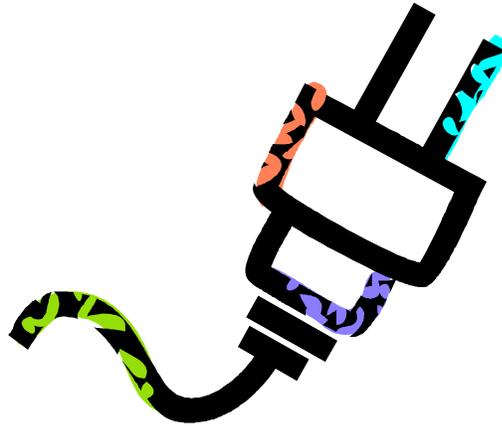




4-H Electricity Projects

Judges' Information



Helpful Information for Judges:

- What is conference judging
- Project Guidelines
- Judging Criteria

Dear 4-H Electricity Project Judge,

Thank you for agreeing to judge your county's 4-H electricity projects. Your expertise will be a great resource for the 4-H electricity members in your county.

To help you give the 4-H members a good learning experience, the Energy Education Council (EEC) Illinois 4-H Youth Committee has developed and prepared several resources that may benefit you while judging. Enclosed please find a copy of the scorecard for each project level, a copy of electricity project guidelines, a copy of the Illinois State Fair electricity class requirements, and a list of the EEC 4-H Youth Committee members.

As you prepare to select electricity project representatives for the Illinois State Fair exhibits, please take a few moments to review the class requirements. By doing this, the members' projects will meet the State Fair guidelines and have a more satisfactory experience at the State Fair. The guidelines are included to assist you to determine if the projects meet Electrical Code recommendations. And, the scorecard(s) may be used to assist you in determining the best-suited projects to advance to State Fair exhibition.

Please be aware that projects selected for Unit I and Unit II should only include DC components; and Unit III projects should utilize AC components. **Unit I and Unit II projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.**

Many 4-H shows use a conference judging process. In this method, you will be talking to the member about the completed project, including things learned, successes, and difficulties in completing the exhibit. If you will be doing this type of judging with the members, you may also want to contact your local University of Illinois Extension Unit office for helpful information and materials about the conference judging process.

If you have questions or concerns about electricity project judging, please feel free to contact one of the EEC 4-H Youth Committee members. The electricity supply representatives will be glad to assist you with any questions, especially regarding project judging guidelines at the Illinois State Fair level.

Good luck with your upcoming project judging! We look forward to seeing the outstanding 4-H electricity projects from you county/unit at the Illinois State Fair in August!

Sincerely,

Energy Education Council
Illinois 4-H Youth Committee

Enclosures – 7

Electricity Project Judge

- Purpose: To judge 4-H electricity projects at county 4-H Show or Exhibitions
- Success Criteria: Electricity projects are judged appropriately according to provided standards. Project members will gain a better understanding of the quality of their exhibit.
- Time Required: One to five hours per day, depending on the number of projects to be evaluated.
- Responsibilities:
- * Review orientation materials offered by U of I Extension
 - * Review project exhibit guidelines for each project level
 - * Communicate one-on-one with 4-H member about completed electricity project exhibit
 - * Designate awards, depending upon quality of exhibit
 - * Select outstanding projects, as necessary
- Target Dates: Months of June, July, and August
- Resources Available:
- * *Conference Judging Fact Sheets:*
<http://www.4-h.uiuc.edu/staff/fieldstaff.html#fair>
 - * Exhibit guidelines
 - * 4-H Electricity Judges' Handbook
 - * Energy Education Council Website:
<http://www.energyedcouncil.org/>
- Training Opportunities:
- * 4-H Judges' Orientation
 - * 4-H Electricity Judges' Handbook
- Report to: Unit Extension Youth Staff
- For Questions, Contact: Unit Extension Youth Staff
- _____ (Address)
- _____ (Phone)



Conference Judging

A Message to Judges

Conference judging brings 4-H members and judges together to evaluate project exhibits. It provides a unique opportunity for 4-H exhibitors to learn from the experiences and knowledge of the judge.

Conference judging involves one-to-one communication in which judge and exhibitor talk directly with each other.

