

EarthComm Earth's Natural Resources: Energy Resources and Your Community Storylines

Below are storylines that were designed by Cheryl Mosier, an Earth Science Teacher at Columbine High School in Littleton, Colorado.

Big Idea:

8. Earth resources include the nonrenewable and renewable supplies of energy, and mineral and water resources. Individuals and communities depend upon these resources in order to maintain quality for life and economic prosperity.
10. In order to sustain the presence and quality of human life, humans and communities must understand their dependency on Earth resources and environments, realize how they influence Earth systems, appreciate Earth's carrying capacity, manage and conserve nonrenewable resources and environments, develop alternate sources of energy and materials needed for human sustenance, and invent new technologies.

	Activity 1 – Exploring Energy Resource Concepts	Activity 2 – Electricity	Activity 3 – Energy from Coal	Activity 4 – Coal	Activity 5 – Environmental Impacts and Energy Consumption	Activity 6 – Petroleum	Activity 7 – Oil and Gas Production	Activity 8 – Renewable Energy Sources – Solar and Wind
Key Evidence Learned	- conduction, convection, radiation	- where energy comes from - compare energy sources in US to other countries	- classify coal - interpret map of where coal is in the US	- production and consumption of coal in US - methods of coal mining	- carbon cycle - pH - acid rain - positive and negative impacts of energy use	- dependence on petroleum - future needs and trends - production change over time - location in US - origin of petroleum and natural gas - consumption of oil and gas in CO	- rate of production in oil and gas fields - density - maximizing energy resources	- evaluate use of sun and wind to reduce dependence on nonrenewables
Connection to:	- conversion of mechanical energy into heat - Second Law of Thermodynamics	- trends and patterns in consumption - electric power vs. electric energy - how we generate electricity	- how coal forms - why coal is nonrenewable	- how coal is used in Colorado - how to conserve coal				

Big Idea	<ul style="list-style-type: none"> - How energy is transferred - How power is determined 	<ul style="list-style-type: none"> - How does the US use energy compared to other countries 	<ul style="list-style-type: none"> - where is coal found in the US and our community - type of coal in the US and our community 	<ul style="list-style-type: none"> - where mines are located and why - where CO coal mines are - how we mine coal in US and locally - types of coal mines 	<ul style="list-style-type: none"> - benefits and hazards of energy production and use 	<ul style="list-style-type: none"> - location of gas and oil deposits in the US and our community - what we use gas and oil for in the US 	<ul style="list-style-type: none"> - how energy needs have changed over time - how to remove oil and gas from the ground 	<ul style="list-style-type: none"> - renewable energy sources - alternative energy sources
Real Life and Chapter Challenge	<ul style="list-style-type: none"> - How energy moves around in our lives 	<ul style="list-style-type: none"> - why are there differences between countries - how we get electricity 	<ul style="list-style-type: none"> - type of coal in our community and how it got here 	<ul style="list-style-type: none"> - Coal Mine Avenue - local coal mines - state coal mines - local use of coal for electricity 	<ul style="list-style-type: none"> - pollution aspects of energy production and use 	<ul style="list-style-type: none"> - impacts felt where we find local sources of gas and oil - CO oil shale deposits 	<ul style="list-style-type: none"> - prices of gas and oil - trends in production 	<ul style="list-style-type: none"> - how we currently use alternative energy sources - planning for the future
Geosphere	<ul style="list-style-type: none"> - how energy moves in a solid 	<ul style="list-style-type: none"> - sources for electricity from the Earth 	<ul style="list-style-type: none"> - coal formation - types of coal 	<ul style="list-style-type: none"> - where coal mines are located - mining techniques 	<ul style="list-style-type: none"> - pollution and it's impacts on surface and ground 	<ul style="list-style-type: none"> - how gas and oil are formed - drilling and mining 	<ul style="list-style-type: none"> - drilling techniques 	<ul style="list-style-type: none"> - resource management
Hydrosphere	<ul style="list-style-type: none"> - how energy moves in a fluid 	<ul style="list-style-type: none"> - possible sources of electricity from the ocean - hydroelectric plants 	<ul style="list-style-type: none"> - types of coal - coal formation 	<ul style="list-style-type: none"> - impact of water in coal mines - hazards of pollution on water sources 	<ul style="list-style-type: none"> - pollution impacts on water 	<ul style="list-style-type: none"> - water uses in drilling - pollution impacts 	<ul style="list-style-type: none"> - how water is used in drilling 	
Atmosphere	<ul style="list-style-type: none"> - how energy moves in a fluid 	<ul style="list-style-type: none"> - byproducts of generation 		<ul style="list-style-type: none"> - hazards of coal mining 	<ul style="list-style-type: none"> - pollution impacts on the air 	<ul style="list-style-type: none"> - methane/gases produced & released 		
Cryosphere								
Biosphere		<ul style="list-style-type: none"> - pollution from generation 		<ul style="list-style-type: none"> - pollution - mine accidents 	<ul style="list-style-type: none"> - pollution impacts 	<ul style="list-style-type: none"> - pollution impacts 		<ul style="list-style-type: none"> - planning for our children's futures
State Stand. 2.2a								
Jeffco Stand.		5.2a	5.2a	5.2a	5.2a	5.2a	5.2a	5.2a
CSAP Frame		4.1.5b, 4.1.5c, 4.1.5d	4.1.5b, 4.1.5c	4.1.5a, 4.1.5b, 4.1.5d	4.1.5b, 4.1.5d	4.1.5b, 4.1.5c, 4.1.5d	4.1.5a, 4.1.5b, 4.1.5d	4.1.5b, 4.1.5c, 4.1.5d
Jeffco PE	NR 1 & 2	NR 1 & 2	NR 1 & 2	NR 1 & 2	NR 1 & 2	NR1 & 2	NR 1 & 2	NR 1 & 2
