CHAPTER 16 SUMMARY

1. The advantages of improving energy efficiency include benefits to the environment, people, and the economy through prolonged fossil fuel supplies, reduced oil imports, very high net energy yield, low cost reduction of pollution, and improved local economies.

2. The advantages of solar energy include reduction of air pollution, reduction of dependence on oil, and low land use. Disadvantages include production of photocells results in release of toxic chemicals, life of systems is short, need backup systems, and high cost.

3. The advantages of hydropower include high net energy yield, low cost electricity, long life span, no carbon dioxide emissions during operation, flood control below dam, water for irrigation, and reservoir development. Disadvantages include high construction cost, high environmental impact, high carbon dioxide emissions from biomass decay, flooding of natural areas, conversion of land habitats to lake habitats, danger of dam collapsing, people relocation, limits fish populations below dam, and decrease flow of silt.

4. The advantages of wind power include high net energy yield and efficiency, low cost and environmental impact, no carbon dioxide emissions, and quick construction. Disadvantages include need for winds and backup systems, high land use, visual and noise pollution, interfering with bird migrations.

5. The advantages of biomass include large potential supplies, moderate costs, no net carbon increase, and use of agricultural, timber, and urban wastes. Disadvantages include nonrenewable resource if not harvested sustainably, moderate to high environmental impact, low photosynthetic efficiency, soil erosion, water pollution, and loss of wildlife.

6. The advantages of geothermal energy include very high efficiency, low carbon dioxide emissions, low cost and land use, low land disturbance, and moderate environmental impact. Disadvantages include scarcity of suitable sites, potential depletion, moderate to high air pollution, noise and odor, and high cost.

7. The advantages of hydrogen gas include the fact that it can be produced from water, the low environmental impact, no carbon dioxide emission, competitive price, ease of storage, safety, and high efficiency. Disadvantages include energy needed to produce the fuel, negative energy yield, nonrenewable, high cost, and no fuel distribution system exists.

8. The advantages of using smaller, decentralized micropower sources include size, fast production and installation, high energy efficiency, low or no CO2 emissions, low air pollution, easy repair, reliable, increased national security, and easily financed.

9. We can improve energy efficiency by increasing fuel efficiency standards, large tax credits for purchasing energy efficient cars, houses, and appliances, encouraging independent energy production, and increasing research and development.