Conference Judging: What can you do?

Put the member at ease. A warm cordial greeting and friendly manner can make a difference. Smile and introduce yourself to the exhibitor. Help the exhibitor relax by initially discussing something other than the exhibit.

Encourage the exhibitor to talk about the exhibit. Find out whether the exhibitor feels successful about his/her efforts. Here are some questions you may ask; remember to encourage the exhibitor to ask questions, also.

- What did you want to achieve from this project?
- Did you learn anything new?
- What was the most enjoyable moment of your project?
- How did you do it (processes, steps, plans)?
- What changes would you make?

Some questions elicit self-evaluating comments from the 4-H'er.

- What problems did you have?
- What could you do differently next time?
- How do you feel about your exhibit now?

You could use questions as a way to give suggestions for improvement.

- Did you experiment with different techniques?
- Have you asked your leader or parent to suggest ways to improve your project?

Send "I" messages instead of "you" messages.

- I really liked...
- I felt you might try to...
- I thought this part really worked well...
- I wasn't quite sure about...

You can make each 4-H'er feel important and successful. Help the 4-H'er understand that **no project exhibit is perfect.** Judging is an educational activity and 4-H'ers should learn some different and better methods for completing their projects.

Timely tips to use during the interview:

- Smile and be friendly
- Let the member do the talking
- Keep in mind the age and experience of the 4-H'er
- Begin and end with positive comments, make *constructive* criticism somewhere in the middle

4-H Judging

Philosophy: An exhibit is not the final statement of a child's effort nor does it offer a measurement of all of the learning that has taken place. The exhibit offers a display of what the child is capable of doing and that he/she has accomplished a goal.

Objectives of the 4-H Program: 4-H members should: have fun, learn to make decisions, think, feel, and act creatively; be conscious of their community and country; and inventive, resourceful and original in problem solving; explore aspects of their 4-H project; evaluate their 4-H project; and investigate careers that are related to their project.

Evaluating the 4-H Project:

- The purpose of the evaluation is for positive learning. Judges are expected to be objective. If there is a questionable decision, error in favor of the youth.
- Projects are evaluated, not members, and projects need to be evaluated independently, not compared.
- Emphasis during the evaluation should be placed on what the member has done and learned.
- There's no such thing as "the 4-H way" of doing things. Many different methods of preparing an exhibit are acceptable.
- Please use the score sheet, if provided. Written comments are extremely helpful.

Things you may want to learn prior to the show:

- What's in the fair book--what it says about class descriptions and requirements
- The county policies about goals, missing parts of an exhibit, ribbons and awards, written comments, and state fair exhibits.
- The county training or emphasis
- Special circumstances of any exhibitors

Additional questions/comments that you may consider using when conference judging:

- How did you improve your skills?
- Did you enjoy working on this project? Why?
- What the easiest...(hardest or most difficult)?
- What caused you the most problems?
- Why did you choose this?
- What would you like to do next year?
- Explain to me about the kinds of materials you used.
- Next time you may want to consider....
- You really did a good job!
- What were your goals for this project?
- How does this exhibit fit into your project?
- I noticed you...(or) I could see you felt...
- Who gave you assistance (help) with the project?



Revised by: Bill Million and Judy Taylor, Youth Development Educators; from materials prepared previously by University of Illinois and Iowa State University
June 2000 (Reviewed 2008)

University of Illinois ▪ U.S. Department of Agriculture ▪ Local Extension Councils Cooperating

University of Illinois Extension provides equal opportunities in programs and employment.

The 4-H Clover is Protected Under 18 U.S.C. 707.



