



Energy & Society - STEM Connections  
Activity 1: Energy Detectives



Overview: Students explore the *Where is the energy?* Poster and then search their classroom for energy connections. They record the ways the use energy throughout a typical day in an energy detective journal.

Resource	S	T	E	M	NGSS Connection
<p><a href="#"><u>Sound and Vibration</u></a></p> <p>Use simple supplies to create sound waves, investigate vibration's role in producing sound, and make percussion instruments</p>	X	X	X		<p><b>Kindergarten DCI PS4.A: Wave Properties</b></p> <ul style="list-style-type: none"> <li>• Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)</li> </ul>
<p><a href="#"><u>Sunshine and Shadows</u></a></p> <p>Use science inquiry skills to explore sunlight and shadows across the seasons and use the information to plan the location of a garden.</p>	X	X	X	X	<p><b>Kindergarten DCI ESS2.D: Weather and Climate</b></p> <ul style="list-style-type: none"> <li>• Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)</li> </ul> <p><b>Grade 1 DCI PS4.B: Electromagnetic Radiation</b></p> <ul style="list-style-type: none"> <li>• Objects can be seen only when light is available to illuminate them. Some objects give off their own light. (1-PS4-2)</li> <li>• Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (1-PS4-3)</li> </ul>

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<p><a href="#"><u>“Wild Wind” - Exploring Local Wind Patterns</u></a></p> <p>Make wind vanes out of paper, straws and soda bottles and use them to measure wind direction over time</p>	X		X		<p><b>Grade 2 DCI ESS2.A: Earth Materials and Systems</b></p> <ul style="list-style-type: none"> <li>• Wind and water can change the shape of the land. (2- ESS2-1)</li> </ul> <p><b>Grade 3 DCI ESS2.D: Weather and Climate</b></p> <ul style="list-style-type: none"> <li>• Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)</li> </ul>
<p><a href="#"><u>Explore the Wind with Curious George</u></a></p> <p>Explore how wind can make a pinwheel turn</p>		X	X		<p><b>Grade 2 DCI ESS2.A: Earth Materials and Systems</b></p> <ul style="list-style-type: none"> <li>• Wind and water can change the shape of the land. (2- ESS2-1)</li> </ul> <p><b>Grade 3 DCI ESS2.D: Weather and Climate</b></p> <ul style="list-style-type: none"> <li>• Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)</li> </ul>
<p><a href="#"><u>Waterwheel Work</u></a></p> <p>Explore kinetic energy by creating an experimental waterwheel from a two-liter plastic bottle</p>	X	X	X	X	<p><b>Grade 2 DCI ESS2.C: The Roles of Water in Earth’s Surface Processes</b></p> <ul style="list-style-type: none"> <li>• Water is found in the ocean, rivers, lakes, and ponds.</li> <li>• Water exists as solid ice and in liquid form. (2-ESS2-3)</li> </ul>
<p><a href="#"><u>“A River Ran Through It”</u></a></p> <p>Investigate water’s potential-to-kinetic energy transformation with falling water and waterwheels; take measurements, calculate averages, and graph results</p>	X		X	X	<p><b>Grade 2 DCI ESS2.C: The Roles of Water in Earth’s Surface Processes</b></p> <ul style="list-style-type: none"> <li>• Water is found in the ocean, rivers, lakes, and ponds.</li> <li>• Water exists as solid ice and in liquid form. (2-ESS2-3)</li> </ul>

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<p><a href="#"><u>Impacts of Energy Sources</u></a></p> <p>Become familiar with the environmental impacts associated with energy sources of the US electric power indust</p>	X	X	X		<p><b>Grade 4 DCI ESS3.A: Natural Resources</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>
<p><a href="#"><u>“Let the Sun Shine”</u></a></p> <p>Learn about passive solar heating, lighting and cooking, and active solar engineering technologies that generate electricity and explore ways to “live off the grid”</p>	X	X	X		
<p><a href="#"><u>“Colonial Crafts and Trades”</u></a></p> <p>Learn how the colonists lived without electricity.</p>	X	X			
<p><a href="#"><u>The Spread of the Industrial Revolution to North America</u></a></p> <p>Determine how factories used natural resources to create products formerly made by hand</p>	X	X			

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<p><a href="#"><u>Got Energy?</u></a></p> <p>Learn about energy flow in food webs and model a food web using diagrams</p>	X		X		<p><b>Grade 5 DCI PS3.D: Energy in Chemical Processes and Everyday Life</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Grade 5 DCI LS1.C: Organization for Matter and Energy Flow in Organisms</b></p> <ul style="list-style-type: none"> <li>Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)</li> </ul>
<p><a href="#"><u>Engineering Challenge</u></a></p> <p>Use information on energy flow in nature to create a model “biodome”</p>		X	X		<p><b>Grade 5 DCI PS3.D: Energy in Chemical Processes and Everyday Life</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Grade 5 DCI LS1.C: Organization for Matter and Energy Flow in Organisms</b></p> <ul style="list-style-type: none"> <li>Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)</li> </ul>