

MTSU Sustainable Campus Fee Funding Request Form

The Sustainable Campus Fee (SCF) supports projects that advance sustainability at MTSU. This form allows students, faculty, and staff to propose initiatives that contribute to a greener campus through energy efficiency upgrades, infrastructure improvements, education, research, and efforts to enhance campus biodiversity.

There are 5 sections to the application: Section I: Contact Information, Section II: Project Category, Section III: Project Description, Section IV: Project Cost, and Section V: Project Performance Information (For applicable projects).

The Sustainable Campus Fee is administered through a partnership with the Office of Student Affairs, the Center for Student Involvement & Leadership, and the Center for Energy and Sustainability (CES).

Date Tuesday, September 1, 2026

Request Number **SCFR27000058**

1. Name Scott Handy

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Phone Number (615) 904-8114

SECTION II: Project Category

Please note that all proposed projects will have to comply with MTSU campus guidelines and recommendations.

1. Select the category that best describes the project. (Select One - See Descriptions Below)

Research and Innovation

CATEGORY DESCRIPTIONS

Energy Conservation/Efficiency - (e.g. installing LED light bulbs, adding insulation to walls, replacing old appliances with energy-efficient models, installing programmable lighting, etc.)

Renewable Energy - (e.g. implementing projects to harness naturally replenishing sources like wind, water, and sunlight to generate electricity - like solar-powered picnic tables, etc.)

Sustainable Transportation - (e.g. installing covered bike racks, replacing fuel vehicles with electric vehicles, etc.)

Alternative Fuels - (e.g. setting up electric vehicle charging stations, implementing hybrid or electric vehicles, purchasing electric or propane power equipment, etc.)

Recycling - (e.g. purchasing recycling bins, improving signage, recycling difficult materials, etc.)

Waste Reduction - (e.g. establishing a reuseable to-go container program, reducing food waste, installing waterbottle filling stations, etc.)

Water Conservation - (e.g. purchasing rain barrels, creating a rain garden, switching to low-flow water fixtures, installing low-flow water valves, etc.)

Biodiversity - (e.g. planting pollinator garden, tree planting, installing bird boxes, etc.)

Education - (e.g. hosting a sustainability fair to raise awareness about green practices, hosting bike repair and/or safety workshops)

Research and Innovation - (e.g. researching the effects of microplastics, solar feasibility study, etc.)

SECTION III: Project Description

Please include as much detail as possible in this section. The more information you provide, the better equipped the adjudication committee will be to fully understand your request and make an informed decision.

To expand a text box, click and drag the two diagonal lines in the bottom-right corner. This allows you to adjust the size and view of your content as you type.

1. Project Title

Natural Supplements as Photocatalysts

2. Scope: Work to be accomplished

Photocatalysis is a promising method in synthesis as it uses light as the only consumed material for a reaction, minimizing waste and the need for toxic materials. Most photocatalysts are expensive and little has been done to use natural materials as photocatalysts. A number of nutritional and dietary supplements do absorb light and could potentially be used including St. John's Wort, Lycopene, Lutein, Turmeric, and Riboflavin. In this project, we intend to explore the use of these materials in some photocatalyzed reactions to demonstrate their utility in this area.

3. Scope: Benefit Statement

Using readily available natural supplements will eliminate the cost of using special and expensive (and frequently toxic) photocatalysts as is currently the case. These new catalysts will be more readily available, less expensive, more sustainable, and could even be recyclable (something that we will explore). Particularly if coupled with normal sunlight, it could reduce the cost of running organic reactions dramatically and could serve as the template for some interesting and less expensive experiments for the Organic lab classes.

4. Location of Project

Science Building, Chemistry Department, primarily in SCI 3021

5. Participants and Roles

Chemistry - Scott Handy - will lead this research project

6. Student Participation in the project and/or Student Benefit from the project

Olivia Sanders, Stephen McNey, Owen Werth - all MTSU undergraduates. They will conduct most of the experiments and will gain experience in research (which is their long term goal), how to set up, work up, and characterize the outcome of reactions, how to plan for new reactions, and give them the results needed to present their work and hopefully have a publication before graduation. All of this will help them to be more competitive for graduate work and/or employment upon graduation.

7. Future Operating and/or Maintenance Requirements

Future efforts on this research will seek external funding to support further development. In effect, this is seed funding to support future work.

8. Additional Comments or Information Pertinent to the Proposed Project

Any supporting documents or attachments will be on the pages following the SCF Request.

Note, all projects are expected to be completed by December 31, 2026.

SECTION IV: Project Costs

1. Project Cost Estimate 2470

2. Source of Estimate

Prices are based on current catalog prices from the vendors listed in the attached file.

3. Has previous funding from this source been awarded? Yes

If Yes, please explain how this request differs from previous funding request. This is a completely different project area. Prior funding has supported the development of other waste reduction methods, which are now seeking external funding for their continuation

SECTION V: Project Performance Information

If your project is expected to reduce energy consumption (e.g. through lighting upgrades or HVAC improvements etc.), please provide an estimate of potential savings. Feel free to contact the Center for Energy and Sustainability for help making these calculations at ces@mtsu.edu.

- 1. Estimated Annual Energy Savings (Estimated in kW, kWh, Btu, etc.)
- 2. Annual Energy COST Savings (\$)
- 3. Annual Operating Cost Savings or Other Cost Savings. Specify in dollar amount, if applicable. (\$)
- 4. Matching or Supplementary Funding (Identify and explain, if applicable)

Acknowledgment

I acknowledge that a project summary and photo must be submitted, if I am awarded funding and upon completion of the project.

Supporting Documentation or Attachments if provided.

Materials List (all prices from web sites of vendor and rounded up to nearest ten since inflation in scientific materials has been an issue):

Thermo Fisher

96 well plates (267334) for rapid screening of reaction conditions	470
Acetonitrile (036423.K7) common reaction solvent for reactions	180
Culture Tubes (14-961-27) for product isolation 3 cases	630

Discount Vials

Reaction vials, 1 dram small reactions and product storage 2 boxes	180
Reaction vials, 3 dram larger reactions and product storage 2 boxes	200

Sorbtech

Silica (62500-1) for product purification	330
TLC plates (4434126) for reaction monitoring 2 packs	480
Total	2,470