



Energy

September 2025

For more information, contact:

Brigitte Passman, UT Extension

Lynne Middleton, 4-H Youth Development

Understanding Energy

- Make observations to determine how sunlight warms Earth's surfaces (sand, soil, rocks, and water)
- Understand the difference between Potential energy vs kinetic energy and be able to identify examples of each energy type
- Understand different types of energy (solar energy, wind energy, green energy, nuclear, etc.)
- Obtain and combine information to describe that energy and fuels are derived from natural resources and that some energy and fuel sources are renewable (sunlight, wind, water) and some are not (fossil fuels, minerals)
- Research and identify challenges of energy
- Learn the difference between AC and DC current
- Discover how electricity flows through a circuit
- Make a simple circuit, flashlight and switch
- Experiment with basic circuits using batteries, light bulbs, and switches

Conservation of Energy and Energy Transfer

- Create a food web and draw conclusions about the transfer of energy or a pyramid in an ecosystem
- Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers
- Research and develop your own definition of conductors, and insulators.
- Use knowledge and form a demonstration of basic electric circuits



Relationship Between Energy and Forces and Fields

- Demonstrate how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in the shape of the colliding objects
- Recognize that energy is present when objects move; describe the effects of energy transfer from one object to another
- Evaluate how magnets cause changes in the motion and position of objects, even when the objects are not touching the magnet

Energy in Chemical Processes and Everyday Life

- Research where your energy comes from
- Demonstrate an understanding of TVA, its history, and the relationship between your local energy provider and how they buy energy from TVA
- Research careers related to energy (utility company, nuclear plants, hydroelectric dam, solar plants, tidal plants, geologists, lineman, electrician, etc.)

Influence of Engineering, Technology, and Science on Society and the Natural World

- The sun provides an excellent "hands-on" learning opportunity for exploring just how the sun provides energy to plants and animals. Create a 4-H demonstration explaining solar energy
- Research magnetism and make a compass

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