FOREWORD

Dear Potential Industry Partner,

Thank you for your time and interest in supporting the Renewable Energy Association (REA) at UCLA.

The Renewable Energy Association is a non-profit, student-led organization at UCLA. Our mission is to cultivate an understanding of the importance of various forms of renewable energy, and study their effects on the environment, economy, and politics of the UCLA and LA communities. As a project-based club, we accomplish this through a myriad of technical, community-based, and educational initiatives. Technical projects involve the design and construction of renewable energy technologies, such as biofuel reactors, solar generators, and biogas digesters. Through these teams, students develop leadership and collaboration skills while gaining valuable scientific knowledge and experience that prepares them for careers in industry. Community-based projects, on the other hand, advocate for and implement renewable energy on and off campus. Through these initiatives, members learn about energy use, efficiency and management, as well as budgeting, institutional regulations, administrative procedures as they pertain to large-scale energy consumers like UCLA. Finally, educational and outreach initiatives directly educate the surrounding community about renewable energy technologies and related industries, thus training both members and their students to become part of the next generation of environmental leaders.

REA’s vision is to cultivate a community of renewable energy enthusiasts that includes faculty, undergraduate students, graduate students, alumni, and industry leaders. On top of the work we do with our projects, we push for the development of this community through speaker panels, research presentations, company information sessions, and an annual career fair.

REA is an organization for all students at UCLA who are passionate about sustainability and renewable energy, and are committed to making a positive difference in the world. Achieving our ambitious goals requires financial assistance and guidance from organizations such as yours, and we ask that you consider supporting the world’s next generation of energy leaders. With direct access to our member pool and an opportunity to impact our community, we hope our partnership will be mutually beneficial, and we invite you to review the descriptions of our projects and events below and join us in our mission.

CHIRINE CHIDIAC
President
2019-2020
OVERVIEW OF PROJECTS

BIODIESEL TEAM

Since its creation two years ago, REA’s Biodiesel Team continues to work on its overarching goal of converting waste oils from UCLA’s dining halls into useable biodiesel. The Team currently consists of four collaborative subgroups with distinct areas of focus.

The experiment group works to test industry-standard acid pretreatment and transesterification processes with waste oil from UCLA dining halls. The pretreatment group uses scientific literature to research new methods of preparing waste oil for biodiesel conversion, such as the use of coconut coir absorbent, and it tests these methods to find optimal rates of conversion. The soap group investigates the repurposing of excess glycerin byproducts to create soaps, using published research articles from reputable scientific journals to develop procedures for future lab experiments. Lastly, the reactor design group is working to construct a prototype bioreactor that will automate the complete conversion of waste oil to biodiesel. By the end of the 2019-20 academic year, our Biodiesel Team is projected to integrate all components of the project into a single bioreactor that will maximize the efficiency with which waste oils from on-campus dining halls are converted into functional biofuels.

Accomplishments

‣ Secured permanent lab space in Dr. Pilon’s laboratory by working diligently with UCLA faculty and administration
‣ Successfully converted small samples of UCLA dining hall waste oils into biodiesel
‣ Awarded $9000 in funds to order and build a biodiesel reactor that would perform conversions at a much larger scale

Goals

‣ Test industry-standard pretreatments and oil-to-biodiesel transesterification processes
‣ Test various pretreatment methods from scientific literature against industry standards
‣ Apply the results of pretreatment and transesterification research to the completed prototype reactor and begin large-scale biodiesel conversion
‣ Collaborate with contractors to build a full-scale reactor unit to produce the team’s first functional biofuels
RENEWABLE NATURAL GAS TEAM

A merger of two of REA's technical teams—Biogas and Waste Processing—the Renewable Natural Gas team is a new project created to encourage collaboration between members who are interested in the energy prospects of gas emissions and the economic and environmental impacts of disposing of organic waste. Members of this team work closely with the UCLA Facilities Management to help the university reach its zero waste by 2020 goals and improve its overall waste management systems. The waste processing component of this team works mostly to conduct campus-wide waste audits to educate students on how to properly sort their waste, increase awareness of UCLA's waste generation, and identify locations where three-stream bins are most needed on campus.

