Carbon Fund Annual Report

University of California, Santa Cruz

2016-2017

Letter from Sustainability Director

Greetings!

I am excited to share the 2017 Carbon Fund Annual Report. This year, the Carbon Fund provided over $130,000 funding to 17 projects, each of which has benefitted student engagement in sustainability both on campus and in our local community. The funded projects featured in this report demonstrate how much positive change we can make toward building a more sustainable world with just a little inspiration, innovation, dedication, community engagement, and student fee funding.

This was my second year advising the Carbon Fund committee, a committed group of student, staff and faculty representatives. The committee welcomed a new organizational representative to the group this year, Raymond Lebeau of the People of Color Sustainability Collective. The committee worked conscientiously to ensure they were using student fees in a responsible way to advance campus sustainability, while also supporting opportunities for student innovation. This year's accomplishments would not have been possible without this engaged group of individuals!

Finally, I would like to extend a special note of gratitude to our Carbon Fund student coordinators, Natalie Hazrati and Conor Langlois. Their tireless dedication and teamwork, paired with high ethical standards, kept the Carbon Fund committee members on their feet. They were also great at having fun along the way!

I hope you enjoy reviewing this report. Please feel free to reach out to the Carbon Fund coordinators at carbon@ucsc.edu with any questions.

Elida Erickson

Sustainability Director

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Acknowledgments

The Carbon Fund, on behalf of the UCSC Sustainability Office, would like to thank the UCSC student body for their dedication to combating local climate change on campus by contributing to the Carbon Fund through a student fee. In addition, we would also like to thank the mentorship provided by Elida Erickson, our advisor and Sustainability Director, as well as our dedicated committee for making Carbon Fund work possible. We would also like to thank all Carbon Fund project managers for their commitmentment to reducing greenhouse gas emissions.

Thank you!

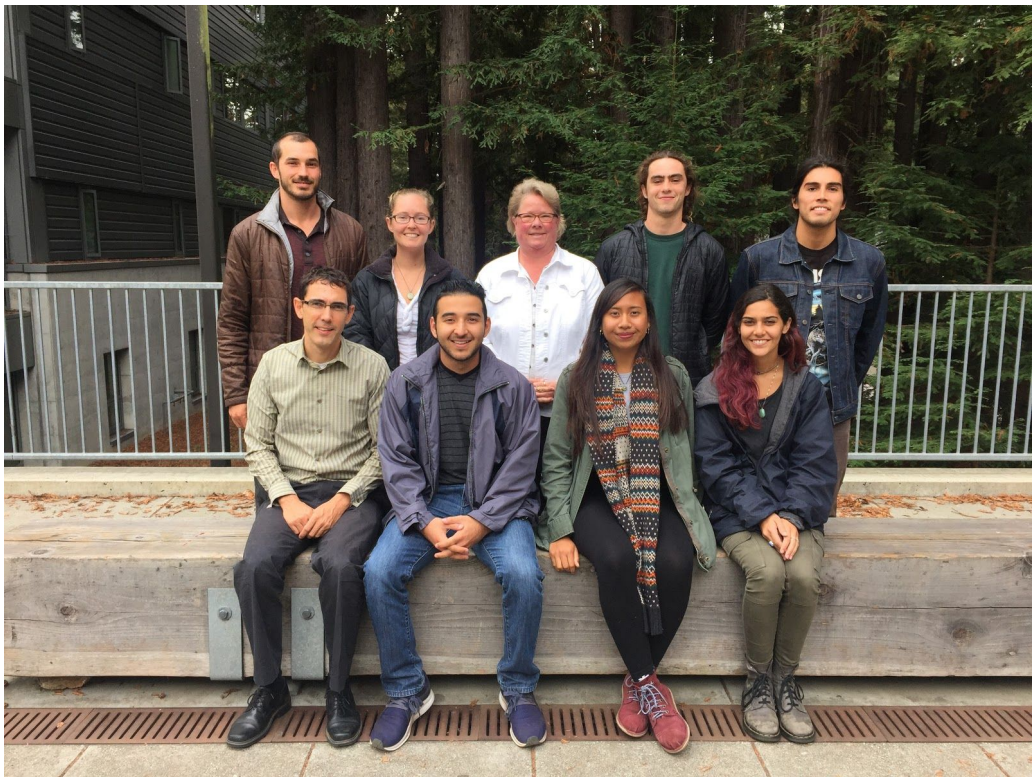
What is the UCSC Carbon Fund?

