



GREAT SOLAR CAR CHALLENGE

General Information

Background:

The Great Solar Car Challenge is the concluding event each spring for the Centre County (Pennsylvania) Middle School Solar Car Challenge Program. This program is a fun, hands-on educational opportunity for middle school youth to design, construct and fine-tune a solar-powered/battery-powered car. The race day event is the culmination of months of effort by the students. The goal of the program is to improve student's knowledge of science, engineering design and analysis, and renewable energy concepts. In addition, the program supports students' self-confidence and ability to apply the textbook math and equations to make a real, hold-it-in-your-hands machine work . . . and hopefully work well.

Students from Centre County middle schools began designing their solar/battery powered cars in February. Schools include public and private school. Materials were purchased for the students with grant funds from organizations like the Centre County Community Foundation, the Centre County Solid Waste Authority and proceeds from the 2005 Cards for Kids Poker Tournament. Students form teams (or can work individually), with each team receiving the same basic materials for a solar-powered car:

- Solar panel assembly
- Solar motor with lead wires
- Gears with motor shaft (3 sizes)
- 4 wheels
- 2 axles
- (2) 9V battery straps

Students receive guidance on what features are common to all high-performance solar cars, but they do not get blue prints or guided assembly steps to follow. Students were encouraged to find low cost or no-cost, light-weight materials for the car chassis and are encouraged to use recycled or reused materials in building the solar cars. The students learned-by-doing and seeing the successes, failures and improvements from re-building. Preliminary races were held at each school prior to the all-county event. The cars can be entered in a total of 7 events – see page 3.

The vision and goal of the event organizers is to expand the Solar Car Challenge program to include middle school students in all the school districts from across Centre County.

Each year, the date for the Grand Challenge Race (where students from all the middle schools meet to compete) is mid- to late-May. This provides approximately two months of construction time, the weather is getting warmer, and the position of the sun in the sky is approaching optimum for solar car racing. If race day is sunny, the Grand Challenge races are held at Penn State University – Natatorium Tennis Courts (Curtin Road). If raining or heavy overcast, races are held indoors at the Penn State University Wagner Building, Armory Hall

People Involved:

Liz Kisenwether	Project Director	863-1531 / 231-4095
Tobin Short	Race Day Director	861-4379
Andy Lau	Engineering Advisor / Solar Energy Guru	

Volunteers:

- State College Area High School students
- Penn State students in Andy Lau's Solar Car
- First-Year Seminar Class (A. Lau)

Sample: GREAT SOLAR CAR CHALLENGE ANNOUNCEMENT! Invitation and Rules

The GREAT CENTRE COUNTY INVITATIONAL SOLAR CAR FESTIVAL will be held on FRIDAY MAY 20 at the PENN STATE/CURTIN ROAD TENNIS COURTS (next to the Penn State Natatorium). In case of rain, the event will be moved indoors (or battery-powered racing) to Wagner Building, Armory Hall. All schools are invited to bring as many racers and spectators as their transportation budgets will allow. There will, however, be a qualifying run that all contestants must finish in order to compete in the festival.

There are seven contest categories:

- o Fastest Car (24 meters)
- o Fastest Relay Team (4 x 12 meters)
- o Straightest Car
(farthest distance traveled within a narrow lane)
- o Lightest Car
- o Slickest-Looking Car
- o Clever Engineering Design
- o Recycle / Reuse Award

SCHEDULE

9:30 a.m.- 10:30 ARRIVAL AND QUALIFYING RUNS

As students arrive at the Penn State Curtin Road Tennis Courts they may begin running their cars on the qualifying track. After they qualify they can proceed to weigh-in and sign up for the racing events they want to participate in. Groups of four qualifiers may sign up as a team for the 4 x 12 meter race.

10:30 - Noon RACES AND JUDGING

Straightest Car competition will be on-going. Contestants may run their cars in the Straightest Car competition any time in between their participation other races.

Slickest-Looking Car, Clever Engineering Design, Recycle / Reuse Award will be evaluated by roving judges.

Lightest car will be determined after all cars have been weighed at check-in.

10:30-11:00 First heat of 24 meter race. First heat races will commence every 10 minutes, first come first serve. If you place in the first heat you advance to race against the other winners. After all entrants have raced once, and if time permits, there may be some "second chance" races - only for those cars who failed to cross the finish line.

11:00-11:30 Advanced heats of 24 meter race. Winners face off until a single car is crowned champion!

11:30-noon Relay races

noon - 12:45 AWARDS CEREMONY

Spectators and racers will picnic on the courts while awards are presented. (Bring your own bag lunch.)

12:45-1:45 ICE CREAM!

All will walk to the PSU Creamery for post-race socializing. Those who wish to may buy ice cream.

1:45-2:00 RETURN TO RACE TRACK AND PICK-UP

Pickup at Penn State/Curtin Road Tennis courts for rides back to schools.

