

## STEM - PHYSICS/ALTERNATIVE/RENEWABLE ENERGY

This category provides 4-H'ers a way to present their ideas about renewable energy resources. 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.

- The name and county of each exhibitor should appear separately on the back on 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.
- 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.
- Posters can be any size up to 28' by 22" when ready for display. Example: trifold poster boards are not 28" by 22" when fully open for display.
- Premier 4-H Science Award is available in this area. For info, go to <https://4h.unl.edu/fairbook/premier-science-award>

Renewable Energy Resources:

- United States Department of Energy: <https://www.energy.gov/clean-energy>
- US Energy Information Administration: <https://www.eia.gov/energyexplained/renewable-sources/>
- Natural Resources Defense Council: <https://www.nrdc.org/stories/renewable-energy-clean-facts>

Scoresheets, forms, contest study materials, and additional resources can be found at:

<https://go.unl.edu/ne4hphysics-powerofwind>

### DIVISION 900 - PHYSICS/POWER OF WIND

PREMIUMS: Purple-\$3.00; Blue-\$2.00; Red-\$1.50; White-\$1.00

- H900001\* **CREATE and COMPARE ENERGY RESOURCES POSTER** – 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" x 22". (SF307)
- H900002\* **EXPERIMENT NOTEBOOK** - 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. (SF305)
- H900003\* **SOLAR as ENERGY DISPLAY/POSTER** - 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 sun. Examples include solar ovens, solar panels, etc. (SF308)
- H900004\* **WATER as ENERGY DISPLAY/POSTER** - 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. (SF308)
- H900005\* **WIND as ENERGY DISPLAY/POSTER** - 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. (SF308)
- H900006\* **OTHER NEBRASKA ALTERNATIVE ENERGY** - Notebook should explore Nebraskan 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. Examples include geothermal, biomass, ethanol, bio-diesel, methane reactors, etc. (SF306)