

# Science, Engineering & Technology - Department H

## Division 900 –Physics/Power of Wind

[This category provides 4-H'ers a way to present their ideas about energy. Through participation in this category 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. For more resources and materials in this category refer to the resource section at the bottom of the page. For help getting started with this project contact your county 4-H office.](#)

### 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 from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board 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.

#### **CLASS 1      Create and Compare Energy Resources Poster (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. Posters can be any size up to 28" by 22."

#### **CLASS 2      Experiment Notebook (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 Redefine Hypothesis.

#### **CLASS 3      Solar as Energy Display (SF308)**

Item should be the original design of the 4-H'er. 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.

- CLASS 4      Water as Energy Display (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 water.
- CLASS 5      Wind as Energy Display (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 wind.
- CLASS 6      Other Nebraska Alternative Energy (SF306)**  
Notebook should explore Nebraska an 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 uses of bio-products.

## Resources

### 4-Wheelin' Physics Fun

Learn basic principles of physics, such as friction, energy, elasticity; Do experiments with a radio-controlled pickup

URL: [https://4hcurriculum.unl.edu/index.php/main/program\\_project/133](https://4hcurriculum.unl.edu/index.php/main/program_project/133)

### The Power of Wind

Learn about wind and its uses; Design, create, build and test a wind-powered device; Explore wind as a potential energy source in the community

URL: [https://4hcurriculum.unl.edu/index.php/main/program\\_project/134](https://4hcurriculum.unl.edu/index.php/main/program_project/134)