

MAINE JUNIOR SOLAR SPRINT RULES & REGS FOR 2020

Spirit of the Sprint

The Maine Junior Solar Sprint offers middle school students an opportunity to learn by means of a friendly competition against their peers, in which students take responsibility for the design, construction, and performance of a model solar electric vehicle. The role of the adult is to nurture the spirit of excitement and the joy of discovery that await students. Adults would do well by letting students assume the responsibility for design decisions, construction, and maintenance of their vehicle, performance at a race, and winning and losing.

Materials and Vehicle Specifications

1. Solar panel: Either the Ray Catcher solar panel sold by Pitsco or the JSS Solar Panel sold by Solar Made may be used. Panels cannot be shaved, drilled or delaminated. **Motor:** Either the Mabuchi #260 or the Mabuchi #280 motor may be used. Motors may not be rewound or disassembled. **No other panel or motor may be employed in the competition.** All parts mentioned here must be used without modification, though reflectors, supports, Velcro and power leads may be added to these components as needed. One solar panel and one motor are allowed per car. The remainder of the vehicle can be made from any other materials.

2. Dimensions: The vehicle, including any attachments, may not be larger than 30 cm. (12 in.) wide by 60 cm. (24 in.) long by 30 cm. (12 in.) high.

3. The vehicle, including the panel support system, must be structurally sound without the solar panel or payload. **The payload may not support the solar panel** or function as any other component of the vehicle's structure. The panel must be able to be easily disconnected from the motor and removed from the vehicle.

4. A space on the vehicle needs to be available for a **car number**, provided at a qualifying event or State Finals.

5. **Payload:** The vehicle must carry a payload of one empty 12 oz. aluminum soda or seltzer can supplied by the students (or, if necessary, the event organizers). The can must not be altered in any way, and the application of adhesives or other materials is not allowed. (It is useful to think of the payload as a person or cargo, which must remain with the vehicle at all times and must be easily and rapidly removed or reinserted.)

6. **Compartment:** The vehicle must be designed with a compartment that secures the payload even in the case of a roll-over. The compartment must retain its shape with or without the payload (**i.e., no rubber bands**).

7. The vehicle, with its solar panel, must be powered solely by the sun's energy. No storage devices (e.g. flywheel, battery, etc.) may be used in conjunction with the solar panel.

8. **No sun?** If the sun's energy is judged insufficient, a battery pack (with two AA batteries) will be furnished for each race in place of the solar panel. Power leads should be accessible for attachment.

9. **Guide wire:** The vehicle will be attached (by paper clip or facsimile) to a guide wire (fishing line) that runs the length of the track. **The guide wire will be no higher than 1.5 cm. above the track surface.**

10. The vehicle must be of students' own design and creation **from current school year.** No car or major component thereof from a previous year is permitted. Solar panels, motors and other individual parts may be reused in a new design. **Each team from a given school must have a reasonably unique car design.**

11. **Race track:** The race lane is **20 meters** (approx. 65.5 ft.) long. The track is a hard, flat surface (such as an asphalt tennis court) and it may be oriented in any direction. A gym floor may be used if it rains.

Conduct of the Race

12. **Double elimination:** Whenever possible, participants will have a minimum of two opportunities to race before elimination.

13. It is preferable that only two team members be on the track during a race---one at the starting line and one at the finish. A non-team member may act as a catcher, if necessary (students only).

14. 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** held over the panel by a team member. At the start of the race, the team member will remove the cover, exposing the panel to sunlight.

15. Once a race has begun, team members may touch their vehicle only after it has crossed the finish line, and may not be on the race lanes until the judges have determined the heat is completed. **Pushing the vehicle after the race has begun may result in disqualification or a re-run of the race.**

16. **If a car leaving its lane interferes with any other cars, it will be disqualified from the heat in question, but may compete in its second trial if it has not done so already.** Those cars suffering interference will be allowed an additional opportunity to run.

17. **Loss of payload (or solar panel, or battery pack) during a race will result in disqualification from the heat in question.** However, the offending vehicle may compete in its second trial if it has not done so already. If the loss of payload (or solar panel, or battery pack) interferes with any other cars, those cars will be allowed an additional opportunity to run.

18. The winner of a heat will be the first vehicle to cross the finish line, or the vehicle to travel the furthest down the track. In the event of a tie (**or even at the discretion of the judges when a race is especially close**), multiple winners may be designated to advance to the next round of competition.

19. **Awards:** At the State Finals awards will be given for Speed, Technical Merit, Craftsmanship, Innovation, Kids' Choice and Most Creative Use of Recycled Materials.