



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

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| Name(s) Quinn E. Proffer | Project Number J0730 |
| Project Title Testing the Effect of Dust on a Photovoltaic Cell's Output | |
| Abstract Objectives/Goals In this project the goal was to determine if dust in our atmosphere could reduce a solar panels effectiveness. The experiment was designed to demonstrate that dust could adversely affect the usefulness of residential and commercial solar panels. Methods/Materials First a box was constructed which housed a solar panel, light source, and fan. The box was designed to keep dust in and allow for a controlled air circulation. The fan was used to circulate talcum powder which was injected into the testing chamber. Air circulation in the box was designed to keep the dust moving until the fan was turned off and the dust allowed to settle. The light acted as the sun and was mounted on the side of the container. The solar panel which was placed in the dead center of the box was a one square foot photovoltaic cell panel. Twelve hours after the dust was inserted the light would be turned on and would register readings. These readings were compared to readings with different amounts of dust. Results The results showed that as dust was added the solar panel lost power, but when the dust had created several layers the power dropped in smaller intervals. Conclusions/Discussion Therefore we can conclude that a solar panel exposed to more dusty area like the desert are more likely to lose power and require regular cleanings. What this means for solar panel owners is that they can lose up to 10% power with only a small amount of dust. This is a major loss when it can take six or more years to see a profit with a residential solar panel. | |
| Summary Statement In this project the goal was to determine if dust in our atmosphere could reduce a solar panel's effectiveness | |
| Help Received Father painted experimental box. Mother helped glue display. | |