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Curriculum Units by Fellows of the National Initiative
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Solar VS Fossil Fuel Generated Electricity: Can Physics Determine Which is Best For You and Your School?

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This curricular unit focuses on the hazards of fossil fuel generated electricity, the exploration of renewable, solar energy, and can be used in any physics, science, or engineering course requiring the study of basic principles of DC current, voltage, resistance, Ohm's Law, series and parallel circuits. The unit is divided into three sub-units with the first containing a series of lectures and "hands-on" labs designed to help students calculate DC current, voltage, and resistance in series and parallel circuits using batteries, light bulbs, and resistors. Digital multimeters will be provided so that students can physically check calculated measurements against actual measurements, in circuits. Students will be performing the same types of lab investigations in the second sub-unit as in the first, but using photovoltaic cells as the energy source. They will also be required to work in engineering teams to research and design a small solar charging station to charge cell phones or similar devices. The third and final sub-unit will require students to work in small engineering teams again, and apply their new knowledge to solve "real life" type problems which will include the submission of a written report, working project "model," and multimedia presentation to perspective clients.

(Developed for Physics, High School grades 9-12; recommended for General Science and Physical Science, Middle School and High School grades, and and Physics, High School grades)