



## STUDENT SUSTAINABILITY COMMITTEE

### Funding Application – Step II

#### Funding Criteria

##### A. General Rules

1. Students, faculty, and staff are encouraged to submit requests for funding. Student-led projects require a faculty or staff sponsor in order to have funds awarded.
2. Funding can only go to university-affiliated projects from students, faculty, staff, and departments.
3. All SSC projects must make a substantial impact on students. This may be a direct impact or an impact through education and engagement. All SSC funding is 100% from student green fees, so the projects funded by the students must benefit them.
4. SSC encourages innovation and new technologies – creative projects are encouraged to apply.
5. Unless a type of expense is specifically listed below as having restrictions, SSC can generally fund it. The items referenced below should not be taken as comprehensive list.

##### B. Things SSC Can Fund, On A Case-By-Case Basis

1. SSC can fund feasibility studies and design work; however, it must work toward ultimately addressing a sustainability need on campus.
2. SSC can fund staff positions that are related to improving campus sustainability. Strong preference will be given to proposals receiving matching funding from departments and/or plans for maintaining continuity of the position after the end of the initial grant.
3. SSC can fund outreach events with a central theme of sustainability, provided their primary audience is the general campus community.
4. SSC discourages funding requests for food and prizes but will consider proposals on a case by case basis that prove significant reasoning.
5. SSC can fund repairs and improvements to existing building systems as long as it works toward the goal of improving campus sustainability; however, a preference is shown to projects utilizing new or innovative ideas.
6. SSC can provide departments with loans for projects with a distinct payback on a case by case base. Loans will require a separate memorandum of understanding between SSC and departmental leadership pledging to repay the award in full and detailing the payback plan.

##### C. Things SSC Will Not Fund:

1. SSC will not fund projects with a primary end goal of generating revenue for non-University entities.
2. SSC will not fund personal lodging, food, beverage, and other travel expenses.
3. SSC will not fund any travel expenses.
4. SSC will not fund tuition or other forms of personal financial assistance for students beyond standard student employee wages.

**Your Step 2 funding application should include this application, the supplemental budget form, and any letters of support.**

Please submit this completed application and any relevant supporting documentation 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 [sustainability-committee@illinois.edu](mailto:sustainability-committee@illinois.edu).

**General & Contact Information**

**Project Name:** Renewable energy house

**Total Amount Requested from SSC:** \$2,935

**Project Topic Areas:**  Land & Water  Education  Energy  
 Transportation  Food & Waste

**Applicant Name:** Roman Y. Makhnenko

**Campus Affiliation (Unit/Department or RSO/Organization):** Civil & Environmental Engineering (CEE)

**Email Address:** romanmax@illinois.edu

**Check one:**

- This project is solely my own **OR**
- This project is proposed on behalf of (name of student org., campus dept., etc.):

**Project Team Members**

Name	Department	Email
Roman Y Makhnenko	CEE	romanmax@illinois.edu
Name	Department/Organization	Email Address
Name	Department/Organization	Email Address
Name	Department/Organization	Email Address

**Student-Led Projects (Mandatory):**

Name of Faculty or Staff Project Advisor:

Advisor’s Email Address:

**Financial Contact (Must be a full-time University of Illinois staff member)**

Contact Name: Heidi Thiele

Unit/Department: CEE

Email Address: hlgreen2@illinois.edu

## **Project Information**

*Please review the proposal materials and online content carefully. It is highly recommended you visit a working group meeting sometime during the proposal submission process.*

### **Please provide a brief background of the project, its goals, and the desired outcomes:**

*You may copy and paste your Step 1 application answer if nothing has changed.*

We intend to make the 3D printed house (approximately 1'x1.5'x2' in size) that would incorporate different types of renewable energy sources. In particular, we will use solar panels and wind turbines connected to voltmeters to show the electric output based on the environmental conditions. We will put the house on a transparent soil and install the lights to demonstrate geothermal energy principles. We will also plant grass around the house and make a simulation of biofuel production. The renewable energy house will be used at outreach events at UIUC and local schools. Here is the approximate agenda for the project:

- Design and build 3D printed house that incorporates different renewable energy sources.
- Install solar panels, wind turbines, and simulation of geothermal system (light chain of changing colors going through a transparent soil put underneath the house).
- Build a platform for the house and seed grass around it to show biofuel production.
- Using lights and fans of different intensity generate electric output from the solar panels and wind turbines and monitor it with voltmeters – provide a tool for comparing renewable energy sources and tips on their proper use.
- Demonstrate principles of renewable energy generation to students and general audience and increase awareness on the role and benefits of renewable energies in sustainable development.

