National Energy Plan

Unit Summary

High school social studies students determine what measures to support in developing a coherent national energy plan. After teacher lecture, student research, and class brainstorming and discussion, students rank and justify their energy plan priorities. Next, students take on the role of a senator to begin formulating their energy plan. Using the *Visual Ranking Tool*, the senators work in small, like-minded groups to prioritize the types of energy development they are advocating. Proposals might include using renewable energy sources, levying gas taxes, and opening up parts of the country for oil exploration. They then compare their proposals to current policies. Finally, each team of senators presents a short summary of their findings (about 5 -10 minutes per team), in which they explain and justify their proposed energy plan.

At a Glance

Grade Level: 9-12
Subject: Social Studies
Topics: Energy Policy, American Economy, Environmental Protection, Alternative Energy
Higher-Order Thinking Skills: Evaluation, Analysis, Cause and Effect
Key Learnings: Distribution of Resources, Human Interaction, Place, Movement, Opportunity/Cost Trade-offs
Time Needed: 10 lessons, 60 minutes each lesson

Curriculum-Framing Questions

- **Essential Question**
  How can we make a difference?
- **Unit Questions**
  What should our priorities be in choosing a national energy plan?
  How can we ensure our energy resources are able to support our desired quality of life?
- **Content Questions**
  What are the costs and trade-offs of resource extraction?
  What are some examples of renewable energy?
  What are their strengths and limitations?
  What is a quad of energy?

Things You Need

Assessment
Standards
Resources

Assessment Processes

View how a variety of student-centered assessments are used in the National Energy Plan Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, and products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Prior to Instruction

In this project, students use the *Visual Ranking Tool* to evaluate energy choices and establish priorities. Examine *Visual Ranking* and its resources, and learn how to use it with your students.

Introduce the Project

This unit seeks to help students think about the impact of energy on the world they live in, including their environment and their pocketbooks. Begin the lesson by writing the Essential Question on the board, *How can we make a difference?* Have students brainstorm in small groups what they or their families have done recently that have impacted their use of natural resources. Use this discussion to assess the students' knowledge and understanding of energy resources in their everyday life.

Discuss the savings of combining trips around town to save on gasoline costs. Calculate out the miles per gallon with current gas prices. Have students calculate the savings of a combined trip. Although the savings per family may seem minimal, have students multiply the amount for each week for 52 weeks, and then per person for the population of your

city. Here we see individuals making a difference in a seemingly small scale, but together they can significantly impact their community. Discuss how there are also individuals who make decisions that impact the community on a large scale. Explain that our community, state, and federal leaders make decisions every day that impact our future.

Tell the students that they will assume the roles of senators serving on an energy subcommittee that has been charged with developing a viable national energy plan for the near future. They must consider the balance between environmental and economic concerns, and remember that poor decisions will affect the lives of millions of people, as well as their chances for re-election. Write the words "Energy Solutions" on the board. Let students brainstorm for a few moments about ways to produce or conserve more energy since an energy plan will need to encompass all energy resources—not just gasoline.

Distribute the Project Overview and Checklist for specific directions to the students and briefly review vocabulary for the unit. Describe the details of their assignment: Students first research the energy consumption patterns and potential energy resources in their assigned state. Then in teams, they establish priorities for choosing an energy plan. They use those priorities and other criteria for selecting a set of energy options and compare those energy options with past and current government policies. Throughout the project, they keep a reflection journal. Lastly, they present their decisions to the class. Help them focus on two main Unit Questions: *What should our priorities be in choosing a national energy plan?* and *How can we ensure our energy resources are able to support our desired quality of life?*

Research a State's Energy Consumption Patterns and Potential Energy Resources
Have each student represent a senator from one state. Assign or let students choose which state they will represent making sure that different regions of the U.S. are represented. Have them explore and take notes on the energy data at the Energy Information Agency* state energy page. Specifically, they should use the State Energy Information document to note their state's strengths and weaknesses in regards to energy availability and energy consumed. Students use this document to help them analyze their state's energy consumption and resources, compare the data with other states, and make decisions specific to their assigned state. Provide appropriate instruction in analysis skills as students use this document.

After completing the State Energy Information document, students complete a journal entry responding to the following prompt: *What did you find surprising or interesting about your state's energy consumption and potential resources? How do you think the people of your state could be more involved in ensuring a healthy use of energy resources?*

Establish Teams
Assign students to teams, each representing one senator on the energy subcommittee. Establish teams by choosing a mix of senators whose states represent different energy production and consumption patterns and environmental interests, such as Alaska, Texas, Hawaii, and your home state. Instruct each team to choose a chairperson and a person to record recommendations for presentation to the class. Have students share and compare their individual state's data from the State Energy Information document.

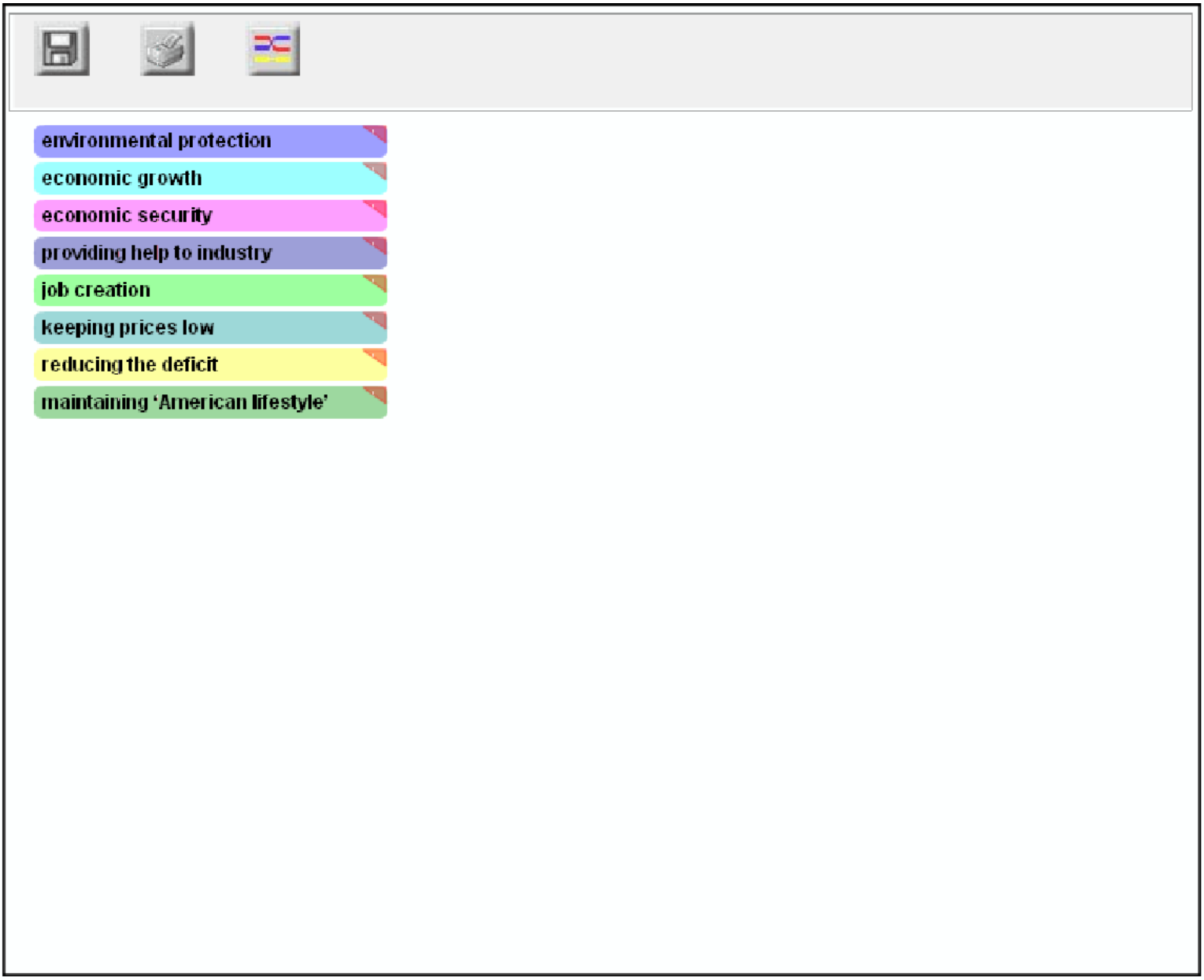
Rank Priorities
Have teams meet to discuss the priorities that matter most to their individual states in choosing energy options. These will likely vary based on students' understanding of the state's natural resources, energy consumption, and values of the citizenry of each team's "home" state. Have each team decide on at least five priorities for choosing energy options.

Meet for a class discussion, and discuss all the priorities for all teams. Collapse and combine items as necessary to create one list that reflects all priorities. (In the sample project, students narrowed the list to: economic growth, job creation, environmental protection, economic security, reducing the deficit, keeping prices low, maintaining 'American lifestyle', and providing help to industry.) Try to keep the list between eight and sixteen items so they can be reasonably ranked and justified. Before you begin the next activity, click here to set up the Energy Priorities project in you workspace. Revise the list based on your class list.

