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. 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.

General & Contact Information

Project Name: Demonstration of Enerdrape Thermal Energy Exchange System in Steam Tunnel
Total Amount Requested from SSC: $50,000

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

Applicant Name: Aman Mehta; amanm2@illinois.edu
Campus Affiliation (Unit/Department or RSO/Organization): Dept. of Mechanical Engineering, iCAP Energy Team Chair
Email Address: amanm2@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.): Enerdrape

Project Team Members

Name	Department	Email
Aman Mehta	Dept. of Mechanical Engineering. iCAP Energy Chair	amanm2@illinois.edu
Blake Johnson	Dept. of Mechanical Engineering	bejohnso@illinois.edu
Mike Larson	Director of Utilities Production, F&S	mjlarso1@illinois.edu
Andrew Stumpf	Prairie Research Institute	astumpf@illinois.edu

Student-Led Projects (Mandatory):
Name of Faculty or Staff Project Advisor: Andrew Stumpf
Advisor's Email Address: astumpf@illinois.edu

Financial Contact *(Must be a full-time University of Illinois staff member)*
Contact Name: Karen Hartman
Unit/Department: Fiscal Services Section Lead, Prairie Research Institute
Email Address: khartman@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:

The UIUC campus would be a demonstration site for a new geothermal energy technology that taps waste heat from underground infrastructure to heat adjacent buildings. This modular, scalable and easy-to-install geothermal heat exchange panel technology developed by Enerdrape (https://enerdrape.com) would be evaluated to capture and reuse waste heat from a steam tunnel (at the Abbott Power Plant) that would be an additional source of thermal energy.

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

The project will be located at the Steam Tunnel at the Abbott Power Plant. We have been in communication with Mike Larson (Director of Utilities Production, F&S) who has given us permission for the installation of the geothermal panels and the safety parameters that need to be considered during installation and implementation.

Attached is the letter from Mike Larson outlining the permission and the safety around the project.

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.

Other than the project team, the company Enerdrape will have stake in the project since it is Enerdrape's panels that are going to be installed for a feasibility study. The department of Mechanical Engineering would benefit since the results from this project will be used as a senior design project (ME470).

F&S and campus will have a vested interest in the results of this demonstration. If successful, this technology could be used to mitigate the release of waste heat from other steam tunnels across campus. This partnership will allow F&S to leverage performance data being collected by Enerdrape. F&S may or may not contract with Enerdrape on subsequent projects. Enerdrape gets the chance to further test the technology under real-world conditions and gain expose of the technology to the market place.

How will this project involve and/or benefit students?

- Two students will work on the project, possibly as part of ME470 course
- Through iCAP Energy Team and RSOs, the benefits of using waste heat on campus will be promoted to Facilities & Services, students, and the university community at large.
- Data retrieved from the project could also be published on the iCAP portal
- Students will be co-advised by a researcher at Northwestern University (Dr. Alessandro Rotta Loria) who has existing collaborations with the project team and is the co-founder of the startup company, Enerdrape, which developed the technology.
- Students will expand their knowledge of geothermal energy technologies through real-world experiences and the training of professionals in the field.
- Students will have the opportunity to make presentations about the technology and publish representative yet non-confidential results about its features and performance.

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

The results from the project will be publicized in the following ways:

1. Reports will be generated for the Senior Design Project and will be showcased on the exhibition day.
2. Data retrieved from the project could also be published on the iCAP portal.
3. An article may be written and published in the iSEE's Q Magazine regarding this project to disseminate information and awareness of this innovative geothermal technology.

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?

I haven't applied for funding from SSC before.

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?

From the total budget, $10,000 is listed for support engineering work to design, install and monitor the system. Now, no more costs other than the listed budget would be required to see this project through. I assume that there will be minimum maintenance while the test is going on. Since it is in a space controlled by F&S I assume they would continue maintaining it after the test. This has been a question for other projects where an energy system is installed. If not arranged beforehand, F&S considers it the responsibility of the department/unit.

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.

This is a demonstration of a new technology, and the expansion to other areas of campus would require additional funding from elsewhere. F&S will take ownership of the equipment and maintain it into the future.

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?

- Relates to most iCAP energy goals since this panel technology will:
  - Increase energy efficiency (2.2)
  - Improve space utilization (2.21)
  - Reduce building-level energy (2.2.2) by harvesting its own waste energy which will reduce its dependence on the grid
  - Contribute to a clean energy source (2.3 and 2.3.1)

Be a source of clean thermal energy (2.3.2)

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.

Some short-term impacts might be a lower electricity consumption in the building because the panels will utilise low level waste heat energy to heat the building. This will reduce the building's dependence on heat from other sources. In the long-term, after evaluating the panels at Abbott, these panels can be installed all throughout campus to reduce building-level energy by harvesting its own energy and reducing the dependence on the grid.

What are your specific outreach goals? How will this project inspire change at UIUC?
The technology will allow students at UIUC to see the kind of technology built throughout the country and can inspire aspiring researchers to work in clean energy.

The project directly helps achieve the iCAP goals. Some of the other outreach goals could be to have a feature of this technology in the iSEE magazine to let students know about this project.

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