Accelerating Solutions for Climate in California Maximizing the Impact of UC Berkeley I&E

Lay Abstract

The proposal outlines portfolio of initiatives that draw on, expand, and pull together many of UC Berkeley's most successful innovation & entrepreneurship (I&E) programs that capture the spectrum of incubation and acceleration needed to bring climate solutions from their student, post doc, faculty, and alumni origins to their full potential. We focus on three key areas, referred to as "platforms" and they are:
1) Incubation & Acceleration, 2) Climate Action Outreach, and 3) Communication & Coordination.

Subject Area(s)

Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Policy and Law, Social and Behavioral Sciences, Other

Aggie Climate action for Equity (ACE): Innovation & Entrepreneurship for Climate Change Solutions

Lay Abstract

The proposed UC Davis Aggie Climate action for Equity initiative ("ACE") will be led by Venture Catalyst, the startup-support arm of the UC Davis Office of Research's Innovation and Technology Commercialization unit. In collaboration with an established cadre of on- and off-campus stakeholders and the UC Davis intellectual property office (InnovationAccess), Venture Catalyst will leverage existing infrastructure and form new partnerships to yield a climate innovation pathway that accelerates the translation of nascent technologies and policy proposals into applied projects that yield actionable results and/or models with a proof-of concept within the 2-year grant horizon, poised so that innovations can be replicated and deployed at scale within 2-5 years. ACE will do this by developing and providing programming that connects climate science, climate justice, and entrepreneurial mindsets with proof-of-concept grant support for translational projects with the highest potential to have large-scale and/or near-to-medium term impact.

Subject Area(s)
Other

Focus Area(s)
Climate Studies and Climate Change

Resilience and Adaptation Development in California (RADiCal)

Lay Abstract

UCI's Resilience and Adaptation Development in California (RADiCal) initiative will apply UC Climate Action Innovation & Entrepreneurship (CAIE) funds to programs bridging innovation-to-impact gaps leading to rapid commercialization. Our integrated strategy brings transdisciplinary campus resources together, leverages diverse and inclusive talent and culture, draws on radical collaboration pathways, and provides flexibility to enable adjustments toward tangible, lasting, leverageable results.

The RADiCal initiative will accelerate the capabilities of UCI and its partners to move climate action projects swiftly and efficiently toward real-world application around two Programming Areas: (1) Catalyze a Prolific Climate Action Translation Hub and (2) Climate Action Solution UCI IP/Knowledge Translation Velocity. Specific programs include the establishment of the Climate Action Business Incubator (CABI), increased Proof of Product (PoP) funding for climate action-oriented innovations, strengthened domain expert exchange platforms and workshops, and eased access to UCI core facilities for industry and community partners accelerating climate action-related projects.

Subject Area(s)

Biological and Life Sciences, Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Social and Behavioral Sciences, Public Health

UCLA Climate Action Innovation and Entrepreneurship Award Application

Lay Abstract

With funding from the UC Climate Action Innovation & Entrepreneurship Awards, UCLA TDG plans to expand its I&E efforts on the following climate priorities:

- Water & Drought Management
- Community Health
- Clean Energy & Energy Efficiency
- Clean Transportation

The record-breaking heat wave that much of California experienced in Sept, 2022 was a reminder of how increased temperatures will be especially dangerous for people in vulnerable communities. Homes in lower-income neighborhoods are less likely to have air-conditioning than those in wealthier neighborhoods. And lower-income neighborhoods tend to be more densely populated, thereby creating an urban heat island effect.

Some of the least-expensive near-term solutions to address the heat risk that vulnerable communities face are new ways of keeping homes and businesses cooler without the use of air-conditioning. UCLA's portfolio of research innovations includes a number of novel technologies in this area. Lab-scale testing of these innovations has shown remarkable reductions in heat transfer to buildings, compared to conventional construction. Funding from the UC Climate Action I&E Awards would facilitate scale-up and refinement of these technologies, to prepare them for implementation in real-world settings.

