**Open website https://phet.colorado.edu**

**Search for *Energy Forms and Changes***

**Download the java simulation**

**Choose *Energy Systems* at the top left of the window**

**Tick the *Energy Symbols* box so that the energy symbol legend is displayed**



Tap Sun Kettle Bike Turbine Solar Panel Water Light Bulb1 Light Bulb2

1. Select the Tap, Turbine and Water.

Complete the following Energy transformation chain

The water has \_\_\_\_\_\_\_\_\_\_\_\_\_ energy which gives the turbine \_\_\_\_\_\_\_\_ energy. The turbine creates \_\_\_\_\_\_\_\_\_\_ energy. The Water is heated by the \_\_\_\_\_\_\_\_\_ energy and generated steam with \_\_\_\_\_\_\_\_\_ energy.

b. Does all the kinetic energy of the water transform into the kinetic energy of the turbine?

1. Change the water to light bulb 1, then light bulb 2 to answer the following questions
2. Describe or draw the energy conversions that happen in light bulb 1
3. Is this any different from the conversion of light bulb 2?
4. Which light bulb is more efficient and why?
5. Select the Kettle and turn the heat on completely.
6. What energy is produced by the kettle that energy makes the turbine move?
7. What energy is produced by the kettle that is wasted?
8. What happens to the energy produces by the kettle if you decrease the heat? Why?
9. Is the kettle more or less efficient than the tap (which one wastes more energy)?
10. Fill in the below flow chart to describe the energy transformations (using kettle, turbine and light bulb 1)

\_\_\_\_\_\_\_\_\_\_\_ energy is transformed into \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ energy

**Turbine generates electricity**

\_\_\_\_\_\_\_\_\_\_ energy of the \_\_\_\_\_\_\_\_\_\_is transformed into \_\_\_\_\_\_\_\_\_\_ energy

**Steam turns the turbine**

\_\_\_\_\_\_\_\_\_ energy of the \_\_\_\_\_\_\_\_ is transformed into \_\_\_\_\_\_\_\_\_ energy of the \_\_\_\_\_\_\_\_\_\_.

**Kettle Produces Steam**

Wasted Energy:

Useful Energy:

\_\_\_\_\_\_\_\_\_\_ energy is transformed into \_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ energy

**Fire heats Water in the kettle**

**Electricity operates the light bulb**

Useful Energy:

Wasted Energy: