Eco-Schools USA Climate Change Audit

LEARNING OBJECTIVES

- To quantify the school's carbon footprint.
- To identify what can be done to reduce the school's carbon footprint.
- For students to learn how carbon is emitted and calculated.
- To design and conduct an action project related to carbon emissions.

CURRICULUM LINKS

Mathematics, Science, Social Studies, Government, and Economics

ECO-SCHOOLS USA PATHWAYS

Climate Change, Energy, Transportation, Water, and Consumption and Waste

BACKGROUND

Please note: National Wildlife Federation and Eco-Schools USA do not support the teaching of climate change education below the 4th grade. Collaboratively we drafted Guidelines for K12 Global Climate Change Education.

What is a Carbon Footprint?

"Carbon footprint" is an expression that describes how much carbon dioxide a person (or entity such as a school) releases over time. Assessing your school's carbon footprint is a way to measure the impact your school's activities and behaviors have on the environment. The more energy, paper, and other supplies your school uses, the bigger your school's footprint or impact.

What is a Carbon Calculator?

A carbon calculator measures the amount of carbon dioxide, CO_2, we contribute to greenhouse gas emissions. The carbon calculator is used to assess climate change because it is a heat-trapping gas that stays in the atmosphere anywhere from decades to thousands of years and over time increases global temperatures.

When we understand how our actions affect the environment we can take steps to make better decisions and better choices.

Procedure

1. The Eco-Action team should work together to gather the data needed to complete the audit form. (Note: If you have completed the energy audit you will have already gathered some of this data)
2. Complete the transportation audit below, entering information in the 'Before Taking Action' columns. Note that the first worksheet asks you to gather data at the classroom level, while the other worksheets ask you to gather data at the school level. Try to include as many classrooms in the data collection process as possible.
3. Open the carbon calculator available at https://www.nwf.org/Eco-Schools-USA/Resources/Activities/Projects/Cool-School-Challenge and input information into the 'Electricity Info' tab. You can use the national average or research information for your local utility. Instructions for completing this are provided on the tab.
4. Next, input data from this paper audit form into the carbon calculator.
5. Go to the 'Add it Up' tab to calculate the carbon footprint of each participating classroom.
6. Open the school tally form, and input data from each classroom to calculate your school's overall carbon footprint.
7. Analyze the results and report the findings to your school community.
8. Formulate an action plan.
9. As part of the monitor and evaluate step, conduct the audit a second time, and enter information into the 'After Taking Action' columns on this audit form.
10. Keep the Climate Change audit form and calculator with your records. **When applying for an award you will need to enter your answers to questions 5 and 6 on the award application form. If you apply for the Green Flag you will need to submit the entire audit form.**

CLASSROOM Climate Change Worksheet

CLASSROOM LIGHTING				
Switch	How many bulbs per switch?	Watts per bulb	# hours per day the switch is on	
			Before Taking Action	After Taking Action
1				
2				
3				
4				
5				

ENERGY VAMPIRES										
Electronic Device	**How Many?**	**End of Day: (check one per device)**								
		"Active" (on and performing main function)		**"Sleep/Standby" (on, ready-for-action but not in use)**		**"Off" (turned off, but still plugged in)**		**"Power strip" (Plugged into power strip, which is turned off at end of day)**	
		Before Taking Action	**After Taking Action**	**Before Taking Action**	**After Taking Action**	**Before Taking Action**	**After Taking Action**	**Before Taking Action**	**After Taking Action**
Desktop Computer									
Laptop Computer									
Computer Monitor – Conventional (CRT)									
Computer Monitor – Flat Screen (LCD)									
Multi-Function Printer/Scanner/Copier									
Stereo									
Television									
DVD/VCR Player									
SMART Board									
LCD Projector									

OTHER APPLIANCES *(Optional)*				
Electronic Device	**How Many?**	**Wattage**	**Hours On Per Day**	
			Before Taking Action	**After Taking Action**

(Fill in other appliances such as: microwaves, refrigerators, electric pencil sharpeners, lamps, etc.)

TRANSPORTATION, HEATING & SOLID WASTE			
	Category	**Before Taking Action**	**After Taking Action**
TRANSPORTATION	1. What is the roundtrip distance the teacher travels to and from school each day?	_____ miles	_____ miles
	2. How many days per week does the teacher use each mode of transportation to get to school?	_____ drive alone _____ carpool _____ walk, bike, bus	_____ drive alone _____ carpool _____ walk, bike, bus
	⇨ If the teacher drives alone or carpools, what is the car's fuel efficiency in miles per gallon, mpg?	_____ drive alone-mpg _____ carpool-mpg	_____ drive alone-mpg _____ carpool-mpg
	⇨ If teacher doesn't know mpg, what is the make and model of the car? (This will allow you to look up its fuel economy online)	_____ make _____ model	_____ make _____ model
	⇨ If the teacher carpools, how many people total are in the carpool?	_____ passengers	_____ passengers
HEATING	1. Is there a controllable thermostat in the classroom, main office, or at the district level?	☐ Yes ☐ No	☐ Yes ☐ No
	2. If so, to what temperature is it set?	_____ warm weather _____ cold weather	_____ warm weather _____ cold weather
	3. Do you try to keep your classroom's windows or doors shut in the winter?	☐ Yes ☐ No	☐ Yes ☐ No
	4. How is your school heated?	_____ electricity _____ fuel oil _____ natural gas	_____ electricity _____ fuel oil _____ natural gas

TRANSPORTATION, HEATING & SOLID WASTE continued…			
	Category	**Before Taking Action**	**After Taking Action**
SOLID WASTE & RECYCLING	1. Approximately how many <u>full</u> bins of trash does the classroom generate each week?	_____ Full Bins	_____ Full Bins
	2. How much does the trash can weigh when empty	_____ Pounds	_____ Pounds
	3. How much does the trash can weigh when filled with trash?	_____ Pounds	_____ Pounds
	4. Does the classroom recycle?	☐ Yes ☐ No	☐ Yes ☐ No
	⇨ If yes, what does the classroom recycle? *Check all that apply:*	_____ Paper _____ Plastic _____ Aluminum Cans _____ Glass	_____ Paper _____ Plastic _____ Aluminum Cans _____ Glass
	5. Approximately how many reams of paper are used by the classroom per week?	_____ Reams	_____ Reams
	⇨ What is the recycled content of the paper?	___ 0% ___ 30% ___ 100%	___ 0% ___ 30% ___ 100%
	⇨ Are both sides of the paper used for printing?	☐ Yes ☐ No	☐ Yes ☐ No
	6. If the teacher drinks bottled water/soda, approximately how many plastic bottles does he/she use each week?	_____ Bottles	_____ Bottles
	⇨ Most of the time, are the bottles usually recycled, or thrown away?	☐ Recycled ☐ Thrown Away	☐ Recycled ☐ Thrown Away
	7. If the teacher drinks coffee/tea or other beverages, does he/she use his/her own mug?	☐ Yes ☐ No	☐ Yes ☐ No
	⇨ Approximately how many disposable cups does he/she consume in a week?	_____ Cups	_____ Cups

SCHOOL Climate Change Worksheet

1. Is climate change education a part of the school's curriculum?	☐ Yes ☐ No
2. Have students attended or participated in an ACE[+] assembly?	☐ Yes ☐ No
3. Have students create awareness campaigns around different climate change topics?	☐ Yes ☐ No
4. Do students understand the Earth is a system made of smaller systems including the biosphere, hydrosphere, atmosphere and lithosphere?	☐ Yes ☐ No
5. Do students understand that CO_2 is a part of the carbon cycle and that the carbon we emit locally travels globally?	☐ Yes ☐ No
6. Do students understand the greenhouse effect?	☐ Yes ☐ No
7. Do students understand the Earth's energy budget?	☐ Yes ☐ No
8. Do students participate in service learning projects related to the environment?	☐ Yes ☐ No
9. Do students participate in citizen science programs? i.e. Project Budburst, GLOBE, Project Feeder Watch, etc.	☐ Yes ☐ No

[+]Alliance for Climate Education, ACE – grades 6-12 - http://www.acespace.org/

Energy auditing documents are partially adapted from materials provided by the Puget Sound Clean Air Agency as part of their Cool School Challenge. The Cool School Challenge program was acquired by the National Wildlife Federation in 2012 and incorporated into our Eco-Schools USA program.

NOTES:

Summarize results from data collection: