



Clean Energy Grant Application



THE EVERGREEN STATE COLLEGE

Please read the grant application guidelines prior to submitting your proposal. We will not consider incomplete applications. Completed applications should be e-mailed to the coordinator at cleanenergy@evergreen.edu before the deadline. For questions regarding the application process, contact the coordinator.

Project Title	Home Designed Mini Micro Hydro System	
Project Lead	Name:	Andrew Gonzales
	E-mail:	
	Phone number:	
Student, Staff, Faculty, or Student Group: <i>(staff and faculty please name department)</i>	Candace Kaiser Andrew Cannard E.J. Zita	
<i>Students only</i>	Class standing:	Sr. Jr. Jr.
	Faculty or Staff sponsor:	E.J. Zita
Campus Location	Olympia	
Date	January 25th 2012	

Abstract	Using recycled materials we will build a Mini Micro hydro system. Using a rear bicycle tire for the turbine we will connect the gears to turn a used alternator. This alternator will then produce electricity from the turning turbine. Once the alternator is engaged we can determine the amount of energy being created. Using our turbine we hope to determine the potential for generating electricity from storm water runoff on campus. This project may lead to further research and implementation of permanent micro hydro systems on campus.
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CEC Vote: (for office use only)

Proposed Motion	
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Moved:	Second:		
Yes:	No:	Abstain:	Absent:
			Recusal:

Please respond to the following sections below. We ask that you present your proposal to the Clean Energy Committee to answer further questions about your project. If your project is funded we require you to publicize your work, and provide the committee with documentation, and a final report.

- If you require more space, please submit any additional documentation with your application.

Areas affected by proposed project: The committee reserves the right to have grant proposal reviewed by an authorized representative from affected areas prior to full review. Please refer to the grant guidelines to see if your project requires authorizations. Contact cleanenergy@evergreen.edu if you have any questions. Be sure to give yourself enough time to communicate with staff and faculty before the deadline. When you receive authorization, type the name of the representative below. Authorization will be verified.

Affected Area		Approval Required	Approval Received
Faculty / Staff Sponsor	E.J. Zita	Always	<input checked="" type="checkbox"/>
Director of Facilities		<input type="checkbox"/>	<input type="checkbox"/>
Environmental Health & Safety Officer		<input type="checkbox"/>	<input type="checkbox"/>
Campus Land Use Committee		<input type="checkbox"/>	<input type="checkbox"/>
Academic Budget Dean		<input type="checkbox"/>	<input type="checkbox"/>
Student Activities Advisor		<input type="checkbox"/>	<input type="checkbox"/>
Science Operations Manager / Organic Farm Manager		<input type="checkbox"/>	<input type="checkbox"/>
Residential and Dining Services		<input type="checkbox"/>	<input type="checkbox"/>

Timeline

- Provide an estimated timeline listing the length of time from start to finish and detailing the length of time that each component will take.

1. Design	Week 1-4	4. Research / Construction	Week 5-7
2. Approval	Week 2-3	5. Present / Report	Week 8-9
3. Procurement	Week 4-5	6. Follow-up	Week 9

Detailed Project Description

Please include:

- Project goals
- Definition of sustainability and the relationship of the project to this definition
- Longevity and/or permanence of the project results on campus
- Location, including any concerns that may arise from the chosen site
- Previous experience directing projects of this nature
- If applicable, comparisons to similar projects at other campuses

Description	<p>Our goal is to create a micro hydro turbine and generator system using some recycled or repurposed materials. Originally we planned to use an automotive alternator; however, after some calculations we have decided to go with a smaller scale turbine such as a permanent magnet alternator used for wind systems or a smaller scaled geared turbine. This new turbine design has led us to more advanced and more expensive options. Once we have our turbine, we plan to take it to different buildings on campus and measure how much energy can be produced by using rain water runoff from campus structures. We are currently looking into the Longhouse area, the HCC, and also potentially resident hall A for locations that could potentially produce a consistent amount of power. This will culminate in a report on the possibilities for using micro hydro electric energy to help power campus facilities.</p>
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Campus Connections (Please select all that apply):

	Research	Implementation	Education
Renewable Energy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Resource Conservation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sustainability Strategies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Impact on Campus Sustainability Goals:
Energy, Environmental, Social and Economic Impact**

- How does your project align with the Climate Action Plan or the goal of zero waste and carbon neutrality by 2020?
- How is your project consistent with the mission of the Clean Energy Committee?

