Solar Car Race: Directions and Rules

What is a solar car race?
Students in grades 5–12 will have an opportunity to design and build a solar powered car to race. The Solar Car Challenge is an education program designed to motivate students in Science, Engineering, and Alternative Energy.

For the Girl Scout competition, while any girl can complete a solar car on their own, **we encourage girls to work together as a troop and submit one car to compete representing your troop** with the theme "Under the Sea."

Procedures
Each car will run three time trials. The car must travel 50 feet. Each girl or troop will register for an individual 30-minute time slot to complete their time trials and achieve their fastest time. Any car that does not finish in 40 seconds will be considered a Did Not Finish (DNF). The time trials will be live.

Where do I get a solar kit?
We will be using Solar Made Student Solar Kits. Scouts may choose the Photon Solar Racer Kit (Daisies and Brownies) or the Junior Sprint Deluxe Kit (Junior, Cadette, and Senior). Both can be ordered from solarmade.com.

Rules
Each girl or troop must use the unaltered solar panel and motor provided in the kits as the only method of powering the car. The rest of the car design and components will be up to the creativity and ingenuity of the entrant(s). All cars must be designed and built by the girls with limited assistance from the coach, troop leader(s), other adults, and non-team members.

There are two different components to the competition: Speed and Design.

Speed Race
The top three fastest cars after all the timed trials are completed will determine first-, second-, and third-place winning teams.

Design Component
Each car will be judged on the merits of quality craftsmanship, unique concept, and overall aesthetics, including appearance, engineering innovation, and originality of materials used.

Solar panels cannot be shaved, drilled, or delaminated. Only the authorized motor supplied with the panel may be used. Motors may not be re-wound or disassembled. Any other panels and motors may not be used in the competition. All parts mentioned here must be used without modification. One solar panel and one motor are allowed per car. Reflectors, supports, and power leads may be added to these components as needed. The remainder of the vehicle must be your own design and can be made from any other material.

Vehicle Specifications
The vehicle must adhere to all parameters, be structurally sound, and safe to contestants and spectators (e.g., no sharp edges, projectiles, safe wire set up etc.).

The sun's light or sun lamp is the only energy source that may be used to power the vehicle. No batteries, capacitors, flywheels, or any other storage devices are permitted. Energy-enhancing devices, like mirrors, must be firmly attached to the vehicle.

Steering
A guide wire attachment, referred to as an eyelet, must be attached to the car. Examples of possible designs are shown below. A guide wire (such as a fishing line) will be no more than 1.5 cm from the surface of the track, will go through the attached eyelet on the car, will serve as the steering mechanism, and will keep the car in its lane. The vehicle must be easily removed from the guide wire, without disconnecting the guide wire. This is the only allowable method of steering the car. No radio control is permitted in the cars.

Guide Wire
The eyelet must be used for steering only and must be directly hooked onto the guide wire. Any guide wire attachment or eyelet used should not support the vehicle such as a grooved spool located on top of the car guiding the car down the track.

All wheels must be in contact with the track. The solar vehicle must be structurally sound without the solar panel. The solar panel cannot be used as the chassis (body of the car).

Teams are NOT allowed to bolt the axles and wheels to the solar panel — the car must be three dimensional.

Track Specifications
The race lane is 60 cm wide and 50 feet long.

At race time, the vehicle will be placed behind the starting line with all its wheels in contact with the ground. At least one team member will start their vehicle.

At least one but no more than two members must wait at the finish line to catch the vehicle. Team members may not accompany or touch the vehicle on the track.

Judges may inspect cars at any time before, during, or after heats.