



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, CO₂, 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 entire audit form.
3. Open the carbon calculator 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 the 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 the school community.
8. Formulate an action plan.
9. At a later point complete the audit again to help monitor and evaluate your progress. You will be able to compare your new and old data to calculate how much your school has reduced its carbon footprint.
10. Keep this audit form, the carbon calculator, and the school tally form with your records. This information will be needed when responding to periodic Eco-Schools USA surveys, when applying for awards, and when communicating with the community and members of the media.

Helpful Tips

- Review the audit form first before sharing it with your students. You will need to determine the best way to gather the data.
- For the first part of the audit you will collect data at the classroom level. For the second part of the audit you will be answering questions about your school campus overall.
- Tables with asterisks (*) in the header indicate that data gathered needs to be transferred to the carbon calculator.

CLASSROOM DATA COLLECTION

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				

NOTES

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									

NOTES:

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 carools, 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 carools, 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	4. How is your school heated?	_____ electricity _____ fuel oil _____ natural gas	_____ electricity _____ fuel oil _____ natural gas

NOTES

TRANSPORTATION, HEATING & SOLID WASTE continued...

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?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	⇒ If yes, what does the classroom recycle? <i>Check all that apply:</i>	_____ 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Recycled <input type="checkbox"/> Thrown Away	<input type="checkbox"/> Recycled <input type="checkbox"/> Thrown Away
7. If the teacher drinks coffee/tea or other beverages, does he/she use his/her own mug?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
⇒ Approximately how many disposable cups does he/she consume in a week?	_____ Cups	_____ Cups	

NOTES

SCHOOL DATA COLLECTION

Name of School: _____ Student Population: _____ Building Age: _____

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

NOTES

*After completing the questions above, input classroom data from tables with asterisks into the carbon calculator. After all of the classroom data has been entered into the calculator, review your Add it up!/Audit Summary. Once all participating classrooms have completed the audit, calculate your school's overall carbon footprint using the school tally form. The carbon calculator and school tally form will need to accompany this audit when submitting your application for an award.

[#]Cool the Earth, grades K-5 - <http://cooltheearth.org/>

⁺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.