<p>Impact on Campus Sustainability</p>	<p>Our project will primarily be used for education and research for future Evergreen students. Within the Climate Action Plan geared towards carbon neutrality by 2020 we can see that the use of electricity accounts for 40% of our carbon footprint. While we already use the money provided by student credits to buy 100% of our electricity from renewable resources, the information yielded from our project would open the door for TESC to have some of our own electricity from rainwater on campus. TESC's commitment to a fundamental strategy path includes complementing educational goals and exploring innovative technical solutions. Our experiment with micro-hydro power will provide the information on the efficiency and cost effectiveness of implementing micro-hydro turbines throughout campus. By creating some of our own electricity hopefully we would be able to spend less on purchased electric energy and use those funds in a different aspect of the Climate Action Plan. This directly is in line with the mission of the Clean Energy Committee, researching if the energy produced from rain water will be an effective form of renewable energy and by conserving the amount of money we spend on purchased electricity. Our project will also provide educational resources on rainwater as a renewable resource and a way for future evergreen students to possibly create on campus renewable energy.</p>
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Outreach and Education:

The Clean Energy Committee strives to fund projects that will be highly visible and have a positive impact in the lives of the Evergreen students responsible for the clean energy initiative. Approved proposals will be required to publicize their project in press releases and/or presentations, including mention of sponsorship by the Clean Energy Committee. It is also expected that you will present your work at the Synergy Conference, the Science Carnival, or another public presentation approved by the committee. With that focus, please address the following:

- visibility of the project to students and the greater evergreen community
- role that students will play in the project
- opportunities for involvement in classroom curriculum
- media outreach opportunities
- any additional information on methods the project will use to educate and engage students and the public about clean energy technologies and resource conservation.

<p>Outreach and Education</p>	<p>Once we have our turbine system built, we plan to move it to different buildings on campus to test the potential for micro hydro power on as much of campus as possible. While we are doing this, our portable micro hydro turbine system will be highly visible. We will educate and attract attention with a laminated informational placard. Since our system will not be permanently installed we will have to monitor it while it is in use. During this time we can answer questions and raise awareness of the possibilities of micro hydro power on Evergreen's Olympia campus. At the end of winter quarter we will update the online slide show or "slidecast" which is published on our program website, and available to the Evergreen community and the public. We also will make a presentation on our findings. Our ultimate goal is that our findings of the potentials for low-cost micro hydro energy will lead to further research and possibly a permanent micro hydro system on campus which will generate renewable energy in a cost effective way.</p>
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Budget and Fundraising

Please include:

- A detailed budget for the full project costs, including initial costs and life-cycle operation and maintenance costs.
- Detail both the specific budget items and the total funding amount being requested, and include support documentation.
- If the Clean Energy Committee does not fund the full requested amount, will the project be able to move forward?
- List any grants or other sources of funding that have been obtained or applied for. If these funds are limited to a certain component of the project, please specify
- NOTE: Preference will be given to those projects that seek additional funding from other sources. This priority is given to encourage cost sharing and to allow the funds available to support a greater number of sustainability projects on campus.

Budget	<p>Projected costs:</p> <p>Renegade 7 PMA (permanent magnet alternator)-----249.98</p> <p>PMA Mounting Bracket-----59.00</p> <p>3Phase Turbine Cable 2000W-----1.59</p> <p>250 Amp and Volt DC Meter with digital display-----39.98</p> <p>Inverter Cable #1 AMG - 4ft. Pair-----40.00</p> <p>Shipping-----30.00</p> <p>Project will be able to move on with or without the full requested amount.</p> <p>We did receive 100\$ in funding from the Clean Energy Committee in Fall Quarter for the basic construction aspects of our project. We plan to use this additional money for more complex components which would enhance our project.</p>
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Cost Summary Including Tax

Goods and Services	\$0
Equipment	\$420.55
Labor and Maintenance	\$0
TOTAL PROJECT COST ESTIMATE	\$420.55