Fall 2014 Student Sustainability Grant Proposals

Total funds requested: $47,634.03
Total funds allocated: $39,495.55

1. Michigan MI-Plate Guide 2.0

Principal Investigators: Courtney D. Gullett, Julee Reed

Faculty/Staff Advisor: Dr. Caroline Webber, Family and Consumer Sciences

Abstract: Sustainability in the food system is essential to preserving the health of the land as well as the health of the people. One way to create a more sustainable food system is to encourage the consumption of local, seasonal foods. Increased consumption of local, seasonal foods promotes both regional and global sustainability by decreasing food miles, preserving farmland, and decreasing spread of food born contamination. Additionally, research has shown that young adults aged 18-23 with increased culinary confidence consume fast food less often and are more likely to meet desired dietary objectives. As such the goal of our project is to create a web-based resource that contains seasonal recipe ideas, how to videos for creating some of our recipes, and resources for where to purchase local and seasonally available products.

Our proposed project is an expansion of the previously successful Mi-Plate Guide which is based on the United States Department of Agriculture’s MyPlate tool. By focusing on culinary skill development our project is also similar to the Michigan State Extension Cooking Matters course, which teaches adults and teens how to cook healthfully on a budget. To ensure this project benefits all students on campus we plan to do a cooking demonstration using one of the recipes from our digital cookbook at an event in the Student Recreational Center. We hope this initiative will increase student’s self-efficacy in regards to cooking and will be a piece of the ground work for the proposed student-centered sustainable café in the future.
2. Leaders Unplugged Backpacking Gear

Principal Investigators: Candace Faistenhammer, Jesus Romero

Faculty/Staff Advisor: Kate Bates, Student Activities and Leadership Programs

Abstract: The Leaders Unplugged programs was developed by Student Activities and Leadership Programs (SALP) in 2013 as an outdoor leadership experience where students would go on a 25-35 mile backpacking trip in the week between the Spring and Summer I semesters. Students who participated in 2013 and 2014 have reported that they met people from diverse backgrounds, gained leadership skills, had personal breakthroughs and gained a sense of appreciation for the environment they live in.

Students, no matter their outdoor experience, can participate: participants have included students who have never camped in their life to experienced backpackers. To prepare students, SALP staff train students in gear, food preparation, leave no traces practices, etc. Students are expected to pay a $25 registration fee to help with travel expenses, provide their own food, and procure gear to the best of their ability.

Over the years, SALP has begun to accrue communal gear for participants to share. This year SALP is expecting to double he size of the program and hopes to expand the program to twice a year in the future. Because of this, we are looking to purchase enough gear for up to 20 participants to use. Better (and lighter) gear allows for participants to have a more positive experience by not having such heavy loads, staying dry and warm. SALP is looking for funding to purchase 4 person tents, Water filters, stoves, communal pots, and sleeping bags.

Amount Requested: $4,964.15    Amount Allocated: $3,440
3. Ultros 3D Printer and Filament Extruder

Principal Investigators: Andrew Brower, Quincy Campbell

Faculty/Staff Advisor: John Kapenge

Abstract: 3D printing is an emerging technology, which allows users to manufacture any part they can imagine from plastic in a relatively short time. Objects can be designed with 3D imaging software or download from the Internet to be printed on a desktop. A delta style printer features 3 vertical rods, which may be extended to the print volume as tall as desired. We build two delta printers for use in the computer science department, and purchase a Filabot extruder, which can recycle plastics into new filaments, which can be used for printers.

Traditionally most plastic items we purchase at stores are shipped from China. Factories produce these parts, and ship them overseas to stores where they might be purchased. Any products not used purchased would then be thrown away. A 3D printer avoids this by allowing consumers to only print what they need. Combined with a filament extruder, this allows the consumers to recycle items in their own home once they are no longer needed, rather than throwing them away or shipping them to be recycled.

There is currently an industrial grade filament extruder in the plastics lab at WMU, but due to safety and damage concerns, it is not usable by students. A Filabot extruder is much smaller, simpler, and safer, and could be easily and safely used to create filament from any materials students desired without supervision.

The delta printer and the Filabot are both constructed from common parts and documentation is readily available on the Internet. Should either of the devices encounter problems, it would be easy to get replacement parts produced by another printer, or purchased from a regular hardware store.

Amount Requested: $4,333.52  Amount Allocated: $4,333.52
4. LED Research Station

Principal Investigators: Cody Potter, Thinh Nguyen

Faculty/Staff Advisor: John Kapenga, Computer Science

Abstract: As we make our way through the 21st century, we are focused on the impact our human footprint has on our environment and we seek for new innovative methods to save energy, promote recyclability, and enhance our daily life. With new LED technologies rising, there are many opportunities to take part in the research and contribute our findings to the growing industry. Our proposal to create an LED research station is one of those opportunities. With the LED research station, students at Western will be able to research and test various LEDs. This workstation will give students the hands on approach to work and check various manufacture claims. One of these claims is the negative effect blue LED lighting has on our environment and also human life cycles. They will be able to research these LED lights as they test various variables in order to find optimal results. This research can be used to find the best lighting for our Residence Halls, as well as various other buildings on campus to make sure that we are creating a sustainable, healthy environment for future Broncos. The movement to more sustainable LED lighting is the future. In order to get there, research is needed. We would like to provide opportunities for students at WMU to be a part of that research and to shine the University under new light.

Amount Requested: $7,525  Amount Allocated: $7,525

5. 2015 North American Beekeeping Conference

Principal Investigators: Ali Leist, Shaana Way

Faculty/Staff Advisor: Lynne Heasley, Environmental Studies

Abstract: Beekeeping at WMU has gathered interest from students, educators, and press since the development of the apiculture-training
installment in 2013 through funds provided by the Student Sustainability Grant. The objectives of the research hives are for education on pollinator ecology, environmental awareness, and enjoyment of local honey and other bee products. Though many individuals in the Kalamazoo beekeeping community have contributed to the education and expansion of the hives, WMU apiary and all programs associated with it remain primarily managed by student volunteers. We propose that three undergraduate students attend the 2015 North American Beekeeping Conference and Tradeshow in Anaheim, CA January 6-10, 2015 to attend lectures and workshops related to apiculture operations, avenue of research and sustainable practices. We believe this conference and tradeshow will aid in WMU students becoming better educated on the culture of beekeeping and teaching practices that can be applied at our own hives. At this conference, three students will also present a poster describing SSE’s acquisition of the hives through the Sustainability Grant, educational goals related to the hives, and any other relevant information related to the WMU Office for Sustainability’s initiatives concerning sustainability and the conservation of pollinators. As attendees of this conference, the three students will represent WUM’s OfS and Students for a Sustainable Earth as models for other educators to engage in sustainable, educational projects that will enhance their institutions. After the conference a public presentation describing the experience, including pictures and detailed notes, will be held.

Amount Requested: $4,786.57    Amount Allocated: $2,947.65

6. Integrated Aquaculture Feed
Principle Investigators: Carlos Daniels, Kyle Simpson
Faculty/Staff Advisor: Mark Delorey, Financial Aid Department

Abstract: The purpose of this project is to determine whether black soldier fly larvae spirulina, and crayfish are suitable in combination as feed for aquaculture. This investigation stems from previous and ongoing SSG research with aquaponics. Several team members have been operating a small-scale aquaponics system in the
WMU Office for Sustainability and are currently in the process of designing a larger pilot system to be installed at WMU’s Gibbs House property. With a larger system comes a higher feed cost; the intention of this project is to reduce that cost by creating a system to produce sustainable feed on site. Feed will be produced onsite by repurposing fish waste as fertilizer for spirulina. This is a form of aquaponics in principle, although in traditional aquaponics nutrients from fish effluent are used by produce intended for human consumption. In the Gibbs House aquaponics system, traditional produce will be grown for human consumption, while excess fish effluent will be used for production of spirulina. Spirulina will be a nutrient-dense feed for both fish and crayfish. The crayfish will then be used as a supplemental feed for fish. Additionally, black soldier fly larvae will be fed post-consumer food waste collected from campus. BSFL are high in protein and fats, and they reduce the presence of common pathogens such as E. coli. The BSFL research serves two purposes: 1) to test BSFL in combination with spirulina and crayfish as an alternative to store-bought fish feed 2) to reduce food waste on Western Michigan University’s campus. Currently 50% of the recurring cost in aquaculture is feed. This research may reduce this recurring cost in addition to recycling WMU food waste as edible, low-cost produce and fish for campus.

