Eco-Schools USA Energy Audit

LEARNING OBJECTIVES

- To investigate energy use within the school and identify inefficiencies.
- To record and analyze energy data.
- To implement student based solutions to improve energy efficiency.

CURRICULUM LINKS

Mathematics, Science, Citizenship, Language Arts

ECO-SCHOOLS USA PATHWAYS

Energy, Climate Change, Consumption and Waste

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 climate change audit you will have already gathered some of this data)
2. Complete the entire audit form. You may need the assistance of your school facility manager or building engineer to answer some of the questions or help you conduct the audit.
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. http://www.nwf.org/Eco-Schools-USA/Become-an-Eco-School/Pathways/Energy/Audit.aspx
4. Next, input data from the audit form into the following tabs in the spreadsheet: *Classroom Lighting, Energy Vampire, Other Appliances*, and *Heating*.
5. Go to the ***Add it Up*** tab to calculate the carbon footprint of each participating classroom based on energy usage. *(NOTE: This carbon data, along with the other information you have gathered through the auditing process will provide a complete picture of your energy use.)*

PROCEDURE continued

6. Next, open the school tally form, and input data from each classroom to calculate your school's overall carbon footprint. http://www.nwf.org/Eco-Schools-USA/Become-an-Eco-School/Pathways/Energy/Audit.aspx
7. Analyze the results and report the findings from the audit sheet and carbon calculator 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 energy use.
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

Teacher: _____ **Classroom #:** _____ **Subject:** _____

CLASSROOM EVALUATION			
		Before Taking Action	**After Taking Action**
1.	**We found the room to be:** ***(circle only if applies)***	Hot Cold	Hot Cold
	We believe this is due to: ***(circle all that apply)***	Temperature Settings Doors and/or windows open or leaking Blinds not closed Other:_____ Other:_____	Temperature Settings Doors and/or windows open or leaking Blinds not closed Other:_____ Other:_____
2.	**We found dripping faucets or faucets left on.**	Yes No	Yes No

NOTES:

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:

CLASSROOM 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									

ELECTRICITY – OTHER APPLIANCES IN THE CLASSROOM* *(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.)

NOTES:

CLASSROOM HEATING*			
Category		**Before Taking Action**	**After Taking Action**
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

NOTES:

SCHOOL DATA COLLECTION

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

BUILDING ENVELOPE		
	Before Taking Action	**After Taking Action**
1. Looking at your school's electricity bill: • How much electricity did your school use last month? • How much money did your school spend on electricity last month?	_____ **Kilowatt Hrs.** **$** _____	_____ **Kilowatt Hrs.** **$** _____
2. Looking at exterior windows: • Are any of them cracked or leaking? • Are the seals between the frame and pane tight?	☐ Yes ☐ No ☐ Yes ☐ No	☐ Yes ☐ No ☐ Yes ☐ No
3. Do outlets on exterior walls have insulated outlet gaskets?	☐ Yes ☐ No	☐ Yes ☐ No
4. Are the seals around exterior doors and door frames tight?	☐ Yes ☐ No	☐ Yes ☐ No
5. Do you notice visible cracks in the buildings foundation?	☐ Yes ☐ No	☐ Yes ☐ No

NOTES:

HVAC SYSTEM	
1. What fuel source provides heating for the building?	☐ Natural Gas ☐ Electric ☐ Propane ☐ Solar ☐ Wind Power ☐ Biofuel ☐ Coal ☐ Other:_____
2. What equipment is used to deliver that heating?	☐ Hot Water Boiler ☐ Steam Boiler ☐ Forced Air Furnace ☐ Other:_____
3. Age of equipment?	_____
4. If boiler, are pipes insulated?	☐ Yes ☐ No
5. If the building has ducts, are they insulated and sealed?	☐ Yes ☐ No
6. What type of equipment is used to cool the building?	☐ Window Air Conditioners ☐ Central Air Conditioner ☐ Chiller ☐ Geothermal

NOTES

SUMMARY

*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.

Energy auditing documents are partially adapted from materials provided by Educational Dividends. Educational Dividends developed the curriculum for Student Power and the award-winning EnergyNet Project (www.energynet.net). Educational Dividends also manages the EnergyNet Project. As well, some of our energy auditing documents were 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.