Have teams log in to their *Visual Ranking* student workspace. Explain the prompt they respond to is: *What should our priorities be in choosing a national energy plan? Rank priorities based on the needs and interests of your assigned state with the most important priority ranked first.* As teams begin, remind them to rank priorities based on the needs and interests of their team members' states and to use the comment feature of the tool to describe the value and importance of that item to their states and why it is ranked at that particular spot. As students work, they need to explain and justify their thinking and ultimately seek agreement on the final order of their list.

Examine the *Visual Ranking* Activity
The space below represents one team's ranking using the *Visual Ranking Tool*. The view you see is functional. You can roll over the red triangle to see the team's comments and click the compare button to see how different teams ranked the items.

Project Name: **Energy Priorities** **(Click here to set up this project in your workspace)**
Question: **What should our priorities be in choosing a national energy plan? Rank priorities based on the needs and interests of your assigned state with the most important priority ranked first.**



After teams have finished ranking their lists, have them compare their rankings and comments with other teams and discuss differences and similarities. The tool displays a correlation coefficient when team lists are compared. Explain that the coefficient expresses the degree to which groups agree or disagree on ranking order. A coefficient of 1.0 is absolute agreement in ranking, and a coefficient of -1.0 is absolute disagreement.

After completing the ranking, have students complete a journal entry responding to the following prompts: *Looking at the comparison of your rankings with those of other teams, why do you think your list of priorities is different? Did reading the comments of other teams make you reconsider your own ranking? How did your perspective of the priorities change as you discussed them with your teammates or with other teams?*

Evaluate Energy Options and Create an Energy Plan
Using their team's priorities for evaluating energy choices, each team of senators studies 15 energy options to draft a national energy plan. Each option has the potential of producing between one-half and six "quads" of energy over the next 10 years, and each has unique costs and benefits in economic and environmental terms. Explain that a quad is a very large unit of energy equivalent to one quadrillion British Thermal Units (1,000,000,000,000,000 BTU's). In more practical terms, it is enough to serve all annual energy needs for about 3,000,000 Americans. Many medium-sized states like Colorado and Arizona consume a total of one quad of energy per year (Source: Texas Renewable Energy Assessment Summary*). Provide additional examples and comparisons to help students understand the size of this measurement of energy.

Students need to select and rank the best options and devise a plan that produces 13 quads of energy over the next 10 years. Their senator teams explain and defend their choices to the subcommittee, which then seeks consensus on a final, national energy plan.

Pose the question, *How do we balance energy needs and environmental concerns?* Discuss the various cause-and-effect issues surrounding that question. Encourage students to use higher-order thinking skills to hypothesize effects and consequences of various actions. Below are some possible questions to help start the discussion.

- *If you adopt a government program, what are some of the consequences?* (Example: You will increase government spending.)
- *How do some people respond to government action and policy?* (Example: They consider it government interference.)
- *If you approve a tax, who might that hurt?* (Example: It could hurt businesses and consumers.)
- *What can result in listening to only one perspective?* (Example: Both environmentalists and energy developers can use statistics and data to "prove" their conflicting positions. It is important to hear all sides before making a decision.)
- *What are some consequences of raising energy prices?* (Example: It may take the steam out of the economic recovery.)
- *How can a policy be good for one area of the country and bad for another?* (Example: Urban-oriented policies may hurt rural constituents, and vice versa.)
- *Why would anyone argue against protecting the environment?* (Example: Environmental regulation can often represent a significant cost of doing business, sometimes outweighing the benefit.)
- *Why would you as a lawmaker be concerned about lobbyists?* (Example: If you anger powerful lobbies, you may not be re-elected—and then you would not be able to carry out actions in other areas.)

Before proceeding with the next activity, click here to set up the Energy Choices project in your workspace. Give students this Energy Plan Choices handout. Have them discuss each of the choices and determine associated costs and benefits. Costs and benefits depend on the priorities the teams set, as well as each state's unique circumstances. Encourage additional research if they have questions about any of the summaries using Energy Information Agency state energy page*, Alliance to Save Energy*, Annual Energy Outlook 2005 with Projections to 2025*, and other Web sites. Encourage students to add more "pro" and "con" comments to the cards as they learn more. If time warrants, have students conduct the research themselves instead of providing the document with all of the information filled in.

Once teams understand the energy plan options, have them use the *Visual Ranking Tool* again to order and justify (in the comments section) their energy plan choices. Have them sign into the second project and rank according to this prompt: *Rank the following energy plan proposals from best to worst based on your group's previously -ranked priorities, as well as the proposals' reliability, support of economic growth, and minimal enviromental impact.* Again, as students rank and defend, encourage discussion, debate, and negotiation. When ranked lists are complete, have teams compare their ranking with those from other teams. Encourage teams to discuss their choices. Use the following questions to help students analyze and compare the different teams' rankings:

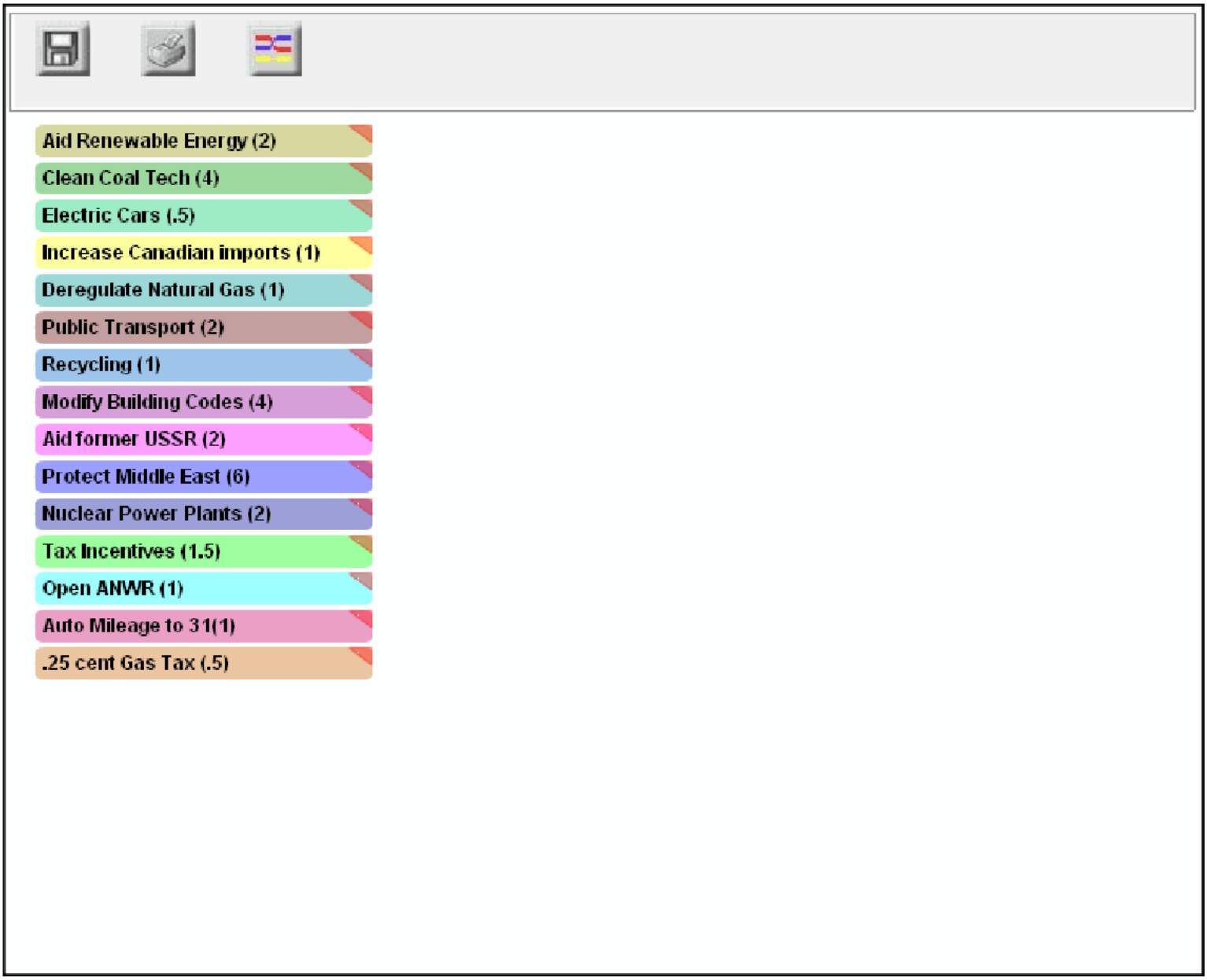
- *How did your team come to consensus on this ranked list?*
- *Are there any other energy plan options that you would have liked to see on this list?*
- *Why do you think your ranked list was different from the other teams'—or from the class average?*
- *Did your decisions change over time? For instance, after discussions with others or after more research?*
- *What team ranks most like you do? Why do you think that is?*

Examine the *Visual Ranking* Activity

The space below represents one team's ranking using the *Visual Ranking Tool*. The view you see is functional. You can roll over the red triangle to see the team's comments and click the compare button to see how different teams ranked the items.

