



Sustainable Action Fund Grant Program

SMALL PROJECTS - APPLICATION

For applicants requesting \$500-\$5,000. Application deadlines and application instructions can be found in the Small Grant Application Toolkit located on our website www.edu/sustain/oroarams/saf/aoolv/. Submit applications by delivering a hard copy AND emailing a scanned version (Including signatures) to the SAF Grant Program Coordinator Johnathan Riopelle at Viking Commons Room 24. Email: johnathan.riopelle@wwu.edu

1. PROJECT TITLE: Grant Development for Electric Bike Research

2. PROJECT TAGLINE (*description of project in one sentence*): Write major grant proposal to fund a multidisciplinary electric bike research project involving Western faculty, students, and the Bellingham community.

3. TEAM INFORMATION

Project Advisor Information (Faculty or Staff) Student proposals must include a staff or faculty advisor. The role of the advisor is to provide assistance and guidance to the proposal submitter during the development, implementation and post-implementation stages of the proposal process.

Project Lead: There must be at least one team leader assigned to the project.

Name	Department/School Students also provide major/minor	Position Faculty/staff/ student. Students provide expected quarter/year of graduation	Email
Project Advisor:	Steve Hollenhorst/Huxley	Dean of Huxley	Steve.hollenhorst@wwu.edu
Project Lead:	Elizabeth Hartsoch/Survey Research	Research Analyst	Beth.hartsoch@wwu.edu
	Harsh Buddhadev/Kinesiology	Faculty	Harsh.buddhadev@wwu.edu
	Olivia Dingus/Energy Policy	Student	dinguso@wwu.edu
	Sharon Shewmake/Economics	Faculty	Sharon.Shewmake@wwu.edu
	Jasmine Goodnow/Recreation	Faculty	jasmine.goodnow@wwu.edu
	Kellen Lynch/ Energy Studies	Student	bikeeducator@wwu.edu

* Teams may have two to four people.

4. PROJECT DETAILS

a. Describe your proposed project.

1. This proposal would fund 10 hours/week of staff time fall and winter quarters to work on development of an external grant application for a major electric bike research project.
2. The proposed research project is a direct extension of the existing SAF-funded Viking eBike project. In the Viking eBike pilot, we identified barriers to adoption of electric bikes including exclusion from state vehicle insurance coverage, lack of tools and skills in existing maintenance shops, and lack of understanding of who is likely to adopt use of an ebike. The lack of large-scale scientific

research on the effects of electric bike use makes it difficult to build a case for requiring their use, or investing in the necessary infrastructure and resources.

3. The proposed research scope is limited to the use of electric bikes for transportation. We are specifically excluding recreational uses.
4. My job is unrelated to the electric bike project and all time spent over the past 3 years has been volunteer.

b. What are the goals and desired outcomes of your project?

1. Secure funding for a major interdisciplinary action research project on electric bikes, the Viking eBike 500 project.

i. The Viking eBike 500 project (the project) is a multidisciplinary research project studying the transportation & utility use of electric bicycles in Bellingham, Washington. Faculty comprising the existing team will investigate the patterns of e-bike use, energy consumption and health benefits associated with active transportation in a diverse population. We will address research questions including:

1. Investigate and explore patterns of e-bike use and energy consumption.
2. Does use of an electric bicycle positively impact health, and how is this effect different based on gender, age, activity level, and other demographic, socioeconomic, psychological and geographic attributes of the rider.
3. Does electric assist catalyze the conversion of car trips to bike trips, and what rider requirements are important in this effect?
4. What is the role of social learning in individual decisions and opinions on electric bikes?
5. How can electric bikes facilitate low-impact adventure tourism?

ii. In addition, we will recruit researchers to investigate questions of the impact of electric bicycle use on transportation patterns, energy use and carbon emissions. Data collected through the project will be available for research questions not yet imagined by the team. Results will inform investment and policy decisions of governments at the local, state and federal levels, as well as corporations, private foundations and private donors with a goal of promoting active, healthy communities, livable communities for residents and employees, and climate change mitigation.

