

End of Oil Calculation

INTERPRETATION, ANALYSIS, REFLECTION

As we have studied in class, human civilization is currently in a serious need to transition away from nonrenewable fossil fuels to renewable clean energy. This is true for all types of energy—petroleum based fuels that power planes, cars, trucks, ships, trains, etc. as well as fuels that generate electricity (coal and natural gas). The end of oil calculation provides us with some perspective on just how urgent this need is. We will find that as civilization makes this transition, each energy type becomes interdependent with each other. For example as vehicles move to electric motors vs. internal combustion engines that use gasoline, the demand for electricity will increase, and the environment will suffer (mercury in fish, acid rain, climate change, etc.) with greater use of coal, unless clean sources of electricity are implemented. As a result we will be studying how to measure and conserve electricity use as part of this big picture.

When we did our End of Oil Calculation we chose values for 1) the possible reserves in the earth and 2) the growth rate of consumption, based on the most likely scenarios. We have to realize that our answer is **only true for those values**. If those values change, the number of years will change. The chart included here contains the years to end of oil for a variety of other consumption growth rates and possible oil reserve amounts. Use that chart to reflect on the following questions. Please do not give one word answers.

IMPORTANT NOTE: You are not expected to know exact "answers" for these questions. Use any knowledge you have and best guesses. The questions will be the basis for future discussion and study.

YEARS TO THE END OF OIL

GLOBAL ANNUAL CONSUMPTION GROWTH RATE

		0%	1.7%	3.5%	5%
GLOBAL RESERVES (trillions of barrels)	2 (med. low estimate)	66	45	33	30
	4 (high estimate)	133	70	50	41
	20 (impossible)	667	148	92	72

1) **OIL RESERVES:** We can only estimate what the total amount of oil in the earth is (all regions known and unknown in shale, tar sands, polar regions, oceans, etc.) Regardless of our estimation, is the actual value finite? Why or why not? Explain.

2) **GROWTH RATE OF CONSUMPTION**

A) What elements or developments in civilization affect an increase or decrease in the growth rate of consumption? Consider both factors that would increase it and that would decrease it, and explain the best you can.

B) What can **citizens** do to reduce the growth rate of consumption of oil?

C) What can **scientists and engineers (new technologies, inventions, etc.)** do to help society reduce the growth rate of consumption on oil?

3) ANALYSIS: Which would have a greater effect on extending the years until oil runs out:

A) increasing supply (the reserves) to 4 trillion barrels by drilling every last spot on the planet or

B) Holding the consumption rate to 32 billion barrels/year (0% growth rate)?

Refer to the chart of values to make your case.

4) ENVIRONMENTAL EFFECTS: Share what you know about the environmental problems associated with use of fossil fuels. Use as much detail as you can about the cause and effect of the problems.