Energy Quick Start Guide
Home Energy & Water Evaluation Kit

Lesson Background Reading

Energy is the ability to do work. Power is the measure of the amount of time it takes to do that work. When your family receives the utility, or energy, bill at the end of the month, your family is charged based on the amount of power, measured in kilowatt-hours (kWh), that is used. The energy that we use comes from natural resources, like coal, oil, and natural gas, which are difficult to replace once it is used; they are non-renewable resources. Since we use energy from the time we get up in the morning until we go to bed, and even while we sleep, it is helpful to know how we use it, in order to make sure we use it well. During this activity, you will become an energy detective within your home, helping to identify areas that may be costing your family on your utility bill and discover what appliances use the most energy.

Perform a Home Water Audit

On the next page are instructions for using the Home Energy & Water Evaluation Backpack Kit that is free for checkout from any Jacksonville Public Library, just like a book. You will go on a scavenger hunt, looking for energy hogs, phantom energy loads, and discovering how much electricity your devices actually use.

End of Activity: Follow-up Question

You learned many new terms, from base load to building envelope and energy hogs. What was the most surprising discovery from this activity? Based on what you learned, what steps will you take to use energy more efficiently in your daily activities?

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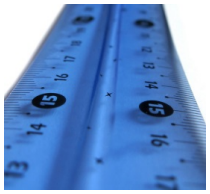
A. Determine your Household Energy Consumption (Optional)

1. Ask a parent or guardian to show you or help you look up your family's energy bill and find the energy consumption, listed in kWh on the bill. This information can be found by creating an account on JEA.com.
2. Inside the backpack kit, find the white JEA folder and pull out one of the green "Energy Evaluation Worksheets". Record your family's energy usage information in Column 2.
3. **Calculate the Base load.** Find the two months with the lowest amount of energy consumed. Add them together and divide by 2. This is your approximate monthly **Base load**, or the amount of energy your home uses all the time, regardless of the weather. Place this value in each box in Column 3 (except the last one) on the green worksheet.



4. Add the 12 entries in Columns 2 and 3 to calculate the total amount of energy your family used for the entire year and how much of that was from the base load.
5. Record the above numbers under *Step 2, calculating annual costs* on the green worksheet.

B. Take a Walk Around Your House- Do a Building Envelope Inspection!

1. Just like a paper envelope encloses, or surrounds a letter you want to mail, a **building envelope** describes the parts of a building that separate it from the outdoors, such as walls, windows, foundation, doors, and roof.
2. Walk around your home and inspect for air leaks in the form of cracks or holes on walls with an exterior side, or a side that is outside, and along windows. **Up to one-third of heating and cooling costs can be due to air leaks!**
    a. Don't forget to check around a fireplace, exhaust fans, and pet doors. For more ideas of where to inspect, see page 41 in the Home Energy & Water Evaluation Guide in the kit.
    b. Record leak locations on the green worksheet to ensure you can go back and with the assistance of an adult, seal them.

Infrared Thermometer

3. From the backpack kit, find the infrared thermometer. Walk around again with the infrared thermometer and take the temperatures of exterior walls and ceilings.
    a. Can you find a big temperature variation? _____Yes _____No

b. **If Yes.** It may mean missing or poor insulation. Make a note about this area and let an adult know.

C. Your AC's Wellness Check-Up!

1. Using the infrared thermometer and after your air conditioner has been running for about 10-15 minutes, measure the temperature difference of your return grill (usually larger grill) and supply (smaller grills). The difference should not be more than 14-22 degrees. **Use step 4 on the green backpack worksheet to calculate the temperature difference.**
    a) Check all of the grills of the supply. Are there any variations among them?
    _____Yes _____No
    If you answered yes: Dramatic temperature differences may mean duck leaks or airflow problems. More information about these can be found in the Evaluation Guide.

D. Let's Keep It Comfortable

1. The thermostat is the easiest device to adjust and see results on the energy bill, whether good or bad! Find your thermostat and record the current temperature below: **_____°F.**
2. The recommended temperature setting for summer is 78°F and in winter 68°F. How does your family's thermostat setting compare? ____ Higher ____ Lower
   What actions can you take to move the thermostat closer to that recommended setting? (What is in your home that can help block sun in the summer or make a room feel cooler?) _____

E. Energy Hogs (Discover what's contributing to that Base Load!)

1. Find the three Kill-a-Watt meters in the backpack kit.
2. In part A, you determined the base load for your family's energy use. Now you are going to search out those devices that might be contributing a lot to your energy use and you don't even realize how much. These are called **energy hogs**.
3. Plug the Kill-a-Watt meters into different outlets and then plug in devices like your TV, gaming system, washer or dryer, or any other high energy appliance.
    a. Using the menu button on the meter, scroll through the displays until you find the Cost display.
    b. Use the up and down buttons to see how much this appliance costs to operate on a daily, weekly, monthly, and yearly basis.
    c. Leave the meter in for 2-3 days.
    d. Come back and check how the numbers of have changed.
    e. Record the cost per month on the green worksheet under Step 6.