**Description**
In this lesson, students create diagrams that allow them to examine their home's energy system. They also evaluate how they utilize these systems, thereby allowing them to understand how they use energy.

**Objectives**
- Students will examine how energy sources are used throughout buildings.
- Students will create diagrams that identify all energy systems throughout their home and reflect on their energy uses.
- Students will define standby power and determine where it occurs in their home.

**Materials**
- *Handout 6 Personal Energy Use Data Sheet* (one copy per student)
- *Transparency 6A Diagram of a House*
- *Transparency 6B Household Circuit and Notes*
- Blank paper, preferably graph (one piece per student)
- Bright markers (one per student)
- Sticky notes

**Background**
Buildings are a leading contributor to greenhouse gas emissions and energy use in the United States. A large amount of the energy used in buildings could be saved by people being more aware of various energy systems that exist in building and their personal energy demands. These energy systems include electrical, heating, air conditioning, hot water, and more. A starting point for everyone is to assess what they use because this helps identify easy ways to save and waste less energy. For example, standby power is the power that devices use when they are plugged in but not actively being used. This is power that is saved simply by unplugging things when you are done using them.

**Do Now**
Distribute five sticky notes to each student. Ask students to think of five ways they use energy daily and write each of them down on separate sticky notes. Encourage students to think of new things they have not considered before.

**Mini-Lesson**

1. Project *Transparency 6A Diagram of House*. Ask students to come up and place their sticky notes on the appropriate locations around the house. Read off some of the sticky notes for each room and discuss the many ways we use energy around our homes. Compare and contrast the energy uses of various rooms.

2. Now ask students to take a few moments to look around the classroom for ways they depend on energy while they are at school. Tell students to get out of their seats and stand by the area of the class that represents of the energy use they have in mind. Again, encourage students to think of areas they do not normally consider. Go around the class and have each student share their energy needs.

3. Project *Transparency 6B Household Circuit and Notes*. Explain that this is an example of how an electrical system looks in a house. Ask students what types of energy are not incorporated in this diagram. Make sure to point out heating, cooling, hot water, private wells, cars, lawnmowers, and any thing else that comes to mind.

**Activity**

1. Explain to students that before they audit the school, they are going to spend some time examining their own homes and personal habits.

2. Distribute paper to students. Tell students their assignment is to create a detailed diagram of their home and points of energy use. Each room should be drawn from a bird's eye view. Things that should be diagrammed include:

    - Electrical Outlets
    - Lights and switches
    - Appliances
    - Electronic devices
    - Thermostats
    - Faucets
    - Vents/radiators
    - Ceiling Fans
    - Motor equipment

3. Circulate around the room while students are working on their diagrams to ensure they are considering all components.

4. Define the term "standby power" as the power drawn by devices when they are off or not being used, such as phone chargers. Give each student a marker and have them use it to identify all points of standby power in each of their rooms.

5. Conduct a class discussion at the end of class. Ask students the following questions about their diagrams:

    - *Which rooms utilize the least energy? Why?*
    - *Which rooms utilize the most energy? Why?*
    - *Which rooms have the highest number of standby power locations?*
    - *What stands out as areas where energy is wasted?*

**Assessment**
In their notebooks, have students identify the top three areas where energy is wasted in their homes and explain why.

**Homework**
Have students complete *Handout 6 Personal Energy Use Data Sheet* prior to the next class. Information collected on this handout is required for the activity conducted during *Lesson 7 Impacts of Personal Choices*. (Note: To complete the included energy use data sheet, students will need to speak with their family/guardians and acquire recent utility bills).