

# Department 30 — 4-H ENERGY

## MANAGEMENT/ELECTRONICS/SMALL ENGINE/WIND POWER

Superintendent, Terry Milller  
Junior Superintendent, Jack Dinsmore

Articles that have been in use should be cleaned for exhibit. A sheet of operating instructions must be furnished for any exhibit not self explanatory. Exhibit must be operable. If battery power is required, batteries must be furnished. Any project with a complexity of size or electronics must have (a) instructions for assembly and use and (b) equipment available at the time of judging for actual testing of the exhibit. No hand dipped solder may be used in exhibits. Each exhibit must have a score card completed and attached securely.

Each 4-Her may enter a total of six (6) items with no more than two (2) per class.

Champion and Reserve Champion will be awarded in each section. Grand Champion and Reserve Grand Champion will be awarded overall.

### **JUNIOR, 7 - 12 years of age**

### **SENIOR, 13 -18 years of age**

#### **Section 1- Electrical and Electronics**

Class 3000 AC Electric Projects - Electric projects with a 110 or 120 V alternating current (AC) power source. Some project examples are household wiring demonstrations, small appliances extension cords, trouble light, indoor or outdoor wiring boards, or shop lights. Projects may be a restoration or original construction. The project must be operational and meet minimum safety standards. AC projects must be 110/120 V, no 240V exhibits are allowed, and must be constructed such that the judges have access to examine the quality of workmanship.

Class 3001 DC Electric Projects - Electric projects with a battery or direct current power source. This class includes electric kits or original projects. This class also includes demonstration DC powered projects. Examples include: wiring two or three way switches, difference between series/parallel lighting circuits or wiring doorbells switches. All DC electric projects must work with batteries supplied by 4-Her. Projects must be constructed such that the judges have access to examine the quality of wiring workmanship.

Class 3002 Electronic Projects - Electronic projects with a battery or direct current power source. This class includes electronic kits or original projects. Examples include radios, telephones, toy robots, light meter, security systems, etc. May be constructed using printed circuit board, wire wrap or breadboard techniques. Include instruction/assembly manual if from a kit. Include plans if an original project. Projects must be constructed such that the judges have access to examine the quality of wiring workmanship.

Class 3003 Educational Displays and Exhibits - This class includes any educational displays, exhibits or science fair projects that DO NOT have a power source. i.e. exhibits, posters or displays of wire types, conduit types, electrical safety, tool or motor parts identification or electrical terminology. Educational displays must be legible from a distance of four feet.

#### **Section 2- Small Engines**

All exhibits should involve engines smaller than 20 horsepower for classes 3004-3007. Displays are limited to 4' wide and 4' deep, both upright and floor displays.

Class 3004 Display - Exhibit a display, selecting one of the following options: 1) a display identifying different engine or lawn and garden equipment parts or a display showing the function of the various engine or lawn and garden equipment parts; OR 2) a display identifying and explaining the function(s) of different special tools needed for small engine work; OR 3) a display illustrating and providing the result of any one of experiments that are included in the project books. No complete engines, lawn tractors, tillers, chainsaws are permitted for display. Maximum tri-fold size is 3' x 4'.

Class 3005 Maintenance - Exhibit a display that illustrated either 1) routing maintenance procedures OR 2) diagnosing and troubleshooting specific problems in an engine. No complete engines, lawn tractors, tillers, chainsaws, etc. are permitted for display using a maximum tri-fold size of 3' x 4'.

Class 3006 Operation - Exhibit an operable small engine (no more that 20 HP) overhauled or rebuilt by the member. Include maintenance schedule for the engine and a brief description of steps taken by the member overhauling or rebuilding the engine.

#### **Section 3- Wind Power**

All exhibits in this division are limited in size to standard, tri-fold, display boards (36" x 48") and items may not extend beyond 12" from the back board All displays must be self standing.

Class 3007 Educational Display - Create an exhibit that addresses a focused topic related to wind power as a renewable energy source. The purpose of the exhibit is to inform and create awareness.

Class 3008 Experiment - Display an experiment addressing a problem or question related to wind power as a renewable energy source. Include hypotheses, background research, variables, a control, data, findings, conclusions and recommendations for future study.