

# Plugged in to CO2

A Windows to the Universe Activity

WORKSHEET #2

NAME: \_\_\_\_\_

Carbon dioxide, a greenhouse gas, is released into the atmosphere when fossil fuels are burned. This is a major cause of recent global warming. The amount of CO<sub>2</sub> released to generate electricity depends on how much of your electricity comes from fossil fuels. In this part of the project, you will figure out how much CO<sub>2</sub> is released to generate the electricity for a particular appliance or electronic device over a year.

## How much of your electricity comes from fossil fuels?

1. Look at the US map that shows pie charts for regions that have particular energy mix. Locate your region and its pie chart.
2. According to that pie chart, what is the percentage of electricity that comes from coal, natural gas, and fuel oil? Fill in percentages in the table at the right. Convert to decimal form (For example, 63% = 0.63).

Fossil fuel	Percent	Decimal
Coal		
Natural Gas		
Fuel Oil		

## How much CO<sub>2</sub> is formed to make the electricity that powers an appliance or electronic device?

3. Choose one of the appliances or electronics measured in the first part of this project. Record its kWh per year (from Worksheet 1.)

*Appliance/electronic:* \_\_\_\_\_, *which uses* \_\_\_\_\_ *kWh in a year*

4. Calculate the number of kWh produced with coal, natural gas, and fuel oil to power the appliance by multiplying the decimal form of the percentage by the total kWh. Fill in these numbers in Column B in the table below.

5. Multiply the pounds or kilograms of CO<sub>2</sub> per kWh (Column C) by the number of kWh for each fuel (Column B) to get the amount of CO<sub>2</sub> produced generating electricity for your appliance or electronic. Record your answers in Column D.

6. Sum the pounds or kilograms of CO<sub>2</sub> you calculated in Column D to get the total pounds of CO<sub>2</sub> sent into the atmosphere by using the appliance or electronic device over a year.

A	B	C	D
Fossil Fuel	Step 4: kWh produced with each fuel to power device over a year	Pounds (kg) of CO <sub>2</sub> per kWh of electricity	Step 5: pounds (kg) of CO <sub>2</sub> produced over a year
Coal		2.095 pounds/kWh (0.95 kg/kWh)	
Natural Gas		1.321 pounds/kWh (0.60 kg/kWh)	
Fuel Oil		1.969 pounds/kWh (0.89 kg/kWh)	
<b>TOTAL CO<sub>2</sub>:</b>			