

Environmental Aspects of Energy

Panel Discussion

Extra credit is available, 20 pts (or more depending on exceptional quality) for participation on a panel discussion regarding environmental aspects of energy use. I am looking for up to five teams of up to 4 people each period. Present a discussion of energy issues relating to gasoline powered vehicles, home electrical use, and alternative energy sources. This is not a debate. Teams are to research the topic and present their findings to the class. The presentation needs to include the specifics below, but those are focus points to use as specific starting points (prompts) for a wider discussion. The presentation will be Wednesday, December 10th.

Global warming (greenhouse effect)

- What is it and why does it matter?
- What is the cause – at least the parts that humans influence?

Fossil fuels

- What are they and where do they come from?
- How much do we think the US and world have. How long can we expect it to last?
- What portion of the world supply does the US use (and the US represents what portion of the world population)?

Automobiles

- How much do they use?
 - Select a vehicle and find its average miles per gallon gas usage (average city and highway numbers). If it is driven 12,000 miles a year (or if you find that the average American drives a different amount, use that), how many gallons a year is that and how many barrels of oil does that represent.
- What do they give off?
 - Gasoline is basically octane, balance the combustion reaction and show the calculation for how much CO₂ (in Kg) is produced by driving one mile (and then calculate for a year's driving). [1 gal_{octane} = 2.722 kilograms]
- What is a "hybrid vehicle" and how do they work (why are they so much more fuel efficient)?

Electric power

- How does California get its electricity?
- The average "baseline allowance" for a home's electricity use is 845 kWh (kilowatt-hour) per month. For coal-fired power plants, 1.1 Kg of CO₂ is produced to generate 1 kWh of electricity. What is the CO₂ production for a year's electricity?
- What things can most people do to save electric energy?
- Bonus points if you can find numbers for kWh/mile for a production car.

Alternative energy

- Describe **at least four** alternative sources of energy that are currently available. Include photo-voltaic, wind, and nuclear.
- What are their advantages and disadvantages (including, but not limited to economic viability).

Before you start your presentation, each person is to give me a copy of his/her outline of the presentation and site references used. Use whatever format you use in English for attributions. One person per team may be a silent contributor providing visual and/or technical support. Most of the grade will be assigned based on individual presentation with some grade based on a cohesive overall product.