**ACP Chem Unit 4**

**Ch. 10 Energy**

**Essential Questions**

* Why do the tiny particles get along? Or not?
* What drives the tiny particles to get along or produce new stuff?

**Learning Objectives**

* explain the 1st Law of Thermodynamics (Conservation of Energy)
* explain the general properties of energy
* explain the difference between temperature and heat
* explain the difference between exothermic & endothermic processes
* understand the flow of heat energy and how to measure enthalpy
* explain how a calorimeter works
* use Hess’s Law to calculate the enthalpy of reaction
* identify renewable versus non-renewable energy sources in our world
* explain the 2nd Law of Thermodynamics and how it drives chemical processes

**Textbook Chapters and Topics**

Ch. 10 sec. 1 Energy, Temperature, and Heat

Ch. 10 sec. 2 The Flow of Energy

Ch. 10 sec. 3 Energy and Chemical Reactions

Ch. 10 sec. 4 Using Energy in the Real World

**Vocabulary (see key terms on pp.351-352)**

**Problem Solving and Calculations – What do these symbols and formulas mean?**

q = mc∆T

∆H if units of ∆H are kJ/g, then q = (∆H)(m)

if units of ∆H are kJ/mol, then q = (∆H)(mol)

∆E = q + W

W = -P∆V

**Diagrams**

Energy diagrams for endothermic and exothermic reactions

Flow of energy and work for system and surroundings

Heating curve