iii. The project will recruit 500 diverse participants, each agreeing to participate in: (a) occasional collection of health data at Western or affiliated labs, (b) frequent use of an electric bike for the period of three years, and (c.) passive collection of gps, battery, motor, and environmental data via data collection unit mounted to the bicycle. We will acquire 500 electric assist bicycles, X# of a standard utility bicycle design, Y# in a cargo/child transportation design, and Z# in alternative designs serving people with disabilities. Each bike will be fitted with a data collection unit which passively transmits data. Each participant will be lent one e-bike, and be responsible for its care and maintenance; at the end of the three years, each participants will be offered the option to purchase that e-bike at its depreciated value.

c. Does your project tie into any broader campus sustainability goals or initiatives? If yes, please describe how.

1. Sustainability Action Plan Objective 1.4: "Offer independent student projects and student research."
 - i. Under the supervision of professor Sharon Shewmake, undergraduate Olivia Dingus spent last summer reviewing the literature and writing a paper we will submit for publication this winter.

- ii. Professor John Lund in engineering is recruiting a senior to develop a prototype on-bike data collection unit, which would be tested on an existing Viking eBike.
 - iii. Securing funding for the larger research project would facilitate numerous opportunities for student involvement in all aspects of the project including research, planning, project management, and grant management.
2. Sustainability Action Plan Objective 3.3: "Increase faculty capacity to offer sustainability related curriculum".
- i. Professor Jasmine Goodnow is planning a summer 2018 research project using the existing bikes.
 - ii. The larger research project would involve faculty from several disciplines.
3. Western's Strategic Goals: "Build upon Western's strengths to address critical needs in the State of Washington." and "Apply Western's expertise and collaborative approach to scholarship, creativity, and research in ways that strengthen communities beyond the campus." This project will support interdisciplinary and inter-institutional research. It will inform transportation infrastructure decisions of municipalities and organizations, serving efforts in the transition to a renewable energy economy, as well as addressing the economic, health, and hazard aspects of cars.
4. Western's Strategic Goals: "Expand student access to rigorous and engaging baccalaureate and graduate education." This project will provide numerous opportunities for student involvement.

d. Provide a chronological timeline listing the steps and tasks it will take to implement this project. Insert additional rows as necessary.

Step/Task	Completed by who	Estimated Completion Date
Submit literature review for publication	Olivia Dingus and team	January 2018
Project outline to Western Foundation	Team	January 2018
Recruit investigators	Team	Winter and spring 2018
Draft application	Team and Western Foundation	Spring 2018
Approach individual donors for first-stage funding	Team and Western Foundation	Spring and summer 2018

Tailor second-stage funding application to specific Team and Western Summer and fall 2018 foundations and granting agencies Foundation

e. How will the success of the project be measured? Describe the quantitative and/or qualitative sustainability metrics you will use to measure the success of your project.

Metric (<i>qualitative or quantitative</i>)	Description	Impact
Publications		Legitimacy of team
Applications submitted		
Phase 1 funding received		Initial investment in equipment and staff time for troubleshooting
Phase 2 funding received		Full investment in data collection

e. Describe your project's education, publicity and outreach plan here. Then complete the table below outlining the proposed results of your education, publicity and outreach efforts. Insert additional rows as necessary.

All education, publicity and outreach would be a function of the resulting project. This small grant is for prepping the larger grant application.

Education, outreach, publicity effort	Who will make this happen?	How will this effort be implemented?	Who is the intended audience?	Frequency of implementation. One-time/daily/weekly?

5. PROJECT STAKEHOLDERS

a. How will your project involve students? How many students, or what percentage of the student body, will be affected by the project?

The initial research and grant development step will involve at least four students,

1. Our campus bike educator Kellen Lynch and former campus bike educator Josh Kirsch.
2. Olivia Dingus, who spent her summer reviewing the literature and will submit her paper for publication this winter.
3. An engineering senior who will develop an on-bike sensor unit for data collection. John Lund has agreed to pitch the project to students this fall and will advise.

