



Great Lakes Energy Service, Inc.

P.O. Box 79
DeWitt, Michigan 48820

(517) 669-5389 ~ Fax. (866) 334-9536
www.greatlakesenergyservice.org



Dear Educators and Community Members:

Are you looking for ways to expand and extend your STEM curriculum? Do you have PTA/PTSA/PTO funds you can tap into? Do you have Title I funds you can use for STEM enrichment products? Do you have STEM Funds available for supplemental materials? Do you have library funds that can be used for science-through-literature and/or math-through-literature titles? Do you work with local foundations, clubs or organizations (e.g. Kiwanis, Rotary, etc.) eager to support your programs? Do you work with national foundations looking for innovative ways to promote STEM education? If so, please consider utilizing those funds on this one-of-a-kind, unique educational experience with your students.

Mobile Renewable Classroom Visit – Once an organization has registered for a visit and given a confirmed date, GLES sends a link for the supplemental Energy Education Curriculum materials that target topics such as renewable energy sources, energy efficiency, and suggested preparation to the requesting contact person. Included in each section of the curriculum are lesson plans, material lists, and external resource lists. The curriculum is intended to supplement the school district's curriculum and may be completed prior to the Mobile Classroom visit in order to prepare students for the upcoming in-depth content and hands-on experiences provided by GLES.

When We Arrive!

On the day of the Mobile Classroom visit, GLES staff pulls the mobile renewable classroom into the drive of the local school. Out of the school windows, GLES staff sees the heads of students actively sneaking a peek to view the huge 44 foot trailer with all sorts of interesting items sticking out from the top towed behind a pick-up truck. GLES staff later hears from teachers that students have queried as to the content and purpose of the indescribable trailer that has arrived at their school.



In order for your experience to go smoothly, please be mindful of the following visit requirements:

- Notify us of any media or press contacts that will require our attention during the day.

- Have the parking space clearly marked.
- Provide us with your student schedule (please limit group size to approximately 25-30 students or less at one time for the best results). This means we would like a schedule which would outline what time each group would arrive and depart from the mobile classroom and what grade level and/or course of study the group is from.

A typical guideline for scheduling students is outlined below.

<u>Number of students</u>	<u>Up to 400 students</u>	400 or more students <u>(booked in 2 day sets)</u>
Time allotted	30 minutes per group	30 minutes per group
Education	7-10 minutes	10-15 minutes
Exploration	20-23 minutes	15-20 minutes

Once all is in order, GLES staff welcomes teachers and groups of 20 to 30 students out to the Mobile Classroom. Each group is greeted by a GLES staff member who happily introduces the Mobile Renewable Energy Classroom and begins to explain in scripted detail each of the colorful hands-on displays. *Does anyone know the name of those funny-looking things poking out of the roof?* Students foster a few guesses with varied accuracy (e.g., “I don’t know.” “Those are wind mills.” “It’s solar power”). Occasionally, a precocious student pipes up with a correct answer. Without fail, the GLES staff praises and prompts responses from even the most seemingly uninterested of teenagers.

After explaining the solar and wind power equipment on top of the trailer and the freestanding solar panel with functioning light bulbs attached, GLES staff invites the group to proceed into the trailer where they may move freely from display to display to investigate renewable energy sources and energy efficiency models. A few of the most preferred interactive displays that GLES provides include solar and wind powered electricity batteries, a functioning light bulb display with wattage meter, wind-powered computers with energy education software, and solar-powered Lego vehicle kits.



Renewable Energy from the Sun and Wind.

Students are able to observe how the sun heats hot water and sends it to the hot water heater. The hot water heater is just like one they would find in their own home, minus the use of gas or electricity. The amount of electricity generated from the wind turbine and solar panels mounted on the roof is displayed on the wall mounted wattage meters and students learn how the electricity is converted from DC to AC currents for powering the trailer. Additionally, students can also try their hand at building a wind turbine and testing blades of different sizes and weight lifting abilities in order to determine what affects the efficiency of a wind turbine and its power production.



Light Bulb Display. Students are able to view the differences in electrical energy use, or watts produced, by 17 different light bulbs. This interactive light bulb display includes a watt meter and four different types of bulbs with varying wattage strengths. Bulb types include incandescent, fluorescent, CFL (compact florescent) and LED (light emitting diode). This display incorporates math and economics by providing the wattage data with a discussion about the value of using more energy efficient light bulbs. Student see why parents tell them to shut lights off when not in use once they understand that a 100 watt incandescent bulb burns 100 watts of electricity while the same 100 watt equivalent (23 watt) CFL bulb uses 20 watts of electricity. Students can observe where monetary savings would generate from the simple conversion of incandescent bulbs to a more energy efficient light bulb such as a CFL or LED.



Energy Education Software. Students can showcase their knowledge of renewable and non-renewable energy sources by competing with their peers on an energy education computer game. The computers run on electricity created by the wind turbines and solar panels mounted to the top of the Mobile Classroom. Students are visually stimulated as they perform a timed sorting task for renewable and non-renewable energy sources.

Solar-Powered Lego Vehicles. Students are able to work on their engineering skills by working together to build solar powered vehicles out of Lego blocks, motors, gears, electrical wiring and miniature solar panels. Creativity abounds in this vehicle experimentation and students are always amazed to see their creation take off down the sidewalk, powered with the energy harnessed by the sun. All ages love this Lego learning station!



