

Mapping Wyoming's Energy Resources

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(This lesson was developed as part of the Wyoming Geographic Alliance's summer PD for Wyoming teachers in 2011).

OVERVIEW: *This lesson is intended for 3rd – 6th grade students. Groups of students will determine the location of different energy resources throughout the state of Wyoming using various internet resources. Based on their research, students will place icons showing the type of energy resource on the different locations, thus completing a map of Wyoming's major energy resources. Through reflection and discussion, students begin to develop a sense of the locations of energy resources throughout Wyoming.*

CONNECTION TO THE CURRICULUM: *Social Studies (Economy, Geography)*

CONNECTION TO THE NATIONAL STANDARDS:

Standard 1: How to Use Maps and Other Geographic Representations, Tools, and Technologies to Acquire, Process, and Report Information From a Spatial Perspective

Standard 11: The Patterns and Networks of Economic Interdependence on Earth's Surface

CONNECTION TO THE STATE SOCIAL STUDIES STANDARDS:

SS4.5.1 Students use physical maps, political maps, and globes to identify locations using scale, cardinal and intermediate direction, legends, keys, and symbols.

SS4.5.4 Students describe relationships among people and places, and the environmental context in which they take place.

TIME: *This lesson will take approximately one 60 min. class period.*

MATERIALS REQUIRED: *Large 12 foot by 12 foot floor map of Wyoming; list of*

internet resources; Energy Icon cards of major energy resources found in Wyoming; Reflection Sheet; computers with internet access (or printed versions of the various maps)

OBJECTIVES: Through this lesson students will:

1. Synthesize information from multiple maps onto a single representation
2. Transfer information from one map to another
3. Associate Wyoming's energy resources with different regions of the state

SUGGESTED PROCEDURE

Set-up:

1. Print off the icon cards on cardstock and cut them apart (some resources, such as coal and natural gas, may need extra copies made to reflect their prevalence in the state. We suggest uranium – 1 copy coal, natural gas, and oil– 5 copies each, and wind 2 copies.).
2. Make copies of the Internet Resources handout for each group, and a Reflection Sheet for each student. (Teachers may want to create a website with links to these websites, or create a shared document with links, therefore eliminating the need for students to manually type in or copy the web addresses.)
3. Arrange students into five groups, and assign each group one of the energy resources – coal, oil, natural gas, wind, and uranium.

OPENING:

Explain to students that they will be working in groups to create a class map reflecting Wyoming's energy resources. Referring to the floor map, review with students the primary location for each type of energy as covered in the Introductory Lesson.

DEVELOPMENT/PROCEDURE:

Arrange students up into groups and assign each group one of the energy resources. Distribute the Internet Resource sheets and direct students to examine each of the sites listed for their energy resource. Using those sites, students keep

track of specific locations in the state where their energy resource is located. As students finish gathering information, they should take the icon cards representing their energy resource and place them on various locations on the 12 foot by 12 foot Wyoming floor map to match their findings. Finally, students should fill out the portion of the Reflection Sheet that pertains to their assigned energy resource.

CONCLUDING THE LESSON: Reflection and Discussion

Students fill out the Reflection Sheet for use in discussion. Discussion should start out with small groups sharing their reflections/observations for the location of each energy resource and then continue in whole group discussion.

ASSESSMENT

Reflection sheets and discussion will provide the opportunity for assessing individuals and their grasp of the objectives.

EXTENDING THE LESSON

Questions identified during the reflection and discussion can be used for further areas of study.

RESOURCES

See attached internet resources list and sample energy map.

Name _____

Date _____

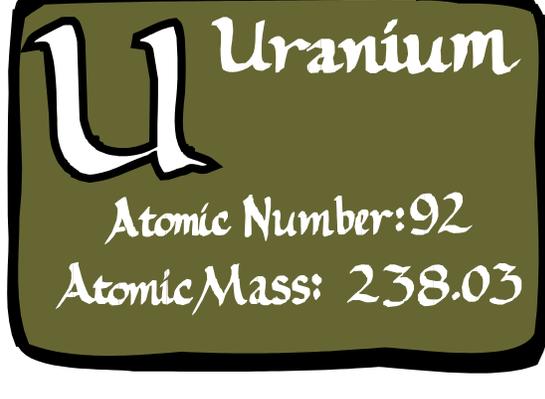
Map of Wyoming Energy Resources: Reflection Sheet

<i>Energy Resource</i>	<i>Region(s) in the state where resource is located</i>	<i>Geographic/geologic features that are common in those regions</i>
<i>Coal</i>		
<i>Oil</i>		
<i>Natural Gas</i>		
<i>Wind</i>		
<i>Uranium</i>		

Map of Wyoming Energy Resources: Reflection Sheet (cont.)

What observations can you make about the general location of energy resources in Wyoming?

What questions do you have about the location of energy resources in Wyoming?









Internet Resources

Natural Gas:

- <http://wogcc.state.wy.us/> (click on map of permits on the left side of the screen)
- http://www.google.com/imgres?q=natural+gas+map+wyoing&hl=en&rlz=1C1TSND_e nUS420US420&tbn=isch&tbnid=acrLW_AB8JCjAM:&imgrefurl=http://feww.wordpre ss.com/2009/08/&docid= cO8QF_5ZEB7OM&w=615&h=488&ei=90NDTsafM8uHsA LRwNW7CQ&zoom=1&iact=rc&dur=244&page=7&tbnh=142&tbnw=172&start=105& ndsp=18&ved=1t:429,r:12,s:105&tx=63&ty=85&biw=1366&bih=643
- http://www.wsgs.uwyo.edu/AboutWSGS/coalbed_natural_gas.aspx
- http://downloads.pennnet.com/mapsearch/paper_wy25.pdf