In 2006, UCSC students passed Measure 26, a student fee measure that taxed themselves to buy Renewable Energy Certificates, in order to offset the climate impact of campus electricity purchases. In 2010, students changed the use of the funds through the passage of Measure 44, which taxes every undergraduate and graduate student a $3 fee per quarter. This amendment allowed funds to be used for sustainability projects that will reduce campus' carbon footprint, ultimately creating the Carbon Fund. Carbon Fund grants provide funding to green projects that directly reduce greenhouse gas emissions, conduct relevant resource, or carry out educational programs. The Carbon Fund supports UCSC goal to become carbon neutral by 2025 and has about $150,000 to allocate to sustainability projects that will help reach this goal.

Grants have two funding levels: Macro, projects requesting above $5,000 and Micro, projects requesting below $5,000. Micro grants take 4-6 weeks to process while Macro grants, with additional paperwork and processing needed, takes 2-3 months. The Carbon Fund grants on a yearly funding cycle based on the academic schedule.

The Carbon Fund Committee

The Carbon Fund Committee is comprised of 7 voting members with the purpose to review project proposals from students, staff, and faculty in accordance with the Carbon Fund criteria and mission statement. The Committee also provides assistance to proposal authors in both project development and post- funding implementation. Carbon Fund Committee meetings are open to the public. Interesting students, staff, faculty, or community members may attend committee meetings, but do not have speaking rights unless requested in advance. If you are interested in attending a meeting, please contact the Carbon Fund staff beforehand.



Top row (left to right): Erik Eriksen (Energy Analyst), Melissa Ott (SO), Kathleen Rogers (Procurement Services), Conor Laglois (Facilitator), Raymond Lebeau (PoCSC), Bottom row (left to right): Adam Millard-Ball (Faculty Advisor), Waleed Salemi (SO), Maxine Jimenez (ESLP), Natalie Hazrati (Outreach)

Members

Representative	Organization
Jordi Vasquez	UCOP Climate Action Student Fellow
Maxine Jimenez	Education through Sustainable Living Program
Waleed Salemi	Sustainability Office (Student)
Erik Eriksen	Physical Plant
Carolyn Chan	Student Environmental Center
Raymond Lebeau	People of Color Sustainability Collective
Adam Millard-Ball	Faculty Advisor
Kathleen Rogers	Strategic Sourcing Manager, Procurement Services (Staff)
Elida Erickson	Sustainability Office (Staff)
Conor Langlois	Carbon Fund Facilitator
Natalie Hazrati	Carbon Fund Outreach Coordinator

Awarded Projects: Micro

Eco-Van: $4,563

The Eco-van will be outfitted with solar panels and a composting toilet to offset some of its carbon footprint as it travels to various California sites during the production of two environmental films. The current film, “Water Makes Us Wet” focuses on water in California and will be finished in the summer of 2017. Pre-preproduction for the next film, “Composting is Hot!” will begin in Winter 2018. Simultaneously the Eco-Van will function as a mobile educational unit that will serve as a center for environmental engagement and a hub where people and communities can gather to discuss issues that are related to the foci of the films - including water, soil and fossil fuels.

Arboretum Green Practices: $600

The project, Arboretum Green Practices, has been awarded a Carbon Fund grant to add elements to the Arboretum to help make it more sustainable. Specifically, funds will be used to purchase a conserving dishwater to be used for large scale events. This is projected to save about 780 gallons of water annually.

Financial Affairs Carbon Edu. and Reduction Initiative: $1,753

This project has been awarded a Carbon Fund grant to help educate Financial Affairs staff members on the effects of using disposable products, and to help eliminate them through use of reusable containers. Given UCSC sustainability goals, it is important to address waste and carbon footprints in areas such as office container use.

