*Please submit this completed application, the supplemental budget spreadsheet, and any relevant supporting documentation by the deadline indicated in your Step 1 notification letter 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 SSC at* *Sustainability-Committee@Illinois.edu**.*

# General Information

**Project Name:** Green Source Building Panels

**Total Amount Requested from SSC:** $68,955

**Project Topic Area(s):** [x] Energy [x] Education [x] Food & Waste

 [x] Land [ ] Water [x] Transportation

# Contact Information

### Project Lead

Applicant Name: Lowell Miller

Unit/Department: Architecture

Email Address: lrmiller@illinois.edu

Phone Number: 217-721-7539

### Financial Contact *(Must be Full-time University of Illinois Staff Member)*

Contact Name: Greg Anderson

Unit/Department: Architecture

Email Address: gnanders@uillinois.edu

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Organization Code: 767000

### Facilities Management Contact *(If Applicable)*

Contact Name: Lowell Miller

Email Address: lrmiller@illinois.edu

**Primary Project Team**

|  |  |  |
| --- | --- | --- |
| **Name** | **Department** | **Email** |
| Austin Johnson (Grad Student) | Architecture | amjohns7@illinois.edu |
| Jay Hayek (Faculty) | Natural Resources | jhayek@illinois.edu |
| Steven Ford (Faculty) | Agriculture | seford@illinois.edu |
| Mark Taylor (Faculty) | Architecture | mstaylor@illinois.edu |

# Project Description

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

The Green Source Building Panels grant proposal looks to create an opportunity to develop sheet goods( i.e. osb, particle board, mdf, etc.) from locally harvested material. Educating and engaging students the cycle of sustainable reuse and repurpose of renewable resources and waste material is a primary point in this process. By using local material to create these goods, the carbon footprint of transportation, as well as hazardous chemicals typically used in the development stages are eased and can be virtually erased from the process.

Most laminated sheet goods are transported up to 1,000-2,000 miles away by way of semi trucks, trains, and/or cargo ships. Creating these materials on campus, we break down a massive amount of carbon emissions due to material transportation, thereby minimizing the carbon footprint of the development process as well as maximizing carbon sequestration by further utilizing logs by way of using saw dust for materials.

**How will the project improve the sustainability of the Illinois campus and how will the project go above and beyond campus standards?**

Over 51% of all energy is spent on building structures and materials. The energy spent would be greatly reduced on these materials when the goods are produced on site, with locally harvested renewable resources. Utilizing natural adhesive methods and getting rid of toxic bonding chemicals will further impact the development process and thus allow for students to partake in these development activities. By utilization of a hydraulic hot press, we can produces sheet goods, heavy timber glue-lam beams, insulation blocks, and energy pellets for heating, among other impactful products which can go a long way towards materials for building development.

Wood is a natural renewable resource, various tree species are effected by diseases every year, by harvesting trees, diseases and insects are less likely to spread to other healthy trees, the Ash tree is a prime example of local trees that are being harvested. The city of Urbana and the University forestry plots have agreed to donate logs as part of the Root to Roof program. The creation of Green Sourced Building Panels is our way of making the milling process more efficient by pushing to be completely waste free.

**Where will the project be located? Will special permissions be required to enact the project on this site? If so, please explain and submit any relevant letters of support with the application.**

Our expectation is to continue our relationship with NRES and the wood science lab to utilize their space occupation of the hydraulic hot press. We have reached out to Jay Hayek of Natural Resources and Steven Ford of Agriculture in regards to finding a home for this machine where it may be used by muli-discipline programs, impacting the most students, faculty and staff as possible.

**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 will be benefitting from this project. Please attach letters of commitment or support at the end of the application.**

Students, faculty and staff from Architecture, Natural Resources, Agriculture, Landscape Architecture, Materials Sciences and Urban Planning will all have direct access. Student groups including but not limited to Root 2 Roof, Solar Decathlon, and Race to Zero among others can and will benefit from this project objective.

