

**Industrial Technology
Hartley-Melvin-Sanborn CSD
Course Benchmarks-Energy**

Standard I: Understand how energy usage affects our environment and civilization.

Identify specific sources of energy. ¹

Relate how various sources of energy can be used.

List the six forms of energy.

Explain how the forms of energy are interrelated.

Relate how energy sources have polluted our environment.

Identify points in history affected by energy source.

List ideas and theories for potentially new sources of energy.

Identify types of energy conservation.

Relate how supply and demand for energy affects the average person.

Identify occupations directly related to energy usage.

Standard II: Differentiate the various internal-combustion engines.

Identify basic parts of a 4 stroke-cycle gasoline engine.

Identify basic parts of a 2 stroke-cycle gasoline engine. -

Identify basic parts of a 4 stroke-cycle diesel engine.

Identify basic parts of a 2 stroke-cycle diesel engine.

Identify basic parts of a rotary engine.

Relate how a hybrid engine operates.

Relate the principle of a fuel-cell engine.

Explain how rocket engines operate.

Explain how jet engines operate.

Standard III: Understand basic wiring skills.

Construct an electrical entrance.

Demonstrate cable ripping.

Demonstrate wire stripping.

Construct proper wire nut and wire loop connections. -'

Construct a single pole switched circuit.

Wire outlet receptacles including GFCI's.

Construct a 2-way switched circuit.

Identify residential wiring materials.

Identify tools of the electrical trade.

Demonstrate safe and proper use of electrical tools.

Identify specific rules or "code" used in residential wiring.

Standard IV: Understand principles related to flight.

Relate how Bernoulli's Principle affects an airplane wing.

Identify parts of a simple glider plane.

List the forces that act upon an airplane wing.

Identify types of materials used in commercial airplanes.

Standard V: Problem-solve a potential energy vehicle.

Identify the source of potential energy in a mousetrap.

Design ideas for a vehicle powered by a mousetrap.

Construct a mousetrap vehicle with limited materials that will travel a long distance.

Standard VI: Understand the steps and procedures for disassembly and assembly of a small 4 stroke-cycle engine.

Identify the systems of an engine.

Identify parts of an engine.

Demonstrate safe and proper use of mechanics tools.

Identify fluids used in an engine and remove them.

Disassemble engine parts in proper order.

Measure clearances during disassembly.

Decide which parts to correct, adjust, or replace.

Assemble engine in proper order.

Assemble fasteners with proper torque and lubrication.

Replace fluids to proper levels.

Perform testing on engine to finalize adjustments.