



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Robert W. McRae, Jr.	Project Number J0722
Project Title How Adding Solar Panels Affects the Running Time and Distance Traveled by an Electric Go-kart	
Objectives/Goals Abstract After converting a gas-powered go-kart to electric and adding solar panels, affects of solar panel use, and running time to deplete the batteries were investigated. The dependent variable, running time to deplete the batteries, was measured in minutes and seconds. The independent variable is solar panel use. The go-kart was run on a 1.61 kilometers course and tested without solar panels to create a control group. After recharging the batteries the go-kart was then run using the solar panels. The hypothesis was that the tests with the solar panels would increase the running time and the increase would be at least 15% or more. The hypothesis was accepted because the go-kart ran 29 minutes or 17% longer with the solar panels. Energy from the sun was collected by the solar panels and transferred to the batteries allowing the go-kart to travel an extra 11 kilometers.	
Summary Statement A gas engine was replaced with an electric motor, solar panels were added to the go-kart, and running time was investigated.	
Help Received Science teacher guided me; Gary Rutberg loaned me a motor and helped with electrical configuring; Todd of Sun Cowboy guided with solar panel wiring; mother took pictures and videoed; father took me for supplies, guided construction, drove to testing sessions and timed trials.	