

Green Fund Project Final Report

This report may be published on the SIU sustainability website.

Project Title: Graduate Research Assistant for Energy Efficiency

Project ID #: 16SP119

Award Date: 4/22/2016

Completion Date: 8/4/2017

Total Funds Used: \$16,523.32

1. Please provide a write up of your project/project experience.

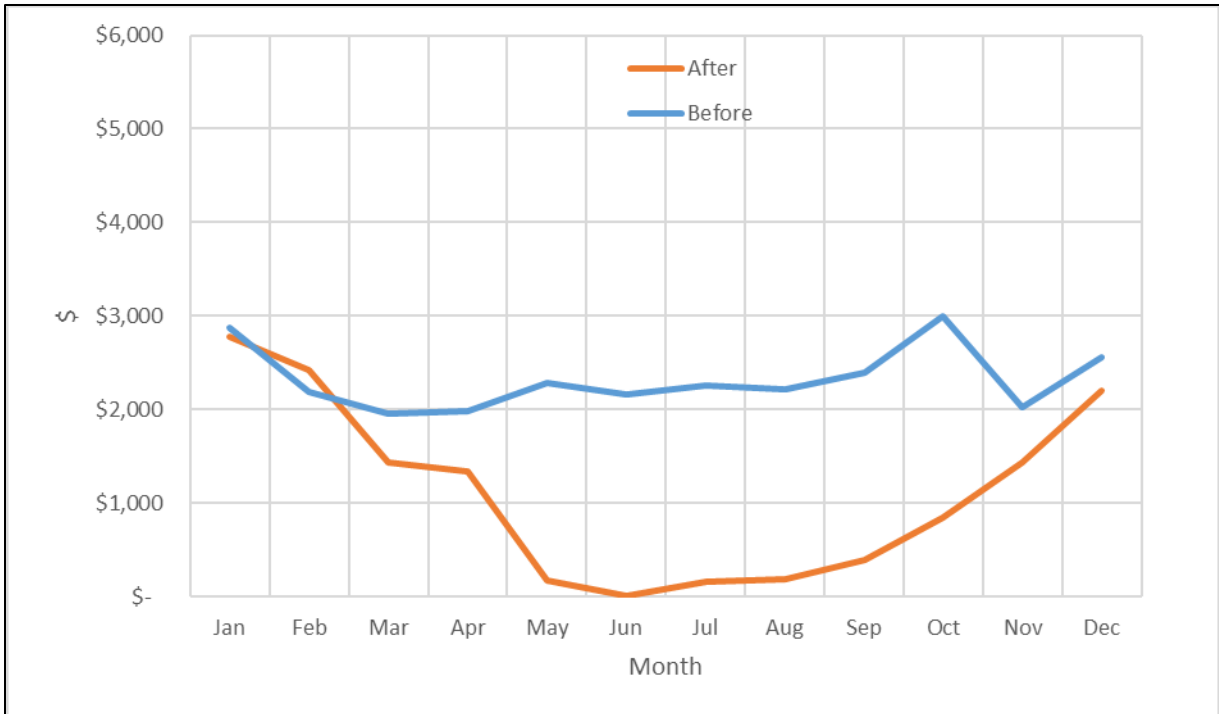
I worked on an HVAC efficiency project. The project included several buildings throughout the campus. It involved defining the HVAC systems for each building and then mapping the spaces to them using Mechanical (Ventilating and Heating) drawings. That means listing all the Air Handling Units (AHUs) in each building, their capacities, type of flow and then assign each room in the building to its respective AHU that feeds it. This was the first step to implement four Energy Efficiency measures; Economizer, Scheduling, Supply Air (SA) Temperature Reset and SA Pressure Reset. These measures were implemented for a couple of buildings whenever applicable. Applicability here means whether the system allows for a certain measure's existence. For example, some systems are constant flow and hence a measure like SA Pressure Reset can't be implemented. Then, a list of all the required variables needed to implement a specific measure (such as temperatures, pressure and humidity set points) was made and cross checked with the available ones in Metasys (the campus Building Automation System). After that, an energy model was created to simulate the building energy performance and then compared with the actual performance. Then the estimated annual savings from implementing the measures were calculated.

2. Please provide a summary of your results (environmental, social, and/or economic) including quantifiable data as appropriate (ex. # of individuals reached, lbs. diverted from landfill, energy saved, etc.).