Another factor that more severely affects people in vulnerable communities during heat waves is decreased air quality. Many lower income neighborhoods suffer from poor air quality because of their location adjacent to freeways and industrial sites. UCLA researchers are working on a number of technologies that will accelerate the transition to electric vehicles, reduce emissions from manufacturing plants, and improve emission-free power generation.

With California's drought continuing into another year, new technologies that ensure a reliable water supply are becoming more important. The recent water crises in Flint, MI, and Jackson, MS, have demonstrated how water supplies in vulnerable communities are often at risk when environmental factors change. UCLA researchers have active research programs that have produced improved water filtration, testing, and monitoring technologies. Funding from the UC Climate Action Awards would allow these researchers to move through their final development and validation steps so that the technologies could be brought into service in the near future.

Subject Area(s)

Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences

UC Merced Climate Action Innovation & Entrepreneurship Hub

Lay Abstract

The University of California Merced proposes to i) disburse Climate Action LaunchPad Proof of Concept (PoC) innovation and entrepreneurship (I&E) funds through a one-time competition, ii) hire an Entrepreneur in Residence (EIR) to assist the PoC award recipients in delivering climate action solutions for California communities, and iii) stand up the first wet lab incubator on the UC Merced campus, facilitating entrepreneurial activity in support of climate solutions.

Subject Area(s)

Arts and Humanities, Biological and Life Sciences, Education, Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Policy and Law, Social and Behavioral Sciences, Public Health

Jumpstarting Climate Action through Entrepreneurship in the Inland Empire

Lay Abstract

UC Riverside proposes the creation of the OASIS Entrepreneurial Academy: an integrated program of entrepreneurial support activities focused on identification, development and validation of solutions focused on increasing climate resilience, adaptation, and mitigation capacity of the most vulnerable populations in the Inland Empire.

Leveraging its robust infrastructure to support technology commercialization and startup creation, the OASIS Academy will deliver entrepreneurial education, specialized mentorship and opportunities for commercialization and deployment to UCR and Inland Empire innovators. Results from activities will be disseminated annually via a regional climate conference.

Regional climate vulnerability assessments and resilience strategies will guide project selection and prioritization to ensure immediate relevance to the community impacted. One important goal of the project is to generate12 new startup/technology licenses.

Subject Area(s)

Arts and Humanities, Education, Engineering, Mathematics and Technology, Physical Sciences, Social and Behavioral Sciences, Public Health, Other

Broadening Participation and Seeding Climate Innovation for the Central Coast

Lay Abstract

UCSB proposes to use $1 million in Climate Action Innovation & Entrepreneurship funds to lay the foundation for a regional ecosystem delivering practical, equitable, and scalable mitigations and adaptations focused on climate action for the state of California. Our vision is to build on regional resources and expertise in materials science, agriculture, and aquaculture and leverage our campus strengths in life-cycle analysis to understand the benefits and marketability of new technologies, ensure equitability in deployment and impact, and assess the practicality and scalability through testbeds and policy. We will implement a series of community-building activities and provide innovation fellowships to engage a broader suite of scholars, local industry leaders, investors, and community members in climate action I&E. Students and postdoctoral researchers supported by these funds will participate in a novel training program for climate action innovation and entrepreneurship. Our planned activities leverage existing I&E resources and infrastructure to accelerate climate action solutions for California communities, particularly those most vulnerable to climate emergencies, disasters, and inequities. In addition, we expect that our community-building activities as well as our focus on broadening faculty and researcher participation will yield long-term sustainable increases in climate action I&E that will extend well beyond the funding period.

