

Chapter 15 Objectives: "Energy Efficiency and Renewable Energy"

1. Define *net energy* and state its significance in evaluating energy resources.
2. Define *life cycle cost* and *cogeneration* and describe their potential for saving energy.
3. Describe changes which can be made in *industry, transportation, buildings, lights,* and *appliances* which would improve energy efficiency.
4. List the advantages and disadvantages of using *direct solar energy* to heat air and water for buildings.
5. Distinguish between *active* and *passive* solar heating.
6. List the advantages and disadvantages of using water in the forms of *hydropower* and *tidal power*.
7. List the advantages and disadvantages of using *wind* to produce electricity.
8. List the advantages and disadvantages of using *biomass* to heat space and water, produce electricity, and propel vehicles (consider burning wood, agricultural wastes, and urban wastes as well as conversion of biomass to biofuels).
9. List the advantages and disadvantages of using *hydrogen* to heat space and water, produce electricity, and propel vehicles.
10. State the energy source that is needed to produce hydrogen to create a truly sustainable future.
11. Describe constraints to a *solar-hydrogen revolution*
12. Describe the process by which *hybrid-electric vehicles* and *plug-in hybrid vehicles* operate. (NOT IN TEXTBOOK)
13. List the advantages and disadvantages of using *geothermal energy* for space heating, high-temperature industrial heating, and electricity production.