Project Name: **Energy Choices** **(Click here to set up this project in your workspace)**

Question: **Rank the following energy plan proposals from best to worst based on your group's previously-ranked priorities, as well as the proposals' reliability, support of economic growth, and minimal environmental impact.**



After completing the ranking, students complete a journal entry responding to the following prompts: *What was the most difficult part of prioritizing the energy options? Did you or any of your team members have any significant differences of opinion that changed over time? How did you come to consensus?*

Compare with Previous Energy Policies
Have students review their teams' decisions against energy policies held in the past. *How are their policies different? How would their choice of policies improve the U.S. energy situation for the future over previous policies?* Students include at least five points for comparison on the Energy Plan Comparison document to help them plan their presentation. Provide the following resources:

American Energy Policy
www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/usa.htm*

Energy Timeline (View other time periods also from links at top)
www.energyquest.ca.gov/time_machine/index.html*

Jimmy Carter State of the Union Address 1980 (Last third of the speech)
www.jimmycarterlibrary.org/documents/speeches/su80jec.phtml*

More information on the history of U.S. energy policy and consumption can be found in the Annual Energy Review – Perspectives 2004* or Energy in the United States, 1635-2000*.

After completing the comparison, students complete a journal entry responding to the following prompts: *Looking back at previous energy policies, what didn't they take into account about the future? How can we make the best plans possible when we can't know what is in store for us in the future?*

Compare with the Energy Policy Act of 2005
Have students compare their teams' decisions to the policies that are planned in the Energy Policy Act of 2005*. (A short overview* is also available.) Students can also review the Strategic Plan for Fiscal Years 2005 - 2008 for the Federal Energy Regulatory Commission*, energy policies for their assigned state, and the estimated costs* for the enactment of the Energy Policy Act. Students use the Energy Plan Comparison document to keep track of their findings.

After completing the comparison, students complete a journal entry responding to the following prompt: *From what you've learned so far about possible energy resources and policies, what do you wish our government leaders would take more seriously? What underdeveloped resource do you think should be explored more? Do you think the provisions in the Energy Policy Act of 2005 will provide enough energy to support our desired quality of life in the future? Why or why not?*

Plan Presentation
Once teams have selected their top choices, they are ready to begin developing an outline for presenting their energy plan for America. Set expectations by discussing this sample team presentation. Have students create an outline for their presentation, using the Energy Plan Comparison document and Energy Plan Choices handout to provide support for their plan. Remind students to use the Project Overview and Checklist and scoring guide to ensure they are including all the essential elements in their presentation; specifically they should be able to answer:

- *Does their decision guarantee a reliable supply of energy sufficient to meet the demands of the American economy over the next 10 years?*
- *Does it promote continued economic growth?*
- *Can it help to provide for the environmental welfare of future generations?*
- *Why should those specific choices be included in a national plan?*
- *How does their plan compare with past and future U.S. energy policies?*

Conduct conferences with each team to review their plans and presentation outline. Assess the outline to make sure students have a credible, well-reasoned proposal prior the next step of students creating the presentation.

Present Decisions and Findings
Provide time for student teams to plan a short presentation (5-10 minutes), in which they present their decisions to the rest of the class, as well as indicating which ideas are included in the government's past and future plans. For any ideas that are not included in the Energy Policy Act, specific state plans, or the FERC Strategic Plan* students argue why their ideas should be considered in the future.

Set aside a day for presentations. Encourage audience members to take notes and submit questions to the teams after each presentation. Facilitate discussion and debate, and encourage students to defend their reasoning using justification from research.

After all presentations have been presented, students complete a journal entry responding to the following prompt: *How have your opinions, attitudes, or understanding about how we use energy changed over the course of this project? Do you think we will be able to balance our energy needs and environmental concerns in the future? Why or why not? What can individuals do to make a difference? What can you do to make a difference?*

Extend the Unit (Optional)
Depending on the amount of time you want to allot to this project, you may have the groups develop additional materials, such as a Web site or secondary activity like a game. This may require additional class periods to complete. A possible additional activity could include coordination with the students' English teacher(s) for students to write a letter to their senator or representative supporting or opposing future or current energy plans.

Conclude the Lesson
Be sure to end the final activity with a comprehensive debriefing session. Circle back to the Essential Question: *How can we make a difference?* Give students the opportunity to express any relevant observations they may wish to make.

Prerequisite Skills

- Interactive communication skills and cooperative work skills
- Reading and writing in persuasive mode
- Oral communication
- Basic computer skills including:
  - Basic use of Web browser
  - Saving of information
  - Basic use of peripherals (printers, etc.)

Differentiated Instruction

Resource Student

- Special needs students will have the benefit of working in a cooperative situation for much of the project.
- Grade-level peers may be assigned within the groups to assist special needs students.
- A template for the presentation can be provided.
- Guidelines for the research component may be adjusted based on individual modifications for special needs students.

Gifted Student

- Gifted students may contribute to their group project by enhancing the presentations with additional information that targets objectives that go beyond project guidelines. For example, they could:
  - Explore more technical elements of the impact of energy acquisition on the environment (for example, the proposed drilling for oil in the Alaska refuge)
  - Add technical expertise in the development of multimedia, newsletter, and Web presentations for their groups
  - Interview experts
  - Visit and photograph energy resource sites in the area to include in the presentation

English Language Learner

- Provide support through the use of a language specialist.
- Provide a technical, translating dictionary for translating terms.
- Pair English language learners with more advanced bilingual students who share a common language.
- Provide some research resources in the native language.

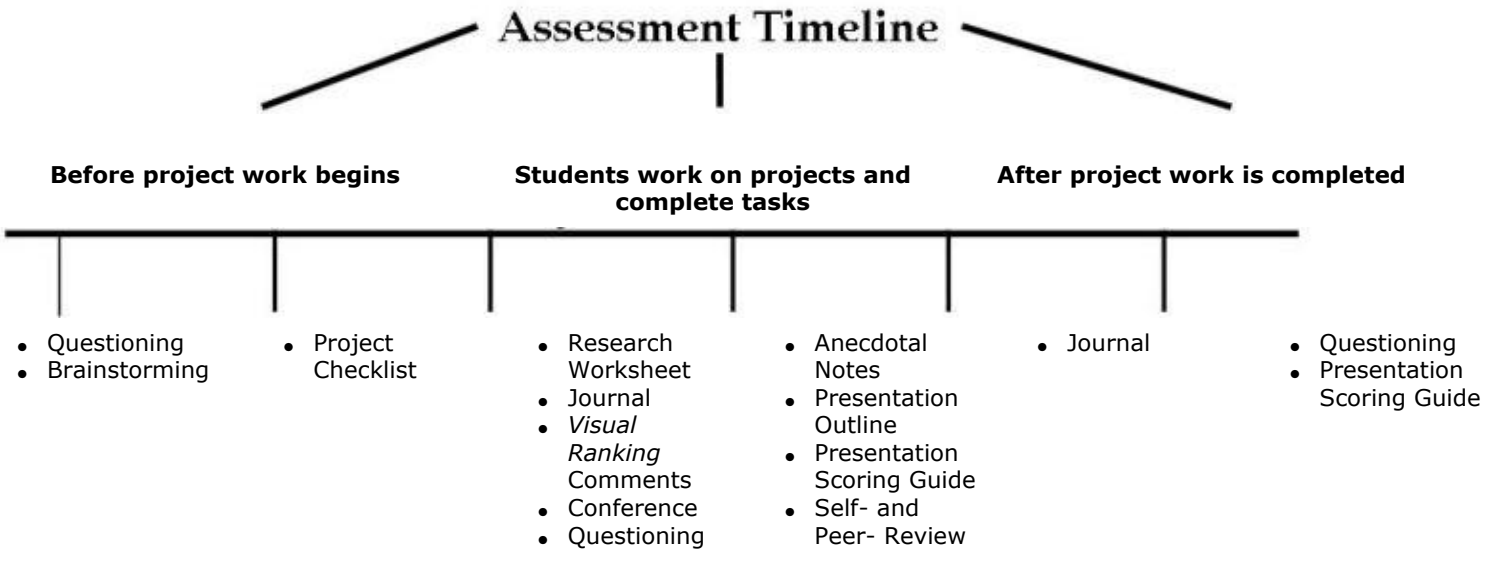
Credits

This project is based on a unit plan developed by teachers at the Arkansas School for Mathematics and Sciences, Hot Springs, Arkansas. A team of teachers expanded the plan into the example you see here.

Visual Ranking Tool: National Energy Plan

Assessment Plan

Assessment Plan



Students use a project checklist to help guide their learning, stay on track, and self-assess their progress. Quality of journal entries, comments in *Visual Ranking* projects, and research worksheets help both teacher and students to monitor progress and understanding of content. Questioning is used throughout the unit to help students develop their higher-order thinking skills and process content. Individual and team group conferences are used to help monitor progress and answer any questions. Ask students to use the presentation scoring guide to help them self- and peer-assess work prior to completion. Use this same scoring guide to assess and grade the final project.

Visual Ranking Tool: National Energy Plan

Content Standards and Objectives

Targeted Content Standards and Benchmarks

National Council for Geography Education's National Geography Standards

Environment and Society

14. How human actions modify the physical environment

16. The changes that occur in the meaning, use, distribution, and importance of resources

The Uses of Geography

18. How to apply geography to interpret the present and plan for the future

California SCORE History/Social Science Standards

12e.3 Students analyze the influence of the federal government on the American economy.

12e.3.1 Understand how the role of government in a market economy often includes providing for national defense, addressing environmental concerns, defining and enforcing property rights, attempting to make markets more competitive, and protecting consumers' rights.

12e.3.2 Identify the factors that may cause the costs of government actions to outweigh the benefits.

Student Objectives

Students will:

- Evaluate the problems of finding new sources of energy balanced against concerns about damage to the environment
- Understand how energy requirements and resources have changed during the past 50 years
- Understand how national energy policies have changed during the past 25 years
- Understand the main components that help shape state and national energy policies
- Compare, analyze, and evaluate energy plans from various perspectives - Understand the concepts: supply and demand, quad, OPEC, alternative energy
- Recognize the impact of human choices on the environment and lifestyles

Visual Ranking Tool: National Energy Plan

Resources

Materials and Resources

Printed Materials

Christensen, John W. (1984). *Global Science: Energy Resources, Environment*. Dubuque, Iowa: Kendall/Hunt Publishing.

Internet Resources

- Energy Information Agency State Energy Page
  http://www.eia.doe.gov/emeu/states/_states.html*
  State-by-state energy production and consumption statistics
- Annual Energy Review – Perspectives 2004
  www.eia.doe.gov/emeu/aer/ep/ep_frame.html*
- Energy in the United States, 1635-2000
  www.eia.doe.gov/emeu/aer/eh/frame.html*
- Alliance to Save Energy
  www.ase.org/*
  Promotes energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security. Also available in Spanish.
- American Energy Policy
  www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/usa.htm*
- Energy Timeline
  www.energyquest.ca.gov/time_machine/index.html*
  View other time periods also from links at top of page
- Jimmy Carter State of the Union Address 1980
  www.jimmycarterlibrary.org/documents/speeches/su80jec.phtml*
  Last third of the speech deals with energy plan
- Energy Policy Act of 2005
  http://en.wikipedia.org/wiki/Energy_Policy_Act_of_2005*
  A review of the highlights of the Energy Policy Act of 2005
- President Bush Signs Into Law a National Energy Plan
  www.whitehouse.gov/news/releases/2005/08/20050808-4.html*
  Short overview of the Energy Policy Act of 2005
- Energy Policy Act of 2005
  http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h6enr.txt.pdf* (PDF; 550pages)
  The full-length Energy Policy Act of 2005
- Strategic Plan for Fiscal Years 2005 - 2008 for the Federal Energy Regulatory Commission
  www.ferc.gov/about/strat-docs/strat-plan.asp*
- Letter to the Chairman for the Committee on Energy and Commerce
  www.cbo.gov/showdoc.cfm?index=6581&sequence=0
  Estimated costs for the Energy Policy Act of 2005
- US Department of Energy Home Page
  http://www.energy.gov/engine/content.do*
  Links, facts and information on US energy policy
- US Department of Energy Office of the Environment Page
  www.energy.gov/engine/content.do?BT_CODE=ENVIRONMENT*
  Discusses impact of energy on the environment
- US Environmental Protection Agency
  www.epa.gov*
  Resources, links, and documentation on the environment
- George Mason University Tech Center Web site
  http://mason.gmu.edu/~montecin/powerpoint.html*
  Tips and information for building a good presentation
- Arkansas School for Mathematics and Science Energy Unit Plan Page
  http://165.29.91.7/asms_teaching_units/Teaching_Units/Sciences/National_Energy.htm*
  Unit plan on energy resources

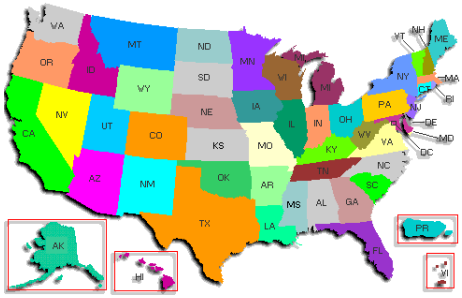
Technology - Hardware

- Computer(s) for completion of Internet research and multimedia presentations
- Internet Connection for completion of Internet research
- Digital Camera (optional) to include pictures of energy resource sites in the area or interviews with experts
- Cameras (optional)

Technology - Software

- Internet Web Browser for completion of Internet research
- Database/Spreadsheet to keep track of energy data
- Desktop Publishing for optional handouts or other visual mdia to be used in the presentation
- Multimedia for presentation

Project Overview and Checklist: An Energy Plan for America



You are senators serving on an energy subcommittee that has been charged with developing a viable national energy plan. The Secretary of the Department of Energy has compiled a list of options for America's future energy plan. It is your job to choose a combination of these proposals for submission to the President.

You will be researching the following questions:

- Essential Question: ***How can we make a difference?***
- Unit Questions:
    - ***What should our priorities be in choosing a national energy plan?***
    - ***How can we ensure our energy resources are able to support our desired quality of life?***

The development of a national energy plan requires six main steps:

1. Research the energy consumption patterns and potential energy resources in your state.
2. In your subcommittee team, establish priorities for choosing an energy plan.
3. Use those priorities as criteria for selecting a set of energy options.
4. Compare your energy options with past government policies.
5. Compare your energy options with current government plans and policies.
6. Present your findings and decisions to the class.

The options for the energy plan must:

1. Guarantee a reliable supply of energy sufficient to meet the demands of the American economy over the next 10 years
2. Promote continued economic growth
3. Provide for the environmental welfare of future generations

Prioritize and evaluate your options based on the needs of the state you represent and your own best judgment. Remember that you must represent the needs of all your constituents—especially your supporters (primarily business and industry).

***Visual Ranking Tool* Log-in Information**

Team members: _____

1. Go to www.intel.com/education/visualranking
2. Click ***Enter***.
3. Click ***Student Log-In***.
4. Enter your team's log-in information:

    TeacherID _____

    TeamID _____

    Password _____

PROJECT INSTRUCTIONS/CHECKLIST

Step 1: Research a State's Energy Consumption Patterns and Potential Energy Resources

Explore and take notes on the energy data at the Energy Information Agency State Energy Web page (www.eia.doe.gov/emeu/states/_states.html) on your assigned state. Specifically, use the ***State Energy Information*** worksheet to note your state's strengths and weaknesses in regards to energy availability and energy consumed. Use this document to:

- ☐ Analyze your state's energy consumption and resources
- ☐ Compare the data with other states
- ☐ Use the information you learn to make decisions specific to your assigned state in the following steps.
- ☐ **Due Date:** Turn in the ***State Energy Information*** worksheet by _____
- ☐ **Due Date:** Complete project journal entry by _____

Step 2: Rank Priorities

- ☐ Within your group, elect a Chairperson to lead the discussion and a Spokesperson to record the choices and report the group's decisions.

  Chairperson:_____

  Spokesperson:_____
- ☐ Meet to discuss the priorities that matter most to your individual states in choosing energy options based on your understanding of your state's natural resources, energy consumption, and values of the citizenry.
- ☐ As a group, choose at least five priorities for choosing energy options:

  _____

  _____

  _____

  _____

  _____
- ☐ After the full class decides on the complete list of priorities, log in to the *Visual Ranking* workspace and rank the list based on the needs and interests of your subcommittee's states.
- ☐ Use the comment feature of the tool to describe the value and importance of that item to your states and why it is ranked at that particular spot.
- ☐ Compare your choices with other teams' rankings. Do you want to change any of your rankings?
- ☐ **Due Date:** Complete your ranking by _____
- ☐ **Due Date:** Complete project journal entry by _____

Step 3: Prioritize Energy Options and Create an Energy Plan

- ☐ Use the ***Energy Plan Choices*** document for information on 15 energy options for increasing or saving energy. Research any option if you need more information. Consider your own state's energy consumption and production history as you discuss possible energy plans.
- ☐ Rank the energy options using the *Visual Ranking Tool* according to your priorities and other criteria.
- ☐ Keep a running tally of the number of quads that each option saves or creates.
- ☐ Use the comment feature of the tool to describe the value and importance of the energy choice to your states and why it is ranked at that particular spot.
- ☐ Compare your choices with other teams' rankings. Do you want to change any of your rankings?
- ☐ **Due Date:** Complete your ranking by _____
- ☐ **Due Date:** Complete project journal entry by _____

Step 4: Compare Your Energy Plan Options with Previous Energy Policies

- ☐ Review energy policies held in the past. Use the following resources:

  American Energy Policy
  www.esru.strath.ac.uk/EandE/Web_sites/01-02/RE_info/usa.htm

  Energy Timeline (View other time periods also from links at top)
  www.energyquest.ca.gov/time_machine/index.html

  Jimmy Carter State of the Union Address 1980 (Last third of the speech)
  www.jimmycarterlibrary.org/documents/speeches/su80jec.phtml

