

Assignment 1 for Evans

1. What is your favorite alternative energy (biofuels, fuel cells, electric vehicles, solar cells, hydrogen, wind, or nuclear). Which do you suspect has the most promising future and why?
2. Discuss the major obstacles in moving toward a hydrogen economy.
3. Discuss the major obstacles in moving toward a solar based economy.
4. Ethanol produced from agriculture (seasonal growth and harvest of crops, such as sugar cane, corn, switch grass, algae, ect.) is often referred to as a renewable, green fuel. What makes it renewable?
Why is it potentially greener than burning petroleum?
5. Several investigators have attempted to perform an energy balance to illustrate the extent in which ethanol obtained from crops is green? Why is it important to perform an energy balance?
6. The main critics of biofuels point to the second law of thermodynamics. What is the second law of thermodynamics and how is it relevant to the energy balances of ethanol production?
7. Contrast the energy balance calculations for biofuels to the energy balance calculations for solar cells.
8. Why is algae an attractive option as a biofuel? What are the major technical barriers to large scale algae operations?