

Energy

GRADES 6–8

Guiding Question

What are the short- and long-term impacts of different energy sources and energy uses?

Connecting Concepts

- Humans depend on Earth’s land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.
- Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors.
- Forests offer renewable materials, such as paper products, corrugated cardboard, cross-laminated timber, and biofuels to support global sustainability.
- The forest sector is diverse and growing. It provides critical resources and products to the global marketplace, including lumber, plywood, engineered wood products, packaging, paper, and fabric.

Scope and Sequence

The collection and order of content below supports an intentional student learning progression.

Activity	Description
Global Goods	Students trace the resources that go into making one product.
Exploration Energy!	Students learn about different sources of energy, conduct an audit of the electricity they use in their own homes, and create an action plan to use energy wisely.
Renewable or Not?	Students model what happens to renewable and nonrenewable resources over time and discover why sustainable use of natural resources is so important.
The Global Climate	Using data collected from Mauna Loa, students graph changes in atmospheric levels of carbon dioxide (CO ₂) over several decades and identify possible reasons for those changes.
Improve Your Place	Students plan and carry out a service-learning project to make positive environmental changes in their community.

See pltcana.org/en/education for detailed standards correlations for each activity.

Storyline

Students learn about different energy sources and explore some of the short- and long-term social, economic, environmental, and health impacts of energy use.

Storyline continued on next page.



Energy (cont.)

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- Introduce the unit with the activity Global Goods, in which students identify the inputs and outputs involved in making a product. Challenge them to include the different ways that energy is required to make and use the product.
- Next, conduct the activity Exploration Energy!, in which students research the impacts of different energy sources and track their own energy use. Ask them how using energy more wisely can reduce the negative effects of energy extraction and distribution on people and the environment.
- In the next activity, Renewable or Not?, students participate in hands-on modeling exercises that demonstrate the long-term impacts of renewable versus nonrenewable resources and the effects of the variable distribution of resources in different parts of the world. For Model 4, challenge students to design and create their own model related to the sustainable use of energy resources.
- Next, use the activity The Global Climate to explore one negative impact of using fossil fuels: CO₂ emissions. In this activity, students graph over 50 years of atmospheric CO₂ data and look for trends. They also explore the relationship among CO₂, the Earth's climate, and local ecosystems and suggest ways to reduce the effects of increased CO₂ levels in the atmosphere.
- Conclude the unit with the activity Improve Your Place, which encourages students to design and carry out a service-learning project. As a culmination of the unit, support students in choosing, planning, and implementing a project related to energy.

