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Electric research: Grant to help develop solar-powered charging stations for plug-in vehicles

MANHATTAN -- A foundation for engineering and construction firm Black & Veatch has awarded Kansas State University a \$200,000 grant to help develop solar-powered charging stations for electric and hybrid vehicles.

"We are very grateful to Black & Veatch for sharing our vision, and we are extremely excited about this corporate partnership and the research opportunities it will bring," said project leader Larry Erickson, professor of chemical engineering. "This grant will help us build on the academic strengths of the College of Engineering in the electrical power engineering program."

The solar panels will power charging stations for plug-in vehicles, and they will provide shade from the sun and protection from rain, snow and ice. The Kansas State University stations will be used for research, development, education and charging vehicles.

The project will allow researchers to better understand the technical, social, environmental and economic issues surrounding plug-in vehicles. Possible research topics include the environmental impact, consumer attitudes and the distribution of electricity.

"The research opportunities are endless for our faculty members and their students," Erickson said. "We already have faculty across the university who are interested in developing research using these stations, including those who specialize in engineering, economics, computer science and psychology."

The grant comes as auto manufacturers have released plug-in models like the all-electric Ford Focus, Chevrolet Volt and Nissan Leaf. The federal government is requiring that auto manufacturers nearly double the average fuel economy of their fleets by 2025.

Electric vehicles have the potential to address some issues associated with combustion-engine vehicles, Erickson said.

"The operating cost of vehicles is significantly less with electrical energy, and this advantage is expected to grow in the future," he said. "Petroleum supplies are finite and will last longer for future generations and be less expensive if we make greater use of solar and electrical energy."

Solar-powered vehicles can reduce air emissions and improve air quality, Erickson said.

"If 200 million solar-powered charging stations are put in place over the next 20 years and if we have more than 50 percent of vehicles with plug-in capability, this would change transportation and greenhouse gas emissions significantly," he said.

Project leaders plan to explore a time line, design and site for the project, which was first investigated in 2009 by participants in the National Science Foundation's Research Experience for Undergraduates. Kansas State University hosts students from other campuses during the summer who participate in research projects.

Overland Park-based Black & Veatch has committed to invest \$1 million in future earnings to the university system in Kansas through Black & Veatch's Building a World of Difference Foundation. The grants fund research and development for new technologies in clean energy, safe water and advanced communications infrastructure.

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