General Judging Criteria for 4-H Electrical Projects

1. Inspect for the wire wrapping around the screw in the direction that screw tightens down (most commonly screws tighten in a clockwise direction).
2. When using stranded wires, check to be sure that all strands are under the screw head.
3. Select proper wire type and size for the particular load that the project requires (refer to *4-H Electricity Exhibit Suggestions* fact sheet).
4. All projects meant for outdoor use or in potential wet locations should use weatherproof or watertight equipment and connections for all projects.
5. All terminals and connections that utilize household voltages (120 volts) should be enclosed. (Examples: dead-front plugs and receptacles, all connections to be inside electrical boxes).
6. AC connections: Choices include ...
 - a. wire-to-wire connections must be soldered and taped OR
 - b. use proper size wire-nut OR
 - c. use a squeezed connector.
7. Wiring shall be protected from all sharp edges by any effective means. (Examples: grommets, silicone seal, etc.)
8. Ground: all electrical materials, parts, and equipment that are not intended to carry current must be grounded by use of a grounding wire (connected to a threaded grounding screw or wiring clip or grounding lug).
9. All electrical materials and equipment should be UL approved.
10. Where necessary, incorporate over-current protection (fuses or circuit breakers) into the project.
11. AC conductors shall be properly color coded by using black or red as hot wires, white as neutral, and green or bare copper as grounding.
- 12. Only use battery powered materials and components for Unit I (*Magic of Electricity*) and Unit II (*Investigating Electricity*). Unit III (*Wired for Power*) must use AC 120 V materials.**

Electricity Project Exhibit Recommendations For 2008 Illinois State Fair

Electricity I, Magic of Electricity- (May only be battery-powered projects using battery components and wiring). Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.

Exhibit a momentary switch, simple switch, or basic circuit **OR** an Electromagnet **OR** a Galvanometer **OR** an Electric motor. All projects must include a report explaining how the project was constructed and the principles demonstrated.

Electricity II, Investigating Electricity - (May only be battery-powered projects using battery components and wiring) Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.

Exhibit a Circuit board demonstrating parallel and series switches, including a circuit diagram **OR** 3-way or 4-way switch circuit using DC/battery **OR** Basic electrical device (examples: Rocket launcher, burglar alarm, etc). All projects must include a report explaining how the project was constructed and the principles demonstrated.

Electricity III, Wired for Power – Exhibit a 120V lighting fixture or other appliance which uses a switch; **OR** two electrical household circuits using 120V materials to comply with National Electrical Code, one with a simple on/off switch to control bulb, and one using 3-way switches to control light from two locations; **OR** other project which demonstrates principles in the Wired for Power book. All projects must include a report explaining how the project was constructed and the principles demonstrated.

Clover Challenge: Electricity – This class is limited to 15-18 year olds who are enrolled in Clover Challenge for this project area. Exhibit a display illustrating the Clover Challenge area explored. This could include anything NOT covered in the project books, including but not limited to career exploration, safety issues, floor plan of electrical wiring for a new or renovated building, power plant design, etc. **The completed Illinois 4-H Clover challenge Agreement must be presented with the exhibit.**

For more information about Illinois 4-H Electricity projects, visit the Energy Education Council website at:

www.energyedcouncil.org



4-H Electricity Exhibit Suggestions

The Electric Energy Education Council (EEC) 4-H Youth Committee has prepared the following Exhibit Suggestions and Judging Criteria. It is encouraged that proper materials be used in the construction of all projects. Also please refer to the *General Judging Criteria for 4-H Electrical Projects* for more information regarding electricity project judging.

Include a written report with your project explaining the project and what you learned. If you are unable to make your project work, include in your report a brief discussion of why it does not work.

Electricity I, Magic of Electricity (Battery-powered projects using battery components and wiring only)

Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.

Exhibit a momentary switch, simple switch, or basic circuit OR an Electromagnet OR a Galvanometer OR an Electric motor. All projects must include a report explaining how the project was constructed and the principles demonstrated.

Electricity II, Investigating electricity (Battery-powered projects using battery components and wiring)

Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.

Exhibit a Circuit board demonstrating parallel and series switches, including a circuit diagram OR 3-way or 4-way switch circuit using DC/battery OR Basic electrical device (examples: Rocket launcher, burglar alarm, etc). All projects must include a report explaining how the project was constructed and the principles demonstrated.

Electricity III, Wired for Power

Exhibit a 120V lighting fixture or other appliance which uses a switch; OR two electrical household circuits using 120V materials to comply with National Electrical Code, one with a simple on/off switch to control bulb, and one using 3-way switches to control light from two locations; OR other project which demonstrates principles in the Wired for Power book.

The following information may be helpful as you plan your exhibit for this project. If you are planning to construct an Outdoor Utility Lamp, Outdoor-type Extension Cord, Trouble Light, Lamp or Lighting Fixture, Motor-Driven Appliance, or Home Wiring and Lighting Layout, these recommendations are necessary to know.