- ☐ How do your teams' decisions compare against those past policies? How are your plans different? How would your choice of plans improve the U.S. energy situation for the future over previous policies? Include at least five points for comparison.
- ☐ Use the ***Energy Plan Comparison*** worksheet to keep track of your findings.
- ☐ **Due Date:** Complete project journal entry by _____

Step 5: Compare Your Policy Options with the Energy Policy Act of 2005

- ☐ Compare your teams' decisions to the policies that are planned in the Energy Policy Act of 2005 (http://en.wikipedia.org/wiki/Energy_Policy_Act_of_2005; the actual 550-page Act is also available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h6enr.txt.pdf and a short overview is available at www.whitehouse.gov/news/releases/2005/08/20050808-4.html)
- ☐ Review the Strategic Plan for Fiscal Years 2005-2008 for the Federal Energy Regulatory Commission (http://www.ferc.gov/about/strat-docs/strat-plan.asp), energy policies for your assigned state, and the estimated costs (http://www.cbo.gov/showdoc.cfm?index=6581&sequence=0) for the enactment of the Energy Policy Act. Update the ***Energy Plan Comparison*** worksheet with any new information.
- ☐ Use the ***Energy Plan Comparison*** worksheet to keep track of your findings.
- ☐ **Due Date:** Turn in the ***Energy Plan Comparison*** worksheet by _____
- ☐ **Due Date:** Complete project journal entry by _____

Step 6: Present Decisions and Findings

- ☐ Create an outline of your presentation. Use the Energy Plan Comparison document and Energy Plan Choices handout to provide support for your plan. Go over your team's plans in a conference with the teacher.
- ☐ Develop a 5-10 minute presentation to be made to the class explaining your top choices.

  Presentations should include:

  - ☐ Evidence that your plan will guarantee a reliable supply of energy sufficient to meet the demands of the American economy over the next 10 years (at least 13 quads of energy over 10 years)
  - ☐ Evidence that your plan will promote continued economic growth
  - ☐ Evidence that your plan will provide for the environmental welfare of future generations
  - ☐ Impact (positive and negative) of different choices
  - ☐ Justification for choices, including how much energy each produces or saves and any data estimates on how much it would cost to implement
  - ☐ Comparison of your choices with previous policies and the Energy Policy Act of 2005
  - ☐ Final conclusions/arguments
- ☐ Use the ***Energy Presentation Scoring Guide*** to self-assess and peer-review presentations.
- ☐ **Due Date:** Turn in presentation outline by _____
- ☐ **Due Date:** Presentation scheduled for _____
- ☐ **Due Date:** Complete last project journal entry and turn in project journal by _____

Notes:

Notes:

U.S. Map image source: http://www.epa.gov/enviro/html/sdwis/sdwis_query.html

Name: _____ Mrs. McGill/Government

Date: _____ Period _____

Energy Journal

Directions: Complete an energy journal entry after each major step of the project.

Step 1: Research a State's Energy Consumption Patterns and Potential Energy Resources – **Journal Prompt:** What did you find surprising or interesting about your state's energy consumption and potential resources? How do you think the people of your state could be more involved in ensuring a healthy use of energy resources?

Step 2: Rank Priorities– **Journal Prompt:** Looking at the comparison of your rankings with those of other teams, why do you think your list of priorities is different? Did reading the comments of other teams make you reconsider your own ranking? How did your perspective of the priorities change as you discussed them with your teammates or with other teams?

Step 3: Prioritize Energy Options and Create an Energy Plan – **Journal Prompt:** What was the most difficult part of prioritizing the energy options? Did you or any of your team members have any significant differences of opinion that changed over time? How did you come to consensus?

Step 4: Compare Your Plan Options with Previous Energy Policies – **Journal Prompt:** Looking back at previous energy policies, what didn't they take into account about the future? How can we make the best plans possible when we can't know what is in store for us in the future?

Step 5: Compare Your Plan Options with the Energy Policy Act of 2005 – **Journal Prompt:** From what you've learned so far about possible energy resources and policies, what do you wish our government leaders would take more seriously? What underdeveloped resource do you think should be explored more? Do you think the provisions in the Energy Policy Act of 2005 will provide enough energy to support our desired quality of life in the future? Why or why not?

Step 6: Present Decisions and Findings – **Journal Prompt:** How have your opinions, attitudes, or understanding about how we use energy changed over the course of this project? Do you think we will be able to balance our energy needs and environmental concerns in the future? Why or why not? What can individuals do to make a difference? What can *you* do to make a difference?

Name: _____ Mrs. McGill/Government

Team Members: _____ Period _____

Date: _____

National Energy Policy:
Developing a Coherent Plan

Presentation Scoring Guide

4	3	2	1
Research _____ x 2 = _____ **Comments:**			
• Research sources include a wide variety of handouts, Internet, and printed texts, and present varying perspectives. • All research resources are reliable, relevant, accurate, well-documented (sources are cited), and known for their expertise.	• Several types of resources (handouts, Internet, texts) from varying perspectives are used. • All of the research resources appear to be reliable, relevant, and accurate, but they do not all cite their sources.	• Several types of resources (handouts, Internet, texts) may be used, but they only reflect one perspective. • The reliability of some of the sources is suspect because they are not from known expert sites. Some of the sources are out of date.	• Only one type of source is used (such as sources only from the Internet), and they only reflect one perspective. • Some of the sources are from obviously biased and unreliable sources or are so out of date that they are misleading. • Sources are not referenced.
Content _____ x 10 = _____ **Comments:**			
• Evidence provided shows the choices in your energy plan are reliable, sufficient to meet demands, supportive of economic growth, and environmentally sensitive. • Presentation provides clear and compelling information on your plan's impact, justification, energy data, and comparisons to past and current plans. • Final conclusions are very clear, well organized, and convincing. • Evaluation of the energy problem is insightful and thorough.	• Evidence provided is fairly clear on how choices in your energy plan are reliable, sufficient to meet demands, supportive of economic growth, and environmentally sensitive, but some areas are not fully supported. • Presentation provides information on your plan's impact, justification, energy data, and comparisons to past and current plans. • Final conclusions are clear, fairly organized, and make a reasonable argument. • Evaluation of the energy problem covers the main issues.	• Evidence provided is missing some elements on how choices in your energy plan are reliable, sufficient to meet demands, supportive of economic growth, and environmentally sensitive. • Presentation provides incomplete information on your plan's impact, justification, energy data, and comparisons to past and current plans. • Final conclusions are presented, but are not organized in a logical manner. • Evaluation of the energy problem misses some of the main issues.	• Evidence does not show how choices in your energy plan are reliable, sufficient to meet demands, supportive of economic growth, or are environmentally sensitive. • Presentation provides very little or no information on your plan's impact, justification, energy data, and comparisons to past and current energy plans. • Final conclusions are incoherent or not presented. • Completely misses the main energy issues.

4	3	2	1
Delivery _____ x 2 = _____ **Comments:**			
• Presentation is well rehearsed with smooth delivery. • Team members have clear roles in the presentation and all are "experts" on the entire subject. • Delivery is supported by effective visual media, including slides, props, or handouts.	• Presentation is fairly well rehearsed with good delivery. • Team members have clear roles in the presentation and all are "experts" in their assigned area of the topic. • Delivery is supported by slides, props, or handouts.	• Presentation is not well rehearsed and is disjointed. • Team members are unclear about their roles in the presentation and only appear to know the content that is written on the slides. • Some of presentation is delivered by reading the slides, rather than using the slides as "notes."	• It is obvious that the presentation has not been rehearsed. • Team members are unclear about their roles in the presentation and do not know the content that is written on the slides. • All of the presentation is delivered by reading the slides, rather than using the slides as "notes."
Mechanics _____ x 2 = _____ **Comments:**			
• Presentation is free of any grammatical or spelling errors.	• Presentation is free of most grammatical or spelling errors, but they do not affect the understanding of the presentation.	• Presentation has some grammatical or spelling errors, some of which affect the understanding of the presentation.	• Presentation has many grammatical or spelling errors, which seriously affect the understanding of the presentation.
Layout/Design _____ x 1 = _____ **Comments:**			
• Design of the presentation is creative, clean, and attractive, supporting the overall purpose/message of the presentation. • Graphics, charts, sounds, and/or animations reinforce the key points of the presentation.	• Design of the presentation is attractive, basically supporting the overall purpose/message of the presentation. • Graphics, charts, sounds, and/or animations do not conflict with the key points of the presentation.	• Design of the presentation is somewhat distracting, and is confusing as to how it supports the overall purpose/message of the presentation. • Graphics, charts, sounds, and/or animations sometimes conflict or distract from the key points of the presentation.	• Design of the presentation is distracting and difficult to view, and does not support the overall purpose/message of the presentation. • Graphics, charts, sounds, and/or animations have nothing to do with the content of the presentation.
Individual Contribution _____ x 8 = _____ **Comments:**			
• Evidence of teamwork is obvious and your contributions greatly enhance the project. • You are an expert in the subject matter. • You are able to see the issues from multiple perspectives. • You discuss possible solutions rationally and clearly in order to weigh their benefits and drawbacks to make an informed decision.	• Evidence of teamwork exists and your contributions enhance the project. • You are an expert in your subject matter, but you could be more informed on other team members' content. • You are able to see the issues from more than one perspective. • You discuss a narrow range of solutions rationally in order to weigh their benefits and drawbacks, but some options are not considered.	• Evidence of teamwork is spotty and it is unclear how your contributions enhance the project. • You do not know your subject matter well and have limited knowledge of other team members' content. • You are able to see the issues from only one perspective. • You discuss solutions with some bias, so you cannot clearly weigh those options' benefits and drawbacks. Some important options are not considered.	• There is no evidence of teamwork and you do not provide any meaningful contribution to the project. • You do not know your subject matter well and have no knowledge of other team members' content. • You do not understand the issues and/or have serious misconceptions. • You discuss solutions with significant bias, so you cannot weigh those options' benefits and drawbacks. Important options are not considered.
Total Points: _____ out of 100	**Comments:**		

Energy Plan Choices Handout

Directions

You must meet the energy demands of the U.S. economy while at the same time keeping in mind the priorities you identified using the *Visual Ranking Tool*. To meet this demand, you must increase the energy supply by 13 quads of energy over the next 10 years. (A quad is a unit for measuring energy and is equal to a quadrillion BTUs.) You must choose a combination of the following proposals to reach this amount. This can be done by saving energy or producing additional BTUs.