Subject Area(s)

Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Social and Behavioral Sciences

UC Santa Cruz Climate Action Solutions Catalyst Program

Lay Abstract

The UC Santa Cruz Climate Action Solutions Catalyst Program will deliver a suite of innovation and entrepreneurship activities across three main elements that will advance development and drive adoption of solutions addressing California's most pressing climate challenges. First, the Program will support ideation and problem solving by cultivating climate action projects supported through separate seed funding initiatives, accelerating projects originating from exemplary campus programs such as the Coastal Resilience Lab and Coastal Science & Policy Program, and integrating a climate solutions track into student pitch competitions. Second, the Program will focus on development and capacity building, advancing innovative solutions through targeted proof-of-concept funding, customer discovery and validation training for project teams, and customized technology and venture development workshops developed in collaboration with partners like the Sustainable Ocean Alliance. Third, the Program will enable meaningful engagement and outreach to build relationships for impact by creating and connecting an extended mentor network, providing access to Institute for Social Transformation community engagement workshops and consultations, and organizing project showcase and partnering events in coordination with ecosystem partners such as Santa Cruz Works. Through its direct activities, the Program will support up to 18 innovative projects and 64 entrepreneurial teams over the two year funding period. As part of the program management efforts, the team will capture a core set of metrics to track the short- and moderate-term success of funded projects and teams, including invention disclosures, patent applications, options and licenses, sponsored projects, and stakeholders engaged. Another important outcome organized under the program management activities will be a collective resource mapping external partners and other entities that could utilize, license, or invest in climate action research outcomes and innovations.

Subject Area(s)
Environmental and Earth Sciences

Innovating for Climate Action - UC San Diego

Lay Abstract

UC San Diego has deep expertise in technology and policy development around issues of climate change and resilience. Collaboration and transdisciplinary are a hallmark of those efforts, with the focus being on bringing multidisciplinary teams around developing effective solutions to tangible problems.

Proposed Scope of Work
With the strong campus foundation, we propose to leverage existing resources and expertise to accelerate the development of climate solutions with tangible outcomes for our California communities. Our proposed activities will contribute to the development of the innovation workforce of tomorrow that will sustain climate adaptation and resilience in the long term.
We propose the following programs which are described in more detail in the proposal plan:
1. Climate solutions: A proof of concept program to take ideas and technologies emerging from research and policy programs and work with the community to deploy as products with real positive impact in the community.
2. Climate Workforce: An experiential incubator program to help student innovators develop their climate solutions from idea to impact while being mentored and supported by community and industry experts. This program will develop both solutions and the climate workforce to drive sustainable growth in these sectors in the long run.
3. Climate Awareness: A series of events, seminars and workshops bringing students, faculty, industry, government and the broader community together to develop relationships, raise awareness, and identify community-driven priorities around the issues of climate adaptation and resilience.
Conclusion
The programs in this proposal will accelerate an already strong foundation in innovation and entrepreneurship, with a specific focus on California climate action priorities. Through our proposed activities, we will contribute to the innovation workforce and build lasting partnerships with state and local agencies, industry, and regional communities.
Our activities will raise awareness of climate resilience and adaptation issues, priming future engaged work. Our proposed scope of work will bring the considerable talent and expertise of faculty, students and staff, together with the community, so we can build a better, more inclusive and climate resilient future for everyone.

Subject Area(s)
Arts and Humanities, Biological and Life Sciences, Education, Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Policy and Law, Social and Behavioral Sciences

Accelerating Climate Emergency Response to Wildfire Smoke to Improve Health and Resilience

Lay Abstract

Lay Abstract

Climate change is driving a wildfire crisis that is polluting California's air. Wildfire smoke harms population health both near and far from fire risk areas and drives significant health disparities. While California is acting to address destructive wildfires, it has paid insufficient attention to health threats from wildfire smoke. This contradicts the State's Climate Adaptation Strategy, which sees wildfire smoke as an urgent public health risk that requires action. In alignment with California's climate goals, we propose to improve public health and protect climate vulnerable communities from wildfire smoke, using the San Francisco Bay Area as a model. Specifically, the proposal outlines three objectives. First, we will use novel machine learning technologies to identify SF Bay Area populations most at risk of adverse health outcomes from wildfire smoke. Second, we will assess how strategies to mitigate the adverse health impacts of wildfire smoke are currently deployed by public health departments and community organizations in the SF Bay Area, and, importantly, whether they are effective. Finally, we will utilize what is learned to activate clinical and community emergency response to wildfire smoke events in the SF Bay Area.

