



## Junior Solar Sprint Rules

### Spirit of the Sprint

Junior Solar Sprints (JSS) offers students the opportunity to learn by means of a friendly competition against their peers. Students design, construct and race a model solar powered vehicle. The role of the educator is to nurture the spirit of excitement and the joy of discovery and learning that awaits students. Educators should let students assume the responsibility for decisions, building and performance on race day. The races are separated into division races that culminate in an Inter County Final. The dates are posted on [transoptions.org/junior-solar-sprints](http://transoptions.org/junior-solar-sprints).

### Materials and Vehicle Specifications

1. The Ray Catcher solar panel sold by Pitsco is the official solar panel to be used for this race. No homemade panels or other commercial panels can be used. If your team moves on to the finals, panels can be kept until after finals. Solar panels are TransOptions' property. In the event you lose your panel, you must pay back TransOptions the retail value of the panel, \$36. You are allowed to purchase your own panels, but they must be the Pitsco Ray Catcher, product ID W37942. Only 1 solar panel per vehicle is allowed. The solar panel can't be part of the structure of the vehicle. It must be easily disconnected from the vehicle as solar panels are shared.
2. The motor provided by TransOptions must be the only motor used in the vehicle design (Pitsco, motor 280, product ID 54428). Motors may not be rewound or disassembled. Only 1 motor per vehicle is allowed.
3. The vehicle with its solar panel must be powered solely by the sun's energy. **No energy storage devices may be used in conjunction with the solar panel.** If the weather is not conducive towards solar only races, the races will switch to battery power. The participants will be provided with faux panels that are made to be similar size and weight to the actual solar panel. The faux panel will have a positive and negative lead and various pieces of Velcro on the back. It will be powered by a single AA battery that will be provided. The panel has an on/off toggle switch and a micro switch. The students will connect the leads to their motor and switch the toggle to on. Then they will hold down the micro switch and wait for the "Ready, Set, Go" instructions, releasing the micro switch on "Go." Students will be shown the panel in advance and informed on how to use it before their race. The construction of this faux panel is based on an example provided by the originators of JSS, the Northeast Sustainable Energy Association (NESEA).
4. The vehicle will be attached to a guide wire in the center of the lane and runs the length of the track, with no free end. The attachment device must not be potentially damaging to the line. The wire will be a small diameter line such as 60# fishing line. The wire will be no higher than 1.5cm above the track surface. Included in the kits paperclips that can be used to connect the vehicle to the guide wire. Using the provided paperclips is optional if you would like to create your own way of attachment.
5. The race track is 66 feet long. The tracks are set on blacktops and tennis courts. In the event of inclement weather, the race is moved inside and the tracks are set on the gym floor of the hosting school.
6. The vehicle must be a student team's own design and manufactured from the current school year. **No vehicle or major component from a previous year will be allowed to compete.** Solar panels, motors and other individual parts may be reused in a new design.
7. The name of the vehicle must correspond with the team registration paperwork submitted prior to race day.
8. Student model cars must be no larger than 12"x24"x12".

### **Conduct of the Race:**

1. Teams will consist of 1 to 4 participants max. Participants must be middle school students (6<sup>th</sup>-8<sup>th</sup> grade) or children ages 11 – 13.
2. The races will be divided into heats. A scoreboard will detail who is racing now and who is up next, referred to as “on deck.” The announcer will alert the crowd over the loudspeaker who is racing and who is on deck. It is the responsibility of the participants and educators to listen to all announcements. There will be some flexibility in regard to moving teams to different heats but as the race continues we will not be able to move teams. Teams that are not announced as racing or on deck should go to the Judges Table to be scored in the following categories Craftsmanship, Engineering, and Best Use of Recycled Materials. Teams that are not racing or on deck may also participate in the Student Choice competition or visit the Fix-It table if their vehicle needs repairs.
3. The races will be run in a double elimination format. Teams must lose twice before being knocked out of the Speed competition.
4. A vehicle needs to be one of the first 3 vehicles to cross the finish line to count as a win in a heat. If not all vehicles cross the finish line, the winners are the 3 vehicles that went the furthest down the track.
5. The following counts as a loss: being in the bottom 3 in a heat, the vehicle disconnecting from the guide wire, pushing/touching the vehicle or any attempts at cheating.
6. One team member at the start and one team member at the finish line is allowed. No extra team members are allowed in the race track area.
7. The vehicle will start from behind the starting line with all wheels touching the track. The solar panel will be completely shaded by a supplied opaque material cover held above the panel by a team member. No member of the team can touch their vehicle. The team will wait for the “Ready, Set, Go” call and remove the cover so the panel is exposed to sunlight. Once the race is started, no member of the team can touch the vehicle. Please see rule 3 under material and vehicle specification for the faux panel use.
8. One team member at the finish line will catch the vehicle **after** it crosses the finish line. Participants aren’t allowed to touch their vehicle until after the race is officially called by the announcer. Participants can remove their vehicle from the guide wire when told to do so by the announcer.
9. The Speed competition will begin at 9am and will continue until a clear winner is determined. Teams placing in the top 10 will be assigned points that will count towards their over-all score.
10. Vehicles that place in 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> in Craftsmanship, Engineering, Best Use of Recycled Materials, Video Journal or Speed qualify to move on to the Inter County Finals. Note: winning Student Choice is not a qualifying category for finals. If we have duplicate winners in the above categories, we will invite teams from the top 10 in the Speed category to make sure we have enough cars for a competitive Finals race.