



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> Stewart Farley; Greg Kahn	<b>Project Number</b> <b>J0111</b>
<b>Project Title</b> <b>Laminar vs. Turbulent</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> This experiment tests whether wind turbines should be placed in laminar or turbulent flow. Laminar flow is a straight, sequenced type of wind while turbulent flow moves erratically.</p> <p><b>Methods/Materials</b> To test this, a wind tunnel was built to provide a controlled environment for a miniature wind turbine to test how much energy it produces in laminar and turbulent flows.</p> <p><b>Results</b> During the experiment, the wind turbine produced more energy in laminar flow than in turbulent flow. There was a significant difference between them: 8.7%. This experiment supports the idea that wind turbines should be put in level, flat places that produce laminar flow.</p> <p><b>Conclusions/Discussion</b> This could greatly increase the efficiency of wind turbines. Since current wind turbines have only a 40 to 60 percent energy efficiency rate right now, this result could have a large impact on wind turbine placement and use.</p>	
<b>Summary Statement</b> This project tests whether wind turbines should be put in laminar or turbulent flow for maximum energy output.	
<b>Help Received</b> Father helped with some ideas and handy work on the wind tunnel.	