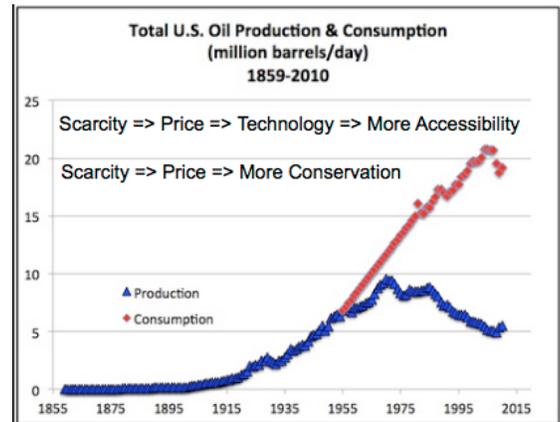


- 1) Please repeat any questions from the past two assessments that you didn't get totally right.
- 2) Look up the rate of petroleum use in gallons or barrels and see if the global use constitutes about 1/3 of humanity's primary energy use.
- 3) I've heard that the thermal solar energy falling on a square meter of surface area is roughly equivalent to a barrel of oil per year. Please check that.
- 4) If I have a Prius that gets about 50 mpg, but my partner drives a 10 mpg hummer, and drives 15,000 miles per year. We drive roughly equal distances. What is our CAFE (Corporate Average Fuel Economy)?
 - a) Please prove to yourself that averaging the two to get 32 mpg don't work... consider if you had a car that got infinite mileage and another that got zero and you drove them both 10 miles, what would be the average mileage of your household transportation?
 - b) Recognizing that average fuel efficiency is total miles / total gallons, find the CAFE of my household. If it helps... imagine driving each of them 100 miles.
 - c) Let's say we agree that we should increase the CAFE of our household, but we will only buy one new vehicle... a more efficient beastly SUV (for her), or a more efficient super-efficient vehicle for me. Which would change would more effectively improve our CAFE? For instance, let's say she was willing to buy a large SUV that gets 12 mpg. If instead, I wanted a new super-efficient car, what would the mileage have to be to get the same increase in CAFE as my partner getting the 12 mpg SUV? With this answer, who should get the new car?
- 5) In my video, I quote the full cost of a gallon of gas to be \$15.
 - a) have you ever heard this before? What costs do you come up with when you research the full cost of a gallon of gas.
 - b) Where do you see yourself paying the external costs so that others to use petroleum cheaply?
 - c) Where do you see yourself benefiting from others paying your petroleum external costs?
 - d) In your opinion, is it OK the way it is, or it should be changed? If your answer is "no it's OK as it is" then please state why it's OK. If your answer is "yes", then what would you propose?
- 6) You're at a party and someone screams, "we're running out of oil and when we empty the wells, ***BAM***, no more oil!" The economists despair, the environmentalists rejoice. Please nicely explain that it's a little more complicated than what the person screamed, and describe what it means to "run out of oil", and describe what it will be like. Please include all following considerations:
 - a) technological
 - b) Upstream energy use, and emissions
 - c) environmental,
 - d) economic
 - e) political, and
 - f) Environmental Justice. Are any groups disproportionately harmed?

- 7) Please look at the graph from the video. Comment on a few things:
- Starting around 1955, what started to happen and what effect did it have on USA security?
 - Note very recently, there has been an abrupt shift in the consumption and the production of petroleum in the USA. What caused that?
 - Has the trend (in b above) continued, increased, decreased? Please do some internet research (careful about which websites you believe). I refer you to a website for Friday's class that will provide an update.



- 8) I've said to my class once (or twice, or more) that 100% of our national debt can be attributed to importing oil over the years. Let's see if it's true. Please look up a graph of US oil production and consumption. I refer you to one for Friday's preparation. Look up the price of crude oil over the years: https://en.wikipedia.org/wiki/Price_of_oil Please estimate the total debt US might expect to have because of our... "oil problem". If you include consideration of interest paid on debt* – more power to you. What portion of our present debt might this constitute?