Subject Area(s)

Dentistry, Medicine and Nursing Practice, Environmental and Earth Sciences, Social and Behavioral Sciences, Public Health

The VINE Climate Smart Agrifood Innovation Program

Lay Abstract

Maintaining a competitive, profitable, and sustainable agriculture and food (agrifood) industry, addressing climate change, and securing the nation's food supply while ensuring economic opportunity in rural and urban communities are among the biggest societal challenges of our time. In response to these grand challenges, the State of California has adopted climate-smart policies and programs that support the transition to climate-smart agrifood, providing funding for the implementation of practices or purchase of new climate-smart technologies by farmers and ranchers.

In alignment with the State's goals and in collaboration with state agencies, UC ANR will expand agrifood technology development and translation programming to support climate-smart innovation and entrepreneurship activities that directly lead to climate change preparedness, resilience, or mitigation outcomes.

Over the two-year period, the following activities will be conducted:
1. Provide matchmaking, mentoring, talent identification, finance connections, and technical assistance to entrepreneurs and startups from University of California campuses, across California, or around the globe that have climate solutions in the agrifood sector, with an emphasis on including and serving diverse founders representing underserved communities.
2. Provide technical assistance for testing, trialing, and demonstration of agrifood technology products or services to support commercial expansion.
3. Support the rapid commercialization and scaling of climate-smart science-based technology solutions to industry-driven needs in California, focused on food-producing regions that are underserved, disinvested, limited resourced, and have experienced economic challenges resulting from climate and pandemic impacts.

As a result, this program will further California's progress towards realizing climate action priorities, leading to new business and economic, growth in BIPOC representation throughout the industry, incentivized climate resilience across the industry, and unprecedented new climate-smart technologies commercialized.

Subject Area(s)
Biological and Life Sciences, Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences, Policy and Law, Social and Behavioral Sciences, Other

Biodiversity and Nature-based Innovations for Mitigating Adverse Impacts of Climate Change

Lay Abstract

The Global Risks Report 2022 of the World Economic Forum lists biodiversity loss as the #3 greatest threat to humanity over the next decade, exceeded only by extreme weather (#2) and climate action failure (#1). While awareness of dangers presented by climate change have increased, the associated consequences of biodiversity loss are often under-appreciated. Biodiversity—the scaffolding for what we broadly define as nature—is essential for human existence and quality of life. As the world's largest university-managed network of natural areas, the UC Natural Reserve System (UCNRS) serves as an opportunity incubator fostering new modes of collaboration, accelerating innovation, and ultimately translating science and scholarship into policy that serves both state and national interests. Equally important, the UCNRS fosters field-based experiential learning that creates new pathways for undergraduates from under-represented backgrounds to enter the workforce as innovators and problem-solvers for people and nature. In this proposal, the UCNRS seeks to apply and scale the next generation of environmental technology and education-based solutions, including artificial intelligence (AI) and machine learning, edge computing, unmanned aerial vehicles (UAVs), low earth orbiting microsatellites, and the Internet of Things (IoT) in new ways, and with the goal of making these environment-focused tools/applications smarter, cheaper and widely accessible in the public domain. Additionally, this proposal seeks outcomes that will benefit Climate Vulnerable Communities, including building new pathways for undergraduates from under-represented backgrounds to enter the climate and environmental workforce. In summary, the projects outlined below leverage existing infrastructure and resources to accelerate nature-based climate solutions by: (1) developing the capacity to remotely assess biodiversity; (2) understanding post-fire resilience of individual plants and/or plant communities to wildfire; (3) establishing a coastal monitoring network that can identify and aid in addressing impacts of global climate change for coastal communities; (4) building an inclusive and diverse workforce of conservation and climate scientists; and (5) understanding how fuels and land use management choices affect subsequent risks from wildfires.

