

ELECTRICITY - MAGIC OF ELECTRICITY - UNIT 1 (Denotes NOT State Fair Eligible)**

PREMIUMS: Purple, \$4.00; Blue, \$3.00; Red, \$2.00 and White, \$1.00 (**Scoresheet CF224**)

H870901 **Switch (see page 13 of manual for instructions)

H870902 **Electromagnet (see page 29 of manual for instructions)

ELECTRICITY - INVESTIGATING ELECTRICITY - UNIT 2 (Denotes NOT State Fair Eligible)**

PREMIUMS: Purple, \$4.00; Blue, \$3.00; Red, \$2.00 and White, \$1.00 (**Scoresheet CF225**)

H870903 **Rocket Launcher - Build a rocket launcher and create a poster using photographs to show the "step by step process" you used to build your launcher (instructions available at the Extension Office).

H870904 **Burglar Alarm - Build a burglar alarm and create a poster using photographs to show the "step by step process" you used to build your alarm (see page 33 of manual for instructions).

ELECTRICITY - WIRED FOR POWER - UNIT 3

PREMIUMS: Purple, \$4.00; Blue, \$3.00; Red, \$2.00; and White, \$1.00

H870001 **Electrical Tool/Supply Kit (Scoresheet SF224)**

Create an electrical supply kit to be used for basic electrical repair around the house. Include a brief description of each item and its use. Container should be appropriate to hold items.

H870002 **Lighting Comparison (Scoresheet SF225)**

Display studying the efficiency of various lighting (incandescent, fluorescent, halogen, Light Emitting Diodes, etc.). Exhibit could be a poster display or an actual item.

H870003 **Electrical Display/Item (Scoresheet SF226)**

Show an application of one of the concepts learned in the Wired for Power project. Examples include: re-wiring or building a lamp, re-wiring or making a heavy-duty extension cord or developing an electrical diagram of a house. Exhibit could be a poster display or an actual item.

H870004 **Poster (Scoresheet SF227)**

Poster should exemplify one of the lessons learned in the Wired for Power project. Posters can be any size up to 28 inches x 22 inches.

ELECTRICITY - ELECTRONICS - UNIT 4

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H870005 **Electrical/Electronic Part Identification (Scoresheet SF228)**

Display different parts used for electrical/electronic work. Exhibit should show the part (either picture or actual item) and give a brief description, including symbol of each part and its function. Display should include a minimum of 10 different parts.

H870006 **Electronic Display (Scoresheet SF229)**

Show an application of one of the concepts learned in the Entering Electronics project. Examples include: components of an electronic device (refer to page 35 of the Electronic manual).

H870007 **Electronic Project (Scoresheet SF230)**

Exhibit an electronic item designed by the 4-H'er or from a manufactured kit that shows the electronic expertise of the 4-H'er. Examples include: a radio, a computer, or a volt meter.

H870008 **Poster (Scoresheet SF231)**

Poster should exemplify one of the lessons learned in the Entering Electronics project. Posters can be any size up to 28 inches x 22 inches.

STEM GEOSPATIAL

STEM Geospatial is a diverse category that includes a variety of exhibits 4-H'ers can get involved in. Through participation in this category 4-H'ers will gain more knowledge about Nebraska's rich history and diverse geography. Take close note of the rules to ensure your exhibit qualifies.

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. 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. Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
4. Please refer to the General Rules for the policy regarding the use of copywritten items.
5. Premier 4-H Science Award is available in this area.

Entries per Individual - One entry per exhibitor per class. Limit of 4 entries per exhibitor per project.

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Scoresheets and additional resources can be found at <https://go.unl.edu/ne4hgeo>.

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CLASSES

- H880001 **Poster (Scoresheet SF299)**
Create a poster (not to exceed 14 inches x 22 inches) communicating a GPS theme such as How GPS or GIS works, Careers that use GPS or GIS, How to use GPS, What is GIS, GPS or GIS in Agriculture, Precision Agriculture, or a geospatial topic of interest.
- H880002 **4-H Favorite Places or Historical Site Poster (Scoresheet SF299)**
The 4-H exhibitor identifies a favorite place or historical site (including grave sites) in Nebraska. Exhibit should include latitude and longitude, digital picture, and local area map. Poster size should not exceed 14 inches x 22 inches.
- H880003 **GPS Notebook (Scoresheet SF300)**
Keep a log of at least 5 places visited using a GPS enabled device. At least one site should be from a community other than where you live. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional but encouraged.
- H880004 **Geocache (Scoresheet SF301)**
Assemble a themed geocache (physical geocache is **REQUIRED** with exhibit). Each geocache should be a water-tight container. It should include a logbook and pencil for finders to log their visits and may include small trinket, geo-coins, etc. for the finders to trade. Documentation should include a title, teaser description, and the geographic coordinates of intended placement. **Register the site at geocaching.com and include a print-out of its registry.** The entry may include a photograph of the cache in its intended hiding place.
- H880005 **Agriculture Precision Mapping (Scoresheet SF302)**
4-Hers will assemble a notebook that will include a minimum of 2 digital copies of various data layers that can be used in precision agriculture to identify spatial patterns and/or correlations (printed copies of websites where applications can be purchased is acceptable). Include a report of how the analysis of the various data will be used to make a management decision.
- H880006 **4-H History Map – Preserve 4-H History (Scoresheet SF303)**
Nominate a Point of Interest for the 4-H History Map Project. Include copy of submitted form in folder or notebook. To nominate a site for the 4-H history map please go to <http://arcg.is/1bvGogV>. For more information about 4-H history go to www.4-hhistorypreservation.com/History_Map. For a step-by-step video on nominating a point, please go to this link: <http://tinyurl.com/nominate4h> Write a brief description of historical significance of 4-H place or person. (a minimum of one paragraph).
- H880007 **GIS Thematic Map (Scoresheet SF302)**
Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-H'er. Example map would be Amelia Earhart's or Sir Francis Drake's voyage, population density maps, water usage maps or 4-H project in Nebraska. Create GIS Map using data from books and/or internet. Use reliable data (U.S. Center or US. Census Bureau, etc.). Map any size from 8.5 inches x 11 inches up to 36 inches x 24 inches, which should include Title, Base Map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of the map.

H880008

Virtual Geocache (Scoresheet SF300)

Keep a log of at least 5 places visited using a virtual geocache platform. At least one site should be from a community other than where you live. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional, but highly encouraged.

STEM 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.

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. 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 inches by 22 inches when ready for display. Example: tri fold poster boards are not 28 inches by 22 inches when fully open for display.

Entries per Individual - One entry per exhibitor per class. Limit of 4 entries per exhibitor per project.

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Premier 4-H Science Award is available in this area. Please see General Information for more details.

Scoresheets and additional resources can be found at <https://go.unl.edu/ne4hphysics-powerofwind>.

Renewable Energy Resources:

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

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H900001

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. Posters can be any size up to 28 inches x 22 inches.

H900002

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 Redefine Hypothesis.

H900003

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 feet tall or 2 feet x 2 feet. 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.

H900004

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 in excess of 6 feet tall or 2 feet x 2 feet. Include a notebook of why the item was designed and how it harnesses the power of water.

H900005

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 in excess of 6 feet tall or 2 feet x 2 feet. Include a notebook of why the item was designed and how it harnesses the power of wind.