



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Riley M. Giller	Project Number J1508
Project Title Is It Green to Go White to Save Green \$\$\$?	
Abstract Objectives/Goals Energy Secretary Steven Chu recommended that flat roofs be painted white in the United States. He said it would be the equivalent in energy savings and carbon emissions of taking all the cars in the world off the road for eleven years. The objective of my project is to determine if energy costs are reduced by painting a sloped roof white and, thereby, impacting climate change by conserving energy and reflecting sunlight back into space. Methods/Materials Seven birdhouses were used to simulate real homes. Each was covered with roofing felt. Terracotta tiles were applied to two; asphalt tiles were applied to three; and, aluminum was applied to the remaining roofs. One of each roof type was painted white. The homes were applied to a board and an apparatus was built to which I attached heat lamps. The heat lamps were turned on and temperature readings were recorded every fifteen minutes for ninety minutes. In the first test run, the unpainted asphalt roofs began to melt. I adjusted the height of the heat lamps. The test was repeated three more times. Results The last three experiments yielded very consistent results. In all three tests, after ninety minutes, the painted terracotta tile house had the coolest temperatures among the three different roofs by approximately 5.33 degrees. The aluminum was cooler than the painted aluminum by approximately 6.66 degrees. The asphalt tiles had the greatest disparity between the painted and the dark asphalt at approximately 8.66 degrees. Conclusions/Discussion If you have a sloped terracotta or asphalt roof, you should paint it white in order to reduce your energy cost and reflect sunlight back into space, thereby reducing global warming.	
Summary Statement Does painting various types of sloped roofs white reduce the temperature inside of a home, thereby reducing energy costs and global warming?	
Help Received I received help from my step dad supervising construction of my project. My uncle also helped me by cutting the terracotta tiles and provided the roofing felt.	