## **Energy Forms**

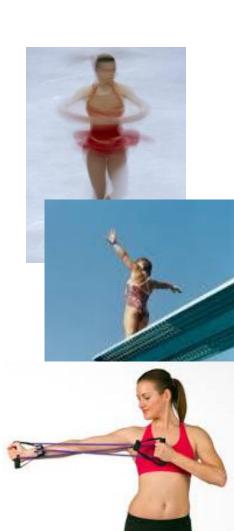
**Kinetic** – Energy of Motion



**Rotational Kinetic** – Energy of motion (spinning)

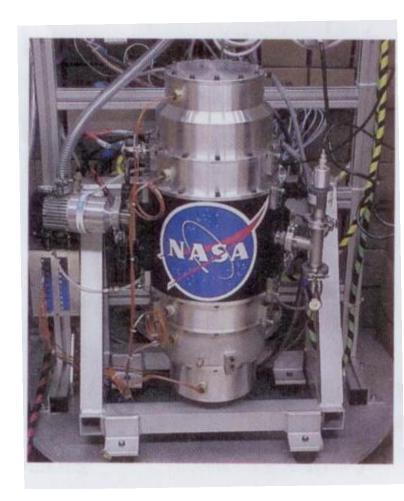
Potential – position

**Elastic potential** – something elastic is stretched or compressed



## **Rotational Energy**

Energy of motion



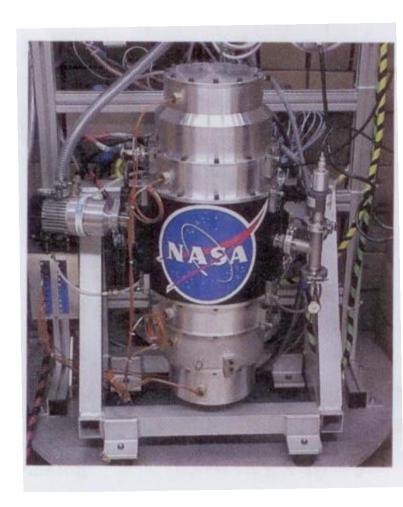
# Picture of Earth Where is the sun?

A. B. D. E. Can't tell

## **Rotational Energy**

Energy of motion





### **Efficiency**

Why do runners get better times in cool rainy races?



#### Who's faster?





**Same Energy Source** 

#### **Heat!**

All energy transformations transfer some to heat. To be more efficient, less transfer to heat.

Cars get hot
Generators get hot
Windmills get hot

Often due to friction or just burning fuel.

## **Energy Drinks**

Sugar — if not sugar free

The only actual energy

#### **Stimulant Drugs**

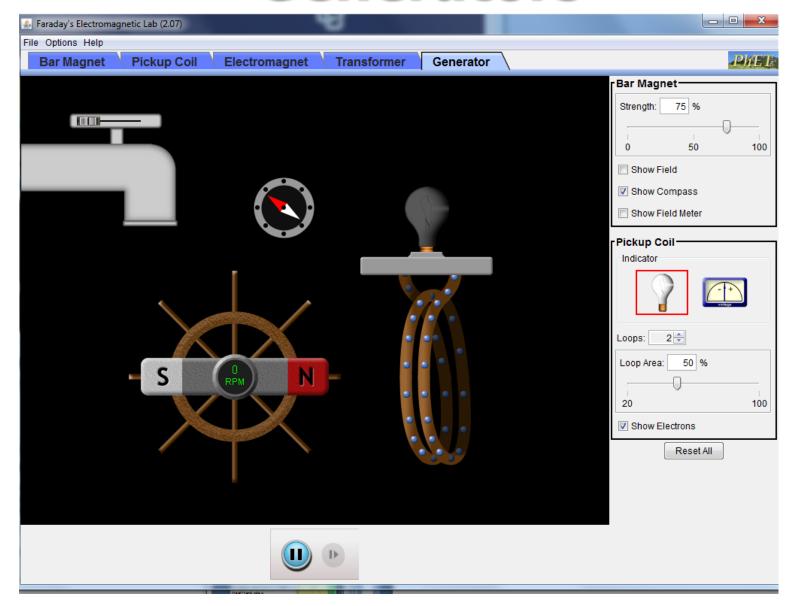
suppress the bodies natural reaction to exhaustion.

