

Energy Innovations Rules for Orange County STEM Saturday



These rules are for the Energy Innovations in-person competition at the Orange County STEM Saturday. These rules are not valid for virtual Energy Innovations competitions.

Energy Innovations is a renewable energy design challenge which explores renewable energy technologies and climate science as applied to daily life or a real-world problem. Student teams design and build a fully operational demonstration product that is powered by renewable energy, and then effectively communicate its attributes through a team-designed web page.

The Energy Innovations competition is open to teams of 2 - 6 students in grades 3 - 12. The competition is divided into three divisions: Elementary (3rd - 5th grade), Middle School (6th - 8th grade), and High School (9th - 12th grade). Teams of mixed grade levels will compete in the division of the highest grade level student.

Construction Requirements

Teams must use a renewable energy source to power their project. Batteries (as a power back-up) may be used in the design, but are not required for applications that are meant to work only during the specific time that the renewable energy source is available (i.e. when the sun shines or the wind blows).

There is no physical size requirement other than the project must be full sized, whether that is micro-electronic or larger than a vehicle.

Teams may have assistance with power tools, and may buy pre-cut parts. Adults are encouraged to monitor the use of tools, but are not to actively participate in the design or construction of the project.

Safety is of the utmost importance as it relates to the design of the project. For example, if the project is meant to be used outdoors, then all wiring, components and building materials must be suitable for outdoor use. Additionally, since these projects will be on display, the team must take into account the project's safety around children and the general public, and avoid dangling wires or uncovered electrical connections.

Projects do not have to be practical or marketable by today's standards—forward thinking or whimsical designs are encouraged.

Projects that are deemed unsafe will be disqualified.

Team Web Page Submission

Each team will populate a web page on the Orange County STEM Saturday section of the EnergyWhiz site (using Wordpress) that showcases their Energy Innovation project. These pages will be used to judge the design of the project, and will be viewed by other students and the public during STEM Saturday.

The web page must include:

1) Photo and Basic Info

- Team name
- School name
- First name(s) and last initials of students on the team (no last names on the public page)
- Grade level of each team member
- A photo of the completed project (use this as the Featured Image on your page).

2) Design Documentation

- Photos - a minimum of four close-up photos of parts of the project that you want to showcase.
- A list of any help received from non-team members (i.e. Home Depot staff, internet, parents, teacher, etc.). Include in this section any help you had with power tools, plans you downloaded, or items that you had pre-cut at a store or shop.
- A list of parts used in construction, including any recycled parts used.

3) Team Design Video

Record a video that includes a team member (or more than one) describing/explaining:

- the finished project
- the design/construction process
- why this particular renewable energy source was chosen
- each team member's contribution to the project
- how this project helps in the fight against climate change (i.e. environmental benefits).

This video will be hosted on our Vimeo site and linked to from your team web page. The video may be edited and/or pieced together, or included on the web page in separate segments; however, it may not exceed five minutes total.

These are the minimum requirements for the web page. However, teams are encouraged to use the judging criteria as a guide to what extras they may want to include in their web page. For example, the web page **may** include:

- extra photos of the design, building and testing process
- videos of the team during the building process
- an explanation of unusual and/or recycled parts used in their design
- design drawings and schematics
- an explanation of the challenges encountered while building and testing their project, and what the team did to overcome the challenge
- project log - entries made on workdays documenting the engineering process
- list of internet sites used in the planning process
- marketing material the team will be presenting at STEM Saturday
- any items that the team feels will showcase their project, or be helpful to the judges to pick them as the winning team!

Energy Innovation web page submissions are due approximately one week before the opening of the event. The exact deadline will be communicated to the team by the STEM Saturday committee.

During the week leading up to the event and during STEM Saturday itself, all Energy Innovation web 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.

Communications and Marketing

Each team is to create a marketing piece to accompany their Energy Innovations project. The purpose of this piece is to highlight the useful, creative and/or functional aspects of their project as well as the environmental benefits and the usability of renewable energy. This marketing piece should be thought of as an advertisement and should be geared toward the general public. Some examples include (but are not limited to):

- brochure/flyer/handouts
- video clip/television commercial
- poster

Teams will be judged on how well the design is marketed to the judging team. This includes team member knowledge, verbal presentation to the judges and salesmanship.

Competition Day - Let Your Project Shine!

At the competition, each team will have a 'booth' space (at least 10' x 12' with a 6' table), in which to set up their project, discuss it with the judges, and present their marketing strategy and materials to the general public. All teams must be able to discuss with the judges their project design, their renewable energy source and how that source and their project may help with the problem of climate change with the judges. Teams are also expected to interact with, and display to the general public.

In the event that a team is unable to transport their design and/or display it at the competition due to its size or if the project is a permanent installation, the team must provide a photo display of their project in their booth and be able to explain their project through additional materials. This can be done through any number of mediums such as documents, videos, schematics, charts, blueprints, drawings, etc. Teams should have enough supporting materials to adequately represent their design and student construction.

Judging Criteria

Awards (1st - 3rd) will be given in **Best Design** for each division.

Design judging includes:

- **Design decisions** - How well does the team understand their renewable energy source? How well thought out are the design decisions? Was careful attention paid to parts selection and integration? Was proper attention paid to safety issues?
- **Construction Technique** - How well was the design constructed? Is the project durable?
- **Function** – How well does the design function according to team specified goals?
- **Delivered Message** - How well is renewable energy technology represented in their project, and their website?
- **Creativity** - How creative is the design and/or the use of materials? Is it a novel or interesting solution to a problem? Is the design and the web page presented in a creative way?
- **Web Page** - Does the contents of the team web page document the design, building and engineering process in a way that the viewer can see how the design works and see the special features that the team incorporated? Is the web page arranged attractively?
- **Marketing Materials** - Does the marketing piece inspire interest, create demand, or promote understanding of renewable energy and the product?