

# Energy Unit Plan

## GRADE LEVEL EXPECTATION:

There are different forms of energy, and those forms of energy can be changed from one form to another - but total energy is conserved

## BIG IDEAS:

Change (Energy Transformations),  
Constancy (Energy Conservation), Systems, Form

### IF NOT, THEN WHAT?

Mixed Grouping by ability. Put lots of responsibility on group members.  
Revisit/Review concepts individually and have students create final product based on their own level/strengths. Review each lab by coll. Group at start of new lab.

### IF SO, THEN WHAT?

- ✓ Challenge each individual to test a hypothesis for how energy could change in space, given certain forces. Challenge individual to find energy examples of various situations.
- ✓ Use Vernier Probes with graphing Calculators to graph p vs. k.

## STUDENTS WILL (KNOW):

Various forms of energy  
Potential and Kinetic  
Energy Conservation  
Resources to find energy transfers

Data Collection  
Validity  
Peer Review

**Need to know Vocab:** Potential, Kinetic, Energy Transformation  
Conservation of Energy, Mechanical.

**Nice to know Vocab:** Forms of Energy: Thermal, chemical, Electrical, nuclear, gravitational, sound, mechanical.

## STUDENTS WILL (DO):

- Gather, analyze, and interpret data to describe the different forms of energy and energy transfer **DOK 1-2**
- Develop a research-based analysis of different forms of energy. Use research-based models to describe energy transfer mechanisms, and predict amounts of energy transferred. **(DOK 1-3)**
- Use research-based models to describe energy transfer mechanisms, and predict amounts of energy transferred. **DOK 1-2**
- Share data and discuss conflicting results. **(DOK 2-3)**
- Recognize and describe ethical traditions of science: value peer review, making work public, etc. **(DOK 1)**
- Use tools to gather, view, analyze and report results for scientific investigations designed to answer energy transfer questions. **DOK 1-2**

## Unit Comments:

- ✓ Check for ties to math curriculum with Rate = Speed and motion graphs (linear, inverse relationship for graphs).
- ✓ Delta P, Delta K
- ✓ High School Math connections for highs. Calculate potential/kinetic.

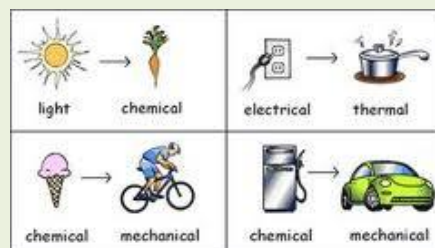
## ACTIVITIES FOR LEARNING : (NOTEBOOK UNIT 2)

**LAUNCH:** Title Page-Vocab. Poem or Comic, picture examples, non-examples.

1. Energy in my life Activity. "Who eats, sings, draws, plays, etc."
2. ESPN – Perpetual Motion Video, [Energy Skate Park](#)
3. Pre-Assessment – ABC quiz
4. Why I love this Unit!

## **EXPLORE** (Inquiry):

1. [Potential vs. Kinetic Energy PPT](#) and [Graphic Organizer](#)
2. Mini-Lesson: Forms of Energy Foldable. (See Master notebook)
  - a. Notes: (See Master Notebook)
3. Video Clip: Bill Nye: Energy Transfers (get 10 notes)
4. WORKDAY – finish title page and foldable!
5. [FORMS of ENERGY STATIONS LAB:](#)
  - a. Day 1: Potential Energy Stations – NEED # 1-3 with student teachers
  - b. Day 2: Kinetic Energy Stations – NEED #4-6 w/Student teachers.
  - c. Review lab stations. Check for completion of 8 square foldable.
    - i. Quia Site.- [Challenge Board](#)
6. Reivew Game: [BINGO](#): Energy Transfers (overhead from NRG binder)
7. [Energy Web Animations](#) (Reflection as group) – [Class Website](#)



## **SUMMARY:** ENERGY PROJECT:

- a. Build a wind turbine.
  - b. Identify potential and kinetic energy within a system.
  - c. Describe Energy Transfers.
  - d. Present to class – group-demonstrate understanding. .
8. Benchmark Assessment and Review BA.

MY UNIT REFLECTION:

FINAL PROJECT: