



# CLASSROOM LIGHTING ASSESSMENT

## CLASSROOM LIGHTING CALCULATION

Adapted from EcoSpark's Wattwise: Teacher Guide Handout #1, available at ecospark.ca

STUDENT NAMES \_\_\_\_\_

DATE \_\_\_\_\_

Explore how much electricity your school uses for classroom lighting by completing this simple lighting calculation.

### Calculate the electricity used for lighting for one day

1a) Count the number of fluorescent lightbulbs that are regularly used in your classroom. Determine the wattage of the most common lightbulb in your classroom. Write the values in the boxes below.

<input type="text"/>	LIGHTBULBS	X	<input type="text"/>	WATTAGE
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1b) Multiply the number of lightbulbs by the average wattage.

<input type="text"/>	WATTS
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2a) Divide the total watts (1b) by 1000 to find the power used in kiloWatts (kW).

<input type="text"/>	KW
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2b) Count the number of hours the lights are on in a day.

<input type="text"/>	HOURS/DAY
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**Multiply the kW (2a) by the number of hours the lights are on during the day (2b)**

<input type="text"/>	KWH/DAY
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*Electricity used in your classroom for lighting in one day*

Calculate the electricity used in your classroom for lighting for one month and one year:

\_\_\_\_\_ kWh/day X \_\_\_\_\_ school days/month = \_\_\_\_\_ kWh/month

\_\_\_\_\_ kWh/day X \_\_\_\_\_ school days/year = \_\_\_\_\_ kWh/school year

### Calculate your yearly emissions in CO<sub>2</sub> equivalents

The production of electricity results in greenhouse gas (GHG) emissions, and a unit called a CO<sub>2</sub> equivalent (CO<sub>2</sub>e) allows for those emissions to be compared. The CO<sub>2</sub>e represents all GHGs (CO<sub>2</sub>, methane, etc.) emitted from an action and is determined based on the potential impact on the environment (global climate change potential). According to Environment Canada, producing 1 kWh of electricity in Ontario is equal to emitting 0.180 kg CO<sub>2</sub>e.

Calculate the yearly GHG emissions produced by your classroom lights

\_\_\_\_\_ kWh/school year X 0.180 kg CO<sub>2</sub>e/kWh = \_\_\_\_\_ kg CO<sub>2</sub>e/school year

\_\_\_\_\_ kg CO<sub>2</sub>e/school year ÷ \_\_\_\_\_ students = \_\_\_\_\_ kg CO<sub>2</sub>e/student/year

### According to the UNEP, an average tree absorbs 12 kg of CO<sub>2</sub> per year.

Take the total GHG emissions produced by your classroom's lights for the school year (top row answer in above grey box) and divide by 12 to find out how many trees would be needed to balance the emissions created through the production of electricity required to light your classroom for a year.

<input type="text"/>	TREES
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## SCHOOL REFLECTION

The reflection can be completed by an EcoTeam, class, or an individual student.

What did you learn about your classroom's (or school's) energy use when you completed the Lighting Assessment?

Did the number of trees needed to balance your lighting use surprise you? Why or why not?

How will having this information change your behaviour? What new questions do you now have?