



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Blaine A. Benham	Project Number J0304
Project Title Regenerative Braking Experiment	
Objectives/Goals What I set out to do was to try to figure out if my experiment question, How high will a weight be lifted by a wheel spinning at a certain RPM and how much RPM can be recovered?	
Abstract Methods/Materials I used a 24 inch bicycle wheel from my bike, then I attached it to a frame made of wood and aluminum. I connected a skateboard wheel to the freewheel threads on the bicycle wheel to provide a good friction surface. I used an aluminum lever assembly that was connected to both the frame and another skateboard wheel. A 50 lb-test fishing line with a 5 pound weight on the end was connected to the skateboard wheel on the lever. A bicycle cadence meter was used to measure the RPM of the wheel. The wheel was spun by hand at different RPMs and the lever was used to engage the skateboard with the fishing line attached to the spinning skateboard wheel on the bike wheel. The energy of the spinning wheel lifted the weight. Then I recorded the height of the weight versus the RPM of the wheel. Then I used the lifted weight to start the bike wheel spinning again and I recorded the amount of RPM that was recovered.	
Results The higher the RPM of the wheel the higher the weight was lifted. What I found out was that the average recovered RPM was over 70 percent of the original RPM which tells me that the system was over 70 percent efficient at re-generating energy.	
Conclusions/Discussion Why my results are important is because it shows a very clear and simple example of the effectiveness of a regenerative braking system and why it is so important for it to be improved and implemented wherever possible to save energy and use it more efficiently.	
Summary Statement My experiment shows that Regenerative Braking could recover and save energy that is usually wasted.	
Help Received My Dad helped me to get my materials and drill holes.	