### **Where will the project be located? Are special permissions required for this project site?**

*If special permission is required for this location, please explain and submit any relevant letters of support with the application.*

The project will be located in CEE building, in particular in the rock mechanics lab that the PI is directing. The lab has all necessary equipment to put the house together and wire the electric devices. We will also use the 3D printer at CEE. Once the house is built, it will be transportable, and we plan to bring to different educational and outreach sustainability events on campus and in town. No special permissions are required for the project site.

### **Other than the project team, who will have a stake in the project? Please list other individuals, groups, or departments affiliated directly or indirectly by the project. This includes any entity providing funding (immediate, future, ongoing, matching, in-kind, etc.) and any entities that benefit from this project.**

*Please attach letters of commitment or support at the end of the application.*

The CEE department will be involved in the project by the means for providing future funding for repairing/expanding the house. We plan to exhibit the house at Engineering Research Fair, Engineering Open House, WYSE summer school and other events. We plan to share the house with SSC and F&S for their sustainability events as well.

**How will this project involve and/or benefit students?**

*This includes both direct and indirect impact.*

At least one undergraduate student will be involved in making the renewable energy house. A few undergraduate students will participate to demonstrations of renewable energy principles at engineering and sustainability related events on campus and in Champaign-Urbana school district. Students in CEE190 Project-based learning class will work on the detailed measurements of the electrical outputs different renewable energy sources an generate. A number of UIUC and summer school students will learn about the renewable energy generation, principles of different methods, and benefits of renewable energies in sustainable development.

**How will you bring awareness and publicize the project on campus? In addition to SSC, where will information about this project be reported?**

The main goal of the project is demonstration of the principles of renewable (green) energy generation to undergraduate students at UIUC and general audience. Students in CEE190 Project-based learning course and summer school students from WYSE program will be learning about the renewable energy generation, making measurements of electrical outputs from different sources and will be provided with tools to build their own renewable energy houses. The house is planned to be demonstrated at Engineering Research Fair, Engineering Open House, Green Quad days, and other sustainability related events on campus, as well as at the local schools as a part of the PIs outreach activities.

The information about the project will be reported at PI's webpage ([rockmechanics.cee.illinois.edu](http://rockmechanics.cee.illinois.edu)) and at CEE website ([cee.illinois.edu](http://cee.illinois.edu)).

## **Financial Information**

*In addition to the below questions, please submit the supplemental budget spreadsheet available on the Student Sustainability Committee [website](#). Submission of both documents by the submission deadline is required for consideration of your project.*

### **Have you applied for funding from SSC before? If so, for what project?**

Yes, I have. The SSC project I am working on is called "Recycle CEE".

### **If this project is implemented, will you require any ongoing funding required? What is the strategy for supporting the project in order to cover replacement, operation, or renewal costs?**

*Please note that SSC provides funding on a case by case basis annually and should not be considered as an ongoing source of funding.*

I plan to use the house for outreach activities in NSF supported projects in the future. If not successful with NSF – the PI startup funds will be used to cover the cost for replacement, operation, and renewal of the house.

### **Please include any other obtained sources of funding. Have you applied for funding elsewhere?**

*Please attach any relevant letters of support as needed in a separate document.*

I did not applied for the house funding separately. I plan to support the students who will in future participate to house development from research grants submitted to NSF and other agencies.

## **Environmental, Economic, and Awareness Impacts**

**How will the project improve environmental sustainability at the Urbana-Champaign campus? If applicable, how does this project fit within any of the [Illinois Climate Action Plan \(iCAP\)](#) goals?**

The main goal of the project is to improve the awareness about renewable (and sustainable) energy generation. We will target undergraduate and high school students, as well as the general audience. This directly fits into the iCAP goal of improving sustainability awareness on campus.

**How will you monitor and evaluate the project's progress and environmental outcomes? What short-term and long-term environmental impacts do you expect?**

*Some examples include carbon emissions, water conservation, green behavior, and reduced landfill waste.*

The main project outcome is the creation of renewable energy house. The impact will be mainly educational: students will be learning about alternative energy resources and how much they can contribute to electricity generation. That should promote more environmentally friendly decisions that future generations will be making.

**What are your specific outreach goals? How will this project inspire change at UIUC?**

The outreach goals are including but not limited to exhibiting the renewable energy house at engineering and sustainability related events on campus: Engineering Research Fair, Engineering Open House, Green Quad days, WYSE Summer school, and Upper Bound Program. The PI is also doing outreach in local elementary and middle schools talking about the importance of recycling and sustainable living. The renewable energy house will be used for this kind of events as well.

**If applicable, how does this project impact environmental injustice or social injustice?**

This project does not have a direct connection to environmental injustice, but in our summer programs (e.g., Upper Bound) we work specifically with students from underrepresented groups.