Not healthy

#### **Induction** is the

- A. Creation of a magnetic field using a battery
- B. A changing magnetic field
- C. Creation of a current with a changing magnetic field
- D. Lighting a light bulb with a current.
- E. None of the above

#### Generators



#### **Induction** is the

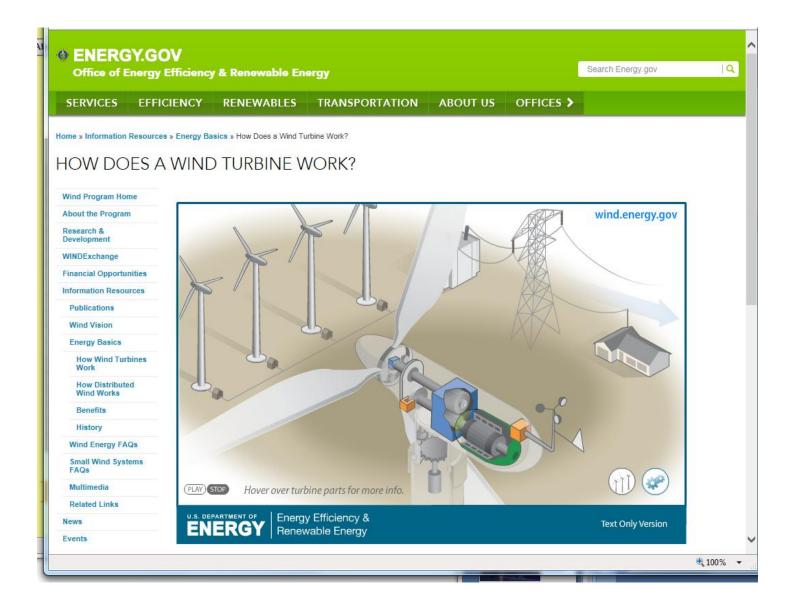
- A. Creation of a magnetic field using a battery
- B. A changing magnetic field
- C. Creation of a current with a changing magnetic field
- D. Lighting a light bulb with a current.
- E. None of the above

#### **Power Plants**



- Burn Coal or Natural Gas
- Covert to mechanical energy
- Then to Electrical via *induction*

#### Windmills



Eight practices that are essential for all students to learn:

- 1. Asking questions (for science) and defining problems (for engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematics and computational thinking
- 6. Constructing explanations (for science) and designing solutions (for engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating, and communicating information

Eight practices that are essential for all students to learn:

1. Asking questions (for science) and defining problems (for engineering)

When I asked the clicker question about the definition of induction, did this meet 1. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

Eight practices that are essential for all students to learn:

1. **Asking questions** (for science) and defining problems (for engineering)

When I asked the clicker queston about the definition of induction, did this meet 1. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

Eight practices that are essential for all students to learn:

3. Planning and carrying out investigations

When I had you use a piece of string to learn about AC current, was I meeting 3. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

Eight practices that are essential for all students to learn:

3. Planning and carrying out investigations

When I had you use a piece of string to learn about AC current, was I meeting 3. above?

- A. Yes
- **B.** Partly
- C. No
- D. I don't know

Eight practices that are essential for all students to learn:

5. Using mathematics and computational thinking

When you investigated the features of the cup instrument that made it loud, or change pitch, did I meet 5. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

Eight practices that are essential for all students to learn:

5. Using mathematics and computational thinking

When you investigated the features of the cup instrument that made it loud, or change pitch, did I meet 5. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

You analyzed data (information)
But there were no numbers involved, no calculations.

Eight practices that are essential for all students to learn:

5. Using mathematics and computational thinking

When you investigated the features of the cup instrument that made it loud, or change pitch, did I meet 5. above?

- A. Yes
- B. Partly
- C. No
- D. I don't know

- 6. Constructing explanations (for science) and designing solutions (for engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating, and communicating information