For each of the following proposals, there are listed pros and cons that accompany the decision. Weigh them carefully, and then make your energy decision. If your group agrees to accept a proposal, write the appropriate number of quads produced in the space before the proposal number. Keep a running total of the quads you have produced. Remember, your final total must be at least 13. You may not alter the number of quads produced by each option. Remember, you are part of a team and your group must reach a consensus.

Energy Proposal Options Cards

1. Open up the Arctic National Wildlife Refuge (ANWR) for oil exploration and production. This will produce 1 quad of energy.

PROS	CONS
- ANWR can potentially increase American oil production. Survey estimates between 1.9 to 9.4 billion barrels* (BBO) of economically recoverable oil. - ANWR production could replace more than 70% of the oil imported from unstable regions. - Between 250,000 and 735,000 ANWR jobs are estimated to be created across the U.S. - Not as susceptible to natural disasters, such as hurricanes - Government revenues would be enhanced by billions of dollars: $4.7 billion in new state revenues and $4.1 in new federal revenues per year - More than 75% of Alaskans favor exploration and production in ANWR. Sources: http://arctic.fws.gov/issues1.htm http://www.anwr.org/topten.htm	- Risk of environmental damage (such as Exxon Valdez incident) - Study concluded that oil exploration would have major effects on the Porcupine Caribou herd and muskoxen. Moderate effects were expected for wolves, wolverine, polar bears, snow geese, seabirds and shorebirds, arctic grayling and coastal fish - Result in continued American dependence on oil and oil products - 90% of Alaskan territories are already open for oil exploration. This area should be left untouched. - It is estimated that ANWR contains approx. a 9-month supply of oil for the entire U.S. Source: http://arctic.fws.gov/issues1.htm

2. Provide tax incentives to producers of American oil and natural gas. This is worth 1 ½ quads of energy.

PROS	CONS
- Will increase Americans use of own resources by helping with the high cost of oil extraction in our country (U.S. has already used its cheapest reserves, so the remainder of the oil must be pumped from deeper within the earth which costs more money) - Will keep the oil industry (one America's most powerful lobbies) satisfied -Will provide economic relief to depressed oil- producing states (LA, OK, TX, CA, AK) http://waysandmeans.house.gov/News.asp?FormMode=print&ID=304 http://www.agiweb.org/gap/legis105/gastaxup.html	- Will increase our nation's budget deficit by reducing taxes collected from oil companies. - Government may raise personal taxes to help pay for the subsidy - Will artificially tilt the market away from alternative energy resources (conservation and renewables) by artificially lowering the cost of oil

3. Continue aid and military protection to Middle Eastern and other oil-rich countries to ensure access to their cheap oil. This will produce 6 quads of energy.

PROS	CONS
- Oil prices will be kept low - IInflation will be kept low (if energy is cheap, other goods remain cheap) - Will keep U.S. military interests happy - Will help the economy recover from recession more quickly http://www.imf.org/external/pubs/ft/med/2003/eng/okogu/okogu.htm	- Continued dependence on Middle East and other politically unstable nations - Keeps defense spending high (money that could aid the domestic economy) - Discourages energy efficiency because oil is cheap - Oil prices could still rise for other reasons http://www.iags.org/n1020032.htm http://www.fueleconomy.gov/feg/oildep.shtml

4. Provide technical assistance to the oil and gas industries of the former Soviet Union. This will produce 2 quads of energy.

PROS	CONS
- Keep world oil prices low (The former Soviet Union was once the world's largest single producer of oil, but production has declined more than 30% since 1988. Currently still one of the major producers of oil—ranked #2 behind Saudi Arabia in 2004.) - Will help stabilize the economies of Russia and other new nations - Will provide new opportunities for American oil companies - Provides an alternative to oil from the Middle East Crude Oil and Total Petroleum Imports Energy Information Administration "Top 10" Lists & Rankings Some interesting oil industry statistics	- Billions of dollars in aid would be necessary - High risk of failure because of possible political instability - In the long run, Russia and other new countries will benefit the most from our tax dollars - There are other countries that have more potential for reserves. - Private oil companies should make their own deals, rather than use U.S. tax dollars

5. Change government regulations to increase imports of Canadian natural gas. This will produce 1 quad of energy and less pollution.

PROS	CONS
- Natural gas is cleaner and cheaper than other fuels (this means lower gas bills for American consumers) - Natural gas is a very safe and stable supply - A new source of natural gas in coal bed seams could double Canada's production—and their export to the U.S. http://www.engineering.ualberta.ca/nav02.cfm?nav02=30452&nav01=18430 http://www.energybulletin.net/358.html http://www.energy.gov.ab.ca/222.asp	- Creates competition for American gas and oil companies (this will cost jobs) - Canada's export of natural gas to the United States grew steadily between 1986 and 2002, reflecting an average annual growth rate of 10.7 percent. U.S. imports of Canadian gas declined from 2002 to 2003 because of declining Canadian production and increased Canadian end-use demand.

6. Remove regulations on the natural gas industry to stimulate competition among natural gas producers. This will produce 1 quad of energy.

PROS	CONS
- If competition works, gas prices will be cheaper - Lower prices will encourage people to switch to clean-burning natural gas http://www.citizenpower.com/GasChoice/ http://www.liheap.ncat.org/dereg/gasoview.htm	- Removing regulations on natural gas could lead to a monopoly situation which would raise prices

7. Provide additional support for clean coal technologies and encourage production and use of

coal. This will produce 4 quads of energy.	
PROS	**CONS**
- Coal is America's most abundant fuel (America has enough coal to last 200 years) - Will create thousands of jobs in the Appalachia region (KY, WV, TN, OH, PA) and, at an average salary of $50,000 per year, coal miners are among the highest paid industrial workers in America. - Coal is cheap (On average, coal energy is about one-quarter the cost of natural gas-fired generation) - scientists have developed new filters that can remove 99% of the smoke particles and 95% of the carbon dioxide released from the burning of coal - $1 billion dollar project is intended to create the world's first zero-emissions fossil fuel plant. When operational, the prototype will be the cleanest fossil fuel fired power plant in the world. http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/coal.html http://www.careenergy.com/powering_life/coal-energy.asp http://www.careenergy.com/technology/coal.asp http://www.fossil.energy.gov/programs/powersystems/futuregen/	- Government spending to develop this technology would be large. Costs are estimated in tens of millions of dollars. - Current clean coal methods still pollute (this will increase acid rain, global warming, and smog) - Traditional mining is very damaging to the environment - Coal is a non-renewable resource so we shouldn't spend a lot of time and money on developing a resource that is going to run out. http://www.worldbank.org/fandd/english/1297/articles/0101297.htm http://www.darvill.clara.net/altenerg/fossil.htm

8. Simplify the process for nuclear power plant approval and construction as well as fund research for safe reactors. This will produce 2 quads of energy.	
PROS	**CONS**
- Will increase our energy security by decreasing our dependence on foreign oil - There will be very low pollution levels (help reduce acid rain, smog, and global warming) - nuclear power plants in the U.S. prevent about as much greenhouse gas emissions as taking 5 billion cars off our streets and highways - Creates jobs and utilizes American expertise - Vast amounts of energy are produced from small amounts of fuel [the fission of 1 pound of uranium releases more energy than the burning of 3 million pounds (1,500 tons) of coal.] - Nuclear energy is America's second largest source of electric power after coal - Cheaper source of energy - Since 1973, they have saved American consumers approximately $44 billion, compared to the other fuels that would have been used to make electricity http://www.ecoworld.org/energy/EcoWorld_Energy_Overview1.cfm http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html http://www.umich.edu/~gs265/society/nuclear.htm	- Danger of nuclear accidents - There is no accepted method for permanently storing radioactive waste - The public does not support nuclear energy - http://en.wikipedia.org/wiki/Nuclear_power

9. Raise building code standards for energy efficiency in buildings, appliances, machines, etc. This will produce 4 quads of energy.

PROS	CONS
- Reduces energy waste - Cheapest way to produce energy (remember, saving a unit of energy is as good as producing a unit of energy) - Reduces our need for foreign supplies of energy - Better for the environment because less fuel is burned http://www.apolloalliance.org/strategy_center/model_legislation/eelegis.cfm http://www.wapa.gov/es/pubs/esb/2003/03Feb/esb021.htm	- Raises the prices American pay for energy- using products (for example, ex: refrigerator prices may go up by 25 percent) - May cause some inflation - May hurt established industries such as oil, coal, etc., as well as small businesses http://www.cato.org/pubs/pas/pa-189.html

10. Give aid to producers of renewable or alternative energy (wind, solar, hydro, geothermal) to encourage use by consumer. This will produce 2 quads of energy.

PROS	CONS
- Renewable energy is unlimited - Environmentally safe in comparison with other energy resources - Many technologies are pollution-free - Makes America less dependent on foreign oil - Stimulating a new industry creates more jobs http://www.ecoworld.org/energy/EcoWorld_Energy_Overview1.cfm http://en.wikipedia.org/wiki/Alternative_energy#Renewable_energy	- Costly for consumers, would raise electricity bills in foreseeable future - high levels of capital investment needed to develop renewable energy - May slow America's economic growth - Some environmental concerns (dams used to produce hydropower power can cause damage to the surrounding ecosystems; windmills can impact bird, bat and other wildlife populations; CO2 and H2S emissions are released from geothermal plants.) - Not currently realistic for large-scale production (e.g., windmills not yet very practical since they require strong and constant winds; solar collectors very expensive) http://www.worldbank.org/html/fpd/energy/geothermal/

11. Provide incentives to meet the goal that 10 percent of all cars sold by 2015 are electric or hybrid cars. This will produce ½ quad of energy.

PROS	CONS
- Reduce urban smog and certain other pollutants - More energy efficient http://www.hybridcars.com/sales-numbers.html http://www.hybridcars.com/faq.html	- Higher initial costs, as well as possible higher maintenance - Limited performance (for example, ex: limited traveling range) - Battery disposal may become a solid waste issue - Perceived by many as not attractive models http://www.cnet.com/4520-6033_1-6224487-1.html

12. Implement a mandatory recycling program for businesses and homes. This will produce 1 quad of energy.

PROS	CONS
- Would reduce waste of resources - Would reduce energy consumption since making recycled products uses less energy than making an original product - Would help preserve the environment http://www.recyclingtoday.com/categories/detail.asp?SubCatID=42&CatID=11	- Enforcement and administrative costs could be high - This represents government interference in people's lives - Adds cost to products.

13. Push standards for auto mileage from 26 miles per gallon (mpg) to 31 mpg. This will produce 1 quad of energy.	
PROS	**CONS**
- Would reduce America's fuel use (this would decrease our dependence on foreign oil) - Would help make our air cleaner, especially in cities - Might make American cars more attractive to consumers in other countries where gasoline prices are very high http://www.ucsusa.org/clean_vehicles/fuel_economy/questions-and-answers-on-fuel-economy.html http://www.nap.edu/books/0309076013/html/	- Almost all cars and trucks would become slightly more expensive - Would be strongly opposed by the auto industry - Would require new investments in production by car manufacturers - Lighter cars would result in higher rates of fatalities. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2005/08/23/BAfuelrules23.DTL

14. Gradually implement a gas tax of 25¢ per gallon. This will produce ½ quad of energy.	
PROS	**CONS**
- Would encourage production of cars with higher mileage per gallon - Would be a major source of revenue for the government (help decrease the budget deficit) - Would encourage conservation and public transportation http://post.economics.harvard.edu/faculty/mankiw/columns/may99.html	- Would increase gas prices for consumers - Would increase costs of products because of increased transportation costs - Would hurt oil companies by reducing sales - Would encourage businesses to move to countries with lower-priced fuel - Would discriminate against people in rural areas and those without access to public transportation - Would slow the economy http://www.heritage.org/Research/Taxes/wm451.cfm

15. Implement transport planning for urban areas. This would include funding for economic and technical research for various public transportation: mass transit systems (buses and subways), development of infrastructures for mass transit, promoting carpooling, bicycling, etc. This will produce 2 quads of energy.	
PROS	**CONS**
- Would reduce fuel use and pollution from cars - Would relieve traffic congestion in urban areas - Provide better access to cities for those unable to afford cars - Most likely would cost less than upkeep and fuel for personal cars http://www.publictransportation.org/	- Would increase government spending - Would require Americans to change their lifestyles, so it's possible that it would not be used (waste of money) - Current public transportation is not efficiently used http://www.rppi.org/transitwaste.html http://www.swedetrack.com/eflwa03.htm

Name: _____ Mrs. McGill/Government

Date: _____ Period _____

State Energy Information

Use this worksheet to record your impressions about your state's energy resources and consumption.

1. What state are you researching? _____

2. Go to: http://www.eia.doe.gov/emeu/states/_states.html and click on your state on the map.

3. Select the "Renewable Potential Map" link on the left under *Features*. Additional information is also available from "Renewable Energy Issues" in the same location.

4. What are your state's possible energy resources that could be further developed?

   ☐ Fuelwood Harvested ☐ Solar Radiation above 6 kilowatts per day
   ☐ Geothermal Potential ☐ Wind Resources ☐ Significant waterways (for hydroelectric)

5. Go back to the main page for your state. On the right hand side, under *Total Energy,* click the "Total" or "Total Consumption" link in the *Consumption* section.

6. Scroll down to the section that is marked "Trillion BTU" (about halfway down the page). Roughly, how much more energy is being consumed for the time periods and energy sources listed below? (example, 1 ½ times, double, 10x, etc.)

   Between 1960 and 1980
   Coal: _____ Natural Gas: _____ Total Petroleum: _____
   Nuclear: _____ Hydroelectric: _____ Wood/Waste: _____

   Between 1980 and 2001
   Coal: _____ Natural Gas: _____ Total Petroleum: _____
   Nuclear: _____ Hydroelectric: _____ Wood/Waste: _____

7. The second to last column on the right describes either the surplus or negative amount of energy the state used for each year. A negative number means it had to bring in energy from another state or country. What was the "Net Interstate Flow of Electricity/Losses" for the following years in million kilowatts?

   1960: _____ 1970: _____ 1980: _____ 2001: _____

8. What can you conclude about your state's consumption of energy and its potential for creating additional sources of alternative energy?

   _____

   _____

   _____

   _____

   _____

9. Compare your numbers with at least two other students' state data. How does your state compare to other states?

Name: _____ Mrs. McGill/Government

Date: _____ Period _____

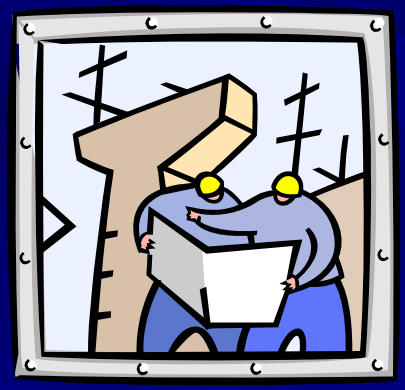
Energy Plan Comparison

Use this worksheet to compare your energy policy decisions with energy policies of the past and the Energy Policy Act of 2005. Remember, your policy proposal must produce or save 13 quads of energy over the next 10 years

Our Team's Energy Plan				Energy Policies of the Past	Energy Policy Act of 2005	Changes to Our Plan
# of Quads Saved	**In Our Plan (x)**	**Energy Description**	**Economic, Societal, and Environmental Effects**	**Energy Description** (Has your proposal been tried before? How is it different? How is it similar? Was it successful?)	**Energy Description** (Does the Energy Policy Act include your proposal? How is it different? How is it similar? What costs are associated with it?)	**Any Changes?** Considering what you have learned, do you still think your choice of this particular energy plan is a good one?