Amount Requested: $8,741.89  
Amount Allocated: $8,741.89

7. Gibbs Farm Compost-Powered Water Heater

Principle Investigators: Elijah Lowry, Kelsey Pitschel
Faculty/Staff Advisor: John Spitsbergen, Biological Sciences

Abstract: The Gibbs Farm compost-powered water heater is a student-led initiative to design and construction a small-scale renewable energy source for the ground heating of the westernmost hoop house. A 60-cubic-yard mound of reclaimed organic material will act as a feedstock for heat-generating thermophilic bacteria. Water-filled tubing will run through the mound and into the hoophouse to transfer heat from the mound to the hoop house seedbeds. The circulating hot water will keep the ground temperature above freezing from October to April and allow for the development of crops, vermicomposting and black soldier fly larvae. Following April, when the feedstock no longer generates heat, the finished compost
will be used or soil amendment at the Gibbs Farm. The project will not only provide practical solutions for the off-season advancement of crops, but will also provide a platform for future research development based on long-term data collection. Adafruit sensors will gather data for humidity, temperature, pressure, and soil moisture using Raspberry Pi and Arduino Uno microcontrollers that compute data for logging. The proposal also includes the purchase of an Agrilab Feasibility Study to further guide the system design and workshop that will be held in the fall of 2015. The workshop will be open to the community and hosted by Gaelan Brown. Brown is the author the "The compost-powered Water Heater" and has constructed many efficient Jean Pain style systems across the country. The scope of this proposal includes the cost for design, equipment, supplies, and hosting fees necessary to construct a fully functional compost heating system. The final system is intended act as a proof-of-concept that can later inform and propose the integration of compost heating technology on a larger scale at Western Michigan University.

Amount Requested: $6,486.97          Amount Allocated: $6,486.97

8. Sustainable Shade Structures as part of the Fountain Plaza Remodel
Principle Investigators: Zachary Morhous, Johan Manuel Mejia
Faculty Advisor: David Middleton, Industrial and Entrepreneurial Engineering

Abstract: We are a joint team of three IEE (Industrial and Entrepreneurial Engineering) and three ECE (Electrical and Computer science Engineering) students working with Landscape Forms of Kalamazoo, tasked with designing sustainable, student friendly shad structures for Western Michigan University’s Office of Campus Planning, as part of the larger Fountain Plaza Redesign Project already under way. We are asking for grant money to help fund the design process and the construction of one or two working models. These models will be used to assess student interests and opinions before we finalize the design for production by Landscape Forms beginning summer of 2015. Campus Planning hopes to have the final product installed in the plaza by the beginning of the Fall 2015 semester. The final structures are to be produced by Landscape Forms custom department, Studio 431, who has graciously volunteered to donate their time to both
manufacture and help build us through the design process of these structures. Campus Planning will pay for the remainder of the production cost out of the budget already designated for the Fountain Plaza Redesign. However, it should be made clear that this grant application is only to help fund the design process and the construction of working models, and will be totally separate from the production and installation costs of the final products.

Amount Requested: $1,377.95        Amount Allocated: $870.76

9. Energy Reduction with the WeMo Switch
Principle Investigators: Katherine Binder
Faculty Advisor: Dr. Ron Van Houten

Abstract: Western Michigan University is on the forefront of behavior changes for energy reduction research. A grant funded research project studying the effects of building energy dashboards is currently underway. In an effort to round out this research study by including empirically supported research plans, the purchase of 24 advance power strips (APS) is proposed. APS devices allow building users to control outlets in their work or living spaces by setting on and off schedules and providing feedback about outlets electricity use. Plug-load electricity use comprises a significant amount of the electricity use of entire buildings. APS devices with scheduling capabilities have been proven effective and can reduce plug load electricity use by approximately 40-50%. The devices will be tested in a variety of settings on WMU’s campus including residence halls, campus apartments, office spaces and computer labs. Results will be compared against findings from the energy dashboard project and recommendations will be presented to campus energy stakeholders. The project has the potential to impact the way we use electricity on campus and could either lead to the justification of the purchase of additional devices for permanent use or to further lines of research and additional recommendations. Other students will be included in the research phases, as participants and research assistants will have access to the devices once the research is complete.

Amount Requested: $1,439.76        Amount Allocated: $1,439.76
Principle Investigators: Karen Haubert, Robert Galman
Faculty Advisor: Dr. Bradley Bazlin

Abstract: The Sunseeker Solar Car team at Western Michigan University is looking for ways to further improve the efficiency of their next generation solar vehicles. The project aims to accomplish their goal through coupling a regenerative braking system to a super capacitor bank in order to more efficiently store braking energy. To do this, the team needs to design the necessary circuitry, software, and hardware. An analysis of the system will be completed to make certain that the extra weight carried by the car is more than offset by the energy recovered from more efficient braking. This work, if successful, may prove to be useful in the hybrid automotive industry as a means to increasing vehicle range.

Amount Requested: $3,065.39  
Amount Allocated: $2,000

10. Sustainability Lecture Series
Principle Investigators: Kathryn Hemmen, Todd Holiquist
Faculty Advisor: Laura Hastings: Assistant Professor on Political Science and Interim Director of the Global and Internationals Studies Program

Abstract: College students at WMU are often unaware of their unsustainable practices or are unsure how to live a more sustainable lifestyle. To educate the student body on sustainability we have proposed a 6-week hands-on lecture series taught by local experts. These six lectures will be on household item repurposing, recycling, how to make a meal from sustainable foods, water conservation, how to garden, and how local actions impact the environment on the global scale. By starting the conversation between students’ interaction with the local community we will foster a community of sustainably here on Western’s campus.

Amount Requested: $609  
Amount Allocated: Proposal Denied

11. LHC Solar Charging Station
Principle Investigators: Mark B McKeon, Latif Eyada Ibr Ibraheem
Faculty Advisor: Denise Keele: Associate Professor ENVS

Abstract: The LHC Solar Charging Station Project is for the installation of a mobile electronic device solar charging station in the LHC. It will be carried out over two phases, the first being in spring semester when research, project assessment, planning and material procurement will happen. The second phase will be the acquisition of final resources and the construction for this project. The overall purpose of this project is to provide students of WMU with location using renewable energy to power their electronic devises such as laptops, cellphones, and tablets. Benefits will be longer lasting, tangible, and intangible. Tangible benefits include financial saving for the university, data, a reduction in university fossil fuels use, carbon emissions. Intangible benefits include an improved in the image of WMU to potential students and in the environmental rankings, pride and awareness of renewable energy amongst students, direct access for students to a renewable energy source that they can easily witness, and an increase in campus wide environmental conscientiousness and culture. The south side of the LHN common room has been chosen because it receives direct sunlight all day, It’s open to the whole student body, is continuously used throughout the day, provides a manageable environment for data collection, and is visible to students on main campus. From the implementation of this project, the university will gain valuable experience and information about the demand for solar energy on campus and the cost/benefits of a solar project.

