

# PROJECT REPORT

**Northern Wyoming Community College District / National Science Foundation  
Summer Energy Education Program 2012**

**Mark Steward  
Douglas High School  
Douglas Wyoming  
Summer 2012**

## TITLE

**THE ENERGY WEB QUEST**

## SUMMARY

This project will give students a clear perspective on the amount of resources available for mining and the amounts produced throughout the state. The focus will be on energy minerals such as coal, natural gas, fissionable materials, oil, and wind. The concept is to show the students the extent of mineral resources in Wyoming and show them possible avenues for employment in the future.

## ENERGY CONTEXT

Mining is a very important economic part of Wyoming life. The students will be exposed to ideas such as mineral reserves, obtainable minerals, and the uses of said minerals. Raw materials are needed every day and Wyoming supplies many of the nation's energy raw materials. It should be important to all students in Wyoming how their schools are funded and where their jobs may come from.

## ANTICIPATED TIME REQUIRED

**This project will require 2 class periods**

Day one: research for the finished product

Computer time should be pre scheduled or lap top access in your room.

The research may take longer than one class period depending on search technique.

Day two: write up including map resources

The students may be given a color geologic map or print one to complete this part.

Using the geologic map find and mark the areas of existing mines, pipelines, wind farms, oil fields.

Evaluate reserve estimates from governmental and private sources.

Discuss the financial effect on converse county Wyoming.

## INTENDED STUDENT LEVEL

The intended level for this project would be grades 9-12.

## ASSUMED PRIOR KNOWLEDGE

The student will need basic search skills for the Internet.

The student will need basic computing skills to create the final project.

## LEARNING OBJECTIVES

The concept of energy recovery is core to this project.

The student should understand the Ida's of reserves and recoverable reserves.

The student should understand how the raw material is turned into usable forms of energy.

## MATERIALS

Each student will need access to a computer.









## INTRODUCTION / MOTIVATION FOR STUDENTS

Mining in Wyoming is a major source of income and employment in Wyoming. As students in Wyoming and possible future employees in Wyoming these students should be made aware of the resources and their possible energy contributions to society. Using the computer in order to become aware of natural resources combines skills in both science and writing. This allows the student to synthesize and construct their own scheme of natural resources and the use of these resources in Wyoming.

## PROCEDURE

### Task 1

- Identify location and reserves in the powder river basin of the following minerals: Coal, oil, coal bed methane, natural gas and fractured formations, uranium, wind, and rare earth elements.
- Find the amount of tonnage or volume removed from the reserves each year.

### Task 2

- Use ArcGIS or Google Earth or some similar product to locate the mines, pipe lines, pumping stations, in operation in the Powder River Basin.
- Map overlays would work well and keep this as an electronic document for future submission.

### Task 3

- Complete your document for evaluation
- Map showing locations of mines, mineral deposits, pipelines, wind farms, etc.
- Evaluation of projected reserves vs. yearly production (what is the life of energy production in PRB).
- What is the economic effect on converse county, tax money, business and other entities like school populations?

- Analyze in detail how each energy source is turned into usable forms of energy like electricity and automobile fuels

**Task 4**

**Resources:**

[www.mii.org/stateminerals.html](http://www.mii.org/stateminerals.html)

Geology map of Wyoming from about.com geology

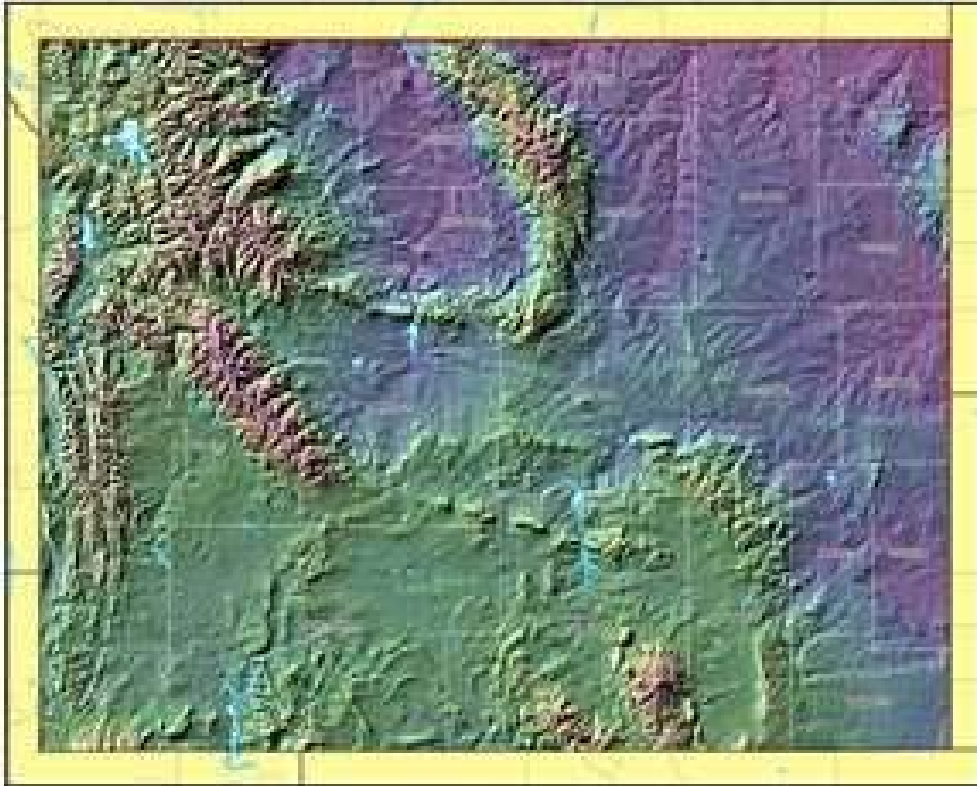
[www.blm.gov/wy/st/en/field-offices/Casper/mineral.html](http://www.blm.gov/wy/st/en/field-offices/Casper/mineral.html)

