



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Elise J. Winward</b>  | <b>Project Number</b><br><br>35850 |
| <b>Project Title</b><br><b>Solar Cycle</b>   |                                    |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b><br/>I tested whether or not I could simulate a solar-powered electric bicycle that could go 1.4 kilometers on one charge of its batteries.</p> <p><b>Methods/Materials</b><br/>I used many regular tools to build the physical project (Ex. Screw driver or drill) but, the most important things were the back bicycle tire (including gears), electric motor, and an Arduino Leonardo (micro-controller).</p> <p><b>Results</b><br/>In my project I tested voltages sent to the amplifier from the Arduino based upon different programming commands, the speed (in kph) the motor would go at the different voltages, the amperage the motor needed to propel the wheel at certain speeds, and how long the batteries would last at the certain speeds.</p> <p><b>Conclusions/Discussion</b><br/>I was successful in completing my objective of my project. Also, my hypothesis was correct in stating that I would be able to. This project applies to humanity because if many people were able to use solar-powered electric bicycles to get to work instead of cars, we could reduce the amount of pollution put into the atmosphere. Also, because the electric motor on the bicycle would, most likely, only be used as supplemental power, riding bicycles to and from work could increase the overall health of the population.</p> |                                    |
| <b>Summary Statement</b><br>My project simulated a solar-powered electric bicycle and tested whether or not it would be an efficient method of transportation.   |                                    |
| <b>Help Received</b><br>Uncle and Father helped me to learn the programming of the micro-controller.   |                                    |