Energy Bike. Energy Bike provides an opportunity to demonstrate energy concepts in unique and memorable ways. It allows the rider to sense their energy being transformed and trace the energy flow back to the sun. Additionally, the Energy



Bike promotes energy conservation and encourages consumers to embrace new technology like the LED (light emitting diode) bulb and CFL (compact fluorescent light bulb) and adopt more energy efficient lifestyles. The Energy Bike package consists of a bicycle on a stand attached to an electric generator. When Pedaled, the bike creates

electrical energy that flows into a freestanding display board that measures the voltage and amperage of the energy being generated as the rider powers various electrical appliances and incandescent, CFL, or LED light bulbs. As the power consumption increases by turning on more bulbs or appliances, the bike becomes harder and harder to pedal.

During the entire Mobile Classroom visit, students learn about energy efficiency and renewable energy sources in a fun and interactive manner that leaves them begging for more. When the end of the tour approaches, students inevitably ask to stay longer.



Additional activities can be requested by teachers to extend both the mobile classroom visit and learning opportunities for students. Some available pre-planned lesson options that GLES staff is prepared to

present include building solar-powered flashlights, deconstructing solar-powered calculators, making miniature wind turbines, comparing light bulb efficiencies, harnessing solar energy to heat water, calculating carbon footprints, comparing the heat energy of fossil fuel to renewable fuel, and more. Teachers are also welcome to collaborate with GLES staff and request additional experiences related to renewable energy sources.



Travel Area Great Lakes Regions

Because of our success in with the mobile classroom in Michigan we would like to offer this creative learning tool and expanded professional development to surrounding states, by providing our Renewable Energy Mobile Classroom and accompanying learning tools for the education of young and old citizens alike. Students, youth groups, state government employees and officials, and community members at large will benefit from the education provided by GLES. Location visits and organized renewable energy events will increase awareness about energy efficiency methods which affect our environment for the better.

Cost – Classroom cost averages \$5.00 per student and varies depending on location and services provided. School districts spend an average of \$4.07 per mile to take kids to and from school. Our mileage rate is \$2.00 per mile and the loss of instruction time is minimal compared to other field trips where students are transported to and from other field trip locations.

Energy Fundraiser

The Great Lakes Energy Service's Education Program has coordinated a fundraiser that is profitable, educational, fun and good for the environment. Students have used the money raised

to improve program activities, support community members in need, and fund student field trips. GLES is proud to offer a fundraiser that helps students and schools, while educating citizens about energy efficiency.

Why Organize an Energy Fundraiser with Your Students? Healthy fundraisers contribute to a healthy school environment. Products with mass appeal can be inexpensive to sell, provide generous fundraising margins, *and* support healthy choices. To find innovative and healthy ways for schools to generate income that help both the school raise money, the purchaser save money, and all to save the environment and Earth's resources, Great Lakes Energy Service, Inc. has come up with an energy efficient way to accomplish this mission.

We have selected some basic energy efficiency items and left the amount of profit to be determined by the school or organization for more details visit our information page at <http://www.greatlakesenergyservice.org/pages/fundraiser.html>

Groups selling 500 to 1,499 items and win a Killawatt Meter for the school or group. For groups selling 1,500 items or more win a 1 day visit from the mobile renewable energy classroom for your school or youth group.

How it Works:



Choose your profit margin and return the registration form to Great Lakes Energy Service, Inc. (GLES). Once the registration form is received, GLES will send 1 pre-sale flyer for each member of your group or groups can print their own and save resources.



Run your fundraiser for 2-3 weeks collecting money for each energy efficiency items you pre-sell, just as you do any other fundraiser. Your goal should be to pre-sell 10-20 items per member of your group!



At the end of the sale period complete the “group order form” and attach ONE check or money order from your organization made payable to “Great Lakes Energy Service, Inc.”. Mail the payment minus your profit with the completed group order form to: P.O. Box 79, DeWitt, Michigan 48820. Your cost will depend on the items ordered and the profit amount selected. Your organization should retain the rest of the money you collected as this is your profit to keep! Your order will be shipped in 3-4 weeks.

For additional information on a classroom visit for your organization or to host an energy fundraiser, please visit www.greatlakesenergyservice.org or call (517) 669-5389 for more details.

Sincerely,

Great Lakes Energy Service, Inc. Staff

Mobile Renewable Classroom Registration

Name of Organization or School _____

Contact person name, email and phone number for day of event

Date of Event (Classroom is available from March 15th - October 31st)

Choice 1) _____ Choice 2) _____ Choice 3) _____

Time of Event From _____ to _____

Mailing address _____

Number of participant's expected _____

Grade level of participants K 1 2 3 4 5 6 7 8 9 10 11 12 Adults

Location of event (street address, city, state & zip) _____

Map of location for parking and special instruction

Authorized Signature and Date

Please return this form in the next 10 days. Your visit will not be confirmed until GLES receives this completed form and 50% deposit! Makes checks payable to: Great Lakes Energy Service, Inc., P.O. Box 79, DeWitt, MI 48820.

