

## Junior Solar Sprint Rules (Virtual Event)

The goal is for students in grades 4 – 8 to design and build an eye-catching, durable and fast moving solar-powered vehicle and effectively present it via a webpage also created by the student(s). This year, teams of 1 – 4 students will be allowed. Designer(s) must use an approved solar panel and motor to power their vehicle. However, the chassis, wheels and transmission may be constructed of any materials chosen by the vehicle's designer(s). Cars are judged on design, innovation and performance. Performance of the vehicle is evaluated on how fast and straight the vehicle moves under the power of the sun. No batteries allowed!

### Car Parameters

The dimensions of a Junior Solar Sprint car cannot exceed:

- 30 cm in width
- 60 cm in length
- 30 cm in height

Each entry begins construction with a kit (Pitsco or Solar Made) containing:

- a three (3) Volt photovoltaic (PV) panel
- a motor matched to the PV panel

The solar panel and motor **may not** be modified. The specific motor supplied with the PV panel (in the kit) must be used. If a replacement motor is needed, the replacement must be purchased from the company that supplied the panel and be the model of motor originally supplied with the panel. One solar cell and motor are permitted per car. Any modification to the solar panel or motor will result in disqualification.

At least one wheel must be driven by the motor.

### Construction

Each team will research and acquire the appropriate materials and parts needed to complete their car.

- Car body/chassis
- Axles
- Wiring
- Connectors
- Gears

The body may be made of any material and decorated at the team's discretion.

The vehicle solar panel is not to be used as the vehicle's chassis. If the axles and wheels are connected directly to the solar panel, the vehicle will be disqualified. No radio control is allowed in Junior Solar Sprint cars.

The vehicle must be safe (no jagged/sharp edges or projectiles).

## Webpage Submission

Each team will populate a webpage (using Wordpress) that showcases their JSS vehicle. The webpage will include basic team info, vehicle photos, and a two part video as described below. These pages will be used to judge the project and will be viewed by other students, teachers and the public during EnergyWhiz.

The webpage **must** include:

### 1) Photo & Basic Info

- Vehicle photo with the vehicle name included (This provides the judges with a first impression.)
- School name
- First names(s) of students on the team (no last names)
- Grade level of each team member

### 2) Design

**Photos** – a minimum of six photos of the completed car showing front, back, both sides, underside and top. Close-ups of special vehicle features may also be included and will help the judges understand the thought and effort that went into the vehicle’s design and construction.

**NOTE:** *Although it is expected that each team will document their design process through notes, drawings and other means, **those are not required to be posted to the team’s webpage.** However, teams **may be** requested to produce a copy of their design notes if needed for clarification purposes or if their vehicle scores high enough to qualify as the top team and regional representative at the National JSS event.*

*Design notes are used to document the design and building process and often include:*

- ✓ **Title page** that includes the vehicle’s name, school represented and the first names of the students who designed and built the vehicle
- ✓ **Project Log** that documents the work sessions. Entries include the dates, task(s), time spent on the task(s), students present (initials or first names only), obstacles encountered, components should be included and listed as such.
- ✓ **Test (Performance) results** – (minimum of 2) each test must include the time of day, weather conditions (sunny, hazy cloudy), approximate distance travelled, comments on performance and any suggestions for improvement (no video required for this part).

### 3) Performance – Show That It Goes!

Once the vehicle is built and in its final form, provide a link to a video (hosted on another site such as vimeo or youtube) that has two parts – 1) team explanation and 2) the vehicle’s performance.

- 1) For the team explanation a minimum of one team member should hold the vehicle as that team member or other teams members describe or explain the following:
  - The name of the vehicle and why it got that name.

- Special features of the vehicle while pointing them out to the audience. Close ups of those features are allowed.
- Any unexpected outcome or discovery made by any team member as a result of this engineering process.
- The team explanation portion of the video may be up to 5 minutes in length.

2) For the vehicle performance component:

- Videotape the vehicle running from a designated starting point to an end point on a smooth, flat area at least 30 feet or approximately 10 meters in length. The start point may be a student uncovering the solar panel, which then starts the car's movement on the surface. The end point should be clearly defined, such as a visible team member or team designee located at the end point, ready to catch or stop the vehicle.
- Prior to the start, one of the team members should state the date and time of day, as well as general weather conditions (sunny, partly cloudy, etc.). When ready someone should clearly announce, "On your mark; Get set; Go!"
- The vehicle should move under the power of the sun only with all wheels making contact with the flat surface. No pushing the vehicle and no lifting of the wheels to get them spinning prior to the start.
- The video should show the car moving from start to finish without any editing to the video.

The above two components can be submitted as one or two separate videos on the team's webpage.

**Junior Solar Sprint submissions are due April 23, 2021.** Judging occurs the following week.

### **Competition Week**

During the week of EnergyWhiz, all Junior Solar Sprint (JSS) pages will be available for public viewing. Students are encouraged to share their web page address with family and friends, and to visit other team pages.

### **Judging Criteria**

Teams will be divided for judging into Division based on their grade/age (grades 4-5, 6-8, 9<sup>th</sup>, Family).

Awards will be provided for **Most Innovative** and **Best Design**, which includes how fast and straight the vehicle moved on a flat 30 foot long (or more) surface.

One winning vehicle and its creator(s) will be selected from the EnergyWhiz event to receive a complementary registration made possible by the Army Educational Outreach Program (AEOP) to participate in the National Junior Solar Sprint Competition happening in Orlando, June 23 – 27, at the Technology Student Association's (TSA) annual conference.