



## 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:** Biomass boiler upgrades to ash handling system

**Total Amount Requested from SSC:** \$12,156.61

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

**Applicant Name:** Tim Mies

**Campus Affiliation (Unit/Department or RSO/Organization):** Energy Farm / Crop Sciences

**Email Address:** [tmies@illinois.edu](mailto:tmies@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
Name	Department/Organization	Email Address
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: Shawna Graddy

Unit/Department: Crop Sciences

Email Address: [sgraddy@illinois.edu](mailto:sgraddy@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:**

Upgrade to ash handling system for Energy Farm Biomass Boiler. Over the last 4 years, several lower cost repairs have been attempted and continue to fail in a short period of time. The manufacturer is recommending a system typically utilized in larger boiler systems to alleviate our continued failures in the ash removal system.

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

This is an upgrade to a biomass boiler system at the University of Illinois Energy Farm. As this is an existing system (partially funded by SSC initially) there are no additional permissions 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.**

The major stake holder in this project is our campus, as this biomass heating system directly relates to the campus Illinois Climate Action Plan(iCAP) and directly offsets propane fuel purchase for heating campus buildings. Energy Farm staff donation of in-kind labor to install the components.

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

Students and community tours continue to provide educational opportunities and exposure to new technology and applications for climate beneficial energy sources at the Energy Farm, including this biomass heating system. These tours not only benefit the student educational experience but also allow the students to invest in these technologies that support the iCAP.

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

The Energy Farm continues to be a high-profile research site that attracts visitors ranging from student classes, community outreach events, campus administrators, and the occasional cabinet level dignitaries including US Department of Agriculture and US Department of Energy. The biomass boiler is one of the frequent highlight discussions in these tours as it shows an operations conversion of field research to actual energy production, all within eyesight between the fields and point-of-production. These outreach opportunities continue to spread the word of the work done on our campus and are supported directly by our students.

## 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, several projects have benefited from funding by the SSC and successfully met their goals :**

- Gable Home - Permanent Location : Relocated the Solar Decathlon Team house from the I-Hotel to its final location at the Energy Farm. The Gable House has also secured funding and donations adding a geothermal system that further demonstrates best practices in energy conservation by providing dwelling heat/cooling/domestic hot water all produced with a portion of the electricity from the roof solar panels. Architecture classes have held on-site seminar class to continue to build upon its presence.
- Expansion and increased utilization of biomass heating at the Energy Farm. This funding helped the expansion of a research support area that now utilizes biomass heat for student / employee comfort and replaced propane operated drying ovens with biomass energy.
- Energy Farm LED lighting and occupancy sensor upgrade : This project was partially funded during the first year of COVID and allowed us to upgrade the primary objective. Metal Halide fixtures were retired and upgraded with LED light fixtures that improved the light levels while decreasing the energy consumption.
- Control the Flow. This project is currently underway and scheduled for completion in the summer of 2022. The objective is to control water runoff, leading to decreased erosion and nutrient / chemical runoff from our University research fields.

**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?**

The Biomass boiler has an operating budget managed through the department of Crop Sciences. Income from the operation of this system offsets the routine repairs and regular maintenance necessary. This grant request is to address a design deficiency that could not have been anticipated at the time of original purchase and exceeds what our operating account can support. Additionally, a recent rate review of our operational budget will increase the cost recovery rates to better support future expenses and upgrades.

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

Expenses greater than the requested funds would be covered from the operational budget of the biomass boiler system managed by Crop Sciences.

## **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?**

This biomass heating system has removed the Energy Farm's reliance on propane as the primary heating source for a research greenhouse growing sugarcane that must maintain a sub-tropical environment throughout Illinois winters. In addition, an expansion of the heating system now offsets propane used in our plant tissue drying facilities when there is underutilized spare capacity in the boiler. These two applications are in direct support of the iCAP goals.

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

The biomass heating system is documented throughout its annual operation for tons of biomass consumed and BTU/kWh produced. Utilizing this information, we can report to campus how many tons of CO<sup>2</sup> were offset using a carbon beneficial renewable energy source. When the system was originally connected to only one building, we consumed 60 tons of biomass per heating season. As we have leveraged new opportunities for expansion, we now consumed 100+ tons of biomass per heating season, a 66% increase in system capacity utilization. These improvements will continue to allow us to maximize the carbon offset potential of our biomass heating plant.

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

Outreach activities will continue to be a regular occurrence and with the ever-expanding portfolio of renewable energy research and demonstration activities, the biomass boiler will continue to have a large impact on these visitors experience. Regular field day tours bring community, students, and researchers together to spread the knowledge of renewable energy activities and opportunities to these groups.

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

## Existing Ash removal tube wear and damage



Original cross auger with wear



Modified auger design with failed bearings



# Proposed upgrade for a top load auger into the ash bin. Components outlined in red.





**STUDENT SUSTAINABILITY COMMITTEE**  
Step II Application

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**GENERAL INFORMATION**

<b>Project Title:</b>	Biomass boiler upgrades to ash handling system
<b>Total Amount Requested from SSC:</b>	\$12,156.61
<b>Amount Requested as:</b>	Grant (LOAN or GRANT)

**SCOPE, SCHEDULE, AND BUDGET VERIFICATION**

If the project required you to obtain information from Facilities & Services Planning Division, please include that here and attach any supporting documentation.

**Scope & Schedule**

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

Task	Timeframe (# of weeks to completion)	Estimated Completion Date
Issue Purchase Order for upgrade parts	2	6/15/2022
Manufacturing Time (dependent on queue)	10	9/1/2022
Shipment from Germany to Canada then US	5	10/7/2022
Installation	2	10/21/2022
Start of 2022/23 Heating Season and Testing		10/22/2022

**Budget**

List all budget items for which funding is being requested under the appropriate category in the following table. Include cost and total amount for each item requested. Please be as

Item	Cost Per Item	Quantity	Total Request
<b>Equipment &amp; Construction Costs</b>			
Parts from Heizomat Germany	\$9,996.45	1	\$9,996.45
F&S Electricians	\$72.51	16	\$1,160.16
F&S Electrical supplies for installation	\$600.00	1	\$600.00
Misc hardware / sheet metal for installation	\$400.00	1	\$400.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
Subtotal			\$12,156.61

**Publicity & Communication**

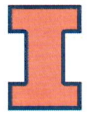
			\$0.00
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			\$0.00
			\$0.00
			\$0.00
			\$0.00
Subtotal			\$0.00

**Personnel & Wages**

			\$0.00
Labor Provided by Energy Farm for Installation(hours)	\$0.00	16	\$0.00
			\$0.00
			\$0.00
			\$0.00







UNIVERSITY OF  
**ILLINOIS**  
URBANA - CHAMPAIGN

**Facilities & Services**

Utilities & Energy Services  
Physical Plant Service Building, MC-800  
1501 S. Oak St.  
Champaign, IL 61820-6905

Student Sustainability Committee

RE: Project "Biomass boiler upgrades to ash handling system"

April 25, 2022

Dear Committee,

Please accept this letter in support of the above referenced project application for funding from your group. The proposed project would provide long term operational improvements to an important part of our carbon reduction energy equipment, and also provide valuable research for long term carbon reduction technologies.

Best Regards,

A handwritten signature in black ink, appearing to read 'Rob Roman', with a large, stylized flourish at the end.

Rob Roman

Director – Utilities & Energy Services