Amount Requested: $9,048.15
Amount Allocated: Proposal Denied

12. Reusable Bags
Principle Investigators: Baron Hoeve, Aaron Clark, Michelle Schmitt
Faculty Advisor: Laura Hastings: Assistant Professor on Political Science and Interim Director of the Global and Internationals Studies Program

Abstract: One of the challenges facing human interactions with the environment is the use of plastic, in particular plastic bags. We wish to apply for a sustainability grand for $1,101.83 to supply incoming students with reusable totes to be used at Western Michigan University stores, as well as in the community for items such as general merchandise. West Michigan University currently uses over 50,000 plastic
bags per year, at a cost of $12,000. The reusable bags would be distribute to incoming students along with the EcoMugs, or could otherwise be picked up at the sustainability office for a modest fee. Also like the EcoMugs, they could be brought to specified areas possibly for discounts or other store incentives. We would also like to provide students with some information about where they could reuse the bags (Walmart, Meijer, any campus store) and why they should, to be sent out through email or else printed recycled paper. We also suggest labeling the bags with the Western Michigan University logo and provide some information about the sustainability office, so that new student could familiarize themselves with the sustainability efforts at Western Michigan University. If they were to be used in local stores with possible incentives this would help future their sustainability efforts in and around the greater Kalamazoo area as well.

Amount Requested: $1,103.83        Amount Allocated: Proposal Denied

Spring 2014 Student Sustainability Grant Proposals

Total funds requested: $20,349.43 Total funds allocated: $20,349.43

1. Hullabazoo: A celebration of DIY (Do it Yourself)
Principal Investigators: Janet Aladetohun.
Faculty/Staff Advisor: Donald Cooney, Department of social work, Kalamazoo City Commissioner

Abstract: Hullabazoo is a dynamic, inclusive, horizontally organized event that involves all-day local music, a local artisan market, and free workshops throughout the day. Hullabazoo is a true celebration of DIY (Do-it-Yourself) culture. This event is in the heart of campus toward the close of the spring semester, on April 5th. While buds and flowers are blooming, we will unite for our third annual Hullabazoo to provide workshops on topics such as zine making, hand-made book binging, screen printing, bicycle maintenance, herbalism and a panel of local farmers. By providing
workshops, students leave Hullabazoo with new skills, and a small fire of inspiration in their bellies to do things for themselves, instead of relying on super stores and fossil-fueled car culture to meet their needs. The Wesley Foundation of Kalamazoo is donating building use for this project for the third year. The Hullabazoo is the explosive finale celebration at the end of a fun-filled, social justice oriented peace week. The event begins on March 29th and spans until April 5th.

The planning organization is a hub for student activism on Western’s campus. We organize students around issues of social, environmental, and economic justice. We have continuously mobilized students around issues of peace and social justice for over 30 years. Peace Week is an annual spring event on campus, and people keep an eye out for it. Hullabazoo brings together a diverse group of people from campus, and the community to unite around a localized economy, skill learning, creativity and resilience.

Amount Requested: $1,480.89  Amount Allocated: $1,480.89

2. Michigan Mi-Plate Guide
Principal Investigators: Alanna Troyer, Elizabeth Palmer.
Faculty/Staff Advisor: Gary Bischof, PhD, interim Chair, FCS.

Abstract: Sustainability in the food system is an important part of responsible environmental stewardship as it helps preserve the health of both land and people. Consuming more local and seasonal foods can decrease the distance that food travels, reducing carbon emissions. Decreasing the length of time between harvest and consumption of food can also result in greater retention of nutrients. Increasing nutrition in the food supply and reducing harmful pollution are two ways we can support a sustainable food system. It is therefore our goal with this project to increase WMU students’ knowledge of how to select and prepare seasonal foods grown in Michigan in order to promote sustainability.

Based on USDA’s ChooseMyPlate tool, we plan to design and produce the Michigan Mi-Plate Guide, a three-fold brochure which will open up to reveal a diagram of the state of Michigan divided into 4 quadrants, plus the U.P.,
representing five food groups. Text will include lists of Michigan foods from the four seasons, and feature healthy uncomplicated recipes that will appeal to students with limited time and financial resources. It will also explain how their food choices can impact the environment and local economy in addition to their own health. We hope this will encourage students to try new foods and cook more for themselves. The guides can be distributed through sites frequented by all students such as Sindecuse Health Center, Bernhard Center, and the Student Recreation Center.

Amount Requested: $1,800   Amount Allocated: $1,800

3. Solar Car Array Optimization Electronics
Principal Investigators: Vincent Kucway and Karen Haubert.
Faculty/Staff Advisor: Bradley Bazuin, ECE Dept. Faculty

Abstract: Solar technology offers one of the most promising paths to a future of sustainable personal transportation with 100% renewable, zero-emission power. This project involves optimizing the efficiency of the solar array on an all-electric vehicle through the evaluation and improvement of the solar charging electronics. The most vital system on a solar powered vehicle is the solar array, which serves as an environmentally responsible energy source. When designing a high efficiency solar array, an essential consideration is the implementation of a solar array system, amplifying the overall energy efficiency of a solar powered vehicle. The design and fabrication of solar powered vehicles actively demonstrates the capabilities of solar energy for everyday transportation, promoting sustainable energy use and engineering. With the expansion of these capabilities at WMU, students, as well as the surrounding community, are able to engage in the promotion and advancement of these technologies at a more relatable level. Our proposal focuses on procuring multiple custom electronics modules in order to increase the efficiency of our solar array, therefore expanding the capability of our team to reach public events throughout the community while granting
invaluable experience to our members through testing and implementation of these devices.

Amount Requested: $6,321.74   Amount Allocated: $6,321.74

4. Filtered Hydration Station in Wood Hall, Third Floor
Principal Investigators: Shaana Way and Nora Gimpel.
Faculty/Staff Advisor: Brian Peterson, Assistant Professor Environmental and Sustainability Studies

Abstract: Over 60 million plastic water bottles are sent to landfills or are incinerated each day in the United States. To reduce these destructive environmental practices, WMU endorses sustainable efforts that benefit students and faculty alike. Several buildings across campus have hydration stations that quickly dispense clean, refrigerated water that has reduced metallic elements and improved taste. However wood hall lacks such an apparatus. The third floor of wood is home to several science departments that endorse sustainable efforts, including GEO, CHEM, BIOS, ENVS, and PSY departments. This key location would greatly benefit the faculty and students that operate in this high-traffic area while simultaneously raising awareness of WMU’s sustainability endeavors. Additional benefits of this modification include hands-free refills, which reduce contamination. Filtered water drinking fountains such as the Elkay Hydration Station will discourage purchasing bottled water, reduce plastic waste, and represent the university’s public and proactive position to foster sustainability.

Amount Requested: $7,500   Amount Allocated: $7,500

5. Insect Walls and Workshop
Principal Investigators: Jared Aslakson and Kenneth Crocker.
Faculty/Staff Advisor: Stephan Keto. Natural Areas and Preserves Manager
Abstract: In recent years, populations such as bees and wasps have been declining. Although the reasons for these trends are manifold, a major contributing factor is habitat loss. Insects, particularly bees and wasps, provide a major service through pollination and play a number of roles enhancing ecological integrity and stability. Although pollination is associated primarily with honeybees, solitary bees and wasps that are native to Michigan provide the same services. Additionally, these insects have a special relationship and are especially beneficial to native plants. To that end, this grant would fund the construction of three insect walls in addition to a construction and educational workshop available to students and the public. Insect walls are constructions designed to provide habitat for native, solitary bees and wasps. Two of which would be installed at the Gibbs House property. The third would be installed at the community garden at the Stadium Drive apartments. These locations would be ideal since both have vegetable and native gardens that would benefit from the pollinating services provided by these insects, including a food forest planned at the Gibbs House property. The workshop would be held at the Gibbs property during one of the summer sessions, and would include the construction of the three walls to be installed on campus, in addition to miniature walls that can be taken home by participants. Not only would this encourage beneficial insect populations on and off campus, it would spread the university’s image of commitment to sustainable agriculture.