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

Students will be allowed the opportunity to create their own building components which can then be explored for structural integrity as well as environmental impact. These material detail projects can lead to discoveries of new environmentally friendly alternative designs. Students will have the opportunity to explore their own material recipies, develop an understanding of how building materials connect, and will have the opportunity to operate the system to create these objects for themselves, as projects permit. Students will be involved as much as possible. Products created in this program will be displayed as student work through the campus and surrounding communities. Further addressing sustainable housing solutions for displaced and impoverished individuals in the University of Illinois surrounding community is of the upmost concern for these advancements. It is important to show students the impacts they can make on the people around them with the skills they acquire through their education. We are providing a generation of future architects and builders an understanding of environmentally progressive manufacturing through sustainable material development. By using locally sourced timber, we are taking a stand against illegal logging practices and deforestation of our valuable forests.

# 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, many of our project team members have participated in SSC grant work. Recent projects funded include Root to Roof, Zero Waste Woodshop, and Off-Grid Solar Kiln

**If this 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?

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

In the event this project is implemented, Saw dust and wood veneers may be produced by the ongoing Root to Roof program. Glue and Resin products will be required to produce such materials. These procducts will be as organic and low VOC as possible. They will be of minimal cost in relation to what the objects can offer in value. The machine will have required maintenance, this will typically be replacement of protective sheathing on the steel press plates, and hydraulic performance oil, and other maintenance as directed by the machine’s manufacturer.

**Please include any other sources of funding that have been obtained or applied for. Please attach any relevant letters of support as needed in a separate document.**

Currently no support of funding has been accepted to this point. Ongoing SSC funding past this initial grant will not be necessary for this project. We will work with the University and community to create additional funding through student project advancements.

# Environmental, Economic, and Awareness Impacts

*In addition to the below questions, please indicate specific measurable impacts as applicable on the supplemental budget spreadsheet.*

**Which aspects of sustainability does your project address, and how? Does the project fit within any of the iCAP goals? If so, how does the project go beyond the university status quo standards and policies.**

This project focuses on the sequestration of carbon through the conservation process of milling wood. Sawdust is typically sent off to landfills where the material takes a significant amount of time to decompose, adding to the volume of waste. On site fabrication affords students a better understanding of waste consumption and maximum use of supplies available, reflecting on efficient sustainable design.

**How will the environmental impacts of your project be measured in the near and long term? What specific monitoring and evaluation processes will you be using to track outcomes and progress?**

At the current clip, Root to Roof has been calculated as salvaging 7 of every 8 logs by making them into useable materials for design and construction purposes. Utilizing saw dust to create building materials with the hot press, we will maximize the efficiency of the process by greatly reducing additional waste. Based on the average log weight of 1,500lbs, we currently have an estimated 1,800 tons of logs waiting to be milled now, that means we are already planning to salvage over 1,575 tons of material that could’ve been placed in a dump. We can save around 225 tons of waste by repurposing the saw dust created in the milling process by Root to Roof.

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

Promotion of this project will begin in the Department of Architecture. We will focus our resources on spreading word of the initiative through media outlets on campus and locally. This project will push further toward our goal of a sustainable building studio which could garner national publicity regarding the advancements made by University of Illinois Students.

**What are your specific, measurable outreach goals? How will these be measured?**

Our goal is to strengthen community and campus partnerships, making Root to Roof a multi program operation which various campus resources can benefit from the advancements made. The primary objective in our goals are to produce LEED certified sustainable facilities using locally sourced products from this campus. We are currently allowing one fabrication project per semester, we are looking at the possibility of making these projects more significant in our design community by adding more course to educate our students on what can be offered.

**Do you have any additional comments or relevant information to aid in evaluation of this application?**

The initial idea of wood conservation in architecture started as a ground level fabrication concept which taught students the importance of renewable resources. The foundation of wood conservation has been laid in the Root to Roof initiative, this grant proposal further affirms our commitment in advancing student understanding in building development so we may teach future architects a better, more sustainable way of design practice. We will continue our sustainable education, outreach, design and fabrication in the architecture program and reach out to multiple facets in the University of Illinois to provide these resources to students throughout the campus.