



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Skylar T. Frantz</b>	<b>Project Number</b> <b>J1507</b>
<b>Project Title</b> <b>Burning Biofuels: Comparing Nonrenewable and Renewable Fuels</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My goal was to find out if the energy in a renewable fuel was equivalent to the energy in the same amount of nonrenewable fuel?</p> <p><b>Methods/Materials</b> Before testing begins: Roll one gauze 6.7 cm x 6.7 cm around the metal rod. Tie each end of the gauze. Measure 10 ml of motor oil in the liquid measuring device and pour it onto the gauze. Place the metal rod at the bottom of the Bar-B-Que. Measure 100 ml of water and pour it into the empty, clean soda can. Place the open end of the plastic cup over the top of the soda can. Poke a hole the same diameter as the thermometer in the top of the cup over the opening in the soda can. Insert the thermometer through the plastic cup and into the soda can. The thermometer should sit in the water, but should not touch the sides of the can. Place the grill on the Bar-B-Que. Set the can on the grill centered over the oil soaked gauze. Set the Bar-B-Que in a well-ventilated area and on a non-flammable surface. Testing: Make sure to have an open box of baking soda in case of an emergency. Light the cotton using the fireplace lighter. Be sure to get the flame going. Start the stopwatch when the gauze lights. Stop the stopwatch when the flame goes out. Read the temperature on the thermometer. Watch it for a few minutes to make sure that it doesn't change. Once the temperature stops changing, record the value. Gently blow out the glowing, hot cotton. Repeat step 1-21, using motor oil, forty-nine additional times. Record all data. Repeat step 1-21, using vegetable oil, forty-nine times. Record all data.</p> <p><b>Results</b> The results of my investigation on which fuel burns the hottest was confirmed by my testing. After 50 trials completed on each type of oil, I found that the renewable oil (vegetable oil) produced the most heat energy.</p> <p><b>Conclusions/Discussion</b> The renewable fuel (vegetable oil) burned much hotter than the nonrenewable fuel (motor oil). The hottest reading was 69.2 degrees Celsius, the coldest reading was 55.5 degrees Celsius, and the average was 66.2 degrees Celsius. I completed 50 trial for each oil. From my results, I learned that the vegetable oil, or renewable fuel, creates more heat energy than the motor oil, the nonrenewable fuel.</p>	
<b>Summary Statement</b> My project tests which fuel (renewable or nonrenewable) produces the most heat energy.	
<b>Help Received</b> My parents supervised me while I performed the testing, the burning of the fuels.	