Amount Requested: $1,672.80    Amount Allocated: $1,672.80

6. Permanent Recycle Signs for Welcome Week
Principal Investigators: Adam Williams.
Faculty/Staff Advisor Dr. Heather McGee, Psychology

Abstract: The beginning of the new school year can be a busy time for college students. The university has less than a week to move all of the students into the dorms. To act more efficiently, the university provides big recycle bins in front of each dormitory. In the beginning of the year, all the students have
brand new things such as laptops, TVs and refrigerators that are still in cardboard boxes that came with the purchase. Within these cardboard boxes there is Styrofoam, plastic, bubble wrap and other materials that can be recycled. The biggest opportunity for wasting and recycling is when the students are moving into the dorms. The bins that are provided have inadequate labeling, which results in confusion for the students. One solution is to identify waste and recycle respectable by having big signs in front of them that identify what type of waste goes in each. This proposal has the opportunity to reduce the landfill waste, and increase the recycle waste during moving week on campus. Making the signs reusable will also reduce the stress and time put into making signs each year for the recycle bins. This proposal will have a major impact on the environmental footprint of our campus.

Amount Requested: $1,074       Amount Allocated: $1,074

7. Western Student Association T-Shirt Swap Grant Proposal
Principal Investigators: Connor Smith.
Faculty/Staff Advisor: Chris Sligh

Abstract: Starting in the 2009-2010 school year, the Western Student Association developed the t-shirt swap that took apparel from other campuses, such as the University of Michigan, Michigan State University, etc., and traded it for a brand new WMU shirt. We are proud to be bringing this pride initiative back to campus; however things are going to look a little different this year. We have learned that t-shirts can be pretty harmful for the environment and also not all students have apparel from other schools to swap. The WSA has decided to partner with “Earth Week” to give away safer, organic shirts to students in exchange for a pledge to do something good for the environment. We will also encourage the donation of any gently used clothing to give to shelters and organizations within the Kalamazoo community.
Fall 2013 Student Sustainability Grant Proposals

Total funds requested: $15,386.45 Total funds allocated: $13,936.45

1. Reinvestment in our WMU Community Garden

Principal Investigators: Weston Hillier and Scott Warner. Faculty/Staff Advisor: Todd Barkman, Assistant Professor, Department of Biological Sciences.

Abstract: In this proposal we seek to promote a campus culture of sustainability by reinvesting in the Stadium Drive Community Garden in 2014. Management will be conducted by Students for a Sustainable Earth and BioClub (Dept. of Bio Sciences). These organizations have a long history on campus, value sustainability and already have a stake in the community garden. Through educational workshops, community events, collaborative work and provision of a space for growing food, we seek to spread the spirit of sustainable food production and preservation throughout campus and to the wider community. The ever-growing awareness of foods impact on our health, community relationships, and economics is evident right here in Kalamazoo in many wonderful ways. Specifically, KVCC has proposed to build a $42 million state of the art food sustainability and wellness campus right downtown. We want to see WMU continue to take action on these important topics as other institutions.

The community garden has been well established since 2010, when it was founded as a Student Garden Organization project. Stewardship passed to the Office for Sustainability (OfS) in 2012, which maintained it through the 2013 season. As the OfS Prepares to build a production garden at the Gibbs House, they are ready to pass the community garden management over to interested student organizations. As sustainability-minded organizations with lots of internal interest, BioClub and SSE are logical successors in this endeavor.
Our budgeting seeks to reflect WMU’s commitment to being leaders in ecological and cultural sustainability. By using organic methods free of synthetic chemicals for the need of transportation and packaging, we will set an example of ecological responsibility. Through comprehensive plot promotion, we hope to gain cultural diversity among participants, which will facilitate an exchange of unique plant varieties and of sustainable farming practices. Taken together, we hope to bring WMU to the forefront of local and sustainable campus-based food production.

Amount Requested: $4,973.83 Amount Allocated: $4,973.83

2. Redesigned Hydraulic Bicycle For The Chainless Challenge
Principal Investigators: Luis Morales and Juan Hernandez.
Faculty/Staff Advisor: Jorge Rodrigues, Ph.D., MBA. Advisor
Department/Program: Industrial and Manufacturing Engineering

Abstract: One aspect that is extremely important in sustainability all over the world is transportation. Developed societies have come to depend on transportation to have economic and social standards, but without the proper attention to the environment.

A Hydraulic bicycle is a chainless bicycle that transfers power to the pedals by means of a liquid passing through tubes from hydraulic pump to hydraulic motor and back.

Due to demand for energy efficiency and environmentally friendly transportation, we are seeking to improve the hydraulic and drive train design for increased energy utilization and regeneration. Also to validate the efficiency in simulated competition conditions and for the first time, to design and fabricate the frame of the bike, due to previous issues, such a spacing for valves, pedals, hoses, etc.

The goal of this invention is to provide a drive mechanism that could be much more efficient. All mechanical elements of this drive mechanism that require lubrication are fully enclosed and thus eliminate all the well known disadvantages of current
drive chains; namely, exposed grease lubricated chains with the potential of staining and jamming cloths, low driving efficiency and high maintenance requirements. Added advantages are, a considerably improved driving efficiency, simplifies drive wheel change out, a simpler frame design and zero maintenance on any drive component. In addition to the efficiency gain the mechanical drive components, is confirmed that the drive ergonomics of this new drive could be better than a conventional bicycle crank drive. There is no penalty, when compared to a convention bicycle crank drive.

The proposed project complements the design and fabrication of the transportation vehicle; it develops an implementation plan to use such vehicles in WMU campus. These can be considered as a wonderful initial step towards having a campus wide culture in terms of alternative non-motorized vehicles.

Amount Requested: $4,750   Amount Allocated: $4,750

3. Assessment and management plan for the dwarf hackberry, savanna remnant and urban forest at Western Michigan University

Principal Investigators: Dean Simionescu, Bruce Howe.
Faculty/Staff Advisor: Steve Keto, Natural Areas and Preserves Manager

Abstract: Recently a dwarf hackberry (Celtis tenuifolia) was discovered growing on a sandy hillside located on Western Michigan University (WMU) property next to the Stadium Drive apartment complex. The ecosystem where this uncommon tree species is growing is reminiscent to a pre-settlement savanna, now nearly absent to the Kalamazoo area. A study done by WMU researchers based on old U.S. Public Land Survey information were able to create a map showing vegetation in Kalamazoo county during the 1820's. The new data shows that this spot lies at the convergence of what was believed to be an oak savanna and burr oak opening before settlers began to transform the landscape (Appendix A). This urban green space has sandy soil and maintains a mix of dense forest, woodland and open savanna area. Since the discovery in 2010 of C. Tenuifolia by Dr. Todd Barkman, more individuals have been identified on the land. This tree species has been recorded in Michigan only 30 times (populations and individuals) in 6 different
counties since 1974 and makes this finding the first in Kalamazoo County to be recorded (MNFI). In Michigan C. Tenuifolia is classified under special concern status and is considered ‘rare or uncertain’ yet is not legally protected. The land sits on the lower slopes of the remnants of the Kalamazoo Psychiatric Hospital, holding historic value but also acts as an important area for the natural storm water drainage. This urban green space is an important aspect to students living in the Stadium Drive apartments, the community garden and the overall aesthetic appeal that WMU provides to its students and its community. A tree inventory was done with a GPS unit and a point data collection with a new mobile application by Avenza (Figure 6). The data will be evaluated with spatial-temporal analysis GIS techniques. This report will highlight C. Tenuifolia and the ecology of the savanna remnant, draw out the interconnectedness of this property with the University as a whole, and layout a management plan to preserve and improve the land in accordance with the WMU Tree Care Plan and Policy standards (Appendix G).

Amount Requested: $4,212.57    Amount Allocated: $4,212.57

4. Reducing Western Michigan University’s Carbon Footprint
Principal Investigators: Christopher A. Roth.
Faculty/Staff Advisor: Duane Hampton, Geosciences.

Abstract: Greenhouse gasses, when in our atmosphere, trap heat and increase global temperatures. Over 50% of these greenhouses gas emissions are in the form of CO₂ and generally come from coal or gas-fired power plants and vehicular traffic. With the EPA edging toward new taxes on power plants that dump greenhouse gasses into the atmosphere, and considering that Western Michigan University (WMU) generates all of its power by burning gas, it is financially as well as environmentally important for WMU to find a way to limit its carbon footprint. Carbon sequestration is an upcoming technology that could be used to reduce CO₂ emissions created by the deep saline aquifer that has been proven reliable in the storage of waste materials. This project will focus on the creation of a steady state CO₂ sequestration model that can be used to estimate the storage efficiency of the Mt. Simon Aquifer. Money from this grant will be used for the applicant to receive proper training in creating this model using GEM. Upon completion of this research,
WMU will have a valid estimate of the sequestration efficiency of the underlying aquifer. In addition to environmental benefits, as EPA standards become stricter, it is important that the university is prepared to limit and reduce its carbon footprint before it becomes a taxable issue.

