

Kim Borrenpohl, Dana (Klockow) Pickering, Katie Jennings

## Conservation of Energy

Chem I: first chem class, basic algebra skills needed, pre-physics

Prerequisites: In previous lessons in this unit, the nature of energy was covered, as well as the basic concept on enthalpy. In previous units, chemical equations and reactions, stoichiometry, and balancing equations was covered. We assume that the students have basic algebra skills (four functions, solving equations).

Next: Directly after this lesson, we will cover enthalpies of formation, which is a similar but often confusing topic. At the end of the unit, we will bring all information about energy together to talk about energy sources, fuel sources.

Goal: Overall—Understand the conservation of energy, and why energy is important to our lives.

Hess's Law—To understand that chemical reactions often take place in multiple steps, also to understand and successfully complete calculations and Hess's Law Energy Diagrams.

	M	T	W	H	F
Nature of Energy					
Enthalpy					
Hess's Law	Day 1	Day 2	Enthalpy of Formations		
Fuel/Energy Sources			Student Project		

### Day 1

- Teacher introduction/explanation of Hess's Law
- Calculations—teacher led, student participation
- Diagrams—teacher led

### Day 2

- Review Diagrams
- Student groups to do calculations/diagrams
- Share and explain answers by group with entire class (could go over to Day 3)

### Student Project

- After learning about chemistry behind energy and uses/sources of energy, students will pick an energy source and research chemistry of source.
- Presentation to class.

Problems possible

- flipping sign=inside-out shirt
- multiplying  $\Delta H$  by balancing coefficient
- balance
- enthalpy=heat
- verbal explanation of diagrams

How teacher will explain Hess's Law

How teacher will explain diagrams

How teacher will involve class during explanations

- act out equations