



## Inspiring students.



We believe many kids who are uninterested in learning math for math's sake can be inspired to develop STEM skills when they get a chance to see how they're employed in the real world.

For middle and high school students, we:

- Offer career camps and robotics competitions that provide hands-on fun and experiences that show how STEM skills can be used in real-world jobs.
- Develop career pathways that allow students to earn while they learn - from diplomas and in-demand certifications, to 2-year, 4-year and post-graduate degrees.
- Host tours of manufacturing, career expos and other events that help students see the wide variety of careers available to them in specific industries.

*For more information, contact the Minnesota State Centers of Excellence main office to explore all the available opportunities and career paths in each industry.*



## ENERGY SCIENCE TRAILERS: Unleashing Creative Energy

How does industry get students interested in energy careers? How do teachers get students interested in energy science? The Minnesota State Energy Center of Excellence had a plan: Energy Science Trailers delivering experiential learning in a mobile classroom. Turns out that was a pretty good idea.

### Brain Child of an Industry/Education Partnership

Realizing that few schools had the resources to provide their faculty with resources to teach energy science at a time when the science is so rapidly evolving, the Minnesota Energy Consortium, a group of energy industry leaders and college partners from Minnesota State began working with the Minnesota State Centers of Excellence to develop an Energy Science Trailer.

Included in the trailer are engaging lab activity kits for solar, wind, and hydro energy generation and more. The trailer itself is equipped with a cabin-size solar generation system. Instructional materials are included to make lessons easy along with multiple resources for additional projects and learning activities.

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“When students see the results of what they can do with renewable energy, it opens a whole new world of possibilities,” says Bruce Peterson, executive director of the Minnesota State Energy Center of Excellence. “That’s worth it, in and of itself, but even greater if it makes them start thinking about working in energy.”

### Driven to Educate

The first Energy Science Trailer has been in almost constant motion since it was first introduced in 2016, booked at individual schools for a week or two at a time — and travelling to community events and career fairs on weekends and during the summer.

At big events, the educators on board are either Peterson and his staff, Minnesota State faculty or industry volunteers, “We all love getting a chance to see the lights come on,” says Peterson.

At events like a career fair, the Science Energy Trailer might be visited by hundreds of students per day — but those students don’t have the in-depth experience that students have during hour-long classes over the course of several days.

At schools however, the single trailer available was always booked — but often underutilized. If only one or two teachers knew how to use the materials, valuable resources often lay idle.

The Energy Science Trailer provided hands-on learning to more than 800 students at 12 high-schools last year alone. That was impressive but Peterson was determined to do more.

### A New Surge of Energy

He got the opportunity last year when Windom, Minnesota received a small grant to upgrade the city’s solar-powered welcome lights. The grant required the City to provide education around renewable energy.

“We do try to prioritize clean energy initiatives that have a public education component,” says Dan Thiede, strategic communications and engagement director for the Clean Energy Resource Teams (CERTs). “We like people to be thinking about how they can educate their communities.”

The Windom City Manager reached out to Bruce Peterson at the Minnesota State Energy Center of Excellence and the result was a second trailer that brought an instructor to Windom to provide a “Solar in the Classroom” experience for every science class in the high school.

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### New Solar-in-the-Classroom Trailer

“Solar in the Classroom” is taught by Doug Kleeberger, program coordinator for Minnesota State Energy Center of Excellence. He brings the Solar-in-the-Classroom trailer to every school — but needs a classroom where he can teach the course to no more than 24 students at a time.

“Small class size is critical,” says Kleeberger. “This is hands-on, experiential learning.” Kleeberger covers topics that include photovoltaics, digital voltmeter, electrical power generation, power storage and “Watts in the real world.”

Although the course was developed for high school students, it is easily adapted for junior high and middle school.

“The younger students are more astounded when the solar-powered popcorn maker starts popping,” says Kleeberger. “I’ve had students insist that I’m tricking them. Once they settle down, they absolutely want to learn more.”

Solar-in-the-Classroom is available for free to science teachers and teachers from related fields such as math, industrial tech, and ag or environmental science. They can request the trailer without being E3 certified because Kleeberger teaches the course.

### Generating Great Results

If Peterson’s goal was to double the number of students reached, the addition of the Solar-in-the-Classroom Trailer has surpassed expectations.

Launched in March of this year, Kleeberger has now taught Solar in the Classroom to more than 2,000 students. “In just 90 days he accomplished what it took 365 days to accomplish last year,” says Peterson.

Teachers with or without E3 certification, are encouraged to contact Doug Kleeberger at 507.847.7948 or [doug.kleeberger@mnwest.edu](mailto:doug.kleeberger@mnwest.edu) to schedule the Solar-in-the-Classroom Trailer at their school.

E3 certified teachers who want to schedule the Energy Science Trailer should contact Bruce Peterson at [bruce.peterson@mnwest.edu](mailto:bruce.peterson@mnwest.edu).