*Please submit this completed application and any relevant supporting documentation by the deadline listed on the SSC website to* [*Sustainability-Committee@Illinois.edu*](mailto:Sustainability-Committee@Illinois.edu)*. The Working Group Chairs will be in contact with you regarding any questions about the application. If you have any questions about the application process, please contact the Student Sustainability Committee at* [*http://sustainability-committee@illinois.edu.*](http://sustainability-committee@illinois.edu.)

**General Information**

Project Name: Solar-powered Road markers

Total Amount Requested from SSC: $6,500

Project Topic Areas:  Land & Water  Education  Energy

Transportation  Food & Waste

**Contact Information**

Applicant Name: Zhanzequn Yuan & Rajeev Kotha

Unit/Department or RSO/Organization: Energy Systems

Email Address: [zyuan8@illinois.edu](mailto:zyuan8@illinois.edu) & rajeevk2@illinois.edu

Phone Number: +1(312) 925-6068 & +1(217) 904-5030

Project Team

|  |  |  |
| --- | --- | --- |
| *Name* | *Department/Organization* | *Email* |
| Rajeev Kotha | Energy Systems | rajeevk2@illinois.edu |
| Zhanzequn Yuan | Energy Systems | Zyuan8@illinois.edu |
|  |  |  |
|  |  |  |

Financial Contact’s Name: Prof. Rizwan Uddin

Faculty/Unit/Department: Department of Nuclear, Plasma and Radiological Engineering

Email: rizwan@illinois.edu

Phone: +1 (217) 244-4944

(If Applicable)

Facilities Manager Name:

Email:

Phone:

**Project Information**

*Provide a brief background of the project, its goals, and the desired outcomes.*

This project plans to improve safety at the pedestrian crossings while implement the use of solar energy such that the theme of sustainability prevails throughout the idea. We have noticed that pedestrians are often uncertain about crossing roads, especially during the night time. We have targeted locations where the footfall is quite high and have ascertained that by installing solar-powered road markers we can improve the safety of the pedestrians and provide visual clues to the drivers as to where they may need to slow down.

*How will this project improve sustainability at UIUC?*

Through the installation of these safety devices, we also achieve complete independence over conventional energy supply as the devices are completely solar-powered. Hence, this project would overall better condition the safety of the pedestrians at some of the primary junctions and would spread the message of using green energy with ease.

*Where will the project be located? Do you need special permissions to enact the project at this site? If so, please explain and attach a letter of support to your application.*

The crossings we identified to be busy during rush hours are the following: Gregory at Library (South Side), Ceramics Building (Goodwin at Materials Research), Illini and Altgeld Hall intersection, Green and Wright intersection, Mathews and Springfield, ARC, Third and Springfield, Peabody & Euclid intersection, Gregory & Dorner intersection and Wright & Armory intersection. Since it requires some drilling on the main intersections, we may require permission from the IDOT (Illinois Department of Transportation) to progress with the project.

*Other than the project team, who will have a stake in the project? Please list other individuals, groups, or departments indirectly or directly affiliated to this project. This includes any funding entities (immediate, future, ongoing, etc.) and any entities that will be benefiting from this project.*

I believe that students, pedestrians and rest of the university community would be benefitting from this project as it is not specifically targeted at any person or group of persons.

*Please indicate how this project will involve or impact students. What role will students play in the project?*

As mentioned earlier, this project would majorly impact students. According to the Champaign County Regional Planning Commission (2007-2011), one of the primary reasons for wet pavement crashes was the inadequate retro-reflectivity of pavement markings and roadway intersections were found to be the major locations for traffic crash occurrences in urban areas. Hence, through this project we would directly affect the safety of students and other pedestrians who utilize the crossways. Our suggestion is to install the yellow-colored lights. We are yet to decide whether the lights would be in a flashy or steady mode. The battery involved is a 600 mA/h Lithium Ion battery with a protection circuit module. Visibility would be ~0.62 miles. Operation lifetime is expected to be greater than 5 years. Charging period would be 2 hrs. (100K LUX) and 4+ nights operation.

*Have you applied for funding with SSC previously? If so, for what project?*

No, this is the first time.

**Scope, Schedule, and Budget verification**

*What is the plan for project implementation? Describe the key steps of the project including the start date, target completion date, target date for submitting a final report, and any significant tasks or milestones in the table below. Please be as detailed as possible.*

We plan to install a single light spaced apart three feet from each other. Considering a pedestrian crossing to be of an average length of 28 feet, we would require around 9-10 units per intersection. Assuming that the items delivery would take 1 month, the total project would be complete within 1-2 months. This is the total timeline inclusive of the time taken for installation, testing and for incorporating any further changes in the plan. If we find the technique to be effective, we may extend this project to more intersections which are at par in terms of traffic and pedestrian flow.

*List all budget items for which funding is being requested. Include cost and total amount for each item requested. Please be as detailed as possible.*

Light units each @58.75 \* 100 units = $5875  
Shipping charges for the lights (TBD)

Epoxy adhesive $200

Macadam Gravel (TBD)

Labor charges (TBD)

*If the project is implemented, will there be any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs? (Note: SSC provides funding on a case by case basis and should not be considered as an ongoing source of funding)*

Since these lights do not require any kind of maintenance and do not involve any kind of electrical wiring, installation should be easy. These lights are snow plow-able, so in the scenario of snowfall their functioning would not be hindered by the snow removal processes. The lights are highly durable and all-weather resistant.

*Please include any other sources of funding that have been obtained or applied for, and please attach any relevant letters of support.*

We haven’t obtained or applied for any other source of funding at the moment.

*What is the plan for publicizing the project on campus? In addition to SSC, where will information about this project get reported?*

Since there already solar powered signboards installed at some crossings (like Grainger), these devices would increase the overall awareness of the surroundings and these lights would be self-publicizing. I believe that if this project is implemented, it would be talked about in the university and local newspapers.