The below tables and chart show the annual projected savings after implementing energy efficiency measures in Furr Auditorium, Pulliam Hall. The blue table and chart line show the estimated monthly HVAC cost before the project and the orange table and chart line show the estimated monthly costs after the project. The estimated annual savings is **\$14,493**. The last table shows the estimated annual savings for three other buildings together with Furr Auditorium.

24/7 cooling, Econ (35-60F), Damper(10%), 8 radiators					
Before					
Month	no. of hours	Motor Energy (kWh)	Q cooling (kWh)	Q heating (klb)	Total cost (\$)
Jan	744	9,298	16	187	2,876
Feb	672	8,398	10	136	2,193
Mar	744	9,298	879	107	1,950
Apr	720	8,998	2,493	103	1,987
May	744	9,298	1,817	129	2,285
Jun	720	8,998	2,427	118	2,167
Jul	744	9,298	5,538	108	2,257
Aug	744	9,298	4,289	110	2,211
Sep	720	8,998	2,485	137	2,398
Oct	744	9,298	209	196	2,996
Nov	720	8,998	2,131	108	2,021
Dec	744	9,298	-	161	2,563
Total	8760	109,480	22,295	1,599	\$ 27,904

scheduled hours, econ (<znt 76,60 dp), adj damper(3%), no radiators					
After					
Month	no. of hours	Motor Energy (kWh)	Q cooling (kWh)	Q heating (klb)	Total cost (\$)
Jan	737	9,211	-	180	\$ 2,781
Feb	630	7,874	-	158	\$ 2,429
Mar	603	7,536	1	78	\$ 1,436
Apr	473	5,911	41	79	\$ 1,345
May	99	1,237	209	7	\$ 180
Jun	14	175	32	0	\$ 15
Jul	115	1,437	1,113	0	\$ 161
Aug	122	1,525	1,373	0	\$ 184
Sep	255	3,187	1,726	7	\$ 396
Oct	391	4,887	53	44	\$ 846
Nov	521	6,511	26	84	\$ 1,442
Dec	688	8,598	-	135	\$ 2,197
Total	4648	58,090	4,575	772	\$ 13,411



Building	Estimated Annual Savings (\$)
Miles Hall	\$ 13,081
TEC	\$ 25,560
Quigley Hall	\$ 56,965
Furr Auditorium	\$ 14,493

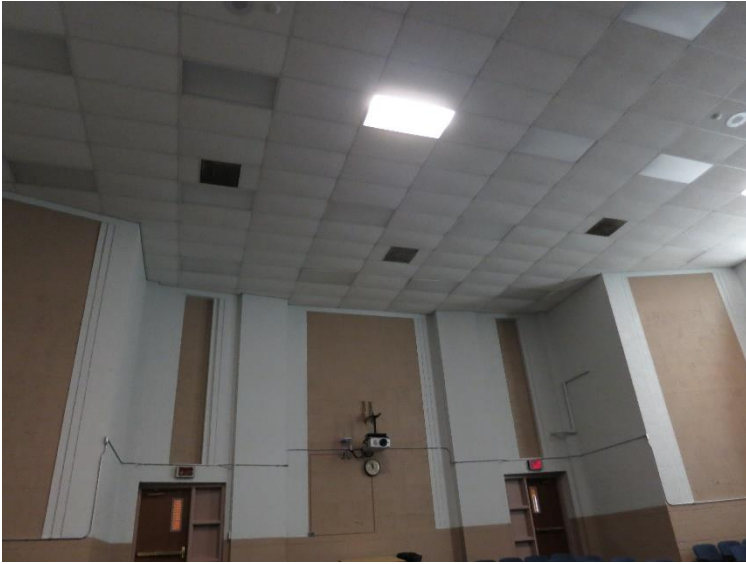
3. Summarize how your project promoted the Green Fee/Sustainability on campus including, but not limited to, flyers created, screenshots of website, signage, etc. Please include website links, if applicable.

No flyers or signage were made. It is actually difficult to do that in this kind of a project. But after a year of implementing those measures, an annual savings report can be published to promote campus sustainability and highlight the steps taken every year to achieve that.

4. Is there anything you would do differently if you were to do a similar project in the future? If so, please describe.

I can't think of anything.

5. Please attach a minimum of 5 digital images –these will be images used to promote interest in sustainability projects on campus. These can be photos of the progress of the project or the completed project.



6. Optional: Do you have any suggestions for the SIU Sustainability Council to improve the Green Fund Award Process?

You can use an additional method for the Fund Award Process. The council can provide its own list of projects and invite applicants to provide the best or the most cost-effective way to do. The best applicant can get the fund and start implementing the project.