A. Outdoor Utility Lamp

General: A written report explaining your project and what you learned must accompany the exhibit. The lamp should be sturdy enough to withstand moderate abuse and allow for mobility. When the project is being constructed, general safety and good workmanship should be considered.

Physical Construction:

1. Height: 4' minimum
2. Column size: 4" X 4" wood or minimum 1/2" steel
3. Base: 24" diameter of either wood or steel
4. Cord Bracket: a cord storage bracket must be incorporated into the lamp
5. Electrical box/boxes: all electrical boxes must be weatherproof or watertight.
6. Receptacle: if a receptacle is included, it must include GFCI protection.
7. Light/lights: Outdoor-type lamp
8. Conductor (wire)
 - a. minimum 6' length
 - b. Type SJOW, SOW, SJTW, STW, SJEO, SEO
 - c. #14-2 wire with grounding conductor (if more than one light or receptacles are included, conductor should be sufficient size to carry connected wattage.) Exception: if GFCI receptacle is incorporated, must use a #12 conductor.
 - d. Attachment plug: heavy-duty dead-front with grounding prong
9. Ground: all metal electrical boxes and metal parts must be grounded with grounding wire.
10. Connections: wire-to-wire connections must be soldered and taped OR have proper size wire-nut. Polarization (proper color coding) of all wiring must be adhered to.
11. Conductor shall be attached at base with an insulated device (nylon cable tie, electrical tape, etc.)

B. Outdoor-Type Extension Cord

General: A written report explaining your project and what learned must accompany the project. When the project is being constructed, general safety and good workmanship should be considered.

Physical Construction:

1. Length: minimum length 6'
2. Cord: #12-2 wire with ground, type SJOW, SOW, SJTW, STW, SJEO, SEO
3. Attachment plug: heavy-duty dead-front with grounding prong
4. Connector: cord grip and grounding receptacle with dead-front
5. Connections: polarization of all wiring must be adhered to

C. Trouble Light

General: A written report explaining your project and what learned must accompany the project. When the project is being constructed, general safety and good workmanship should be considered.

Physical Construction:

1. Non-metallic handle with switch
2. Shielded lamp guard
3. Minimum of #14-2 wire should be used, type SJOW, SOW, SJTW, STW, SJEO, SEO if to be used only for a light and no receptacle.

D. Lamp or Lighting Fixture

General: A written report explaining your project and what learned must accompany the project. When the project is being constructed, general safety and good workmanship should be considered.

Physical Construction:

1. Dead-front attachment plug
2. Wiring shall be protected for all sharp edges by any effective means, e.g., grommets, silicone seal, etc.
3. Soldering of wire ends is recommended.
4. Minimum of #18-2 lamp cord (minimum 6' length)
5. Appropriate fixture and design for intended use.

E. Motor-Driven Appliance

General: A written report explaining your project and what learned must accompany the project. When the project is being constructed, general safety and good workmanship should be considered.

Physical Construction:

1. Motor should be adequate size to fulfill expected workload
2. All metal equipment shall be grounded
3. Wiring and attachment plug should be of adequate size for load of the motor with overload protection.
4. Dead-front attachment plug with grounding prong
5. Pulleys, belts, and chains used are to be guarded
6. Cord used should be type SJOW, SOW, SJTW, STW, SJE0, SE0

F. Home Wiring and Lighting Layout

General: A written report explaining your project and what learned must accompany the project.

1. Prepare a "floor plan" of a home
2. Describe lighting and receptacle layout in the home with "overlays"
 - a. General lighting
 - b. Task lighting
 - c. Decorative lighting
 - d. Receptacles for general use
 - e. Receptacles for specific purposes (circuits could also be shown)
 - f. Indicate where GFCI protected receptacles should be used
3. Show the wattage for lighting per room and total
4. Use National Electrical Code Symbols
5. Indicate if the lighting is incandescent or fluorescent and if lighting is adequate or needs improvement. If improvement is needed in lighting or receptacle layout, tell what should be done.

