

Sustainability Fee Project Grant Report Guidelines
for grants awarded during FY2015
Due by 5pm August 1, 2015
Email pdf or word doc to cfs@georgiasouthern.edu

Please provide the following information in order to help the Center for Sustainability document the success of the Sustainability Fee Grant Program.

Date: 8/3/15
Name(s): David Calamas
Unit/Department(s): Mechanical Engineering
E-mail address: dcalamas@georgiasouthern.edu
Phone: (912) 478-5751
Project title: Solar Energy Potential at Georgia Southern University
Amount granted: \$31,424.75
Amount spent: \$31,424.75

Project Outcomes/Value

The planned outcomes were met. A solar tracker was installed and calibrated by undergraduate students. The solar tracker is currently collecting data that can be continuously analyzed. A recommendation to place the solar tracker on the roof of the RAC has been made to assist in data collection for future flat plate collectors. The solar tracking equipment will help to show how much water can be heated by solar flat plate collectors.

Project Timeline - Is your project *completed* or still *in progress*?

The project is completed but the location of the solar tracking equipment will change. The solar tracking equipment successfully records the amount of incoming solar radiation. The solar tracker also successfully logs this data for future use and study. The tracker will be moved to the Student RAC as flat plate solar collectors will be installed on the roof of the RAC to provide sustainable water heating.

Project Outcomes -List the *proposed* project goals/objectives and *actual* outcomes of the grant. The solar tracker was successfully purchased, calibrated, and installed by undergraduate students. Outcomes were achieved as identified in the ***Project Outcomes/Value*** section.

Sustainability Improvements – clearly state how your project has improved campus or community sustainability and explain how you assessed the improvement. If funds were used to purchase products intended to reduce energy, water use, waste, labor cost, etc., please provide information and calculations that show the expected return on investment for your grant.

The funds were used to purchase equipment to track the amount of solar thermal radiation reaching campus. The data can be used to determine how much energy a specific solar panel could produce or transfer. The average daily solar insolation, or “peak sun hours” in June was found to be 6.48 h

means that the tracker received 6.48 hours of sun per day at a rate of $1 \frac{\text{h}}{\text{h}^2}$. This means that the tracker received 6.48 hours of sun per day at a rate of $1 \frac{\text{h}}{\text{h}^2}$. It is important to calculate

the peak sun hours as solar photovoltaic (PV) panels are rated at an input of 1^{◆◆◆◆}

^{◆◆}². Based on this data, if a specific solar panel was identified, the University could then determine the actual output of the panel throughout the day.

Outreach – how did you publicize your Sustainability Fee grant/project? Please attach copies of all publicity (news articles, web pages, fliers, newsletter, etc.) associated with your grant. If no publicity measures have been taken yet, what are your plans for publicity of your project? A conference paper on this project will be submitted at the 2016 ASEE SE Annual Conference in Tuscaloosa, AL.

Budget report- provide an explanation of how all funds were used and explain any deviation from the original budget.

One hundred percent of the total, \$31,424.75, was spent on the solar tracking equipment. There was zero deviation from the initial budget.

Student and Community Impact

Because these grant funds come directly from a \$10 Student Sustainability Fee, it is important to document how they benefit students. Please provide information on the following:

14 undergraduate students were involved with the project in MENG 5137 Mechanical System Design. 5 undergraduate students were involved with the project in MENG 5891 Solar Energy Applications.

Grant Leverage

Were you able to leverage your work for additional outcomes? Indicate the following if they apply.

2016 ASEE SE Conference Paper to be submitted for conference paper in Tuscaloosa, AL. Two undergraduate students will be authors on the paper.

Project abstract

Provide a one paragraph abstract of the completed project and a photo (preferably including some of the people involved with the project at work) to be posted on the CfS web page. Also include links to all web pages on which this work is discussed or displayed

A solar tracker was installed that can assess the solar energy potential at Georgia Southern University. The tracking equipment can measure the magnitude, direction, and duration of incident thermal radiation from the sun. The data collected by the tracking equipment can be used to determine the viability and cost effectiveness of various solar energy harvesting devices (e.g. photovoltaic panels or flat plate collectors). The tracking equipment will be installed on the roof of the RAC and will assist with the installation and monitoring of numerous flat plate collectors utilized for water heating. Fourteen undergraduate students helped to purchase, install, and calibrate the equipment for data collection.

3 photos of the students involved can be found below.