Solar Energy Challenge Workshop

November 4th, 2023 from 9 am until 3:00 pm
119 Chambers Building, University Park, PA 16802

Register now!

Learn how to coach a team of students to compete in our inaugural solar challenge, including details on solar power, basic electronics, properties of light and designing a building with integrated photovoltaics.

Presented by Dr. Susan Stewart, Amber Cesare, and Stephanie Klixbull

When students participate in the Solar Challenge they will:
- Discover solar energy as a resource and its ability to provide clean energy solutions to meet the needs of society
- Design, build and test a functional, creative solar power solution
- Compete with their peers in a supportive environment

Solar electric power is one of the fastest growing energy resources in the United States today. In this workshop you will engage in hands-on activities that will introduce you to the science behind solar energy while putting easy-to-use tools in your hands. Hands-on activities include evaluating performance of solar devices under a variable solar resource, applications of solar energy, basic electrical concepts, and properties of light. These investigations are powerful vehicles to expose students to "difficult-to-hold-onto" concepts like energy conversion and transfer, electricity generation, and our energy future. You will leave this workshop with the knowledge, skills, and resources needed to introduce students to solar energy concepts as well as how to integrate solar power into building designs. You can use the activities from the workshop with your students to get them excited about clean energy systems.

Target Audience: Teachers of students in grades 4-12
- This workshop is FREE to all educators with ACT 48 (5 hours).
- A continental breakfast and lunch are provided by the Center for Science and the Schools (CSATS).
- An introductory KidWind Solar Kit.

Maximum enrollment is 24. Register online now to reserve a spot today.

Contact: Stephanie Klixbull at smk7256@psu.edu

PennState College of Engineering | AEROSPACE ENGINEERING | PennState College of Education | CSATS Center for Science and the Schools

Academic Standards

Next Generation Science Standards:

- **4-PS3-2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
- 4-**PS3-4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- **MS-PS3-3** Apply scientific principles to design, construct, and test a device that either minimized or maximized thermal energy transfer.
- **MS-PS3-5** Construct, use, and present arguments to support the claim that kinetic energy of an object changes, energy is transferred to or from the object.
- **HS-PS2-5** Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.
- **HS-PS3-3** Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

NGSS Science and Engineering Practices:

- Defining Problems
- Planning and Carrying out Investigations
- Analyzing and Interpreting Data
- Designing Solutions
- Obtaining, Evaluating, and Communicating Information

PA Science and Technology Standards:

- **3.2.4.B2.** Identify types of energy and their ability to be stored and changed from one form to another.
- **3.2.4.B4**. Apply knowledge of basic electrical circuits to the design and construction of simple direct current circuits. Compare and contrast series and parallel circuits.
- **3.2.4.B6.** Give examples of how energy can be transformed from one form to another.
- **3.2.6.B2.** Describe how energy can be changed from one form to another (transformed) as it moves through a system or transferred from one system to another system.
- **3.2.8.B2.** Identify situations where kinetic energy is transformed into potential energy, and vice versa.
- **3.2.10.B2.** Explain how overall energy flowing through a system remains constant.
- **3.2.10.B4**. Describe quantitatively the relationships between voltage, current, and resistance to electrical energy and power.