Amount Requested: $1,450   Amount Allocated: $0

5. Rain Water Collection Feasibility Study
Principal Investigators: Kyle Simpson.
Faculty/Staff Advisor: not identified

Abstract: This Student Sustainability Grant will evaluate the potential for implementing rainwater collection systems across Western Michigan University property. Areas included in the study will be: Main Campus, Oakland Campus, Parkview Campus, Student Housing, The Office for Sustainability, and the Gibbs House. The methods will include in-depth research into existing and prior art, implementation of similar programs and structures in the United States and abroad, potential filtration and sterilization techniques, potential legal considerations, and cost evaluations for future implementation to the specific areas mentioned prior. This feasibility study will be concluded with a technical paper, reviewing aforementioned methods and conclusions, and a PowerPoint presentation of the study’s results to any interested parties. This study will not yield any physical structures by the time of completion, but will instead serve as a fundamental base for future considerations in this area of research while educating the local community. Rainwater collection is abundant throughout many parts of the world, and for many it is the only source of portable water. WMU currently pipes in all the water the campus uses via the city mains, which comes with both a monetary cost and a cost to the environment. Kalamazoo water has a well-deserved reputation for being un-ideal, due to the slew of contaminants that are detrimental to local human, animal, and environmental life. Rainwater often contains less contaminant than piped city water, although is still prone to problems of its own. This feasibility study for a rainwater collection program and necessary structures at WMU offers a more self-reliant, self-sustainable, and a potentially healthier and more cost-effective solution.

Amount Requested: $0   Amount Allocated: $0
Spring 2013 Student Sustainability Grant Proposals

Total funds requested: $35,050.70 Total funds allocated: $35,050.70

1. WMU Plant Policy Initiative

Principal Investigators: Karma Hassell and John-Luke D’Ambrosio. Faculty/Staff Advisor: Scott Smith, Assistant Professor, Geography.

Abstract: The advancement of sustainability on the campus of Western Michigan University is an effort that benefits all members of the University community. New sustainable projects and initiatives are prevalent and can be seen at this level in many capacities. This proposal provides an outline of a sustainable design project that will result in an increase in the biophilic elements seen on campus. Increasing the amount of plants within indoor environments has sustainable benefits that are realized in many ways. Associated research shows that plants-filled buildings contain a substantially less amount of air-borne mold and bacteria. Research has also shown positive benefits as to plants’ abilities to purify the air of indoor pollutants such as CO2 and Benzene. This proposal outlines the installation of indoor plants inside a small area of Wood Hall. The current absence of any such plant installation in Wood Hall makes this project a well-suited fit for such proposal. Using wall mounted plants as well as a Balconera (box) planters, this simple initiative will establish a presence of “greenness” in Wood Hall that is currently absent and will benefit all who work and study there. Aside from the environmental and health aspects of such green installations, this project will substantially increase the aesthetics associated with Wood Hall. Though this aspect of the proposal it is the hope of the authors that this project will provide for an increased awareness of sustainability on campus though exposure and knowledge of such sustainable projects.

Amount Requested: $4,375.70  Amount Allocated: $4,375.70

2. High Efficiency Low-Flow Showerheads
Principal Investigators: Daniel Nowak and Mayra Yat Aguilar. Faculty/Staff Advisor: Scott Smith, Assistant Professor, Geography.

**Abstract:** Water consumption in the United States is among the highest around the world. Americans use roughly 43 billion gallons of fresh water everyday. Western Michigan University is no exception to this trend. Looking for new ways to reduce our carbon footprint is what WMU is all about. This proposed pilot project aims to do just that. By renewing the showerheads of Britton and Hadley Halls in the fall of 2013 with low flow showerheads, we plan to show that with little cost to the university we can make a substantial difference in our move towards the goal of WMU’s 5-year comprehensive master plan for year 2014-2018. With the implementation of the pilot project, we expect to save 2,592,000 gallons of water annually with just 150 low flow showerheads with an output of 1.5 gallons per minute (GPM) as opposed to the current showerheads that average 3.0 GPM. With the highest density living situations for on campus living, this pilot project would cost roughly $3,800, an extremely sound investment as it would be able to pay itself back within a year based on energy savings, reduction in carbon emissions and water consumptions.

Amount Requested: $3,800.00 Amount Allocated: $3,800.00

**3. Apiculture Training Installment for Continued Horticultural Research**

Principal Investigators: Nicholas Wikar and Weston Hillier. Faculty/Staff Advisor: Dr. Lawrence John Connor, Founder of Wicwas Press.

**Abstract:** With our proposal we are trying to setup an apiary horticulture research installment on Western Michigan University’s property. The proposal was authored by the members of SSE as a collaboration with the Office for Sustainability, Biological Sciences Department, Landscaping Services, and the Environmental Studies Department. Though this research, we aim to build upon the Office’s existing garden space and future goal of a permaculture system. Bees play a vital role in many biological systems, specifically as pollinators.

We are very pleased to have the opportunity to work alongside our advisor, Dr. Lawrence Connor, who is a world-renowned entomologist, author, and publisher.
With a Bachelors of Science, Masters of Science, and a PH.D from Michigan State in Entomology, Dr. Connor will help foster a working relationship between the student researchers and the Biological Sciences and Environmental Studies Department of Western Michigan University. Our aim will be to integrate this research installment into the future curricula, with special events open to both undergraduate and graduate students, as well as the community. Though the employment of train-the-trainer educational techniques, it is our hope that is project will be a long-term opportunity, for individuals to share the materials and rotate throughout the years to ensure increased apiculture literacy. These educational opportunities will include direct beehive maintenance; microscopic lab analysis of bee anatomy, and the exploration of the potential benefit of harvestable resources such as honey and propolis form the hives.

Amount Requested: $11,065.00 Amount Allocated: $11,065.00

4. “I AM WMU” T-Shirt Swap

Principal Investigators: Nicole Davenport and Christine Davenport. Faculty/Staff Advisor: Chris Sligh, Director of Student Activities and Leadership Programs.

**Abstract:** Each year, Western Michigan University students are provided with the opportunity to receive t-shirts that proudly promote the university's organizations and campus programming. These basic t-shirts being disbursed do not adequately represent WMU’s sustainability initiatives. We propose for the Western Student Association (WSA), the student body representation, to initiate the change to a more eco-friendly t-shirt being provided by Western’s campus. This will be done on April 17, 2013, where WSA’s Student Pride Committee will facilitate a “T-Shirt Swap.” On this day, any student will have the opportunity to exchange either apparel from another university or make a documented pledge to be more sustainable for an eco-friendly long-sleeve “I AM WMU” t-shirt. This exchange will serve as an example for Western Michigan University that students are acknowledging that basic t-shirts are not sustainable for the long-term mission of this University and initiate the discussion for eco-friendly t-shirts a normal requirement for this campus.

Amount Requested: $1,535.00 Amount Allocated: $1,535.00
5. **Office for Sustainability Green Wall**

Principal Investigators: Elise Crafts and Curtis Aardema. Faculty/Staff Advisor: Scott Smith, Assistant Professor, Geography.

**Abstract:** This proposal details the design and implementation of a green wall on the western exterior of the Office for Sustainability building. A green wall in this location will have many benefits, including: reduced air, noise, and water pollution; reduced heating and cooling costs for the OfS building; and increased educational opportunities for all WMU and non-WMU peoples who utilize the Howard Street and West Michigan Avenue corridors and associated public realm. Using a recycled trellis provided by WMU Landscape Services or other material, the design will incorporate rainwater harvesting adjacent to the wall. The project planting materials will be determined upon collaboration with the Department of Biology and Environmental Studies to offer educational opportunities as well as native species plant selection. Additionally, the Department of Fine Arts will be consulted for final project design that is both accessible and informative to a diverse population. Landscape services will provide ongoing maintenance including watering, pruning, and general repair as needed.