As 2020 approaches, the team is focusing on converting emissions from organic waste into a viable energy source. Specifically, the biogas component of this project is investigating the efficiency of a commercial biogas digester, one which claims to digest any type of organic waste into natural gas that can power a portable stove. The Renewable Natural Gas team will carry its momentum into the coming year as they apply their successes in waste audits and biodigester preliminary research to their new goals in investigating the environmental impact and energy potential of renewable natural gas.

Accomplishments

- Successfully conducted UCLA's first campus-wide waste audit, which involved sorting garbage and collecting data from over 200 bags of landfill waste.
- Completed 3 more audits after three-stream bins were installed to assess waste diversion rates
- Collaborated with industry sponsors to secure training for the use of biodigesters
- Established an on-campus location to house the biodigester, a source of food waste, and a use for left-over organic waste as compost
- Performed preliminary research to test the digester

Goals

- Conduct data analysis on the 2018-2019 campus-wide waste audit
- Create a cumulative end-of-year report on the energy potential of UCLA’s organic waste using the aforementioned data analysis
- Receive administrative approval to begin testing the efficiency of the biogas digester on campus
The Solar Team began three years ago as a project aimed at expanding the area of solar coverage at UCLA. The team was extremely successful at accomplishing this feat. First, it acquired the necessary funding which is allowing the Ackerman Union at UCLA to install enough new rooftop solar panels to reach full solar capacity. And second, it increased outdoor energy access for students and faculty, by helping to install solar umbrellas as part of a solar awareness campaign.

Since then, Solar Team has shifted to a more hands-on technical approach. REA partnered with GRID Alternatives to provide members with training to assist in rooftop solar installations in underserved communities, thus supporting the energy needs of low-income families and promoting the transition to a solar-powered future. This year, the Solar Team also completed the design and construction of a full-scale operational solar generator. They performed data analysis in multiple phases of the machine’s development, and they are continuing to improve its efficiency in the coming year. Given their immense success in building their first solar generator, members of the solar team have decided to establish their own independent organization: Design Create Solar, which plans to continue working in close partnership with REA.

Accomplishments

- Received $220,000 from The Green Initiative Fund (TGIF) to expand existing solar installation at UCLA.
- Partnered with the On-Campus Housing Council to install solar umbrellas for outdoor energy access.
- Completed solar installation trainings and three trips to service low-income communities.
- Built a solar generator that successfully powered a partnered organization’s electric vehicle. The generator had a charging rate of 5V/hr, a peak amperage of 10.17A, and a peak voltage of 36.05 V

Goals

- Continued partnership with Grid Alternative, with the goal of completing 5 solar installs in the 2019-20 academic year
- Conduct a quarterly workshop in partnership with Design, Create, Solar to teach technical skills pertinent to the development of solar energy
LEARN & TEACH

As an organization at one of the country’s top research universities, REA believes that education forms the foundation for students to develop a passion for renewable energy. The Learn & Teach team was therefore created to spread knowledge about renewable energy and sustainability and to get young students excited about and aware of these fields. Previously the Lab School project, Learn & Teach developed and distributed curricula, as well as led weekly energy-focused lectures for young students at UCLA’s Lab School: an innovative school for students’ age 4-12. They presented this curricula to a range of other audiences as well, including the WorldSpeak School and LA Family Housing.

In the past, Learn & Teach also partnered with LA Family Housing to reach out to underserved communities to provide access to energy and sustainability-related information. This past year, the Learn & Teach team worked with Sotomayor high school, presenting to the high school’s photovoltaics class on a number of occasions. They presented on the topic of renewable energies in general, and delved into green roofing, geothermal energy, and energy and politics. Additionally, the team attended a number of outreach events, like Engineering Kids Day, Engineering Week, and the annual Exploring Your Universe fair to bring renewable energy curricula to the over 1,000 attending students. This coming year, the team will continue its community involvement and expand its on-campus advocacy by partnering with other student organizations, attending conferences, and hosting more info sessions for UCLA students.