Subject Area(s)

Biological and Life Sciences, Education, Engineering, Mathematics and Technology, Environmental and Earth Sciences

Transforming UC Health systems to reduce impact of climate on vulnerable populations

Lay Abstract

Climate change has led to new challenges to health of vulnerable populations in California and the United States. The University of California (UC) including its health system are committed to monitoring the impact of their operations on the environment. This commitment has been formally documented in the UC sustainability policy. Hospitals and health systems are some of the most energy and resource intensive sectors. UC Health has substantial opportunities to better understand the intensity and utilization of resources for its operations and potential impact on the vulnerable populations in the communities the respective systems serve. The goal of this proposal is to develop the capacity for UC Health to determine the impact of its operations more rapidly on greenhouse gas emissions and the populations it serves. The objectives of the project are to create dynamic sustainability data reporting for UC Health, reduce direct GHG emissions by transitioning to a portable system for nitrous oxide, and develop climate resilience best practice tool kits. Outreach workshops and other activities will be done to engage stakeholders. The project work will be published on World Wide Web along with workshops and other strategies to disseminate the results. Results of the project are expected to assist health systems in determining climate impact on vulnerable populations.

Subject Area(s)
Environmental and Earth Sciences

Accelerating Climate Tech Commercialization through Innovation & Entrepreneurship Fellowships

Lay Abstract

With this UC Climate Action Innovation & Entrepreneurship (I&E) proposal, Berkeley Lab Foundation, in partnership with Activate Global, Inc. and Lawrence Berkeley National Laboratory (LBNL), will support six fellows for two years in Activate's nationally recognized climate technology accelerator program. The program allows scientists with early-stage, innovative ideas addressing climate change to continue their technical progress to demonstrate the feasibility of their idea, while also learning the fundamentals of commercialization. LBNL will provide the technical mentorship and resources to help each fellow advance their technology from idea to proof-of-concept experiment, while Activate will provide the entrepreneurial training and connectivity to California's climate change innovation ecosystem. Together, Activate and LBNL will support six fellows over two years with a focus on empowering California-based scientists that will provide benefits to those communities that are likely to be disproportionately impacted by climate change due to economic and geographic factors in the State. This program will ultimately enable the creation of six climate-focused companies that are advancing innovative solutions around climate preparedness, resilience, and/or mitigation tailored to local community or regional needs in California.

Subject Area(s)

Biological and Life Sciences, Engineering, Mathematics and Technology, Environmental and Earth Sciences, Physical Sciences

Aligning Climate Solutions with Energy Equity, Entrepreneurship and Environmental Justice

Lay Abstract

Global problems such as climate change, have increased the stakes of slow technological progress and demanded accelerated technological solutions. A center for technology development is needed to de-risk and accelerate basic scientific discoveries toward early- and middle-stage climate solutions including large pilot- and production-scale demonstrations. This center is also needed to help build and train a specialized workforce to acquire the skills necessary to foster the development of climate technologies in application areas such as carbon capture, conversion, and associated renewable energy technologies, and to mitigate the impacts from climate change and climate technologies on vulnerable communities. Here we present a framework for a novel approach called the “Prototyping Enclave”, a center for technology development that will aim to rapidly develop and/or scale climate technologies while seeking to mitigate diversity, equity, and inclusion impacts from climate change. In the following, we describe how the center includes a multi-pronged approach to mitigate the impacts climate change and climate technologies could have on vulnerable California communities. This approach consists of leveraging the Prototyping Enclave to (1) build and train a workforce comprising members from these vulnerable communities, (2) chart a path for members of these communities to benefit from the carbon economy through entrepreneurial opportunities, and (3) empower members from vulnerable communities to participate in climate technology development and deployment discussions with government agencies and industrial partners.

Subject Area(s)
Engineering, Mathematics and Technology