Amount Requested: $9,750.00 Amount Allocated: $9,750.00


Principal Investigators: Anthony Haduch and Brandy Morgan. Faculty/Staff Advisor: Chris Sligh, Director of Student Activities and Leadership Programs.

**Abstract:** The Forum [Amphitheater] Design Initiative is a special project driven entirely through student efforts. Working with administrators of Western Michigan University to repurpose the amphitheater space, located in the center of Dunbar, Knauss, and Friedman Hall. Currently, this area has no defined use. We as a student body are working toward further defining its purpose as a location for outdoor events to be held. The purpose of this grant request is to obtain funding to fully implement “stage one” of the cosmetic renovation to the amphitheater event space.

“Stage one” of this cosmetic renovation will consist of a WMU student designed mural, brown and gold tapestry, and assorted vegetation to bring life to the space.
Since this venue is meant to be a point of pride for our university, student(s) from our art program will facilitate the design of the mural. This stage of implementation will use the artistic theme of “Western Values”. These artistically represented values will embody what it means to be a student here at Western Michigan University: academics, student involvement, diversity, university pride and, of course, sustainability. There will be a professional consultant provided by facilities management to monitor the realistic approach toward the completion of the mural.

Due to the timing of this grant application, we are unable to request funding for the supplies to design the mural. Instead, we are asking that the sustainability grant specifically fund the essential finishing touches to enhance the space. These items are those listed as assorted plant life, including our University Flower the Brown-Eyed Susan, as well as, WMU themed tapestry that will overhang across the top of the amphitheater. If this budget is approved, we will be sure to purchase the most sustainable and durable fabric for the use of this design. Facilities Management has the resources to sort through vendors that will fit the mission of this sustainability initiative.

Amount Requested: $4,525.00 Amount Allocated: $4,525.00

Fall 2012 Student Sustainability Grant Proposals
Total funds requested: $13,269.00 Total funds allocated: $13,269.00

1. Aquaponics / Black Soldier Fly Larvae / Vermicomposting

Principal Investigators: Brian Balconi and Tyler Shelton. Faculty/Staff Advisor: Jorge Rodriguez, Associate Professor, Industrial and Manufacturing Engineering.

Abstract: Aquaponics is a food production system of that combines hydroponics—growing plants without soil, and aquaculture —fish farming. Fish wastewater is utilized as a nutrient source for plants grown in media, and plant filtered water is then cycled back to the fish. Specifically, bacteria convert fish effluent ammonia into nitrogen that is plant soluble as nutrients. Aquaponics is a developing technology, gaining momentum in food production without the use of synthetic chemicals. We
intend to expand upon aquaponics by incorporating vermiculture and black soldier fly larvae. Pre-consumer organic food waste can be directly fed to worms in vermicomposting. Vermicomposting converts this food waste into nutrient-rich castings. Castings can be applied to a garden or used as media for rooting our aquaponics plants. A portion of the worms will be used as fish feed in the aquaponics system. Black soldier fly larvae will consume lipids and fats that the worms cannot. The larvae will produce a black residue that is very palatable for the worms. The worms then further convert the residue into worm casts, while larvae/fly protein will be used as fish feed. Currently the Office for Sustainability is transitioning into a permaculture approach of food production. In permaculture systems thinking is highly valued. The incorporation of the systems above will allow for research into comprehensive waste management. This system will also allow us to research an alternative to energy and pollution intensive industrial agriculture, which is a major contributor to current global climate change.

Amount Requested: $4,999.00 Amount Allocated: $4,999.00

2. Alternative Energy Vehicles, Make it Fun!

Principal Investigator: Baxter Gill. Faculty/Staff Advisor: Jorge Rodriguez, Associate Professor, Industrial and Manufacturing Engineering.

Abstract: Transportation is a topic of extreme importance in sustainability efforts all over the world. Society has come to depend on transportation in order to have economic and social standards, but its dependence on fossil fuels is the largest negative effect on the environment. Fortunately there have been strong efforts in the area of alternative energies, like electric and solar vehicles, and in the area of energy storage, like flywheels. We are proposing the design, fabrication and benchmarking of vehicles (go-karts) that use these technologies. One vehicle will have the capability to operate with electric and/or solar energy, and the second one with a standard gas-engine, but with a modification to include the flywheel concept. Two goals are pursued with this project, that these vehicles will be used to I) benchmark performances under different conditions, and II) showcase during student events to raise awareness about sustainability and alternative energies, in a fun way. Every young person is attracted to driving and competition, and these unique vehicles will be great educational tools because students will have the opportunity to experiment with them in future projects, and at the same time they
will be great engaging devices that will capture young minds and will put that seed about sustainability and alternative energies in their brains. The group of students proposing this project have been involved with the SAE Baja and Formula competitions, and firmly believe that the impact that these vehicles will have in the College and WMU will eventually be reflected in the global environment because they have learned about green transportation while having fun.

Amount Requested: $3,495.00  
Amount Allocated: $3,495.00

3. Urban Transportation Tricycle Prototype Using a Sustainable Open Source Design

Principal Investigators: Adam Hill and Michael Robinson. Faculty/Staff Advisor: David Middleton, Senior Instructor, Industrial and Manufacturing Engineering.

Abstract: Bicycling is an incredibly efficient means of transportation. When cycling at relatively fast speeds, it is the most efficient form of transportation, more efficient than an automobile or even walking (Exploratorium, 2012). Thus, experimenting, improving, and cultivating awareness of different cycling options is a great method of increasing our level of sustainability on campus and in the community. We propose to build an urban transportation tricycle in order to provide alternative options of transportation to students while exploring different technologies that can assist these methods of transportation. Our design team will build a recumbent tricycle frame using raw materials and materials from other bicycles; it will be lightweight, have room for storage, and be usable in adverse weather conditions. This prototype will serve as a platform to which other technologies can be added to improve functioning and to explore alternative transportation options. Our electrical engineering team will be outfitting the bike with the first of these technology options – an electric hub motor system and a hydrogen fuel cell to provide the vehicle with clean power to assist the rider and extend the range of its use. When finished, the plans will be made available for free as an open-source to any student or community member who wishes to construct a similar vehicle. Somewhat similar vehicles are available on the market today but
are impractical due to their high cost or weight. Ideally our tricycle could be made for comparatively little money, thus becoming an affordable option for a student to build and use for daily commuting.

Amount Requested: $4,775.00  
Amount Allocated: $4,775.00

Spring 2012 Student Sustainability Grant Proposals
Total funds requested: $11,648.59  
Total funds allocated: $10,928.00

1. Prototype of a Hybrid Solar Updraft Tower

Principal Investigators: Josef Imesch and Adam Haslinger. Faculty/Staff 
Advisor: Jorge Rodriguez, Associate Professor, Industrial and Manufacturing Engineering.

Abstract: This project involves the design and fabrication of a prototype Hybrid Solar Updraft Tower (HSUT). This tower uses the sun’s light to create energy through the use of a greenhouse, chimney, and turbine. The sun shines onto the greenhouse, heating the air within. Concentration techniques will be utilized (Hybrid) by having lenses mounted on top of the greenhouse to focus light onto mirrors. These mirrors will then redirect the light onto the tower, where hot air will rise and drive turbines to create electricity. Solar updraft towers have been tried before, with mixed results, but none of them utilized lenses and mirrors. This new design will be more efficient and, hopefully, competitive with other forms of green energy. Green energy is growing more important every day as power plants spew more and more pollution into our atmosphere. This tower is another step toward understanding the capabilities of a full size HSUT, and will be used as a proof-of-concept. We currently have solar panels and a wind turbine on campus. The addition of a prototype HSUT would show a stronger commitment to becoming a more sustainable campus. To the best of our knowledge, we would be the only campus with a prototype of such a tower. This would set us apart from other universities. This prototype would be used to encourage current students to become involved in similar projects. It would also be used as a showpiece to get
perspective students more interested in coming to WMU.

