

2020 Solar Energy Cook-off Rules & Guidelines

The Solar Energy Cook-off is a two-part competition encompassing design of a functional solar cooker and the creation of a dish cooked in this same cooker. This competition was developed to provide a real world solar thermal challenge for upper elementary and middle school students. Eligible teams must attend school within MEEC's boundaries (MEEC's boundaries consist of the High Desert portion of San Bernardino County, the Palo Verde Valley of Riverside County and the High Desert region of North Los Angeles County, including the cities of Lancaster and Palmdale.)

Competition Structure:

Each team of 2 - 5 students is responsible for designing and building a fully operational solar cooking device and then cooking a dish of their choice with their device. The challenge is to design an effective solar cooker and to pair the operational capability of the cooker to the type of food cooked.

Design Specifications:

The solar cooker must be portable and **not weigh more than 15 lbs. (you will be disqualified if unit exceeds 15 lbs).** Cookers will be weighed at team check in day of event by event staff. There is NO SIZE limitation but should be easily movable. It should be capable of reaching a minimum temperature of 212°F or 100°C and a maximum temperature which does not exceed 400°F or 200°C (average temp. for stove top and oven cooking). Its design should lend itself to cooking, canning, pasteurization, and sterilization of foods and other materials. Provide a short report describing how your solar cooker will work and explaining why your team chose this particular design. Create and provide a materials list.

Eligibility requirements:

1. Each competing team consists of 2 - 5 students in grades 4 through 12 and at least 1 Advisor. At least 2 team members must be present at competition to participate. NO EXCEPTIONS.
2. The competition is divided into three divisions: elementary (grades 4 - 6), middle school (grades 7 and 8), and high school (grades 9-12). Teams of mixed grade levels will compete in the division of the highest-grade level student.
3. Each school may send up to (2) teams to the Solar Cook-off. Each team needs a separate advisor.

Construction requirements:

1. Teams may design and build any style of cooker—i.e. box, panel, parabolic, etc.

2. Teams may use any non-toxic materials they wish to build their solar cooking device.
3. Only students are allowed to build their cooker–this is not a parent project. However, for safety reasons, teams may have assistance with power tools, and may buy pre-cut parts such as glass or Plexiglass. Adults are encouraged to monitor the use of tools.
4. The solar cooker is to be powered exclusively by the sun. No additional power sources are permitted.
5. All cookers must be large enough to cook at least (3) servings of the food to be judged.
6. All teams must complete 2 cooker Construction & Design Forms. One must be turned in at registration and one must be posted on their table the day of the competition. Forms must list all materials and basic design concept. Points will be deducted from total for missing forms.
7. Teams are expected to discuss their cooker design with a panel of judges, as well as be able to explain how solar cookers work.

Cooking requirements:

1. Teams are required to prepare a recipe of their choosing and cook it using their cooking device.
2. NO HOME PREPARATION OF FOOD IS ALLOWED. ALL FOOD MUST BE PREPARED AND COOKED ON SITE IN ANY WAY PRIOR TO THE COMMENCEMENT OF THE OFFICIAL COOK-OFF. The only exceptions are canned or bottled foods, sauces, spices, vegetables, or beverages. Meat may be pre-cut or ground. MEAT MAY NOT BE PRE- COOKED, in any manner. All other ingredients must be chopped or prepared during the preparation period.
3. The food cooked must be paired to the operational capability of the team's cooker, such as heat attainable, type of cooking (baking, frying), size of cooker, etc. Since the weather on the day of the competition is unknown and can vary, teams may want to plan for different types of cooking conditions.
4. Teams may use any kind of non-toxic cooking vessel or container that they wish.
5. Non-cooked items may be added as garnish to a dish after it has been in the cooker. However, this garnish must be specified in the printed recipe.
6. Recipe ingredients may not be added or subtracted the day of the event from those specified in the printed recipe given to the judges or points will be deducted from the total.

7. The team must cook at least (3) servings of their dish to be judged.
8. For a team's dish to be eligible for judging, it must reach a minimum of 140°F. Cooking temperatures will vary depending on ingredients used (**eggs-155°F, poultry - 165°F, beef-145° F-155°F, fish- 145°F**). Recipes using these ingredients will need to reach this temperature to be eligible for judging.
9. Temperature of food will be recorded by event staff promptly at 2:30 PM. If a dish is ready to be removed from the cooker before 2:30 PM, a team may ask for an official temperature recording early. Teams may only receive one official temperature reading of their dish. Once the temperature is recorded by event staff, it is not eligible to be re-tested.
9. The team's food will be judged on taste, appearance, creativity, plating, complexity of recipe and general appeal.
- 10 The team must provide (1) typed copy of recipe(s) with detailed instructions and submitted with team application for judging. All winning recipes will become the property of MEEC and included in a solar cookbook. Recipes with missing ingredients or instructions will have points deducted.
10. Teams must be able to discuss the cooking of their recipe with a panel of judges, as well as be able to explain why they chose this particular recipe.

Competition Day:

1. At the competition, each team will have a 'booth' space, in which to cook their food, discuss their cooker with the judges and present to the general public.
2. Teams will have 5 ½ hours to cook their food (9:00 AM-2:30 PM).
3. Teams are responsible for managing their cookers and cooking times during the entire event. Cookers should not be left unattended while cooking is taking place.
4. The teams are judged in two separate categories; Design and Recipe. Each category has a total of (60) points, (10) points for each judging requirement. Total points for both categories: (120)

Judging Criteria-Design:

1. Design Decisions--How well does the team understand solar cooking and solar thermal design? How well thought out are their design decisions? Was careful attention paid to parts selection and integration?
2. Construction Technique--How well did the students construct their design? Are the students able to discuss the materials used? Is the cooker sturdy enough to

cook their food? Is it replicable?

3. Function--How well does the design function as a cooking apparatus? Are students able to discuss how well the cooker workshop and what temperature is achieved?
4. Creativity--How innovative is the design? How creative is the use of materials? Is The design/project presented in a creative way?
5. Durability—Has the cooker been designed for repeat usage? Can the cooker stand up to moderate wind and intense sun exposure?
6. Construction Form: Did the team complete and provide a required Construction and Design Form?

Judging Criteria—Recipe:

1. Suitability—How well does the team's prepared recipe fit the capabilities of their cooker design? Was the team able to prepare it easily? Did the team finish cooking in a timely manner?
2. Recipe Forms—Did team provide (3) type-written copies of their recipe(s)? Were there any missing ingredients? Did the prepared and completed dish(es) contain the identical ingredients listed on the recipe?
3. Quality—Did each portion completely cook or were all/some sides disqualified for failing to reach appropriate and safe temperature (at least 140°)?
4. Difficulty—Was the recipe too easy (i.e. not a simple heat and serve)?
5. Creativity—How creative is the recipe? Is the recipe visually appealing? Is the recipe tasty? Does the recipe use a variety of ingredients?
6. Presentation/Plating—Is the dish presentation/plating visually appealing?