When funding is secured for phases 1 and 2 of the research project there will be many opportunities for student involvement, including:

1. Undergraduate research experiences in:
 - a. kinesiology - routine health evaluations of participants will involve students in Western labs, as well as additional evaluations for specialized research (such as Harsh Buddhadev's research on the effect of cycling on knee osteoarthritis in older adults). 10 students
 - b. Urban planning - analyzing data on routes chosen, trip types, chained trips, and facilities important to electric bike riders. 5 students
 - c. Urban and transportation planning - analyzing data to determine coefficients for factors involved in electric bike adoption. 5 students
 - d. Computing the carbon emissions and pollution reduction impacts of access to an electric bicycle. 5 students
 - e. Recreation - plan and conduct micro-adventures on electric bikes. 10 students
2. Involvement of AS Environmental and Sustainability programs for the implementation of the treatment variable (ebike acquisition, sample selection, ebike distribution, etc.) and dependent variable monitoring. 5 students
3. Involvement of students in a project advisory team. 3 students
4. Involvement of classes in study implementation and data analysis. 200 students
5. Students as research subjects. 50 students

b. If your project involves or requires permission from other organizations, departments, individuals, or stakeholders, list them below. Each stakeholder must provide a signature of approval for this project. Insert

additional rows as necessary.

Name	Department or School and Position	Involvement in Project	Stakeholder signature of approval
Steve Hollenhorst	Huxley College/Dean	Owner of the larger research project	

**** If your project team is proposing a temporary or permanent facility or property modification, then a Project Owner Form must be submitted with the application. Form can be found on SAF website: www.wvu.edu/sustain/programs/saf/apply**

6. BUDGET

a. Provide an itemized list of the budget items required for this project. Include Equipment and Construction Costs, Education Publicity and Outreach Costs, Personnel and Labor Costs, and any other costs. Insert additional rows as necessary.

Western Human Resources classified this position as Temporary Grant Development Coordinator. Salary and benefit figures below are based on that classification as well as Western's Office of Research and Sponsored Programs budget worksheet.

Item	Cost per Item	Quantity	Total Request
Staff time - Elizabeth Hartsoch	\$27/hour	125 hrs	\$3375
Benefits (calculated at 45% per the RSP budget template http://www.wvu.edu/rsp/documents/proposaldevelopment.shtml)	\$12.15/hour	125 hrs	\$1518.75
TOTAL REQUEST			\$4839.75

b. If the project is implemented, will there be any ongoing replacement, operational, maintenance or renewal costs? If yes, has a source of funds been identified to cover those costs? Yes, and the purpose of this proposal is to secure those funds.

c. Matching Funds. List pending, approved, and denied applications for funding from other sources. List amounts requested from those sources.



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PROPOSAL REVIEW

Once your project proposal is complete, you must print and receive hand-written signatures from the individuals listed below. After signatures are received, applications can be delivered as a hard copy to the SAF Grant Program Coordinator, Johnathan Riopelle at Viking Commons Room 24 or by scanning the application and emailing it to johnathan.riopelle@wvu.edu.

PROJECT TITLE: Grant Development for Electric Bike Research

7. Please set an appointment with the Sustainable Action Fund Grant Program Coordinator to review your draft proposal before submitting your application. This appointment should take place at least a week before the proposal due date.

Sustainable Action Fund Grant Program Coordinator, Johnathan Riopelle
Viking Commons, Room 24
Available by appointment
Email: johnathan.riopelle@wwu.edu
Phone: (360)650-4501

Signature: _____ Date: _____

This signature does NOT indicate that you have received funding, but it does confirm that the proposal has been reviewed and is approved for funding review by the Sustainable Action Fund Committee.

Comments:

8. After meeting with the Sustainable Action Fund Grant Program Coordinator, please set an appointment with the Campus Sustainability Manager who will review and sign your proposal application.

Campus Sustainability Manager, Seth Vidaña
Viking Commons, Room 25
Phone: (360) 650-2491

Signature: _____ Date: _____

This signature does NOT indicate that you have received funding, but it does confirm that the proposal is approved for funding review by the Sustainable Action Fund Committee.

Comments: