

Chemistry 1500: Chemistry in Modern Living

Topic 6: New Energy Sources for the New Century

Alternative “Green” Energy Sources

Chemistry in Context, 2nd Edition: Chapter 9, Pages 281-318

Chemistry in Context, 3rd Edition: Chapter 8, Pages 305-336

Chemistry in Context, 4th Edition: Chapter xxx, Pages xxx-xxx

The Figure, Table, & Problem numbers in these notes are taken from the 4th edition of the text unless otherwise noted.

Graphics from Text: Figure xxx.0

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6A Why not stick with the Energy we are using now?

➤ Ask Students: What are the strengths of current energy mix

➤ Group Activity

➤ Ask Students: What are the problems with current energy mix

➤ Group Activity

➤ Alternative Energy Sources

➤ Intermittent supplies and energy storage

6B Solar Energy

- Photovoltaics (Solar Cells)
 - Graphics from Text: Figure 9.11 in 2nd Edition and 8.14 in 3rd Edition, Photovoltaic Cell
 - Graphics from Text: Figures 8.16 and 8.17 in 3rd Edition, Photovoltaic arrays
 - Ask Students: Develop a list of current uses of Photovoltaic technology
 - Group Activity

- Ask Students: Develop a list of future uses of Photovoltaic technology
 - Group Activity

➤ Photothermal Energy

➤ Passive heating

➤ Graphics from Text: Figure 9.1 in 2nd Edition, Passive
Solar Heating

➤ Solar thermal on land

➤ Solar thermal from oceans

➤ Costs

➤ R&D

➤ Capital

➤ Operating

➤ Land Area

➤ Benefits

6C Wind Power

➤ Wind farms

➤ Graphics from Text: Figure 9.2 in 2nd Edition: Wind Farm

➤ Ask Students: What are some of the advantages and disadvantages of Wind Energy

➤ Group Activity

6D The Hydrogen Economy

- Hydrogen production
 - Current industrial route
 - Made from hydrocarbon fuels

 - Electrolysis
 - Graphics from Text: Figure 9.6 in 2nd Edition and 8.2 in 3rd Edition, Electrolytic cell

 - Photolytic Hydrogen Generation

- Hydrogen storage: energy density

6E Biomass and Garbage

- Everything old is new again

- Thermal generation of electricity
 - Industrial Waste

 - Household Waste

 - Agricultural Waste

- Ask Students: What are the strengths and weakness of this sort of alternative energy
 - Group Activity

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