Amount Requested: $2,925.00  
Amount Allocated: $2,925.00

2. Botany Club

Abstract: Botany Club is based around giving the WMU population a chance to learn and grow plants in a student led discussion about how and what to do. Using the money given to the RSO the goal will be to help start and situate the club in its finances; giving the right environment and supplies necessary to thrive.

Amount Requested: $720.55  
Amount Allocated: $0.00

3. New Student Orientation: Strides Toward Becoming Sustainable

Principal Investigators: Anthony Haduch and Brian Donahue. Faculty/Staff Advisor: Steve Booher, Orientation Coordinator, First-Year Experience.

Abstract: The First-Year Experience Program is moving toward making changes within its programs to become more sustainable. Our programs interact with all incoming first year students and their families. With these interactions we are able to provide a proper first impression that students can anticipate while attending Western Michigan University. As an office, we are adapting our programs to utilize more sustainable practices. Through this proposal an explication of shifting from plastic ponchos to durable and reusable umbrellas will be made. A discussion of how this will enhance the environment of Western Michigan University, as well as how our department plans to express the importance of the sustainability efforts at both our programs and the University are progressing toward.

Amount Requested: $3,125.00  
Amount Allocated: $3,125.00

NOTE: Although this abstract reads as though the proposal came from a WMU department, it was authored by an undergraduate student and supported by a graduate student in keeping with SSG funding guidelines.

Principal Investigators: Izaak Blankenstijn and Meredith Atchison. Faculty/Staff Advisor: Kate Bates, Assistant Director, Student Activities & Leadership Programs.

Abstract: The RSO Financial Workshop has been conducted for many years for students and RSOs that apply for SSG, WSA-AC, GFAC, and SCC funds. Each academic year, RSOs and other grant receivers are required to attend this workshop. Traditionally, during these workshops mandatory reading materials have been handed out in paper format of approximately 36-40 pages. With funding from the SSG, students that attend these workshops will receive these reading materials, payment forms, sample forms, sample contracts, presentation, RSO Handbook, etc., in electronic format via a Carbon Neutral USB-Drive made partially from hardwood from a FSC certified source. This potentially reduces the amount of ink, electricity, and paper for this project by over 15,200 pages per academic year, thus further increasing the sustainability of the University and its undergraduate and graduate students. The USB-Drives will bear a logo or other acknowledgement indicating that this project was funded by the SSG-AC, hence promoting and bringing awareness to the culture of sustainability at WMU.

Amount Requested: $4,878.00     Amount Allocated: $4,878.00

Fall 2011 Student Sustainability Grant Proposals
Total funds requested: $45,830.00 Total funds allocated: $31,803.00

1. Prototype of a Dual-Purpose Assisted HP Transportation Vehicle for Campus

Principal Investigators: Kevin W. Peabody, Shane Ambler, Ryan Mass, and Bill Burd. Faculty/Staff Advisor: Jorge Rodriguez, Associate Professor, Industrial and Manufacturing Engineering.

Abstract: Sustainability has become one of the biggest issues in the last decade. A specific aspect of extreme importance in sustainability is transportation. Developed societies are highly dependent on transportation for economic and social standards, but without attention to the environment.
We are proposing the design and fabrication of a prototype of a dual-purpose assisted human powered transportation vehicle for campus use. It will be a prototype, since it will be a single unit that will serve as a proof-of-concept, it is dual-purpose because the goal auxiliary power capabilities to fulfill requirements, and it is a vehicle, which implies at this point that it will be “something that moves”, the alternatives (i.e., 2-, 3-, or 4-wheel vehicles) will be evaluated, and the final vehicle will fulfill safety and road regulations. The proposal considers as well developing an implementation plan to use such vehicles on campus.

The plan for the design will follow a standard engineering design process, and the budget covers mainly materials and components. This proposal can be considered as a wonderful initial step towards having a campus wide initiative in terms of vehicles, and an additional step that supports existing initiatives on campus (e.g., borrow a bike) or in the community (e.g., bike paths). The benefits for sustainability on campus are great, by showing fun, healthy options, it is expected that more people will be involved and eventually the campus culture will change. We just need support to get the ball rolling.

Amount Requested: $2,700.00 Amount Allocated: $2,700.00

2. Vermicomposting: Reducing Waste and Promoting Sustainability

Principal Investigators: Dean Simionescu and John W. Lee Faculty/Staff Advisor: Matthew Hollander, Coordinator of Sustainability Projects, Office for Sustainability.

Abstract: Vermicomposting is a method of converting organic waste into a natural fertilizer using microbes and earthworms. This method of waste conversion has gained popularity across the globe for its ecological and economical benefits. As food waste is consumes, worms produce excrement, called castings, which are further broken down by microbes. These castings provide nutrients for plants to grow larger and yields more produce and can even help deter pests and insects (Perumalsamy). The castings are often
turned into a compost tea, which can then be sprayed for easy application. There is already ongoing research on campus for compost tea using a 150-gallon brewer located at the Gibbs house. The compost tea produced will be used by the Student Garden Organization (SGO) and will allow us to explore the potential for business and municipal integration. Establishing a small-scale vermicompost facility on campus will allow students to learn the processes that comprise decomposition, allow for experiments to further explore and expand the limits of vermicompost capabilities while producing a super nutrient-rich fertilizer.

Amount Requested: $3,868.00  
Amount Allocated: $3,868.00

3. Used Bike Rental Program

Principal Investigators: Brian Oswald and Zach Waas Smith. Faculty/Staff Advisor: John Schmitt, Business Consultant, Haworth College of Business.

Abstract: In order for WMU to increase its sustainability, it must reduce its carbon dioxide emissions, one third of which come from transporting alone (Bessey, Braman, Davis, 2010). While the university is making great strides toward reducing carbon emissions, more must be done in the way of transportation reorganization if WMU hopes to become a leader in sustainability. Cycling is not only a sustainable mode of transportation, but it promotes positive health and physical condition of riders, improves air quality, requires very little infrastructure (compared to cars), and contributes to social inclusion (Grabrow and others, 2011; Engbers, Hendriksen, 2010). STEED, a registered student organization (RSO) at WMU, focuses on the advocacy of non-motorized transportation (NMT) through education and empowerment. The Bike Stable, who works directly with STEED offers in-shop services such as maintenance, repair education, and tool accessibility. The Bike Stable has already made a headway toward a bicycle rental program in OCTOBER of 2011. The Bike Stable worked with WMU Public Safety to select 8 bikes from Public Safety’s collection of abandon bikes which are now bound for eventual rental. However, the components on the bicycles have become very weathered and rusted. While The Bike Stable will work to reuse and
salvage any usable parts on the bikes, many of the components will require replacement to ensure safe operation of the bikes. The goal of this project is to work with The Bike Stable to provide a bicycle rental program to expand services beyond the physical confines of our on-campus shop.

Amount Requested: $4,996.69 Amount Allocated: $5,096.69 (SSG-AC allocated $100 additional funding for program promotion)

4. Increasing Recycling: Prompts & Response Effort

Principal Investigators: Kathryn Kestner, Elian Aljadeff-Abergel, and Yannick Schenk. Faculty/Staff Advisor: Stephanie Peterson, Associate Professor, Psychology.

Abstract: The purpose of this study is to the effectiveness of two interventions for increasing appropriate recycling and trash sorting in Wood Hall. The first intervention will use visual prompts/cues appearing or the existing recycling and trash stations in the hallways on the first and second floors of Wood Hall. These prompts will include more detailed waste-sorting information in order to increase appropriate recycling and decrease in errors. The second intervention will be the addition of lids on top of existing classroom trashcans to increase the effort of throwing material into classroom trashcans to encourage individuals to instead choose the less effortful response of using the open recycling/trash centers in the hallway. An additional prompt will appear on the classroom trashcans to; indicate the recyclable materials should be disposed of in the appropriate cans in the hallway. There are no recycling receptacles in the classrooms; individuals using the centers in the hallway will come into contact with the opportunity to recycle. Our hypothesis is that providing detailed waste sorting information in the hallway receptacles will increase appropriate sorting while reducing errors. We hypothesize that the additional component of increasing the response effort involved in the use of the classroom’s trashcans will further increase appropriate recycling and waste disposal.