Our Team's Energy Plan				Energy Policies of the Past	Energy Policy Act of 2005	Changes to Our Plan
# of Quads Saved	**In Our Plan (x)**	**Energy Description**	**Economic, Societal, and Environmental Effects**	**Energy Description** (Has your proposal been tried before? How is it different? How is it similar? Was it successful?)	**Energy Description** (Does the Energy Policy Act include your proposal? How is it different? How is it similar? What costs are associated with it?)	**Any Changes?** Considering what you have learned, do you still think your choice of this particular energy plan is a good one?
Total Quads:						

US National Energy Plan: *How Can We Make a Difference?*



Senator Nathan Anderson from California
Senator Lisa Jordan from Massachusetts
Senator Jessica Sanders from Wisconsin
Senator Anthony Rodriguez from Idaho

Mrs. McGill
4th Period Social Studies

OVERVIEW OF OUR POLICY CHOICES

- Our Energy Priorities
- Overview of Our Energy Plan
- Comparison with Previous Policies
- Comparison with the Energy Policy Act of 2005
- Justification and Impacts
- Counter-Arguments
- Conclusion

Our Energy Priorities

- Initially, the five factors that we felt should be energy priorities are:
  - Preserving the environment
  - Decreasing the amount of non-renewable energy consumed
  - Decreasing our dependency on other countries for our energy resources
  - Encouraging alternative fuels/vehicles
  - Maintaining/growing our economy

Visual Ranking of Priorities

From the priorities created and decided upon by the whole class, our top three energy priorities are:

ENVIRONMENT

- Protect for future generations
- Allow for new discoveries

ECONOMIC GROWTH

- We need to be able to have money to find and develop additional energy resources

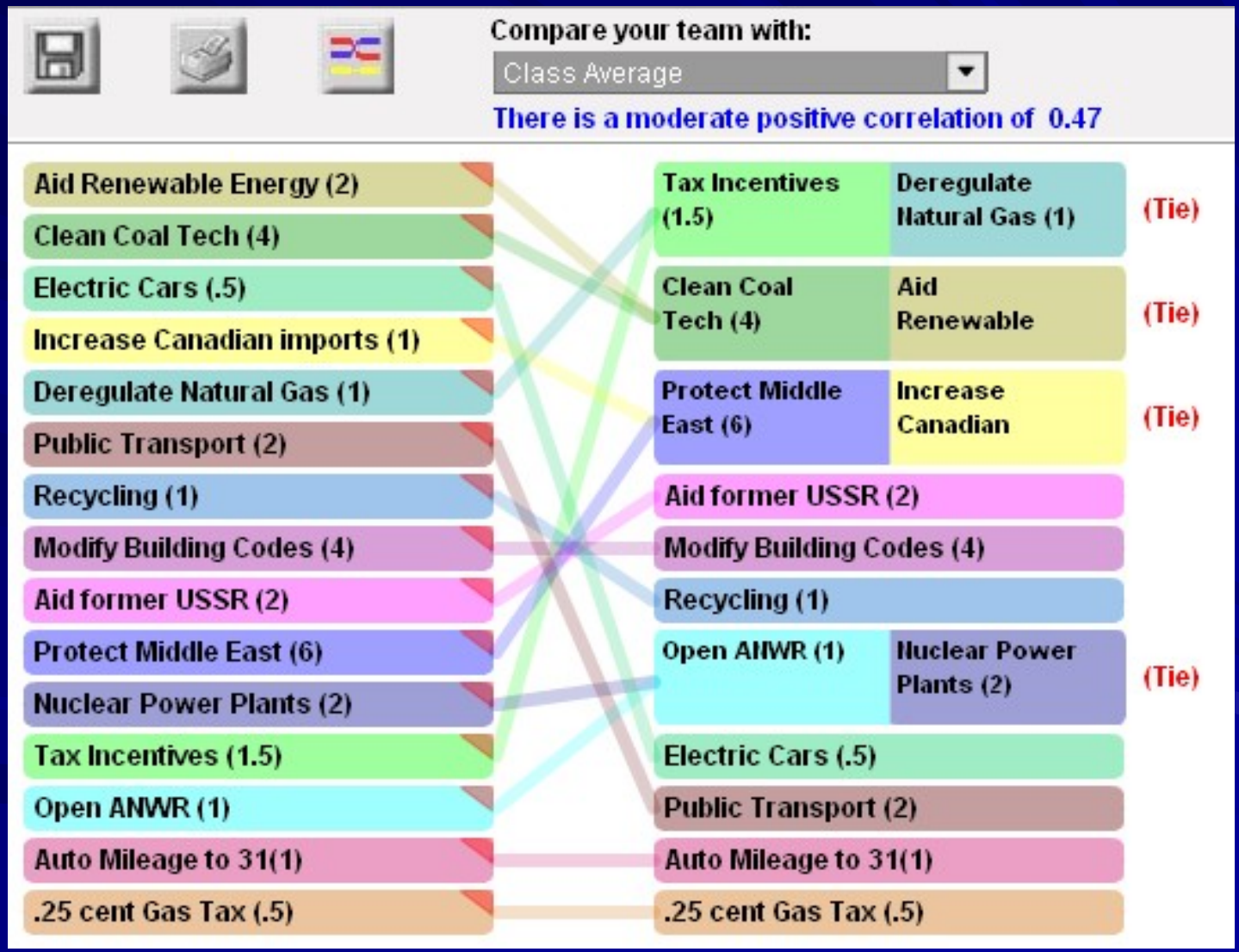
SECURITY

- Protect our resources and future
- Be more self-reliant

Overview of Energy Plan

- 14.5 Quads of Energy for 10 years
  - Only 1 Quad planned for "Building Codes" (less restrictive/costly)
- Fulfills our priorities and the interests of our states:
  - Promotes the environment
  - Somewhat less dependent on foreign resources
  - Helps to develop our future energy resources

Class Average



Comparison with Previous U.S. Policies

- **Similarities – Focus on:**
  - Conservation
  - Renewable energy
  - Decreasing pollution of energy resources
- **Differences:**
  - Nuclear energy (our group was split)
  - Specific gasoline conservation goals
  - Restricting foreign oil imports

- **Atomic Energy Act of 1946 - Develop the use of atomic energy for civilian and military purposes[1]**
- **"Energy Policy and Conservation Act" (1975) - Reduce dependence on imported oil and increase energy efficiency[2]**
- **"Energy Tax Act" (1977) - Tax credit for wind and solar power and other renewable energy[2]**
- **1980 - Reduce overall petroleum consumption and establish a maximum amount for importing foreign oil[3]**
- **Clean Air Act Amendments (1990) - emissions-reduction program, specifically targeted at coal[2]**
- **National Energy Policy (2001) - Funding of research and development into renewable technologies[2]**

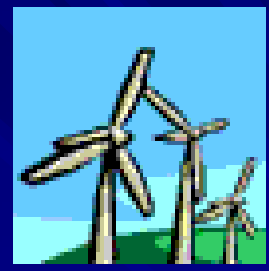
Comparison with the Energy Policy Act of 2005

- Similarities:
  - Electric cars
  - Alternative energy
  - Clean coal
- Differences
  - Daylight savings time
  - Nuclear power

- **Tax break for hybrid (electric) vehicles**
- **Loan guarantees for "innovative technologies"**
  - **Advanced nuclear reactor designs**
  - **Clean coal**
  - **Renewable energy**
- **Clean coal as an energy source**
- **Subsidies and provisions for encouraging renewable, alternative energy producers**
  - **Wind, wave, tidal, geothermal**
- **Extends daylight savings time by four weeks**
- **Six new nuclear power plants**

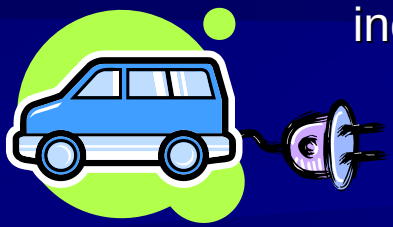
Cost estimate: $1.6 billion directly and reduced revenue by $12.3 billion between 2006 and 2015[4]

Justification and Impacts



- Healthy Environment
  - What else have we got?
  - Need to make changes now for the future
  - Support recycling, clean fuels, electric cars
  - Cost is an issue, but worth it

- Economic Growth
  - Plans are not too restrictive or burdensome
    - Example: less restrictive building codes than initially proposed
  - Allow the market to choose alternatives--with incentives from government
    - Example: Hybrid cars – Costs more to buy and maintain, but tax incentives, carpool lane access in some locations, and gas savings
      - 81% increase of sales in 2004 over 2003 [5]
      - 2005 already doubles 2004 figures
      - Calif. buys 4.5 times more than any other state[6]



Justification and Impacts

- Security
  - Less dependent on foreign resources
  - Developing resources to be more self-reliant in the future
  - Use of coal
    - Plentiful resource that doesn't need to be imported
    - New methods in the near future
      - Produces electricity and hydrogen
      - Clean use – gasifies coal before burning, captures carbon dioxide[7]
- Supports the needs/priorities of our states
  - Supports our current policies and available renewable resources
    - California - Wind, solar, hydroelectric, and geothermal resources/programs
    - Massachusetts – Solar, wind, and hydro programs/resources (small)
    - Wisconsin - Wind, hydroelectric, and solar programs/resources
    - Idaho – Solar, wind, and geothermal programs (small), but greater potential resources available[8]

Counter-Arguments

- Cost
  - Government spending is huge (estimates of $13.9 billion over 8 years for the Energy Policy Act of 2005[4])
  - People don't like anything that might cost them more money like recycling or more expensive cars

- Out of People's "Comfort Zones"
  - People don't want weird houses or cars—especially if they will cost more
- Industry and Big Business Resists
  - Powerful lobbies in Washington D.C. prevent change

Conclusion

- We were surprised that much of the class chose what we view as “anti-environmental” measures.
- Protecting the environment is much more complex.
  - Need more policies to promote change and new ideas, rather than just producing more of the same
  - We need to develop renewable alternatives *before* we run out of non-renewable resources
- Use of clean domestic resources, such as coal, will help our more immediate energy needs
- Energy choices have broad-range and long-term impacts.

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