Name_____ Period _____ Date _____

Electric Power

STEM Sims

Lesson 2: At What Cost?

Cheaper is not always better. Buying a battery that costs one dollar less than another battery is only a smarter purchase if the less expensive battery performs equally as well as the more expensive one. Many factors beyond the initial cost of items must be factored into buying decisions. Can you determine which fuel type is the overall best value to produce electrical energy?

Doing the Science

1. Start the Electric Power Simulation by clicking on the "Sim" tab.
2. Click on one of the fuel sources at the bottom of the screen (see Table 1).
3. Click the blue "Run" button located at the right-hand bottom of the screen.
4. The simulation will count down 24 hours. When the clock reaches 0:00, click on the blue "Data" button located at the right-hand bottom of the screen.
5. Note and record the various cost factors in Table 1 for that particular fuel type. Click the "Close" icon at the top right-hand corner of the Electric Power Data pop-up box.
6. Click the blue "Reset" button located at the right-hand bottom of the screen.
7. Repeat steps 2-6 until you test all fuel types. Make sure to record your data in Table 1.

Table 1. Fuel Type's Cost Factors

	Fuel Type					
Costs	**Coal**	**Petroleum**	**Natural Gas**	**Nuclear**	**Propane**	**Biomass**
Facility						
Maintenance						
Fuel						
Disposal						
Workforce						
CO_2 emissions						
By-products						

Do You Understand?

1. Which fuel type is the best overall for producing the electrical company's power? Please explain your response.

2. Which fuel type had extremely low CO_2 emissions? Explain why this is so. Make sure to use the simulation animation to support your reasoning.