View results

Respondent

16 Taly Escamilla

20:56
Time to complete

Instructions:

Please adhere to the session word counts. Project leads must attend one SSC working group meeting post step 1 application submission. If you have any questions about the application process, please contact the SSC at Sustainability-Committee@illinois.edu.

1. Have you attended an SSC working group meeting? If not, please attend an SSC Working Group and present your project. Once working group attendance is complete, please return to complete your application.

   https://studentengagement.illinois.edu/student-sustainability/ssc/calendar/
   *

   (●) Yes

   ( ) No

2. Please enter the date of the working group meeting you attended. As a reminder, the working group meetings are structured as follows

   - Energy + Transportation and Infrastructure working group.
   - Food & Waste + Land, Air, and Water working group.
   - Education and Justice working group.

   *

   10/12/2023

3. Date of Application *

   10/12/2023

4. Project Name: *

   Small-Scale Anaerobic Digester

5. Total Funding Requested From the SSC. *

10000

Please enter a number less than or equal to 10000

6. Project Lead Full Name: *

Taly Escamilla

7. Project Lead University Email Address *

nesca2@illinois.edu

8. Project Abstract: (In less than 100 words, briefly describe the project.) *

Developing a working small scale anaerobic digester with a membrane separation technology to collect separated carbon dioxide and methane that is economically viable system for small farms. This allows for the farms to lower their carbon emissions, and decrease the need for natural gas extraction, by utilizing natural sources of cattle manure. And can be utilized on the UIUC research cattle farms.

9. Project Category *

- ○ Education & Justice
- ◉ Energy
- ○ Food & Waste
- ○ Land, Air & Water
- ○ Transportation & Infrastructure

All rolling application require a faculty/staff advisor.

Faculty and Staff Advisor

10. Full Name: *

Jiajun He

11. RSO/Department *

MechSE

12. University Email Address: *

jiajunhe@illinois.edu

13. Do you have additional members? *

- (●) Yes
- ( ) No

Project Team Member

Additional Member

14. Full Name: *

Aman Mehta

15. RSO/Department *

MechSE

16. University Email Address: *

amanm2@illinois.edu

17. Do you have additional members? *

- ( ) Yes
- (●) No

UIUC Financial Contact

Financial Contact (Must be full-time UIUC employee)

18. Full Name: *

Jiajun He

19. RSO/Department *

MechSE

20. University Email Address: *

jiajunhe@illinois.edu

Project Questionnaire:

21. Is this project student led? *

- (●) Yes
- ( ) No

22. If applicable, have you received approval from Facilities & Services and/or site manager? *

- ( ) Yes
- ( ) No
- (●) N/A

23. If additional funding is required, do you have a plan for ongoing funding beyond SSC? (SSC cannot guarantee ongoing financial support) *

- ( ) Yes
- (●) No

24. Beyond SSC, do you have sources contributing funding or support (ex. staff time, external grants, etc.) to this project? *

- ( ) Yes
- (●) No

25. Have you applied for SSC funding previously? *

- ( ) Yes
- (●) No

26. Project Timeline:
(SSC funding agreements remain active for two years. List your project's timeline and major milestones.) *

10 months
2 month for designing anaerobic system
1 month for sourcing materials
2 month for building Anaerobic Digester
1 month for testing and reconfigurations
2 months for designing system to test membrane separation capabilities
2 months for research testing of membrane separation

27. Project Description:
(In 250 words or less, describe your project. What does your project hope to accomplish? What are your project's deliverables?) *

Our project hopes to prove that small scale anaerobic digestion with membrane filtration is possible for small farms. Illinois specifically does not have any prominent sources of natural gas production, thus a lot is transported in. By showing that small-scale systems are possible, this can be utilized on the many small farms that are in Illinois to decrease reliance on importing methane, which has leakage issues in the pipeline. The system also allows for the capturing of carbon dioxide that would otherwise be released from composting, the byproduct creation of fertilizer, and the main point of capturing methane for usage. The project's deliverables would be the small-scale anaerobic digester, and then a feasibility study on whether a membrane separation technology would be cost effective and feasible for the system.

28. Environmental Impact:
(In 200 words or less, how does your project increase environmental stewardship at UIUC? If applicable, what is the carbon, water, waste, and/or energy savings?) *

This has energy and carbon savings for UIUC. The Abbott power plant runs on natural gas for heating campus, and thus utilizing local sources of UIUC research farms will save the university money from natural gas purchases. And since the system also captures carbon dioxide, this could possibly be used for carbon credits. There is also the added benefit of avoided emissions. A lot of carbon and methane is emitted when mining for Natural Gas and we are now collecting methane that would have been otherwise emitted from natural sources (manure). Understanding the feasibility of creating small digesters along with refinement technologies is important in the long run. Potential connections will be made with the Beef & Sheep Research Farm at the university to deploy this technology there and generate localized energy and fertilizer for the farm. However, this will be much after a prototype is made.

29. iCAP Objective Correspondence:
(In 200 words or less, does your project aim to advance one or more of the Illinois Climate Action Plan's (iCAP) objectives? If so, how?)

A full list can be found here: https://icap.sustainability.illinois.edu/objectives

It actively promotes the use of renewable energy and decreases the reliance on fossil fuel and natural gas extraction. It also captures carbon dioxide allowing for it to be either used as an ingredient or for it to be stored.

30. Student Impact:
(In 200 words or less, how will this project benefit students? How will students be involved with this project? What educational components are in your project?) *

Students will be directly involved in developing the system. Allowing for experience in communicating with professionals in this field and self learning to be able to develop the system. And a better understanding of how sustainable energy can be found in different sources. Additionally, this project showcases the importance of economical feasibility. Biogas refinement already occurs on a large scale, and thus this project will highlight how to be resourceful. Collaborations will be made with other students in Vet-Med, iSEE and research students working in this field for propelling research efforts.

31. Please see attached file, please be very descriptive and fill out the budget and timeline Excel sheet, and submit it below.

    https://studentengagement.illinois.edu/student-sustainability/ssc/docs/SSC-Supplemental-Budget-Timeline.xlsx

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    SSC-Supplemental-Budget-Timeline (3)_Taly Escamilla.xlsx