

Night Vision Roles

Thank you for considering joining the [Night Vision](#) team.

A small NASA grant is funding this project specifically for young people from around St. Joseph County, Indiana. In essence, NASA is asking us to measure the quality of our night sky and to report our results. This is not an assignment, but we hope it is an opportunity. We seek people who want to look into a community issue (in this case, [light pollution](#)), to learn more about it through observation and measurement, and to share their experience.

Night Vision is not a make-work type of activity in which you simply watch someone else "do science." Everyone is expected to have an active role in gathering data and making some sense out of our findings. We are not going into this with a preconceived notion of what the results should be, though together we will certainly state a hypothesis. After an introduction to lighting issues, participants will promptly start gathering data.

The core of the project is using [Sky Quality Meters \(SQMs\)](#) to measure the brightness of the night sky caused by manmade lights. We want to find out where the local sky is darkest and where it is brightest. A high number on the SQM indicates a dark sky, while a lower number suggests a bright sky.

Each of three main sites--Boys and Girls Club, Girl Scouts, and LaSalle Academy--will have a few SQMs to loan out. Small teams and individuals will borrow the meters for one-week periods. On a map will be a list of different locations where we want to measure the sky glow. When it is your week, you will have a parent/guardian take you to the designated site(s) after the last of the twilight has disappeared and the sky is as dark as it's going to get. In order to plan your time efficiently, you can enter the date into a website to find out when [astronomical twilight](#) ends and begins.

To insure safety at night, observers must be accompanied by a parent/guardian or their designee. The observing locations you choose to visit may all be in your immediate neighborhood, especially for participants who do not have access to nighttime transportation. However, we want to collect readings from across St. Joseph County, so we appreciate the support of adults who are willing and able to drive the participating youths around town and further afield.

The data gathering is simple. You stop at an area where there are no interfering lights nearby. Outside the car, hold the SQM overhead, push the red button, and read the number on the digital display. Write this number down, and repeat the process ten times at this site. Write additional notes about the observing conditions and about the site. Then move on to the next location, if you're doing more than one.

Later you will determine the average of the readings from each site and enter the average into a database. A team member will also record some information taken from a [Clear Sky Clock](#) website. After your week of using the SQM is over, you return the meter for someone else to use.

There may be a few frustrations for participants. For example, during your week, poor weather may prevent you from taking useful measurements. During Daylight Saving Time, you may find that it gets dark too late for you to take readings, so you will have to wait for a later week to measure the sky glow. Or perhaps when the weather finally turns ideal, students may not have anyone to drive them around that night. Those are the pitfalls of doing real science. It doesn't always work out perfectly.

After we have gathered lots of readings, we will plot them on a local map and discuss the findings. We will

try to create a computer based plot as well, somewhat like the [Rockland map](#). What does the map tell us, and what are shortcomings of our data? How can others use our map in the future? In discussions we will assess the value and the tradeoffs of outdoor lighting. How do outdoor lights serve society, and at what cost (beyond the dollars)?

Each participating individual or team brings different strengths and skills to the project. In the final part of the project the participants will decide how they each will convey the group's findings to the community. Some may create artwork, others design a science fair project, others make a public presentation. See more suggestions at [ideas.htm](#). This is where the reward for the participants is as unbounded as their imagination.

Afterward the group will make suggestions on how others can improve the process and address lighting issues in their community. This will be part of a final report to NASA.

The Night Vision project will require some modest math for determining averages, though advanced participants can delve into standard deviation and other statistics. We will tap into computers and the Internet, with the opportunity for advanced participants to learn about computer mapping and perhaps geographic information systems (GIS). Some writing skills will be summoned when participants give updates on their investigation and for the final report to NASA. Finally, for the public presentations, participants will showcase their individual strengths, ideas, and talents.

Your consideration of the Night Vision project is appreciated. I look forward to meeting with you soon.

www.nightwise.org

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