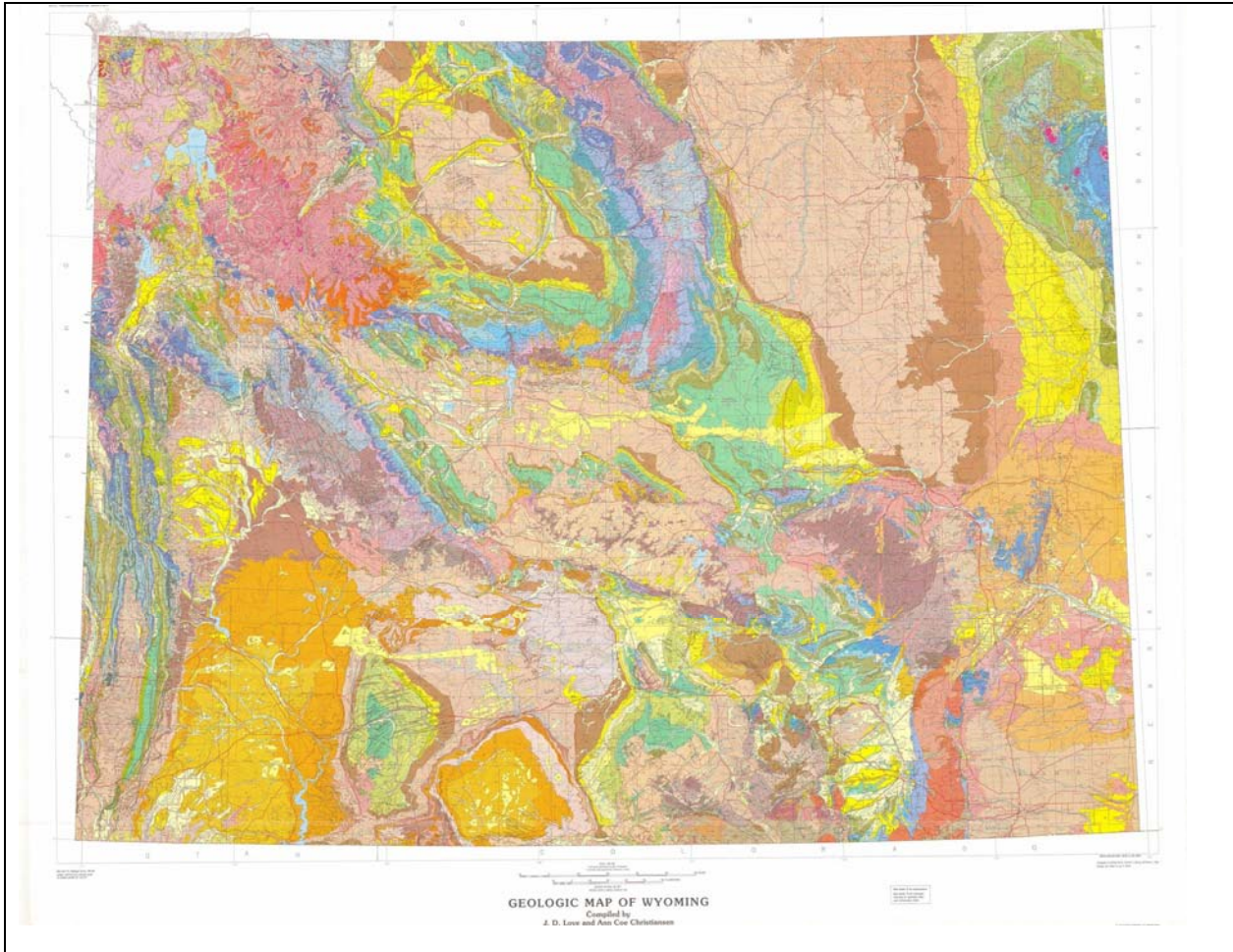
Wyoming oil and gas commission

Wyoming mining association

Wyoming lands and reclamation

Wikipedia - Wyoming





### SAFETY ISSUES

No real issues other than Internet safety.

### TROUBLESHOOTING TIPS

Use search engines to find resources, my resources are only suggestions and only scratch the surface of information available.

### ASSESSMENT

The assessment of this project will be a 5 point rubric:

1. Basic , not on target, information incorrect no sources listed
2. Emerging, some information correct, less than 3 sources
3. Proficient, most information correct, lacks higher quality presentation, 3 or more sources listed
4. Advancing, errors not easily noticed, presentation looks professional, many sources used
5. Excellent, no visible errors, professional presentation, sources are of highest quality.

### SUGGESTED EXTENSIONS

Compare energy reduction to other basins in Wyoming.  
Compare energy production in other closely related states.