

Sustainable Action Fund Grant Program

LARGE GRANT – FINAL APPLICATION

For applicants requesting over \$5,000. Submit applications via email to the SAF Grant Program Coordinator johnathan.riopelle@wwu.edu

1. PROJECT TITLE: Electric Vehicle Charging Stations

2. PROJECT TAGLINE (*description of project in one sentence*):

We are proposing the installation of the first electric vehicle (EV) charging stations on Western Washington University's campus.

3. PROJECT GROUP MEMBERS

Name	Department/School Students also provide major/minor	Position Faculty/staff/ student. Students provide expected quarter/year of graduation	Email
<i>Project Advisor:</i>	Charles Barnhart	Faculty	charles.barnhart@wwu.edu
<i>Project Lead:</i>	Whitaker Jamieson, Energy System Sciences Major, Energy Policy Minor	Student, will graduate Spring 2018.	jamiesw@wwu.edu
	Spiridon Pappas, Business and Sustainability Major, Political Science Minor; Economics Minor	Student, will graduate Spring 2018.	pappass@wwu.edu
	Mary Moeller, Economics Major, Mathematics Minor	Student, will graduate Spring 2018.	moellem2@wwu.edu

4. PROJECT DETAILS (*reflecting any changes since conceptual application*)

a. Describe your proposed project.

Our proposal is to install six Semaconnect 620 Series charging stations in dual pedestal configurations, to serve six parking spots on the southeast corner of lot 12A on Western Washington University's campus. These six parking spots will be designated as the "electric vehicle charging" spots, available to students, faculty, staff, visitors, and the general public

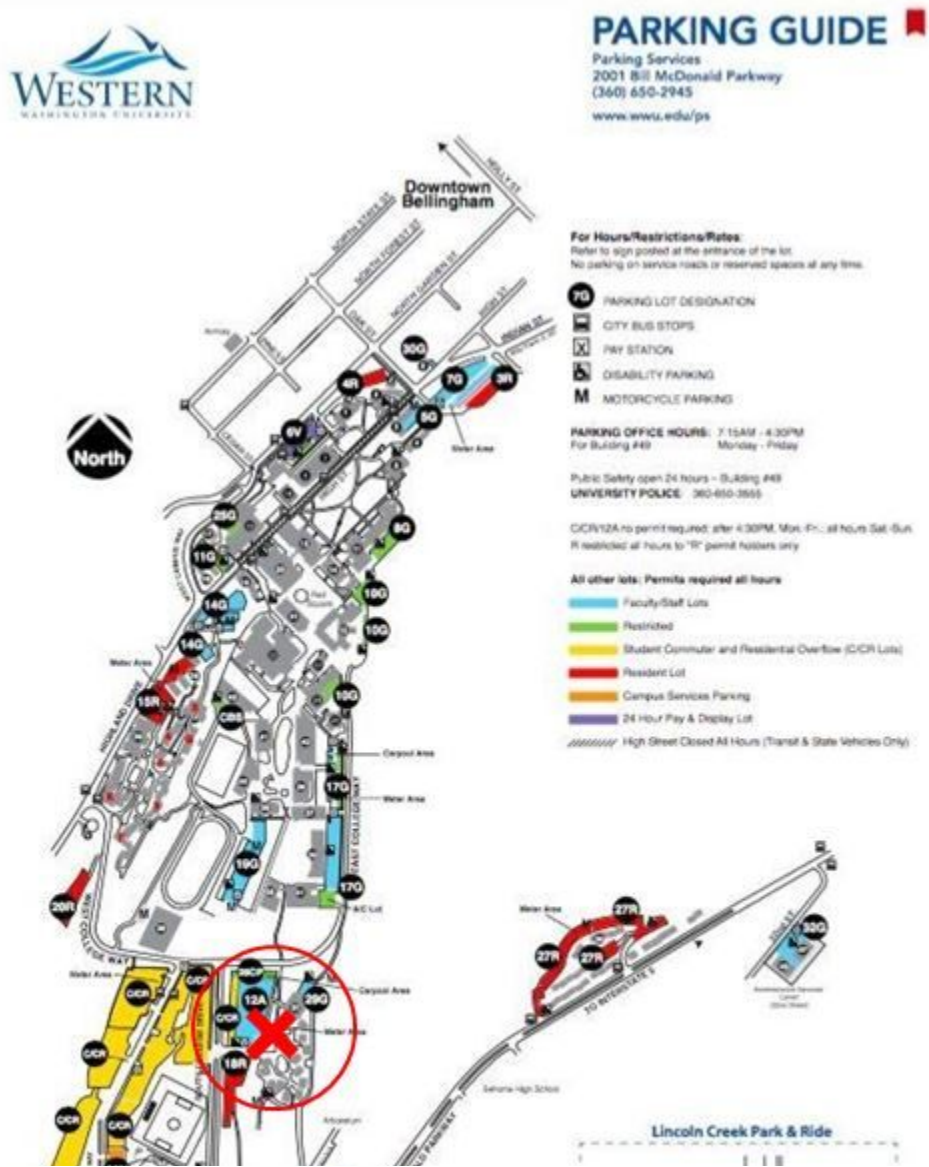
while their car is charging. Charging will be paid for by parking passes, which will be handled by parking services. Parking services will enforce the safety and security of the charging stations. Parking in these spots while not charging will be prohibited in accordance with the Revised Code of Washington, RCW 46.08.185. Parking permit costs will be established by parking services.

