



E² Energy to EducateSM

Social responsibility is one of Constellation's core foundational values. We believe that providing quality educational opportunities and career development are among the most important tools to help communities succeed in the long term. As part of our commitment to education, E²: Energy to Educate Grants support projects that are team oriented, learning focused, hands-on demonstration projects with specific results. E² Energy to Educate projects enhance student understanding of the science and technology needed to address energy issues, and reach and inspire students to think differently about energy.

2013 E2 Energy to Educate – Highlights

- **10 projects awarded \$310,000, reaching over 21,000 students nationwide**
- Energy efficiency analysis, using the school building itself as a laboratory
- Investigating photovoltaic solar conversion efficiency, hands-on solar installation and model solar car competition
- Demand response of small to medium load appliances using wireless smart plug technology
- Student ambassadorship of energy efficiency, electric vehicles, and alternative technologies leveraging design and investigative experience

2013 E2 Energy to Educate – Awardees

Baltimore Polytechnic Institute (Maryland)

180 students will be involved in making a classroom solely dependent on a renewable energy-solar. Students will learn from hands on projects in conjunction with a new Renewable Energy Curriculum written in cooperation with the Department of Energy. Many renewable energy activities are integrated throughout the curriculum, the most important being progressive solar energy installation. Students will conceive, design and install all facets of the project with the advice of an industry expert and under the supervision of school faculty. Students will learn the science and engineering of the technology in the classroom, then test and measure in the lab, and finally measure the efficiency of the comparable commercial equipment in the school building.

Coppin State University (Maryland)

120 students from Coppin State University and Coppin Academy will explore new energy technologies including quantum dot solar cells and nanotechnology. Student will explore how these technologies are developed and applied and what makes them succeed while others fail. Researchers and engineers in solar technology industry will mentor students as they design projects and explore career opportunities in solar technology. At the completion of the project, students will have a better understanding of solar energy technologies as measured by pre-test and post-test, design of solar cell with greater efficiency and presentation of project results at energy conferences.

Evergreen Heritage Foundation (Maryland)

Over 1,100 high school and college students will experience in hands-on learning opportunities in energy science and technology through creating 1) a 200 square-foot Energy Learning Station that will be used by hundreds of students annually and 2) an energy-efficient architectural design for a new 2500 square-foot Evergreen Energy Education (E3) EHC classroom facility that will provide a functioning example of green energy solutions. Students will identify and evaluate energy resources, investigate renewable energy technology alternatives, conduct energy audits at their schools, and assess renewable energy solutions already in use at local high school and college facilities. The buildings will demonstrate and allow students to evaluate renewable and other energy-saving solutions, including an energy "dashboard" that will enable students and visitors to monitor energy usage and efficiency.

Farleigh Dickinson University (New Jersey)

550 students from various New Jersey high schools will participate in a conference on Global Sustainability and Renewable Energy. The 2014 Global Leadership and Sustainability Challenge is a partnership between academic centers at Fairleigh Dickinson University and local educational partner, Student Global Ambassador Project (SGAP). The conference will bring together students, teachers and administrators at Fairleigh Dickinson campuses for hands on projects in Global Sustainability and Renewable Energy (Spring 2014), followed by second session on Social Entrepreneurship (Fall 2014). The program will culminate in the participating students creating social venture ideas/proposals, a selection of which will be entered into FDU's annual Business Ideas Competition that will have a Social Entrepreneurship category for the Spring 2015 season.

Green Street Academy (Maryland)

Green Street Academy and the Living Classrooms Crossroads School will partner to take the Green Street Racers competition to the next level. Building from a successful Baltimore pilot of a National Science Foundation-supported middle school program, the two schools will team up to engage 400 students on a program that focuses on new electric vehicle (EV) and photovoltaic (PV) technologies now emerging into the marketplace. The after-school program is based on national science, math, and technology standards and promotes a team-oriented, hands-on demonstration project with specific results: a spring 2012 EV racing competition. The program will advance student understanding of what makes some technologies succeed and others fail, while fostering teamwork among middle school students toward a common goal. Topics covered include: Solar Technology, Distributed Generation, Electrical Vehicles and Energy Storage.

International Center for Sustainable Development - Baltimore-Washington Electric Vehicle Institute (Maryland)

Baltimore-Washington Electric Vehicle Initiative (BEVI) will engage a youth service corps of high school and college students focused on electric vehicle education. These interns target community outreach and impact in energy and the environment for Maryland EV ready jurisdictions. BEVI works to improve and grow electric vehicle outreach and education in collaboration with the University of Maryland at College Park Energy Research Center, Johns Hopkins University, Maryland Institute College of Arts, and the University of Maryland Baltimore County. Elements include a Statewide EV education and outreach website at

'www.MarylandEV.org', related social media campaigns designed by students, and social entrepreneurship business plans related to electric vehicles in the region, ultimately reaching 4,500 students.

Mid-State Technical College Foundation (Wisconsin)

189 area students at four participating high schools will learn energy generation, use, and conservation. Mid-State Technical College's Renewable Energy program faculty will provide energy efficiency curriculum and instruction to evaluate the energy efficiency of their facility using modern scientific methods and curriculum. Students will utilize state of the art energy efficiency diagnostic tools, such as infrared cameras and blower door systems, to assess their facility energy efficiency. Based on their education and application of tools, students will then design a 2-4kW photovoltaic system for their high school. The system will be used hence forth as an actual demonstration unit for STEM courses. Through a partnership with the Wisconsin K-12 Energy Education Program (KEEP), teachers will participate in continuing education courses to further reach an additional 600 students.

Rochester Museum (New York)

10,000 school-age youth will be engaged in the process of invention as it relates to energy production and consumption, and learn about careers within these fields through hands-on design-and-build challenges in RMSC's new Inventor Center exhibit. The Inventor Center will consist of a series of participatory stations designed to scaffold the inventive process into accessible parts. The experience is a combination maker/engineering-challenge space where visitors are invited to engage in design and build challenges based on authentic problems faced by industry/academics.

Solar One (New York)

Developed by Solar One, the Green Design Lab (GDL) is a hands-on sustainability curriculum aimed at greening urban schools. GDL utilizes the school building as both a laboratory for learning and a tool for environmental change to enhance student environmental literacy and science, technology, engineering and math (STEM) skills while promoting behavioral change in the direction of energy efficiency and healthier, greener urban spaces. The Green Design Lab will teach 4,500 students to reduce energy consumption in their school buildings, cultivate environmental stewardship in their communities, and gain valuable skills for career pathways in the growing industries of Clean Tech, Energy Efficiency, Green Design and Construction, and Renewable Power.

University of Maryland Baltimore County (Maryland)

200 students will engage in a competition to develop new interactive demand response technologies. The challenge the students will address is informed 'localized' optimization of large numbers of low-to-medium load appliances, which currently aren't managed by commercially available demand response technologies, and consume approximately 50% of a commercial building's energy consumption. By using new emerging 'smart plugs' which embed a micro-controller and low-power communication device, power consumption will be monitored and the data will be communicated wirelessly. Students will benchmark power consumption data to build a dynamic catalog, and develop a web-based portal for visualizing detailed historical and real time energy consumption. Ultimately, these systems will make energy consumption visible and actionable. Further, students will investigate motivational practices to convince individual consumers to reduce their energy footprints.