G. Clover Challenge: Electricity

This class is limited to 15-18 year olds who are enrolled in Clover Challenge for this project area. Exhibit a display illustrating the Clover Challenge area explored. This could include anything NOT covered in the project books, including but not limited to career exploration, safety issues, floor plan of electrical wiring for a new or renovated building, power plant design, etc. The completed Illinois 4-H Clover Challenge Agreement must be presented with the exhibit.



ELECTRICITY – UNITS 1 & 2

A check list for evaluating 4-H Electricity exhibits

Name _____ County _____ Rating _____

Circle Project Level: Electricity 1 2

Directions: Check the appropriate column. Comments are helpful to the presenter.

Criteria	Very Good	Improvement Needed	
		Some	Much
Knowledge of Subject Matter			
A. General knowledge of electrical applications			
Explanation of Project Exhibit			
A. Goal of project exhibit B. Age Appropriate for exhibitor and project level C. Ability to Explain Decisions made or Results Shown D. Self-Evaluation of Project E. Skills Learned F. Workmanship G. Appropriateness of Materials used H. Safety			
Exhibit Presentation			
A. Neat Appearance B. Follows exhibit requirements C. Size of exhibit does not exceed limits			
Ideas & Plans for continuing in project area:			
Overall Comments:			

General Judging Criteria for Electrical Projects

1. Inspect for the wire wrapping around the screw in the direction that the screw tightens down (most commonly screws tighten in a clock-wise direction).
2. When using stranded wires, check to be sure that all strands are under the screw head.
3. Select the proper wire type and size for the particular load that the project requires.
4. Use weatherproof or watertight equipment and connections for all projects that will be used outside or in a damp location.
5. All terminals and connections that utilize household voltages (120 volts) should be enclosed. (Examples: dead-front plugs and receptacles, all connections to be inside electrical boxes.)
6. AC connections: choices include...
 - a. wire-to-wire connections must be soldered and taped...or
 - b. use proper size wire-nut...or
 - c. use a squeezed connector.
7. Wiring shall be protected from all sharp edges by any effective means. (Examples: grommets, silicone seal, etc.)
8. Ground: all electrical materials, parts, and equipment that are not intended to carry current must be grounded by use of a grounding wire (connected to a threaded grounding screw or wiring clip or grounding lug).
9. All electrical materials and equipment should be U.L. approved.
10. Where necessary, incorporate over-current protection (fuses or circuit breakers) into the project.
11. AC conductors shall be properly color coded by using black or red as hot wires, white as neutral, and green or bare copper as grounding.
12. Use battery power for Unit Level I and II and 120 V for Unit Level III.

Published by:

4-H Committee of Energy Education Council
University of Illinois Extension
3001 West White Oaks Drive, Suite D
Springfield, IL 62704
www.iecouncil.org

Updated, May 2008



UNIVERSITY OF ILLINOIS
EXTENSION

College of Agricultural, Consumer and Environmental Sciences



ELECTRICITY – UNIT 3

A check list for evaluating 4-H Electricity exhibits

Name _____ County _____ Rating _____

Directions: Check the appropriate column. Comments are helpful to the presenter.

Criteria	Very Good	Improvement Needed	
		Some	Much
Knowledge of Subject Matter			
A. General knowledge of electrical applications			
Explanation of Project Exhibit			
A. Goal of project exhibit			
B. Age Appropriate for exhibitor and project level			
C. Ability to Explain Decisions made or Results Shown			
D. Self-Evaluation of Project			
E. Skills Learned			
F. Workmanship			
G. Appropriateness of Materials used			
H. Safety			
Exhibit Presentation			
A. Neat Appearance			
B. Follows exhibit requirements			
C. Size of exhibit does not exceed limits			
Ideas & Plans for continuing in project area:			
Overall Comments:			

Use back of page for additional comments if necessary

Revised 5/2008

General Judging Criteria for Electrical Projects

13. Inspect for the wire wrapping around the screw in the direction that the screw tightens down (most commonly screws tighten in a clock-wise direction).
14. When using stranded wires, check to be sure that all strands are under the screw head.
15. Select the proper wire type and size for the particular load that the project requires.
16. Use weatherproof or watertight equipment and connections for all projects that will be used outside or in a damp location.
17. All terminals and connections that utilize household voltages (120 volts) should be enclosed. (Examples: dead-front plugs and receptacles, all connections to be inside electrical boxes.)
18. AC connections: choices include...
 - a. wire-to-wire connections must be soldered and taped...or
 - b. use proper size wire-nut...or
 - c. use a squeezed connector.
19. Wiring shall be protected from all sharp edges by any effective means. (Examples: grommets, silicone seal, etc.)
20. Ground: all electrical materials, parts, and equipment that are not intended to carry current must be grounded by use of a grounding wire (connected to a threaded grounding screw or wiring clip or grounding lug).
21. All electrical materials and equipment should be U.L. approved.
22. Where necessary, incorporate over-current protection (fuses or circuit breakers) into the project.
23. AC conductors shall be properly color coded by using black or red as hot wires, white as neutral, and green or bare copper as grounding.
24. Use battery power for Unit Level I and II and 120 V for Unit Level III.

Published by:

4-H Committee of Energy Education Council
University of Illinois Extension
3001 West White Oaks Drive, Suite D
Springfield, IL 62704
www.iecouncil.org

Updated, May 2008



UNIVERSITY OF ILLINOIS
EXTENSION

College of Agricultural, Consumer and Environmental Sciences



ELECTRICITY

A check list for evaluating 4-H electricity exhibits

Name: _____ County: _____ Rating: _____

Directions: Check the appropriate column. Comments are helpful to the presenter.

Criteria	Very Good	Improvement Needed	
		Some	Much
Workmanship			
A. Wires properly routed and secured			
B. Wire-to-wire connections, have proper size squeezed connector or have proper terminal connection			
C. Screws & mechanical connections properly tightened			
D. Polarization & color coding or wiring followed			
E. Neatness			
F. Appliance works properly*			
G. *If not, documentation of problems explained			
Safety			
A. Purchased materials & devices appropriate & safe			
B. Safety features in place, working			
C. Project is safe & appropriate for intended use			
Knowledge			
A. Concepts presented			
B. Skills learned & possible improvements			
Exhibit Presentation			
A. Follows exhibit requirements			
B. Written report clear, neat & demonstrates knowledge, understanding & applications of concepts			
C. Clean, neat, attractive			
Overall Comments:			

Energy Education Council (EEC) 4-H Youth Committee

Co-Chair and EEC Board Liaison:

Denise F. Kistner, University of Illinois Extension
Montgomery County Extension
#1 Industrial Park Dr., Hillsboro 62049
Telephone: (217) 532-3941; Fax (217) 532-3944
E-mail: dkistner@uiuc.edu

Co-chair:

Melinda States, University of Illinois Extension
Mt. Vernon Extension Center
4112 N. Water Tower Place, Mt. Vernon 62864
Telephone: (618) 242-9310; Fax (618) 242-9433
E-mail: mstates@uiuc.edu

Chris Boyd, Southern Illinois Electric Cooperative
PO Box 100, Dongola 62926
Telephone: (618) 827-3555; Fax: (618) 827-3585
E-mail: cboyd@siec.org

Chris Grotbo, Volunteer
28227 E 725 N Road, Leroy 61752
E-mail: grotboc@dtnspeed.net

Allan Masterson, Monroe County Electric Cooperative, Inc.
PO Box 128, Waterloo 62298
Telephone: (618) 939-7171; Fax: (618) 939-3969
E-mail: mcec@htc.het

Bill Million, University of Illinois Extension
Illinois State 4-H Office
302 East Johnson Street, Suite 1901, Champaign 61820
Telephone: (217) 333-0910; Fax: (217) 333-9287
E-mail: wmillion@uiuc.edu

Charles Peterson, Volunteer
251 Coyote Lane
Coffeen 62017
Telephone: (217) 534-2510
E-mail: cpeterson@frontier.net

Dana T. Smith, Rural Electric Convenience Cooperative Co.
PO Box 19, Auburn 62615
Telephone: (217) 438-6197; Fax: (217) 438-3212
E-mail: dana.smith@recc.coop

Larry Wachtel, Volunteer
505 Ridgeview Dr., Sherman 62684-9782
Telephone: (217) 496-2421
E-mail: wachtell@gcctv.com