



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Corie Holland, Jr.; Freeman C. Outlaw, III; Jose Partida, Jr.	Project Number S0706
Project Title Hydrogen Fuel Cells	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the project was to conduct internet research, and laboratory experimentation to study the theoretical principles behind fuel cells, and study their practical applications in the real world.</p> <p>Methods/Materials Fuel cells were assembled and connected to solar modules, electrolyzers, load measurement boxes, multimeters and other equipment to conduct the following experiments to determine the following:</p> <ol style="list-style-type: none">Characteristic curve of a fuel cell.Faraday efficiency and energy efficiency of the fuel cell.Impact of catalyst concentration on the characteristic curve of the fuel cell.Impact of gas input on the characteristic curve of the fuel cell.Impact of total resistance on the characteristic curve of the fuel cell. <p>Results Fuel cells have the following advantages in the development of a Hydrogen-based economy</p> <ol style="list-style-type: none">Fuel cells are efficient.Fuel cells are clean.Fuel cells are quiet.Fuel cells are modular.Fuel cells are environmentally safe. <p>Conclusions/Discussion As our demand for electrical power grows, and non-renewable sources of energy are getting depleted, there is a need to find new ways of meeting this demand safely and responsibly.</p> <p>With the use of fuel cells and hydrogen technology, portable electrical power from renewable energy sources can be delivered cleanly, efficiently and sustainably.</p>	
Summary Statement This project explores the use of fuel cells and hydrogen technology, to produce portable electrical power from renewable energy sources, cleanly, efficiently and sustainably.	
Help Received The project was conducted under the guidance of our Science Teacher, Mr. Avinderjit Bindra, using fuel cell components and equipment provided by a grant awarded by BP America and National Energy Development (NEED) Project.	