Oil:

- <http://wogcc.state.wy.us/> (click on map of permits on the left side of the screen)
- http://www.wyomingagclassroom.org/resources/pdf/Energy_NaturalResource_map_TeachersGuide.pdf (scroll down to find the map page)
- <http://wyofile.com/2011/05/next-wave-of-natural-gas/>

Coal:

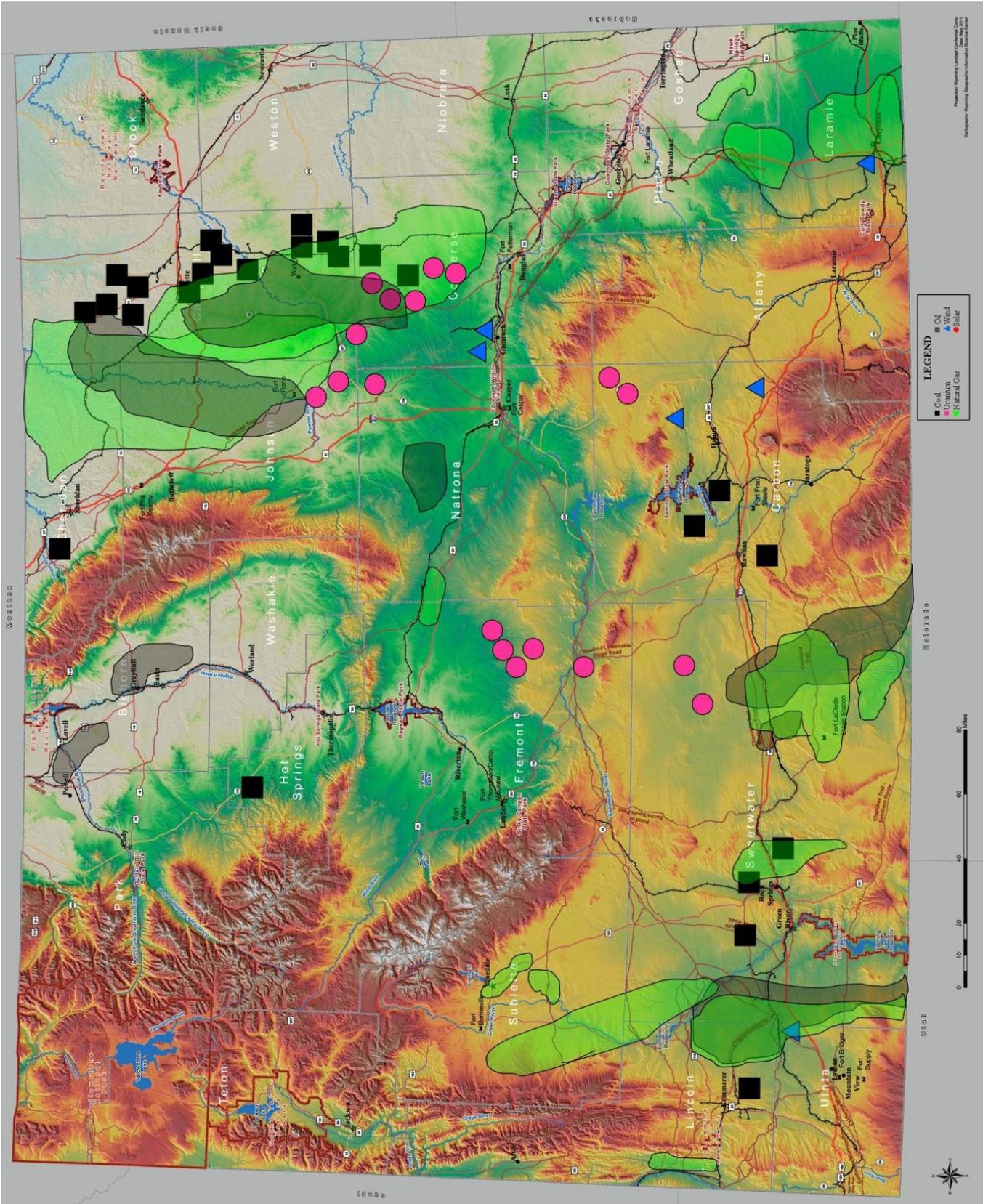
- <http://www.wma-minelife.com/coal/coalhome.html>
- <http://www.wyomingtalesandtrails.com/coal.html>
- <http://www.eia.gov/state/state-energy-profiles.cfm?sid=WY>
- http://www.wyomingagclassroom.org/resources/pdf/Energy_NaturalResource_map_TeachersGuide.pdf (scroll down to find the map page)

Wind:

- http://www.fort.usgs.gov/products/publications/pub_abstract.asp?PubID=22954
- <http://en.openei.org/wiki/Wyoming> (scroll down for the wind farms map)
- <http://wyofile.com/2011/05/next-wave-of-natural-gas/>
- http://www.wyomingagclassroom.org/resources/pdf/Energy_NaturalResource_map_TeachersGuide.pdf
- <http://www.investmentu.com/2011/August/investing-in-wind-power-growth.html> (use the 3rd map on the page. You can either keep it nation-wide, or crop it down to include only WY)

Uranium:

- http://www.wma-minelife.com/uranium/Uranium_Well_Map/NURE_Co_NM_Wy.pdf
- <http://www.wma-minelife.com/uranium/umap.html>
- http://www.wsgs.uwyo.edu/GIS_and_online_maps/uraniumlogs/default.aspx
- <http://www.nrc.gov/info-finder/materials/uranium/>,
<http://wyofile.com/2011/05/next-wave-of-natural-gas/>



Sample map of Wyoming's energy resources