Section 1: Summary Information

***Project Title:** Amendment for Share-A-Bull Bikes - A Smart Bike Sharing Program for USF Bulls

***Duration:** 25 months

***Total Budget:** $105,327

***Requested SGEF Funds:** $67,827

***Matching Funds:** $37,500

***Proposed Starting Date:** July 1, 2015

Section 2: Applicant Information

	Full Name	Unit/Department	Phone	Email
***Principal Investigator**	Yu Zhang	CEE	8139745846	yuzhang@usf.edu
Investigator 1	Dwight Pollock	Recreation Center	8139746381	dpolloc2@usf.edu
Investigator 2	Jochen Eckart	Patel College	8139740312	jocheneckart@mail.usf.edu
Investigator 3	Phil Winter	CUTR	8139749811	winters@cute.usf.edu
Investigator 4	Pei-Sung Lin	CUTR	8139744911	lin@cutr.usf.edu

Section 3: Project Description

***Project Background and Purpose (reasons motivating request)(Max 500 words)**

The Share-A-Bull smart bike sharing project was awarded by SGEF in Oct. 2013. After carefully comparing the pros and cons of existing bike sharing systems in the market, the advisory committee selected the Social Bicycle (SoBi) as the vendor. SoBi developed a free-floating bike sharing system, which is an innovative bike sharing system allowing users obtain bicycles wherever they are available and return them to any bicycle racks nearest to the users' destinations. In comparison to the prevailing station-based bike sharing, free-floating saves on start-up cost by avoiding constructing expensive docking stations and kiosk machines. By real-time tracking bikes with the built-in GPS, free-floating system prevents the bike theft and also offers significant potentials on smart management of the system for serving the users' needs the best.

The project team for Share-A-Bull contains Project Development Subcommittee, led by the PI Dr. Yu Zhang from CEE department, Project Implementation Subcommittee, led by Francis Morgan from Campus Rec, Marketing Subcommittee, led by Andrea Fiedler from Student

Affairs, and Trip Planner development, led by Dr. Sean Barbeau from CUTR. The major tasks that have either been accomplished or are undertaken include: 1. Review of different bike sharing systems and recommendations of vendors; 2. Bidding and negotiation with vendors; 3. Study of the spatial and temporal demand distributions of bike sharing on Tampa campus; 4. Design of the bicycles and marketing/promoting materials; 5. Development of web-based trip planners for bicyclists maneuvering on the campus; 6. Development of operational tools for rebalancing the system in daily operations.

The program is expected to be launched in August 2016. Nevertheless, there are a couple of elements need to be addressed to assist the effective utilization of the program. During the study of understanding the spatial and temporal demand distributions of bike sharing on Tampa campus, the team identified some spots that have high attractions but either lack of bicycle racks or existing usage of the racks having reached the capacities. Thus, to realize the significant benefit of the free-floating bike sharing systems, additional bicycle racks need to be installed (See enclosed document for the proposed sites and number of bicycle racks to be added at each site). Fortunately, we obtained support from FDOT through their pedestrian and bicyclist program for purchasing 150 U-loop bicycle racks. The PI would like to ask for the support from SGEF to cover the installation expenses. In addition, once the program is launched, it will be critical to trace the usage of the bicycles and analyze the information for better design of the program and future expansions. The PI proposes to hire a graduate student to work on the task in academic year 2015-2017 at 0.25 FTE (10 hours per week). The deliverables include a report summarize the analysis results and recommendations.

Project Activities (Max 250 words)

Task I: Install the 150 bicycle racks on different sites proposed in the enclosed document. This will be done through the coordination between Facility Planning and Physical Plant. The relevant space impact form has been submitted and reviewed.

Task II: Analyze the usage data and offer recommendations on improvement of the program design and future expansion.

Project Results (Max 500 words)

This is an amendment of the Share-A- Bull smart bike sharing project. Share-A-Bull project proposes to design and deploy a smart bike-sharing program, a free-floating sharing that does not need substantial construction of stations. The implementation of this program would be a step towards developing the USF Tampa Campus' sustainability. It will reduce the intra-campus auto trips, encourage the usage of perimeter parking facilities, mitigate traffic congestion on campus, reduce GHG emissions and encourage healthy life styles. The estimated appropriate fleet size of eliminating intra-campus trips is about 250 bikes to 300 bikes, dependent on the utilization rate of bikes given different design of the program. Given the 100 bikes proposed in this project, the program can reduce 0.4 million intra-campus auto trips annually. The reduction in Vehicle Miles Traveled (VMT) and gasoline usage are approximately 0.8 million miles and 59,000 gallons, respectively. Consequently, GHG emissions will be reduced by roughly 1.1 million pounds.

The program will be developed through a variety of rigorous research methods, including demand analysis, intelligent information system design, financial analysis, sustainability assessment, operation and maintenance plan, etc. Faculty and students from many different departments and organizations will be involved in this research. The department of Civil and Environmental Engineering, the Center for Urban Transportation Research, the Computer Science department, Operations Research, the Clean Energy Research Center, the Electrical Engineering department, and the Marketing and Management department from the College of Business are all expected to participate. Additionally, representatives from student organizations and university administration will contribute to this study, while students from the School of Mass Communication will document the program's development. The bike-sharing program's potential of being extended to local municipalities is also worthy of exploration throughout the project so that local elected officials, urban planners, and traffic engineers can be invited to serve on the advisory board and attend milestone events and meetings.

From an educational point of view, the program will encourage talented students to explore the application of intelligent information technologies in daily usage. Once the program is implemented, the usage of the bikes will be monitored and operational data will be continuously collected so that the information obtained can be used in various courses to help students better understand bike sharing usage, traffic demand management, intermodal transportation planning, and green campus development. The program will also collaborate with the ongoing annual Bull Walk and Bike Week campaign to improve the awareness of rules so users can intelligently ride bicycles on campus. In the meantime, the program will be a showcase of USF's sustainable transportation. It can be combined with the Campus Visit Experience program, the summer pre-college program of Patel College, the Engineering Expo, and other programs or activities. The process of the design and the development of the program will be recorded and organized into a 15 to 30 minute presentation that can be shown during those activities. Furthermore, the presentation can be shown to general audiences at MOSI.

*Annual energy savings: 59,000 gallons of gasoline

Annual Cost Savings: $206,500

Return of Investment in %: 204% (refer to Page 7 in enclosed file).

Annual Green House Gas Reduction: 1.13 million pounds

Project Sustainability

As described in initial proposal, funding resources besides the Student Green Energy Funds will be explored and will include companies in industry (advertisement), government agencies (FDOT), and local municipalities. Staff and faculty will be charged for using the program. Additionally, an account will be created on the university fundraising webpage. Low-cost fundraising efforts will be made to encourage the support of the program. Furthermore, when

campus facilities are rented for external events, the Share-A-Bull can be provided as a part of the rental package.

Section 4: Workplan and Budget Details

***Detailed work plan/schedule of activities (Max 250 words)**

July-August 2015	Task I	
August 2015-July 2017		Task II

***Budget breakdown**

Category	Unit	Request from SGEF	Applicant contribution	Total
Bicycle racks	150	$0	$37,500	$37,500
Bicycle racks installation	150	$32,500	$0	$32,500
Personnel	0.25FET*2year	$24,522*	$0	$20,200
Health insurance	5 academic year. person	$10,805**	$0	$10,840
Total Project Cost		**$67,827**	$37,500	$105,327

*$20,200 stipend +$2,161*2 student health insurance
Was not budgeted in the original proposal but has spent because of the mandatory student insurance for the students who are hired as RA on this project.**

***Budget Justification**

The expenses of bicycle racks cover 150 U-loop bicycle racks. It was sponsored by FDOT pedestrian and bicyclist grants. The installation cost of adding 150 bicycle racks on 23 sites of the campus is estimated to be $32,500. The budget of hiring a graduate student for academic year 2015-2017 at 0.25 FTE is $20,200. The student health insurance for two years will be $2,161*2=$4,322.

In the original budget, the student health insurance was not included. Nevertheless, it became mandatory later and was paid from the project for the students hired on this project. From the starting of the project to the summer of 2016, a total of 5 person.academic year should have been included. The annual student health insurance is $2,161 so the total is $10,805.