



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

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<b>Project Title</b> <b>Hydro-Power</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of the project Hydro-Power was to find the increase of voltage from three different water column heights, five feet, ten feet, and fifteen feet. The operational hypothesis was that the increase for every five foot interval would be 25%. <b>Methods/Materials</b> To conduct this experiment the following materials were used: a hydroelectric generator, a waterwheel, volt-meter, 1 5-gallon bucket, 3 different length pipes: 5 feet, 10 feet, and 15 feet, couplings. The experiment is set up by taking a 2-1/2 foot section of pipe and placing it inside a five gallon bucket. On the end o the pipe inside the bucket place a coupling and on the other end a 90 degree angled section of pipe. Place the 5 foot section of pipe on the end of the 90 degree angled pipe. Repeat with the 10 and 15 foot section of pipe when the test is run for those lengths. On the end of the pipe place a water spout. To collect data put a hose in a bucket and wait for water to stream down from the bucket via the pipe. Place a waterwheel in front of the stream of water so the generator spins due to its connection to the waterwheel. Tests last about one minute each. Perform several tests from each height to gather enough usable numbers for data. <b>Results</b> The results of data collected show that five feet had on average 2.82 volts, ten feet had an average of 4.93 volts an increase of 43%, and from fifteen feet there were 7.96 volts on average which was an increase of 38% from ten to fifteen feet. <b>Conclusions/Discussion</b> The data collected did not support the hypothesis. There was an increase of 43% from five to ten feet and an increase of 38% from ten to fifteen feet. Overall there was an increase of 155% from five to fifteen feet. This project is applicable because runoff from storm drains and household gutters could be used to spin larger versions of this type of hydroelectric generator and generate "clean" energy.	
<b>Summary Statement</b> Hydro-Power examines the increase in energy output when water is allowed to drop from varying water column heights and directed through a hydroelectric generator.	
<b>Help Received</b> Father helped build hydroelectric generator with 3D printer	