Photo 1: The pictured dual pedestal mount would be placed on the curb between every two parking spots on location.



Dual Mount

Photo 2. Location of site on WWU map. EV Charging Stations will be located in the southeast corner of lot 12A, a faculty and staff lot. This location was specified because it is right next to required electrical infrastructure and recommended by facilities.



Photos 3-5: Site of charging stations parking spots in lot 12A, the lot closest to Fairhaven dorms.





b. Describe the purpose of your project proposal.

The purpose of our proposal is to encourage the use of plug-in EVs to, from, and nearby Western Washington University's campus in Bellingham. We aim to reduce greenhouse gas (GHG) emissions from cars by building the infrastructure necessary for a transition from gas-powered vehicles to EVs. Our project will create the first EV charging stations on a campus that prides itself on being sustainable. These stations will be open to the entire Western community, including students, faculty, guests, and the public. In addition to promoting sustainable transportation, a secondary goal is to make sure the Western Community knows what the EV stations are, how to use them, and why we need them.

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

- Improve the air quality around Western's campus by reducing the fossil-fuel based transportation.
- Contribute to Western's greenhouse gas emissions reduction goals.
- Create a campus that supports owners of electric vehicles.
- Increase awareness of EV infrastructure, giving Western's graduates a vision of the future of sustainable transportation.
- Incentivize the purchase of EVs instead of gasoline-burning vehicles by having convenient chargers available.
- Facilitate a cultural shift towards green transportation and sustainable living.

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

Our project ties in with the 2010 Climate Action Plan for net zero carbon emissions by 2050 adopted by the WWU Board of Trustees. This plan was part of Washington State's requirement for all state agencies to adopt a strategy for reducing GHG emissions through RCW 70.235.050. EV charging stations reduce GHG emissions by using electricity instead of fossil fuel. Because of Washington's hydroelectric infrastructure, EVs emit about half as much as a non-plug-in hybrid.

Once Western's Sustainability Action Plan is finalized, it will become a roadmap for creating a healthier and more sustainable campus community. The anticipated Sustainability Action Plan has a strong emphasis on transportation, and our proposal aligns with numerous goals addressed by the anticipated Sustainability Action Plan. Our proposal will contribute to the first goal of the campus and community engagement objectives within the anticipated Sustainability Action Plan (SAP), supporting campus and community engagement. This project will support engagement by promoting awareness for what EV infrastructure is and how to use it. Our outreach plan aims to build a community that values and promotes EV infrastructure, which will additionally provide comfort and convenience for the owners of EVs around Western.

This also ties into the third goal of campus and community engagement, which is to make Western's sustainability resources easily accessible by the public. Our EV charging stations will be located in one of the most traffic-heavy areas on campus, making them easily accessible to campus visitors. Our proposal also aligns with the objective to engage in local transportation solutions by providing the first EV charging stations on campus. By encouraging the use of EVs, our proposal also supports the goal of reducing the climate impacts from employees and students.

