

EPA Awards More Than \$1 Million to College Teams for Innovative Environmental Solutions

The U.S. Environmental Protection Agency (EPA) awarded more than \$1 million in grants to 15 university and college teams from across the country who participated in the 8th Annual National Sustainable Design Expo on the National Mall in Washington, D.C. for their innovative environmental solutions. EPA's People, Prosperity and the Planet (P3) award competition was held at the expo, and featured more than 300 college innovators showcasing their sustainable projects designed to protect the environment, encourage economic growth and use natural resources more efficiently. Some P3 team projects include a new process that uses spinach to capture and convert the sun's energy to electricity and a partnership with a local landfill to design a process that uses waste heat and drainage to grow algae for biodiesel production.

Following an initial peer review process, this year's winners were selected from 45 competing teams after two days of judging by a panel of national experts convened to provide recommendations to the American Association for the Advancement of Science. EPA selected the award-winning projects from the most competitive pool of teams ever, basing their decisions on the potential to provide innovative, cutting-edge sustainable solutions to worldwide environmental problems.

"The competition and expo are not only about EPA's prestigious P3 award, but also about supporting the next generation of this country's innovators and entrepreneurs who are entering the environmental and public health field with passion to make a difference and many brilliant ideas," said Lek Kadeli, acting assistant administrator for the EPA's Office of Research and Development. "The P3 program gives these students the opportunity to bring those ideas to realization and many have the potential to make significant impacts on our nation's sustainable future and development of environmental technologies."

Each P3 award-winning team will receive a grant of up to \$90,000 to further develop their design, apply it to real world applications or move it to the marketplace. Previous P3 award winners have started successful businesses and are marketing the technologies in the U.S. and around the world.

Winners of this year's awards include:

- Appalachian State University for developing an artificial wetland suitable for recycling of grey water from small businesses for immediate reuse.
- Butte College for developing structural insulated panels for building construction using rice hulls, an abundant agricultural waste, as the primary raw material.
- Embry-Riddle Aeronautical University for designing a foldable solar power water purification system that can fit into a backpack for easy transport for use after a disaster affecting drinking water supply.
- Gonzaga University for developing a simple ventilation system for kitchens in rural dwellings using electrical power generated from thermoelectric cells driven by waste heat from cooking fires.
- Oregon State University for raising awareness of pollution associated with the production and use of plastic mulch by farmers and testing alternative biodegradable mulch material.
- Princeton University for developing, testing and deploying an electricity generation system that can be transported in a standard shipping container and rapidly set up in rural communities and post disaster areas.
- Santa Clara University for developing a fuel cell capable of continuous sustainable energy supply to meet energy demands in rural communities in developing nations lacking reliable energy grids.
- Southern Illinois University - Carbondale for developing methods to extract (recycle) metals from Coal Combustion Byproducts (CCB) to reduce mining and to produce a concrete with reduce carbon dioxide emissions.

- SUNY College of Environmental Science and Engineering for studying ways to recover struvite, a slow release fertilizer, from digested animal manures and assesses its marketability.
- Texas State University - San Marcos for converting rice husks, a byproducts of agriculture, into a starter material called lignocellulose for producing fabrics, biofuel and silica nanoparticles.
- University of California - Riverside for designing a solar collector to heat ambient air for use in home appliances, such as clothes dryers and space heaters, to reduce home energy consumption.
- University of Cincinnati for developing a pilot scale system to convert trap grease from restaurants, a waste sent to landfills, to renewable biodiesel.
- University of Connecticut for investigating ways to use local industrial byproducts such as steel slag and lime kiln dust to control erosion and to stabilize roads in Nicaragua.
- University of Oklahoma - Norman for design, field-test, construct, instrument, analyze and document a habitat for humanity house built of compressed earth blocks (CEB).
- Vanderbilt University for developing a biohybrid solar panel that substitutes a protein from spinach for rare metals (mined) and is capable of producing electricity.

Honorable Mention winners of this year's competition include:

- Christian Brothers University for developing technologies to improve energy efficiency in the building envelope of residencies in Memphis, Tenn., that focus on the thermal properties of materials, fire safety, material stability and cost.
- Clarkson University for studying the feasibility of using waste heat and leachate from a solid waste management facility for energy to produce biodiesel from algae.
- Drexel University for designing a pilot-scale reactor for local landfill that uses algae to produce biofuels from landfill leachate and gas.
- Purdue University for designing, building and installing affordable ram pumps in Haiti to improve the availability of water for its citizens.
- Rochester Institute of Technology for designing a hydrofoil system that harvests energy from a river while minimizing the harmful effects that dams create for river flow and sediments.
- Santa Clara University for developing a high efficiency solar absorber/exchanger that can bring low cost energy to urbanites who have limited space for solar collectors.
- Southern Illinois University - Edwardsville for evaluating the use of selenium-polluted plant waste materials harvested from phytoremediation sites to produce selenium-enriched edible mushrooms.
- University of Texas at Austin for designing, constructing and testing vermicomposting (composting with worms) bins to improve public health in the Dominican Republic by reducing water contamination from organic waste.
- University of California - Davis for designing and monitoring an affordable green roof technology that uses the shading from plant to cool roof surfaces and reduce peak electricity demand by up to 75 percent.
- Missouri University of Science and Technology for developing a control system that opens and closes windows to maximize natural ventilation and save energy by sensing differences in outdoor and indoor climate conditions.
- University of North Carolina at Chapel Hill for creating and implementing a point-of-view disinfectant for

drinking water that is cheap, non-toxic and effective in reducing waterborne illness in developing nations.

Each year, the National Sustainable Design Expo features EPA's P3 competition while also highlighting and exhibiting other sustainable initiatives, programs and technologies developed and implemented by nonprofit organizations, government and state agencies. This year's expo was co-sponsored by the American Society of Civil Engineers, Engineers without Borders-USA, Engineering for Change and the Association for the Advancement of Sustainability in Higher Education.

P3 teams were also recognized earlier this week during EPA's American Innovation for Sustainability Forum, an event bringing together sustainability and innovation leaders nationwide. The U.S. Army recognized three teams for projects that fit the Army's NetZero initiative. The team from University of Texas at Austin received recognition for Zero Waste for their use of vermicomposting to reduce solid waste. Embry Riddle Aeronautical University developed a lightweight solar powered battery backup water purification system that reflects the Army's Zero Water efforts. University of California at Davis was recognized for their cool roofs project promoting Zero Energy. Additionally, the Paladin Capital Group recognized Vanderbilt University's project working on solar cells with the "Marketplace Innovation Award."

More information on the P3 award competition: <http://www.epa.gov/p3/2012winners>