BIG IDEAS ENERGY & RESOURCE ALTERNATIVES

OVERVIEW

Today, more than ever, the negative environmental and economic impact of using non-renewable energy resources such as fossil fuels and the benefits of renewable energy resources, such as solar, wind, geothermal, hydropower and tidal energy, and biofuels that are grown and harvested without fossil fuels are well known. A strong consensus in the scientific community has affirmed that non-renewable energy is less accessible, reliable, safe, and clean than renewable alternatives. Climate change, caused by human production of carbon dioxide and other greenhouse gasses, has already had observable effects on the environment (i.e., shrunked glaciers, shifts in plant and animal ranges, accelerated sea level rise). In the long term, climate change threaten agriculture, endanger clean drinking water, and aid in the spread of disease.

THE CHALLENGE

The challenge for this category is to encourage the adoption of clean energy alternatives that are sustainable and have the potential for broad impact. Proposals may focus on the design, development, or delivery of sustainable energy solutions and can be domestic or international in scope. However, all proposals should clearly demonstrate the relationship between the proposed intervention and its impact on the environment.

Solutions may focus on several areas, including but not limited to: (1) clean, renewable energy technology; (2) land/watershed management; (3) climate change adaptation; (4) ecosystem recovery and/or maintenance; (5) source reduction/waste prevention.

Examples of proposals that would fit into this category include:

- A project to accelerate governance, policies, laws, or commerce to spur clean energy alternatives.
- A program to create economic growth based on alternative energy production.
- A proposal that integrates carbon sequestration into the design process to create better, more environmentally beneficial, buildings.
- An initiative focused on low-cost clean energy solutions that foster adaptation and resilience to climate change.

BIG IDEAS PAST WINNERS

BERKELEY ENERGY & RESOURCES COLLABORATIVE (BERC)

2nd Place Winner, Energy Efficient Technologies (2008)

The Berkeley Energy & Resources Collaborative (BERC) is a multidisciplinary network of UC Berkeley students, alumni, faculty, industry professionals, and advisors who seek to turn world-leading research into world-changing solutions by tackling tough and timely energy and environmental challenges. More specifically, BERC's mission is to connect, educate, and engage its members in order to foster innovation and action. BERC's Innovative Solutions program (BIS) is a consulting initiative that leverages Berkeley's energy resources and expertise to offer innovative solutions to clients.

Status: BERC is one of Berkeley's most established and reputable student-run initiatives, with several high-profile programs each year. BIS remains one of it's core services, and has served past clients like Siemens and Sunpower.

http://berc.berkeley.edu/

GRAM POWER

3rd Place Winner, Global Poverty Alleviation (2011)

Gram Power developed an integrated smart microgrid technology that offers: (1) an innovative power management unit (PMU) in every home to provide intelligently metered pre-paid power with multiple AC and DC voltage outputs; (2) distributed storage (battery backup at the household level) to minimize investment and losses related to centralized battery banks; and (3) DC transmission technology to prevent theft. The modular and scalable design of PMUs and storage enables Gram Power to setup microgrids for 20 to 1000 homes catering to individual energy needs of 11Wh to 2000Wh.

Status: The Gram Power team has scaled significantly, and is now offering smart metering, smart microgrids, and smart energy monitors in a continued effort to eliminate barriers to affordable energy solutions. They have since won several prestigious awards and received extensive media publicity.

http://www.grampower.com/

FECES TO FUEL

1st Place Winner, Clean & Sustainable Energy Alternatives (2015)

The increased market demand for household cooking fuel in Kenya provides an opportunity to improve livelihoods and the environment. This project unlocks the potential in human feces and other waste streams by transforming it into an affordable household cooking fuel. Sanivation, a partner organization, produces charcoal briquettes derived from human and agricultural waste that is cheaper than traditional charcoal. These fuel briquettes produce less smoke than traditional charcoal, consequently reducing the users' exposure to toxic fumes and reducing indoor air pollution. Feces to Fuel aims to aid Sanivation with the technical and design work necessary to expand their business and scale production to 180 tons of fuel derived from waste products per month.

Status: The Feces to Fuel team is partnering with Sanivation to launch their project this summer.

http://bigideas.berkeley.edu/winners/feces-to-fuel-saving-trees-budgets-and-lungs-uc-berkeley/