Amount Requested: $858.40 Amount Allocated: $858.40
5. Earth Hour 2012

Abstract: Earth Hour has become a global movement that raises the awareness of sustainability in a monumental fashion; there is no other event worldwide that brings so many people together to support sustainability (currently 1.8 billion). While they might not physically be together, we are united as one for this one time a year where people all over the world are fighting for the same cause, sustainability.

Surprisingly the city we think has proven time and time again to be a frontrunner in modernization and innovation has let this spring event slip through their fingers. However, it’s finally time that Earth Hour and its followers inhabit Kalamazoo.

Earth Hour takes place on March 31, 2012 at 8:30. At this time the lights go off, and I mean this literally. The goal of this event is to power down the ENTIRE city, which means cars, buses, businesses and anything else that uses energy. During this hour a festival is held to celebrate the generous act that is taking place, to come together as a community and of course to fill the void that our technology driven lives are missing without instant connectivity.

Amount Requested: $9,990 Amount Allocated: $0.00

6. RSO Financial Workshop USB-Drives

Abstract: The RSO Financial Workshop has been conducted for many years for students and RSOs that apply for SSG, WSA-AC, GFAC, and SCC funds. Each academic year, RSOs and other grant receivers are required to attend this workshop. Traditionally, during these workshops mandatory reading materials have been handed out in paper format of approximately 36-40 pages. With funding from the SSG, students that attend these workshops will receive these reading materials in electronic format via USB-Drive. This potentially reduced the amount of paper for this project by 15,200 pages over academic year, thus further increasing the sustainability of the University and its undergraduate and graduate students.
7. 2011 Student Garden Organization Grant Proposal

Principal Investigators: William H. Derouin and Kevin Martini. Faculty/Staff Advisor: Matthew Hollander, Coordinator of Sustainability Projects, Office for Sustainability.

Abstract: As Western Michigan University’s Student Garden Organization (SGO), our proposal represents the continuation and expansion of currently existing sustainability projects associated with Western Michigan University’s gardens at the Gibb House and on Stadium Drive. We seek to create opportunities for students and Kalamazoo-area residents to become better educated about sustainable options for food production through direct, active learning experiences. At the same time, we will be developing and maintaining gardens capable of supplying WMU catering services with sustainably grown produce, with year-round provision of herbs made possible through collaboration with the Finch greenhouse. Additionally, we seek to create a conservation area to protect native Michigan biodiversity, while providing a relaxing and inviting atmosphere, conductive to community outreach programs, including educational events and activities. Ultimately, our goals are to increase overall sustainability at WMU and expanded outreach to a larger segment of WMU’s student population.

Amount Requested: $9,992.00  Amount Allocated: $9,992.00

8. The Campus Beet’s Weekly Meal

Principal Investigators: Brian Balconi and Michelle Tomasko. Faculty/Staff Advisor: Matthew Hollander, Coordinator of Sustainability Projects, Office for Sustainability.

Abstract: The Campus Beet is an initiative to begin a student-led café on Western Michigan University’s campus. The Campus Beet will focus on providing sustainable, healthy food choices and providing menu items that cater to special dietary needs. The Campus Beet will attain these goals through
sourcing food from local and/or organic vendors, planning menus that reflect the seasonality of produce on the region, collaborating with on-campus farming initiatives to source items. Menu items will cater to gluten and/or dairy-intolerances, as well as gain and demonstrate competence in regularly preparing and serving food from a licensed kitchen.

Amount Requested: $9,288.78   Amount Allocated: $9,288.78

Spring 2011 Student Sustainability Grant Proposals
Total funds requested: $22,308.58

Total funds allocated: $19,384.58  1. Evaluation of University Residence Halls on Utilities

Abstract: The price of utilities continues to climb throughout the world, and it is no different for on-campus residents of Western Michigan University. With costs constantly rising, universities are being forced to raise the price of student housing to match the demands of growing energy costs. However, I believe we can curve the demand in cost increases by giving money back to nearly 5,000 students who choose to live in in university residence halls annually. If these 5,000 students are contributing $8 per semester, they are contributing $80,000 annually towards the Sustainability Fund. Some of this money should be allocated for the sustainable improvement of residence halls. This research would look for ways to efficiently decrease the amount of energy consumed by on-campus residents through alternative energy resources, such as wind turbines, high efficiency light bulbs, solar panels, or other more sustainable methods. The research will include the cost to implement suggested improvements, estimated amount of money the community would save on utilities, and student response to suggested improvements.

Amount Requested: $2,834.00   Amount Allocated: $0.00

2. Campus Bicycle Cooperative

Principal Investigators: Zachary Waas Smith and Jacob Huizenga. Faculty/Staff
Advisor: Harold Glasser, Executive Director, Office for Sustainability.

Abstract: Over a third of Western Michigan University’s total greenhouse gas emissions are the result of gasoline-powered transportation. In order to lessen the impact of transportation carbon emissions and improve WMU sustainability, WMU needs to invest in alternative transportation options. A campus bicycle cooperative is one of these options and is an essential step toward advancing campus bicycle infrastructure. This project will be the first effort to establish a bicycle cooperative at WMU, but not the first at any university; there are several very successful campus bike co-ops in existence across the continent whose efforts have contributed to the structural development of this co-op. This co-op will focus on bicycle maintenance, repair, education, accessibility, and promoting the bicycle as a mode of transportation. Money from this grant will support the purchase of necessary tools, promotional efforts, and operational structure (computers, staff, signage, office materials, etc.). Students will work collaboratively to operate the campus bike co-op, and this grant will augment their success. This grant will improve WMU sustainability through the amelioration of infrastructure for alternative transportation options available to WMU faculty, staff, and students.

Amount Requested: $9,388.00  Amount Allocated: $9,388.00

3. Free Store/Share Space Infrastructure

Abstract: Over the past three years, I have been trying to formulate an alternative consumer community as well as utilize the creative and thrifty population of students on WMU’s campus. This project of a Free Store/Share Space would mean that there would be a permanent location for these items and ideas to thrive and be exchanged. In order to do that, I need a minimal amount of infrastructure for organization and aesthetics. Tentatively, this space will be in a few Offices in the basement of Faunce; two rooms for display, and one room for storage and organization. All of these rooms will need shelving units, clothing racks, and hangers.

Amount Requested: $540.00  Amount Allocated: $540.00 (conditional)  

NOTE: The proposal author failed to meet the SSG-AC’s allocation conditions. Funds were not disbursed.
4. The Campus Beet Open House

Principal Investigators: Amelia Stefanac and Caleb Oliver. Faculty/Staff Advisor: Matt Hollander, Coordinator of Sustainability Projects, Office for Sustainability.

Abstract: The Campus Beet is a Registered Student Organization that is working towards building a student-led café. This initiative is in response to a growing need for students to have a source for local and sustainable foods on campus that fit their dietary needs, as well as a need for a social, creative, and co-curricular outlet on Western’s campus. We recently collaborated with dining services and dietetics inters to hold a menu-taste event that was well attended and thoroughly enjoyed. With the feedback on recipes from that even, we plan on making improvements through mini-tastes held on campus every other week. After working in the Bernhard kitchen for the menu test, we decided on pieces of equipment necessary to make this possible and ease the stress of production on such a mass scale. On April 8th, we will showcase the vision for this café through a finalized and perfected menu, along with musical guests poetry and fiction readings, film screenings, and visual art, all of which display the various talents of Western students. There will be a videographer to document, promote, and share our efforts throughout the University to further illustrate the success of this initiative.

Amount Requested: $9,996.58   Amount Allocated: $9,996.58