- e. 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
Final application approved	Committee	5/15/2017
Request Funds from Foundation	Johnathan	Soon after approval
Work with Parking Services (PS) to have plan for cost to charge	Group/Bob/PS	Soon after approval
Order charging stations- 3 weeks maximum to get here	Group and FM	4 weeks before project starts-mid to late July
Fill out Semaconnect forms	Group/Bob/FM	When we order the stations
Get charging stations on phone applications	Semaconnect	When stations go live
Prep site	FM	When installation occurs-mid to late August
Install charging stations and signage	FM	When installation occurs
Electrical charging station system test	FM	When installation occurs
EV page on parking website is ready	Group/OS/ESP	When stations go live
Integrate charging stations into pay station system	PS	When stations go live
System test	FM and PS	When stations go live
Table at info fair with SAF	Whit	First week during Fall quarter
EV Charging Station Outreach Events	Group	Other times during 2017-2018 School year

5. METRICS AND MEASURABILITY

- a. 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. Insert additional rows as necessary.

Metric (<i>qualitative or quantitative</i>)	Description	Impact
<p>Metric: How many hours per day cars charge at the stations collectively.</p> <p>Unit: Hours per day and kWh per day, as well as the distribution of the charging</p>	Using the built-in meters, we will measure how and when people charge their cars.	Quantitatively understand how much the stations are being used and how much Carbon Dioxide is being prevented from entering the atmosphere.
<p>Metric: How much energy is being consumed and at what time.</p> <p>Unit: Aggregate kWh per day. (A graph will actually be most useful-given using the features of Semaconnect)</p>	Using the built-in meters we will measure the collective amount of energy that has been consumed by charging on average each month	Quantitatively understand when stations are being used and potentially adjust pricing schemes.

- b. 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.

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?
Tabling at Fall Info Fair	Whit	We will reserve a table or work with the SAF table for Fall Info Fair with the VU and give out quarter-sheet flyers to promote the project, as well as prepare an elevator-pitch to interested individuals	The entire student body that attends Fall Info Fair (Especially new students at WWU)	One-time
Canvas Announcements to students	Spiro	We will formulate a message for students across various majors and ask faculty to create canvas announcements for our message. This way, we promote our project without depending on professors sacrificing class time.	Students from a range of majors and minors with an interest in environmental resilience, social equity, and economic vitality	One-time (one canvas announcement per faculty member)
Posters across campus (Maybe A Banner)	Spiro and AS Publicity Center	We will create and design an informational project poster in collaboration with the OS Graphics Design team to visually promote our project to students. Posters will be placed around campus by the AS Publicity Center and Spiro will place posters around campus in other areas. We will especially focus on the Fairhaven Commons for poster placement, since they are located closest to the charging stations.	The on-campus student body, particularly focused on South Campus and Fairhaven Commons	One-time (Posters will remain up for weeks)
Western Front, the AS Review, and the Planet	Mary	We will give interviews to the Western Front, the AS Review, and the Planet. These 3 news outlets will be critical promotional and educational outreach pieces to students at large across all departments.	The entire student body, but specifically those who read the Western Front, the AS Review, and the Planet.	One-time Possibility of an update later on detailing progress updates

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

Our project will involve students in multiple ways. EV owners will be most dramatically affected by this project, simply because of the convenience of finding charging on campus, available whenever they need or want it. Students, or parents of students who are considering purchasing a car, may also be influenced to purchase an EV by the installations. The level-2 charging stations will be near multiple on-campus dormitories that house students and a central location for the Western community in general. Since this project is installing long-term infrastructure on campus, every current and future student will be affected by this project indirectly. Whether it is a student who is a daily EV driver, or a student who appreciates Western's efforts towards the movement away from fossil fuels, this project will be a visual representation of Western's support of renewable energy. As a first on campus, these EV charging stations are an introduction to educating students on the benefits and importance of reducing GHG emissions that accompany petroleum based vehicles. The precise percentage of the student body that will be affected by this cannot be determined.

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.

Item	Cost per Item	Quantity	Total Request
Survey Monkey	\$26	-	\$26
Charging stations (per dual station)	\$11,100	3	\$33,300
Paying for Features in the future-5 years of features paid for in advance through the warranty package we purchased.	\$1440/ per year	-	\$0
Shipping	~\$250	3	\$750
Tax on Charging Stations- 8.7%	\$33,300	8.7 %	\$2897.10
Approval to Proceed with Design-FM	\$8800-9800	-	\$9,800
Installation-includes time, labor, parts, etc. See attached Installation Cost Estimate from Facilities Management	\$53,000-66,000	-	\$66,000
Electricity. Assuming 24 hours of total charging on all 6 stations per day at \$0.11 per kWh all year round (way overestimate for current demand, but UW saw these numbers a year ago. Rounded up for total request	\$6937.92	-	\$7,000
Operation/Maintenance. A 5 year warranty package will be purchased so operation/maintenance expenses are negligible for the first 5 years.	-	-	-
Promotional budget (Banner, display stand)	\$500	-	\$500
Donor			-\$40,000
TOTAL REQUEST			\$80,273.10

- b. If the project is implemented, will there be any ongoing replacement, operational, maintenance or renewal costs? If yes, what source have you identified to cover those costs?

