



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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Project Title Eco-Torch Elite: A Device for Generating Electricity from Human Energy	
Abstract Objectives/Goals The objective is to design a simple and reliable device that turns human energy into electricity that can be generated anywhere or everywhere with little investment unlike other methods of energy generation that depend on fossil fuel or other non-renewable energy sources. Methods/Materials The device was developed with simple mechanism that converted vertical motion into circular motion using simple building blocks such as Lego pieces, spring and motor from toys. Multiple gears helped with faster rotation of the generator rotor. The rotor was attached to the axle and the whole mechanism was enclosed in a small cardboard box. A simple circuit to store the electricity in a capacitor was implemented. The diode prevented the capacitor from discharging and a switch was used to turn the LED On. Results Using the device we successfully converted simple human steps to rotate the generator and generated about 2V across capacitor that was sufficient to light a LED for about 10 seconds. On an average a human takes about 7200 steps a day, that would be sufficient to light a LED for about 10 mins. Conclusions/Discussion Our conclusion is that, human energy can be successfully and reliably be converted to electrical energy with a cheap and simple device. By using this new method we successfully demonstrated with a working prototype that electricity can be made available to everyone, everywhere! With circuit enhancements and better mechanism more electricity can be generated. Circuit can be modified to charge rechargeable battery and can be used for charging other mobile devices such as cellphones. This device can be used in third world countries as a simple source of electricity or in developing countries in case of emergency.	
Summary Statement Eco-Torch Elite: A device for generating electricity from human energy	
Help Received Parent taught the circuit concepts and helped in soldering the components. Science teacher, Mrs. Patel provided overall guidance.	