

PROJECT REPORT

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

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TITLE

California Energy Resources

STATE STANDARDS

CA State Standards:

- 1a. Students Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
- 7b. Students know the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, oceans, biomass, fossil fuels, and the movement of carbon among these reservoirs.
- 7c. Students know the movement of matter among reservoirs is driven by Earth's internal and external sources of energy.
- 9a. Students know the resources of major economic importance in California and their relation to California's geology.

SUMMARY

Project Summary

This activity will allow students to identify the energy resources and their location within the state of California. Students will research the location of oil reserves, natural gas power plants, hydroelectric and wind electrical generation. They will plot these resources on an outline map of California. They will analyze the distribution of energy within the state and its economic impact on the state's economy.

ENERGY CONTEXT

California Resources

The state of California has a large amount of natural resources. Many of these are located below the surface or have to be imported. As the most populous state its energy requirements are immense. Planning for future requirements will demand an understanding of the availability and cost of these limited resources.

ANTICIPATED TIME REQUIRED

This activity will require approximately 100 minutes:

- Background information – 10 minutes
- Research - 30 minutes
- Plotting resources on Map – 30 minutes
- Analyzing and discussing economic – 30 minutes

INTENDED STUDENT LEVEL
This project will present learning activities and assessment activities for students entering the 9th grade.
ASSUMED PRIOR KNOWLEDGE
This project will assume that students have prior knowledge of: <ul style="list-style-type: none"> • Basic mathematics • Basic report writing • Basic research skills
LEARNING OBJECTIVES
<ul style="list-style-type: none"> • Understand the concepts of locating potential energy and natural resources. • Plotting and mapping energy resources within the state of California. • Recognize the energy distribution system in California. • Analyzing the quality of extracted material and the economic importance.
MATERIALS
Each group needs: <ul style="list-style-type: none"> • 1 worksheet including outline map • internet access for economic information
INTRODUCTION / MOTIVATION FOR STUDENTS
California natural resources and energy reserves must be adequate for the needs of the population. Analyzing past energy requirements, estimated future needs and population changes will allow students to understand an important aspect of their environment. Locating these resources is one method of helping students appreciate their environment.
PROCEDURE
<ul style="list-style-type: none"> • Pair the class into groups of twos and hand out the worksheet. • Arrange for access to a library or the internet. • Have each pair record their location of the resources. • Discuss the results of their research. • Project the future requirements for energy and populations.
SAFETY ISSUES
None.
TROUBLESHOOTING TIPS
Some students may have trouble transferring information from their research to plot on outline map.
ASSESSMENT
Pre-Activity Assessment <u>Question/Answer:</u> Ask the students and discuss how resources are located or imported into the state. <ul style="list-style-type: none"> • How much do students understand about energy use, distribution and cost? • What evidence can student observe in their own location about energy? <u>Prediction:</u> Ask the students to predict: <ul style="list-style-type: none"> • What resources are likely to have the most problems today in terms of availability, access and environment damage?

Post-Activity Assessment

Question/Answer: Ask the students and discuss as a class:

- What natural resource would most likely to change over the next 50 years?

SUGGESTED EXTENSIONS

Students could extend the concept by looking at surrounding states energy requirements and resources.