



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Audrey G. Hanna	Project Number J1709
Project Title Size Really Does Matter: A Study in Stovetop Efficiency	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to determine the effect of pot size on the efficiency of natural gas conversion into heat energy on a stove.</p> <p>Methods/Materials Four aluminum pots of differing sizes, gas stove, gas meter, thermocouple thermometer, water, timer, graduated beaker, computer for graphs, ruler, and calculator. Measured the efficiency of energy conversion in four different sized pots.</p> <p>Results By heating water for a fixed time in different sized pots and measuring the temperature change, I determined through a series of calculations that the energy conversion in the largest pot was 229% more efficient than that of the smallest pot.</p> <p>Conclusions/Discussion I estimate the U.S. consumption of natural gas for cooking to be 236,624,307,003 cubic feet annually. If even half of the U.S. population began to use larger pots for cooking, we could save 66,000,000,000 cubic feet of natural gas per year. Since each therm is the equivalent of 2.268 pounds of CO₂, this would amount to saving over 150,000,000,000 pounds of CO₂ emissions each year.</p>	
Summary Statement By measuring the efficiency of natural gas conversion into heat energy in various size pots, I demonstrated that substantial carbon dioxide emissions reduction is possible.	
Help Received I designed and performed the experiments by myself. My father helped me research the equations and further my understanding of the calculations.	