect more radiation than standard roofing, be it shingle, metal or tiles. Their cool brown, for example, reflects 20 percent more of the sun than a regular brown roof, according to Architecture Week.

We spend billions to cool our homes. Some estimate the cost at \$40 billion. And our air conditioners release about two tons of carbon dioxide a year, according to Philadelphia materials maker Rohm and Haas. The company, which provides elastomeric roof coatings primarily for commercial roofs, also answers some basic questions about the white coat process on their website..

You can see plenty of before and after photos from the National Coatings Association. For example, they transformed a leaking, corroding metal roof on a 100,000 square foot Sears warehouse in Vernon, Calif. Afterward, the roof's temperature in the summer was lowered by 50 degrees.

Rohm and Haas took on a “Cool Block” effort in Philadelphia, providing white acrylic-based coating for roofs in a densely populated residential block. The many senior citizens who live on the block reported that their homes were cooler as a result.