Accomplishments
- Presented at the UCLA Lab School, WorldSpeak School, LA Family Housing, and Sotomayor Learning Academy
- Participated in Explore Your Universe, Engineering Kids Day, and Engineering Week for 3 consecutive years

Goals
- Reach out to new schools to form partnerships with more students, particularly in underserved communities
- Expand and adapt the renewable energy curriculum for on campus UCLA events that attract students from all fields of study
ANNUAL EVENTS

On top of the incredible work that REA’s teams do, the Executive Board is also a driving force in the accomplishment of REA’s mission. Between organizing and running campus-wide events, collaborating with all branches of UCLA’s administration and student body, and inviting leading experts to educate students, the Executive Board is consistently looking to expand REA’s presence and impact on campus. The following are highlights of some of our notable annual events.

WASTE AWARENESS WEEK

This year, REA organized UCLA’s first-ever Waste Awareness Week: a campus-wide collaboration with 15 other student organizations aimed at shedding light on the multi-faceted global waste crisis. With interactive exhibits, DIY workshops, documentary screenings, clothing swaps, and speaker panels of government officials and nonprofit entrepreneurs, Waste Awareness Week is one of UCLA’s most ambitious, widespread, and powerful sustainability outreach events that emphasizes topics ranging from environmental justice to commercial packaging alternatives. In 2019, Waste Awareness Week earned REA the award for Best Sustainability Program of the Year at UCLA’s 2019 Green Gala Awards Ceremony, paving the way for an impactful tradition for years to come!

SPEAKER SERIES

Throughout the year, REA hosts multiple speaker events featuring guests from a wide range of occupations pertaining to sustainability. One such event is the annual Renewable Energy Research Panel in which professors discuss the relation between their work and modern advances in renewable energy technologies. REA also hosts the Energy Policy Panel, where we invite government officials and policy researchers to discuss
how public policy can shape and promote renewable energy. The panel features presentations from influential leaders in fields that are often understated in their importance for sustainability, such as journalism and law.

**TABLING EVENTS**

In addition to our many self-organized campus events, REA also offers exhibits and presentations at a variety of fairs organized by other organizations in the UCLA community. Such events include Coastalong (an eco-friendly on-campus music festival), the Enormous Activities Fair (a presentation of clubs and organizations in the first week of the academic year), and UCLA's annual Earth Day celebration. At these gatherings, REA teaches the UCLA community about exciting developments in renewable energy, the current state of world-wide waste management, and the powerful impact each individual can make through their daily decisions and actions.

**INFO SESSIONS AND WORKSHOPS**

At REA, we often invite professionals to speak about their organization, recruit for internships and full-time positions, and inform students of the technical and professional skills they need to work in industry. Ranging from the head of administrations at start-ups to representatives of multi-million dollar corporations to career advising professionals from UCLA, workshop representatives exhibit a wealth of experience with all types and sizes of companies in the energy sector. In some workshops, they also provide one-on-one resume critiques, interview prep, and cover letter revisions for UCLA undergraduates.
ENERGY JOBS FAIR

REA hosts an annual jobs fair to connect the UCLA community with energy focused companies. Since 2015, the event provides an amazing opportunity for students and companies to interact. The attendance of students from diverse academic backgrounds increases every year, boasting over 100 applicants for 8 industry-leading alternative energy companies in 2018.

**SPONSORSHIP TIERs**

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Please feel free to contact us at uclarenewable@gmail.com, and we would be happy to answer any questions about REA. If you would like to sponsor us or negotiate any of the mentioned tiers, please contact our External Vice President, Joe Picchi, at jpicchi22@q.ucla.edu. Thank you!