Central Coast Urban Gardens: $5,000

Past years of drought in the Central Coast has led community garden projects to confront water management and reduce use. Some gardens implement water use rules and conservation policies, yet few gardeners actually know how much water they use and few know management strategies to conserve water. This research project addresses this lack of understanding and the gaps in urban agriculture research on water use. The research project collaborates with gardeners across the Central Coast to assess and improve water use sustainability. This project is estimated to save 87,360 gallons of water annually!

College 9/10 Garden Project: $1,000

A Carbon Fund grant has been awarded to the College 9/10 Garden to create a similar awareness of land use as well as food systems awareness for the community of students at Colleges Nine and Ten. Funds have been allocated to plant 20 fruit trees to help sequester carbon from the atmosphere, while providing local produce. In addition, the 20 fruit trees will also enable the garden to practice agroforestry by planting crops near the trees. These crops will be able to grow sustainably through an alley cropping system which will provide much needed nutrients and organic material to the soil. This will reduce our carbon footprint and limit environmental degradation by not using synthetic fertilizers and sequestering carbon.

Green Business: $2,500

This project will provide grants of $500 or less to help businesses complete their Green Business Program (GBP) certification (checklist and audits). These grants can help these businesses with the cost of installing energy efficient lighting or appliances, and supplement the cost of water efficient fixtures that will help reduce their environmental impact and satisfy GBP requirement. The project also has a student internship aspect, where students will gain valuable experience in the field approaching new businesses and helping businesses that have been unable to complete the requirements thus far through the process. City Staff will provide hands-on experience through the site visit “ride-alongs” as students help businesses reduce their energy use, water use and waste-to-landfill

Solar Picnic Tables: $1,250

Solar Picnic Tables is a project geared towards student use, as it is meant to replace the current picnic tables by Digital Arts Research Center (DARC) with better equipped workspaces, as well as provide additional places to study at. Safety and security are top priorities in the design of the Solar Picnic Tables, so all of the internal electronics will be secured to prevent public access or exposure; the internal electronics will also be completely weatherproofed to prevent damage; the outlets will have outdoor weatherproof covers; and the structures will be fitted with motion sensor, eco-friendly lights. All labor, including design, construction, and implementation is organized through the student organization Formula Slug, and, more specifically, our devoted solar team.This project is projected to save $2,960 kWh of electricity annually!

Solar Power Upgrade: $3,818

This project has received a Carbon Fund grant for solar power upgrade, which will provide a long-term solar power solution for research and teaching activities at UC's Año Nuevo Natural Reserve. This unique Reserve is home to a diverse array of wildlife and ecosystems including a large elephant seal colony. The Reserve hosts a variety of undergraduate classes who use the natural areas as a living classroom. However, a lack of infrastructure means that researchers and classes are forced to go all the way back to Santa Cruz to process samples, lecture using PowerPoint presentations, or even to enter and process data. By installing a solar generator kit which includes solar panels, deep-cycle battery, and inverter, this project will provide a source of electricity that is both clean and renewable. This will allow researchers, instructors, and students to use an existing structure for overnight visits. The solar installation will reduce carbon emissions by directly powering equipment using solar power, but also dramatically reduce the number of van-hours transporting students back and forth to Santa Cruz.

UV LED Filtration: $600

This project has been awarded a Carbon Fund grant to help create a scalable, self contained water filtration system using UV LED technology. The project aims to create a system capable of providing potable water to both off grid homes and small rural communities. This project is projected to save 400 kWh of electricity and 29,200 gallons of water annually.

Vermicomposting Worm Bins: $500

Utilizing vermicomposting will help reduce food waste in an efficient and environmentally friendly way. In vermicomposting, worms are fed organic wastes which are then converted into fertilizer that can be used as plant nutrients. This benefits waste management and provides an organic fertilizer that is beneficial to the growth of plants. This project will be incorporated into an ongoing Aquaponics research project and will ensure that waste from the greenhouse and other sources is composted and ultimately used as fertilizer to help the crops thrive. This project is estimated to save 1664 pounds of waste annually.

