



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Nicholas A. Drain	Project Number 36467
Project Title Artificial Turf Pool Heating	
<div><div>Objectives/Goals<p>There are over 4,544,000 pools in the United States of America, most of which are heated using natural gas. Solar pool heating saves gas and energy every year. One problem with solar pool heating is not having enough roof space. In this project I set out to find out if water pumped under artificial turf would heat a tank of water as well as traditional solar heating.</p></div><div>Abstract</div><div>Methods/Materials<p>I set up a system with three separate model pools and used irrigation tubing and a pond pump to make a solar heating system. One model pool was heated with traditional style solar heating. One model pool was heated with a solar heating system that ran under artificial turf. The final model pool was heated by ambient air alone.</p></div><div>Results<p>I found that the traditional solar heating model increased the final water temperature an average of 17.41 degrees Fahrenheit. The pool model with heating that went under the artificial turf increased the final water temperature an average of 13.5 degrees Fahrenheit.</p></div><div>Conclusions/Discussion<p>My data suggests that artificial turf may be an effective alternative to traditional solar pool heating when sufficient roof space is not available.</p></div></div>	
Summary Statement <p>I developed a solar swimming pool heating system that can effectively heat a pool by pumping water under artificial turf instead of onto the roof.</p>	
Help Received <p>My mom and dad helped me build my solar heating systems and proofread my papers. My science teacher proofread my papers.</p>	