

X = This lesson supports the learning standard.	Intro to Energy	Basic Circuits	Circuit Systems	Electrical Safety	The Journey of Hydropower
<b>Next Generation Science Standards</b>					
<b>PERFORMANCE EXPECTATIONS</b>					
<b>Physical Science</b>					
4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	X	X	X	X	X
4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.		X	X		X
5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.		X			
5-PS1-3. Make observations and measurements to identify materials based on their properties.				X	
5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.					X
5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.	X				
<b>Earth and Human Activity</b>					
4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.					X
5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.					X
<b>PRACTICES</b>					
<b>Asking Questions and Defining Problems</b>					
Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.		X	X		
<b>Constructing Explanations and Designing Solutions</b>					
Use evidence to construct an explanation.		X	X		
Identify the evidence that supports particular points in an explanation.		X	X		
<b>DISCIPLINARY CORE IDEAS</b>					
<b>ESS3.A: Natural Resources</b>					
Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3-1)					X
<b>ESS3.C: Human Impacts on Earth Systems</b>					
Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)					X
<b>PS1.A: Structure and Properties of Matter</b>					
Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. (5-PS1-1)		X			
Measurements of a variety of properties can be used to identify materials. (5-PS1-3)				X	
<b>PS2.B: Types of Interactions</b>					

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The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (5-PS2-1)					X
<b>PS3.A: Definitions of Energy</b>					
The faster a given object is moving, the more energy it possesses. (4-PS3-1)			X		
Energy can be moved from place to place by moving objects or through sound, light, or electric currents. (4-PS3-2),(4-PS3-3)	X	X	X	X	X
<b>PS3.B: Conservation of Energy and Energy Transfer</b>					
Light also transfers energy from place to place. (4-PS3-2)	X				
Energy can also be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat, or light. The currents may have been produced to begin with by transforming the energy of motion into electrical energy. (4-PS3-2),(4-PS3-4)	X	X	X	X	X
<b>PS3.D: Energy in Chemical Processes and Everyday Life</b>					
The expression "produce energy" typically refers to the conversion of stored energy into a desired form for practical use. (4-PS3-4)		X	X		X
The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)	X				
<b>CROSS-CUTTING CONCEPTS</b>					
<b>Cause and Effect</b>					
Cause and effect relationships are routinely identified and used to explain change.		X	X		X
<b>Energy and Matter</b>					
Energy can be transferred in various ways and between objects.	X	X	X	X	X
<b>Influence of Engineering, Technology, and Science on Society and the Natural World</b>					
Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.				X	
<b>Science is a Human Endeavor</b>					
Most scientists and engineers work in teams.		X	X	X	X
<b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b>					
Science assumes consistent patterns in natural systems.					X
<b>Systems and System Models</b>					
A system can be described in terms of its components and their interactions.	X		X		X