**The Great Energy Exploration**  
**Grades 6-8**

**Name:** _______________________________________________________________________________

**Room:** _______________________________________________________________________________

**Exploration 1**

In this exploration, you will learn about the difference between a standard meter and a smart meter as well as the energy efficiency of different appliances.

1. What is the Current Time? __________AM at the top of the screen?
2. Turn ON all appliances in the room.
3. Click START
4. What is the Electricity Cost? $_________/kWh
5. Click PAUSE after 1 hour
6. What is the Current Time? __________AM
7. What is the Electricity Cost? $_________/kWh
8. What is the Total Usage Cost? $_________
9. What is the Total Watt Hours Used? ___________/kWh
10. Find and record the data for any two appliances in the chart below.
11. Click RESET after the data has been recorded.

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Part Number</th>
<th>Watts</th>
<th>Watt Hours Used</th>
<th>Usage Cost</th>
</tr>
</thead>
<tbody>
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12. **Raise your hand for the electricity technician to come over and install a Smart Meter.**

13. What is the Current Time? __________AM at the top of the screen?
14. Click START
15. What is the Electricity Cost? $_________/kWh
16. Click PAUSE after 1 hour
17. What is the Current Time? __________AM
18. What is the Electricity Cost? $_________/kWh
19. What is the Total Usage Cost? $_________
20. What is the Total Watt Hours Used? ___________/kWh
21. Record the data for the same two appliances in the chart below:
22. **Turn off all appliances and click RESET**

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Discussion 1

Discuss the following questions with your group and write your answer. Raise your hand if you have any questions.

1. Which of the two appliances you chose used more energy and how do you know?

2. Do we use all appliances in real life for the same length of time?

3. List an appliance in your home that runs for a long time:

4. List an appliance in your home that you use for a short amount of time:

5. Describe why knowing how much electricity an appliance uses would affect your use of the appliance:

6. How much would it cost to run both appliances for an entire day (24 hours) with a standard meter? (Usage Cost + Usage Cost) x 24

7. Explain the difference between Electricity Cost and Usage Cost:

8. What does a meter do?

9. What change do you notice on the monitor when you switch the standard meter with a Smart Meter?

10. Explain how knowing the price of electricity throughout the day would affect when you use different appliances.

11. If energy is cheaper to use at night, describe why you don’t run your appliances at night.
Exploration 2

In this exploration you will **test three of the same appliance in your room** to learn about its energy efficiency. (Example: three toasters or three vacuums). Your group can test the same appliance or you can each choose your own.

1. Pick the appliance you want to test and turn it ON
2. Click START when everyone’s appliance is ON
3. Copy the EnergyGuide Tag
4. What is its purchase price? $______________
5. Click PAUSE after 1 hour.
6. Record the data from the monitor and click RESET

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7. **Turn OFF and UNPLUG your appliance**
8. **Swap it out in the appliance store for a different model of the same appliance.**

1. Plug in the SECOND appliance and turn it ON
2. Click START when everyone is ready
3. Copy the EnergyGuide Tag
4. What is its purchase price? $______________
5. Click PAUSE after 1 hour.
6. Record the data from the monitor and click RESET

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7. **Turn OFF and UNPLUG the second appliance**
8. **Swap it out in the appliance store for the third model of the same appliance.**

1. Plug in the THIRD appliance. Turn it ON
2. Click START when all teams are ready
3. Copy the EnergyGuide Tag
4. What is its purchase price? $______________
5. Click PAUSE after 1 hour.
6. Write the data from the monitor and **RESET**

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Turn OFF all appliances

Leave one plugged in. Put the other two back in the appliance store.

Click RESET

Discussion 2

Using the data you gathered, answer the questions and discuss as a group:

1. Compare the numbers (watts, usage cost) for the first appliance to the numbers for the second model of the appliance. Describe what you notice about the data:

   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________

2. How much does it cost to buy:
   Appliance 1: $______________
   Appliance 2: $______________
   Appliance 3: $______________

   What do you notice about the energy efficiency of the least expensive appliance compared to the most expensive?

   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________

3. Explain why you would consider buying a more expensive appliance instead of a cheaper appliance?

   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________

4. What else should you consider before buying an appliance?

   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________

5. Which of these three appliances would you consider buying and why?

   ____________________________________________________________________________________________________________
   ____________________________________________________________________________________________________________