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Cool Roofs to Save Money and Delay Global Warming

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White roofs, and now cool-colored roofs, with a high reflectivity or ‘albedo’ have a long history (best known around the Mediterranean) of keeping buildings and cities cool. In modern times, cool roofs have been shown to reduce air conditioning (a-c) demand and slow the formation of ozone (smog). Studies establishing a typical 10% reduction in a-c demand and electricity savings due to white roofs in California (CA) resulted in the 2005 CA new building energy efficiency standard prescribing that low-slope roofs be white, but exempting sloping roofs for aesthetic reasons. The advent (thanks to physicists’ efforts) of inexpensive colored pigments with high albedo has led to 2008 CA standards requiring that even sloping roofs be cool. Here, I show that cooling the planet by reducing urban albedo through white and other cool roofs is a direct effect, much larger and immediate than the 2nd-order cooling from reduced CO₂ from reduced a-c use. I then investigate widespread deployment of cool roof in major tropical and temperate cities, which cover 2% of global land area and have a proportionately higher albedo impact due to lower latitude. Here, cool roofs and cooler pavements can raise urban albedo by 10%. This directly drops the global average temperature by ~ 0.05 /deg C. Though small compared to a likely 3 /deg C rise by 2060, an immediate drop of 0.05 /deg C represents a reprieve in global warming of 1 year, and represents avoiding a year’s current annual world emissions of CO₂, i.e. 25 GT(CO₂). At a trading price of \$25/tCO₂, this is worth \sim \$625B. Cooling the planet also could save annually hundreds of \$billions on a-c electric bills. Finally I suggest policies to increase cool roof deployment, for example, developed world Kyoto signatories could use its CDM (Clean Development Mechanism) for cool roof programs in developing countries.