There is a possibility that the equipment may require operation and maintenance (O&M) in the future, however, the first five years of O&M are included and provided in the request for the charging station package we are purchasing. After the five year warranty expires, Parking Services will inherit the cost for continued operation of the features package (which is \$240 per year per station) and any necessary maintenance costs that arise. Facilities Management will be responsible for performing the maintenance.

- c. Outside or Matching Funds. List pending, approved, and denied applications for funding from other sources. List amounts requested from those sources.
- i. Source of outside or matching funds: Anonymous person donated money to the Foundation for an EV Charging Station Project.
 - ii. Date request was submitted: n/a
 - iii. Status or amount received: \$40,000
 - iv. If funding was denied, please state the reason: n/a
- d. Project Scalability. Can this project be scaled to be smaller or larger? Yes *If yes, complete the section below.*

- i. If this project was smaller, what would be the minimum budget for this project:

The minimum project size would be purchasing and installing one charging station. This could decrease the total cost to approximately \$30,000-60,000 exact numbers unknown due to scaling of installation costs.

- ii. If this project was larger, what would be the maximum budget for this project:

Theoretically, this project could try to install a charging station in every parking spot, in every parking lot. If that were the case, the required budget would be hundreds of thousands of dollars past our project proposal cost. The demand for a project this large does not currently exist.

If four more charging stations were installed at the current location, the price would increase by about \$40,000. This cost increase would primarily be due to the purchase of more charging stations (still, exact cost increases are unknown due to scaling of installation costs).

If four more charging stations were installed, but in different locations across the university campus, the installation cost would increase substantially. Each site would require its own installation cost estimate, and on its own timeline. If other installation sites were selected for more than two chargers at each site, we would expect the total cost of project to be somewhere between \$200,000- \$300,000.

- iii. How would the project outcome be affected if the project was scaled to be smaller or larger?

If more charging stations were installed, there would be more space for people to charge their EVs. If there were only one charging station installed, we may run into rising demand issues quickly. If charging stations were installed in two or three select areas, we could see a large benefit to certain types of EV owners such as faculty and staff or special visitors to Western's campus. We propose that the decision to add more EV charging stations should wait until the demand is sufficient, we expect that time to be in about five years.

7. PROJECT STAKEHOLDERS

- a. If your project involves or requires permission from other organizations, departments, individuals, or stakeholders, list them below and describe their involvement in the project. Insert additional rows as necessary.

Stakeholder/Project Owner Name	Department or School and Position	Involvement in Project
John Furman	Director of Facilities Management-Facilities Management	John Furman will oversee the maintenance of the EV Charging Stations that will be undertaken by facilities after the 5 years of warranty end.
Bob Putich	Student Business Office Manager-(department)	Bob Putich will be the Project Owner and will have control over the project after the one year of SAF control is finished. Bob and Parking Services (embedded in the Student Business Office) will take over the payment for features and or warranty services after the 5 year agreement ends.

- b. For every Stakeholder/Project Collaborator listed, have the individual complete a Project Stakeholder Form. Form can be found on SAF website: www.wvu.edu/sustain/programs/saf/apply/ under the tab “Forms, Documents, and Guidelines.”

Number of Project Stakeholder Forms attached to Final Application _____

- c. 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. For every Project Owner listed, have them complete a Project Owner Form. Form can be found on SAF website: www.wvu.edu/sustain/programs/saf/apply/ under the tab “Forms, Documents, and Guidelines.”

Number of Project Owner Forms attached to Final Application _____

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LARGE GRANT – FINAL APPLICATION 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@wwu.edu.

8. Please set an appointment with the Sustainable Action Fund Grant Program Coordinator to review your draft proposal before submitting your application.

Sustainable Action Fund Grant Program Coordinator, Johnathan Riopelle

Viking Commons, Room 24

Office Hours: Mondays and Thursdays 2-4pm or 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:

9. 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 Vidana

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 has been reviewed and is approved for funding review by the Sustainable Action Fund Committee.

Comments: