

ENERGY MERIT BADGE

Pre-Work Packet — Revised to Current Scouting America Requirements

Complete the assigned pre-work BEFORE the counselor session. Bring your notes, charts, log, and project materials. Written work is preparation; the counselor must discuss/verify each requirement with you.

Scout Name: _____

Troop #: _____

Counselor: _____

Meeting/Event Date: _____

REQUIREMENT 1 | Energy Article + Follow-Up

Before the meeting:

- With parent/guardian permission, find a blog, podcast, website, or article about the use or conservation of energy.
- Write the source/title and brief notes about: what interested you, what questions it raised, and what you did not understand.
- After completing Requirements 2–8, revisit the same source and be ready to explain what you now understand better.

Source/title: _____

What interested me:

Questions it raised / what I did not understand:

After completing 2–8, what I understand better:

REQUIREMENT 2 | Energy Forms & Conversions

Choose THREE devices from the official list and explain how each uses energy and its energy conversions:

Toaster • Greenhouse • Lightbulb • Bow drill • Cell phone • Nuclear reactor • Sauna • Electric vehicle

Device 1: _____

Energy in → conversions → useful result:

Device 2: _____

Energy in → conversions → useful result:

Device 3: _____

Energy in → conversions → useful result:

Requirement 2b will be completed DURING CLASS. No hands-on project or project materials need to be completed or brought from home. All project supplies will be provided.

REQUIREMENT 3 | Energy Efficiency

Choose a common system in which energy moves through the system to produce a useful result. Prepare to explain:

- The parts of the system affected by energy movement.
- The system's primary energy source.
- The useful outcomes.
- The energy losses.

System chosen: _____

Parts affected:

Primary energy source:

Useful outcomes:

Energy losses:

REQUIREMENT 4 | 14-Day Home Energy Audit

This requirement **MUST** include a 14-day log. Start at least 14 days before the counselor session.

Complete a home energy audit and keep a 14-day log of what you and your family did to reduce energy use. After the 14 days, be prepared to discuss what you learned.

Option A — Home energy:

- List the types of energy used at home (examples: electricity, wood, oil, liquid petroleum, natural gas).
- For each, record how it is delivered, how it is measured, and current cost.

OR Option B — Transportation:

- Record transportation fuel used, miles driven, miles per gallon, and trips using your family car or another vehicle.

For your discussion, also prepare:

- Ways your family can use energy resources more wisely.
- Energy required for daily activities such as cooking, showering, lighting, driving, TV, and computers.
- What sustainable energy sources means.
- How reuse and recycling can change energy use.

14-Day Log — date / energy-saving action / result or observation:

Day/Date	What we did to reduce energy use	What I noticed / learned
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

- 11
- 12
- 13
- 14

Home energy types / delivery / measurement / current cost OR transportation data:

What I learned after 14 days:

REQUIREMENT 5 | Energy Waste in School or Community

In a notebook, identify and describe FIVE examples of energy waste in your school or community. For each, suggest ways to reduce the waste.

#	Energy waste observed	Possible reduction	Benefit / trade-off
1			
2			
3			
4			
5			

- For the group discussion, prepare to explain:
- How your proposed changes could lower costs, reduce pollution, or otherwise improve the community.
 - What changes to routines, habits, or convenience would be required.
 - Why people might resist those changes.
 - What a trade-off in energy use means.

REQUIREMENT 6 | Five Energy Pie Charts

Prepare FIVE pie charts. Each chart must be based on a stated source. Be ready to explain the important ideas each chart reveals. We will compare everyone's answers and discuss.

Chart 1: U.S. energy resources supplying most of its energy

Source: _____

What the chart shows:

Chart 2: Share of U.S. energy resources that comes from other countries

Source: _____

What the chart shows:

Chart 3: Proportion of U.S. energy resources used by homes, businesses, industry, and transportation

Source: _____

What the chart shows:

Chart 4: Fuels used to generate America's electricity

Source: _____

What the chart shows:

Chart 5: World's known and estimated primary energy resource reserves

Source: _____

What the chart shows:

Also prepare to explain how cost affects use of a nonrenewable energy resource and makes alternatives practical.

REQUIREMENT 7 | Improving Energy Systems

Choose FIVE energy systems from the list below. Research what is being done to make each produce more usable energy. For each, address technology, cost, environmental impacts, and safety concerns.

- ☐ Biomass digesters or waste-to-energy plants
- ☐ Cogeneration plants
- ☐ Fossil fuel power plants
- ☐ Fuel cells
- ☐ Geothermal power plants
- ☐ Nuclear power plants
- ☐ Solar power systems
- ☐ Tidal energy, wave energy, or ocean thermal energy conversion devices
- ☐ Wind turbines

Use five of the selected systems for your discussion. Notes:

REQUIREMENT 8 | Careers in Energy

Identify THREE career opportunities that use skills and knowledge in energy. Pick ONE and research it in greater depth.

Three careers:

1. _____
2. _____
3. _____

Career selected for deeper research: _____

Training / education requirements:

Certification requirements:

Experience requirements:

Expenses to enter the field:

Employment prospects:

Starting salary:

Advancement opportunities:

Career goals:

Why this career interests me:

PRE-MEETING CHECKLIST

- ☐ Req. 1a: Article/source researched and discussion notes prepared.
- ☐ Req. 2a: Three devices researched; energy conversions understood.
- ☐ Req. 2b: No pre-work required — hands-on two-conversion system will be constructed and explained during class; supplies provided.
- ☐ Req. 3: Energy-efficiency system selected and all four points prepared.
- ☐ Req. 4: 14-day log completed; home/transportation data and discussion prepared.
- ☐ Req. 5: Five school/community energy-waste examples completed with trade-offs.
- ☐ Req. 6: Five pie charts completed, sourced, and understood.

☐ Req. 7: Five energy systems researched across technology, cost, environment, safety.

☐ Req. 8: Three careers identified; one researched in depth.

☐ Req. 1b: Original article revisited after Requirements 2–8.

Important: Completing this packet alone does not complete the merit badge. You must discuss/demonstrate each requirement with your counselor.