Awarded Projects: Macro

RESPECT: $5,000

RESPECT is a pilot/demo project for alternative electricity storage methods on campus. It will provide valuable information and experience for the campus to go ahead with a megawatt-scale photovoltaic (PV) system, while giving students an opportunity to engage in new, valuable, and potentially publishable research. This project will be operated through the S-lab, and could form the foundation of a future on-campus sustainable energy laboratory, offering hands-on experience to both undergraduate and graduate students experience in designing, testing, and operating power systems.

Data Visibility: $33,000

This project will put easily accessible and comprehensible data into the hands of anyone who wants to engage with on-campus residents on energy initiatives. Currently, in student apartments on campus, the only data available is monthly energy usage numbers in an internal campus database. The planned upgrades will allow 5-minute electric consumption data to be accessible by any campus community member who desires it through a web or mobile interface. This more granular data will reveal the effectiveness of various behavior-driven energy implications, helping to inform conservation efforts, allow for more accurate appropriation of energy charges, and allow staff to better manage and maintain the electric systems in the apartments where this is installed. The planned locations at this point are the Crown-Merrill apartments and the College 8 apartments.

Increasing Compost Education: $1,3021

The project, Increasing Compost Education, has been awarded a Carbon Fund grant to increase the amount of food waste diverted from the landfill and influence behavior choices made by UCSC students related to food waste. The Compost Coordinator at PICA will organize educational compost workshops which include the distribution of worm compost bins to UCSC students who live off campus. It is estimated that this project will divert 4,710 pounds of food waste from landfills annually.

Green Labs: $30,000

The UCSC Sustainability Office student led program, Green Labs, was awarded a $30,000 grant for equipment retrofit fund to provide certified labs with energy- efficient lab equipment. Labs account for over half of the energy use on campus, which is partly due to their outdated and inefficient equipment. The cost of this equipment is often a barrier that prevents labs from upgrading to more energy efficient equipment and appliances. This fund will provide Green certified labs with a funding source for energy-efficient equipment lab equipment such as freezers, centrifuges, and incubators. It is estimated that this project will save 4.76 tons of carbon emission a year.

Engineering Future Sustainable Food Systems: $1,2450

This project has received funds to construct hydroponic system prototypes by UCSC engineering students. This system will be powered by innovative solar generation technology to reduce GHG emissions and aims to learn more about other environmental and community impacts of a sustainable agricultural closed loop system. The goal of this project is to provide hydroponic system units to UCSC food insecure students and community members to help increase their access to local, nutritious food.

Quantifying Urban Tree Canopy: $10,000

As part of the City of Santa Cruz Climate Action Plan, the City is responsible for increasing the total Urban Tree Canopy. Unfortunately, the City does not have a feasible method for estimating the amount of Urban Tree Canopy. The Center for Integrated Spatial Research will be using Object-Based Image Analysis to interpret aerial imagery and quantify the change in Urban Tree Canopy over five years (2010-2014). By increasing the urban tree canopy by 10%, an additional ~11,500 MT of carbon dioxide equivalent will be sequestered annually. The urban tree canopy indirectly reduces greenhouse gas emissions by removing harmful particulate matter from the surrounding atmosphere and cooling the urban landscape. Additionally, understanding the distribution of tree canopy change can inform where tree planting, growth, death, and removal is occurring relative to different communities within the City.

Rainwater at the Arboretum: $6,000

The project, Rainwater at the Arboretum, has been awarded a Carbon Fund grant to expand the Rainwater Catchment System at the Arboretum. The overall purpose of this project is to conserve water, by diverting rainwater from impermeable surfaces, watering plants from the Arboretum with sustainably sourced water, and growing plants with water free from chemicals found in municipal water.

Executive Summary

Total Amount Requested:	$223,531.43
Total Micro Amount Requested:	$51,572.97
Total Macro Request:	$171,958. 46
Total Funds Available 2016-2017	$150,973.14
Total Allocated to Micro Grants	$21,583. 97
Total Allocated Macro Grants	$109,472.36

The Carbon Fund strives to implement our mission statement and allocate funds through demanding processes including: research on calculated life span of projects, carbon mitigation calculations, and cost per ton of carbon saved. In addition, we have other criteria to ensure a diversity of projects and project strength, including: project feasibility, project implementation plan, metrics and reporting, student involvement, direct savings aspect, quality budget, etc.