

## MOBILE DEMONSTRATION TO TEACH PUBLIC ABOUT ENERGY

FAYETTEVILLE, Ark. -- University of Arkansas Assistant Professor Kate Shoulders is using mobile energy technology equipment to teach the public about energy efficiency.

Shoulders, an assistant professor in the Bumpers College of Agricultural, Food and Life Sciences, uses mobile energy efficiency manipulators as a part of a portable demonstration unit. The unit shows consumers how various technologies can conserve energy. The demonstration unit is one facet of her Renewable Energy Analysis Project.

The mobile unit consists of solar panels that are attached to a drywall board. The board is replica of a typical residential wall and has multiple lamp bases and electrical outlets, which demonstrators can use to run electricity through light bulbs and appliances, demonstrating the efficiencies and limitations of solar power.

The solar panels collect electricity in direct current (DC) form that must be converted to usable electricity, otherwise known as alternating current (AC) for a home.

“The back of each panel has what is called an inverter,” said Shoulders. “[The inverter] transfers that DC energy into usable AC electricity that we can use in our homes.”

A problem Shoulders had to overcome with this demonstration unit was that inverters needed their own electricity source—a battery. However, incorporating a battery into the demonstration caused the unit to use the electricity from the battery instead of the solar electricity from the panels, defeating the purpose of the solar energy panels.

To solve this problem, Shoulders worked with the College of Engineering to develop an inverter that will convert the collected DC energy to AC energy without using its own electrical source.

“They have been building from total scratch a type of inverter that does not require a battery to run, that will run off the solar itself,” said Shoulders.

The mobile demonstration will provide Shoulders a way to focus on teaching the public about energy efficiency in a way that observers can see how much energy common household items use.

The solar module can't pull more electricity than it is collecting from the sun, said Shoulders. By plugging in regular appliances and energy-efficient appliances, viewers can see which appliance will cause the electricity to “brown out,” or deplete its electricity reserves, first. The lamp bases will allow for different types of light bulbs, like compact fluorescent lamp (CFL) bulbs or incandescent bulbs, to be compared as well.

“This could be set up very easily for [visitors] to come up and manipulate quickly, learn a little and move on,” said Shoulders.

George Wardlow, professor and department head in the Department of Agricultural Education, Communications and Technology, sees Shoulders' efforts as an effective way to educate the citizens of Arkansas.

"[Shoulders'] interest in alternative energy education reminds us that teaching is most effective within a subject matter context," Wardlow said. "In this case, the science and technologies of energy."

Shoulders sees the mobile unit being used at a variety of venues, ranging from high school science classes to Earth Day festivals.

"The other components of [the Renewable Energy Analysis Project] are very stationary," said Shoulders. "This overall project is designed to teach the general public in a free manner about renewable energy."

For more information about REAP or to set up a tour, contact Kate Shoulders by phone (479-575- 3799) or email [cshoulde@uark.edu](mailto:cshoulde@uark.edu).