

# SCIENCE, ENGINEERING & TECHNOLOGY STEM (ENGINEERING)

Unlimited entries per class number may be made per exhibitor.

## Premium Code: STATIC ITEMS

### Rules:

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24" and not to exceed 1/4" in thickness. A height of 23 7/8" is acceptable to allow for the saw kerf (width) if two 24" boards are cut from one end of a 4' X 8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. (Example: Woodworking, & Electricity). Posters can be any size up to 28" by 22" when ready for display. Example: tri fold poster boards are not 28" by 22" when fully open for display.
3. Fabricated boards such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did. Method used and observations. Results: What you learned. All reports should be computer generated and enclosed in a clear/plastic cover. The reports should be attached securely to the display.

## STEM ENERGY

This division provides 4-H'ers a way to present their idea about renewable energy resources. Through participation in this division, 4-H'ers will learn more about physics, friction, energy, and elasticity. In addition, participants will make a display to go along with their findings.

### Rules:

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated
2. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what

you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

3. Posters can be any size up to 28" by 22" when ready for display. Example: tri fold poster boards are not 28" by 22" when fully open for display.

## **Dept H Division 900**

### **Classes**

- 1 **Create and Compare Energy Resources Poster-** Scoresheet SF307- Poster should explore 2 alternative/renewable energy resources. Compare and contrast the 2 resources including two of the following information: amount of energy created, costs of production, usability of the energy, pros/cons of environmental impacts, etc. Poster can be any size up to 28" x 22".
- 2 **Experiment Notebook-** Scoresheet SF305- Notebook will explore the scientific method involving alternative/renewable energy sources. Information required. 1) Hypothesis, 2) Research, 3) Experiment, 4) Measure, 5) Report or Redefined Hypothesis.
- 3 **Solar as Energy Display/Poster-** Scoresheet SF308- Item should be the original design of the 4-Her. Include the item, or a picture if item is in excess of 6' tall or 2' x 2'. Include a notebook of why the item was designed and how it harnesses the power of the sun. Examples include solar ovens, solar panels, etc.
- 4 **Water as Energy Display/Poster-** Scoresheet SF308- Item should be the original design of the 4-Her. Include the item, or a picture if item is more than 6' tall or 2' x 2'. Include a notebook of why the item was designed and how it harnesses the power of water.
- 5 **Wind as Energy Display/Poster-** Scoresheet SF308- Item should be the original design of the 4-Her. Include the item, or a picture if item is more than 6' tall or 2' X 2'. Include a notebook of why the item was designed and how it harnesses the power of wind.
- 6 **Other Nebraska Alternative Energy-** Scoresheet SF306- Notebook should explore Nebraska alternative energy source besides wind, water, and solar power. Include information on type of power chosen, infrastructure for distribution, what resources are needed to create this alternative resource, cost of production, and potential used of bio-products. Examples include geothermal, biomass, ethanol, biodiesel, methane reactors, etc.