



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Sandra Karon	Project Number J1209
Project Title The Disappearing Night: Does Night Urban Light Pollution Cause More Skyglow than Natural Moonlight?	
Abstract Objectives/Goals The project objective was to determine if the nighttime urban light pollution causes more skyglow than natural moonlight. Methods/Materials Two different digital cameras were used to measure the ambient light at zenith by collecting multiple data series within a densely inhabited area in Huntington Beach, CA and an uninhabited area outside of Barstow, CA. Care was taken to shield the instruments from direct light sources and to assure comparable measurement conditions. The average pixel luminosity values of all digital photographs were extracted using the Photoshop software and the resulting data was statistically analyzed and compared for the two locations. Results The measurements provide evidence that the urban skyglow is on average 294% brighter than moon skyglow. Conclusions/Discussion This experiment, somewhat surprisingly, concluded that even though the moon is a relatively strong light source, capable of creating shadows, the multitude of individual city light sources adds up to a much brighter (but diffused) night-time skyglow. The results presented are conclusive and convincing based on collected data, but they do not accurately state the absolute amount of skyglow. In relative terms however, the cityglow is almost three times stronger than moonlight, and thus may have a stronger than commonly realized impact on the urban human environment. It also indicates an area of potentially huge energy consumption savings.	
Summary Statement This project is about measuring and comparing the amount of light in the artificial skyglow created by an urban area and the natural skyglow of the moon.	
Help Received My father drove with me to observation locations and helped organize data; uncle (physics professor) advised on the methodology and suggested subjects to include in the research report.	